

## Національний сейсмологічний бюлетень України за 2021 р.

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Національна система сейсмічних спостережень України на сьогодні має мережу пунктів спостереження, які знаходяться у відомстві Інституту геофізики ім. С.І. Субботіна Національної академії наук та Головного центру спеціального контролю Державного космічного агентства України. На базі цих установ створено об'єднаний Національний центр даних, де проводяться збір, обробка та аналіз отриманих даних. Інформація надається як в оперативному режимі, так і після поглибленого аналізу у вигляді сейсмологічних бюлетенів та каталогів землетрусів.

За результатами інструментальних спостережень у 2021 р. на територіях України та суміжних держав відбулося більш ніж півтори сотні землетрусів, основна частина яких належить до глибокофокусної зони Вранча (Румунія). Максимальна зафіксована магнітуда землетрусу — 4,6. Землетруси з територій інших суміжних держав мали локальний характер і суттєво не впливали на сейсмічність території України. У межах території України землетрус з максимальною магнітудою відбувся 23 вересня на Тернопільщині. Його параметри  $t_0=03:18:04$ ;  $\varphi=48,87^\circ\text{N}$ ;  $\lambda=25,68^\circ\text{E}$ ;  $h=6$  км;  $m_b=4,3$ .

Більшість епіцентрів зареєстрованих землетрусів в Україні знаходиться в межах Волино-Поділля та Передкарпатського прогину на межі Складчастих Карпат. У Кримсько-Чорноморському регіоні спостерігалася слабка сейсмічність, епіцентри землетрусів були зосереджені в межах морської акваторії.

Сейсмологічний бюлетень України містить детальну інформацію про всі сейсмічні події, що відбулися у 2021 р. на територіях України, Румунії, Польщі, Молдови, Словаччини, Угорщини та Білорусі.

Інформацію щодо кожного землетрусу з Каталогу землетрусів за 2021 р. у повному обсязі наведено у pdf-файлі цього бюлетеня на сайті «Геофизического журнала».

**Ключові слова:** землетрус, сейсмологічна мережа, магнітуда, епіцентральна відстань, зона Вранча, сейсмологічний бюлетень.

**Вступ.** Сейсмологічний моніторинг є невід'ємною частиною життєзабезпечення населених регіонів і систем забезпечення безпеки об'єктів критичної інфраструктури (атомних електростанцій, гідроелектростанцій, шахт, мостів, трубопроводів та ін.). Моніторинг включає не тільки реєстрацію, а й подальшу оперативну обробку та інтерпретацію сейсмологічних даних. Отримані в результаті обробки сейсмічних записів відомості

стосовно часу виникнення землетрусів, розміщення їх вогнищ та енергії спільно з даними щодо історичних землетрусів використовують для сейсмічного районування та оцінювання сейсмічного ризику території. Інша практична мета використання сейсмічного моніторингу — попередження про сейсмічну небезпеку, яка виникає внаслідок тектонічної активності поблизу великих інженерно-технічних і екологічно-небезпечних об'єктів. Резуль-

тати сейсмічного моніторингу застосовують і для вирішення більш глобальних завдань сейсмології — вивчення внутрішньої будови Землі.

З метою підвищення безпеки проживання населення та експлуатації виробничих фондів у сейсмонебезпечних регіонах країни, контролю за дотриманням вимог міжнародних договорів України щодо обмеження та заборони випробовувань ядерної зброї, вивчення сейсмічного та геогідродеформаційного стану території України і суміжних держав Урядом було створено Національну систему сейсмічних спостережень України [Постанова..., 1995]. На сьогодні пункти спостереження Інституту геофізики імені С.І. Субботіна НАН України (ІГФ) і Головного центру спеціального контролю Національного центру управління та випробувань космічних засобів (НЦУВКЗ) Державного космічного агентства України фактично становлять всю мережу Системи реєстрації землетрусів (сейсмологічна мережа України), а їх обчислювальні центри разом утворюють Національний центр даних (НЦД) [Постанова..., 1997]. Окрім завдань збору, архівування, обробки та аналізу геофізичних даних НЦД здійснює оперативне та методичне керівництво силами і засобами моніторингу, розвиває технічне, методичне та математичне забезпечення, інформує населення та державні органи влади, формує і публікує сейсмологічні бюлетені та каталоги.

Сейсмологічний бюлетень України, засновником якого свого часу була Кримська експертна рада з оцінки сейсмічної небезпеки і прогнозу землетрусів, публікувався щорічно до 2013 р. Однак після російської анексії території Автономної Республіки Крим випуск бюлетеня було тимчасово призупинено. У 2022 р. прийнято рішення про відновлення випуску спільного Сейсмологічного бюлетеня України за результатами проведення спостережень національною сейсмологічною мережею.

До бюлетеню увійшли землетруси, що відбулись у 2021 р. на території України та суміжних держав. Магнітуда зареєстрова-

них землетрусів на території України становить від 1,0 до 4,3 на глибинах 2—7 км. Сейсмологічною мережею зареєстровано також велику кількість промислових вибухів у гірничих виробках та кар'єрах Житомирської, Кіровоградської та інших областей України, які згодом публікуватимуться в національному сейсмологічному бюлетені для території України.

**Природа сейсмічності території України** зумовлена сусідством її західних, південно-західних і південних областей з потужним сейсмоактивним поясом планети, який утворився в результаті колізії Африканської, Аравійської і Євразійської тектонічних плит. Сучасний рух Африканської плити коливається від ~4 мм/рік у північно-західному напрямі до 10 мм/рік на північ у бік Євразійської плити. Границя Африкано-Євразійської плити складна і включає зони розтягу та перехідні зони конвергентного режиму (стиснення). Це зближення почалося приблизно 50 млн років тому (Ma) і було пов'язане із закриттям моря Тетіс. Найвищий рівень сейсмічності в Середземноморському регіоні спостерігається вздовж еллінської зони субдукції на півдні Греції та зони північно-анатолійського розлому на північному заході Туреччини [Herman et al., 2015]. Більшість виділеної пружної енергії реалізується у вигляді землетрусів різної інтенсивності безпосередньо в Середземноморському поясі, але значна частина енергії передається в тектонічні структури відносно спокійної Східноєвропейської платформи, де можуть виникати небезпечні місцеві землетруси. Як свідчить історичний досвід, землетруси відбуваються в межах усіх давніх тектонічних платформ, хоча й набагато рідше, ніж у сейсмоактивних поясах [Каган, 1999]. Причому землетруси на порівняно стабільних тектонічних платформах зазвичай призводять до значних економічних втрат через непідготовленість будівель і споруд до їх впливів. Так, землетрус у Криму 1927 р. спричинив руйнування «Ластівчиного гнізда», побудованого на скельній основі [Національний..., 2007].

На всій території України відчуваються сильні підкорові землетруси зони Вранча (рис. 1). Домінують землетруси середньої глибини, що виникають всередині сейсмогенного тіла сейсмічної зони Вранча, що поширюється на глибину до 200 км. Ці землетруси є головним джерелом сейсмічної небезпеки як для Румунії, так і для сусідніх країн. Останні найпотужніші події з магнітудою 7,7 і 7,4 відбулись у 1940 і 1977 рр. відповідно, спричинивши значні широкомасштабні руйнування [Poiatea et al., 2022]. Сейсмічний регіон Вранча визначається особливою концентрацією або кластеризацією землетрусів середньої глибини [Radulian, 2015].

До 40 % території України може бути охоплено безпосереднім впливом небезпечних сейсмічних подій і до 70 % — за-

гальним впливом землетрусів, підтоплень, зсувів, осідань та інших інженерно-геологічних процесів, які негативно позначаються на стійкості споруд [Немчинов та ін., 2013; Кендзера, 2015].

**Національна сейсмологічна система спостережень України** — це комплекс автоматизованих багатофункціональних систем, який складається зі стаціонарних сейсмологічних пунктів реєстрації сейсмічних хвиль, розподіленої системи передачі і збору сейсмологічної інформації та центру оперативного опрацювання даних, які надходять із пунктів реєстрації землетрусів. Пункти спостереження належать Інституту геофізики ім. С.І. Субботіна НАН України [Вербицький, Вербицький, 2011; Ганієв та ін., 2021] і Головного центру спеціального контролю НЦУВКЗ

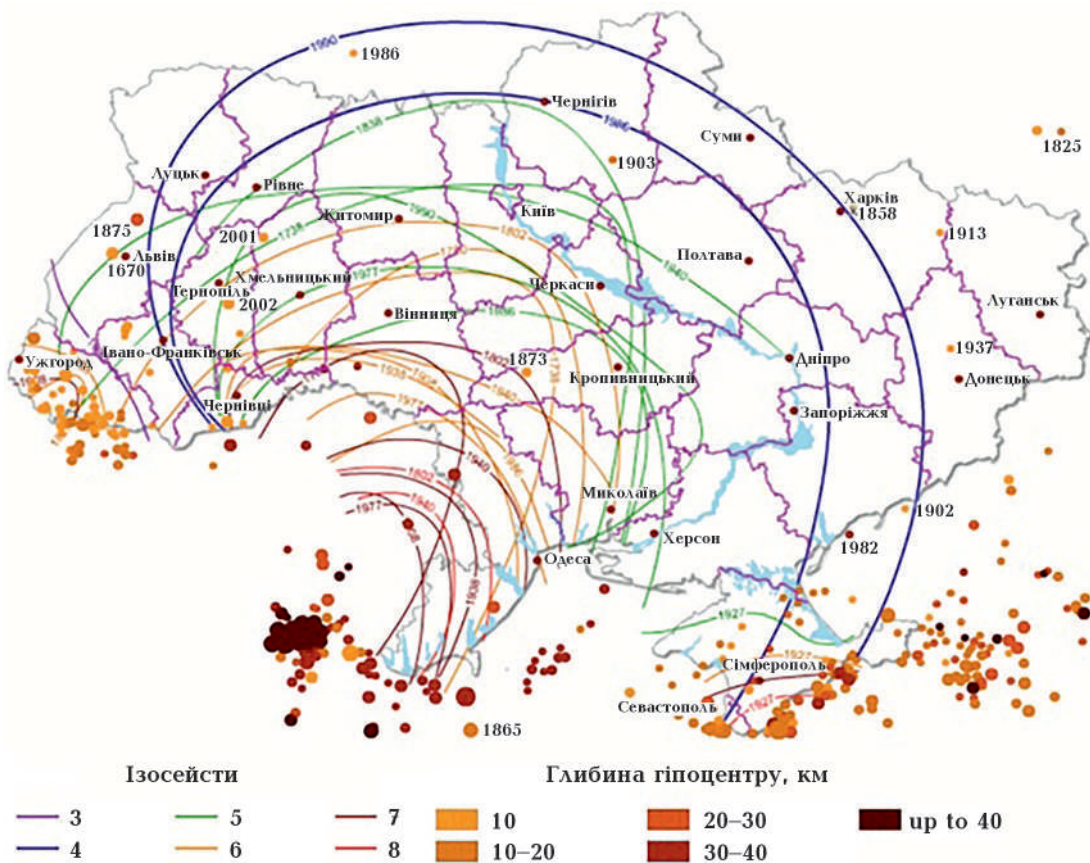


Рис. 1. Ізосейсти землетрусів зони Вранча, Румунія ( $7,0 < M < 7,5$ ) на території України (1738, 1790, 1802, 1838, 1940, 1977, 1986, 1990 рр.) [Сагалова и др., 1969; Харитонов и др., 1996; Никонов и др., 1996; Національний..., 2007].  
 Fig. 1. Earthquakes isoseists of the Vrancea zone ( $7,0 < M < 7,5$ ) on the territory of Ukraine (1738, 1790, 1802, 1838, 1940, 1977, 1986, 1990 years) [Sagalova et al., 1969; Kharitonov et al., 1996; Nikonov et al., 1996; Rudenko, 2007].

ДКА України [Seismic..., 2010], а їх обчислювальні центри разом утворюють НЦД.

У бюлетені представлено параметри сейсмічних подій, визначення яких проводилося за результатами інструментальних спостережень сейсмологічною мережею України. Для уточнення параметрів сейсмічних подій також було залучено дані локальних сейсмологічних мереж Державного підприємства «Національна атомна енергогенеруюча компанія «Енергоатом» і закордонних сейсмологічних мереж [Mărmureanu et al., 2021; Андрущенко та ін., 2020]. Національну сейсмологічну систему спостережень території України станом на 2022 р. показано на рис. 2.

**Мережа постійно діючих сейсмічних станцій Інституту геофізики НАН України** є щільною в західних областях України (Закарпаття і Передкарпаття), обслуговується відділом сейсмічності Карпатського регіону ІГФ (рис. 2, табл. 1). На території Карпатського регіону України працює 22 сейсмічні станції, переважна більшість яких обладнана цифровими сейсмічними станціями DAS-04 [Кендзера та ін., 1998]. Київським відділом сейсмічної небезпеки обслуговуються сейсмічні станції: Kiev-IRIS (Київ), MI03 (Сквира, Київська обл.); MI05 (Степанівка, Одеська обл.), ODS (Одеса); MI07 (Миколаїв), MI02 (Полтава), MIU (Кривий Ріг), MI06 (Нова Галещина, Пол-

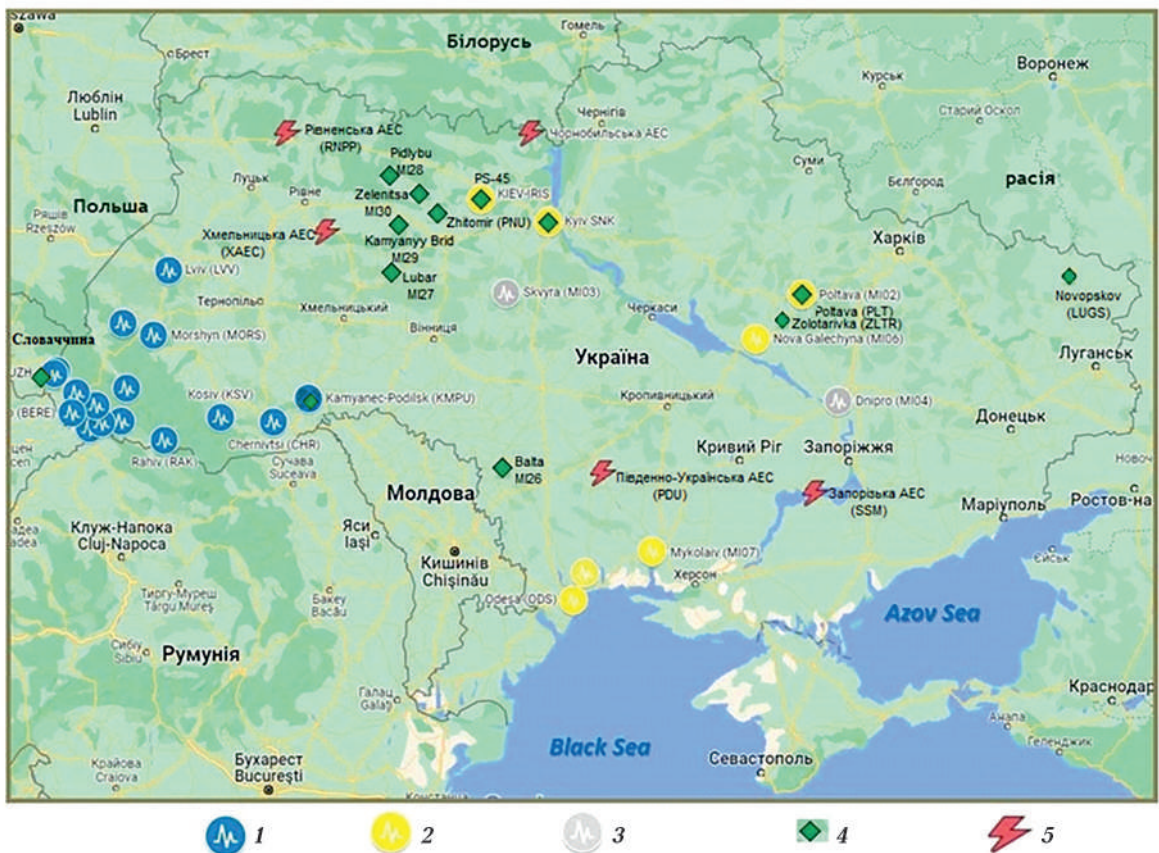


Рис. 2. Національна система спостережень території України включає сейсмологічні мережі, що обслуговуються: 1 — Карпатським відділом сейсмічності ІГФ, 2 (online) і 3 (out-of-line) — Київським відділом сейсмічної небезпеки ІГФ; 4 — Головним центром спеціального контролю Державного космічного агентства України; 5 — локальні сейсмологічні мережі ДП «НАЕК» ЕНЕРГОАТОМ» навколо атомних електростанцій.

Fig. 2. The national observation system of the territory of Ukraine includes seismic networks served by: 1 — the Carpathian Seismic Department of the IGPH, 2 (online) and 3 (out-of-line) — the Kyiv Seismic Hazard Department of the IGPH; 4 — the Main Center of Special Control of the State Space Agency of Ukraine; 5 — local seismic networks of SE «NNEGC «Energoatom» around nuclear power plants.

тавська обл.), SNK (острів Зміїний, наразі сейсмодатчик знаходиться в приміщенні ПГФ і потребує калібрування).

**Сейсмологічна мережа Головного центру спеціального контролю** складається з 11 пунктів спостереження, більшість з яких розташовані в північній та центральній частинах території України. Пункти спостереження оснащені широкосмуговими цифровими сейсмічними станціями (див. табл. 1).

Крім того, Головним центром обслуговується автоматизований комплекс апаратури сейсмічного групування, включений як первинна станція (PS-45) до Міжнародної системи моніторингу. Угодою між Кабінетом Міністрів України і Підготовчим комітетом Організації договору про всеосяжну заборону ядерних випробувань, що ратифікована Верховною Радою України у 2000 р. Уряд взяв на себе зобов'язання щодо забезпечення всебічного функціонування станції. Станція являє собою територіально рознесену систему збору сейсмологічної інформації, що складається з 22 свердловинних елементів і одного шахтного, розташованого поблизу технічного майданчика (с. Ворсівка). Елементи станції об'єднані єдиною телеметричною системою, яка виконує функції збору інформації одночасно зі всіх елементів і централізованого управління елементами з технічного майданчика. Коливання ґрунту реєструються сейсмоприймачами виробництва компанії Guralp System Limited. У свердловинах встановлені вертикальні короткоперіодні сейсмоприймачі SMG-3ESPV, у шахті — трикомпонентний широкосмуговий сейсмоприймач SMG-3T. Сигнали від кожного датчика перетворюються в цифровий вигляд за допомогою аналого-цифрового перетворювача SMG-DM24S3EAM.

**Методи дослідження.** Збір, обробка та аналіз даних проводились із використанням спеціалізованого сейсмологічного програмного забезпечення SeisComP3, що підтримує як автоматичну, так і ручну обробку даних та інтерактивний перегляд результатів обробки.

Епіцентр і глибина джерела землетрусу визначалися із застосуванням методу LocSAT, що використовує одномірну модель земної кори [Bratt, Nagy, 1991]. Оператор має змогу змінити, додати чи прибрати час вступу фаз сигналу на станції, у такий спосіб досягаючи мінімальних похибок.

Для визначення магнітуди використовувалися значення локальної магнітуди  $ML$  («магнітуди Ріхтера»):  $ML = \log A_{\max} - \log A_0$ , де  $A_0$  — амплітуда еталонної події. Для  $ML=0$  рівняння можна переписати як  $ML = \log A_{\max} - 2,48 + 2,76 \log \Delta$ , де  $\Delta$  — відстань від станції до місця землетрусу. Формула використовується для значень  $ML < 7$  на регіональних відстанях. Зазвичай цю магнітуду розраховано по горизонтальним каналам для  $S$ -хвилі. Магнітуда  $ML_v$  є модифікацією  $ML$  для вертикальних каналів. Використовується для сейсмічних станцій на відстанях менше 8 градусів.

За вступами об'ємних хвиль визначається магнітуда  $m_b$ , що призначена для телесеїсмічних відстаней, однак її використання допустиме з відстані 5 градусів, коли вже є чітка пряма фаза  $P$ -хвилі:  $m_b = \log(A/T) + Q(h, \Delta)$ , де  $A$  — амплітуда зміщення в мікрометрах,  $T$  — переважаючий період в секундах,  $Q$  — поправочний коефіцієнт для відстані ( $\Delta$ ) та глибини ( $h$ ).

Розрахунок інтенсивності землетрусу для глибокофокусного регіону Карпат зони Вранча проводиться з використанням магнітуди  $m_b$ :  $I = 1,9m_b + 4,8 \log(h^2 + \Delta^2)^{1/2} + 5$ .

Для решти території використовується магнітуда  $ML$  ( $ML_v$ ):  $I = 1,9ML(ML_v) + 3,5 \log(h^2 + \Delta^2)^{1/2} + 3$ , де в обох виразах  $\Delta$  — відстань,  $h$  — глибина.

**Національний сейсмологічний національний бюлетень України за 2021 р.** За інструментальними даними у 2021 р. на території України та суміжних держав відбулося більш ніж півтори сотні землетрусів, основна частина яких приурочена до глибокофокусної зони Вранча (Румунія). Максимальна зафіксована магнітуда землетрусу — 4,6. Землетруси з території інших суміжних держав мали локальний характер і не впливали суттєво на сейсмічність території України.

Таблиця 1. Обладнання та параметри сейсмічних датчиків мережі ІГФ і ГЦСК

Номер	Сейсмологічна станція	Висота встановлення над рівнем моря	φ, град	λ, град	Тип обладнання	Динамічний діапазон, Дб	Частота, Hz	Канали запису	Приналежність
<i>Сейсмічні станції платформної частини України</i>									
1	Malyn Kiev-IRIS (1997)	180	50.7012	29.2242	STS-2.5, STS-1V/VBB; Accelerometer EpiSensor ES-T; Datalogger — Quanterra Q330	175	0,1—100	N-S, E-W, Z	ІГФ НАНУ
2	Poltava MI02	148	49.6025	34.5430	1 VLPs SL-210; 2 HLPs SL-220 (GEOTECH); Datalogger — IGPH	120	0,02—15,0	N-S, E-W, Z	ІГФ НАНУ
3	Skvuta MI03	195	49.7173	29.6566	1 VLPs SL-210; 2 HLPs SL-220 (GEOTECH); Datalogger — IGPH	120	0,02—15,0	N-S, E-W, Z	ІГФ НАНУ
4	Stepanivka MI05	20	46.77707	46.77707	1 VLPs SL-210; 2 HLPs SL-220 (GEOTECH); Datalogger — IGPH	120	0,02—15,0	N-S, E-W, Z	ІГФ НАНУ
5	Nova Galeshyna MI06	75	49.10113628	33.44102516	IGPH Seismometer; IGPH Datalogger	120	0,02—15,0	N-S, E-W, Z	ІГФ НАНУ
6	Mukolaiv MI07	55	46.9728	31.97291	IGPH Seismometer; IGPH Datalogger	120	0,02—15,0	N-S, E-W, Z	ІГФ НАНУ
7	Kryvyi Rig MIU	89	47.933	33.33	IGPH Seismometer; IGPH Datalogger	120	0,02—15,0	N-S, E-W, Z	ІГФ НАНУ
8	Odesa ODS	2	46.4990	30.7194	Guralp CMG-40T	140	0,03—12,5	N-S, E-W, Z	ІГФ НАНУ
9	Poltava PLT	159	49.605	34.545	CMG-3TD	140	0,03—50	N-S, E-W, Z	ГЦСК
10	Lastivisi KPD	135	48.563	26.46	KCB, KCT	80	0,5—15	N-S, E-W, Z	ГЦСК
11	Lubar MI27	260	49.9205	27.7576	IGPH Seismometer; IGPH Datalogger	120	0,02—15,0	N-S, E-W, Z	ГЦСК
12	Balta MI26	200	47.9355	29.6013	IGPH Seismometer; IGPH Datalogger	120	0,02—15,0	N-S, E-W, Z	ГЦСК
13	Pidlybu MI28	196	50.9305	27.6694	IGPH Seismometer; IGPH Datalogger	120	0,02—15,0	N-S, E-W, Z	ГЦСК
14	Zelenitsa MI30	215	50.746	28.189	IGPH Seismometer; IGPH Datalogger	120	0,02—15,0	N-S, E-W, Z	ГЦСК
15	Kamyanyu Brid MI29	234	50.418	27.85	IGPH Seismometer; IGPH Datalogger	120	0,02—15,0	N-S, E-W, Z	ГЦСК
16	Gorodok MI25	170	29.4460	50.5980	IGPH Seismometer; IGPH Datalogger	120	0,02—15,0	N-S, E-W, Z	ГЦСК

Номер	Сейсмологічна станція	Висота встановлення над рівнем моря	φ, град	λ, град	Тип обладнання	Динамічний діапазон, Дб	Частота, Hz	Канали запису	Приналежність
17	Zolotarivka ZLTR	160	49,1601	31,1301	K-213-C	80	0,5—15	Z	ГЦСК
18	Zhytomyr (PNU)	168	50,2480	28,6680	K-213-C	80	0,5—15	Z	ГЦСК
19	Novopskov (LUGS)	159	49,5203	39,1410	K-213-C	80	0,5—15	Z	ГЦСК
17	AK01	160	50,6911	29,2131	CMG—3ESPV	140	0,033—50	Z	ГЦСК
18	AK02	170	50,6573	29,2056	CMG—3ESPV	140	0,033—50	Z	ГЦСК
19	AK03	160	50,7263	29,2216	CMG—3ESPV	140	0,033—50	Z	ГЦСК
20	AK04	160	50,7226	29,166	CMG—3ESPV	140	0,033—50	Z	ГЦСК
21	AK05	180	50,6196	29,2036	CMG—3ESPV	140	0,033—50	Z	ГЦСК
22	AK06	190	50,5858	29,1985	CMG—3ESPV	140	0,033—50	Z	ГЦСК
23	AK07	170	50,5506	29,2043	CMG—3ESPV	140	0,033—50	Z	ГЦСК
24	AK08	122	50,6338	29,2548	CMG—3ESPV	140	0,033—50	Z	ГЦСК
25	AK09	180	50,6151	29,2846	CMG—3ESPV	140	0,033—50	Z	ГЦСК
26	AK10	180	50,599	29,2513	CMG—3ESPV	140	0,033—50	Z	ГЦСК
27	AK11	160	50,6783	29,1676	CMG—3ESPV	140	0,033—50	Z	ГЦСК
28	AK12	180	50,6436	29,1548	CMG—3ESPV	140	0,033—50	Z	ГЦСК
29	AK13	180	50,6122	29,0606	CMG—3ESPV	140	0,033—50	Z	ГЦСК
20	AK14	180	50,6306	29,1076	CMG—3ESPV	140	0,033—50	Z	ГЦСК
21	AK15	170	50,6951	29,124	CMG—3ESPV	140	0,033—50	Z	ГЦСК
22	AK16	170	50,67	29,1058	CMG—3ESPV	140	0,033—50	Z	ГЦСК
23	AK17	170	50,6851	29,0573	CMG—3ESPV	140	0,033—50	Z	ГЦСК
24	AK18	170	50,7221	29,0676	CMG—3ESPV	140	0,033—50	Z	ГЦСК
25	AK19	180	50,7221	29,0116	CMG—3ESPV	140	0,033—50	Z	ГЦСК
26	AK20	170	50,743	29,01	CMG—3ESPV	140	0,033—50	Z	ГЦСК
27	AK21	160	50,7763	29,0418	CMG—3ESPV	140	0,033—50	Z	ГЦСК
28	AK22	160	50,7608	29,0711	CMG—3ESPV	140	0,033—50	Z	ГЦСК
29	AK23	160	50,7625	29,1253	CMG—3ESPV	140	0,033—50	Z	ГЦСК
30	AKBB	160	50,7011	29,2241	CMG-3T	137	0,033—50	N-S, E-W, Z	ГЦСК
31	Kostykhivka RNPP1	168	51,3497	25,7657	CMG-SPB	137	0,033—100	N-S, E-W, Z	НАЕК «Енергоатом»
32	Varash RNPP2	293	51,3266	25,8896	CMG-SPB	137	0,033—100	N-S, E-W, Z	НАЕК «Енергоатом»
33	Chartoryisk RNPP5	188	51,2291	25,8854	CMG-SPB	137	0,033—100	N-S, E-W, Z	НАЕК «Енергоатом»

Номер	Сейсмологічна станція	Висота встановлення над рівнем моря	φ, град	λ, град	Тип обладнання	Динамічний діапазон, Дб	Частота, Hz	Канали запису	Приналежність
34	Polytsky RNPP6	176	51,2583	26,0640	CMG-SPB	137	0,033—100	N-S, E-W, Z	НАЕК «Енергоатом»
35	Kuznetsovsk RNPP8	172	51,3362	25,8547	CMG-SPB	137	0,033—100	N-S, E-W, Z	НАЕК «Енергоатом»
36	Sopachiv RNPP9	165	51,4119	25,8905	CMG-SPB	137	0,033—100	N-S, E-W, Z	НАЕК «Енергоатом»
37	Energodar SSM1	180	47,5061	34,6156	CMG-3T BOREHOLE	137	0,033—50	N-S, E-W, Z	НАЕК «Енергоатом»
38	Blagovishhenka SSM2	180	47,4593	34,8223	CMG-3T BOREHOLE	137	0,033—50	N-S, E-W, Z	НАЕК «Енергоатом»
39	Menzhyns'ke SSM5	180	47,6103	34,3409	CMG-3T BOREHOLE	137	0,033—50	N-S, E-W, Z	НАЕК «Енергоатом»
40	Velyka Znam'janka SSM3	180	47,4403	34,3358	CMG-3T BOREHOLE	137	0,033—50	N-S, E-W, Z	НАЕК «Енергоатом»
41	Dobra Nadija SSM6	180	47,5862	34,7075	CMG-3T BOREHOLE	137	0,033—50	N-S, E-W, Z	НАЕК «Енергоатом»
42	Dniprovka SSM4	180	47,4280	34,6189	CMG-3T BOREHOLE	137	0,033—50	N-S, E-W, Z	НАЕК «Енергоатом»
43	Yuzhnoukrainsk PDU0	150	47,7830	31,1840	CMG-3T BOREHOLE	137	0,033—50	N-S, E-W, Z	НАЕК «Енергоатом»
44	Marivka PDU1	150	47,8758	31,1196	CMG-3T BOREHOLE	137	0,033—50	N-S, E-W, Z	НАЕК «Енергоатом»
45	Arbuzynka PDU2	150	47,8943	31,3161	CMG-3T BOREHOLE	137	0,033—50	N-S, E-W, Z	НАЕК «Енергоатом»
46	Трукраты PDU3	150	47,7181	31,3999	CMG-3T BOREHOLE	137	0,033—50	N-S, E-W, Z	НАЕК «Енергоатом»
Сейсмічні станції Карпатського регіону України									
47	Lviv LVV	320	49,820	24,031	DAS-05, CA-1 Guralp CMG-40T	120 140	0,02—15,0 0,03—12,5	N-S, E-W, Z N-S, E-W, Z	КВ ПФ НАНУ
48	Chernivtsi CHR	300	48,298	25,922	DAS-05 СКД, СМ-3КВ	120 120	0,02—15,0 0,02—15,0	N-S, E-W, Z N-S, E-W, Z	КВ ПФ НАНУ
49	Morshyn MORS (1978)	260	49,124	23,876	DAS-03, СМ-3КВ	120	0,2—15,0	N-S, E-W, Z	КВ ПФ НАНУ
50	Uzhgorod UZH (1934)	160	48,629	22,291	DAS-04, СКД	120	0,2—15,0	N-S, E-W, Z	КВ ПФ НАНУ



Номер	Сейсмологічна станція	Висота встановлення над рівнем моря	φ, град	λ, град	Тип обладнання	Динамічний діапазон, Дб	Частота, Hz	Канали запису	Приналежність
51	Onokivtsi ONO (1963)	168	48,664	22,333	DAS-03, СКМ-3	120	0,02—5,0	N-S, E-W, Z	КВІГФ НАНУ
52	Miggir'ya MEZ (1961)	420	48,543	23,498	DAS-05, СКА	120	0,02—15,0	N-S, E-W, Z	КВІГФ НАНУ
53	Trosnyk TRSU (1987)	120	48,095	22,957	DAS-03, СМ-3КВ	120	0,2—15,0	N-S, E-W, Z	КВІГФ НАНУ
54	Nygne Selysche NSL (1987)	250	48,198	23,457	DAS-03, СМ-3КВ	120	0,2—15,0	N-S, E-W, Z	КВІГФ НАНУ
55	Rahiv RAK (1956)	460	48,036	24,173	DAS-04, СКА	120	0,02—15,0	N-S, E-W, Z	КВІГФ НАНУ
56	Kosiv KSV (1961)	450	48,314	25,065	DAS-04, СКА	120	0,02—15,0	N-S, E-W, Z	КВІГФ НАНУ
57	Chernivtsi CHR (1907)	300	48,298	25,922	DAS-05, СКА	120	0,02—15,0	N-S, E-W, Z	КВІГФ НАНУ
58	Gorodok HORU (1991)	340	49,214	26,426	DAS-03, СМ-3КВ	120	0,2—15,0	N-S, E-W, Z	КВІГФ НАНУ
59	Камуанес-Podilsk КМПУ (2005)	121	48,563	26,460	DAS-05, СМ-3КВ	120	0,2—15,0	N-S, E-W, Z	КВІГФ НАНУ
60	Novo-Dnistrovsk NDNU (2006)	242	48,595	27,366	DAS-04, СМ-3КВ	120	0,2—15,0	N-S, E-W, Z	КВІГФ НАНУ
61	Korolevo KORU (1998)	160	48,157	23,134	DAS-05, СМ-3КВ	120	0,2—15,0	N-S, E-W, Z	КВІГФ НАНУ
62	Shidnytsya SHIU (2006)	600	49,22	23,35	DAS-03, СМ-3КВ	120	0,2—15,0	N-S, E-W, Z	КВІГФ НАНУ
63	Starunya STAU (2007)	391	48,71	24,50	DAS-05	120	0,2—15,0	N-S, E-W, Z	КВІГФ НАНУ
64	Mukachevo MUKU (1999)	125	48,454	22,687	DAS-05	120	0,2—15,0	N-S, E-W, Z	КВІГФ НАНУ
65	Beregovo BERE (2000)	160	48,234	22,646	DAS-05	120	0,2—15,0	N-S, E-W, Z	КВІГФ НАНУ
66	Brid BRIU(2000)	180	48,338	23,020	DAS-05	120	0,2—15,0	N-S, E-W, Z	КВІГФ НАНУ
67	Southukraine PDIU (time-domain) (20007)	420	47,711	31,149	DAS-03	120	0,2—15,0	N-S, E-W, Z	КВІГФ НАНУ
68	Uzhhorod UZH	160	48,629	22,291	КСВ, КСГ	80	0,5—15	N-S, E-W, Z	КВІГФ НАНУ

*Примітка:* Guralp СМG-40Т, СМG-3Т, СМG-3ЕСРV — широкополосні сейсмометри компанії Guralp Systems Ltd (England); STS-2.5, STS-1V/VBB — Streckeisen Seismic Instrumentation (Switzerland); EpiSensorES-T — акселерометри виробництва Kinematics (USA); Quanterra Q330 — цифровий перетворювач фірми Quanterra Environmental Processorusedin IRISUS Array/TA and GSN stations (Quanterra, Inc., USA); VLPSSL-210 GEOTECH — vertical long-period seismometer model SL-210 and HLPSSL-220 — horizontal long-period seismometers model SL-220 (Geotech Instruments, LLC, USA); DAS (Digital automatic seismometer); 03, 04, 05 — generation of digital automatic seismometer (розроблені в ІГФ); СКМ-3 — сейсмометр Кірноса; СКА — довгоперіодний сейсмометр; СМ-3КВ магнітолуційний сейсмометр; ІСРН Seismometer, ІСРН Datalogger — копія сейсмометра Guralp СМG-40 і цифровий перетворювач, розроблені в ІГФ І.Ю. Михайликом.

На території України більшість епіцентрів зареєстрованих землетрусів знаходиться в межах Волино-Поділля та Передкарпатського прогину на границі Складчастих Карпат. 23 вересня на Тернопільщині було зафіксовано землетрус з магнітудою 4,3 і розрахунковою інтенсивністю 5 балів. За результатами опитування, поки трисило кілька секунд людям було страшно. Поштовхи відчували в радіусі майже 100 км щонайменше у шести областях (Чернівецькій, Вінницькій, Львівській, Рівненській, Івано-Франківській та Хмельницькій). Приклад його обробки наведено нижче. У 2019 та 2020 рр. у цій області вже відбувалися землетруси, сила яких становила 2 бали. У Кримсько-Чорноморському регіоні спостерігалася слабка сейсмічність, епіцентри землетрусів були зосереджені в межах морської акваторії.

На територіях України, Румунії, Польщі, Молдови, Словаччини, Угорщини та Білорусі зареєстровано землетруси, які приведено у вигляді каталогів з детальною

інформацією про них. Землетруси, що відбулись у 2021 р. на території України та на території суміжних держав викладено у вигляді таблиці (табл. 2) і на гугл карті рис. 3.

**Обробка сейсмічних подій.** У табл. 3 та 4 наведено приклади обробки землетрусів 03.02.2021 та 23.09.2021, де вказано час, координати події, глибину гіпоцентру  $h$ , магнітуду та назви станцій, згідно з якими виконано релокацію події.

Землетрус 03.02.2021 (район Вранча, Румунія) зареєстровано 29 станціями (див. рис. 3, табл. 3). Параметри:  $t_0=00:52:58$ ;  $\varphi=45,82^\circ\text{N}$ ;  $\lambda=26,62^\circ\text{E}$ ;  $h=109$  км;  $ML_v=3,6$ .

Землетрус 23.09.2021. (Тернопільська обл., Україна) зареєстровано 44 станціями (див. рис. 4, табл. 4). Параметри:  $t_0=03:18:04$ ;  $\varphi=48,87^\circ\text{N}$ ;  $\lambda=25,68^\circ\text{E}$ ;  $h=6$  км;  $m_b=4,3$ .

Дані про параметри зареєстрованих сейсмічних подій у табличному вигляді автоматично формуються за допомогою спеціалізованого програмного забезпечення SeisComp3, що є найпоширенішим



Рис. 3. Розташування епіцентрів землетрусів за 2021 р., зареєстрованих Національною сейсмологічною системою спостережень України.

Fig. 3. Location of epicenters of earthquakes for 2021, registered by the National Seismological Monitoring System of Ukraine.

**Таблиця 2.** Каталог землетрусів за 2021 р.

Но- мер	Дата	Час (UTC)	Координати, град		Магні- туда	Інтен- сивність	Глибина	Місце джерела
			φ	λ				
1	2021-02-03	00:52:58	45,82	26,62	3,5	1—2	109	Румунія
2	2021-02-03	03:48:45	45,35	25,06	2,4	1	7	Румунія
3	2021-02-03	16:10:59	45,37	24,99	2,4	1	7	Румунія
4	2021-02-03	17:40:24	51,32	15,99	3,4	1	13	Польща
5	2021-02-03	17:47:03	45,37	25,01	2,6	1	6	Румунія
6	2021-02-08	12:09:56	44,90	22,29	2,6	2	4	Румунія
7	2021-02-11	06:32:41	45,75	26,83	3,4	2	89	Румунія
8	2021-02-14	17:24:53	45,66	26,39	3,5	1	143	Румунія
9	2021-02-15	08:44:59	45,81	26,61	3,5	1—2	122	Румунія
10	2021-02-21	15:10:24	45,73	26,78	3,0	1	124	Румунія
11	2021-02-23	10:36:12	48,40	22,84	1,70	1	2	Закарпатська обл.
12	2021-02-24	02:35:09	45,75	26,62	3,60	1—2	134	Румунія
13	2021-02-25	05:21:01	51,55	16,24	4,00	4	5	Польща
14	2021-02-27	21:13:10	45,57	26,61	4,10	2—3	130	Румунія
15	2021-03-07	09:52:27	45,66	26,49	4,10	2—3	147	Румунія
16	2021-03-07	22:34:27	45,65	26,49	3,40	1,0	145	Румунія
17	2021-03-11	17:09:44	50,27	19,21	2,90	1	5	Польща
18	2021-03-12	20:11:39	45,61	26,55	2,60	1,0	131	Румунія
19	2021-03-14	16:23:31	48,55	27,34	2,10	1,0	4	Чернівецька обл.
20	2021-03-14	19:09:48	48,66	27,40	2,20	1,0	5	Чернівецька обл.
21	2021-03-15	08:39:57	46,89	27,51	2,30	1,0	5	Румунія
22	2021-03-15	12:19:22	45,45	26,43	2,70	1,0	120	Румунія
23	2021-03-17	02:44:44	51,37	16,16	3,40	1—2	10	Польща
24	2021-03-23	06:26:53	45,45	26,28	3,70	1,0	123	Румунія
25	2021-03-25	13:44:27	49,87	19,16	2,80	1,0	10	Польща
26	2021-03-28	14:58:55	45,71	26,86	2,30	1,0	67	Румунія
27	2021-03-30	10:16:53	48,56	24,48	2,50	1—2	3	Івано-Франківська обл.
28	2021-04-02	19:28:24	46,88	27,59	2,40	1,0	8	Румунія
29	2021-04-03	03:42:30	45,75	26,45	2,20	1,0	109	Румунія
30	2021-04-08	19:54:48	45,66	26,57	3,70	2,0	138	Румунія
31	2021-04-09	12:30:04	49,77	28,66	2,10	0	0	Вінницька обл.
32	2021-04-09	18:36:45	45,91	26,74	4,60	5,0	75	Румунія
33	2021-04-18	10:03:16	45,49	26,27	3,10	1,0	131	Румунія
34	2021-04-22	13:46:16	45,30	28,86	2,70	1,0	26	Румунія
35	2021-04-28	23:34:41	51,70	16,08	4,00	4,1	5	Польща
36	2021-05-03	20:21:01	45,66	26,42	2,50	1,0	137	Румунія
37	2021-05-05	07:44:13	50,03	18,35	3,20	1,0	33	Польща
38	2021-05-05	17:34:59	51,43	16,15	3,30	2,0	9	Польща
39	2021-05-09	00:15:29	45,56	26,32	3,00	2—3	3	Румунія
40	2021-05-10	14:13:54	45,66	26,62	3,40	2	83	Румунія
41	2021-05-11	14:04:10	48,58	24,51	2,60	1—2	4	Івано-Франківська обл.
42	2021-05-12	14:42:22	51,50	16,12	4,10	3,0	10	Польща
43	2021-05-13	10:34:33	48,31	22,84	1,40	1,0	3	Закарпатська обл.
44	2021-05-23	04:36:09	45,03	22,53	2,90	1—2	5	Румунія
45	2021-05-25	21:30:37	45,57	26,57	4,50	3—4	125	Румунія
46	2021-05-26	17:11:48	51,57	15,99	3,50	2	10	Польща
46	2021-05-29	17:10:23	45,12	23,12	2,90	1,0	14	Румунія
47	2021-05-31	03:19:21	50,14	18,71	2,90	1—2	5	Польща
48	2021-06-08	13:32:42	48,55	24,48	2,60	1—2	4	Івано-Франківська обл.
49	2021-06-09	00:53:26	50,11	19,30	3,10	1—2	10	Польща
50	2021-06-13	02:00:16	51,49	16,05	3,40	3,0	5	Польща
51	2021-06-14	09:54:05	45,63	26,71	3,20	1,0	17	Румунія

Но- мер	Дата	Час (UTC)	Координати, град		Магні- туда	Іnten- сивність	Глибина	Місце джерела
			φ	λ				
52	2021-06-14	10:36:20	45,63	26,70	3,30	1,0	17	Румунія
53	2021-06-15	00:07:59	45,65	26,62	3,30	1,0	14	Румунія
54	2021-06-16	17:57:19	45,34	25,17	2,70	2,0	3	Румунія
55	2021-06-17	02:25:34	45,79	26,65	2,70	1,0	81	Румунія
56	2021-06-17	07:02:54	45,69	26,72	3,20	2,0	86	Румунія
57	2021-06-17	09:48:37	45,58	26,55	3,00	1,0	101	Румунія
58	2021-06-19	15:10:14	45,76	26,72	2,70	1,0	70	Румунія
59	2021-06-20	04:50:24	45,84	26,83	3,20	2,0	66	Румунія
60	2021-06-20	21:06:47	45,79	26,80	2,30	1,0	5	Румунія
62	2021-06-23	00:29:56	45,78	26,58	3,10	2,0	70	Румунія
64	2021-06-24	01:27:12	49,91	19,16	2,80	1—2	4	Польща
65	2021-06-24	03:58:47	51,56	16,10	3,40	1—2	10	Польща
66	2021-06-27	17:30:59	52,97	27,29	2,20	1,2	2	Білорусь
67	2021-06-30	06:46:35	45,58	26,68	2,90	1,0	18	Румунія
68	2021.07.05	18:27:46	45,66	26,50	3,10	1,0	141	Румунія
69	2021.07.06	11:20:00	45,62	26,49	4,20	3,0	136	Румунія
70	2021.07.08	22:16:32	47,58	25,61	2,00	1,0	2	Румунія
71	2021.07.09	12:37:41	45,64	26,56	3,10	1,0	138	Румунія
72	2021.07.09	13:38:32	45,52	26,43	3,70	2,0	128	Румунія
73	2021.07.12	00:09:28	45,61	26,49	4,00	3,0	109	Румунія
74	2021.07.12	07:58:09	47,71	23,26	1,70	1,0	15	Румунія
75	2021.07.12	23:51:16	45,83	26,86	3,50	2,0	108	Румунія
76	2021.07.15	08:03:29	52,81	27,47	1,80	1,0	12	Білорусь
77	2021.07.17	15:57:26	51,55	16,02	3,50	2,0	10	Польща
78	2021.07.17	17:15:39	45,68	26,49	3,00	1,0	145	Румунія
79	2021.07.28	04:01:17	45,16	28,07	2,30	1,0	8	Румунія
80	2021.07.31	11:09:32	45,81	26,64	3,10	1—2	86	Румунія
81	2021.07.31	21:09:12	45,52	26,38	3,30	1,0	116	Румунія
82	2021-08-01	17:57:10	46,77	27,40	4,10	3,0	10	Румунія
83	2021-08-01	18:09:25	46,83	27,37	2,70	1,0	10	Румунія
84	2021-08-05	13:19:42	51,44	16,13	3,40	2,0	7	Польща
85	2021-08-05	19:19:31	50,02	17,97	2,5	1,0	10	Польща
86	2021-08-07	08:24:40	45,67	26,64	3,10	1,0	135	Румунія
87	2021-08-11	09:31:21	45,49	26,34	4,30	3,0	133	Румунія
88	2021-08-27	07:35:46	47,09	28,43	2,00	1,0	5	Молдова
89	2021-09-07	02:01:17	45,27	24,15	3,60	2	10	Румунія
90	2021-09-08	13:32:26	48,46	22,79	2,10	1,0	2	Закарпатська обл.
91	2021-09-09	05:10:14	45,37	25,19	3,00	1—2	5	Румунія
92	2021-09-09	08:57:13	45,34	25,24	3,50	3,0	5	Румунія
93	2021-09-10	17:31:14	45,56	26,48	3,80	2,0	139	Румунія
94	2021-09-11	06:17:29	45,34	25,21	2,30	1,0	3	Румунія
95	2021-09-11	06:33:10	44,71	36,58	3,50	2,0	10	Чорне море
96	2021-09-11	08:27:00	45,44	26,31	3,00	1,0	128	Румунія
97	2021-09-12	07:20:45	52,65	27,64	1,90	1,0	2	Білорусь
98	2021-09-13	18:16:36	45,30	26,67	2,20	1,0	26	Румунія
99	2021-09-14	17:10:43	50,24	18,95	3,40	2—3	5	Польща
100	2021-09-15	08:49:08	53,00	27,47	2,20	1,0	16	Білорусь
101	2021-09-17	03:54:48	49,77	21,76	2,60	3,0	2	Польща
102	2021-09-19	02:21:25	48,37	36,94	3,30	1—2	12	Донецька обл.
103	2021-09-23	03:17:57	48,87	25,68	4,30	5	6	Тернопільська обл.
104	2021-09-25	05:48:20	45,35	24,64	3,00	1—2	6	Румунія
105	2021-09-28	23:34:14	50,17	18,94	2,90	1—2	5	Польща
106	2021-10-02	23:16:01	51,51	22,97	3,20	2,0	8	Польща

Но- мер	Дата	Час (UTC)	Координати, град		Магні- туда	Іnten- сивність	Глибина	Місце джерела
			φ	λ				
107	2021-10-03	15:17:40	47,24	23,89	2,50	1,0	8	Румунія
108	2021-10-03	19:22:42	45,53	26,47	1,70	1,0	114	Румунія
109	2021-10-07	22:43:36	5016	18,72	2,50	1,0	8	Польща
110	2021-10-09	19:34:34	45,62	26,50	2,90	1,0	15	Румунія
111	2021-10-11	03:49:33	43,13	27,50	3,50	2,0	9	Болгарія
112	2021-10-12	07:25:53	48,73	24,43	2,00	1,0	5	Івано-Франківська обл.
113	2021-10-14	05:14:11	45,27	27,20	3,00	1,0	11	Румунія
114	2021-10-15	03:06:53	45,55	26,87	3,20	1,0	127	Румунія
115	2021-10-17	23:20:26	48,15	22,60	2,50	1,0	5	Закарпатська обл.
116	2021-10-19	09:21:06	48,74	24,53	2,40	1,0	7	Івано-Франківська обл.
117	2021-10-20	16:07:49	51,45	16,12	3,20	1,0	9	Польща
118	2021-10-20	18:12:46	45,81	26,46	1,90	1,0	9	Румунія
119	2021-10-22	21:46:59	45,63	26,62	3,30	1,0	125	Румунія
120	2021-10-26	08:22:18	45,87	25,32	2,40	1,0	9	Румунія
121	2021-10-27	01:44:57	48,11	22,94	3,10	2—3	7	Закарпатська обл.
122	2021-10-29	12:16:21	48,55	24,47	2,50	2,0	2	Івано-Франківська обл.
123	2021-10-30	18:04:19	51,33	23,19	2,90	1,0		Польща
124	2021-10-31	01:13:07	51,37	16,12	3,40	1—2	11	Польща
125	2021-10-31	18:44:27	45,90	26,98	2,90	1,0	53	Румунія
126	2021.11.02	07:56:54	47,97	23,57	3,00	1—2	8	Румунія
127	2021.11.04	05:50:07	51,61	16,20	3,80	2—3	10	Польща
128	2021.11.05	08:09:14	45,85	26,79	1,80	1,0	93	Румунія
129	2021.11.08	07:21:14	52,87	27,44	2,40	1,0	30	Білорусь
130	2021.11.09	15:20:23	45,41	25,91	3,20	2—3	65	Румунія
131	2021.11.14	14:59:26	46,35	26,80	2,30	1,0	9	Румунія
132	2021.11.17	18:52:53	45,59	27,14	3,20	3,0	24	Румунія
133	2021.11.19	09:06:34	48,64	24,50	2,60	2,0	5	Івано-Франківська обл.
134	2021.11.22	18:59:51	52,95	27,52	2,70	1,0	15	Білорусь
135	2021.11.24	03:03:33	45,43	26,51	2,10	1,0	130	Румунія
136	2021.11.24	19:30:14	45,51	26,36	2,10	1,0	131	Румунія
137	2021.11.28	15:40:57	45,59	26,44	1,80	1,0	109	Румунія
138	2021.11.30	16:20:57	45,79	26,72	4,00	2—3	125	Румунія
139	2021.12.02	16:20:54	45,46	26,38	2,80	1,0	125	Румунія
140	2021.12.04	07:52:21	50,28	18,82	3,00	2,0	5	Польща
141	2021.12.06	07:22:10	45,82	26,65	3,10	1—2	88	Румунія
142	2021.12.06	18:46:41	50,27	18,96	2,90	2,0	3	Польща
143	2021.12.07	13:40:01	45,70	26,80	3,50	2,0	95	Румунія
144	2021.12.07	14:45:28	51,94	32,61	3,40	2,0	10	Чернігівська обл.
145	2021.12.09	21:37:33	51,44	16,08	3,90	3,0	7	Польща
146	2021.12.17	00:04:17	45,64	26,58	4,10	2,0	104	Румунія
147	2021.12.17	13:00:51	51,54	16,17	3,20	2,0	8	Польща
148	2021.12.20	05:28:33	52,91	27,40	2,60	1,0	15	Білорусь
149	2021.12.21	15:06:25	48,61	24,48	2,60	2,0	4	Івано-Франківська обл.
150	2021.12.26	21:45:21	48,52	27,35	2,40	2,0	4	Чернівецька обл.
151	2021.12.26	21:45:23	45,62	26,44	2,40	1,0	140	Румунія
152	2021.12.28	11:53:05	45,53	26,52	3,30	1,0	118	Румунія
153	2021.12.28	15:35:37	45,34	26,10	3,10	1,0	128	Румунія
154	2021.12.28	19:13:38	50,22	18,98	3,00	3,0	3	Польща
155	2021.12.29	03:21:00	45,44	27,45	2,10	1,0	18	Румунія
156	2021.12.29	14:17:34	48,59	24,51	2,40	2—3	3	Івано-Франківська обл.
157	2021.12.29	23:20:37	45,48	26,74	3,10	1,0	131	Румунія
158	2021.12.30	14:57:00	45,85	26,86	4,00	3,0	74	Румунія

**Т а б л и ц я 3.** Детальні дані про землетрус 03.02.2021 (р-н Вранча, Румунія),  $t_0=00:52:58$ ;  $\varphi=45,82^\circ\text{N}$ ;  $\lambda=26,62^\circ\text{E}$ ;  $h=109$  км;  $ML_v=3,6$

Sta	Dist	EvAz	Phase	Time	RMS
PLOR	0,0	27	<i>P</i>	00:53:13,8	0,4
PLOR	0,0	27	<i>S</i>	00:53:25,6	0,5
VRI	0,1	55	<i>P</i>	00:53:13,9	0,2
MLR	0,6	236	<i>P</i>	00:53:16,5	-0,2
MLR	0,6	236	<i>S</i>	00:53:30,2	-0,8
TESR	0,7	1	<i>P</i>	00:53:16,9	-0,6
VOIR	1,2	252	<i>P</i>	00:53:21,7	0,5
VOIR	1,2	252	<i>S</i>	00:53:39,2	0,1
ARR	1,5	253	<i>P</i>	00:53:25,5	0,8
HUMR	1,7	223	<i>P</i>	00:53:27,6	-0,3
CJR	2,3	294	<i>S</i>	00:54:02,9	-0,3
SORM	2,6	26	<i>P</i>	00:53:38,7	-0,2
PLVB	2,8	211	<i>P</i>	00:53:41,5	-0,3
MDVR	3,6	255	<i>P</i>	00:53:52,8	0,5
AK07	5,0	19	<i>P</i>	00:54:11,4	-0,0
AK13	5,1	18	<i>P</i>	00:54:11,9	0,1
AK06	5,1	19	<i>P</i>	00:54:12,1	0,2
AK14	5,1	18	<i>P</i>	00:54:11,8	-0,3
AK05	5,1	19	<i>P</i>	00:54:12,7	0,4
AK12	5,1	18	<i>P</i>	00:54:12,8	0,3
AK09	5,1	19	<i>P</i>	00:54:12,6	0,1
AK08	5,1	19	<i>P</i>	00:54:13,2	0,5
AK16	5,1	18	<i>P</i>	00:54:12,9	0,2
AK17	5,1	18	<i>P</i>	00:54:12,6	-0,1
AK02	5,1	19	<i>P</i>	00:54:12,6	-0,2
AK11	5,2	18	<i>P</i>	00:54:13,2	0,3
AK04	5,2	18	<i>P</i>	00:54:13,5	-0,1
AK21	5,2	17	<i>P</i>	00:54:12,9	-0,9
AK23	5,2	18	<i>P</i>	00:54:13,4	-0,5

*Примітки:* Sta — маркування сейсмічних станцій, які задіяні у обробці; Dist — епіцентрально відстань; EvAz — азимут напрямку з епіцентру на станцію, визначений за координатами епіцентру, град; Phase — фаза вступу сейсмічної хвилі; Time — час вступу сейсмічної хвилі; RMS — середньоквадратична нев'язка часу пробігу.

програмним пакетом для моніторингу землетрусів та інших сейсмічних подій у реальному часі. Він забезпечує автоматичний та інтерактивний збір, обробку та обмін сейсмологічними даними.

**Висновки.** Сейсмологічна мережа спо-

стережень є комплексом систем, який складається із стаціонарних сейсмологічних пунктів реєстрації сейсмічних хвиль, розподіленої системи передачі і збору сейсмологічної інформації, а також центру оперативного опрацювання даних,

**Таблиця 4. Детальні дані про землетрус 23.09.2021 (Чернопільська обл., Україна),  $t_0=03:18:04$ ;  $\varphi=48,87^\circ\text{N}$ ;  $\lambda=25,68^\circ\text{E}$ ;  $h=6$  км;  $m_b=4,3$**

Sta	Dist	EvAz	Phase	Time	RMS
BMR	1,90	231,4	<i>P</i>	03:18:33,1	-1,3
ARCR	2,00	207,1	<i>P</i>	03:18:33,7	-2,2
TRPA	2,22	251,6	<i>P</i>	03:18:38,0	-0,9
KOLS	2,25	272,7	<i>P</i>	03:18:40,6	1,3
TESR	2,45	164,3	<i>P</i>	03:18:43,1	1,1
CJR	2,58	213,9	<i>P</i>	03:18:42,3	-1,6
DRGR	2,89	225,0	<i>P</i>	03:18:47,4	-0,8
KIEV	2,91	50,1	<i>P</i>	03:18:45,4	-2,9
GHRR	3,05	156,9	<i>P</i>	03:18:53,6	3,4
MLR	3,39	177,0	<i>P</i>	03:18:58,2	3,2
KECS	3,47	265,4	<i>P</i>	03:18:56,0	0,1
DEV	3,54	213,3	<i>P</i>	03:18:55,4	-1,5
LOT	3,67	201,6	<i>P</i>	03:18:57,3	-1,5
SIRR	3,77	227,8	<i>P</i>	03:18:59,5	-0,6
PSZ	3,98	258,2	<i>P</i>	03:19:00,2	-2,8
GZR	4,01	210,8	<i>P</i>	03:19:03,3	-0,1
BZS	4,28	221,9	<i>P</i>	03:19:06,8	-0,2
VYHS	4,55	267,8	<i>P</i>	03:19:09,0	-1,8
VRSS	4,79	220,1	<i>P</i>	03:19:12,7	-1,4
MDVR	4,92	215,1	<i>P</i>	03:19:17,6	1,7
OKC	5,02	283,9	<i>P</i>	03:19:17,7	0,5
JAVC	5,29	272,8	<i>P</i>	03:19:21,7	0,7
MORC	5,40	282,7	<i>P</i>	03:19:22,5	0,0
MODS	5,60	268,0	<i>P</i>	03:19:27,3	2,2
MPLH	5,72	255,7	<i>P</i>	03:19:29,0	2,2
KRLC	5,92	285,0	<i>P</i>	03:19:29,3	-0,4
VRAC	5,99	277,6	<i>P</i>	03:19:30,9	0,4
KRUC	6,12	275,2	<i>P</i>	03:19:32,8	0,5
DPC	6,26	287,1	<i>P</i>	03:19:31,0	-3,3
OSTC	6,37	288,9	<i>P</i>	03:19:36,1	0,4
CHVC	6,47	289,0	<i>P</i>	03:19:37,1	0,0
TREC	6,71	277,4	<i>P</i>	03:19:40,0	-0,4
PABE	6,72	351,6	<i>P</i>	03:19:42,3	1,9
PRU	7,35	282,9	<i>P</i>	03:19:49,4	0,3
PVCC	7,39	287,1	<i>P</i>	03:19:49,3	-0,4
CKRC	7,51	273,9	<i>P</i>	03:19:54,9	3,6
PBUR	7,51	343,7	<i>P</i>	03:19:50,5	-0,8
GEC2	7,90	274,3	<i>P</i>	03:19:58,9	2,1
KHC	7,97	276,4	<i>P</i>	03:19:58,3	0,7
WET	8,42	276,6	<i>P</i>	03:20:03,0	-0,9
TANN	8,72	285,2	<i>P</i>	03:20:07,9	0,0
MOX	9,27	286,3	<i>P</i>	03:20:16,3	0,8
GRC4	9,31	276,6	<i>P</i>	03:20:15,4	-0,6
НАКТ	17,28	124,2	<i>P</i>	03:22:01,9	-0,7

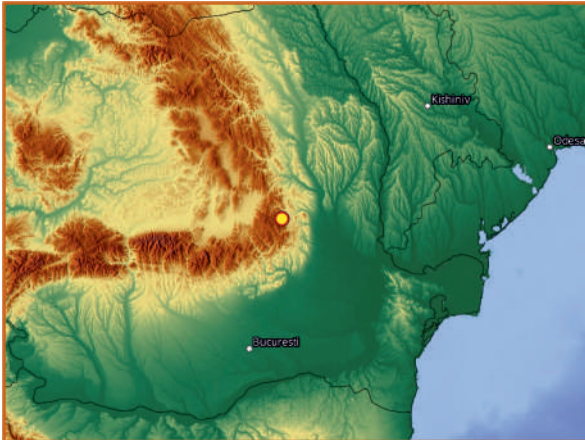


Рис. 4. Положення землетрусу 03.02.2021 (район Вранча, Румунія).

Fig. 4. Location of the earthquake on February 3, 2021 (Vrancea region, Romania).

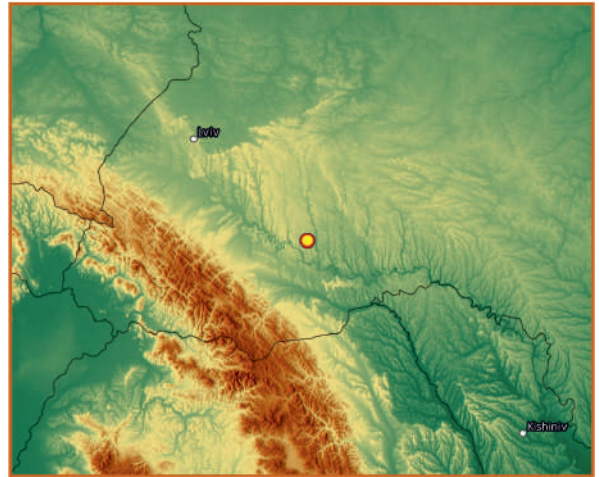


Рис. 5. Положення землетрусу 23.09.2021 (Тернопільська обл., Україна).

Fig. 5. Location of the earthquake on September 23, 2021 (Ternopil region, Ukraine).

які надходять з пунктів реєстрації даних. Проведення режимних сейсмологічних спостережень за локальними і віддаленими сейсмічними подіями, удосконалення методики обробки отриманих записів, комплексна обробка зареєстрованих подій необхідні для виділення локальних землетрусів та оцінювання сучасної активності тектонічних структур у межах території України.

Сейсмологічною мережею у 2021 р. на території України та суміжних держав зареєстровано більш ніж півтори сотні землетрусів, основна частина яких приурочена до глибокофокусної зони Вранча (Румунія). Максимальна зафіксована магнітуда румунського землетрусу — 4,6. Найпотужніший землетрус магнітудою 4,3 на території України відбувся 23 вересня на Тернопільщині, розрахункова інтенсивність в епіцентрі 5 балів. Землетруси з те-

риторій інших суміжних держав мали локальний характер і суттєво не впливали на сейсмічність території України. Більшість епіцентрів зареєстрованих землетрусів на території України знаходиться в межах Волино-Поділля та Передкарпатського прогину на межі Складчастих Карпат.

Інформацію щодо кожного землетрусу з Каталогу землетрусів за 2021 р. (див. табл. 2) у повному обсязі наведено у pdf-файлі бюлетеня на сайті «Геофізичного журналу».

Для забезпечення високоякісними даними сейсмологічних спостережень та надійного визначення рівня і кількісних характеристик сейсмічної небезпеки території України необхідне суттєве розширення сейсмологічної мережі та облаштування її сучасною цифровою реєструючою апаратурою.

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## National seismological bulletin of Ukraine for 2021

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O.Z. Haniiev<sup>2</sup>, V.I. Osadchy<sup>1</sup>, K.S. Petrenko<sup>1,2</sup>, S.T. Verbytskyi<sup>2</sup>, 2022

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The National System of seismic observations of Ukraine has accumulated a network of observation seismic points the joint management of the S.I. Subbotin Institute of Geophysics of National Academy of Sciences of Ukraine and the Main Special Monitoring Center of the State Space Agency of Ukraine. The two institutions together established a joint National database in which the observations are collected, processed and analyzed. Alongside live updates, the data are systematized as seismological bulletins and earthquake catalogs.

According to the data, in Ukraine and the nearby countries there happened in 2021 over one hundred fifty earthquakes. Most of them occurred in the deep-focus Vrancea region (Romania). The maximum recorded magnitude was 4.6; the earthquakes in the nearby countries were local in scope and had no significant effect on the seismicity in Ukraine. The largest earthquake in Ukraine ( $t_0=03:18:04$ ;  $\varphi=48.87^\circ\text{N}$ ;  $\lambda=25.68^\circ\text{E}$ ;  $h=6\text{ km}$ ;  $m_b=4.3$ ) occurred on September 23 in the Ternopil region.

In Ukraine, most epicenters of the recorded earthquakes lie in the Volyn-Podillya area and the Forecarpathian fold at the edge of the Folded Carpathians. In the Crimean-Black Sea region, there was weak seismicity with earthquake epicenters concentrated in the sea.

The Seismological bulletin of Ukraine contains detailed information on all seismic events which happened in Ukraine, Romania, Poland, Moldova, Slovakia, Hungary, and Belarus.

The full information for every earthquake in the Earthquake Catalog 2021 is given in the PDF version of this article on the website of the *Geofizicheskiy Zhurnal*.

**Key words:** earthquake, seismological network, magnitude, epicentral distance, Vrancea region, seismological bulletin.

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# Ukrainian National Seismological Bulletin 2021

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2023

## 1. The Ukrainian National Seismological Network

The national system of seismic observations of Ukraine currently consists of observation points of the Institute of Geophysics by S.I. Subbotin name of the National Academy of Sciences (IGPH) and the Main Center for Special Monitoring (MCSM) of the of the State space agency of Ukraine, and their computing centers together form the National Data Center (NDC).

The density of the network of permanently operating seismic stations of the Institute of Geophysics is dense in the western regions of Ukraine, which is served by the Carpathian Department of Seismicity. There are 22 seismic stations operating in the Carpathian region of Ukraine, the vast majority of which are equipped with DAS-04 digital seismic stations. A small number of seismic stations operate in the rest of Ukraine and are serviced by the Kyiv Department of Seismic Hazards.

The seismological network of the Main Center for Special Monitoring consists of 11 observation points, most of which are located in the northern and central parts of the territory of Ukraine. Observation points are equipped with broadband digital seismic stations. In addition, the Main Center maintains an automated set of seismic grouping equipment, included as a primary station (PS-45) in the International Monitoring System (IMS). The station is a territorially distributed system of collecting seismological information, consisting of 22 boreholes and one mine element located near the technical site. Vertical short-period seismic receivers CMG - 3ESPV are installed in the wells, and three-component broadband seismic receiver CMG - 3T is installed in the mine. Signals from each sensor are converted into digital form using the analog-to-digital converter CMG-DM24S3EAM.

№	Station	Height (m)	Lat. (°N)	Lon. (°E)	Sensor	Dynamic range, Db	Frequency, Hz	Channels	Affiliation
1	2	3	4	5	6	7	8	10	11
<b>Seismic stations of the platform part of Ukraine</b>									
1	Malyn Kiev-IRIS (1997)	180	50.7012	29.2242	STS-2.5, STS-1V/VBB; Accelerometer EpiSensor ES-T; Datalogger -Quanterra Q330	175	0.1-100	N-S, E-W, Z	IGPH
2	Poltava MI02	148	49.6025	34.5430	1 VLPS SL-210;2 HLPS SL-220(GEOTECH); Datalogger – IGPH	120	0,02-15,0	N-S, E-W, Z	IGPH
3	Skvyra MI03	195	49.7173	29.6566	1 VLPS SL-210; 2 HLPS SL-220(GEOTECH); Datalogger – IGPH	120	0,02-15,0	N-S, E-W, Z	IGPH
4	Stepanivka MI05	20	46.77707	46.77707	1 VLPS SL-210; 2 HLPS SL-220(GEOTECH); Datalogger - IGPH	120	0,02-15,0	N-S, E-W, Z	IGPH
5	Nova Galeshyna MI06	75	49.10113 628	33.44102 516	IGPH Seismometr; IGPH Datalogger	120	0,02-15,0	N-S, E-W, Z	IGPH
6	Mykolaiv MI07	55	46.9728	31.97291	IGPH Seismometr, IGPH Datalogger	120	0,02-15,0	N-S, E-W, Z	IGPH

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

7	Kryvyi Rig MIU	89	47.933	33.33	IGPH Seismometr, IGPH Datalogger	120	0,02-15,0	N-S, E-W, Z	IGPH
8	Odesa ODS	2	46.4990	30.7194	Guralp CMG-40T	140	0,03-12,5	N-S, E-W, Z	IGPH
9	Poltava PLT	159	49,605	34,545	CMG-3TD	140	0,03 -50	N-S, E-W, Z	MCSM
10	Lastivtsi KPD	135	48,563	26,46	KCB, KCF	80	0,5-15	N-S, E-W, Z	MCSM
11	Lubar MI27	260	49,9205	27,7576	IGPH Seismometr, IGPH Datalogger	120	0,02-15,0	N-S, E-W, Z	MCSM
12	Balta MI26	200	47,9355	29,6013	IGPH Seismometr, IGPH Datalogger	120	0,02-15,0	N-S, E-W, Z	MCSM
13	Pidlybu MI28	196	50,9305	27,6694	IGPH Seismometr, IGPH Datalogger	120	0,02-15,0	N-S, E-W, Z	MCSM
14	Zelenitsa MI30	215	50,746	28,189	IGPH Seismometr, IGPH Datalogger	120	0,02-15,0	N-S, E-W, Z	MCSM
15	Kamyanny Brid MI29	234	50,418	27,85	IGPH Seismometr, IGPH Datalogger	120	0,02-15,0	N-S, E-W, Z	MCSM
16	Gorodok MI25	170	29,4460	50,5980	IGPH Seismometr, IGPH Datalogger	120	0,02-15,0	N-S, E-W, Z	MCSM
17	Zolotarivka ZLTR	160	49,1601	31,1301	K-213-C	80	0,5-15	Z	MCSM
18	Zhytomyr (PNU)	168	50,2480	28,6680	K-213-C	80	0,5-15	Z	MCSM
19	Novopskov (LUGS)	159	49,5203	39,1410	K-213-C	80	0,5-15	Z	MCSM
17	AK01	160	50,6911	29,2131	CMG - 3ESPV	140	0,033 -50	Z	MCSM
18	AK02	170	50,6573	29,2056	CMG - 3ESPV	140	0,033 -50	Z	MCSM
19	AK03	160	50,7263	29,2216	CMG - 3ESPV	140	0,033 -50	Z	MCSM
20	AK04	160	50,7226	29,166	CMG - 3ESPV	140	0,033 -50	Z	MCSM
21	AK05	180	50,6196	29,2036	CMG - 3ESPV	140	0,033 -50	Z	MCSM
22	AK06	190	50,5858	29,1985	CMG - 3ESPV	140	0,033 -50	Z	MCSM
23	AK07	170	50,5506	29,2043	CMG - 3ESPV	140	0,033 -50	Z	MCSM
24	AK08	122	50,6338	29,2548	CMG - 3ESPV	140	0,033 -50	Z	MCSM
25	AK09	180	50,6151	29,2846	CMG - 3ESPV	140	0,033 -50	Z	MCSM
26	AK10	180	50,599	29,2513	CMG - 3ESPV	140	0,033 -50	Z	MCSM
27	AK11	160	50,6783	29,1676	CMG - 3ESPV	140	0,033 -50	Z	MCSM
28	AK12	180	50,6436	29,1548	CMG - 3ESPV	140	0,033 -50	Z	MCSM
29	AK13	180	50,6122	29,0606	CMG - 3ESPV	140	0,033 -50	Z	MCSM

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

20	AK14	180	50,6306	29,1076	CMG - 3ESPV	140	0,033 -50	Z	MCSM
21	AK15	170	50,6951	29,124	CMG - 3ESPV	140	0,033 -50	Z	MCSM
22	AK16	170	50,67	29,1058	CMG - 3ESPV	140	0,033 -50	Z	MCSM
23	AK17	170	50,6851	29,0573	CMG - 3ESPV	140	0,033 -50	Z	MCSM
24	AK18	170	50,7221	29,0676	CMG - 3ESPV	140	0,033 -50	Z	MCSM
25	AK19	180	50,7221	29,0116	CMG - 3ESPV	140	0,033 -50	Z	MCSM
26	AK20	170	50,743	29,01	CMG - 3ESPV	140	0,033 -50	Z	MCSM
27	AK21	160	50,7763	29,0418	CMG - 3ESPV	140	0,033 -50	Z	MCSM
28	AK22	160	50,7608	29,0711	CMG - 3ESPV	140	0,033 -50	Z	MCSM
29	AK23	160	50,7625	29,1253	CMG - 3ESPV	140	0,033 -50	Z	MCSM
30	AKBB	160	50,7011	29,2241	CMG-3T	137	0,033 -50	N-S, E-W, Z	MCSM
31	Kostykhnivka RNPP1	168	51,3497	25,7657	CMG-SPB	137	0,033 -100	N-S, E-W, Z	NNEGC "Energoatom"
32	Varash RNPP2	293	51,3266	25,8896	CMG-SPB	137	0,033 -100	N-S, E-W, Z	NNEGC "Energoatom"
33	Chartorylsk RNPP5	188	51,2291	25,8854	CMG-SPB	137	0,033 -100	N-S, E-W, Z	NNEGC "Energoatom"
34	Polytsy RNPP6	176	51,2583	26,0640	CMG-SPB	137	0,033 -100	N-S, E-W, Z	NNEGC "Energoatom"
35	Kuznetsovsk RNPP8	172	51,3362	25,8547	CMG-SPB	137	0,033 -100	N-S, E-W, Z	NNEGC "Energoatom"
36	Sopachiv RNPP9	165	51,4119	25,8905	CMG-SPB	137	0,033 -100	N-S, E-W, Z	NNEGC "Energoatom"
37	Energodar SSM1	180	47,5061	34,6156	CMG-3T BOREHOLE	137	0,033 -50	N-S, E-W, Z	NNEGC "Energoatom"
38	Blagovishhenka SSM2	180	47,4593	34,8223	CMG-3T BOREHOLE	137	0,033 -50	N-S, E-W, Z	NNEGC "Energoatom"
39	Menzhyns'ke SSM5	180	47,6103	34,3409	CMG-3T BOREHOLE	137	0,033 -50	N-S, E-W, Z	NNEGC "Energoatom"
40	Velyka Znam'janka SSM3	180	47,4403	34,3358	CMG-3T BOREHOLE	137	0,033 -50	N-S, E-W, Z	NNEGC "Energoatom"
41	Dobra Nadija SSM6	180	47,5862	34,7075	CMG-3T BOREHOLE	137	0,033 -50	N-S, E-W, Z	NNEGC "Energoatom"
42	Dniprovka SSM4	180	47,4280	34,6189	CMG-3T BOREHOLE	137	0,033 -50	N-S, E-W, Z	NNEGC "Energoatom"
43	Yuzhnoukrainsk PDU0	150	47,7830	31,1840	CMG-3T BOREHOLE	137	0,033 -50	N-S, E-W, Z	NNEGC "Energoatom"
44	Marivka PDU1	150	47,8758	31,1196	CMG-3T BOREHOLE	137	0,033 -50	N-S, E-W, Z	NNEGC "Energoatom"

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

45	Arbuzynka PDU2	150	47,8943	31,3161	CMG-3T BOREHOLE	137	0,033 -50	N-S, E-W, Z	NNEGC "Energoatom"
46	Trykraty PDU3	150	47,7181	31,3999	CMG-3T BOREHOLE	137	0,033 -50	N-S, E-W, Z	NNEGC "Energoatom"
<b>Seismic stations of the Carpathian region of Ukraine</b>									
47	Lviv LVV	320	49,820	24,031	DAS-05, CД-1	120	0,02-15,0	N-S, E-W, Z	CD IGPH
					Guralp CMG-40T	140	0,03-12,5	N-S, E-W, Z	
48	Chernivtsi CHR	300	48,298	25,922	DAS-05	120	0,02-15,0	N-S, E-W, Z	CD IGPH
					CKД, CM-3KB	120	0,02-15,0	N-S, E-W, Z	
49	Morshyn MORS (1978)	260	49,124	23,876	DAS-03; CM-3KB	120	0,2-15,0	N-S, E-W, Z	CD IGPH
50	Uzhgorod UZH (1934)	160	48,629	22,291	DAS-04; CKД	120	0,2-15,0	N-S, E-W, Z	CD IGPH
51	Onokivtsi ONO (1963)	168	48,664	22,333	DAS-03; CKM-3	120	0,02-5,0	N-S, E-W, Z	CD IGPH
52	Miggir`ya MEZ (1961)	420	48,543	23,498	DAS-05; CKД	120	0,02-15,0	N-S, E-W, Z	CD IGPH
53	Trosnyk TRSU (1987)	120	48,095	22,957	DAS-03; CM-3KB	120	0,2-15,0	N-S, E-W, Z	CD IGPH
54	Nygne Selysche NSL (1987)	250	48,198	23,457	DAS-03; CM-3KB	120	0,2-15,0	N-S, E-W, Z	CD IGPH
55	Rahiv RAK (1956)	460	48,036	24,173	DAS-04; CKД	120	0,02-15,0	N-S, E-W, Z	CD IGPH
56	Kosiv KSV (1961)	450	48,314	25,065	DAS-04; CKД	120	0,02-15,0	N-S, E-W, Z	CD IGPH
57	Chernivtsi CHR (1907)	300	48,298	25,922	DAS-05; CKД	120	0,02-15,0	N-S, E-W, Z	CD IGPH
58	Gorodok HORU (1991)	340	49,214	26,426	DAS-03; CM-3KB	120	0,2-15,0	N-S, E-W, Z	CD IGPH
59	Kamyaneц-Podilsk KMPU (2005)	121	48,563	26,460	DAS-05; CM-3KB	120	0,2-15,0	N-S, E-W, Z	CD IGPH
60	Novo-Dnistrovsk NDNU (2006)	242	48,595	27,366	DAS-04; CM-3KB	120	0,2-15,0	N-S, E-W, Z	CD IGPH
61	Korolevo KORU (1998)	160	48,157	23,134	DAS-05; CM-3KB	120	0,2-15,0	N-S, E-W, Z	CD IGPH
62	Shidnytsya SHIU (2006)	600	49,22	23,35	DAS-03; CM-3KB	120	0,2-15,0	N-S, E-W, Z	CD IGPH
63	Starunya STAU (2007)	391	48,71	24,50	DAS-05	120	0,2-15,0	N-S, E-W, Z	CD IGPH
64	Mukachevo	125	48,454	22,687	DAS-05	120	0,2-15,0	N-S, E-W, Z	CD IGPH



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

	MUKU (1999)								
65	Beregovo BERE (2000)	160	48,234	22,646	DAS-05	120	0,2-15,0	N-S, E-W, Z	CD IGPH
66	Brid BRIU (2000)	180	48,338	23,020	DAS-05	120	0,2-15,0	N-S, E-W, Z	CD IGPH
67	Southukraine PDIU (time-domain) (20007)	420	47,711	31,149	DAS-03	120	0,2-15,0	N-S, E-W, Z	CD IGPH
68	Uzhhorod UZH	160	48,629	22,291	KCB, KCF	80	0,5-15	N-S, E-W, Z	CD IGPH

IGPH - Institute of geophysics by S.I. Subbotin name;

MCSM - The main center of special monitoring;

NNEGC "Energoatom" - National Nuclear Energy Generating Company «Energoatom»;

CD IGPH - Carpathian Department of Seismicity (IGPH);

Guralp CMG-40T, CMG-3T, CMG - 3ESPV – broadband seismometers of Guralp Systems Ltd (England);

STS-2.5, STS-1V/VBB - Streckeisen Seismic Instrumentation (Switzerland);

EpiSensor ES-T – accelerometers manufactured by Kinemetrics (USA);

Quanterra Q330 – Quanterra Environmental Processor used in IRIS USArray/TA and GSN stations (Quanterra, Inc., USA);

VLPS SL-210 GEOTECH - vertical long-period seismometer model SL-210 and HLPS SL-220 - horizontal long-period seismometers model SL-220 (Geotech Instruments, LLC, USA);

DAS (Digital automatic seismometer); 03, 04, 05 – generation of digital automatic seismometer (made by Institute of geophysics (IGPH));

CKM-3 Kirnos seismometer;

CKД – long-period seismometer;

CM-3KB - magnetotelluric seismometer;

IGPH Seismometr, IGPH Datalogger – a copy of the Guralp CMG-40 seismometer and a digital converter developed at the Institute of Geophysics by Mykhailik I.

# UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

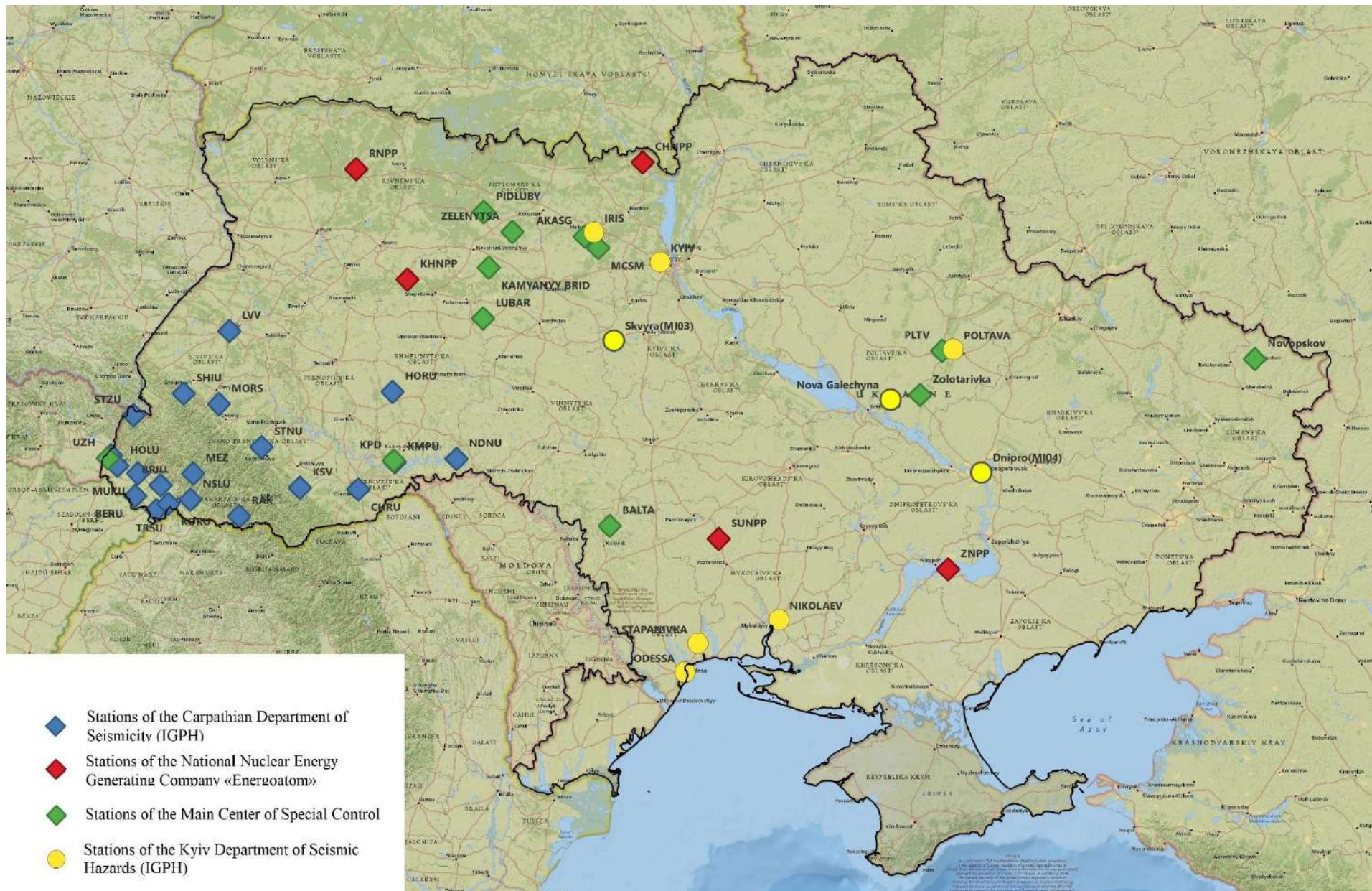


Figure 1. Stations of the Ukrainian National Seismological Network in 2021

## 2. Local events

In 2021, 2157 local events have been detected by the Ukrainian National Seismological Network. From these events, 158 earthquakes (Table. 2.1) and 1999 quarry explosions (Table. 2.2) have been identified.

The most of epicenters were located within the seismically active Vrancea zone, Romania (65 seismic events) among all earthquakes that were registered in 2021 on the territory of Ukraine and neighboring countries. The most powerful earthquake in this region had a magnitude of 4.6. The estimated intensity of shaking on the territory of Ukraine was 3 points.

In general, stations of the Ukrainian National Seismological Network registered about 30 local earthquakes on the territory of Ukraine in 2021. The epicenters of the majority of earthquakes are located within the Transcarpathia, Ivano-Frankivsk and Chernivtsi regions. The magnitude values of seismic events range from 1.4 to 4.3. The most powerful earthquake near the Chortkiv town on September 23, 2021 had a magnitude of  $m_b = 4.3$  and an intensity of up to 5 points at the epicenter. Comparison of the distribution of the epicenters of these earthquakes with the fault tectonics of the southwestern part of the East European Craton shows that the sources of seismic events are confined mainly to different fault zones. The main number of epicenters of registered local earthquakes is located within the Volyn-Podillya and Precarpathian trough on the border of the Folded Carpathians. In the Crimean-Black Sea region, weak seismicity was observed during the year, earthquake epicenters were concentrated within the sea area.

Earthquakes in Poland, Moldova, Slovakia, Hungary and Belarus were local in nature and did not significantly affect the seismicity of the territory of Ukraine.

Table 2.1: Parameters of earthquakes detected by the Ukrainian National Seismological Network

	Date	Time (UTC)	Lat. (°N)	Long. (°E)	Magnitude	Intensity	Depth (km)	Locality
1	2021-02-03	00:52:58	45,82	26,62	3,5	1-2	109	Romania
2	2021-02-03	03:48:45	45,35	25,06	2,4	1	7	Romania
3	2021-02-03	16:10:59	45,37	24,99	2,4	1	7	Romania
4	2021-02-03	17:40:24	51,32	15,99	3,4	1	13	Poland
5	2021-02-03	17:47:03	45,37	25,01	2,6	1	6	Romania
6	2021-02-08	12:09:56	44,90	22,29	2,6	2	4	Romania
7	2021-02-11	06:32:41	45,75	26,83	3,4	2	89	Romania
8	2021-02-14	17:24:53	45,66	26,39	3,5	1	143	Romania
9	2021-02-15	08:44:59	45,81	26,61	3,5	1-2	122	Romania
10	2021-02-21	15:10:24	45,73	26,78	3,0	1	124	Romania
11	2021-02-23	10:36:12	48,40	22,84	1,70	1	2	Transcarpathian region
12	2021-02-24	02:35:09	45,75	26,62	3,60	1-2	134	Romania
13	2021-02-25	05:21:01	51,55	16,24	4,00	4	5	Poland
14	2021-02-27	21:13:10	45,57	26,61	4,10	2-3	130	Romania
15	2021-03-07	09:52:27	45,66	26,49	4,10	2-3	147	Romania
16	2021-03-07	22:34:27	45,65	26,49	3,40	1,0	145	Romania
17	2021-03-11	17:09:44	50,27	19,21	2,90	1	5	Poland
18	2021-03-12	20:11:39	45,61	26,55	2,60	1,0	131	Romania
19	2021-03-14	16:23:31	48,55	27,34	2,10	1,0	4	Chernivtsi region
20	2021-03-14	19:09:48	48,66	27,40	2,20	1,0	5	Chernivtsi region
21	2021-03-15	08:39:57	46,89	27,51	2,30	1,0	5	Romania
22	2021-03-15	12:19:22	45,45	26,43	2,70	1,0	120	Romania
23	2021-03-17	02:44:44	51,37	16,16	3,40	1-2	10	Poland
24	2021-03-23	06:26:53	45,45	26,28	3,70	1,0	123	Romania
25	2021-03-25	13:44:27	49,87	19,16	2,80	1,0	10	Poland
26	2021-03-28	14:58:55	45,71	26,86	2,30	1,0	67	Romania

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

27	2021-03-30	10:16:53	48,56	24,48	2,50	1-2	3	Ivano-Frankivsk region
28	2021-04-02	19:28:24	46,88	27,59	2,40	1,0	8	Romania
29	2021-04-03	03:42:30	45,75	26,45	2,20	1,0	109	Romania
30	2021-04-08	19:54:48	45,66	26,57	3,70	2,0	138	Romania
31	2021-04-09	12:30:04	49,77	28,66	2,10	0	0	Vinnytsia region
32	2021-04-09	18:36:45	45,91	26,74	4,60	5,0	75	Romania
33	2021-04-18	10:03:16	45,49	26,27	3,10	1,0	131	Romania
34	2021-04-22	13:46:16	45,30	28,86	2,70	1,0	26	Romania
35	2021-04-28	23:34:41	51,70	16,08	4,00	4,1	5	Poland
36	2021-05-03	20:21:01	45,66	26,42	2,50	1,0	137	Romania
37	2021-05-05	07:44:13	50,03	18,35	3,20	1,0	33	Poland
38	2021-05-05	17:34:59	51,43	16,15	3,30	2,0	9	Poland
39	2021-05-09	00:15:29	45,56	26,32	3,00	2-3	3	Romania
40	2021-05-10	14:13:54	45,66	26,62	3,40	2	83	Romania
41	2021-05-11	14:04:10	48,58	24,51	2,60	1-2	4	Ivano-Frankivsk region
42	2021-05-12	14:42:22	51,50	16,12	4,10	3,0	10	Poland
43	2021-05-13	10:34:33	48,31	22,84	1,40	1,0	3	Transcarpathian region
44	2021-05-23	04:36:09	45,03	22,53	2,90	1-2	5	Romania
45	2021-05-25	21:30:37	45,57	26,57	4,50	3-4	125	Romania
46	2021-05-26	17:11:48	51,57	15,99	3,50	2	10	Poland
46	2021-05-29	17:10:23	45,12	23,12	2,90	1,0	14	Romania
47	2021-05-31	03:19:21	50,14	18,71	2,90	1-2	5	Poland
48	2021-06-08	13:32:42	48,55	24,48	2,60	1-2	4	Ivano-Frankivsk region
49	2021-06-09	00:53:26	50,11	19,30	3,10	1-2	10	Poland
50	2021-06-13	02:00:16	51,49	16,05	3,40	3,0	5	Poland
51	2021-06-14	09:54:05	45,63	26,71	3,20	1,0	17	Romania
52	2021-06-14	10:36:20	45,63	26,70	3,30	1,0	17	Romania
53	2021-06-15	00:07:59	45,65	26,62	3,30	1,0	14	Romania
54	2021-06-16	17:57:19	45,34	25,17	2,70	2,0	3	Romania
55	2021-06-17	02:25:34	45,79	26,65	2,70	1,0	81	Romania
56	2021-06-17	07:02:54	45,69	26,72	3,20	2,0	86	Romania
57	2021-06-17	09:48:37	45,58	26,55	3,00	1,0	101	Romania
58	2021-06-19	15:10:14	45,76	26,72	2,70	1,0	70	Romania
59	2021-06-20	04:50:24	45,84	26,83	3,20	2,0	66	Romania
60	2021-06-20	21:06:47	45,79	26,80	2,30	1,0	5	Romania
62	2021-06-23	00:29:56	45,78	26,58	3,10	2,0	70	Romania
64	2021-06-24	01:27:12	49,91	19,16	2,80	1-2	4	Poland
65	2021-06-24	03:58:47	51,56	16,10	3,40	1-2	10	Poland
66	2021-06-27	17:30:59	52,97	27,29	2,20	1,2	2	Belarus
67	2021-06-30	06:46:35	45,58	26,68	2,90	1,0	18	Romania
68	2021-07-05	18:27:46	45,66	26,50	3,10	1,0	141	Romania
69	2021-07-06	11:20:00	45,62	26,49	4,20	3,0	136	Romania
70	2021-07-08	22:16:32	47,58	25,61	2,00	1,0	2	Romania
71	2021-07-09	12:37:41	45,64	26,56	3,10	1,0	138	Romania
72	2021-07-09	13:38:32	45,52	26,43	3,70	2,0	128	Romania
73	2021-07-12	00:09:28	45,61	26,49	4,00	3,0	109	Romania
74	2021-07-12	07:58:09	47,71	23,26	1,70	1,0	15	Romania
75	2021-07-12	23:51:16	45,83	26,86	3,50	2,0	108	Romania
76	2021-07-15	08:03:29	52,81	27,47	1,80	1,0	12	Belarus
77	2021-07-17	15:57:26	51,55	16,02	3,50	2,0	10	Poland
78	2021-07-17	17:15:39	45,68	26,49	3,00	1,0	145	Romania
79	2021-07-28	04:01:17	45,16	28,07	2,30	1,0	8	Romania
80	2021-07-31	11:09:32	45,81	26,64	3,10	1-2	86	Romania
81	2021-07-31	21:09:12	45,52	26,38	3,30	1,0	116	Romania
82	2021-08-01	17:57:10	46,77	27,40	4,10	3,0	10	Romania
83	2021-08-01	18:09:25	46,83	27,37	2,70	1,0	10	Romania
84	2021-08-05	13:19:42	51,44	16,13	3,40	2,0	7	Poland

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

85	2021-08-05	19:19:31	50,02	17,97	2,5	1,0	10	Poland
86	2021-08-07	08:24:40	45,67	26,64	3,10	1,0	135	Romania
87	2021-08-11	09:31:21	45,49	26,34	4,30	3,0	133	Romania
88	2021-08-27	07:35:46	47,09	28,43	2,00	1,0	5	Moldova
89	2021-09-07	02:01:17	45,27	24,15	3,60	2	10	Romania
90	2021-09-08	13:32:26	48,46	22,79	2,10	1,0	2	Transcarpathian region
91	2021-09-09	05:10:14	45,37	25,19	3,00	1-2	5	Romania
92	2021-09-09	08:57:13	45,34	25,24	3,50	3,0	5	Romania
93	2021-09-10	17:31:14	45,56	26,48	3,80	2,0	139	Romania
94	2021-09-11	06:17:29	45,34	25,21	2,30	1,0	3	Romania
95	2021-09-11	06:33:10	44,71	36,58	3,50	2,0	10	Black Sea
96	2021-09-11	08:27:00	45,44	26,31	3,00	1,0	128	Romania
97	2021-09-12	07:20:45	52,65	27,64	1,90	1,0	2	Belarus
98	2021-09-13	18:16:36	45,30	26,67	2,20	1,0	26	Romania
99	2021-09-14	17:10:43	50,24	18,95	3,40	2-3	5	Poland
100	2021-09-15	08:49:08	53,00	27,47	2,20	1,0	16	Belarus
101	2021-09-17	03:54:48	49,77	21,76	2,60	3,0	2	Poland
102	2021-09-19	02:21:25	48,37	36,94	3,30	1-2	12	Donetsk region
103	2021-09-23	03:17:57	48,87	25,68	4,30	5	6	Ternopil region.
104	2021-09-25	05:48:20	45,35	24,64	3,00	1-2	6	Romania
105	2021-09-28	23:34:14	50,17	18,94	2,90	1-2	5	Poland
106	2021-10-02	23:16:01	51,51	22,97	3,20	2,0	8	Poland
107	2021-10-03	15:17:40	47,24	23,89	2,50	1,0	8	Romania
108	2021-10-03	19:22:42	45,53	26,47	1,70	1,0	114	Romania
109	2021-10-07	22:43:36	50,16	18,72	2,50	1,0	8	Poland
110	2021-10-09	19:34:34	45,62	26,50	2,90	1,0	15	Romania
111	2021-10-11	03:49:33	43,13	27,50	3,50	2,0	9	Bulgaria
112	2021-10-12	07:25:53	48,73	24,43	2,00	1,0	5	Ivano-Frankivsk region
113	2021-10-14	05:14:11	45,27	27,20	3,00	1,0	11	Romania
114	2021-10-15	03:06:53	45,55	26,87	3,20	1,0	127	Romania
115	2021-10-17	23:20:26	48,15	22,60	2,50	1,0	5	Transcarpathian region
116	2021-10-19	09:21:06	48,74	24,53	2,40	1,0	7	Ivano-Frankivsk region
117	2021-10-20	16:07:49	51,45	16,12	3,20	1,0	9	Poland
118	2021-10-20	18:12:46	45,81	26,46	1,90	1,0	9	Romania
119	2021-10-22	21:46:59	45,63	26,62	3,30	1,0	125	Romania
120	2021-10-26	08:22:18	45,87	25,32	2,40	1,0	9	Romania
121	2021-10-27	01:44:57	48,11	22,94	3,10	2-3	7	Transcarpathian region
122	2021-10-29	12:16:21	48,55	24,47	2,50	2,0	2	Ivano-Frankivsk region
123	2021-10-30	18:04:19	51,33	23,19	2,90	1,0		Poland
124	2021-10-31	01:13:07	51,37	16,12	3,40	1-2	11	Poland
125	2021-10-31	18:44:27	45,90	26,98	2,90	1,0	53	Romania
126	2021-11-02	07:56:54	47,97	23,57	3,00	1-2	8	Romania
127	2021-11-04	05:50:07	51,61	16,20	3,80	2-3	10	Poland
128	2021-11-05	08:09:14	45,85	26,79	1,80	1,0	93	Romania
129	2021-11-08	07:21:14	52,87	27,44	2,40	1,0	30	Belarus
130	2021-11-09	15:20:23	45,41	25,91	3,20	2-3	65	Romania
131	2021-11-14	14:59:26	46,35	26,80	2,30	1,0	9	Romania
132	2021-11-17	18:52:53	45,59	27,14	3,20	3,0	24	Romania
133	2021-11-19	09:06:34	48,64	24,50	2,60	2,0	5	Ivano-Frankivsk region
134	2021-11-22	18:59:51	52,95	27,52	2,70	1,0	15	Belarus
135	2021-11-24	03:03:33	45,43	26,51	2,10	1,0	130	Romania
136	2021-11-24	19:30:14	45,51	26,36	2,10	1,0	131	Romania
137	2021-11-28	15:40:57	45,59	26,44	1,80	1,0	109	Romania
138	2021-11-30	16:20:57	45,79	26,72	4,00	2-3	125	Romania
139	2021-12-02	16:20:54	45,46	26,38	2,80	1,0	125	Romania
140	2021-12-04	07:52:21	50,28	18,82	3,00	2,0	5	Poland
141	2021-12-06	07:22:10	45,82	26,65	3,10	1-2	88	Romania

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

142	2021-12-06	18:46:41	50,27	18,96	2,90	2,0	3	Poland
143	2021-12-07	13:40:01	45,70	26,80	3,50	2,0	95	Romania
144	2021-12-07	14:45:28	51,94	32,61	3,40	2,0	10	Chernihiv region
145	2021-12-09	21:37:33	51,44	16,08	3,90	3,0	7	Poland
146	2021-12-17	00:04:17	45,64	26,58	4,10	2,0	104	Romania
147	2021-12-17	13:00:51	51,54	16,17	3,20	2,0	8	Poland
148	2021-12-20	05:28:33	52,91	27,40	2,60	1,0	15	Belarus
149	2021-12-21	15:06:25	48,61	24,48	2,60	2,0	4	Ivano-Frankivsk region
150	2021-12-26	21:45:21	48,52	27,35	2,40	2,0	4	Chernivtsi region
151	2021-12-26	21:45:23	45,62	26,44	2,40	1,0	140	Romania
152	2021-12-28	11:53:05	45,53	26,52	3,30	1,0	118	Romania
153	2021-12-28	15:35:37	45,34	26,10	3,10	1,0	128	Romania
154	2021-12-28	19:13:38	50,22	18,98	3,00	3,0	3	Poland
155	2021-12-29	03:21:00	45,44	27,45	2,10	1,0	18	Romania
156	2021-12-29	14:17:34	48,59	24,51	2,40	2-3	3	Ivano-Frankivsk region
157	2021-12-29	23:20:37	45,48	26,74	3,10	1,0	131	Romania
158	2021-12-30	14:57:00	45,85	26,86	4,00	3,0	74	Romania

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

Table 2.1: Parameters of quarry explosions detected by the Ukrainian National Seismological Network

	Date	Time (UTC)	Lat. (°N)	Long. (°E)	Magnitude	Locality
1.	2021-01-20	14:19:18	49,14	31,46	1,50	Cherkasy region
2.	2021-01-21	10:06:20	47,83	33,42	1,90	Dnipropetrovsk region
3.	2021-01-21	11:00:12	48,26	33,37	1,80	Kirovohrad Region
4.	2021-01-21	11:55:12	50,54	27,68	1,10	Zhytomyr Region
5.	2021-01-21	12:01:49	51,31	26,92	1,90	Rivne region
6.	2021-01-21	13:40:48	50,85	28,14	1,70	Zhytomyr Region
7.	2021-01-22	06:54:12	52,23	27,38	2,20	Belarus
8.	2021-01-22	06:54:18	52,26	27,36	2,10	Belarus
9.	2021-01-22	06:54:29	52,24	27,51	2,10	Belarus
10.	2021-01-22	08:00:00	48,74	26,66	1,80	Khmelnyskyi region
11.	2021-01-22	08:59:36	47,67	33,22	2,00	Dnipropetrovsk region
12.	2021-01-22	10:00:03	49,01	33,74	2,20	Poltava region
13.	2021-01-22	10:44:39	49,62	25,90	1,40	Ternopil Region
14.	2021-01-22	11:00:03	48,13	33,46	2,00	Dnipropetrovsk region
15.	2021-01-22	11:00:23	49,64	30,56	1,10	Kyiv region
16.	2021-01-22	11:01:46	50,76	29,26	0,50	Zhytomyr Region
17.	2021-01-22	11:06:09	50,75	29,30	1,60	Zhytomyr Region
18.	2021-01-23	10:35:22	51,28	26,92	1,60	Rivne region
19.	2021-01-25	10:26:29	49,09	28,28	2,10	Vinnysia region
20.	2021-01-26	09:46:58	50,17	29,95	1,40	Kyiv region
21.	2021-01-26	09:59:55	49,04	33,66	1,80	Poltava region
22.	2021-01-26	10:15:33	50,75	29,33	1,80	Zhytomyr Region
23.	2021-01-26	11:33:30	49,78	29,80	1,50	Kyiv region
24.	2021-01-26	11:37:39	49,66	30,38	1,00	Kyiv region
25.	2021-01-26	12:01:51	49,43	27,36	1,60	Khmelnyskyi region
26.	2021-01-26	13:50:15	50,87	28,19	1,90	Zhytomyr Region
27.	2021-01-26	14:59:36	48,62	26,32	1,60	Khmelnyskyi region
28.	2021-01-27	10:00:11	48,47	33,37	1,60	Kirovohrad Region
29.	2021-01-27	11:24:43	51,30	27,11	1,60	Rivne region
30.	2021-01-28	10:00:02	48,03	33,56	2,40	Dnipropetrovsk region
31.	2021-01-28	11:00:45	47,84	33,34	2,00	Dnipropetrovsk region
32.	2021-01-28	12:11:17	50,74	29,34	1,00	Zhytomyr Region
33.	2021-01-28	12:28:41	51,06	28,69	1,00	Zhytomyr Region
34.	2021-01-28	13:44:13	49,67	30,49	1,30	Kyiv region
35.	2021-01-28	14:45:21	51,32	26,92	1,70	Rivne region
36.	2021-01-29	06:48:32	52,26	27,46	1,30	Belarus
37.	2021-01-29	06:53:51	52,25	27,44	1,20	Belarus
38.	2021-01-29	07:59:59	48,87	26,61	1,40	Khmelnyskyi region
39.	2021-01-29	09:29:47	49,77	25,67	1,60	Ternopil Region
40.	2021-01-29	10:07:58	50,16	29,95	1,20	Kyiv region
41.	2021-01-29	10:13:57	49,51	28,47	1,60	Vinnysia region
42.	2021-01-29	11:00:02	50,75	29,31	1,70	Zhytomyr Region
43.	2021-01-29	11:00:22	48,34	33,38	1,70	Kirovohrad Region
44.	2021-01-29	11:16:11	51,31	26,92	1,50	Rivne region
45.	2021-01-29	11:44:15	49,54	26,00	1,30	Ternopil Region
46.	2021-01-29	12:00:54	47,83	33,29	1,90	Dnipropetrovsk region
47.	2021-01-29	12:42:42	50,56	27,67	1,70	Zhytomyr Region
48.	2021-01-29	13:45:36	53,23	27,47	1,70	Belarus
49.	2021-01-29	13:51:22	49,59	27,80	1,30	Vinnysia region
50.	2021-01-30	13:41:12	50,94	28,58	1,60	Zhytomyr Region

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

51.	2021-01-30	15:38:36	50,93	28,59	0,80	Zhytomyr Region
52.	2021-01-31	14:49:25	50,74	28,81	1,00	Zhytomyr Region
53.	2021-02-01	10:29:05	51,29	26,91	1,70	Rivne region
54.	2021-02-01	10:42:31	48,22	28,30	2,10	Moldova
55.	2021-02-01	12:43:35	50,14	29,94	1,60	Kyiv region
56.	2021-02-01	11:15:19	49,57	25,90	1,60	Ternopil region
57.	2021-02-02	12:39:18	49,77	29,96	1,00	Kyiv region
58.	2021-02-02	13:01:05	49,21	28,44	1,70	Vinnytsia region
59.	2021-02-02	15:07:48	50,93	28,71	1,80	Zhytomyr region
60.	2021-02-03	11:19:54	51,31	27,23	1,70	Rivne region
61.	2021-02-03	14:14:26	49,76	24,37	1,60	Khmelnyskyi region
62.	2021-02-04	09:22:21	50,75	29,31	2,30	Zhytomyr region
63.	2021-02-04	11:16:28	51,03	28,66	1,30	Zhytomyr region
64.	2021-02-04	11:00:12	48,11	33,61	2,00	Dnipropetrovsk region
65.	2021-02-04	10:00:17	47,82	33,43	1,60	Dnipropetrovsk region
66.	2021-02-05	06:50:51	52,29	27,50	1,60	Belarus
67.	2021-02-05	06:50:45	52,24	27,32	2,10	Belarus
68.	2021-02-05	08:58:59	47,61	33,24	2,40	Dnipropetrovsk region
69.	2021-02-05	11:22:59	51,27	26,86	1,70	Rivne region
70.	2021-02-05	11:14:01	51,23	27,05	1,70	Rivne region
71.	2021-02-05	11:00:00	48,23	33,28	1,90	Kirovohrad region
72.	2021-02-05	11:29:59	48,98	33,73	1,50	Poltava region
73.	2021-02-05	14:16:11	51,32	27,02	1,50	Rivne region
74.	2021-02-05	14:06:12	51,54	27,79	1,70	Belarus
75.	2021-02-06	08:54:45	48,09	30,86	2,20	Mykolaiv region
76.	2021-02-06	09:23:48	50,74	29,30	1,00	Zhytomyr region
77.	2021-02-06	14:52:27	50,70	28,82	1,00	Zhytomyr region
78.	2021-02-08	12:02:25	50,92	28,54	1,40	Zhytomyr region
79.	2021-02-08	12:47:19	50,93	28,57	1,20	Zhytomyr region
80.	2021-02-08	13:59:13	49,12	28,26	1,50	Vinnytsia region
81.	2021-02-08	17:24:30	53,14	27,45	1,90	Belarus
82.	2021-02-09	09:32:19	50,15	30,00	1,60	Kyiv region
83.	2021-02-09	10:14:58	49,00	33,73	1,80	Poltava region
84.	2021-02-09	12:47:31	50,73	29,29	1,80	Zhytomyr region
85.	2021-02-10	10:00:21	48,31	33,26	1,60	Kirovohrad region
86.	2021-02-10	10:14:14	49,64	25,65	1,40	Ternopil region
87.	2021-02-10	11:27:39	51,31	27,00	1,60	Rivne region,
88.	2021-02-11	07:07:35	49,65	30,40	1,10	Kyiv region
89.	2021-02-11	09:50:15	48,23	28,35	2,10	Moldova
90.	2021-02-11	10:00:01	47,92	33,35	2,00	Dnipropetrovsk region
91.	2021-02-11	11:00:11	48,28	33,29	2,40	Kirovohrad region
92.	2021-02-11	11:00:30	48,18	33,52	2,30	Kirovohrad region
93.	2021-02-11	11:17:56	49,71	30,40	1,30	Kyiv region
94.	2021-02-11	11:40:53	49,63	25,75	1,40	Ternopil region
95.	2021-02-11	12:26:24	48,33	32,66	2,20	Kirovohrad region
96.	2021-02-11	13:00:28	48,31	33,25	2,20	Kirovohrad region
97.	2021-02-11	14:29:53	47,97	33,43	2,00	Dnipropetrovsk region
98.	2021-02-12	06:26:19	52,25	27,42	1,50	Belarus
99.	2021-02-12	06:22:34	52,24	27,44	1,60	Belarus
100.	2021-02-12	12:57:05	50,71	28,83	0,40	Zhytomyr region
101.	2021-02-12	12:13:02	49,53	28,44	1,50	Vinnytsia region
102.	2021-02-12	11:00:31	48,18	33,51	2,20	Dnipropetrovsk region
103.	2021-02-12	14:24:14	48,53	27,72	1,40	Vinnytsia region
104.	2021-02-12	14:28:23	51,31	27,20	1,50	Rivne region,
105.	2021-02-13	04:59:55	48,06	33,49	1,90	Dnipropetrovsk region
106.	2021-02-15	11:32:00	51,24	26,93	1,50	Rivne region,
107.	2021-02-16	12:24:46	49,48	26,04	1,50	Ternopil region



UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

108.	2021-02-17	08:10:51	49,75	30,03	1,50	Kyiv region
109.	2021-02-17	08:30:50	49,64	30,34	1,60	Kyiv region
110.	2021-02-17	11:34:25	51,34	26,91	1,50	Rivne region
111.	2021-02-17	13:45:21	51,22	26,03	1,80	Rivne region
112.	2021-02-17	14:34:09	51,30	27,22	1,50	Rivne region,
113.	2021-02-17	14:44:53	49,65	30,44	1,50	Kyiv region
114.	2021-02-17	10:00:00	48,98	33,49	2,20	Poltava region
115.	2021-02-18	09:41:06	49,64	25,87	1,60	Ternopil region
116.	2021-02-18	10:00:14	47,82	33,39	1,90	Dnipropetrovsk region
117.	2021-02-18	11:00:15	48,28	33,39	1,60	Kirovohrad region
118.	2021-02-18	11:17:00	49,52	30,79	1,10	Kyiv region
119.	2021-02-18	14:01:00	50,92	28,54	1,90	Zhytomyr region
120.	2021-02-19	06:27:15	52,23	27,45	1,50	Belarus
121.	2021-02-19	06:27:31	52,20	27,34	1,70	Belarus
122.	2021-02-19	08:59:50	47,69	33,30	1,70	Dnipropetrovsk region
123.	2021-02-19	11:01:26	48,30	33,40	1,90	Kirovohrad region
124.	2021-02-19	11:25:44	49,67	30,48	1,40	Kyiv region
125.	2021-02-19	13:31:10	51,28	26,92	1,60	Rivne region,
126.	2021-02-19	14:03:40	48,75	30,28	1,30	Черкаська обл,
127.	2021-02-19	15:23:44	50,55	27,61	1,50	Zhytomyr region
128.	2021-02-20	10:11:37	49,79	27,34	1,60	Khmelnyskyi region
129.	2021-02-22	00:15:28	49,08	28,34	1,90	Vinnysia region
130.	2021-02-22	14:13:15	50,14	29,90	1,30	Kyiv region
131.	2021-02-23	10:05:09	50,75	29,33	1,80	Zhytomyr region
132.	2021-02-23	10:21:40	51,27	26,98	1,80	Rivne region,
133.	2021-02-23	12:13:26	49,30	28,47	1,70	Vinnysia region
134.	2021-02-23	13:38:04	49,80	29,82	1,10	Kyiv region
135.	2021-02-24	10:00:24	47,85	33,31	2,50	Dnipropetrovsk region
136.	2021-02-24	10:18:19	51,30	26,96	1,50	Rivne region,
137.	2021-02-24	11:30:42	51,24	26,89	1,80	Rivne region,
138.	2021-02-24	10:52:46	50,57	27,60	1,50	Zhytomyr region
139.	2021-02-24	12:15:50	50,90	28,58	1,70	Zhytomyr region
140.	2021-02-24	13:07:43	50,69	28,82	0,90	Zhytomyr region
141.	2021-02-25	11:00:31	48,10	33,57	2,80	Dnipropetrovsk region
142.	2021-02-25	11:00:11	48,29	33,34	2,60	Kirovohrad region
143.	2021-02-25	10:29:40	47,72	33,37	1,60	Dnipropetrovsk region
144.	2021-02-25	10:12:44	48,30	29,87	1,40	Kirovohrad region
145.	2021-02-25	09:55:39	49,47	28,41	1,50	Vinnysia region
146.	2021-02-25	09:42:57	48,23	28,31	1,80	Moldova
147.	2021-02-25	12:16:20	47,66	34,43	1,70	Dnipropetrovsk region
148.	2021-02-25	14:08:23	51,44	28,91	2,00	Zhytomyr region
149.	2021-02-25	15:15:07	50,94	28,58	1,60	Zhytomyr region
150.	2021-02-26	06:32:07	52,24	27,49	1,30	Belarus
151.	2021-02-26	06:32:28	52,23	27,46	1,20	Belarus
152.	2021-02-26	09:57:17	49,44	26,00	1,80	Ternopil region
153.	2021-02-26	10:49:59	49,13	28,32	1,70	Vinnysia region
154.	2021-02-26	11:00:11	48,35	33,38	2,20	Kirovohrad region
155.	2021-02-26	11:28:30	51,36	26,89	1,60	Rivne region,
156.	2021-02-26	12:00:48	47,74	34,28	2,10	Dnipropetrovsk region
157.	2021-02-26	10:46:50	47,76	31,12	1,60	Mykolaiv region
158.	2021-02-27	08:12:22	50,13	29,90	1,10	Kyiv region
159.	2021-02-27	10:31:25	50,94	28,56	1,40	Zhytomyr region
160.	2021-02-27	10:35:04	50,91	28,59	1,70	Zhytomyr region
161.	2021-02-27	15:17:43	47,19	34,99	1,40	Zaporizhzhia region
162.	2021-03-01	11:40:48	51,21	26,93	1,50	Rivne region
163.	2021-03-01	12:09:08	49,75	30,03	1,20	Kyiv region
164.	2021-03-02	10:00:01	47,78	33,36	2,00	Dnipropetrovsk region

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

165.	2021-03-02	10:35:56	49,63	25,87	1,40	Ternopil region
166.	2021-03-02	10:42:22	49,62	25,89	1,70	Ternopil region
167.	2021-03-02	12:02:27	49,81	27,32	1,50	Khmelnyskyi region
168.	2021-03-02	13:38:00	50,74	29,30	1,80	Zhytomyr region
169.	2021-03-02	16:07:08	51,01	28,66	1,70	Zhytomyr region
170.	2021-03-03	10:00:06	49,05	33,66	2,80	Poltava region
171.	2021-03-03	11:00:06	50,15	27,53	1,80	Khmelnyskyi region
172.	2021-03-03	13:00:10	49,31	28,45	1,60	Vinnysia region
173.	2021-03-03	14:14:04	49,45	28,34	1,60	Vinnysia region
174.	2021-03-04	09:00:27	50,67	28,85	1,00	Zhytomyr region
175.	2021-03-04	09:13:01	51,07	28,71	1,30	Zhytomyr region
176.	2021-03-04	10:00:14	48,21	33,49	1,60	Kirovohrad region
177.	2021-03-04	10:46:35	51,27	27,03	1,70	Rivne region
178.	2021-03-04	11:00:06	48,18	33,69	1,50	Dnipropetrovsk region
179.	2021-03-04	11:53:59	50,17	29,94	1,40	Kyiv region
180.	2021-03-04	12:01:52	50,32	27,39	1,70	Khmelnyskyi region
181.	2021-03-04	13:31:58	49,79	27,30	1,60	Khmelnyskyi region
182.	2021-03-04	13:36:18	49,62	30,44	1,30	Kyiv region
183.	2021-03-04	13:37:52	49,67	30,38	1,20	Kyiv region
184.	2021-03-05	06:12:52	52,20	27,51	1,70	Belarus
185.	2021-03-05	06:13:03	52,27	27,51	1,30	Belarus
186.	2021-03-05	09:00:16	47,80	33,30	1,90	Dnipropetrovsk region
187.	2021-03-05	09:55:30	49,49	28,39	1,20	Vinnysia region
188.	2021-03-05	10:09:55	50,22	29,97	1,30	Kyiv region
189.	2021-03-05	10:29:40	51,34	26,87	1,30	Rivne region
190.	2021-03-05	10:59:56	48,29	33,33	1,90	Kirovohrad region
191.	2021-03-05	11:21:20	50,92	28,56	1,00	Zhytomyr region
192.	2021-03-05	13:47:24	50,92	28,57	1,30	Zhytomyr region
193.	2021-03-05	15:26:38	51,23	27,05	1,90	Rivne region
194.	2021-03-06	09:17:15	50,69	28,83	1,00	Zhytomyr region
195.	2021-03-06	09:21:03	51,53	27,74	1,60	Belarus
196.	2021-03-06	15:25:02	48,33	31,48	1,80	Kirovohrad region
197.	2021-03-09	09:59:58	49,13	33,68	1,80	Poltava region
198.	2021-03-09	11:25:58	49,65	25,74	1,60	Ternopil region
199.	2021-03-09	13:50:10	51,33	27,20	1,70	Rivne region
200.	2021-03-09	15:12:10	50,74	29,29	1,60	Zhytomyr region
201.	2021-03-09	16:44:41	50,70	28,80	1,00	Zhytomyr region
202.	2021-03-10	10:00:23	48,48	33,95	1,90	Dnipropetrovsk region
203.	2021-03-10	10:06:01	51,21	26,92	1,80	Rivne region
204.	2021-03-10	10:20:31	51,34	26,84	1,60	Rivne region
205.	2021-03-10	10:33:12	50,75	29,31	1,80	Zhytomyr region
206.	2021-03-10	11:29:50	50,14	27,53	1,80	Khmelnyskyi region
207.	2021-03-10	12:09:44	51,33	27,00	1,80	Rivne region
208.	2021-03-10	12:10:27	50,18	27,16	1,50	Khmelnyskyi region
209.	2021-03-10	12:35:14	50,89	28,35	1,40	Zhytomyr region
210.	2021-03-10	13:21:10	51,31	26,94	1,40	Rivne region
211.	2021-03-10	15:57:33	49,68	30,44	1,60	Kyiv region
212.	2021-03-11	10:00:01	47,77	33,33	2,40	Dnipropetrovsk region
213.	2021-03-11	10:22:59	49,60	25,84	1,20	Ternopil region
214.	2021-03-11	11:08:25	50,95	28,55	1,50	Zhytomyr region
215.	2021-03-11	12:02:10	48,19	33,61	2,20	Dnipropetrovsk region
216.	2021-03-11	13:01:13	48,02	34,62	1,60	Dnipropetrovsk region
217.	2021-03-11	13:15:18	49,78	29,91	1,30	Kyiv region
218.	2021-03-11	13:36:18	49,64	30,36	1,40	Kyiv region
219.	2021-03-11	18:15:12	49,08	28,35	2,00	Vinnysia region
220.	2021-03-12	06:31:14	52,28	27,54	1,40	Belarus
221.	2021-03-12	06:31:25	52,29	26,61	1,50	Belarus

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

222.	2021-03-12	06:33:36	52,24	27,30	1,50	Belarus
223.	2021-03-12	12:44:04	49,71	30,00	1,20	Kyiv region
224.	2021-03-12	13:56:16	50,98	28,69	1,70	Zhytomyr region
225.	2021-03-12	14:22:57	50,09	28,74	1,70	Zhytomyr region
226.	2021-03-12	15:22:16	50,70	28,71	1,20	Zhytomyr region
227.	2021-03-13	08:43:09	48,86	29,13	1,50	Vinnitsia region
228.	2021-03-15	08:53:31	48,34	31,54	1,90	Kirovohrad region
229.	2021-03-15	09:37:29	49,14	28,14	1,50	Vinnitsia region
230.	2021-03-15	11:20:37	51,36	26,94	1,40	Rivne region
231.	2021-03-16	09:31:41	50,75	29,32	1,50	Zhytomyr region
232.	2021-03-16	10:01:26	49,45	28,40	1,30	Vinnitsia region
233.	2021-03-16	11:15:17	49,77	27,31	1,20	Khmelnitskyi region
234.	2021-03-16	11:31:16	50,86	28,18	1,60	Zhytomyr region
235.	2021-03-16	13:11:29	49,44	27,29	1,70	Khmelnitskyi region
236.	2021-03-16	13:56:10	51,54	27,83	1,60	Belarus
237.	2021-03-17	07:35:41	47,65	31,27	2,00	Mykolayiv region
238.	2021-03-17	08:35:28	51,06	28,73	1,10	Zhytomyr region
239.	2021-03-17	10:00:10	49,08	33,72	1,60	Poltava region
240.	2021-03-17	10:44:05	49,04	33,67	1,90	Poltava region
241.	2021-03-17	10:59:14	48,98	33,61	2,00	Poltava region
242.	2021-03-17	11:37:51	50,93	28,37	1,90	Zhytomyr region
243.	2021-03-17	12:38:59	51,08	28,68	1,70	Zhytomyr region
244.	2021-03-18	07:52:01	49,21	28,40	1,70	Vinnitsia region
245.	2021-03-18	10:00:07	47,66	33,08	2,30	Dnipropetrovsk region
246.	2021-03-18	10:49:08	51,04	28,67	1,10	Zhytomyr region
247.	2021-03-18	11:00:07	48,42	33,38	1,50	Kirovohrad region
248.	2021-03-18	11:20:07	51,31	26,88	1,80	Rivne region
249.	2021-03-18	12:42:18	50,53	26,32	1,60	Rivne region
250.	2021-03-18	13:05:18	49,80	27,27	1,60	Khmelnitskyi region
251.	2021-03-18	13:25:12	49,64	30,39	1,50	Kyiv region
252.	2021-03-19	06:17:52	52,22	27,44	1,40	Belarus
253.	2021-03-19	06:18:29	52,23	27,45	1,70	Belarus
254.	2021-03-19	09:00:41	47,66	33,33	2,30	Dnipropetrovsk region
255.	2021-03-19	10:23:57	51,24	26,05	1,70	Rivne region
256.	2021-03-19	10:47:51	50,55	27,61	1,50	Zhytomyr region
257.	2021-03-19	11:00:03	49,41	26,05	1,90	Ternopil region
258.	2021-03-19	11:47:38	49,12	28,27	1,80	Vinnitsia region
259.	2021-03-19	14:07:38	50,15	29,95	1,60	Kyiv region
260.	2021-03-20	07:43:36	47,66	31,21	2,10	Mykolayiv region
261.	2021-03-20	12:18:36	50,93	28,55	1,90	Zhytomyr region
262.	2021-03-22	09:56:33	50,70	28,81	1,10	Zhytomyr region
263.	2021-03-22	11:55:29	49,67	30,42	1,00	Kyiv region
264.	2021-03-23	09:11:00	55,27	30,41	2,10	Belarus
265.	2021-03-23	10:00:01	49,00	33,62	2,30	Poltava region
266.	2021-03-23	11:02:01	47,73	31,24	1,60	Mykolayiv region
267.	2021-03-23	11:16:43	49,15	28,25	1,80	Vinnitsia region
268.	2021-03-23	12:03:37	49,50	30,80	1,40	Kyiv region
269.	2021-03-23	12:15:31	50,91	28,59	1,80	Zhytomyr region
270.	2021-03-23	12:47:00	49,41	27,33	1,80	Khmelnitskyi region
271.	2021-03-24	09:41:10	49,08	30,91	1,30	Cherkasy region
272.	2021-03-24	10:00:25	47,86	33,30	2,30	Dnipropetrovsk region
273.	2021-03-24	10:07:47	48,23	28,28	2,10	Moldova
274.	2021-03-24	10:42:24	50,25	27,56	1,30	Khmelnitskyi region
275.	2021-03-24	12:31:21	47,68	31,11	1,40	Mykolayiv region
276.	2021-03-24	12:58:05	49,77	29,73	1,10	Kyiv region
277.	2021-03-24	13:08:53	49,74	29,73	1,10	Kyiv region
278.	2021-03-24	15:25:37	50,14	29,96	1,10	Kyiv region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

279.	2021-03-24	15:28:15	51,33	27,11	1,80	Rivne region
280.	2021-03-25	10:00:32	47,85	33,34	2,00	Dnipropetrovsk region
281.	2021-03-25	11:00:39	47,79	33,42	2,10	Dnipropetrovsk region
282.	2021-03-25	11:13:16	50,74	29,34	1,80	Zhytomyr region
283.	2021-03-25	11:34:00	51,34	26,90	1,80	Rivne region
284.	2021-03-25	11:44:49	51,39	28,89	1,90	Zhytomyr region
285.	2021-03-25	13:00:15	47,84	33,45	2,00	Dnipropetrovsk region
286.	2021-03-26	06:40:49	52,18	27,47	1,30	Belarus
287.	2021-03-26	06:41:21	52,29	27,33	1,40	Belarus
288.	2021-03-26	09:30:06	51,33	26,93	1,70	Rivne region
289.	2021-03-26	10:01:57	51,26	26,97	1,60	Rivne region
290.	2021-03-26	10:45:31	50,73	29,30	2,20	Zhytomyr region
291.	2021-03-26	10:55:23	50,91	28,54	1,50	Zhytomyr region
292.	2021-03-26	11:00:38	48,32	33,34	2,30	Kirovohrad region
293.	2021-03-26	12:00:30	47,70	34,25	2,00	Dnipropetrovsk region
294.	2021-03-26	13:06:38	49,68	30,42	1,40	Kyiv region
295.	2021-03-26	13:55:40	49,98	28,51	1,10	Zhytomyr region
296.	2021-03-26	13:56:09	50,74	29,31	1,80	Zhytomyr region
297.	2021-03-29	09:00:43	48,33	31,58	2,20	Kirovohrad region
298.	2021-03-29	10:06:11	48,99	33,59	1,90	Poltava region
299.	2021-03-29	10:21:28	48,61	26,43	1,50	Khmelnyskyi region
300.	2021-03-29	11:07:45	50,92	28,55	1,90	Zhytomyr region
301.	2021-03-29	12:14:47	49,62	25,84	1,40	Ternopil region
302.	2021-03-29	12:38:55	48,88	29,05	1,70	Vinnitsia region
303.	2021-03-29	12:58:38	50,52	27,19	1,20	Rivne region
304.	2021-03-30	08:33:47	50,91	28,59	1,70	Zhytomyr region
305.	2021-03-30	10:00:51	50,91	28,57	1,90	Zhytomyr region
306.	2021-03-30	11:59:15	49,76	28,63	1,70	Vinnitsia region
307.	2021-03-30	12:00:50	49,79	28,64	1,30	Vinnitsia region
308.	2021-03-30	13:34:29	49,70	30,42	1,40	Kyiv region
309.	2021-03-30	13:46:35	51,08	28,69	1,90	Zhytomyr region
310.	2021-03-31	09:00:07	48,92	33,65	1,90	Poltava region
311.	2021-03-31	09:32:18	48,35	32,60	1,80	Kirovohrad region
312.	2021-03-31	10:09:57	49,84	27,25	1,40	Khmelnyskyi region
313.	2021-03-31	10:18:55	51,34	27,17	1,60	Rivne region
314.	2021-03-31	10:38:40	49,32	28,81	1,60	Vinnitsia region
315.	2021-03-31	10:54:36	49,70	30,34	1,30	Kyiv region
316.	2021-03-31	12:35:19	50,02	28,46	1,20	Zhytomyr region
317.	2021-03-31	13:19:28	49,20	26,35	1,60	Khmelnyskyi region
318.	2021-03-31	14:49:56	50,72	28,67	1,10	Zhytomyr region
319.	2021-03-31	15:37:15	50,70	28,79	1,20	Zhytomyr region
320.	2021-04-01	08:59:42	47,73	33,32	2,50	Dnipropetrovsk region
321.	2021-04-01	09:41:02	50,12	29,89	1,90	Kyiv region
322.	2021-04-01	10:00:41	48,24	33,43	1,60	Kirovohrad region
323.	2021-04-01	11:35:33	49,58	30,90	1,10	Kyiv region
324.	2021-04-01	11:46:21	50,83	28,15	1,60	Zhytomyr region
325.	2021-04-02	07:06:36	52,01	27,68	2,00	Belarus
326.	2021-04-02	07:07:11	52,28	27,58	1,10	Belarus
327.	2021-04-02	07:59:41	47,70	33,23	2,00	Dnipropetrovsk region
328.	2021-04-02	09:01:42	51,31	27,29	1,70	Rivne region
329.	2021-04-02	09:10:05	49,64	30,39	1,40	Kyiv region
330.	2021-04-02	09:12:14	49,59	28,83	1,00	Vinnitsia region
331.	2021-04-02	09:44:34	50,13	27,50	1,30	Khmelnyskyi region
332.	2021-04-02	10:02:28	51,38	26,98	1,70	Rivne region
333.	2021-04-02	10:24:55	51,35	27,02	1,60	Rivne region
334.	2021-04-02	13:02:27	50,95	28,67	1,50	Zhytomyr region
335.	2021-04-03	14:12:37	50,70	28,83	1,00	Zhytomyr region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

336.	2021-04-05	08:42:46	48,20	28,30	1,90	Moldova
337.	2021-04-05	08:52:53	49,08	28,34	1,50	Vinnitsia region
338.	2021-04-05	12:33:33	48,93	30,75	1,90	Cherkasy region
339.	2021-04-05	13:09:09	50,87	28,15	1,50	Zhytomyr region
340.	2021-04-06	11:26:05	50,20	29,78	1,70	Kyiv region
341.	2021-04-06	11:47:34	51,09	28,71	1,50	Zhytomyr region
342.	2021-04-06	12:27:30	50,52	28,63	1,10	Zhytomyr region
343.	2021-04-06	14:07:56	50,90	28,56	1,90	Zhytomyr region
344.	2021-04-07	08:32:53	51,32	27,12	1,60	Rivne region
345.	2021-04-07	09:00:19	48,44	34,18	1,50	Dnipropetrovsk region
346.	2021-04-07	09:40:36	51,36	27,03	1,40	Rivne region
347.	2021-04-07	10:27:12	50,92	28,65	1,30	Zhytomyr region
348.	2021-04-07	10:42:29	49,99	28,40	1,40	Zhytomyr region
349.	2021-04-07	12:27:22	50,16	27,13	1,20	Khmelnitskyi region
350.	2021-04-07	12:37:13	50,75	29,33	1,50	Zhytomyr region
351.	2021-04-08	08:50:46	50,55	27,70	1,30	Zhytomyr region
352.	2021-04-08	09:00:05	48,11	33,46	2,10	Dnipropetrovsk region
353.	2021-04-08	09:07:34	50,21	27,18	1,50	Khmelnitskyi region
354.	2021-04-08	10:00:20	48,42	33,40	2,20	Kirovohrad region
355.	2021-04-08	11:04:52	49,50	28,46	1,80	Vinnitsia region
356.	2021-04-08	11:13:26	50,19	27,14	1,30	Khmelnitskyi region
357.	2021-04-08	11:51:06	49,58	30,43	1,30	Kyiv region
358.	2021-04-09	06:31:12	52,32	27,47	2,00	Belarus
359.	2021-04-09	06:31:27	52,24	27,28	1,20	Belarus
360.	2021-04-09	06:34:37	52,25	27,46	1,90	Belarus
361.	2021-04-09	09:00:04	49,09	33,74	1,50	Poltava region
362.	2021-04-09	09:21:16	49,60	25,95	1,50	Ternopil region
363.	2021-04-09	09:41:22	50,92	28,53	1,80	Zhytomyr region
364.	2021-04-09	10:00:13	48,38	33,32	1,70	Kirovohrad region
365.	2021-04-09	14:08:30	50,27	27,36	1,70	Khmelnitskyi region
366.	2021-04-09	15:29:28	50,75	29,33	2,00	Zhytomyr region
367.	2021-04-10	08:05:50	50,17	29,83	1,10	Kyiv region
368.	2021-04-12	09:00:55	48,22	28,35	1,20	Moldova
369.	2021-04-12	09:10:27	49,24	28,60	0,80	Vinnitsia region
370.	2021-04-12	10:32:17	51,27	26,98	1,70	Rivne region
371.	2021-04-12	10:40:07	50,93	28,71	1,80	Zhytomyr region
372.	2021-04-12	11:06:49	50,56	27,69	1,40	Zhytomyr region
373.	2021-04-12	13:51:26	50,85	28,17	1,70	Zhytomyr region
374.	2021-04-13	08:25:36	50,75	29,31	1,80	Zhytomyr region
375.	2021-04-13	10:05:13	50,91	28,37	1,80	Zhytomyr region
376.	2021-04-13	12:00:06	49,30	28,47	1,50	Vinnitsia region
377.	2021-04-14	07:41:11	49,05	33,64	1,70	Poltava region
378.	2021-04-14	09:00:13	48,92	33,65	1,70	Poltava region
379.	2021-04-14	10:56:20	51,11	27,74	1,20	Zhytomyr region
380.	2021-04-14	11:02:35	49,10	31,54	1,50	Cherkasy region
381.	2021-04-14	11:09:55	49,67	30,40	1,20	Kyiv region
382.	2021-04-14	11:48:14	51,09	28,71	1,40	Zhytomyr region
383.	2021-04-15	08:59:38	47,65	33,22	1,80	Dnipropetrovsk region
384.	2021-04-15	09:29:54	50,90	28,35	1,80	Zhytomyr region
385.	2021-04-15	10:30:53	50,92	28,54	1,60	Zhytomyr region
386.	2021-04-15	11:21:03	48,58	31,26	1,90	Kirovohrad region
387.	2021-04-15	11:34:59	50,16	29,94	1,60	Kyiv region
388.	2021-04-15	12:03:15	49,29	28,48	1,50	Vinnitsia region
389.	2021-04-15	13:07:43	51,55	27,75	1,40	Belarus
390.	2021-04-15	14:29:28	51,24	26,05	1,70	Rivne region
391.	2021-04-16	06:15:26	52,26	27,51	1,20	Belarus
392.	2021-04-16	06:19:06	52,25	27,44	1,30	Belarus

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

393.	2021-04-16	08:00:14	47,82	33,31	2,10	Dnipropetrovsk region
394.	2021-04-16	09:09:43	49,66	30,36	1,30	Kyiv region
395.	2021-04-16	09:12:07	51,03	28,71	1,70	Zhytomyr region
396.	2021-04-16	09:51:03	51,30	26,93	1,50	Rivne region
397.	2021-04-16	10:00:26	48,33	33,31	1,60	Kirovohrad region
398.	2021-04-16	10:19:42	49,67	30,46	1,20	Kyiv region
399.	2021-04-16	10:37:52	51,34	27,23	1,80	Rivne region
400.	2021-04-16	10:49:13	49,07	28,29	1,60	Vinnytsia region
401.	2021-04-16	10:56:03	50,56	27,64	1,30	Zhytomyr region
402.	2021-04-16	10:59:19	50,73	28,85	1,00	Zhytomyr region
403.	2021-04-16	11:15:18	51,31	27,08	1,90	Rivne region
404.	2021-04-16	11:55:20	50,75	29,34	1,90	Zhytomyr region
405.	2021-04-16	13:10:51	50,30	28,46	1,00	Zhytomyr region
406.	2021-04-17	10:25:26	50,20	28,33	1,30	Zhytomyr region
407.	2021-04-17	10:52:15	49,50	30,55	1,40	Kyiv region
408.	2021-04-17	12:39:35	50,87	28,20	1,20	Zhytomyr region
409.	2021-04-17	15:31:45	50,70	28,82	1,10	Zhytomyr region
410.	2021-04-18	07:15:30	50,71	28,83	1,10	Zhytomyr region
411.	2021-04-19	08:40:48	49,60	25,87	1,70	Ternopil region
412.	2021-04-19	09:35:37	51,26	26,97	1,60	Rivne region
413.	2021-04-19	10:34:11	50,93	28,67	1,60	Zhytomyr region
414.	2021-04-19	12:52:14	50,21	29,87	1,40	Kyiv region
415.	2021-04-19	14:38:26	49,78	29,86	1,30	Kyiv region
416.	2021-04-20	07:05:23	48,48	29,65	1,30	Vinnytsia region
417.	2021-04-20	07:57:28	50,14	27,49	1,50	Khmelnyskyi region
418.	2021-04-20	08:59:52	49,09	33,70	1,60	Poltava region
419.	2021-04-20	09:14:24	49,30	28,49	1,30	Vinnytsia region
420.	2021-04-20	09:15:04	49,31	28,48	1,30	Vinnytsia region
421.	2021-04-20	09:18:38	50,14	30,00	1,20	Kyiv region
422.	2021-04-20	09:47:41	47,99	27,38	1,80	Moldova
423.	2021-04-20	10:04:56	51,30	27,04	1,70	Rivne region
424.	2021-04-20	10:49:35	49,19	28,39	1,60	Vinnytsia region
425.	2021-04-20	11:22:00	48,22	31,42	1,70	Kirovohrad region
426.	2021-04-20	13:14:16	50,75	29,31	1,80	Zhytomyr region
427.	2021-04-21	07:33:50	47,85	31,24	2,20	Mykolayiv region
428.	2021-04-21	09:00:22	48,16	33,52	1,70	Dnipropetrovsk region
429.	2021-04-21	09:11:15	49,47	28,24	1,10	Vinnytsia region
430.	2021-04-21	09:12:02	49,52	28,14	1,20	Vinnytsia region
431.	2021-04-21	09:14:41	51,31	27,08	1,50	Rivne region
432.	2021-04-21	10:11:40	48,86	28,99	1,70	Vinnytsia region
433.	2021-04-21	10:21:31	51,41	28,86	1,90	Zhytomyr region
434.	2021-04-21	11:01:33	49,75	27,30	1,60	Khmelnyskyi region
435.	2021-04-22	08:01:52	49,46	28,40	1,50	Vinnytsia region
436.	2021-04-22	08:49:34	51,26	26,90	1,60	Rivne region
437.	2021-04-22	08:59:34	47,67	33,26	1,80	Dnipropetrovsk region
438.	2021-04-22	10:00:37	47,97	33,33	1,50	Dnipropetrovsk region
439.	2021-04-22	10:20:22	49,66	30,42	1,20	Kyiv region
440.	2021-04-22	10:34:41	51,23	26,93	1,70	Rivne region
441.	2021-04-22	12:00:33	48,14	33,48	1,80	Dnipropetrovsk region
442.	2021-04-22	12:17:52	50,15	27,72	1,70	Zhytomyr region
443.	2021-04-22	14:07:36	50,14	29,97	1,00	Kyiv region
444.	2021-04-23	06:12:26	52,25	27,51	1,60	Belarus
445.	2021-04-23	06:12:42	52,23	27,49	1,70	Belarus
446.	2021-04-23	09:03:42	50,75	29,34	1,20	Zhytomyr region
447.	2021-04-23	09:59:21	50,95	28,55	1,40	Zhytomyr region
448.	2021-04-23	10:00:02	48,39	33,34	1,70	Kirovograd region
449.	2021-04-23	10:26:32	51,29	27,03	1,50	Rivne region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

450.	2021-04-23	10:47:43	50,88	28,37	1,30	Zhytomyr region
451.	2021-04-23	12:50:47	50,31	27,40	1,20	Zhytomyr region
452.	2021-04-24	07:52:11	48,21	30,03	2,00	Kirovohrad region
453.	2021-04-24	08:36:55	48,23	28,29	1,90	Moldova
454.	2021-04-24	08:46:30	47,66	31,19	2,10	Mykolayiv region
455.	2021-04-24	10:43:58	50,93	28,53	2,00	Zhytomyr region
456.	2021-04-26	11:27:54	49,70	30,48	1,20	Kyiv region
457.	2021-04-26	11:39:48	49,86	27,22	0,70	Khmelnyskyi region
458.	2021-04-26	11:41:01	49,72	27,18	0,80	Khmelnyskyi region
459.	2021-04-26	11:58:50	49,66	30,62	1,00	Kyiv region
460.	2021-04-27	07:38:57	50,20	27,50	1,50	Khmelnyskyi region
461.	2021-04-27	09:32:56	50,12	29,97	1,20	Kyiv region
462.	2021-04-27	11:08:48	49,82	30,02	1,70	Kyiv region
463.	2021-04-27	11:55:30	49,33	28,43	1,70	Vinnytsia region
464.	2021-04-28	05:20:05	49,66	30,33	1,10	Kyiv region
465.	2021-04-28	09:00:05	49,07	33,57	1,70	Poltava region
466.	2021-04-28	09:10:51	49,34	28,50	1,10	Vinnytsia region
467.	2021-04-28	09:13:12	49,35	28,39	1,20	Vinnytsia region
468.	2021-04-28	09:33:16	51,33	26,93	1,40	Rivne region
469.	2021-04-28	10:35:35	50,22	29,93	1,20	Kyiv region
470.	2021-04-28	11:28:35	49,67	30,61	1,20	Kyiv region
471.	2021-04-28	11:48:20	49,77	27,28	1,30	Khmelnyskyi region
472.	2021-04-28	11:52:53	49,47	27,46	1,50	Khmelnyskyi region
473.	2021-04-28	12:04:58	49,78	27,29	1,30	Khmelnyskyi region
474.	2021-04-29	06:41:12	50,70	28,83	1,00	Zhytomyr region
475.	2021-04-29	09:00:04	47,68	33,25	2,20	Dnipropetrovsk region
476.	2021-04-29	09:14:10	49,46	28,36	1,20	Vinnytsia region
477.	2021-04-29	09:24:06	48,32	31,58	1,60	Kirovohrad region
478.	2021-04-29	10:00:02	47,83	33,31	2,50	Dnipropetrovsk region
479.	2021-04-29	10:01:25	48,30	33,31	2,30	Kirovohrad region
480.	2021-04-29	10:20:22	50,92	28,64	1,40	Zhytomyr region
481.	2021-04-29	10:48:10	49,48	28,35	1,50	Vinnytsia region
482.	2021-04-29	10:49:18	48,85	29,04	1,20	Vinnytsia region
483.	2021-04-29	11:00:57	49,10	28,24	1,60	Vinnytsia region
484.	2021-04-29	11:14:59	50,75	29,31	1,40	Zhytomyr region
485.	2021-04-29	11:37:21	49,75	27,29	1,30	Khmelnyskyi region
486.	2021-04-29	11:52:13	49,75	27,30	1,20	Khmelnyskyi region
487.	2021-04-29	14:08:36	51,01	28,62	1,50	Zhytomyr region
488.	2021-04-30	06:09:06	50,69	28,72	1,00	Zhytomyr region
489.	2021-04-30	06:48:11	50,75	29,34	1,40	Zhytomyr region
490.	2021-04-30	06:49:11	52,18	27,43	1,80	Belarus
491.	2021-04-30	07:38:08	50,18	27,53	1,40	Khmelnyskyi region
492.	2021-04-30	08:00:05	47,67	33,21	3,00	Dnipropetrovsk region
493.	2021-04-30	08:14:19	49,65	30,47	1,80	Kyiv region
494.	2021-04-30	09:00:05	51,08	28,70	1,70	Zhytomyr region
495.	2021-04-30	09:07:49	49,99	28,43	1,40	Zhytomyr region
496.	2021-04-30	10:00:24	48,44	33,40	2,50	Kirovohrad region
497.	2021-04-30	10:10:30	49,76	30,09	1,40	Kyiv region
498.	2021-04-30	10:42:45	51,32	27,03	1,40	Rivne region
499.	2021-04-30	12:35:05	50,14	29,95	1,00	Kyiv region
500.	2021-04-30	14:00:19	50,75	29,31	1,40	Zhytomyr region
501.	2021-05-05	09:00:27	47,72	33,16	1,80	Dnipropetrovsk region
502.	2021-05-05	09:26:48	49,75	27,35	1,40	Khmelnyskyi region
503.	2021-05-05	13:56:42	50,75	29,31	1,50	Zhytomyr region
504.	2021-05-05	14:09:22	49,69	30,42	1,40	Kyiv region
505.	2021-05-06	08:11:20	50,75	29,32	1,90	Zhytomyr region
506.	2021-05-06	08:35:19	49,52	28,44	1,90	Vinnytsia region

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

507.	2021-05-06	08:59:51	47,87	33,37	2,10	Dnipropetrovsk region
508.	2021-05-06	09:15:46	51,08	28,70	1,50	Zhytomyr region
509.	2021-05-06	09:20:18	50,92	28,37	2,00	Zhytomyr region
510.	2021-05-06	10:01:45	51,01	32,18	1,40	Chernihiv region
511.	2021-05-06	10:44:35	49,69	30,39	1,10	Kyiv region
512.	2021-05-06	11:17:04	49,06	33,61	2,00	Poltava region
513.	2021-05-06	11:36:23	51,28	27,04	2,00	Rivne region
514.	2021-05-06	11:43:18	51,32	27,12	1,80	Rivne region
515.	2021-05-07	06:45:54	52,25	27,47	1,40	Belarus
516.	2021-05-07	06:48:04	52,26	27,47	1,30	Belarus
517.	2021-05-07	06:49:07	52,26	27,45	1,80	Belarus
518.	2021-05-07	08:51:40	51,33	26,96	1,60	Rivne region
519.	2021-05-07	10:01:00	47,85	33,37	2,10	Dnipropetrovsk region
520.	2021-05-07	10:29:38	50,71	28,70	1,20	Zhytomyr region
521.	2021-05-07	10:36:15	49,07	28,32	1,80	Vinnitsia region
522.	2021-05-07	10:58:27	50,55	27,63	1,60	Zhytomyr region
523.	2021-05-07	11:37:16	50,16	29,93	1,20	Kyiv region
524.	2021-05-08	09:35:36	51,54	27,80	1,60	Belarus
525.	2021-05-10	06:23:17	50,71	28,84	1,00	Zhytomyr region
526.	2021-05-10	08:57:14	49,34	28,74	1,00	Vinnitsia region
527.	2021-05-10	11:22:36	50,92	28,54	1,90	Zhytomyr region
528.	2021-05-11	08:44:24	51,31	26,99	1,60	Rivne region
529.	2021-05-11	08:59:57	49,04	33,64	1,60	Poltava region
530.	2021-05-11	09:04:05	49,62	30,48	1,10	Kyiv region
531.	2021-05-11	09:34:47	49,63	25,65	1,30	Ternopil region
532.	2021-05-12	07:50:31	50,28	28,51	1,10	Zhytomyr region
533.	2021-05-12	09:00:07	47,87	33,20	1,70	Dnipropetrovsk region
534.	2021-05-12	09:08:14	50,93	29,67	1,30	Zhytomyr region
535.	2021-05-12	10:05:03	51,09	28,70	1,20	Zhytomyr region
536.	2021-05-12	13:40:44	50,91	28,56	1,40	Zhytomyr region
537.	2021-05-13	08:59:59	47,77	33,30	2,10	Dnipropetrovsk region
538.	2021-05-13	09:03:35	49,09	33,68	2,00	Poltava region
539.	2021-05-13	09:17:39	49,12	28,30	1,80	Vinnitsia region
540.	2021-05-13	09:19:17	51,21	26,93	1,50	Rivne region
541.	2021-05-13	09:21:55	51,22	26,03	1,80	Rivne region
542.	2021-05-13	09:59:58	48,29	33,26	2,30	Kirovohrad region
543.	2021-05-13	10:17:00	51,32	27,25	1,70	Rivne region
544.	2021-05-13	10:32:55	50,90	28,35	1,80	Zhytomyr region
545.	2021-05-14	06:22:17	52,22	27,40	1,60	Belarus
546.	2021-05-14	08:00:13	47,64	33,26	2,10	Dnipropetrovsk region
547.	2021-05-14	08:03:29	48,31	29,88	2,00	Kirovohrad region
548.	2021-05-14	10:00:30	48,33	33,34	2,10	Kirovohrad region
549.	2021-05-14	10:21:45	51,34	26,94	1,80	Rivne region
550.	2021-05-14	10:38:47	51,28	27,12	1,60	Rivne region
551.	2021-05-14	10:43:31	51,53	27,74	1,00	Belarus
552.	2021-05-14	10:53:42	50,57	27,65	1,20	Zhytomyr region
553.	2021-05-14	11:04:46	51,35	26,90	1,70	Rivne region
554.	2021-05-14	11:43:27	51,26	27,00	1,80	Rivne region
555.	2021-05-14	12:37:50	50,22	29,96	1,60	Kyiv region
556.	2021-05-14	12:44:56	50,74	29,29	1,90	Zhytomyr region
557.	2021-05-14	12:53:38	49,18	28,23	1,70	Vinnitsia region
558.	2021-05-15	09:06:28	48,18	28,33	1,60	Moldova
559.	2021-05-15	09:55:05	50,86	28,16	1,80	Zhytomyr region
560.	2021-05-17	08:14:56	50,76	29,35	1,60	Zhytomyr region
561.	2021-05-17	09:44:35	51,31	26,89	1,80	Rivne region
562.	2021-05-17	10:38:17	50,71	28,89	1,10	Zhytomyr region
563.	2021-05-17	10:51:27	48,90	26,25	1,40	Khmelnyskyi region



UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

564.	2021-05-17	11:23:55	49,65	30,41	1,50	Kyiv region
565.	2021-05-17	12:07:20	49,68	30,40	1,50	Kyiv region
566.	2021-05-17	12:27:00	50,17	27,48	1,60	Khmelnyskyi region
567.	2021-05-17	12:47:21	50,18	29,95	1,50	Kyiv region
568.	2021-05-18	09:20:48	50,95	28,69	1,80	Zhytomyr region
569.	2021-05-18	09:24:57	50,55	27,66	0,70	Zhytomyr region
570.	2021-05-18	09:31:34	48,75	26,60	1,40	Khmelnyskyi region
571.	2021-05-18	09:44:27	49,16	33,65	2,20	Poltava region
572.	2021-05-18	09:58:02	48,31	29,88	1,80	Kirovohrad region
573.	2021-05-18	10:02:21	50,90	28,37	1,90	Zhytomyr region
574.	2021-05-18	13:21:12	52,83	27,80	2,00	Belarus
575.	2021-05-18	14:05:16	51,24	26,09	1,90	Rivne region
576.	2021-05-19	08:17:46	49,16	25,04	2,00	Ternopil region
577.	2021-05-19	09:00:19	48,19	33,50	2,20	Dnipropetrovsk region
578.	2021-05-19	11:03:33	49,75	27,33	1,40	Khmelnyskyi region
579.	2021-05-19	11:17:56	51,04	28,70	1,70	Zhytomyr region
580.	2021-05-19	11:31:50	50,85	28,19	1,70	Zhytomyr region
581.	2021-05-19	11:48:56	49,78	29,81	1,40	Kyiv region
582.	2021-05-19	13:24:17	50,75	29,32	1,60	Zhytomyr region
583.	2021-05-19	16:04:09	50,17	29,99	1,30	Kyiv region
584.	2021-05-19	17:50:31	50,69	28,84	1,00	Zhytomyr region
585.	2021-05-20	08:01:19	50,76	29,32	1,90	Zhytomyr region
586.	2021-05-20	08:45:57	51,41	28,83	1,80	Zhytomyr region
587.	2021-05-20	09:00:09	47,81	33,40	2,10	Dnipropetrovsk region
588.	2021-05-20	09:09:28	51,09	28,68	1,30	Zhytomyr region
589.	2021-05-20	09:28:14	50,23	27,21	1,60	Khmelnyskyi region
590.	2021-05-20	10:07:27	51,29	27,03	1,20	Rivne region
591.	2021-05-20	10:24:29	50,92	28,59	1,40	Zhytomyr region
592.	2021-05-20	11:20:07	50,13	27,50	1,20	Khmelnyskyi region
593.	2021-05-20	12:00:06	49,29	28,52	1,90	Vinnysia region
594.	2021-05-21	06:46:27	52,23	27,48	1,50	Belarus
595.	2021-05-21	06:46:40	52,22	27,36	1,60	Belarus
596.	2021-05-21	08:45:45	51,26	28,59	1,80	Zhytomyr region
597.	2021-05-21	08:59:10	49,32	28,70	1,90	Vinnysia region
598.	2021-05-21	09:36:02	49,66	30,42	1,60	Kyiv region
599.	2021-05-21	09:51:44	51,25	26,97	1,80	Rivne region
600.	2021-05-21	10:00:54	48,42	33,37	1,80	Kirovohrad region
601.	2021-05-21	11:00:21	47,73	34,05	2,00	Dnipropetrovsk region
602.	2021-05-21	12:54:11	50,21	30,00	1,30	Kyiv region
603.	2021-05-21	15:14:05	50,51	28,61	1,50	Zhytomyr region
604.	2021-05-24	09:31:35	49,08	28,26	1,60	Vinnysia region
605.	2021-05-24	11:20:47	49,48	28,25	1,60	Vinnysia region
606.	2021-05-24	12:35:36	50,95	28,61	1,80	Zhytomyr region
607.	2021-05-24	12:42:59	50,95	28,70	1,50	Zhytomyr region
608.	2021-05-24	14:04:32	50,93	28,66	1,90	Zhytomyr region
609.	2021-05-25	08:50:34	51,21	26,95	1,80	Rivne region
610.	2021-05-25	09:30:46	49,98	28,48	1,40	Zhytomyr region
611.	2021-05-25	09:35:55	49,28	28,52	1,20	Vinnysia region
612.	2021-05-25	09:52:14	49,69	30,43	1,60	Kyiv region
613.	2021-05-25	10:27:15	50,76	29,36	1,90	Zhytomyr region
614.	2021-05-25	11:34:24	50,20	29,80	1,50	Kyiv region
615.	2021-05-25	14:16:29	50,71	28,83	1,00	Zhytomyr region
616.	2021-05-26	06:55:18	48,93	33,60	1,20	Poltava region
617.	2021-05-26	09:00:03	49,13	33,59	1,80	Poltava region
618.	2021-05-26	11:32:24	50,69	28,69	1,00	Zhytomyr region
619.	2021-05-26	13:58:13	49,66	30,39	1,20	Kyiv region
620.	2021-05-27	07:00:03	48,76	26,65	1,80	Khmelnyskyi region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

621.	2021-05-27	09:00:08	48,09	33,57	2,60	Dnipropetrovsk region
622.	2021-05-27	09:27:22	50,75	29,32	1,40	Zhytomyr region
623.	2021-05-27	10:00:22	48,00	33,43	2,20	Dnipropetrovsk region
624.	2021-05-27	10:08:37	51,09	28,66	2,30	Zhytomyr region
625.	2021-05-27	11:16:54	49,07	28,32	1,90	Vinnitsia region
626.	2021-05-27	12:00:24	47,85	35,05	2,80	Zaporizhzhia region
627.	2021-05-27	12:45:07	49,54	30,89	1,30	Kyiv region
628.	2021-05-27	13:46:36	50,15	29,99	1,00	Kyiv region
629.	2021-05-27	14:36:18	48,84	29,12	1,40	Vinnitsia region
630.	2021-05-27	15:23:55	50,88	28,19	1,80	Zhytomyr region
631.	2021-05-28	06:34:03	52,20	27,46	1,70	Belarus
632.	2021-05-28	06:38:07	50,20	27,52	1,40	Khmelnyskyi region
633.	2021-05-28	07:07:42	50,70	28,77	1,10	Zhytomyr region
634.	2021-05-28	07:59:56	47,98	33,35	2,00	Dnipropetrovsk region
635.	2021-05-28	08:29:44	49,49	26,03	1,30	Ternopil region
636.	2021-05-28	08:57:40	51,34	26,86	1,40	Rivne region
637.	2021-05-28	09:45:41	50,30	28,47	1,30	Zhytomyr region
638.	2021-05-28	10:00:02	48,38	33,29	1,80	Kirovohrad region
639.	2021-05-28	10:33:26	48,33	31,58	1,60	Kirovohrad region
640.	2021-05-28	11:00:57	49,80	27,30	1,60	Khmelnyskyi region
641.	2021-05-28	11:16:01	49,21	31,51	1,10	Cherkasy region
642.	2021-05-28	13:57:47	49,48	28,39	1,60	Vinnitsia region
643.	2021-05-28	14:16:26	51,52	27,80	1,40	Belarus
644.	2021-05-29	06:57:38	48,28	30,55	2,00	Kirovohrad region
645.	2021-05-31	09:03:19	49,71	27,38	1,60	Khmelnyskyi region
646.	2021-05-31	09:27:47	51,35	26,95	1,70	Rivne region
647.	2021-05-31	09:30:14	49,35	28,63	1,60	Vinnitsia region
648.	2021-05-31	10:08:55	50,56	27,63	1,50	Zhytomyr region
649.	2021-05-31	10:13:02	51,23	27,00	1,00	Rivne region
650.	2021-05-31	10:58:30	49,64	30,54	1,40	Kyiv region
651.	2021-05-31	11:11:57	49,47	27,61	1,90	Khmelnyskyi region
652.	2021-05-31	12:49:12	50,28	28,48	1,60	Zhytomyr region
653.	2021-06-01	09:13:22	48,32	29,88	1,60	Kirovohrad region
654.	2021-06-01	09:25:58	51,33	27,23	1,10	Rivne region
655.	2021-06-01	09:26:58	50,75	29,33	1,80	Zhytomyr region
656.	2021-06-01	10:01:06	48,31	33,30	2,20	Kirovohrad region
657.	2021-06-01	10:34:03	48,89	30,73	1,40	Cherkasy region
658.	2021-06-01	11:41:26	50,92	28,54	1,60	Zhytomyr region
659.	2021-06-01	12:00:52	49,68	30,57	1,40	Kyiv region
660.	2021-06-02	07:41:07	50,73	29,31	1,40	Zhytomyr region
661.	2021-06-02	10:11:43	51,41	28,87	1,30	Zhytomyr region
662.	2021-06-02	11:29:55	50,19	29,94	1,30	Kyiv region
663.	2021-06-02	13:52:04	51,28	26,99	1,60	Rivne region
664.	2021-06-03	05:32:27	51,20	26,93	1,80	Rivne region
665.	2021-06-03	06:39:17	52,22	27,44	1,90	Belarus
666.	2021-06-03	06:39:32	52,19	27,31	1,90	Belarus
667.	2021-06-03	06:41:43	52,26	27,46	1,70	Belarus
668.	2021-06-03	09:00:07	47,99	33,40	2,30	Dnipropetrovsk region
669.	2021-06-03	09:40:30	48,19	28,30	1,50	Moldova
670.	2021-06-03	10:00:46	48,36	33,46	2,10	Kirovohrad region
671.	2021-06-03	10:13:02	49,70	30,38	1,90	Kyiv region
672.	2021-06-03	11:59:58	49,31	28,34	1,90	Vinnitsia region
673.	2021-06-03	17:39:15	50,96	28,56	1,90	Zhytomyr region
674.	2021-06-04	07:00:00	48,70	26,63	1,50	Khmelnyskyi region
675.	2021-06-04	07:57:07	50,75	29,30	1,90	Zhytomyr region
676.	2021-06-04	10:00:02	48,28	33,24	1,80	Kirovohrad region
677.	2021-06-04	10:45:52	51,34	27,12	1,20	Rivne region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

678.	2021-06-04	11:37:55	50,14	27,48	1,50	Khmelnyskyi region
679.	2021-06-04	11:48:02	50,57	27,69	1,50	Zhytomyr region
680.	2021-06-04	11:55:49	50,94	28,56	1,70	Zhytomyr region
681.	2021-06-04	12:08:03	49,32	28,46	1,50	Vynnytsia region
682.	2021-06-04	13:37:48	50,16	29,96	1,40	Kyiv region
683.	2021-06-05	08:03:31	49,52	28,43	1,70	Vynnytsia region
684.	2021-06-05	10:13:21	50,21	30,01	1,50	Kyiv region
685.	2021-06-05	11:27:20	50,93	28,67	1,60	Zhytomyr region
686.	2021-06-06	16:07:48	50,70	28,80	1,00	Zhytomyr region
687.	2021-06-07	09:10:30	51,34	26,98	1,50	Rivne region
688.	2021-06-07	09:47:53	50,74	29,36	1,40	Zhytomyr region
689.	2021-06-07	10:12:11	49,66	30,51	1,80	Kyiv region
690.	2021-06-07	11:59:27	50,90	28,14	1,60	Zhytomyr region
691.	2021-06-07	13:04:38	50,75	29,31	1,40	Zhytomyr region
692.	2021-06-08	07:00:06	48,76	26,64	1,50	Khmelnyskyi region
693.	2021-06-08	09:49:56	51,03	28,66	1,60	Zhytomyr region
694.	2021-06-08	10:07:04	51,34	26,91	1,60	Rivne region
695.	2021-06-08	10:07:11	49,19	31,45	2,00	Cherkasy region
696.	2021-06-08	10:36:24	50,92	28,35	1,50	Zhytomyr region
697.	2021-06-08	11:25:53	48,90	29,04	1,50	Vynnytsia region
698.	2021-06-08	13:07:48	50,75	29,31	1,80	Zhytomyr region
699.	2021-06-08	15:12:36	49,70	30,50	1,60	Kyiv region
700.	2021-06-09	07:22:21	48,67	26,09	1,30	Ternopil region
701.	2021-06-09	07:53:02	47,87	27,35	1,70	Moldova
702.	2021-06-09	08:02:51	49,51	28,46	1,70	Vynnytsia region
703.	2021-06-09	09:00:03	49,05	33,75	2,30	Poltava region
704.	2021-06-09	09:00:07	49,07	33,67	2,20	Poltava region
705.	2021-06-09	09:41:10	48,18	27,10	1,60	Moldova
706.	2021-06-09	09:51:39	48,85	30,32	1,60	Cherkasy region
707.	2021-06-09	11:01:31	49,78	27,32	1,80	Khmelnyskyi region
708.	2021-06-09	11:52:57	51,29	27,22	1,60	Rivne region
709.	2021-06-09	12:30:34	49,62	25,73	1,60	Ternopil region
710.	2021-06-09	13:11:15	48,47	29,62	1,50	Vynnytsia region
711.	2021-06-10	08:36:41	50,74	29,31	1,90	Zhytomyr region
712.	2021-06-10	09:00:05	47,82	33,33	2,00	Dnipropetrovsk region
713.	2021-06-10	09:19:46	51,31	27,10	1,60	Rivne region
714.	2021-06-10	10:00:02	48,31	33,25	1,80	Kirovohrad region
715.	2021-06-10	11:17:27	50,94	28,55	1,70	Zhytomyr region
716.	2021-06-10	12:00:39	47,82	33,33	2,40	Dnipropetrovsk region
717.	2021-06-10	12:39:34	49,68	30,48	1,80	Kyiv region
718.	2021-06-10	14:00:18	50,07	29,53	1,60	Zhytomyr region
719.	2021-06-11	06:46:07	52,23	27,42	1,90	Belarus
720.	2021-06-11	08:02:27	47,67	33,20	2,60	Dnipropetrovsk region
721.	2021-06-11	08:03:00	50,15	27,50	1,80	Khmelnyskyi region
722.	2021-06-11	09:33:47	49,23	28,38	2,10	Vynnytsia region
723.	2021-06-11	09:41:19	49,50	30,83	1,60	Kyiv region
724.	2021-06-11	09:53:56	50,91	28,60	2,00	Zhytomyr region
725.	2021-06-11	10:02:09	49,81	27,33	1,60	Khmelnyskyi region
726.	2021-06-11	10:02:14	50,14	27,75	1,00	Zhytomyr region
727.	2021-06-11	10:27:21	51,35	26,88	1,80	Rivne region
728.	2021-06-11	11:49:02	50,54	27,65	1,60	Zhytomyr region
729.	2021-06-11	12:29:37	50,94	28,67	1,40	Zhytomyr region
730.	2021-06-11	13:26:31	49,11	30,92	1,30	Cherkasy region
731.	2021-06-12	14:39:45	48,91	30,80	1,20	Cherkasy region
732.	2021-06-14	08:55:49	51,31	27,16	1,80	Rivne region
733.	2021-06-14	10:08:58	50,75	29,31	1,70	Zhytomyr region
734.	2021-06-14	10:15:48	49,68	30,41	1,00	Kyiv region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

735.	2021-06-14	13:22:18	50,75	29,35	1,60	Zhytomyr region
736.	2021-06-15	07:50:25	48,23	33,54	2,10	Kirovohrad region
737.	2021-06-15	08:54:30	49,67	30,36	1,80	Kyiv region
738.	2021-06-15	08:59:58	49,02	33,71	2,00	Poltava region
739.	2021-06-15	09:16:43	51,33	26,91	1,00	Rivne region
740.	2021-06-15	09:56:38	50,91	28,42	1,00	Zhytomyr region
741.	2021-06-15	10:29:55	49,10	28,29	1,70	Vinnitsia region
742.	2021-06-15	11:02:26	50,90	28,59	1,50	Zhytomyr region
743.	2021-06-15	15:43:27	51,48	27,82	1,50	Belarus
744.	2021-06-15	16:55:18	49,77	29,84	1,20	Kyiv region
745.	2021-06-16	08:49:01	49,52	25,80	1,30	Ternopil region
746.	2021-06-16	09:01:00	49,46	28,30	1,60	Vinnitsia region
747.	2021-06-16	09:13:08	50,19	27,06	1,50	Khmelnitskyi region
748.	2021-06-16	09:59:43	48,83	28,99	1,50	Vinnitsia region
749.	2021-06-16	10:03:44	48,93	30,94	1,60	Cherkasy region
750.	2021-06-16	10:23:16	51,32	27,04	1,50	Rivne region
751.	2021-06-16	11:00:24	49,80	27,22	1,30	Khmelnitskyi region
752.	2021-06-16	13:05:31	50,94	28,69	1,50	Zhytomyr region
753.	2021-06-16	15:05:00	49,65	30,36	1,50	Kyiv region
754.	2021-06-16	16:12:59	50,94	28,54	1,50	Zhytomyr region
755.	2021-06-17	07:19:51	48,85	26,08	1,40	Ternopil region
756.	2021-06-17	07:22:48	48,74	26,01	1,50	Ternopil region
757.	2021-06-17	07:58:40	50,75	29,33	1,50	Zhytomyr region
758.	2021-06-17	08:39:27	50,75	28,55	1,00	Zhytomyr region
759.	2021-06-17	09:00:04	47,83	33,40	2,00	Dnipropetrovsk region
760.	2021-06-17	10:01:13	48,35	33,31	1,70	Kirovohrad region
761.	2021-06-17	10:04:00	48,09	33,60	1,90	Dnipropetrovsk region
762.	2021-06-17	10:25:14	50,89	28,37	1,50	Zhytomyr region
763.	2021-06-17	10:50:41	49,10	28,26	1,90	Vinnitsia region
764.	2021-06-17	11:14:21	50,74	29,34	2,00	Zhytomyr region
765.	2021-06-17	12:40:51	50,24	30,01	1,40	Kyiv region,
766.	2021-06-18	06:33:18	52,22	27,63	1,70	Belarus
767.	2021-06-18	07:18:32	49,68	30,42	1,30	Kyiv region
768.	2021-06-18	08:53:12	49,61	25,72	1,20	Ternopil region
769.	2021-06-18	09:06:07	51,29	26,87	1,60	Rivne region
770.	2021-06-18	09:09:48	50,27	27,38	1,30	Khmelnitskyi region
771.	2021-06-18	09:12:04	49,49	25,95	1,70	Ternopil region
772.	2021-06-18	09:43:53	50,64	27,65	1,80	Zhytomyr region
773.	2021-06-18	10:00:47	48,33	33,29	1,70	Kirovohrad region
774.	2021-06-18	10:10:12	51,22	26,06	1,60	Rivne region
775.	2021-06-18	10:30:28	51,30	26,87	1,50	Rivne region
776.	2021-06-18	11:23:51	49,45	28,37	1,40	Vinnitsia region
777.	2021-06-18	11:39:39	50,93	28,56	1,70	Zhytomyr region
778.	2021-06-18	13:34:45	49,13	28,26	1,40	Vinnitsia region
779.	2021-06-19	10:18:39	50,13	29,94	1,40	Kyiv region
780.	2021-06-19	10:53:12	51,04	28,72	1,60	Zhytomyr region
781.	2021-06-21	10:34:27	55,31	30,41	2,30	Belarus
782.	2021-06-22	09:40:16	51,27	28,61	2,00	Zhytomyr region
783.	2021-06-22	10:22:24	51,18	26,95	2,20	Rivne region
784.	2021-06-22	10:30:07	49,52	28,15	1,70	Vinnitsia region
785.	2021-06-22	11:05:50	51,32	26,86	1,80	Rivne region
786.	2021-06-22	11:13:20	51,09	28,71	1,60	Zhytomyr region
787.	2021-06-22	12:09:38	50,91	28,54	1,80	Zhytomyr region
788.	2021-06-22	12:30:29	50,75	29,32	1,50	Zhytomyr region
789.	2021-06-22	13:57:55	49,77	29,84	1,60	Kyiv region
790.	2021-06-23	08:43:48	49,70	30,45	1,50	Kyiv region
791.	2021-06-23	09:00:05	49,03	33,67	1,70	Poltava region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

792.	2021-06-23	10:19:09	49,65	30,69	1,20	Kyiv region
793.	2021-06-23	10:29:04	49,69	30,41	1,50	Kyiv region
794.	2021-06-23	11:29:37	49,48	27,36	1,60	Khmelnyskyi region
795.	2021-06-23	14:08:31	49,80	27,25	1,40	Khmelnyskyi region
796.	2021-06-24	08:24:10	48,40	32,40	1,60	Kirovohrad region
797.	2021-06-24	09:00:12	48,10	33,67	1,90	Dnipropetrovsk region
798.	2021-06-24	09:17:07	48,33	29,88	1,70	Kirovohrad region
799.	2021-06-24	09:38:32	51,29	26,87	1,90	Rivne region
800.	2021-06-24	09:57:38	49,32	28,43	1,80	Vinnysia region
801.	2021-06-24	10:00:09	47,63	33,16	1,90	Dnipropetrovsk region
802.	2021-06-24	10:27:09	51,40	28,84	1,90	Zhytomyr region
803.	2021-06-24	11:42:51	50,30	27,41	1,90	Khmelnyskyi region
804.	2021-06-24	12:01:04	47,94	33,64	1,80	Dnipropetrovsk region
805.	2021-06-25	06:54:23	52,24	27,37	1,70	Belarus
806.	2021-06-25	06:57:16	52,23	27,51	1,90	Belarus
807.	2021-06-25	08:00:26	47,98	33,36	2,10	Dnipropetrovsk region
808.	2021-06-25	08:11:29	51,36	28,94	1,70	Zhytomyr region
809.	2021-06-25	08:36:18	49,54	28,42	1,50	Vinnysia region
810.	2021-06-25	08:41:53	51,40	28,89	1,50	Zhytomyr region
811.	2021-06-25	09:23:49	51,25	26,00	1,90	Rivne region
812.	2021-06-25	09:30:06	48,24	30,00	1,60	Kirovohrad region
813.	2021-06-25	09:45:58	50,75	29,32	1,70	Zhytomyr region
814.	2021-06-25	09:55:01	51,22	27,00	1,40	Rivne region
815.	2021-06-25	09:58:04	50,71	28,78	1,00	Zhytomyr region
816.	2021-06-25	10:00:04	48,35	33,37	2,20	Kirovohrad region
817.	2021-06-25	10:29:02	50,54	27,83	1,80	Zhytomyr region
818.	2021-06-25	10:48:59	51,34	27,14	1,80	Rivne region
819.	2021-06-25	10:49:58	51,20	27,03	1,00	Rivne region
820.	2021-06-25	11:03:22	48,56	31,33	1,50	Kirovohrad region
821.	2021-06-26	13:03:58	50,71	28,75	1,10	Zhytomyr region
822.	2021-06-26	13:25:16	50,69	28,79	1,20	Zhytomyr region
823.	2021-06-27	07:06:30	50,72	28,82	1,00	Zhytomyr region
824.	2021-06-27	14:29:27	47,91	35,01	1,50	Zaporizhzhia region
825.	2021-06-29	08:46:37	50,16	27,49	1,70	Khmelnyskyi region
826.	2021-06-29	09:01:10	49,01	33,67	2,90	Poltava region
827.	2021-06-29	09:03:01	50,85	28,25	1,90	Zhytomyr region
828.	2021-06-29	09:26:07	50,74	29,33	1,60	Zhytomyr region
829.	2021-06-29	09:57:00	51,08	28,69	1,80	Zhytomyr region
830.	2021-06-29	13:53:26	49,69	27,38	1,00	Khmelnyskyi region
831.	2021-06-29	14:23:15	49,73	27,23	1,10	Khmelnyskyi region
832.	2021-06-29	14:28:12	50,77	29,38	1,70	Zhytomyr region
833.	2021-06-29	15:44:38	49,77	29,93	1,10	Kyiv region
834.	2021-06-30	07:00:01	48,73	26,66	1,60	Khmelnyskyi region
835.	2021-06-30	08:05:09	48,16	27,11	1,70	Moldova
836.	2021-06-30	08:54:46	49,98	28,50	1,70	Zhytomyr region
837.	2021-06-30	09:00:27	48,30	33,39	2,00	Dnipropetrovsk region
838.	2021-06-30	09:34:45	50,75	29,32	1,80	Zhytomyr region
839.	2021-06-30	09:44:39	48,84	26,58	1,50	Khmelnyskyi region
840.	2021-06-30	09:51:47	50,03	28,65	1,80	Zhytomyr region
841.	2021-06-30	10:10:02	49,76	27,29	1,60	Khmelnyskyi region
842.	2021-06-30	10:25:43	48,82	28,99	1,60	Vinnysia region
843.	2021-06-30	11:23:01	50,94	26,24	1,60	Rivne region
844.	2021-06-30	12:18:51	48,64	31,24	1,70	Kirovohrad region
845.	2021-06-30	13:40:29	50,91	28,55	1,70	Zhytomyr region
846.	2021-06-30	15:48:43	50,70	28,84	1,00	Zhytomyr region
847.	2021.07.01	08:38:38	48,22	28,25	1,70	Moldova
848.	2021.07.01	09:00:07	48,06	33,65	2,40	Dnipropetrovsk region

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

849.	2021.07.01	09:02:26	49.30	31.91	1.30	Cherkasy region
850.	2021.07.01	10:00:54	48.10	33.62	2.40	Dnipropetrovsk region
851.	2021.07.01	10:28:26	50.14	29.97	1.20	Kyiv region
852.	2021.07.01	11:10:09	50.12	29.90	1.50	Kyiv region
853.	2021.07.01	11:40:56	48.85	26.16	1.70	Ternopil region
854.	2021.07.01	12:12:41	50.60	27.68	1.40	Zhytomyr region
855.	2021.07.01	13:07:13	49.68	30.62	1.40	Kyiv region
856.	2021.07.02	06:43:32	52.25	27.35	1.70	Belarus
857.	2021.07.02	06:43:50	52.26	27.49	1.90	Belarus
858.	2021.07.02	08:13:34	49.13	28.29	1.90	Vinnitsia region
859.	2021.07.02	09:22:56	48.87	30.76	1.60	Cherkasy region
860.	2021.07.02	10:35:07	51.32	27.00	1.50	Rivne region
861.	2021.07.02	10:37:10	50.29	28.44	1.30	Zhytomyr region
862.	2021.07.02	10:53:14	48.06	30.71	1.70	Mykolayiv region
863.	2021.07.02	11:16:19	49.69	30.44	1.20	Kyiv region
864.	2021.07.02	13:25:25	50.92	28.69	1.70	Zhytomyr region
865.	2021.07.03	03:33:46	48.55	31.76	1.90	Kirovohrad region
866.	2021.07.03	08:13:51	50.75	29.33	2.00	Zhytomyr region
867.	2021.07.03	08:58:43	49.55	30.96	1.50	Kyiv region
868.	2021.07.03	09:36:15	48.51	31.50	1.80	Kirovohrad region
869.	2021.07.03	15:17:43	50.18	29.96	1.60	Kyiv region
870.	2021.07.05	08:29:19	48.78	32.03	2.00	Kirovohrad region
871.	2021.07.05	08:33:12	50.74	29.29	1.50	Zhytomyr region
872.	2021.07.05	09:00:36	49.48	28.25	1.70	Vinnitsia region
873.	2021.07.05	09:12:28	50.28	27.33	1.90	Khmelnyskyi region
874.	2021.07.05	10:04:37	51.28	26.83	1.80	Rivne region
875.	2021.07.05	10:04:58	51.31	27.09	1.70	Rivne region
876.	2021.07.05	10:14:14	49.69	30.46	0.90	Kyiv region
877.	2021.07.05	10:19:00	50.30	28.45	1.40	Zhytomyr region
878.	2021.07.06	09:14:45	49.65	30.36	1.50	Kyiv region
879.	2021.07.06	09:35:56	50.57	27.65	1.50	Zhytomyr region
880.	2021.07.06	11:36:35	50.90	28.55	1.40	Zhytomyr region
881.	2021.07.06	12:17:27	49.66	30.85	1.30	Kyiv region
882.	2021.07.06	13:12:03	50.94	28.68	1.50	Zhytomyr region
883.	2021.07.06	13:29:36	49.43	27.48	1.60	Khmelnyskyi region
884.	2021.07.07	08:02:39	48.29	28.31	1.60	Vinnitsia region
885.	2021.07.07	09:00:04	49.05	33.67	2.60	Poltava region
886.	2021.07.07	09:36:05	51.31	28.86	1.80	Rivne region
887.	2021.07.07	09:50:23	50.75	28.34	1.60	Zhytomyr region
888.	2021.07.07	10:19:54	51.30	27.23	1.60	Rivne region
889.	2021.07.07	11:50:17	50.56	28.58	1.30	Zhytomyr region
890.	2021.07.07	13:03:26	51.06	28.70	1.70	Zhytomyr region
891.	2021.07.08	06:32:28	48.15	30.80	1.30	Mykolayiv region
892.	2021.07.08	08:57:55	49.70	27.28	1.60	Khmelnyskyi region
893.	2021.07.08	09:00:09	47.84	33.30	2.40	Dnipropetrovsk region
894.	2021.07.08	10:00:05	47.99	33.40	2.10	Dnipropetrovsk region
895.	2021.07.08	10:02:36	50.88	28.35	1.50	Zhytomyr region
896.	2021.07.08	11:45:25	50.88	28.17	1.60	Zhytomyr region
897.	2021.07.08	12:00:58	49.35	28.48	1.40	Vinnitsia region
898.	2021.07.09	06:31:07	52.20	27.31	1.70	Belarus
899.	2021.07.09	07:37:16	49.11	33.28	1.90	Kirovohrad region
900.	2021.07.09	07:53:42	47.90	27.30	2.00	Moldova
901.	2021.07.09	08:01:04	47.73	33.32	2.20	Dnipropetrovsk region
902.	2021.07.09	09:12:09	49.73	25.49	1.50	Ternopil region
903.	2021.07.09	10:00:18	48.32	33.47	1.80	Dnipropetrovsk region
904.	2021.07.09	10:06:55	49.48	28.14	1.70	Vinnitsia region
905.	2021.07.09	10:10:36	51.29	26.94	1.60	Rivne region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

906.	2021.07.09	10:12:35	50.74	29.32	1.90	Zhytomyr region
907.	2021.07.09	10:55:34	49.76	29.96	1.30	Kyiv region
908.	2021.07.09	11:56:28	49.69	30.42	1.20	Kyiv region
909.	2021.07.09	13:14:30	49.30	28.70	1.80	Vinnitsia region
910.	2021.07.09	14:14:14	50.15	29.97	1.40	Kyiv region
911.	2021.07.10	11:13:51	50.95	28.58	1.60	Zhytomyr region
912.	2021.07.12	06:30:45	50.16	27.56	1.60	Khmelnyskyi region
913.	2021.07.12	11:07:40	49.31	28.19	1.50	Vinnitsia region
914.	2021.07.12	12:17:27	49.49	28.40	1.20	Vinnitsia region
915.	2021.07.12	12:38:01	50.18	27.10	1.60	Khmelnyskyi region
916.	2021.07.12	19:29:17	51.31	26.00	1.10	Rivne region
917.	2021.07.13	08:44:40	50.74	29.30	1.50	Zhytomyr region
918.	2021.07.13	08:44:46	50.73	29.31	1.50	Zhytomyr region
919.	2021.07.13	09:00:05	49.02	33.59	1.90	Poltava region
920.	2021.07.13	10:33:17	50.90	28.38	1.80	Zhytomyr region
921.	2021.07.13	10:43:24	49.78	28.53	1.90	Vinnitsia region
922.	2021.07.13	14:33:36	49.76	29.76	1.20	Kyiv region
923.	2021.07.14	06:04:59	48.76	26.61	1.70	Khmelnyskyi region
924.	2021.07.14	07:50:48	51.31	26.95	1.50	Rivne region
925.	2021.07.14	07:51:05	51.30	26.97	1.60	Rivne region
926.	2021.07.14	08:30:25	49.84	25.48	1.40	Ternopil region
927.	2021.07.14	08:35:43	50.94	28.53	1.60	Zhytomyr region
928.	2021.07.14	09:00:23	47.95	33.41	1.90	Dnipropetrovsk region
929.	2021.07.14	09:13:06	48.90	30.69	1.50	Cherkasy region
930.	2021.07.14	09:44:28	49.03	28.29	1.90	Vinnitsia region
931.	2021.07.14	12:11:26	49.67	30.36	1.50	Kyiv region
932.	2021.07.14	12:59:01	50.71	28.77	1.40	Zhytomyr region
933.	2021.07.15	09:00:04	48.49	35.15	2.00	Dnipropetrovsk region
934.	2021.07.15	09:44:10	49.55	30.98	1.10	Kyiv region
935.	2021.07.15	09:56:09	50.75	29.32	2.10	Zhytomyr region
936.	2021.07.15	11:26:07	51.28	26.96	1.80	Rivne region
937.	2021.07.15	11:55:40	49.77	29.80	1.00	Kyiv region
938.	2021.07.15	12:00:37	48.10	33.34	1.90	Dnipropetrovsk region
939.	2021.07.15	13:46:57	50.71	28.79	1.20	Zhytomyr region
940.	2021.07.16	06:13:08	50.29	27.38	1.80	Khmelnyskyi region
941.	2021.07.16	07:35:49	48.80	26.67	1.30	Khmelnyskyi region
942.	2021.07.16	08:34:30	52.22	27.44	2.10	Belarus
943.	2021.07.16	08:34:37	52.22	27.32	2.00	Belarus
944.	2021.07.16	09:06:06	50.94	28.68	1.80	Zhytomyr region
945.	2021.07.16	09:29:43	51.22	26.86	1.80	Rivne region
946.	2021.07.16	09:51:01	50.91	28.38	1.30	Zhytomyr region
947.	2021.07.16	10:00:39	48.31	33.31	1.90	Kirovohrad region
948.	2021.07.16	10:43:07	49.68	30.48	1.40	Kyiv region
949.	2021.07.16	10:47:41	50.94	28.58	1.80	Zhytomyr region
950.	2021.07.16	12:04:38	49.84	30.09	1.10	Kyiv region
951.	2021.07.16	13:51:17	50.21	30.01	1.30	Kyiv region
952.	2021.07.19	10:34:29	51.28	27.17	1.60	Rivne region
953.	2021.07.19	10:39:10	51.17	26.94	1.70	Rivne region
954.	2021.07.19	11:43:22	50.97	28.58	1.60	Zhytomyr region
955.	2021.07.19	12:41:42	50.77	29.38	1.60	Zhytomyr region
956.	2021.07.20	05:59:59	48.81	26.63	1.30	Khmelnyskyi region
957.	2021.07.20	06:29:51	50.49	28.96	1.00	Zhytomyr region
958.	2021.07.20	08:03:36	49.66	30.48	1.40	Kyiv region
959.	2021.07.20	08:44:57	49.13	28.23	1.30	Vinnitsia region
960.	2021.07.20	08:53:33	51.07	28.72	1.20	Zhytomyr region
961.	2021.07.20	09:10:06	50.86	28.17	2.00	Zhytomyr region
962.	2021.07.20	11:51:28	50.20	27.66	1.70	Zhytomyr region

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

963.	2021.07.20	23:31:10	48.67	22.42	1.20	Transcarpathian region
964.	2021.07.21	05:49:25	51.25	27.01	1.40	Rivne region
965.	2021.07.21	09:00:05	49.00	33.53	1.60	Poltava region
966.	2021.07.21	09:21:05	50.23	29.84	1.60	Kyiv region
967.	2021.07.21	10:04:53	50.94	28.69	1.80	Zhytomyr region
968.	2021.07.22	09:00:07	48.09	33.54	2.50	Dnipropetrovsk region
969.	2021.07.22	10:00:21	48.35	33.29	2.40	Kirovohrad region
970.	2021.07.22	10:14:58	51.30	27.18	1.30	Rivne region
971.	2021.07.22	10:39:52	50.89	28.43	1.50	Zhytomyr region
972.	2021.07.22	11:07:45	49.53	30.94	1.20	Kyiv region
973.	2021.07.22	11:42:05	48.86	29.15	1.60	Vinnitsia region
974.	2021.07.22	11:48:30	49.11	28.32	1.50	Vinnitsia region
975.	2021.07.22	13:47:21	51.33	27.79	1.60	Belarus
976.	2021.07.23	06:17:59	52.19	27.39	1.90	Belarus
977.	2021.07.23	06:20:30	52.25	27.50	2.10	Belarus
978.	2021.07.23	07:59:52	47.71	33.24	2.00	Dnipropetrovsk region
979.	2021.07.23	08:04:57	51.24	26.95	1.60	Rivne region
980.	2021.07.23	08:32:05	48.75	26.70	1.40	Khmelnyskyi region
981.	2021.07.23	08:51:31	50.18	29.99	1.20	Kyiv region
982.	2021.07.23	08:59:31	50.75	29.30	1.80	Zhytomyr region
983.	2021.07.23	09:28:33	49.67	27.28	1.60	Khmelnyskyi region
984.	2021.07.23	10:00:03	47.80	34.90	1.50	Zaporizhzhia region
985.	2021.07.23	10:36:32	49.14	28.30	1.60	Vinnitsia region
986.	2021.07.23	11:33:44	50.87	28.34	1.70	Zhytomyr region
987.	2021.07.23	12:16:52	49.66	30.51	1.30	Kyiv region
988.	2021.07.23	12:23:08	49.29	28.57	1.50	Vinnitsia region
989.	2021.07.23	14:24:57	51.27	28.62	1.30	Zhytomyr region
990.	2021.07.23	14:32:14	51.31	26.91	1.60	Rivne region
991.	2021.07.24	11:07:17	50.16	29.95	1.10	Kyiv region
992.	2021.07.24	13:09:25	50.58	27.78	1.70	Zhytomyr region
993.	2021.07.26	09:19:12	50.75	29.34	1.60	Zhytomyr region
994.	2021.07.26	10:17:55	49.65	25.76	1.30	Ternopil region
995.	2021.07.26	11:06:47	49.67	30.63	1.00	Kyiv region
996.	2021.07.26	11:14:37	51.14	28.70	1.40	Zhytomyr region
997.	2021.07.26	11:19:51	50.58	27.60	1.50	Zhytomyr region
998.	2021.07.26	13:59:02	51.03	28.67	1.40	Zhytomyr region
999.	2021.07.27	08:38:17	50.75	29.34	1.80	Zhytomyr region
1000.	2021.07.27	08:59:55	49.54	28.45	1.60	Vinnitsia region
1001.	2021.07.27	09:32:32	50.23	29.99	1.30	Kyiv region
1002.	2021.07.27	10:10:21	50.38	28.92	1.70	Zhytomyr region
1003.	2021.07.27	13:07:40	50.70	28.82	1.10	Zhytomyr region
1004.	2021.07.27	13:23:24	49.77	29.83	1.20	Kyiv region
1005.	2021.07.27	15:18:26	50.69	28.84	1.40	Zhytomyr region
1006.	2021.07.28	07:15:58	49.42	26.03	1.60	Ternopil region
1007.	2021.07.28	08:51:26	50.11	27.55	1.50	Khmelnyskyi region
1008.	2021.07.28	09:00:24	48.15	33.57	2.20	Dnipropetrovsk region
1009.	2021.07.28	09:09:43	49.74	25.24	1.40	Ternopil region
1010.	2021.07.28	09:26:18	48.14	33.52	1.70	Dnipropetrovsk region
1011.	2021.07.28	10:30:49	50.90	28.61	1.70	Zhytomyr region
1012.	2021.07.28	10:39:23	49.68	30.65	1.40	Kyiv region
1013.	2021.07.28	11:12:17	51.26	26.92	1.50	Rivne region
1014.	2021.07.28	15:53:12	50.67	28.81	1.20	Zhytomyr region
1015.	2021.07.29	08:59:59	48.33	33.58	1.90	Dnipropetrovsk region
1016.	2021.07.29	09:40:59	51.25	26.94	1.60	Rivne region
1017.	2021.07.29	10:05:05	49.09	28.26	1.40	Vinnitsia region
1018.	2021.07.29	10:26:59	48.79	30.33	1.50	Cherkasy region
1019.	2021.07.29	10:51:42	50.74	29.35	1.70	Zhytomyr region



UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

1020.	2021.07.29	11:53:32	51.37	26.87	1.40	Rivne region
1021.	2021.07.30	06:34:26	52.24	27.48	2.10	Belarus
1022.	2021.07.30	08:14:53	51.21	25.97	2.10	Rivne region
1023.	2021.07.30	09:00:21	47.64	33.30	2.20	Dnipropetrovsk region
1024.	2021.07.30	10:00:39	48.24	33.21	1.80	Kirovohrad region
1025.	2021.07.30	10:14:40	51.27	27.01	2.10	Rivne region
1026.	2021.07.30	10:59:21	49.75	27.45	1.00	Khmelnyskyi region
1027.	2021.07.30	11:08:24	50.90	28.61	1.70	Zhytomyr region
1028.	2021.07.30	13:24:37	50.98	28.50	1.50	Zhytomyr region
1029.	2021.07.31	07:13:35	47.85	31.24	2.20	Mykolayiv region
1030.	2021.07.31	13:00:04	50.23	30.02	1.20	Kyiv region
1031.	2021-08-01	11:34:04	49,69	30,43	1,20	Kyiv region
1032.	2021-08-02	09:51:49	51,32	27,15	1,70	Rivne region
1033.	2021-08-02	10:19:31	51,11	28,72	1,60	Zhytomyr region
1034.	2021-08-02	10:43:46	50,22	27,14	1,30	Khmelnyskyi region
1035.	2021-08-02	10:54:43	50,29	28,49	1,30	Zhytomyr region
1036.	2021-08-02	10:55:18	50,76	29,36	2,00	Zhytomyr region
1037.	2021-08-02	15:21:52	50,18	30,68	1,20	Kyiv region
1038.	2021-08-03	09:00:03	49,01	33,68	2,00	Poltava region
1039.	2021-08-03	09:02:53	49,52	28,46	1,30	Vinnysia region
1040.	2021-08-03	09:25:59	48,33	29,88	1,60	Kirovohrad region
1041.	2021-08-03	09:51:41	50,51	28,63	1,30	Zhytomyr region
1042.	2021-08-03	10:29:28	49,61	25,88	1,30	Ternopil region
1043.	2021-08-03	10:51:32	50,93	28,55	1,60	Zhytomyr region
1044.	2021-08-03	11:59:24	49,30	28,47	1,70	Vinnysia region
1045.	2021-08-04	06:30:11	48,78	29,87	1,40	Cherkasy region
1046.	2021-08-04	09:17:10	51,36	26,93	1,50	Rivne region
1047.	2021-08-04	13:01:36	51,04	28,70	1,40	Zhytomyr region
1048.	2021-08-04	15:51:41	49,65	30,71	1,20	Kyiv region
1049.	2021-08-05	06:58:36	49,16	31,52	1,80	Cherkasy region
1050.	2021-08-05	07:59:44	49,75	29,91	1,50	Kyiv region
1051.	2021-08-05	09:00:17	47,92	33,43	2,00	Dnipropetrovsk region
1052.	2021-08-05	11:02:45	50,91	28,59	1,50	Zhytomyr region
1053.	2021-08-05	11:18:16	50,94	28,67	1,80	Zhytomyr region
1054.	2021-08-05	12:00:47	47,99	33,35	1,60	Dnipropetrovsk region
1055.	2021-08-05	12:24:18	48,89	26,27	1,20	Khmelnyskyi region
1056.	2021-08-05	12:32:09	48,94	29,07	1,40	Vinnysia region
1057.	2021-08-05	13:18:25	49,48	28,41	1,50	Vinnysia region
1058.	2021-08-05	14:04:04	50,15	29,85	1,50	Kyiv region
1059.	2021-08-06	06:30:05	52,21	27,37	1,50	Belarus
1060.	2021-08-06	07:48:56	50,76	29,32	2,10	Zhytomyr region
1061.	2021-08-06	07:59:46	48,15	33,73	2,00	Dnipropetrovsk region
1062.	2021-08-06	09:28:11	49,10	31,50	1,40	Cherkasy region
1063.	2021-08-06	09:39:30	51,25	26,95	1,10	Rivne region
1064.	2021-08-06	10:00:01	48,21	33,50	1,90	Dnipropetrovsk region
1065.	2021-08-06	10:21:17	49,66	30,40	1,00	Kyiv region
1066.	2021-08-06	11:10:49	50,87	28,35	1,40	Zhytomyr region
1067.	2021-08-06	11:52:37	49,66	30,40	1,20	Kyiv region
1068.	2021-08-06	12:12:39	50,15	29,94	1,40	Kyiv region
1069.	2021-08-06	12:29:55	49,10	28,24	1,30	Vinnysia region
1070.	2021-08-06	12:42:54	50,57	27,65	1,90	Zhytomyr region
1071.	2021-08-07	10:39:45	50,85	28,18	1,40	Zhytomyr region
1072.	2021-08-07	14:22:14	50,70	28,82	1,20	Zhytomyr region
1073.	2021-08-09	08:27:45	49,67	25,63	1,60	Ternopil region
1074.	2021-08-09	09:03:09	51,21	26,93	2,00	Rivne region
1075.	2021-08-09	09:24:56	51,26	26,96	1,50	Rivne region
1076.	2021-08-09	10:03:32	48,89	30,71	1,40	Cherkasy region

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

1077.	2021-08-09	10:24:48	50,14	27,54	1,50	Khmelnyskyi region
1078.	2021-08-09	12:26:33	48,35	31,58	1,40	Kirovohrad region
1079.	2021-08-10	08:16:36	51,22	26,94	1,90	Rivne region
1080.	2021-08-10	08:59:56	49,04	33,75	1,50	Poltava region
1081.	2021-08-10	09:55:18	49,75	29,70	1,20	Kyiv region
1082.	2021-08-10	13:28:27	49,68	30,45	1,60	Kyiv region
1083.	2021-08-10	14:21:13	50,96	28,71	1,80	Zhytomyr region
1084.	2021-08-11	06:13:55	51,27	27,00	1,60	Rivne region
1085.	2021-08-11	07:53:12	49,64	25,73	1,40	Ternopil region
1086.	2021-08-11	08:03:27	49,49	28,39	1,50	Vinnitsia region
1087.	2021-08-11	09:00:05	47,96	33,31	1,80	Dnipropetrovsk region
1088.	2021-08-11	09:19:22	51,25	26,91	1,20	Rivne region
1089.	2021-08-11	09:48:59	50,89	28,31	1,80	Zhytomyr region
1090.	2021-08-11	11:06:48	49,53	25,93	2,00	Ternopil region
1091.	2021-08-11	11:15:08	49,13	28,29	1,70	Vinnitsia region
1092.	2021-08-11	12:40:12	50,71	28,89	1,10	Zhytomyr region
1093.	2021-08-11	12:40:28	51,39	28,83	1,80	Zhytomyr region
1094.	2021-08-11	15:16:04	51,10	28,68	1,90	Zhytomyr region
1095.	2021-08-12	07:43:57	50,71	28,85	1,00	Zhytomyr region
1096.	2021-08-12	08:42:39	48,86	26,17	1,30	Ternopil region
1097.	2021-08-12	09:00:04	47,81	33,27	1,70	Dnipropetrovsk region
1098.	2021-08-12	09:19:04	48,66	32,52	1,80	Kirovohrad region
1099.	2021-08-12	09:44:41	51,08	28,72	1,80	Zhytomyr region
1100.	2021-08-12	09:59:40	51,30	26,96	2,00	Rivne region
1101.	2021-08-12	10:03:19	50,29	27,41	2,20	Khmelnyskyi region
1102.	2021-08-12	12:06:55	49,40	27,39	1,60	Khmelnyskyi region
1103.	2021-08-12	13:11:38	51,03	28,69	1,80	Zhytomyr region
1104.	2021-08-13	06:38:46	52,25	27,42	1,40	Belarus
1105.	2021-08-13	06:39:01	52,23	27,34	1,40	Belarus
1106.	2021-08-13	07:50:07	50,00	28,53	1,20	Zhytomyr region
1107.	2021-08-13	09:13:16	50,92	28,60	1,80	Zhytomyr region
1108.	2021-08-13	09:47:37	51,32	26,94	1,60	Rivne region
1109.	2021-08-13	10:19:42	50,56	27,63	1,80	Zhytomyr region
1110.	2021-08-13	10:22:16	49,51	30,90	1,20	Kyiv region
1111.	2021-08-13	10:32:18	50,73	29,28	1,20	Zhytomyr region
1112.	2021-08-13	11:33:05	50,84	28,19	1,50	Zhytomyr region
1113.	2021-08-14	06:58:19	48,58	31,12	2,50	Kirovohrad region
1114.	2021-08-14	07:35:43	50,18	30,01	1,00	Kyiv region
1115.	2021-08-16	09:32:19	51,41	28,86	1,60	Zhytomyr region
1116.	2021-08-16	10:21:42	49,53	30,91	1,60	Kyiv region
1117.	2021-08-16	10:47:48	49,53	28,47	1,70	Vinnitsia region
1118.	2021-08-16	11:25:47	49,52	27,86	1,40	Vinnitsia region
1119.	2021-08-16	12:11:32	50,30	27,21	1,70	Rivne region
1120.	2021-08-16	13:04:26	50,70	28,73	1,50	Zhytomyr region
1121.	2021-08-16	13:15:51	50,51	27,63	1,60	Zhytomyr region
1122.	2021-08-16	13:42:38	50,94	28,59	1,50	Zhytomyr region
1123.	2021-08-16	14:17:34	48,52	32,19	1,90	Kirovohrad region
1124.	2021-08-16	15:57:18	50,95	28,67	1,70	Zhytomyr region
1125.	2021-08-17	09:00:04	49,03	33,62	1,50	Poltava region
1126.	2021-08-17	09:42:26	50,75	29,29	1,20	Zhytomyr region
1127.	2021-08-17	10:19:29	49,64	30,58	1,60	Kyiv region
1128.	2021-08-17	11:08:42	49,77	30,06	1,50	Kyiv region
1129.	2021-08-17	12:12:45	49,29	28,49	1,70	Vinnitsia region
1130.	2021-08-17	12:16:09	51,29	26,93	1,10	Rivne region
1131.	2021-08-17	12:17:35	50,94	28,68	1,40	Zhytomyr region
1132.	2021-08-18	06:19:00	48,00	29,87	1,50	Cherkasy region
1133.	2021-08-18	09:30:00	51,28	26,91	1,60	Rivne region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

1134.	2021-08-18	09:38:40	50,76	29,33	1,70	Zhytomyr region
1135.	2021-08-18	09:43:06	49,11	28,29	1,50	Vinnitsia region
1136.	2021-08-18	10:38:42	49,30	28,50	1,50	Vinnitsia region
1137.	2021-08-18	11:20:37	50,55	27,65	2,00	Zhytomyr region
1138.	2021-08-18	11:28:47	48,89	30,77	1,50	Cherkasy region
1139.	2021-08-18	12:18:05	50,93	28,55	1,50	Zhytomyr region
1140.	2021-08-18	12:23:45	49,12	28,31	1,60	Vinnitsia region
1141.	2021-08-18	16:23:19	50,69	28,85	1,00	Zhytomyr region
1142.	2021-08-19	07:55:19	50,15	27,54	1,70	Khmelnyskyi region
1143.	2021-08-19	09:00:01	48,30	33,33	2,10	Kirovohrad region
1144.	2021-08-19	10:00:26	48,31	33,32	2,50	Kirovohrad region
1145.	2021-08-19	11:58:25	49,29	28,48	1,50	Vinnitsia region
1146.	2021-08-19	12:27:02	49,68	30,65	1,60	Kyiv region
1147.	2021-08-19	12:28:38	50,15	29,97	1,20	Kyiv region
1148.	2021-08-19	12:58:27	50,76	29,36	1,50	Zhytomyr region
1149.	2021-08-19	13:04:15	50,13	27,74	1,60	Zhytomyr region
1150.	2021-08-20	06:41:03	52,22	27,43	1,90	Belarus
1151.	2021-08-20	07:59:59	47,68	33,20	1,70	Dnipropetrovsk region
1152.	2021-08-20	08:26:19	50,75	29,34	1,90	Zhytomyr region
1153.	2021-08-20	09:05:23	49,80	29,87	1,60	Kyiv region
1154.	2021-08-20	09:22:31	50,74	29,33	1,60	Zhytomyr region
1155.	2021-08-20	09:45:11	51,35	26,91	1,50	Rivne region
1156.	2021-08-20	10:04:50	51,30	27,09	1,70	Rivne region
1157.	2021-08-20	10:10:23	49,78	27,30	1,80	Khmelnyskyi region
1158.	2021-08-20	10:19:35	50,92	28,57	1,80	Zhytomyr region
1159.	2021-08-20	10:40:33	49,63	30,57	1,70	Kyiv region
1160.	2021-08-20	12:55:13	49,48	28,37	1,70	Vinnitsia region
1161.	2021-08-21	09:48:51	49,65	30,36	1,20	Kyiv region
1162.	2021-08-21	10:34:01	48,51	32,10	1,30	Kirovohrad region
1163.	2021-08-23	08:44:33	49,73	25,54	1,40	Ternopil region
1164.	2021-08-23	10:38:11	51,26	26,96	1,60	Rivne region
1165.	2021-08-23	14:15:57	50,72	28,65	1,00	Zhytomyr region
1166.	2021-08-23	14:35:18	50,70	28,84	1,10	Zhytomyr region
1167.	2021-08-23	15:12:13	51,03	28,67	1,70	Zhytomyr region
1168.	2021-08-25	08:36:55	50,75	29,31	1,60	Zhytomyr region
1169.	2021-08-25	09:00:10	49,53	28,44	1,50	Vinnitsia region
1170.	2021-08-25	10:58:32	51,28	26,99	1,80	Rivne region
1171.	2021-08-25	11:11:15	49,68	30,43	1,60	Kyiv region
1172.	2021-08-25	16:06:51	50,74	29,30	1,70	Zhytomyr region
1173.	2021-08-26	09:00:04	47,88	33,28	2,00	Dnipropetrovsk region
1174.	2021-08-26	09:13:27	48,20	32,03	1,60	Kirovohrad region
1175.	2021-08-26	09:36:50	49,59	25,81	1,50	Ternopil region
1176.	2021-08-26	09:43:43	50,19	30,04	1,20	Kyiv region
1177.	2021-08-26	09:59:57	49,09	33,68	1,70	Poltava region
1178.	2021-08-26	10:01:10	48,15	33,70	1,80	Poltava region
1179.	2021-08-26	10:06:13	49,13	26,22	1,50	Khmelnyskyi region
1180.	2021-08-26	10:30:34	48,88	26,55	1,30	Khmelnyskyi region
1181.	2021-08-26	11:06:45	50,93	28,55	1,90	Zhytomyr region
1182.	2021-08-26	12:00:00	47,92	33,28	1,70	Dnipropetrovsk region
1183.	2021-08-26	14:38:21	50,57	27,62	2,00	Zhytomyr region
1184.	2021-08-27	06:35:24	52,24	27,40	1,60	Belarus
1185.	2021-08-27	06:39:46	52,25	27,32	2,00	Belarus
1186.	2021-08-27	08:34:27	50,30	28,44	1,70	Zhytomyr region
1187.	2021-08-27	09:21:46	49,59	25,87	2,00	Ternopil region
1188.	2021-08-27	09:43:56	48,65	26,93	2,00	Khmelnyskyi region
1189.	2021-08-27	10:00:37	48,31	33,40	2,00	Kirovohrad region
1190.	2021-08-27	11:21:21	50,92	28,53	1,70	Zhytomyr region

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

1191.	2021-08-27	11:24:41	51,07	28,69	1,60	Zhytomyr region
1192.	2021-08-27	12:08:27	51,25	26,92	2,10	Rivne region
1193.	2021-08-27	12:39:59	49,66	30,41	1,80	Kyiv region
1194.	2021-08-27	16:30:21	51,50	27,80	1,90	Belarus
1195.	2021-08-27	16:40:50	50,13	29,94	1,70	Kyiv region
1196.	2021-08-28	07:20:39	52,26	27,47	1,90	Belarus
1197.	2021-08-28	08:20:46	51,55	27,78	1,80	Belarus
1198.	2021-08-28	09:12:37	51,57	27,78	1,40	Belarus
1199.	2021-08-29	06:43:31	47,87	31,21	1,90	Mykolayiv region
1200.	2021-08-29	07:26:19	49,76	29,40	1,50	Zhytomyr region
1201.	2021-08-30	07:13:32	50,50	28,94	1,00	Zhytomyr region
1202.	2021-08-30	08:28:19	50,00	28,51	1,00	Zhytomyr region
1203.	2021-08-30	08:38:46	48,87	29,11	1,50	Vinnytsia region
1204.	2021-08-30	11:42:20	48,86	28,92	1,80	Vinnytsia region
1205.	2021-08-30	11:57:26	50,92	28,53	1,40	Zhytomyr region
1206.	2021-08-30	12:59:56	50,21	27,21	1,50	Khmelnyskyi region
1207.	2021-08-30	13:44:32	49,71	30,49	1,60	Kyiv region
1208.	2021-08-30	14:22:44	49,57	30,87	1,00	Kyiv region
1209.	2021-08-30	14:32:44	50,75	29,32	1,90	Zhytomyr region
1210.	2021-08-31	08:13:20	50,50	28,60	1,40	Zhytomyr region
1211.	2021-08-31	09:00:04	49,08	33,75	1,90	Poltava region
1212.	2021-08-31	09:37:26	48,30	30,03	1,50	Kirovohrad region
1213.	2021-08-31	10:00:33	50,59	27,65	1,60	Zhytomyr region
1214.	2021-08-31	10:15:35	49,67	27,25	1,50	Khmelnyskyi region
1215.	2021-08-31	10:38:24	48,86	26,23	1,50	Khmelnyskyi region
1216.	2021-08-31	11:01:26	51,29	27,09	1,40	Rivne region
1217.	2021-08-31	11:54:32	51,34	27,01	1,50	Rivne region
1218.	2021-08-31	12:42:38	51,03	28,70	1,60	Zhytomyr region
1219.	2021-08-31	12:57:55	49,65	30,34	1,20	Kyiv region
1220.	2021-08-31	13:06:27	48,14	30,87	1,50	Mykolayiv region
1221.	2021-08-31	15:28:38	50,92	28,69	1,40	Zhytomyr region
1222.	2021-09-01	08:26:31	49,68	30,45	1,20	Kyiv region
1223.	2021-09-01	10:36:53	50,76	29,34	1,50	Zhytomyr region
1224.	2021-09-01	10:47:52	50,76	29,35	1,60	Zhytomyr region
1225.	2021-09-01	11:46:13	51,20	26,88	1,60	Rivne region
1226.	2021-09-01	12:03:14	51,11	28,71	1,60	Zhytomyr region
1227.	2021-09-02	06:00:00	48,82	26,65	1,60	Khmelnyskyi region
1228.	2021-09-02	09:00:36	50,91	28,59	1,70	Zhytomyr region
1229.	2021-09-02	09:47:59	48,94	30,73	1,00	Cherkasy region
1230.	2021-09-02	09:50:04	51,31	26,92	1,00	Rivne region
1231.	2021-09-02	10:00:30	49,74	27,32	1,50	Khmelnyskyi region
1232.	2021-09-02	11:09:30	50,98	30,72	1,00	Chernihiv region
1233.	2021-09-02	11:13:03	49,49	25,98	1,60	Ternopil region
1234.	2021-09-02	12:23:29	49,12	28,31	1,80	Vinnytsia region
1235.	2021-09-02	14:12:36	51,27	27,04	1,20	Rivne region
1236.	2021-09-03	06:17:44	52,24	27,47	2,00	Belarus
1237.	2021-09-03	07:59:59	47,71	33,31	2,10	Dnipropetrovsk region
1238.	2021-09-03	08:22:17	51,00	30,70	1,00	Chernihiv region
1239.	2021-09-03	08:44:57	50,71	28,84	1,00	Zhytomyr region
1240.	2021-09-03	09:09:11	51,27	26,95	1,60	Rivne region
1241.	2021-09-03	09:19:00	49,69	30,52	1,40	Kyiv region
1242.	2021-09-03	09:55:26	49,44	27,47	1,50	Khmelnyskyi region
1243.	2021-09-03	10:04:39	49,78	29,82	1,40	Kyiv region
1244.	2021-09-03	10:06:11	50,75	29,31	1,90	Zhytomyr region
1245.	2021-09-03	10:18:36	50,90	28,36	1,70	Zhytomyr region
1246.	2021-09-03	11:22:14	49,55	27,80	1,40	Khmelnyskyi region
1247.	2021-09-03	12:59:23	50,21	29,84	1,40	Kyiv region

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

1248.	2021-09-03	14:56:08	50,56	27,77	1,40	Zhytomyr region
1249.	2021-09-06	10:01:25	50,88	28,32	1,70	Zhytomyr region
1250.	2021-09-06	10:22:57	51,10	28,68	1,70	Zhytomyr region
1251.	2021-09-06	10:26:00	49,66	30,41	1,50	Kyiv region
1252.	2021-09-06	10:41:04	50,86	28,14	1,90	Zhytomyr region
1253.	2021-09-07	06:40:08	50,70	28,84	1,00	Zhytomyr region
1254.	2021-09-07	08:58:32	55,22	30,33	2,40	Belarus
1255.	2021-09-07	09:00:39	49,06	33,82	2,30	Poltava region
1256.	2021-09-07	10:47:45	50,55	27,66	1,60	Zhytomyr region
1257.	2021-09-07	14:07:11	50,75	29,34	1,90	Zhytomyr region
1258.	2021-09-08	08:34:08	50,70	28,76	1,00	Zhytomyr region
1259.	2021-09-08	09:00:26	47,99	33,48	1,80	Dnipropetrovsk region
1260.	2021-09-08	09:39:41	48,87	29,01	1,70	Vinnnytsia region
1261.	2021-09-08	10:29:57	49,36	28,43	1,50	Vinnnytsia region
1262.	2021-09-08	13:42:07	51,31	27,12	1,50	Rivne region
1263.	2021-09-09	08:44:09	50,31	28,44	1,60	Zhytomyr region
1264.	2021-09-09	09:00:04	48,20	33,49	2,10	Dnipropetrovsk region
1265.	2021-09-09	09:44:26	49,53	30,86	1,80	Kyiv region
1266.	2021-09-09	10:00:04	47,99	33,39	1,90	Dnipropetrovsk region
1267.	2021-09-09	10:03:24	47,97	33,43	2,10	Dnipropetrovsk region
1268.	2021-09-09	11:01:55	50,75	29,31	1,80	Zhytomyr region
1269.	2021-09-09	11:39:06	49,78	29,85	1,20	Kyiv region
1270.	2021-09-09	12:00:35	48,19	33,51	2,10	Dnipropetrovsk region
1271.	2021-09-09	13:43:06	50,24	28,25	1,40	Zhytomyr region
1272.	2021-09-09	14:32:16	50,93	28,55	1,60	Zhytomyr region
1273.	2021-09-10	07:12:54	52,27	27,41	2,00	Belarus
1274.	2021-09-10	07:14:13	52,22	27,42	1,20	Belarus
1275.	2021-09-10	08:00:38	50,14	27,52	1,80	Khmelnyskyi region
1276.	2021-09-10	08:58:42	50,19	29,90	1,10	Kyiv region
1277.	2021-09-10	09:22:08	51,23	26,95	1,30	Rivne region
1278.	2021-09-10	09:53:52	50,72	28,82	1,00	Zhytomyr region
1279.	2021-09-10	10:00:20	48,54	33,90	1,90	Dnipropetrovsk region
1280.	2021-09-10	12:00:41	49,32	28,43	1,80	Vinnnytsia region
1281.	2021-09-10	12:09:08	50,95	28,53	1,50	Zhytomyr region
1282.	2021-09-10	12:37:39	51,00	28,66	1,60	Zhytomyr region
1283.	2021-09-10	13:20:41	50,92	28,55	1,50	Zhytomyr region
1284.	2021-09-11	09:26:20	50,71	28,83	1,00	Zhytomyr region
1285.	2021-09-11	10:51:53	51,28	27,25	2,00	Rivne region
1286.	2021-09-11	11:04:57	50,23	30,02	1,70	Kyiv region
1287.	2021-09-11	12:07:29	49,68	30,50	1,40	Kyiv region
1288.	2021-09-11	14:09:32	47,19	34,89	2,00	Zaporizhzhia region
1289.	2021-09-11	15:22:41	50,70	28,82	1,10	Zhytomyr region
1290.	2021-09-13	08:58:43	49,67	30,44	1,30	Kyiv region
1291.	2021-09-13	09:42:21	50,74	29,32	1,90	Zhytomyr region
1292.	2021-09-13	10:47:36	50,26	28,60	1,90	Zhytomyr region
1293.	2021-09-13	10:55:08	49,66	30,43	1,40	Kyiv region
1294.	2021-09-13	12:32:59	51,03	28,65	1,70	Zhytomyr region
1295.	2021-09-14	08:33:39	49,65	25,71	1,40	Ternopil region
1296.	2021-09-14	09:00:02	49,04	33,60	2,10	Poltava region
1297.	2021-09-14	09:12:10	50,75	29,33	1,70	Zhytomyr region
1298.	2021-09-14	09:23:06	50,91	28,17	1,60	Zhytomyr region
1299.	2021-09-14	09:44:45	51,25	26,95	1,70	Rivne region
1300.	2021-09-14	09:46:08	51,26	26,96	1,20	Rivne region
1301.	2021-09-14	10:19:42	50,91	28,59	1,50	Zhytomyr region
1302.	2021-09-14	10:38:26	51,26	28,58	2,00	Zhytomyr region
1303.	2021-09-14	11:36:15	51,30	27,23	1,50	Rivne region
1304.	2021-09-14	12:21:14	49,53	30,87	1,30	Kyiv region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

1305.	2021-09-14	14:27:25	49,47	28,36	1,40	Vinnytsia region
1306.	2021-09-14	14:33:55	49,47	28,37	1,30	Vinnytsia region
1307.	2021-09-15	06:52:15	48,87	30,28	1,40	Cherkasy region
1308.	2021-09-15	09:52:44	51,29	26,85	1,70	Rivne region
1309.	2021-09-15	11:01:11	49,15	28,21	1,60	Vinnytsia region
1310.	2021-09-15	12:18:21	49,42	28,37	1,70	Vinnytsia region
1311.	2021-09-15	13:08:54	48,86	28,93	1,60	Vinnytsia region
1312.	2021-09-15	13:47:28	50,93	28,56	1,30	Zhytomyr region
1313.	2021-09-15	14:49:23	50,75	29,35	1,90	Zhytomyr region
1314.	2021-09-15	15:25:36	49,69	30,39	1,70	Kyiv region
1315.	2021-09-16	07:26:07	47,79	28,93	1,60	Moldova
1316.	2021-09-16	09:00:07	47,88	33,31	2,10	Dnipropetrovsk region
1317.	2021-09-16	09:13:54	49,13	25,05	1,50	Ternopil region
1318.	2021-09-16	09:28:19	51,48	26,86	1,50	Rivne region
1319.	2021-09-16	09:48:48	50,94	28,55	1,50	Zhytomyr region
1320.	2021-09-16	10:00:19	48,15	33,49	1,90	Dnipropetrovsk region
1321.	2021-09-16	10:09:02	49,59	30,60	1,50	Kyiv region
1322.	2021-09-16	10:12:19	51,30	26,99	1,70	Rivne region
1323.	2021-09-16	11:26:20	48,66	26,14	1,50	Ternopil region
1324.	2021-09-16	11:40:52	49,25	24,73	1,90	Ivano-Frankivsk region
1325.	2021-09-16	12:16:50	48,89	30,70	1,50	Cherkasy region
1326.	2021-09-16	13:21:51	50,17	29,95	1,50	Kyiv region
1327.	2021-09-17	06:45:09	52,27	27,35	1,80	Belarus
1328.	2021-09-17	07:47:05	51,07	30,70	0,70	Chernihiv region
1329.	2021-09-17	08:00:50	48,10	33,58	1,90	Dnipropetrovsk region
1330.	2021-09-17	10:00:29	49,53	27,76	1,50	Khmelnyskyi region
1331.	2021-09-17	10:14:25	50,88	28,37	1,60	Zhytomyr region
1332.	2021-09-17	10:37:55	49,66	30,42	1,50	Kyiv region
1333.	2021-09-17	13:29:14	50,95	28,60	1,50	Zhytomyr region
1334.	2021-09-17	13:31:03	49,35	28,70	1,60	Vinnytsia region
1335.	2021-09-17	15:38:00	51,24	25,98	1,80	Rivne region
1336.	2021-09-17	16:52:24	49,75	28,54	1,40	Vinnytsia region
1337.	2021-09-17	16:53:31	49,77	28,59	1,40	Vinnytsia region
1338.	2021-09-20	09:11:07	50,90	28,58	1,60	Zhytomyr region
1339.	2021-09-20	10:42:06	49,61	30,57	1,60	Kyiv region
1340.	2021-09-20	10:53:07	50,74	29,30	1,80	Zhytomyr region
1341.	2021-09-21	09:00:12	49,10	33,67	2,00	Poltava region
1342.	2021-09-21	09:39:01	51,29	26,93	1,70	Rivne region
1343.	2021-09-21	10:36:39	50,95	28,68	1,70	Zhytomyr region
1344.	2021-09-21	11:57:44	48,82	28,15	1,40	Vinnytsia region
1345.	2021-09-21	13:13:13	51,09	30,78	1,00	Chernihiv region
1346.	2021-09-21	13:34:00	50,67	28,86	1,40	Zhytomyr region
1347.	2021-09-21	14:02:08	50,54	27,63	1,70	Zhytomyr region
1348.	2021-09-22	07:13:10	50,70	28,83	1,00	Zhytomyr region
1349.	2021-09-22	08:35:11	50,75	29,32	1,60	Zhytomyr region
1350.	2021-09-22	08:59:08	51,25	26,96	2,00	Rivne region
1351.	2021-09-22	09:00:08	51,19	26,98	2,00	Rivne region
1352.	2021-09-22	09:25:57	50,34	28,40	1,00	Zhytomyr region
1353.	2021-09-22	09:49:34	50,21	27,19	1,90	Khmelnyskyi region
1354.	2021-09-22	10:21:24	49,11	28,31	1,70	Vinnytsia region
1355.	2021-09-22	11:22:05	50,15	27,56	1,60	Khmelnyskyi region
1356.	2021-09-22	13:15:09	51,03	28,66	1,80	Zhytomyr region
1357.	2021-09-22	14:24:40	50,91	28,57	1,70	Zhytomyr region
1358.	2021-09-22	15:42:51	50,22	29,98	1,20	Kyiv region
1359.	2021-09-23	09:00:04	47,81	33,27	2,00	Dnipropetrovsk region
1360.	2021-09-23	10:01:10	47,65	33,20	1,80	Dnipropetrovsk region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

1361.	2021-09-23	10:01:48	47,80	33,27	1,80	Dnipropetrovsk region
1362.	2021-09-23	10:17:21	50,93	28,55	1,40	Zhytomyr region
1363.	2021-09-23	10:37:45	49,65	30,50	1,60	Kyiv region
1364.	2021-09-23	10:48:12	50,74	29,31	1,30	Zhytomyr region
1365.	2021-09-23	11:33:03	49,28	28,44	1,70	Vinnitsia region
1366.	2021-09-23	11:44:46	50,25	27,39	1,50	Khmelnyskyi region
1367.	2021-09-23	11:59:33	49,45	28,38	1,40	Vinnitsia region
1368.	2021-09-23	12:17:24	49,64	30,42	1,20	Kyiv region
1369.	2021-09-23	12:50:08	51,03	30,73	0,70	Chernihiv region
1370.	2021-09-23	13:21:53	50,11	29,99	1,40	Kyiv region
1371.	2021-09-23	14:16:52	51,53	27,76	1,80	Belarus
1372.	2021-09-23	14:42:16	51,13	28,69	1,80	Zhytomyr region
1373.	2021-09-24	06:24:34	52,27	27,46	1,70	Belarus
1374.	2021-09-24	06:27:31	52,25	27,35	2,10	Belarus
1375.	2021-09-24	08:50:23	50,56	27,64	1,50	Zhytomyr region
1376.	2021-09-24	08:57:12	49,95	28,54	1,60	Zhytomyr region
1377.	2021-09-24	10:00:18	48,25	33,38	1,90	Kirovohrad region
1378.	2021-09-24	10:17:11	50,13	27,72	1,60	Zhytomyr region
1379.	2021-09-24	10:19:44	49,10	28,33	1,70	Vinnitsia region
1380.	2021-09-24	10:33:32	50,74	29,34	1,80	Zhytomyr region
1381.	2021-09-24	11:26:03	49,74	30,05	1,10	Kyiv region
1382.	2021-09-24	12:18:31	50,20	29,89	1,30	Kyiv region
1383.	2021-09-24	14:10:20	51,28	27,03	1,20	Rivne region
1384.	2021-09-24	15:26:50	51,53	27,75	1,70	Belarus
1385.	2021-09-27	10:07:20	47,68	28,84	1,30	Moldova
1386.	2021-09-27	10:34:23	50,93	28,54	1,70	Zhytomyr region
1387.	2021-09-27	12:22:43	49,52	30,88	1,40	Kyiv region
1388.	2021-09-27	12:38:17	50,31	28,44	1,40	Zhytomyr region
1389.	2021-09-27	12:42:08	49,69	30,50	1,40	Kyiv region
1390.	2021-09-27	16:21:26	50,71	28,83	1,00	Zhytomyr region
1391.	2021-09-28	06:54:44	50,15	27,48	1,50	Khmelnyskyi region
1392.	2021-09-28	09:00:03	49,07	33,73	1,80	Poltava region
1393.	2021-09-28	09:07:26	51,29	26,89	1,70	Rivne region
1394.	2021-09-28	09:09:43	49,54	27,39	1,70	Khmelnyskyi region
1395.	2021-09-28	10:10:23	55,15	30,34	0,70	Belarus
1396.	2021-09-28	10:43:02	48,31	29,80	1,00	Kirovohrad region
1397.	2021-09-28	11:14:33	50,50	28,51	0,80	Zhytomyr region
1398.	2021-09-28	15:26:24	50,56	27,65	1,70	Zhytomyr region
1399.	2021-09-29	07:00:54	48,81	27,50	1,40	Vinnitsia region
1400.	2021-09-29	09:00:30	49,16	24,80	1,40	Ternopil region
1401.	2021-09-29	09:33:20	48,74	28,16	1,10	Vinnitsia region
1402.	2021-09-29	09:43:16	47,82	35,21	1,70	Zaporizhzhia region
1403.	2021-09-29	09:57:54	51,34	26,97	1,80	Rivne region
1404.	2021-09-29	10:00:30	49,49	28,52	1,60	Vinnitsia region
1405.	2021-09-29	10:30:26	50,89	28,38	1,60	Zhytomyr region
1406.	2021-09-29	10:32:21	49,77	27,33	1,80	Khmelnyskyi region
1407.	2021-09-29	11:05:40	51,47	29,05	1,70	Zhytomyr region
1408.	2021-09-29	12:15:20	50,68	27,69	1,50	Zhytomyr region
1409.	2021-09-29	14:54:23	50,94	28,57	1,70	Zhytomyr region
1410.	2021-09-30	08:16:38	49,52	27,79	1,00	Khmelnyskyi region
1411.	2021-09-30	09:00:11	47,85	33,34	2,00	Dnipropetrovsk region
1412.	2021-09-30	09:21:41	51,27	26,92	1,70	Rivne region
1413.	2021-09-30	09:24:17	49,66	30,41	1,00	Kyiv region
1414.	2021-09-30	09:59:32	47,88	33,34	1,70	Dnipropetrovsk region
1415.	2021-09-30	10:00:10	48,33	33,29	1,50	Kirovohrad region
1416.	2021-09-30	11:23:39	48,75	25,12	1,70	Ivano-Frankivsk region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

1417.	2021-09-30	11:41:28	49,75	27,26	1,50	Khmelnyskyi region
1418.	2021-09-30	11:43:22	51,24	25,99	2,30	Rivne region
1419.	2021-09-30	12:00:10	47,90	33,30	2,00	Dnipropetrovsk region
1420.	2021-09-30	15:29:23	50,16	29,93	1,20	Kyiv region
1421.	2021-10-01	12:58:18	50.15	29.97	1.20	Kyiv region
1422.	2021-10-01	11:50:02	50.90	28.37	1.50	Zhytomyr region
1423.	2021-10-01	11:49:53	50.87	28.39	1.40	Zhytomyr region
1424.	2021-10-01	10:59:40	49.63	30.50	1.10	Kyiv region
1425.	2021-10-01	06:42:46	52.27	27.42	1.70	Belarus
1426.	2021-10-01	08:00:14	48.06	33.52	1.90	Dnipropetrovsk region
1427.	2021-10-01	09:22:03	51.08	28.73	1.50	Zhytomyr region
1428.	2021-10-01	10:29:20	50.84	28.19	1.60	Zhytomyr region
1429.	2021-10-01	10:06:35	51.27	26.87	1.50	Rivne region
1430.	2021-10-01	10:49:14	5075	29.31	1.70	Zhytomyr region
1431.	2021-10-01	10:58:32	49.17	28.32	1.80	Vinnysia region
1432.	2021-10-02	14:11:12	49.69	3051	1.50	Kyiv region
1433.	2021-10-02	14:32:05	47.15	34.99	1.90	Zaporizhzhia region
1434.	2021-10-02	13:06:39	51.03	28.67	1.60	Zhytomyr region
1435.	2021-10-02	10:40:18	49.13	28.28	2.00	Vinnysia region
1436.	2021-10-04	12:32:46	5023	27.16	1.50	Khmelnyskyi region
1437.	2021-10-04	13:06:34	51.32	27.08	1.80	Rivne region
1438.	2021-10-04	09:40:03	5075	29.37	1.70	Zhytomyr region
1439.	2021-10-04	10:24:59	48.83	29.15	1.70	Vinnysia region
1440.	2021-10-05	11:11:01	49.40	27.43	1.80	Khmelnyskyi region
1441.	2021-10-05	11:09:52	5016	29.90	1.00	Kyiv region
1442.	2021-10-05	10:46:48	5074	29.29	1.40	Zhytomyr region
1443.	2021-10-05	09:49:22	51.36	26.86	1.40	Rivne region
1444.	2021-10-05	10:29:54	51.31	27.30	1.70	Rivne region
1445.	2021-10-06	12:07:10	49.43	28.37	1.30	Vinnysia region
1446.	2021-10-06	09:00:26	47.97	33.55	2.20	Dnipropetrovsk region
1447.	2021-10-06	08:56:02	49.27	28.56	1.40	Vinnysia region
1448.	2021-10-06	09:12:11	49.64	3054	1.10	Kyiv region
1449.	2021-10-06	09:14:01	5056	27.67	1.60	Zhytomyr region
1450.	2021-10-06	09:55:04	5075	29.32	1.50	Zhytomyr region
1451.	2021-10-07	10:24:48	51.30	26.96	1.60	Rivne region
1452.	2021-10-07	10:27:55	51.27	26.88	1.70	Rivne region
1453.	2021-10-07	13:14:41	5073	28.47	1.50	Zhytomyr region
1454.	2021-10-07	12:38:46	49.71	3037	1.30	Kyiv region
1455.	2021-10-07	12:09:22	49.78	29.84	1.10	Kyiv region
1456.	2021-10-07	08:02:29	49.59	25.88	1.90	Ternopil region
1457.	2021-10-07	09:00:09	48.12	33.55	2.00	Dnipropetrovsk region
1458.	2021-10-07	09:05:23	51.10	28.69	2.10	Zhytomyr region
1459.	2021-10-07	09:42:04	50.69	28.82	1.00	Zhytomyr region
1460.	2021-10-07	09:52:32	49.47	28.29	1.20	Vinnysia region
1461.	2021-10-07	09:53:33	49.51	28.32	1.20	Vinnysia region
1462.	2021-10-07	10:04:50	5025	27.38	1.20	Khmelnyskyi region
1463.	2021-10-08	10:02:04	48.18	33.54	2.00	Dnipropetrovsk region
1464.	2021-10-08	10:49:07	49.22	31.35	1.70	Cherkasy region
1465.	2021-10-08	13:13:40	47.63	31.25	1.50	Mykolayiv region
1466.	2021-10-08	14:24:27	50.91	28.59	1.50	Zhytomyr region
1467.	2021-10-08	14:53:36	50.23	29.99	1.50	Kyiv region
1468.	2021-10-08	16:26:57	50.93	28.56	1.70	Zhytomyr region
1469.	2021-10-08	17:05:28	50.75	29.33	1.90	Zhytomyr region
1470.	2021-10-08	10:01:00	48.15	33.59	2.00	Dnipropetrovsk region
1471.	2021-10-08	10:00:07	48.30	33.37	1.90	Kirovohrad region
1472.	2021-10-08	11:03:42	49.86	25.52	1.40	Ternopil region
1473.	2021-10-08	06:34:36	52.27	27.45	1.40	Belarus



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

1474.	2021-10-08	06:35:14	52.18	27.42	1.40	Belarus
1475.	2021-10-08	08:06:01	50.50	28.89	1.00	Zhytomyr region
1476.	2021-10-08	08:33:52	50.14	27.54	1.60	Khmelnyskyi region
1477.	2021-10-08	08:53:35	50.25	28.50	1.10	Zhytomyr region
1478.	2021-10-08	08:58:24	48.77	26.65	1.20	Khmelnyskyi region
1479.	2021-10-08	10:53:41	49.33	28.22	1.50	Vynnytsia region
1480.	2021-10-11	11:37:28	50.90	28.65	1.70	Zhytomyr region
1481.	2021-10-11	07:39:30	47.86	31.17	1.90	Mykolayiv region
1482.	2021-10-11	09:45:33	51.30	27.03	1.70	Rivne region
1483.	2021-10-11	10:39:43	49.81	29.90	1.40	Kyiv region
1484.	2021-10-11	10:55:18	48.86	30.30	1.10	Cherkasy region
1485.	2021-10-12	10:47:08	51.03	28.75	1.50	Zhytomyr region
1486.	2021-10-12	12:04:53	50.91	28.38	1.80	Zhytomyr region
1487.	2021-10-12	12:02:52	49.29	28.60	1.70	Vynnytsia region
1488.	2021-10-12	12:39:34	49.57	27.82	1.50	Khmelnyskyi region
1489.	2021-10-12	12:45:39	49.15	28.25	1.30	Vynnytsia region
1490.	2021-10-12	10:36:51	51.74	33.84	2.50	Sumy region
1491.	2021-10-12	12:47:02	49.69	30.44	1.10	Kyiv region
1492.	2021-10-12	10:08:55	5025	29.86	1.30	Kyiv region
1493.	2021-10-12	09:11:33	5058	27.63	1.70	Zhytomyr region
1494.	2021-10-12	09:00:00	49.10	33.73	1.40	Poltava region
1495.	2021-10-13	11:53:17	5027	27.39	1.70	Khmelnyskyi region
1496.	2021-10-13	12:17:40	49.65	3057	1.10	Kyiv region
1497.	2021-10-13	12:28:14	5015	29.94	1.10	Kyiv region
1498.	2021-10-13	13:37:09	5015	27.53	1.30	Khmelnyskyi region
1499.	2021-10-13	09:40:52	49.53	27.78	1.60	Khmelnyskyi region
1500.	2021-10-13	10:05:40	50.76	29.35	1.50	Zhytomyr region
1501.	2021-10-13	09:56:56	51.31	26.84	1.50	Rivne region
1502.	2021-10-13	08:54:05	51.10	28.69	1.40	Zhytomyr region
1503.	2021-10-13	09:11:50	5093	28.56	1.00	Zhytomyr region
1504.	2021-10-14	12:32:29	47.68	31.34	1.30	Mykolayiv region
1505.	2021-10-15	13:42:06	48.87	30.29	1.30	Cherkasy region
1506.	2021-10-15	13:51:07	51.54	27.79	1.60	Belarus
1507.	2021-10-15	15:04:09	50.70	28.83	1.00	Zhytomyr region
1508.	2021-10-15	10:16:39	50.28	28.50	1.50	Zhytomyr region
1509.	2021-10-15	10:09:15	49.66	3042	1.50	Kyiv region
1510.	2021-10-15	10:00:41	48.00	33.45	2.00	Dnipropetrovsk region
1511.	2021-10-15	06:20:51	52.22	27.43	1.80	Belarus
1512.	2021-10-15	06:25:05	52.23	27.40	1.70	Belarus
1513.	2021-10-15	08:00:20	49.05	33.69	2.10	Poltava region
1514.	2021-10-15	08:57:14	51.26	26.97	1.70	Rivne region
1515.	2021-10-15	10:00:39	5075	29.31	2.00	Zhytomyr region
1516.	2021-10-16	10:15:43	47.62	31.27	1.40	Mykolayiv region
1517.	2021-10-17	07:32:25	5071	28.81	1.00	Zhytomyr region
1518.	2021-10-17	10:25:58	48.27	33.28	1.90	Kirovohrad region
1519.	2021-10-18	13:00:41	49.53	3095	2.00	Kyiv region
1520.	2021-10-18	12:51:07	5087	28.20	1.80	Zhytomyr region
1521.	2021-10-18	12:01:43	5094	28.65	2.00	Zhytomyr region
1522.	2021-10-18	11:34:15	51.08	28.73	1.70	Zhytomyr region
1523.	2021-10-18	10:00:28	49.54	25.92	1.50	Ternopil region
1524.	2021-10-19	12:19:38	5055	27.64	1.90	Zhytomyr region
1525.	2021-10-19	11:20:54	49.57	27.85	1.30	Vynnytsia region
1526.	2021-10-19	08:47:53	5075	29.33	1.60	Zhytomyr region
1527.	2021-10-19	09:09:47	49.52	28.45	1.70	Vynnytsia region
1528.	2021-10-19	08:59:55	49.03	33.66	1.80	Poltava region
1529.	2021-10-19	10:18:08	49.68	30.40	1.40	Kyiv region
1530.	2021-10-19	10:34:34	51.30	26.90	1.50	Rivne region

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

1531.	2021-10-20	09:00:28	48.02	33.40	2.10	Dnipropetrovsk region
1532.	2021-10-20	10:35:10	55.29	3042	1.70	Belarus
1533.	2021-10-20	11:33:08	51.00	3070	1.10	Chernihiv region
1534.	2021-10-20	12:59:19	5031	28.46	1.70	Zhytomyr region
1535.	2021-10-20	09:58:33	49.78	27.33	1.50	Khmelnyskyi region
1536.	2021-10-20	08:58:08	5014	29.96	1.80	Kyiv region
1537.	2021-10-20	09:09:28	5075	29.35	1.50	Zhytomyr region
1538.	2021-10-21	10:00:07	48.29	33.32	2.40	Kirovohrad region
1539.	2021-10-21	11:42:42	51.34	27.00	1.10	Rivne region
1540.	2021-10-21	06:15:06	5024	27.38	1.40	Khmelnyskyi region
1541.	2021-10-21	18:55:41	5092	28.56	1.70	Zhytomyr region
1542.	2021-10-21	10:15:55	51.38	28.83	1.60	Zhytomyr region
1543.	2021-10-21	09:54:24	5074	29.30	1.50	Zhytomyr region
1544.	2021-10-22	11:36:19	5090	28.57	1.60	Zhytomyr region
1545.	2021-10-22	12:23:06	49.91	3094	1.10	Kyiv region
1546.	2021-10-22	13:04:21	5056	27.70	1.50	Zhytomyr region
1547.	2021-10-22	13:32:08	5016	29.84	1.30	Kyiv region
1548.	2021-10-22	10:42:12	49.51	3086	1.50	Kyiv region
1549.	2021-10-22	10:00:10	48.27	33.27	2.40	Kirovohrad region
1550.	2021-10-22	06:37:50	52.21	27.33	1.40	Belarus
1551.	2021-10-22	08:51:03	51.37	28.88	1.80	Zhytomyr region
1552.	2021-10-22	08:53:13	51.32	28.90	1.80	Zhytomyr region
1553.	2021-10-22	09:12:55	51.22	26.95	1.70	Rivne region
1554.	2021-10-23	10:54:03	51.11	28.70	1.70	Zhytomyr region
1555.	2021-10-23	10:20:22	49.63	25.78	1.50	Ternopil region
1556.	2021-10-23	09:03:15	51.28	27.02	1.80	Rivne region
1557.	2021-10-25	12:35:55	5055	28.72	1.70	Zhytomyr region
1558.	2021-10-25	15:47:16	5093	28.55	1.70	Zhytomyr region
1559.	2021-10-25	16:17:21	5093	28.55	1.80	Zhytomyr region
1560.	2021-10-25	12:26:21	48.95	28.99	1.40	Vinnitsia region
1561.	2021-10-25	12:16:39	49.54	3090	1.40	Kyiv region
1562.	2021-10-25	11:21:11	48.88	26.55	1.30	Khmelnyskyi region
1563.	2021-10-25	06:07:17	48.48	36.58	2.70	Dnipropetrovsk region
1564.	2021-10-25	11:03:49	5095	28.68	1.60	Zhytomyr region
1565.	2021-10-25	11:46:09	5057	27.68	2.10	Zhytomyr region
1566.	2021-10-25	11:51:58	48.04	31.03	1.70	Mykolayiv region
1567.	2021-10-26	10:27:42	5089	28.33	1.90	Zhytomyr region
1568.	2021-10-26	10:40:13	5012	27.56	1.50	Khmelnyskyi region
1569.	2021-10-26	11:07:48	49.78	29.83	1.40	Kyiv region
1570.	2021-10-26	12:01:32	49.31	28.78	1.50	Vinnitsia region
1571.	2021-10-26	12:40:10	5075	29.33	1.60	Zhytomyr region
1572.	2021-10-26	10:04:29	51.24	26.94	1.30	Rivne region
1573.	2021-10-26	07:34:08	48.87	26.16	1.60	Ternopil region
1574.	2021-10-26	09:33:39	51.32	27.09	1.60	Rivne region
1575.	2021-10-26	08:59:59	49.04	33.78	1.90	Poltava region
1576.	2021-10-27	09:43:38	49.29	28.51	1.70	Vinnitsia region
1577.	2021-10-27	09:23:40	51.31	27.11	1.60	Rivne region
1578.	2021-10-27	09:10:30	49.20	31.44	1.20	Cherkasy region
1579.	2021-10-27	09:05:10	51.34	27.25	1.90	Rivne region
1580.	2021-10-27	09:02:09	5075	29.32	1.80	Zhytomyr region
1581.	2021-10-27	06:09:40	49.65	3061	1.10	Kyiv region
1582.	2021-10-28	10:47:33	48.30	29.83	2.20	Kirovohrad region
1583.	2021-10-28	12:31:15	49.31	28.42	1.30	Vinnitsia region
1584.	2021-10-28	11:13:38	47.73	28.48	1.80	Moldova
1585.	2021-10-28	14:56:42	5014	29.96	1.20	Kyiv region
1586.	2021-10-28	09:59:27	48.32	33.24	2.20	Kirovohrad region
1587.	2021-10-28	10:37:17	5092	28.39	1.40	Zhytomyr region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

1588.	2021-10-28	09:11:00	49.37	26.09	1.70	Ternopil region
1589.	2021-10-28	06:21:36	5014	27.52	1.60	Khmelnyskyi region
1590.	2021-10-28	09:00:12	48.12	33.77	2.00	Dnipropetrovsk region
1591.	2021-10-29	11:28:05	51.23	26.95	1.80	Rivne region
1592.	2021-10-29	10:33:06	51.20	26.98	1.70	Rivne region
1593.	2021-10-29	11:27:16	51.35	26.93	1.70	Rivne region
1594.	2021-10-29	12:37:06	5090	28.58	1.60	Zhytomyr region
1595.	2021-10-29	10:00:17	48.28	33.30	2.50	Kirovohrad region
1596.	2021-10-29	10:07:22	49.55	3099	1.50	Kyiv region
1597.	2021-10-29	06:39:11	52.27	27.30	1.90	Belarus
1598.	2021-10-29	06:39:30	52.25	27.41	1.80	Belarus
1599.	2021-10-29	07:41:33	5014	27.50	1.70	Khmelnyskyi region
1600.	2021-10-29	09:00:42	47.66	33.33	2.00	Dnipropetrovsk region
1601.	2021-10-29	09:58:48	5075	29.33	1.90	Zhytomyr region
1602.	2021-10-29	09:45:30	5075	29.33	1.90	Zhytomyr region
1603.	2021.11.01	09:29:46	50.30	28.47	0.70	Zhytomyr region
1604.	2021.11.01	10:35:41	49.09	28.32	1.00	Vinnysia region
1605.	2021.11.01	10:55:00	50.14	29.96	1.40	Kyiv region
1606.	2021.11.01	12:34:59	49.67	30.49	1.00	Kyiv region
1607.	2021.11.01	14:22:07	50.24	27.18	1.50	Khmelnyskyi region
1608.	2021.11.02	08:18:54	49.95	28.55	1.30	Zhytomyr region
1609.	2021.11.02	09:52:57	49.72	30.51	1.60	Kyiv region
1610.	2021.11.02	10:14:04	50.74	29.33	1.90	Zhytomyr region
1611.	2021.11.02	10:59:59	49.02	33.67	2.20	Poltava region
1612.	2021.11.02	11:07:21	49.56	27.86	1.40	Vinnysia region
1613.	2021.11.02	11:39:08	49.80	29.86	1.50	Kyiv region
1614.	2021.11.02	12:10:03	50.58	27.63	1.60	Zhytomyr region
1615.	2021.11.02	14:03:45	47.64	31.17	1.80	Mykolayiv region
1616.	2021.11.02	14:27:37	50.89	28.18	1.70	Zhytomyr region
1617.	2021.11.02	15:13:45	51.30	27.17	1.70	Rivne region
1618.	2021.11.03	10:00:20	47.94	33.38	2.10	Dnipropetrovsk region
1619.	2021.11.03	10:37:38	51.26	26.96	1.60	Rivne region
1620.	2021.11.03	11:16:08	51.40	28.90	1.70	Zhytomyr region
1621.	2021.11.03	11:28:04	55.27	30.36	2.30	Belarus
1622.	2021.11.03	11:42:14	48.55	31.35	1.90	Kirovohrad region
1623.	2021.11.03	13:04:32	50.17	29.95	1.50	Kyiv region
1624.	2021.11.03	13:35:24	49.51	28.45	1.60	Vinnysia region
1625.	2021.11.03	14:09:45	51.03	28.68	1.70	Zhytomyr region
1626.	2021.11.03	14:15:08	50.74	29.34	1.80	Zhytomyr region
1627.	2021.11.04	08:30:36	50.49	28.93	1.00	Zhytomyr region
1628.	2021.11.04	10:00:10	48.00	33.42	2.30	Dnipropetrovsk region
1629.	2021.11.04	10:04:26	50.76	29.32	1.80	Zhytomyr region
1630.	2021.11.04	10:34:15	51.26	26.96	1.40	Rivne region
1631.	2021.11.04	11:00:09	48.41	33.40	2.30	Kirovohrad region
1632.	2021.11.04	11:05:26	47.84	33.31	2.80	Dnipropetrovsk region
1633.	2021.11.04	11:18:42	48.87	29.01	1.50	Vinnysia region
1634.	2021.11.04	11:23:03	51.24	26.94	1.40	Rivne region
1635.	2021.11.04	12:01:05	49.45	27.37	1.80	Khmelnyskyi region
1636.	2021.11.04	13:58:08	51.55	27.72	1.50	Belarus
1637.	2021.11.05	06:58:29	55.23	27.50	1.20	Belarus
1638.	2021.11.05	06:58:54	55.16	27.45	1.60	Belarus
1639.	2021.11.05	07:22:19	49.76	27.31	1.50	Khmelnyskyi region
1640.	2021.11.05	09:39:58	49.79	30.54	1.30	Kyiv region
1641.	2021.11.05	10:17:06	49.78	29.80	1.30	Kyiv region
1642.	2021.11.05	11:00:37	48.32	33.33	2.50	Kirovohrad region
1643.	2021.11.05	11:04:01	51.26	26.91	1.70	Rivne region
1644.	2021.11.05	11:04:23	51.29	27.05	1.70	Rivne region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

1645.	2021.11.05	12:28:01	50.87	28.16	1.60	Zhytomyr region
1646.	2021.11.05	13:34:41	50.56	29.62	1.00	Zhytomyr region
1647.	2021.11.05	14:30:51	50.21	30.01	1.00	Kyiv region
1648.	2021.11.05	15:45:40	50.32	29.63	1.80	Zhytomyr region
1649.	2021.11.05	16:33:20	50.95	28.57	1.60	Zhytomyr region
1650.	2021.11.06	09:54:00	51.27	26.99	1.60	Rivne region
1651.	2021.11.06	10:40:48	50.23	30.00	1.60	Kyiv region
1652.	2021.11.06	11:11:14	51.45	28.86	1.90	Zhytomyr region
1653.	2021.11.06	11:24:59	51.26	28.62	1.60	Zhytomyr region
1654.	2021.11.06	13:01:01	50.70	28.83	1.00	Zhytomyr region
1655.	2021.11.06	13:26:43	51.23	26.02	1.80	Rivne region
1656.	2021.11.06	13:32:07	51.23	26.00	1.40	Rivne region
1657.	2021.11.08	09:23:10	50.75	29.33	1.50	Zhytomyr region
1658.	2021.11.08	10:03:24	51.30	27.04	1.60	Rivne region
1659.	2021.11.08	10:59:24	49.66	30.57	1.40	Kyiv region
1660.	2021.11.08	11:46:04	51.05	30.70	0.50	Chernihiv region
1661.	2021.11.08	14:09:42	50.93	28.55	1.70	Zhytomyr region
1662.	2021.11.08	14:19:41	50.08	28.70	1.80	Zhytomyr region
1663.	2021.11.09	07:57:56	50.27	27.44	1.50	Khmelnyskyi region
1664.	2021.11.09	08:52:36	48.48	29.78	1.60	Vinnysia region
1665.	2021.11.09	09:35:23	50.54	27.63	1.70	Zhytomyr region
1666.	2021.11.09	10:00:30	49.11	33.67	1.60	Poltava region
1667.	2021.11.09	10:41:18	50.72	29.29	1.90	Zhytomyr region
1668.	2021.11.09	11:03:28	48.31	26.97	1.70	Moldova
1669.	2021.11.09	11:34:50	50.76	29.34	1.90	Zhytomyr region
1670.	2021.11.09	13:04:07	50.92	28.66	1.20	Zhytomyr region
1671.	2021.11.10	10:40:09	50.75	29.31	1.70	Zhytomyr region
1672.	2021.11.10	11:17:55	50.92	28.35	1.30	Zhytomyr region
1673.	2021.11.10	11:25:26	49.79	29.85	1.20	Kyiv region
1674.	2021.11.10	12:30:04	51.25	27.00	1.40	Rivne region
1675.	2021.11.11	10:00:08	48.00	33.41	2.20	Dnipropetrovsk region
1676.	2021.11.11	10:21:00	49.18	26.25	1.70	Khmelnyskyi region
1677.	2021.11.11	11:00:23	47.67	33.16	1.90	Dnipropetrovsk region
1678.	2021.11.11	11:02:52	51.22	26.91	1.70	Rivne region
1679.	2021.11.11	11:07:44	49.65	30.34	1.70	Kyiv region
1680.	2021.11.11	12:00:49	51.26	26.81	1.60	Rivne region
1681.	2021.11.11	12:23:03	51.24	26.99	1.50	Rivne region
1682.	2021.11.11	12:59:05	49.30	28.47	1.70	Vinnysia region
1683.	2021.11.11	13:00:28	47.74	33.18	2.00	Dnipropetrovsk region
1684.	2021.11.11	14:27:32	50.69	28.84	1.00	Zhytomyr region
1685.	2021.11.12	06:27:47	51.56	27.75	1.40	Belarus
1686.	2021.11.12	06:27:55	52.24	27.48	1.40	Belarus
1687.	2021.11.12	08:56:17	50.14	30.03	1.10	Kyiv region
1688.	2021.11.12	08:59:59	47.91	33.30	1.90	Dnipropetrovsk region
1689.	2021.11.12	09:02:11	48.76	26.60	1.50	Khmelnyskyi region
1690.	2021.11.12	10:18:29	50.74	29.33	1.40	Zhytomyr region
1691.	2021.11.12	11:10:33	51.36	26.86	1.20	Rivne region
1692.	2021.11.12	11:52:44	50.29	28.42	1.20	Zhytomyr region
1693.	2021.11.12	12:05:31	48.71	30.29	1.30	Cherkasy region
1694.	2021.11.13	09:54:34	50.75	29.33	2.00	Zhytomyr region
1695.	2021.11.13	15:45:59	50.71	28.73	1.10	Zhytomyr region
1696.	2021.11.15	10:19:44	50.93	28.70	1.70	Zhytomyr region
1697.	2021.11.15	11:09:09	49.70	30.39	1.50	Kyiv region
1698.	2021.11.15	11:16:33	50.52	28.62	1.70	Zhytomyr region
1699.	2021.11.15	13:02:57	49.51	28.46	1.60	Vinnysia region
1700.	2021.11.16	08:52:56	49.63	30.60	1.70	Kyiv region
1701.	2021.11.16	10:30:02	49.48	25.97	1.50	Ternopil region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

1702.	2021.11.16	10:54:33	50.39	29.25	1.40	Zhytomyr region
1703.	2021.11.16	11:05:07	51.30	27.05	1.80	Rivne region
1704.	2021.11.16	11:06:09	51.31	27.09	1.60	Rivne region
1705.	2021.11.16	11:20:05	51.32	27.05	1.70	Rivne region
1706.	2021.11.16	11:35:53	49.53	30.92	1.50	Kyiv region
1707.	2021.11.16	12:04:49	49.82	30.02	1.30	Kyiv region
1708.	2021.11.16	12:56:06	49.75	27.34	1.30	Khmelnyskyi region
1709.	2021.11.16	14:17:52	50.91	28.57	1.30	Zhytomyr region
1710.	2021.11.17	08:57:35	50.75	29.32	1.60	Zhytomyr region
1711.	2021.11.17	10:00:21	48.14	33.65	2.00	Dnipropetrovsk region
1712.	2021.11.17	11:20:53	50.92	26.21	1.50	Rivne region
1713.	2021.11.17	11:30:23	51.29	26.97	1.60	Rivne region
1714.	2021.11.17	12:02:09	49.51	28.46	1.60	Vinnytsia region
1715.	2021.11.17	12:23:32	51.97	33.29	2.00	Chernihiv region
1716.	2021.11.17	12:34:38	50.21	29.88	1.50	Kyiv region
1717.	2021.11.17	12:37:00	50.94	26.22	1.40	Rivne region
1718.	2021.11.17	13:59:54	49.76	29.87	1.20	Kyiv region
1719.	2021.11.17	14:33:14	52.53	27.70	1.40	Belarus
1720.	2021.11.18	09:36:37	47.80	33.45	1.90	Dnipropetrovsk region
1721.	2021.11.18	10:00:07	47.79	33.28	2.10	Dnipropetrovsk region
1722.	2021.11.18	11:00:36	48.51	33.73	2.20	Kirovohrad region
1723.	2021.11.18	11:24:04	51.02	28.65	1.50	Zhytomyr region
1724.	2021.11.18	13:17:04	49.65	25.91	2.10	Ternopil region
1725.	2021.11.18	13:27:45	50.92	28.56	2.00	Zhytomyr region
1726.	2021.11.19	06:36:22	52.17	27.48	1.70	Belarus
1727.	2021.11.19	08:14:35	50.47	28.85	1.10	Zhytomyr region
1728.	2021.11.19	08:45:06	50.49	28.84	1.10	Zhytomyr region
1729.	2021.11.19	10:14:42	50.56	27.63	1.80	Zhytomyr region
1730.	2021.11.19	10:29:22	51.27	26.97	1.60	Rivne region
1731.	2021.11.19	11:00:07	48.26	33.36	2.50	Kirovohrad region
1732.	2021.11.19	11:44:50	49.44	28.43	1.90	Vinnytsia region
1733.	2021.11.19	11:45:17	49.42	28.28	1.80	Vinnytsia region
1734.	2021.11.19	12:01:09	49.69	30.40	1.40	Kyiv region
1735.	2021.11.19	15:04:17	51.06	28.66	1.70	Zhytomyr region
1736.	2021.11.20	10:09:24	51.13	28.75	1.50	Zhytomyr region
1737.	2021.11.20	10:14:44	51.39	28.82	1.30	Zhytomyr region
1738.	2021.11.20	10:53:07	50.90	28.59	1.60	Zhytomyr region
1739.	2021.11.20	12:12:21	51.34	27.11	1.80	Rivne region
1740.	2021.11.20	13:43:28	50.21	27.51	1.50	Khmelnyskyi region
1741.	2021.11.21	10:45:54	50.70	28.83	1.00	Zhytomyr region
1742.	2021.11.22	11:46:45	49.50	29.44	1.50	Vinnytsia region
1743.	2021.11.22	14:21:42	50.45	28.87	1.00	Zhytomyr region
1744.	2021.11.22	14:34:41	50.58	27.77	1.90	Zhytomyr region
1745.	2021.11.23	07:50:40	48.66	30.35	2.10	Cherkasy region
1746.	2021.11.23	10:00:04	49.06	33.58	2.30	Poltava region
1747.	2021.11.23	10:19:09	55.14	30.34	2.40	Belarus
1748.	2021.11.23	10:33:43	49.32	28.52	1.80	Vinnytsia region
1749.	2021.11.23	10:34:10	49.31	28.52	1.70	Vinnytsia region
1750.	2021.11.23	10:34:40	49.32	28.53	1.80	Vinnytsia region
1751.	2021.11.23	10:35:08	49.31	28.51	1.80	Vinnytsia region
1752.	2021.11.23	10:35:36	49.32	28.52	1.80	Vinnytsia region
1753.	2021.11.23	10:42:03	49.77	29.84	1.60	Kyiv region
1754.	2021.11.23	10:53:15	49.76	27.34	1.70	Khmelnyskyi region
1755.	2021.11.23	11:09:47	50.74	29.33	1.70	Zhytomyr region
1756.	2021.11.23	11:28:24	50.74	29.33	1.80	Zhytomyr region
1757.	2021.11.23	12:11:18	51.30	26.89	1.90	Rivne region
1758.	2021.11.23	13:00:33	49.29	28.47	1.60	Vinnytsia region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

1759.	2021.11.23	13:33:08	50.15	29.95	1.80	Kyiv region
1760.	2021.11.24	09:22:29	49.66	30.40	1.20	Kyiv region
1761.	2021.11.24	10:38:18	51.07	28.64	1.20	Zhytomyr region
1762.	2021.11.24	11:11:02	49.30	28.41	1.70	Vinnitsia region
1763.	2021.11.24	12:17:16	50.14	27.74	1.40	Zhytomyr region
1764.	2021.11.25	09:20:22	55.33	30.34	2.50	Belarus
1765.	2021.11.25	09:49:37	50.54	27.67	1.50	Zhytomyr region
1766.	2021.11.25	10:00:11	47.78	33.31	2.00	Dnipropetrovsk region
1767.	2021.11.25	10:33:25	49.78	28.56	1.30	Vinnitsia region
1768.	2021.11.25	10:46:15	50.70	28.84	1.20	Zhytomyr region
1769.	2021.11.25	10:58:14	51.33	26.96	2.00	Rivne region
1770.	2021.11.25	11:10:10	50.14	27.55	2.00	Khmelnitskyi region
1771.	2021.11.25	11:56:04	50.16	30.01	1.50	Kyiv region
1772.	2021.11.25	12:43:11	49.66	30.51	1.60	Kyiv region
1773.	2021.11.26	06:53:05	52.27	27.38	1.30	Belarus
1774.	2021.11.26	06:53:21	52.30	27.40	1.50	Belarus
1775.	2021.11.26	08:26:40	49.47	27.40	1.10	Khmelnitskyi region
1776.	2021.11.26	08:50:28	50.32	28.43	1.00	Zhytomyr region
1777.	2021.11.26	09:00:31	47.68	33.23	2.80	Dnipropetrovsk region
1778.	2021.11.26	09:20:44	50.70	28.83	1.00	Zhytomyr region
1779.	2021.11.26	11:12:15	49.68	30.47	1.40	Kyiv region
1780.	2021.11.26	11:26:20	49.16	31.46	1.20	Cherkasy region
1781.	2021.11.26	11:47:10	51.32	26.87	1.20	Rivne region
1782.	2021.11.26	11:54:29	50.16	29.93	1.30	Kyiv region
1783.	2021.11.26	12:53:58	50.53	28.61	1.00	Zhytomyr region
1784.	2021.11.26	13:04:31	49.46	27.31	1.50	Khmelnitskyi region
1785.	2021.11.26	13:15:57	51.43	28.81	1.70	Zhytomyr region
1786.	2021.11.26	15:42:46	50.72	28.81	1.00	Zhytomyr region
1787.	2021.11.27	10:52:06	48.13	30.82	1.80	Mykolayiv region
1788.	2021.11.27	11:27:20	48.04	28.58	1.30	Moldova
1789.	2021.11.29	08:44:44	50.75	29.33	1.80	Zhytomyr region
1790.	2021.11.29	10:52:19	47.82	33.31	2.10	Kirovohrad region
1791.	2021.11.29	11:39:21	49.48	25.96	1.30	Ternopil region
1792.	2021.11.29	12:32:15	51.29	27.25	1.30	Rivne region
1793.	2021.11.29	13:09:55	50.55	27.64	1.80	Zhytomyr region
1794.	2021.11.30	09:47:40	50.74	29.28	1.70	Zhytomyr region
1795.	2021.11.30	10:01:58	49.01	33.67	2.40	Poltava region
1796.	2021.11.30	10:17:37	49.50	28.46	1.60	Vinnitsia region
1797.	2021.11.30	11:55:35	50.92	28.54	1.70	Zhytomyr region
1798.	2021.11.30	12:21:54	48.69	22.42	1.40	Transcarpathian region
1799.	2021.11.30	12:58:53	49.28	28.47	1.80	Vinnitsia region
1800.	2021.12.01	13:46:30	51,30	27,12	1,90	Rivne region
1801.	2021.12.01	11:17:18	51,25	26,97	1,50	Rivne region
1802.	2021.12.01	10:12:13	48,26	30,03	1,70	Kirovohrad region
1803.	2021.12.01	09:49:22	50,75	29,31	1,80	Zhytomyr region
1804.	2021.12.02	11:04:18	48,09	33,67	2,10	Dnipropetrovsk region
1805.	2021.12.02	11:24:50	48,44	31,13	2,00	Kirovohrad region
1806.	2021.12.02	12:24:48	49,63	30,42	1,40	Kyiv region
1807.	2021.12.02	13:41:13	49,66	30,46	1,50	Kyiv region
1808.	2021.12.02	11:00:06	47,17	33,39	2,10	Dnipropetrovsk region
1809.	2021.12.02	10:35:08	50,70	28,83	1,00	Zhytomyr region
1810.	2021.12.02	07:42:07	50,71	28,82	1,00	Zhytomyr region
1811.	2021.12.02	10:00:08	47,80	33,37	2,10	Dnipropetrovsk region
1812.	2021.12.02	10:05:11	50,15	29,95	1,50	Kyiv region
1813.	2021.12.02	10:28:45	49,16	31,28	1,70	Cherkasy region
1814.	2021.12.03	10:40:52	51,08	28,69	1,90	Zhytomyr region
1815.	2021.12.03	11:00:12	48,41	33,36	1,90	Kirovohrad region

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

1816.	2021.12.03	12:31:21	49,78	28,68	2,00	Vinnitsia region
1817.	2021.12.03	10:07:34	51,26	26,96	1,70	Rivne region
1818.	2021.12.03	06:23:55	52,20	27,42	1,20	Belarus
1819.	2021.12.03	08:28:55	50,28	28,51	1,30	Zhytomyr region
1820.	2021.12.03	08:30:29	50,30	28,47	1,10	Zhytomyr region
1821.	2021.12.04	09:59:22	50,74	29,31	1,70	Zhytomyr region
1822.	2021.12.05	14:44:16	50,94	28,59	1,80	Zhytomyr region
1823.	2021.12.05	07:29:46	50,72	28,65	1,60	Zhytomyr region
1824.	2021.12.06	11:49:47	51,26	26,97	1,50	Rivne region
1825.	2021.12.06	12:20:45	49,53	30,92	1,30	Kyiv region
1826.	2021.12.06	11:29:59	50,13	27,52	1,40	Khmelnyskyi region
1827.	2021.12.06	10:42:36	51,08	28,69	1,60	Zhytomyr region
1828.	2021.12.06	10:06:32	50,75	29,33	1,90	Zhytomyr region
1829.	2021.12.07	12:59:14	51,15	28,68	1,60	Zhytomyr region
1830.	2021.12.07	13:47:24	49,37	28,71	1,30	Vinnitsia region
1831.	2021.12.07	14:00:21	50,89	28,20	1,70	Zhytomyr region
1832.	2021.12.07	10:07:42	49,58	25,87	1,50	Ternopil region
1833.	2021.12.07	10:00:11	49,00	33,64	1,90	Poltava region
1834.	2021.12.07	11:05:34	50,93	28,67	1,70	Zhytomyr region
1835.	2021.12.07	11:30:47	50,90	28,40	1,70	Zhytomyr region
1836.	2021.12.07	11:52:50	48,90	30,79	1,60	Cherkasy region
1837.	2021.12.07	11:56:17	50,14	27,56	1,70	Khmelnyskyi region
1838.	2021.12.07	11:07:11	48,78	34,78	1,40	Poltava region
1839.	2021.12.07	12:55:50	47,83	35,29	1,50	Zaporizhzhia region
1840.	2021.12.08	12:36:00	50,92	28,60	1,20	Zhytomyr region
1841.	2021.12.08	11:53:32	51,28	26,96	1,60	Rivne region
1842.	2021.12.08	09:59:31	49,53	28,42	1,80	Vinnitsia region
1843.	2021.12.08	09:33:36	50,75	29,32	1,80	Zhytomyr region
1844.	2021.12.08	08:23:08	50,69	28,81	1,00	Zhytomyr region
1845.	2021.12.09	11:00:01	47,93	33,35	1,80	Dnipropetrovsk region
1846.	2021.12.09	12:26:24	49,82	26,26	1,40	Ternopil region
1847.	2021.12.09	13:48:02	50,23	28,24	1,70	Zhytomyr region
1848.	2021.12.09	14:19:59	51,58	27,74	1,50	Belarus
1849.	2021.12.09	14:45:14	51,06	28,70	1,50	Zhytomyr region
1850.	2021.12.09	11:15:27	48,30	33,36	1,90	Kirovohrad region
1851.	2021.12.09	08:37:03	49,69	30,48	2,20	Kyiv region
1852.	2021.12.09	07:50:45	48,31	26,99	1,50	Moldova
1853.	2021.12.09	10:00:09	47,84	33,37	2,10	Dnipropetrovsk region
1854.	2021.12.09	10:37:05	49,04	33,47	1,90	Poltava region
1855.	2021.12.09	11:07:49	51,31	27,22	1,60	Rivne region
1856.	2021.12.09	11:03:34	49,74	27,35	1,50	Khmelnyskyi region
1857.	2021.12.09	11:42:39	49,80	29,93	1,80	Kyiv region
1858.	2021.12.09	13:00:21	47,82	35,30	1,40	Zaporizhzhia region
1859.	2021.12.10	12:17:51	50,60	27,65	1,40	Zhytomyr region
1860.	2021.12.10	12:24:28	50,92	28,60	1,50	Zhytomyr region
1861.	2021.12.10	12:35:58	50,18	29,89	1,20	Kyiv region
1862.	2021.12.10	12:50:44	51,29	26,87	1,70	Rivne region
1863.	2021.12.10	16:37:19	50,71	28,84	1,40	Zhytomyr region
1864.	2021.12.10	12:08:32	49,52	30,95	1,00	Kyiv region
1865.	2021.12.10	07:17:33	52,20	27,43	1,70	Belarus
1866.	2021.12.10	07:21:50	52,29	27,40	1,80	Belarus
1867.	2021.12.10	09:00:04	48,04	33,42	1,90	Dnipropetrovsk region
1868.	2021.12.10	09:22:54	49,82	26,26	1,40	Ternopil region
1869.	2021.12.10	10:24:21	47,65	34,45	1,70	Dnipropetrovsk region
1870.	2021.12.10	10:25:48	50,27	28,47	1,40	Zhytomyr region
1871.	2021.12.10	11:00:04	47,82	33,23	1,60	Dnipropetrovsk region
1872.	2021.12.10	11:43:00	50,19	29,98	1,10	Kyiv region

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

1873.	2021.12.13	12:25:42	50,58	27,63	1,80	Zhytomyr region
1874.	2021.12.13	13:00:04	49,68	30,47	1,80	Kyiv region
1875.	2021.12.13	15:35:00	51,28	27,03	1,60	Rivne region
1876.	2021.12.13	10:37:53	55,12	30,28	2,40	Belarus
1877.	2021.12.13	10:14:14	50,74	29,33	1,90	Zhytomyr region
1878.	2021.12.14	13:25:24	50,93	28,69	1,50	Zhytomyr region
1879.	2021.12.14	13:17:28	49,25	28,39	1,40	Vinnitsia region
1880.	2021.12.14	13:10:05	49,72	30,06	1,10	Kyiv region
1881.	2021.12.14	13:02:39	51,86	26,52	1,10	Belarus
1882.	2021.12.14	12:51:08	51,31	26,89	1,60	Rivne region
1883.	2021.12.14	14:04:34	49,50	27,71	1,10	Khmelnyskyi region
1884.	2021.12.14	12:42:43	50,22	27,43	1,80	Khmelnyskyi region
1885.	2021.12.14	09:06:03	50,93	28,54	1,70	Zhytomyr region
1886.	2021.12.14	09:59:49	49,10	33,57	1,70	Poltava region
1887.	2021.12.14	09:35:08	50,51	28,60	1,40	Zhytomyr region
1888.	2021.12.14	10:16:15	48,23	28,27	1,70	Moldova
1889.	2021.12.14	11:44:52	51,30	27,15	1,60	Rivne region
1890.	2021.12.14	11:56:07	50,90	28,36	1,70	Zhytomyr region
1891.	2021.12.15	12:21:46	51,31	26,94	1,80	Rivne region
1892.	2021.12.15	12:49:51	51,25	27,01	1,50	Rivne region
1893.	2021.12.15	11:46:20	50,15	29,89	1,50	Kyiv region
1894.	2021.12.15	10:07:08	50,75	29,33	1,70	Zhytomyr region
1895.	2021.12.15	09:09:30	49,66	30,45	1,70	Kyiv region
1896.	2021.12.16	13:14:31	48,89	29,05	1,70	Vinnitsia region
1897.	2021.12.16	13:15:45	49,72	30,43	1,30	Kyiv region
1898.	2021.12.16	12:37:32	51,51	33,98	1,90	Sumy region
1899.	2021.12.16	11:25:35	48,88	30,45	1,50	Cherkasy region
1900.	2021.12.16	11:21:05	50,27	28,50	1,30	Zhytomyr region
1901.	2021.12.16	10:00:17	48,13	33,46	2,10	Dnipropetrovsk region
1902.	2021.12.16	11:34:21	50,92	28,59	1,40	Zhytomyr region
1903.	2021.12.17	12:04:58	48,19	28,22	1,60	Moldova
1904.	2021.12.17	11:09:16	48,88	28,99	1,70	Vinnitsia region
1905.	2021.12.17	12:57:41	48,04	28,43	1,60	Moldova
1906.	2021.12.17	07:08:49	52,26	27,38	2,00	Belarus
1907.	2021.12.17	10:54:08	49,21	31,38	1,50	Cherkasy region
1908.	2021.12.17	10:10:30	51,28	26,96	1,70	Rivne region
1909.	2021.12.17	07:08:11	52,25	27,44	1,90	Belarus
1910.	2021.12.17	07:08:49	52,26	27,38	2,00	Belarus
1911.	2021.12.17	09:25:00	50,94	28,57	1,70	Zhytomyr region
1912.	2021.12.17	10:39:51	50,71	28,79	1,00	Zhytomyr region
1913.	2021.12.17	10:02:55	49,48	28,38	1,60	Vinnitsia region
1914.	2021.12.18	10:50:15	51,13	28,70	1,70	Zhytomyr region
1915.	2021.12.19	15:28:07	50,70	28,77	1,00	Zhytomyr region
1916.	2021.12.19	10:57:15	50,69	28,82	1,00	Zhytomyr region
1917.	2021.12.20	14:26:30	50,33	28,47	1,70	Zhytomyr region
1918.	2021.12.20	14:24:36	50,16	27,74	1,50	Zhytomyr region
1919.	2021.12.20	13:42:35	49,68	30,58	1,60	Kyiv region
1920.	2021.12.20	12:17:10	49,55	30,88	1,50	Kyiv region
1921.	2021.12.20	11:12:21	48,43	31,53	1,60	Kirovohrad region
1922.	2021.12.20	10:18:47	49,69	30,40	1,50	Kyiv region
1923.	2021.12.20	10:45:09	55,21	30,31	1,90	Belarus
1924.	2021.12.21	13:55:19	49,77	29,87	1,40	Kyiv region
1925.	2021.12.21	14:43:42	49,40	27,35	1,80	Khmelnyskyi region
1926.	2021.12.21	12:36:55	50,13	29,96	1,40	Kyiv region
1927.	2021.12.21	12:35:11	49,79	29,80	1,40	Kyiv region
1928.	2021.12.21	10:00:02	49,07	33,62	2,00	Poltava region
1929.	2021.12.21	11:12:27	50,89	28,37	1,80	Zhytomyr region



UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

1930.	2021.12.21	11:31:46	51,27	26,92	1,60	Rivne region
1931.	2021.12.22	13:26:10	48,97	33,59	2,10	Poltava region
1932.	2021.12.22	11:20:10	49,58	25,86	1,60	Ternopil region
1933.	2021.12.22	11:22:01	49,54	25,87	1,50	Ternopil region
1934.	2021.12.22	15:22:59	51,26	27,17	1,70	Rivne region
1935.	2021.12.22	09:59:55	50,90	28,35	1,70	Zhytomyr region
1936.	2021.12.22	10:00:27	49,71	30,39	1,60	Kyiv region
1937.	2021.12.22	08:34:12	50,57	27,62	1,80	Zhytomyr region
1938.	2021.12.22	10:32:58	51,22	26,96	1,80	Rivne region
1939.	2021.12.22	10:29:52	49,42	28,34	1,80	Vinnitsia region
1940.	2021.12.22	10:29:19	49,49	28,43	1,90	Vinnitsia region
1941.	2021.12.22	10:21:57	50,74	29,32	1,80	Zhytomyr region
1942.	2021.12.22	10:01:21	48,53	31,29	1,90	Kirovohrad region
1943.	2021.12.23	12:45:10	51,08	28,68	1,60	Zhytomyr region
1944.	2021.12.23	12:18:51	49,51	25,96	1,50	Ternopil region
1945.	2021.12.23	12:04:03	50,29	28,50	1,50	Zhytomyr region
1946.	2021.12.23	11:27:16	49,56	25,85	1,60	Ternopil region
1947.	2021.12.23	10:16:06	51,27	26,04	1,70	Rivne region
1948.	2021.12.23	07:00:06	48,88	26,60	1,60	Khmelnyskyi region
1949.	2021.12.23	10:02:44	50,75	29,31	1,90	Zhytomyr region
1950.	2021.12.23	10:00:08	48,14	33,46	2,10	Dnipropetrovsk region
1951.	2021.12.23	11:00:07	47,66	33,35	2,20	Dnipropetrovsk region
1952.	2021.12.24	11:00:09	48,37	33,37	1,80	Kirovohrad region
1953.	2021.12.24	11:54:45	49,68	30,49	1,40	Kyiv region
1954.	2021.12.24	12:16:22	50,16	27,53	1,60	Khmelnyskyi region
1955.	2021.12.24	13:39:05	50,93	28,53	1,80	Zhytomyr region
1956.	2021.12.24	16:19:18	50,94	28,56	1,80	Zhytomyr region
1957.	2021.12.24	15:04:50	50,73	28,80	1,10	Zhytomyr region
1958.	2021.12.24	11:29:56	49,48	28,32	1,80	Vinnitsia region
1959.	2021.12.24	10:20:17	51,36	26,93	1,80	Rivne region
1960.	2021.12.24	06:43:41	51,54	27,80	2,10	Belarus
1961.	2021.12.24	09:00:12	47,89	33,35	2,20	Dnipropetrovsk region
1962.	2021.12.24	09:49:12	50,93	28,60	1,10	Zhytomyr region
1963.	2021.12.24	09:47:08	48,63	26,33	1,30	Khmelnyskyi region
1964.	2021.12.25	11:20:44	50,25	29,98	1,80	Kyiv region
1965.	2021.12.27	09:57:59	51,26	28,65	1,60	Zhytomyr region
1966.	2021.12.28	13:36:41	50,56	27,75	2,00	Zhytomyr region
1967.	2021.12.28	12:22:46	48,24	29,79	1,80	Kirovohrad region
1968.	2021.12.28	13:18:13	49,30	28,50	1,70	Vinnitsia region
1969.	2021.12.28	11:57:00	51,23	27,01	1,50	Rivne region
1970.	2021.12.28	07:08:28	49,17	33,68	2,10	Poltava region
1971.	2021.12.28	09:11:17	51,23	26,94	1,70	Rivne region
1972.	2021.12.28	09:44:56	49,60	25,80	1,60	Ternopil region
1973.	2021.12.28	09:16:34	51,08	28,70	1,20	Zhytomyr region
1974.	2021.12.28	09:59:58	48,99	33,78	2,30	Poltava region
1975.	2021.12.28	11:19:59	55,33	30,34	2,40	Belarus
1976.	2021.12.29	11:50:57	48,91	26,69	1,50	Khmelnyskyi region
1977.	2021.12.29	14:01:10	51,54	27,79	1,70	Belarus
1978.	2021.12.29	11:12:57	48,20	29,36	2,20	Vinnitsia region
1979.	2021.12.29	14:08:22	50,15	27,53	1,50	Khmelnyskyi region
1980.	2021.12.29	13:04:47	49,19	31,45	1,20	Cherkasy region
1981.	2021.12.29	10:57:13	50,22	30,48	1,10	Kyiv region
1982.	2021.12.29	07:59:58	48,93	26,56	1,50	Khmelnyskyi region
1983.	2021.12.29	09:36:03	50,73	29,29	1,90	Zhytomyr region
1984.	2021.12.29	10:51:28	51,15	28,72	1,60	Zhytomyr region
1985.	2021.12.30	12:30:58	47,86	35,25	1,40	Zaporizhzhia region
1986.	2021.12.30	12:13:36	47,84	33,29	1,40	Dnipropetrovsk region

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

1987.	2021.12.30	11:21:46	50,20	29,84	1,60	Kyiv region
1988.	2021.12.30	11:00:22	48,39	33,47	1,80	Kirovohrad region
1989.	2021.12.30	09:00:59	50,27	27,34	1,70	Khmelnyskyi region
1990.	2021.12.30	09:24:34	49,79	29,89	1,50	Kyiv region
1991.	2021.12.30	09:34:43	50,75	29,31	1,40	Zhytomyr region
1992.	2021.12.30	09:59:04	50,16	29,98	1,70	Kyiv region
1993.	2021.12.30	10:00:05	48,16	33,47	1,80	Dnipropetrovsk region
1994.	2021.12.31	09:46:10	49,73	27,21	1,80	Khmelnyskyi region
1995.	2021.12.31	11:17:51	47,96	27,30	1,90	Moldova
1996.	2021.12.31	08:32:48	50,74	29,34	1,60	Zhytomyr region
1997.	2021.12.31	06:49:55	52,22	27,41	2,00	Belarus
1998.	2021.12.31	07:50:49	49,66	30,59	1,50	Kyiv region
1999.	2021.12.31	06:46:15	52,22	27,41	2,10	Belarus



Figure 2.1 The epicenters of the located earthquakes in 2021

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

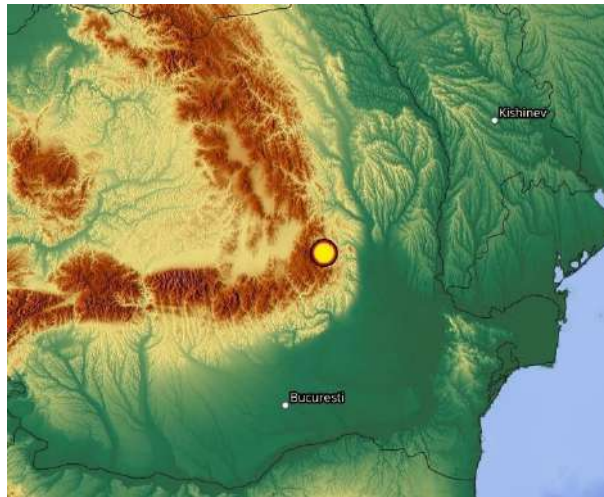
**03.02.2021. Zona seismică Vrancea**

$t_0 = 00:52:58$ ;  $\varphi = 45,82^\circ N$ ;  $\lambda = 26,62^\circ E$ ;  $h = 109 \text{ km}$ ;  $ML_v = 3,6$

Date	Time	Latitude	Longitude	Depth	Mag
2021/02/03	00:52:58.2	45.82	26.62	109	MLv 3.53

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.0	27	P	2021/02/03	00:53:13.8	0.4
PLOR	0.0	27	S	2021/02/03	00:53:25.6	0.5
VRI	0.1	55	P	2021/02/03	00:53:13.9	0.2
MLR	0.6	236	P	2021/02/03	00:53:16.5	-0.2
MLR	0.6	236	S	2021/02/03	00:53:30.2	-0.8
TESR	0.7	1	P	2021/02/03	00:53:16.9	-0.6
VOIR	1.2	252	P	2021/02/03	00:53:21.7	0.5
VOIR	1.2	252	S	2021/02/03	00:53:39.2	0.1
ARR	1.5	253	P	2021/02/03	00:53:25.5	0.8
HUMR	1.7	223	P	2021/02/03	00:53:27.6	-0.3
CJR	2.3	294	S	2021/02/03	00:54:02.9	-0.3
SORM	2.6	26	P	2021/02/03	00:53:38.7	-0.2
PLVB	2.8	211	P	2021/02/03	00:53:41.5	-0.3
MDVR	3.6	255	P	2021/02/03	00:53:52.8	0.5
AKBB	5.1	19	P	2021/02/03	00:54:12.6	-0.2



**03.02.2021. Zona seismică Vrancea**

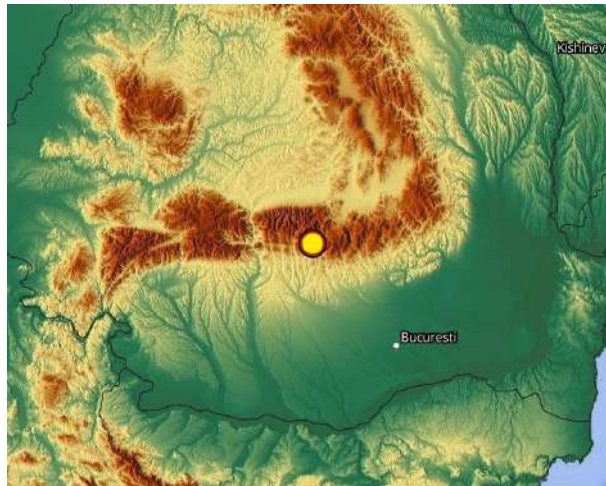
$t_0 = 03:48:45$ ;  $\varphi = 45,35^\circ N$ ;  $\lambda = 25,06^\circ E$ ;  $h = 7 \text{ km}$ ;  $ML_v = 2,4$

Date	Time	Latitude	Longitude	Depth	Mag
2021/02/03	03:48:45.8	45.35	25.06	7	MLv 2.4

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
MLR	0.6	77	P	2021/02/03	03:48:58.1	-0.4
MLR	0.6	77	S	2021/02/03	03:49:07.9	0.2
PLOR	1.2	65	P	2021/02/03	03:49:08.4	-0.0
VRI	1.3	66	P	2021/02/03	03:49:09.6	0.3
TESR	1.6	43	P	2021/02/03	03:49:14.2	-0.1
DEV	1.6	290	P	2021/02/03	03:49:14.4	0.1
DEV	1.6	290	S	2021/02/03	03:49:36.0	0.1
CJR	1.7	324	P	2021/02/03	03:49:15.7	0.0
CJR	1.7	324	S	2021/02/03	03:49:38.4	0.0
DRGR	2.2	312	P	2021/02/03	03:49:22.5	-0.1
BURAR	2.3	2	P	2021/02/03	03:49:23.9	-0.2
SIRR	2.5	292	P	2021/02/03	03:49:27.6	0.0

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



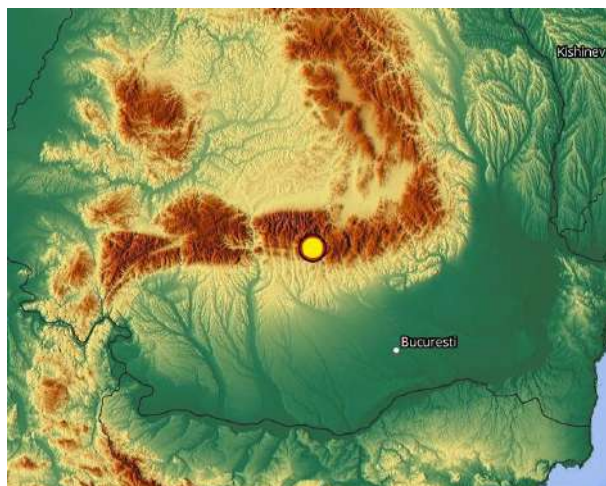
**03.02.2021. Zona seismica Vrancea**

$t_0 = 16:10:58$ ;  $\varphi = 45,42^\circ N$ ;  $\lambda = 25,04^\circ E$ ;  $h = 7 \text{ km}$ ;  $ML = 2,4$

Date	Time	Latitude	Longitude	Depth	Mag
2021/02/03	16:10:58.8	45.42	25.04	7	ML 2.4

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VOIR	0.02	21.6	P	2021/02/03	16:11:00.1	0.0
ARR	0.29	259.8	P	2021/02/03	16:11:03.2	-1.6
STFAR	0.56	185.8	P	2021/02/03	16:11:09.4	-0.2
DOPR	0.60	23.9	P	2021/02/03	16:11:10.4	0.0
MLR	0.64	83.3	P	2021/02/03	16:11:11.0	-0.3
OZUR	0.85	37.4	P	2021/02/03	16:11:15.2	-0.1
HUMR	0.89	182.7	P	2021/02/03	16:11:16.4	0.5
LOT	0.89	272.2	P	2021/02/03	16:11:16.4	0.2
TURR	0.93	46.7	P	2021/02/03	16:11:17.3	0.5
PLOR	1.21	68.5	P	2021/02/03	16:11:22.7	0.7
VRI	1.26	68.7	Pn	2021/02/03	16:11:23.1	-0.1
VRI	1.26	68.7	P	2021/02/03	16:11:22.9	0.1
GZR	1.59	269.8	P	2021/02/03	16:11:27.9	0.1
MARR	1.83	313.9	P	2021/02/03	16:11:31.2	0.1
DRGR	2.12	311.1	Pn	2021/02/03	16:11:35.7	0.7
DRGR	2.12	311.1	Sn	2021/02/03	16:12:04.3	2.5
SZH	2.25	163.1	Pn	2021/02/03	16:11:40.3	3.7



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

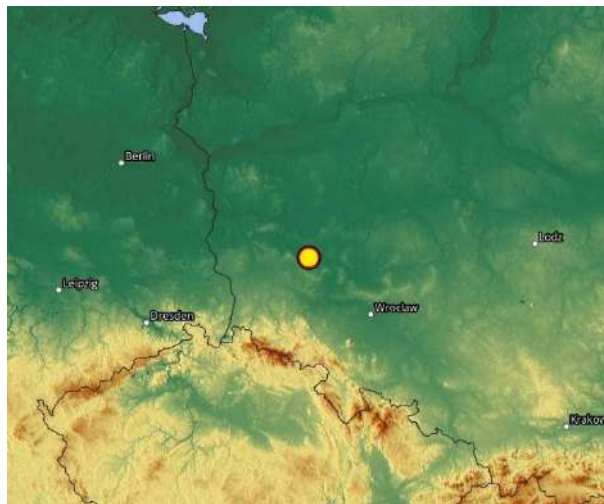
**03.02.2021. Poland**

$t_0 = 17.40.21$ ;  $\varphi = 51,65^\circ N$ ;  $\lambda = 16,11^\circ E$ ;  $h = 10 \text{ km}$ ;  $M = 3,5$

Date	Time	Latitude	Longitude	Depth	Mag
2021/02/03	17:40:21.3	51.6492	16.1163	10	M 3.5

**POLAND**

Sta	Dist	EvAz	Phase	Date	Time	Res
UPC	1.14	183.3	P	2021/02/03	17:40:41.3	-1.3
DPC	1.31	174.2	P	2021/02/03	17:40:43.0	-1.1
PVCC	1.48	221.5	P	2021/02/03	17:40:47.2	-0.5
BRG	1.56	241.1	P	2021/02/03	17:40:48.3	-0.6
KRLC	1.62	163.5	P	2021/02/03	17:40:49.0	-0.6
PRU	1.94	211.5	P	2021/02/03	17:40:53.4	-0.8
CLL	1.97	261.2	P	2021/02/03	17:40:53.0	-0.8
HSKC	1.98	239.3	P	2021/02/03	17:40:55.1	0.2
WANN	1.99	293.7	P	2021/02/03	17:40:54.7	-0.4
MORC	2.08	153.7	P	2021/02/03	17:40:55.2	-1.0
LNIZ	2.18	328.6	P	2021/02/03	17:41:05.4	7.8
OKC	2.22	144.0	P	2021/02/03	17:41:01.6	3.4
VRAC	2.36	172.4	P	2021/02/03	17:40:59.7	-0.4
TREC	2.39	189.9	P	2021/02/03	17:40:59.0	-0.5
KRUC	2.59	176.0	P	2021/02/03	17:41:03.5	0.2
TANN	2.61	243.2	P	2021/02/03	17:41:03.4	-0.1
NKC	2.71	239.9	P	2021/02/03	17:41:04.6	-0.4
OJC	2.73	120.2	P	2021/02/03	17:41:10.9	5.7
NEUB	2.75	262.2	P	2021/02/03	17:41:12.3	6.8
WIMM	2.87	269.2	P	2021/02/03	17:41:13.7	6.5
JAVC	2.96	159.8	P	2021/02/03	17:41:08.8	0.4
KHC	2.99	213.7	P	2021/02/03	17:41:09.8	1.0
MOX	3.00	252.2	P	2021/02/03	17:41:17.1	8.1
FALKS	3.01	272.5	P	2021/02/03	17:41:08.5	-0.7
FLT1	3.08	284.7	P	2021/02/03	17:41:17.7	7.5
GEC2	3.20	209.8	P	2021/02/03	17:41:17.9	6.3
WET	3.24	220.7	P	2021/02/03	17:41:11.9	-0.4



**03.02.2021. Zona seismica Vrancea**

$t_0 = 17:47:04$ ;  $\varphi = 45,38^\circ N$ ;  $\lambda = 25,08^\circ E$ ;  $h = 5 \text{ km}$ ;  $M_w = 2,4$

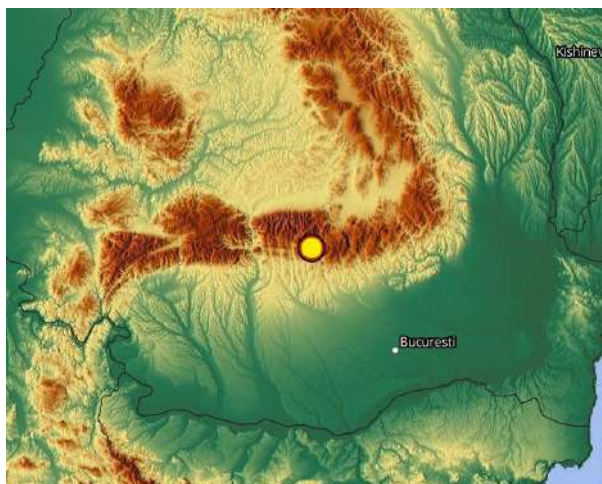
Date	Time	Latitude	Longitude	Depth	Mag
2021/02/03	17:47:04.12	45.3792	25.0829	5.0	M <sub>w</sub> 2.4

**ROMANIA**

Sta	Dist	EvAz	Phase	Date	Time	Res
VOIR	0.06	338.0	P	2021/02/03	17:47:05.468	-0.1
MTUR	0.14	182.5	P	2021/02/03	17:47:06.078	-0.9
ARR	0.32	267.7	P	2021/02/03	17:47:08.498	-1.7
STFAR	0.52	189.5	P	2021/02/03	17:47:14.828	0.6
DOPR	0.63	19.9	P	2021/02/03	17:47:15.778	-0.3
MLR	0.62	79.2	P	2021/02/03	17:47:16.218	0.4
BOSR	0.80	29.9	P	2021/02/03	17:47:19.760	0.3
HUMR	0.85	184.9	P	2021/02/03	17:47:19.798	-0.6
OZUR	0.87	34.2	P	2021/02/03	17:47:20.748	-0.1
TURR	0.94	43.6	P	2021/02/03	17:47:22.490	0.3

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

COPA	1.25	175.6	P	2021/02/03	17:47:26.390	-1.8
VRI	1.25	66.5	P	2021/02/03	17:47:28.360	0.2
SRE	1.51	242.3	P	2021/02/03	17:47:31.738	0.0
GZR	1.62	271.3	P	2021/02/03	17:47:33.738	0.4



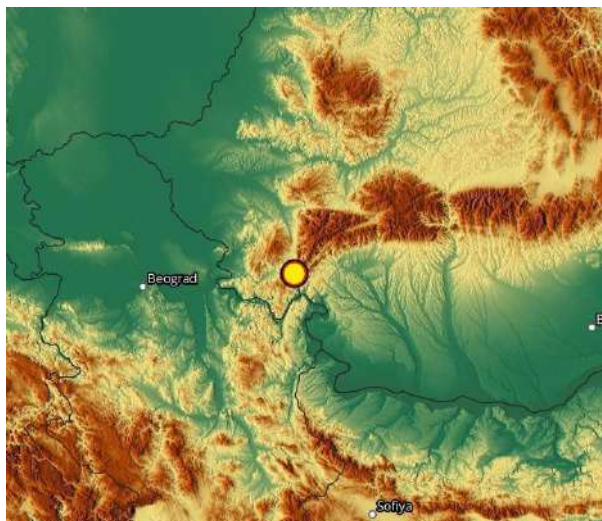
### 08.02.2021. Zona seismica Vrancea

$t_0 = 12:09:56$ ;  $\varphi = 44,90^\circ N$ ;  $\lambda = 22,33^\circ E$ ;  $h = 4 \text{ km}$ ;  $M = 2,2$

Date	Time	Latitude	Longitude	Depth	Mag
2021/02/08	12:09:56.1	44.9160	22.3390	4	M 2.2

#### ROMANIA

Sta	Dist	Phase	Date	Time
DJES	0.28	Pg	2021/02/08	12:10:01.7
DJES	0.28	Sg	2021/02/08	12:10:05.7
MDVR	0.46	Pg	2021/02/08	12:10:04.7
MDVR	0.46	Sg	2021/02/08	12:10:12.2
GZR	0.56	Sg	2021/02/08	12:10:13.9
KUBS	0.69	Pg	2021/02/08	12:10:08.3
KUBS	0.69	Sg	2021/02/08	12:10:17.4
VRSS	0.74	Pg	2021/02/08	12:10:09.9
VRSS	0.74	Sg	2021/02/08	12:10:21.1
PUNG	0.76	Pg	2021/02/08	12:10:11.1
PUNG	0.76	Sg	2021/02/08	12:10:21.5
BORS	0.85	Pg	2021/02/08	12:10:10.8
BORS	0.85	Sg	2021/02/08	12:10:22.9
BZS	0.86	Sg	2021/02/08	12:10:23.2
BZS	0.86	Pg	2021/02/08	12:10:12.7
ZAGS	1.10	Pg	2021/02/08	12:10:16.8
ZAGS	1.10	Sg	2021/02/08	12:10:31.8
TRUS	1.54	Pg	2021/02/08	12:10:23.8
TRUS	1.54	Sg	2021/02/08	12:10:45.0
GRUS	1.55	Pg	2021/02/08	12:10:24.7
GRUS	1.55	Sg	2021/02/08	12:10:44.3



UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

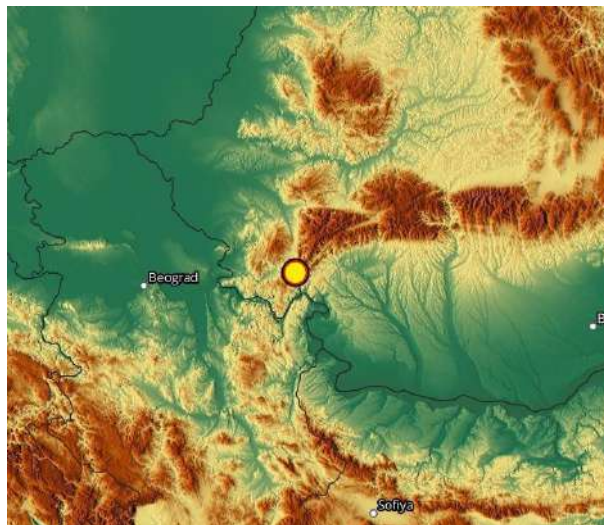
11.02.2021. Zona seismică Vrancea

$t_0 = 06:32:42$ ;  $\varphi = 45,79^\circ N$ ;  $\lambda = 26,77^\circ E$ ;  $h = 4 \text{ km}$ ;  $M = 2,2$

Date	Time	Latitude	Longitude	Depth	Mag
2021/02/11	06:32:42.01	45.7903	26.7791	4	M 2.2

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
SAHR	0.09	225.7	P	2021/02/11	06:32:54.724	-0.4
PLOR	0.11	304.1	P	2021/02/11	06:32:55.418	0.3
VRI	0.08	334.6	P	2021/02/11	06:32:55.440	0.4
BISRR	0.25	191.3	P	2021/02/11	06:32:56.165	0.6
COVR	0.40	278.1	P	2021/02/11	06:32:56.494	0.1
GHRR	0.51	58.1	P	2021/02/11	06:32:57.576	0.5
TURR	0.59	296.8	P	2021/02/11	06:32:58.101	0.3
TUDR	0.65	107.2	P	2021/02/11	06:32:58.266	0.1
ONER	0.61	334.0	P	2021/02/11	06:32:58.396	0.5
MLR	0.66	243.1	P	2021/02/11	06:32:58.852	0.4
TESR	0.73	352.9	P	2021/02/11	06:32:58.853	-0.1
OZUR	0.75	294.2	P	2021/02/11	06:32:59.140	-0.2
ISR	0.69	193.9	P	2021/02/11	06:32:59.327	0.6
BIR	0.75	53.3	P	2021/02/11	06:32:59.651	0.5
SCHL	0.79	111.1	P	2021/02/11	06:32:59.774	0.2
VARL	0.75	81.3	P	2021/02/11	06:32:59.785	0.6
NEGRR	0.81	107.9	P	2021/02/11	06:32:59.991	0.2
SCHLR	0.80	113.1	P	2021/02/11	06:33:00.183	0.4
SCTR	0.86	97.4	P	2021/02/11	06:33:00.782	0.5
VLDR	0.91	86.1	P	2021/02/11	06:33:01.240	0.4
TATR	0.91	101.8	P	2021/02/11	06:33:01.359	0.4
DOPR	0.98	280.9	P	2021/02/11	06:33:01.894	0.2
DMBR	1.05	21.7	P	2021/02/11	06:33:02.340	-0.1
VASR	1.10	39.1	P	2021/02/11	06:33:03.152	0.1
MNTR	1.10	27.9	P	2021/02/11	06:33:03.380	0.4
CFR	1.13	122.3	P	2021/02/11	06:33:03.665	0.3
SULR	1.17	198.6	P	2021/02/11	06:33:04.619	0.8
AMRR	1.24	161.4	P	2021/02/11	06:33:04.814	0.1
BIZ	1.24	338.1	P	2021/02/11	06:33:05.177	0.5
VRI	0.08	334.6	S	2021/02/11	06:33:05.187	0.2
PLOR	0.11	304.1	S	2021/02/11	06:33:05.302	0.2
VOIR	1.26	254.3	P	2021/02/11	06:33:05.394	0.4
SAHR	0.09	225.7	S	2021/02/11	06:33:05.672	0.6
HARR	1.37	143.2	P	2021/02/11	06:33:06.114	-0.1
ODBI	0.19	97.9	S	2021/02/11	06:33:06.787	1.4
COVR	0.40	278.1	S	2021/02/11	06:33:07.180	-0.2
TPGR	1.48	128.4	P	2021/02/11	06:33:07.942	0.2
TLBR	1.53	143.9	P	2021/02/11	06:33:08.226	-0.0
TLCR	1.55	112.2	P	2021/02/11	06:33:08.592	0.1
GHRR	0.51	58.1	S	2021/02/11	06:33:09.394	0.8





UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

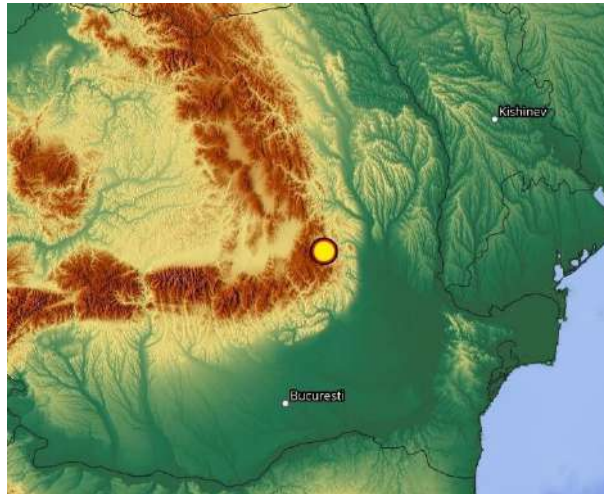
14.02.2021. Zona seismică Vrancea

$t_0 = 17:24:53$ ;  $\varphi = 45,66^\circ N$ ;  $\lambda = 26,39^\circ E$ ;  $h = 143 \text{ km}$ ;  $ML_v = 2,9$

Date	Time	Latitude	Longitude	Depth	Mag
2021/02/14	17:24:53.3	45.66	26.39	143	MLv 2.9

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.3	43	Pn	2021/02/14	17:25:09.8	-0.9
VRI	0.3	49	Pn	2021/02/14	17:25:10.4	-0.0
VRI	0.3	49	Sn	2021/02/14	17:25:24.3	0.3
MLR	0.4	242	Pn	2021/02/14	17:25:10.2	0.0
MLR	0.4	242	Sn	2021/02/14	17:25:24.8	1.3
TESR	0.9	12	Pn	2021/02/14	17:25:13.8	2.4
TESR	0.9	12	Sn	2021/02/14	17:25:31.0	5.6
VOIR	1.0	257	Pn	2021/02/14	17:25:13.5	1.3
VOIR	1.0	257	Sn	2021/02/14	17:25:30.3	3.5
ARR	1.3	257	Pn	2021/02/14	17:25:16.7	0.9
HUMR	1.5	222	Pn	2021/02/14	17:25:18.4	-0.3
HUMR	1.5	222	Sn	2021/02/14	17:25:37.9	-0.3
BURAR	2.1	338	Pn	2021/02/14	17:25:29.6	2.6
CJR	2.2	300	Pn	2021/02/14	17:25:28.6	0.8
DEV	2.5	277	Pn	2021/02/14	17:25:30.6	-0.5
DEV	2.5	277	Sn	2021/02/14	17:25:59.5	-0.9
PLVB	2.6	210	Pn	2021/02/14	17:25:33.1	0.1
SORM	2.8	28	Pn	2021/02/14	17:25:36.1	0.1
SORM	2.8	28	Sn	2021/02/14	17:26:11.7	2.5
KPD	2.9	1	Pn	2021/02/14	17:25:38.0	0.8
SIRR	3.4	282	Pn	2021/02/14	17:25:42.4	-0.8
KOLS	4.3	321	Pn	2021/02/14	17:25:57.1	1.0
LUBAR	4.4	12	Pn	2021/02/14	17:25:57.2	0.5
LUBAR	4.4	12	Sn	2021/02/14	17:26:46.0	-0.5
AKBB	5.4	20	Pn	2021/02/14	17:26:10.5	-0.0
RNPP9	5.8	357	Pn	2021/02/14	17:26:15.9	0.1



15.02.2021. Zona seismică Vrancea

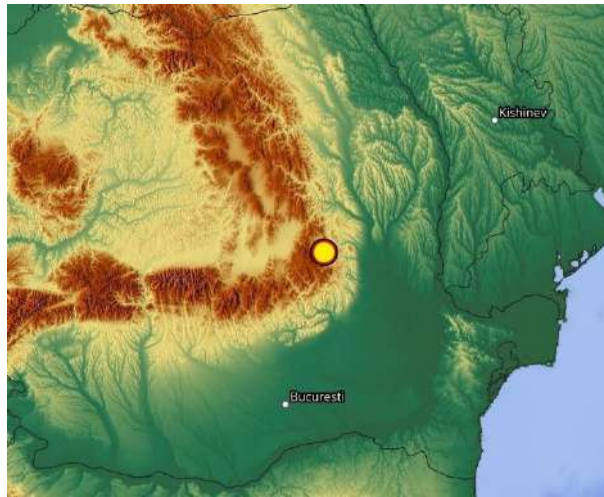
$t_0 = 08:44:59$ ;  $\varphi = 45,81^\circ N$ ;  $\lambda = 26,61^\circ E$ ;  $h = 122 \text{ km}$ ;  $ML_v = 3,5$

Date	Time	Latitude	Longitude	Depth	Mag
2021/02/15	08:44:59.2	45.81	26.61	122	MLv 3.5

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.1	31	P	2021/02/15	08:45:16.2	0.2
VRI	0.1	54	P	2021/02/15	08:45:16.3	0.0
MLR	0.6	236	P	2021/02/15	08:45:18.9	-0.0
TESR	0.7	2	P	2021/02/15	08:45:19.4	-0.3
SORM	2.6	26	P	2021/02/15	08:45:40.6	0.1
KPD	2.8	358	P	2021/02/15	08:45:42.5	0.1
PLVB	2.8	211	P	2021/02/15	08:45:43.1	0.1
LUBAR	4.2	10	P	2021/02/15	08:46:01.3	0.1
AKBB	5.2	18	P	2021/02/15	08:46:13.8	-0.4
RNPP2	5.5	355	P	2021/02/15	08:46:19.2	-0.2
SSM4	5.8	68	P	2021/02/15	08:46:23.1	-0.1

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



**21.02.2021. Zona seismica Vrancea**

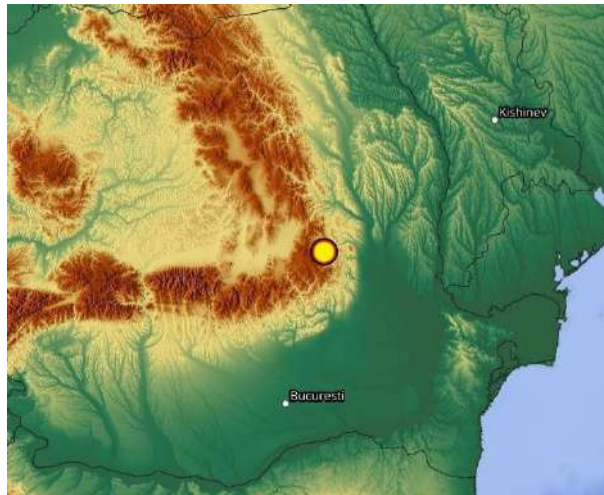
$t_0 = 15:10:24$ ;  $\varphi = 45,75^\circ N$ ;  $\lambda = 26,72^\circ E$ ;  $h = 124 \text{ km}$ ;  $mb = 3,2$

Date	Time	Latitude	Longitude	Depth	Mag
2021/02/21	15:10:24.81	45.7473	26.7168	124	mb 3.2

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.11	335.8	P	2021/02/21	15:10:42.2	0.1
VRI	0.12	3.7	P	2021/02/21	15:10:42.3	0.2
SAHR	0.03	226.7	P	2021/02/21	15:10:42.5	0.5
COVR	0.37	285.6	P	2021/02/21	15:10:42.8	-0.0
ODBI	0.24	86.0	P	2021/02/21	15:10:43.1	0.8
GRER	0.41	153.7	P	2021/02/21	15:10:43.2	0.3
TURR	0.58	302.5	P	2021/02/21	15:10:44.1	0.2
MLR	0.60	244.9	P	2021/02/21	15:10:44.3	0.1
GHRR	0.57	56.7	P	2021/02/21	15:10:44.5	0.6
OZUR	0.74	298.6	P	2021/02/21	15:10:44.7	-0.5
ONER	0.63	339.2	P	2021/02/21	15:10:44.8	0.5
TESR	0.77	356.5	P	2021/02/21	15:10:45.0	-0.3
ISR	0.64	191.0	P	2021/02/21	15:10:45.1	0.7
SCHLR	0.83	109.2	P	2021/02/21	15:10:45.9	0.1
NEGRR	0.84	104.1	P	2021/02/21	15:10:46.2	0.4
DOPR	0.95	283.9	P	2021/02/21	15:10:46.9	-0.1
VLDR	0.96	83.7	P	2021/02/21	15:10:47.3	0.3
TATR	0.94	98.6	P	2021/02/21	15:10:47.3	0.4
PDRR	1.15	25.6	P	2021/02/21	15:10:48.9	0.1
CFR	1.15	119.2	P	2021/02/21	15:10:49.0	0.2
VOIR	1.21	255.7	P	2021/02/21	15:10:49.2	-0.3
NGRR	1.20	24.4	P	2021/02/21	15:10:49.3	-0.0
VASR	1.16	39.4	P	2021/02/21	15:10:49.3	0.4
MNTR	1.16	28.8	P	2021/02/21	15:10:49.4	0.4
LEHL	1.28	176.7	P	2021/02/21	15:10:50.3	0.1
HARR	1.36	140.6	P	2021/02/21	15:10:50.9	-0.1
TLCR	1.57	110.1	P	2021/02/21	15:10:53.2	-0.3
VRI	0.12	3.7	S	2021/02/21	15:10:55.3	-0.0
TIRR	1.76	136.5	P	2021/02/21	15:10:55.5	-0.2
VLDR	0.96	83.7	S	2021/02/21	15:11:03.9	-0.1
SORM	2.64	24.5	P	2021/02/21	15:11:06.1	-0.5
DMBR	1.10	22.9	S	2021/02/21	15:11:06.2	-0.4
CFR	1.15	119.2	S	2021/02/21	15:11:06.5	-0.8
PDRR	1.15	25.6	S	2021/02/21	15:11:06.9	-0.6
SULR	1.12	197.2	S	2021/02/21	15:11:06.9	0.1
VASR	1.16	39.4	S	2021/02/21	15:11:07.4	-0.3
MNTR	1.16	28.8	S	2021/02/21	15:11:07.5	-0.1
NGRR	1.20	24.4	S	2021/02/21	15:11:07.9	-0.4

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



**24.02.2021. Zona seismică Vrancea**

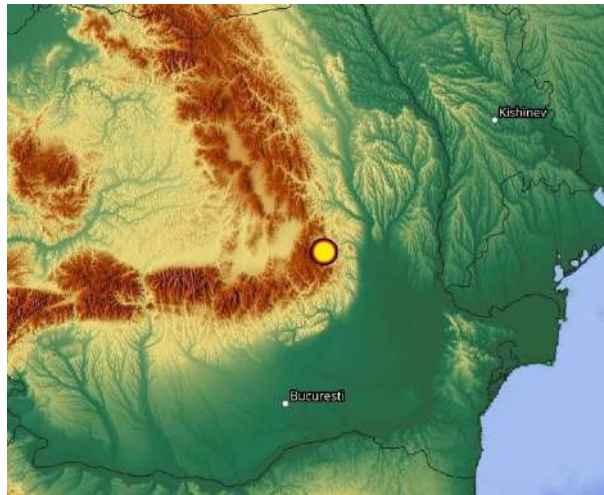
$t_0 = 02:35:09$ ;  $\varphi = 45,75^\circ N$ ;  $\lambda = 26,62^\circ E$ ;  $h = 134 \text{ km}$ ;  $ML_v = 3,6$

Date	Time	Latitude	Longitude	Depth	Mag
2021/02/24	02:35:09.1	45.75	26.62	134	MLv 3.6

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VRI	0.1	33	P	2021/02/24	02:35:28.3	0.4
VRI	0.1	33	S	2021/02/24	02:35:43.8	1.4
BISRR	0.2	164	P	2021/02/24	02:35:28.1	-0.1
MLR	0.5	241	P	2021/02/24	02:35:29.8	-0.2
MLR	0.5	241	S	2021/02/24	02:35:45.4	-0.8
GHRR	0.6	60	P	2021/02/24	02:35:30.6	0.2
ISR	0.6	185	P	2021/02/24	02:35:30.0	-0.5
OZUR	0.7	301	P	2021/02/24	02:35:30.1	-0.6
TESR	0.8	1	P	2021/02/24	02:35:31.0	-0.1
VOIR	1.1	255	P	2021/02/24	02:35:33.9	0.0
TIRR	1.8	135	P	2021/02/24	02:35:40.9	-0.2
KIS	2.0	50	P	2021/02/24	02:35:43.7	0.8
KIS	2.0	50	S	2021/02/24	02:36:08.5	-0.6
PURM	2.4	70	P	2021/02/24	02:35:48.6	0.6
SORM	2.7	26	P	2021/02/24	02:35:51.8	0.3
KPD	2.8	358	P	2021/02/24	02:35:53.6	0.2
BAL3X	3.0	42	P	2021/02/24	02:35:56.0	0.2
MI26	3.0	42	P	2021/02/24	02:35:56.0	0.2
PDU0	3.7	55	P	2021/02/24	02:36:06.5	1.1
PDU0	3.7	55	S	2021/02/24	02:36:48.0	-1.5
UZH	4.1	316	P	2021/02/24	02:36:10.7	0.2
LUBAR	4.2	10	P	2021/02/24	02:36:12.0	-0.0
LUBAR	4.2	10	S	2021/02/24	02:36:59.5	-1.9
CTYL	4.4	164	P	2021/02/24	02:36:14.4	-0.5
XAEC5	4.7	1	P	2021/02/24	02:36:18.3	0.5
AK07	5.1	19	P	2021/02/24	02:36:23.4	-0.1
AKBB	5.2	18	P	2021/02/24	02:36:25.7	0.3
RNPP5	5.5	355	P	2021/02/24	02:36:29.1	0.2
MORH	5.6	278	P	2021/02/24	02:36:29.9	-0.1
RNPP8	5.6	355	P	2021/02/24	02:36:30.7	0.4
NIE	5.6	313	P	2021/02/24	02:36:30.6	0.1
RNPP9	5.7	355	P	2021/02/24	02:36:31.3	0.0

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



**25.02.2021. Poland**

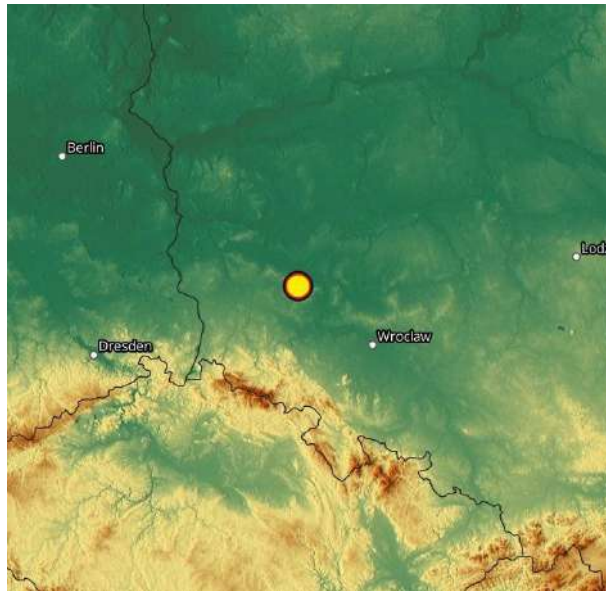
$t_0 = 05:21:01$ ;  $\varphi = 51,56^\circ N$ ;  $\lambda = 16,15^\circ E$ ;  $h = 10 \text{ км}$ ;  $ML = 4,1$

Date	Time	Latitude	Longitude	Depth	Mag
2021/02/25	05:21:01.8	51.5611	16.1473	10	ML 4.1

POLAND

Sta	Phase	Date	Time	Res
UPC	P	2021/02/25	05:21:20.5	-1.3
DPC	P	2021/02/25	05:21:23.3	-0.9
PVCC	P	2021/02/25	05:21:27.2	-0.2
KRLC	P	2021/02/25	05:21:28.6	-0.2
BRG	P	2021/02/25	05:21:28.3	-0.7
RUE	P	2021/02/25	05:21:31.4	-0.2
PRU	P	2021/02/25	05:21:33.1	-0.8
HSKC	P	2021/02/25	05:21:35.3	0.2
CLL	P	2021/02/25	05:21:34.4	-0.9
MORC	P	2021/02/25	05:21:34.9	-0.6
OKC	P	2021/02/25	05:21:36.5	-1.1
LNIZ	P	2021/02/25	05:21:38.7	-0.6
VRAC	P	2021/02/25	05:21:38.9	-0.4
TREC	P	2021/02/25	05:21:39.3	-0.5
KRUC	P	2021/02/25	05:21:42.6	-0.0
TANN	P	2021/02/25	05:21:43.6	-0.2
NKC	P	2021/02/25	05:21:44.0	-0.2
JAVC	P	2021/02/25	05:21:49.6	2.0
WIMM	P	2021/02/25	05:21:49.6	1.7
KHC	P	2021/02/25	05:21:48.1	-0.4
MOX	P	2021/02/25	05:21:48.9	-0.4
GEC2	P	2021/02/25	05:21:51.9	0.7
WET	P	2021/02/25	05:21:51.6	-0.5
MODS	P	2021/02/25	05:21:54.4	1.3
GRB3	P	2021/02/25	05:21:57.1	0.1
GRA3	P	2021/02/25	05:21:55.7	-1.4
CLZ	P	2021/02/25	05:21:57.9	0.3
TNS	P	2021/02/25	05:22:17.5	-0.1
OBKA	P	2021/02/25	05:22:19.2	0.1
WTTA	P	2021/02/25	05:22:20.7	1.0
TRPA	P	2021/02/25	05:22:21.7	-0.2
UBR	P	2021/02/25	05:22:25.5	1.5
CLUD	P	2021/02/25	05:22:25.0	0.8
MORH	P	2021/02/25	05:22:25.9	0.9
DRE	P	2021/02/25	05:22:25.4	-0.2
CIMO	P	2021/02/25	05:22:27.6	-0.0
DAVA	P	2021/02/25	05:22:30.8	1.4
KIEV	P	2021/02/25	05:22:59.0	-1.7
ESCA	P	2021/02/25	05:23:21.6	-0.1
CALF	P	2021/02/25	05:23:25.3	0.2

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



**27.02.2021, Zona seismică Vrancea**

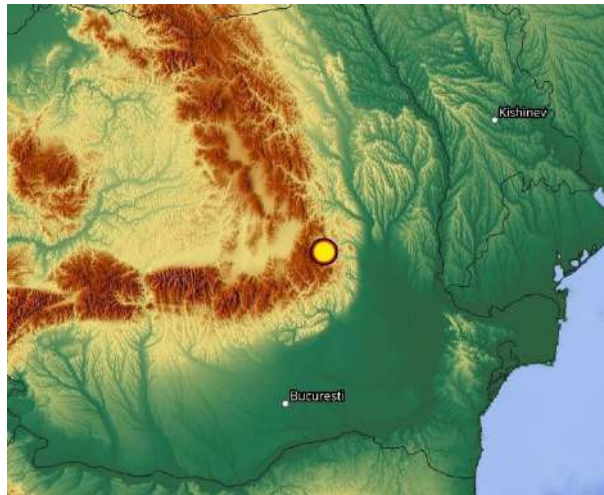
$t_0 = 21:13:10$ ;  $\varphi = 45,57^\circ N$ ;  $\lambda = 26,61^\circ E$ ;  $h = 130 \text{ km}$ ;  $ML_v = 3,8$

Date	Time	Latitude	Longitude	Depth	Mag
2021/02/27	21:13:09.8	45.57	26.61	130	MLv 3.8

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.3	5	P	2021/02/27	21:13:28.8	0.1
PLOR	0.3	5	S	2021/02/27	21:13:43.0	-0.5
VRI	0.3	15	P	2021/02/27	21:13:29.0	0.1
VRI	0.3	15	S	2021/02/27	21:13:43.9	0.2
MLR	0.5	260	P	2021/02/27	21:13:29.5	-0.3
TESR	0.9	1	P	2021/02/27	21:13:32.6	0.3
VOIR	1.1	263	P	2021/02/27	21:13:33.7	-0.0
ARR	1.4	262	P	2021/02/27	21:13:37.1	0.1
HUMR	1.6	229	P	2021/02/27	21:13:38.5	-0.1
BURAR	2.3	335	P	2021/02/27	21:13:48.5	1.3
CJR	2.4	300	P	2021/02/27	21:13:48.9	0.4
PLVB	2.6	214	P	2021/02/27	21:13:51.4	0.0
DEV	2.6	278	P	2021/02/27	21:13:51.4	-0.1
SORM	2.8	24	P	2021/02/27	21:13:54.3	0.2
DRGR	3.0	296	P	2021/02/27	21:13:55.2	-0.7
KPD	3.0	358	P	2021/02/27	21:13:56.2	-0.0
BAL3X	3.1	40	P	2021/02/27	21:13:58.3	0.2
MI26	3.1	40	P	2021/02/27	21:13:58.5	0.4
SIRR	3.5	283	P	2021/02/27	21:14:02.8	-0.4
MDVR	3.6	259	P	2021/02/27	21:14:02.3	-1.2
TRPA	3.8	314	P	2021/02/27	21:14:06.1	-0.5
LUBAR	4.4	10	P	2021/02/27	21:14:14.8	-0.2
KOLS	4.5	320	P	2021/02/27	21:14:16.1	0.4
PSZ	5.2	299	P	2021/02/27	21:14:25.4	0.2
AKBB	5.4	18	P	2021/02/27	21:14:28.3	-0.0
MORH	5.6	279	P	2021/02/27	21:14:30.9	0.0
SSM3	5.6	68	P	2021/02/27	21:14:31.5	0.1
RNPP5	5.7	355	P	2021/02/27	21:14:31.9	0.1

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



**07.03.2021. Zona seismică Vrancea**

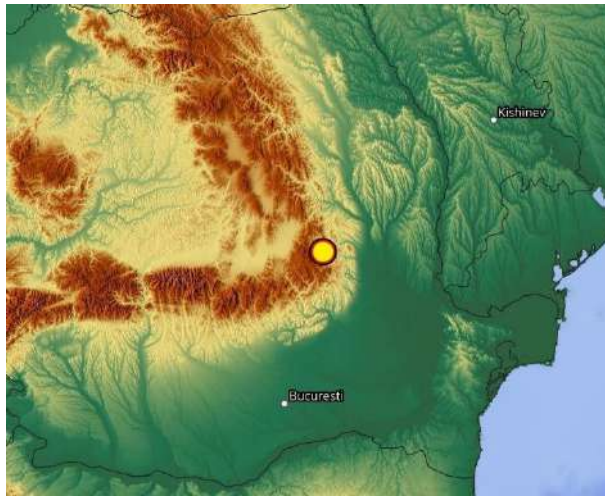
$t_0 = 09:52:27$ ;  $\varphi = 45,66^\circ N$ ;  $\lambda = 26,49^\circ E$ ;  $h = 147 \text{ km}$ ;  $mb = 4,1$

Date	Time	Latitude	Longitude	Depth	Mag
2021/03/07	09:52:27.6	45.66	26.49	147	mb 4.1

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.2	31	P	2021/03/07	09:52:48.2	-0.0
VRI	0.3	39	P	2021/03/07	09:52:48.6	0.1
VRI	0.3	39	S	2021/03/07	09:53:05.2	0.5
MLR	0.4	246	P	2021/03/07	09:52:48.9	-0.4
MLR	0.4	246	S	2021/03/07	09:53:05.3	-0.7
TESR	0.9	7	P	2021/03/07	09:52:51.4	0.1
VOIR	1.0	258	P	2021/03/07	09:52:52.7	0.3
ARR	1.3	258	P	2021/03/07	09:52:55.7	0.4
HUMR	1.6	224	P	2021/03/07	09:52:57.2	-0.4
BURAR	2.2	336	P	2021/03/07	09:53:06.0	1.5
CJR	2.3	299	P	2021/03/07	09:53:05.6	-0.1
DEV	2.5	276	P	2021/03/07	09:53:08.7	-0.1
PLVB	2.6	211	P	2021/03/07	09:53:09.9	-0.3
SORM	2.8	27	P	2021/03/07	09:53:12.1	0.1
DRGR	2.9	295	P	2021/03/07	09:53:12.6	-0.3
KPD	2.9	360	P	2021/03/07	09:53:13.3	-0.2
DJES	3.0	252	P	2021/03/07	09:53:13.1	-1.4
SIRR	3.4	282	P	2021/03/07	09:53:20.1	-0.1
MDVR	3.5	257	P	2021/03/07	09:53:20.7	-0.3
TRPA	3.7	314	P	2021/03/07	09:53:23.1	-0.2
PDU0	3.9	55	P	2021/03/07	09:53:27.4	1.6
AMBH	4.1	282	P	2021/03/07	09:53:29.6	1.0
PHSR	4.1	169	P	2021/03/07	09:53:29.7	0.7
LUBAR	4.3	11	P	2021/03/07	09:53:31.8	-0.4
KOLS	4.4	320	P	2021/03/07	09:53:33.1	0.8
XAEC2	4.5	3	P	2021/03/07	09:53:36.4	1.5
KECS	5.0	307	P	2021/03/07	09:53:40.8	0.2
MI29	5.2	12	P	2021/03/07	09:53:39.4	-4.2
AKBB	5.4	19	P	2021/03/07	09:53:45.6	-0.0
AKBB	5.4	19	S	2021/03/07	09:54:43.6	-3.5
MORH	5.5	279	P	2021/03/07	09:53:47.6	0.1
RNPP5	5.6	356	P	2021/03/07	09:53:48.2	-0.4
NIE	5.6	314	P	2021/03/07	09:53:49.8	0.7
KOVH	5.9	277	P	2021/03/07	09:53:52.9	0.5
SSM6	6.0	68	P	2021/03/07	09:53:54.0	0.2

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



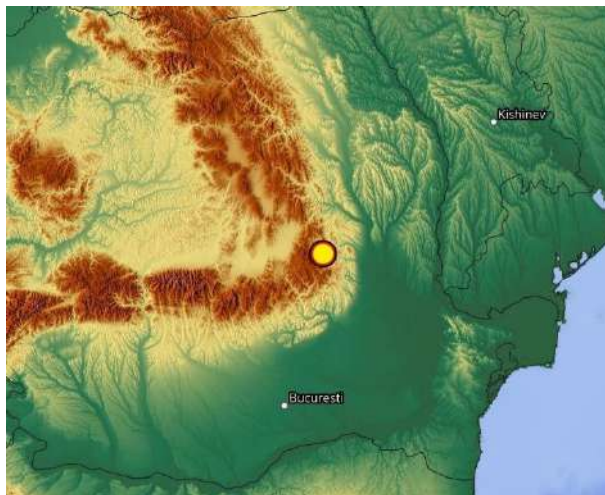
**07.03.2021. Zona seismică Vrancea**

$t_0 = 22:34:27$ ;  $\varphi = 45,65^\circ N$ ;  $\lambda = 26,49^\circ E$ ;  $h = 145 \text{ km}$ ;  $mb = 3,4$

Date	Time	Latitude	Longitude	Depth	Mag
2021/03/07	22:34:27.7	45.65	26.49	145	mb 3.4

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.2	29	P	2021/03/07	22:34:47.9	-0.2
PLOR	0.2	29	S	2021/03/07	22:35:04.1	0.0
VRI	0.3	38	P	2021/03/07	22:34:48.1	-0.3
VRI	0.3	38	S	2021/03/07	22:35:04.6	0.2
MLR	0.4	247	P	2021/03/07	22:34:48.5	-0.6
MLR	0.4	247	S	2021/03/07	22:35:05.5	-0.2
TESR	0.9	7	P	2021/03/07	22:34:51.5	0.3
VOIR	1.0	258	P	2021/03/07	22:34:52.8	0.5
VOIR	1.0	258	S	2021/03/07	22:35:11.4	-0.0
ARR	1.3	258	P	2021/03/07	22:34:55.7	0.4
HUMR	1.6	224	P	2021/03/07	22:34:57.3	-0.2
HUMR	1.6	224	S	2021/03/07	22:35:20.9	0.1
BURAR	2.2	336	P	2021/03/07	22:35:05.5	0.9
CJR	2.3	299	P	2021/03/07	22:35:05.9	0.2
DEV	2.5	277	P	2021/03/07	22:35:08.9	0.1
DEV	2.5	277	S	2021/03/07	22:35:40.9	-0.1
PLVB	2.6	211	P	2021/03/07	22:35:10.0	-0.2
SORM	2.8	27	P	2021/03/07	22:35:12.4	0.3
DRGR	2.9	295	P	2021/03/07	22:35:12.8	-0.2
SIRR	3.4	282	P	2021/03/07	22:35:20.0	-0.2
MDVR	3.5	257	P	2021/03/07	22:35:20.7	-0.4
LUBAR	4.4	11	P	2021/03/07	22:35:32.7	0.4
AKBB	5.4	19	P	2021/03/07	22:35:45.7	-0.1
YLV	5.5	156	P	2021/03/07	22:35:48.2	0.5
RNPP5	5.6	356	P	2021/03/07	22:35:48.8	0.0



UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

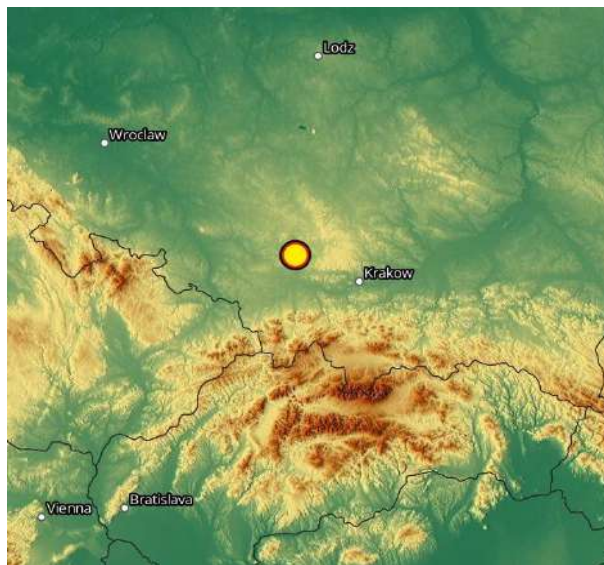
11.03.2021. Poland

$t_0 = 17:09:43$ ;  $\varphi = 51,26^\circ N$ ;  $\lambda = 50.21^\circ E$ ;  $h = 5 \text{ km}$ ;  $ML = 2,9$

Date	Time	Latitude	Longitude	Depth	Mag
2021/03/11	17:09:43.3	50.2662	19.2169	5	ML 2.9

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
OJC	0.38	96.9	Pg	2021/03/11	17:09:51.0	0.4
OJC	0.38	96.9	Sg	2021/03/11	17:09:56.0	0.4
OKC	0.81	238.5	Pg	2021/03/11	17:09:59.9	1.0
OKC	0.81	238.5	Sg	2021/03/11	17:10:11.2	1.7
MORC	1.18	246.2	Pg	2021/03/11	17:10:06.6	0.4
MORC	1.18	246.2	P	2021/03/11	17:10:07.3	1.1
MORC	1.18	246.2	Sg	2021/03/11	17:10:22.6	1.0
MORC	1.18	246.2	S	2021/03/11	17:10:24.0	2.4
DPC	1.86	273.7	Pg	2021/03/11	17:10:18.0	-1.0
DPC	1.86	273.7	Sg	2021/03/11	17:10:43.1	0.0
VRAC	1.95	241.6	P	2021/03/11	17:10:18.2	1.0
KSP	1.95	288.3	Pg	2021/03/11	17:10:22.9	2.1
VRAC	1.95	241.6	S	2021/03/11	17:10:43.9	1.9
KSP	1.95	288.3	Sg	2021/03/11	17:10:46.9	0.8
PSZ	2.39	169.0	P	2021/03/11	17:10:23.8	0.5
BRG	3.41	282.3	Pg	2021/03/11	17:10:48.1	-0.7
BRG	3.41	282.3	Sg	2021/03/11	17:11:34.2	1.1
GEC2	3.86	250.5	Pg	2021/03/11	17:10:54.4	-3.1
MORH	4.07	185.6	P	2021/03/11	17:10:45.5	-0.8
CLL	4.08	287.2	Sg	2021/03/11	17:11:57.5	3.1
WET	4.26	257.2	Sg	2021/03/11	17:11:56.9	-3.5
TANN	4.33	274.6	Pg	2021/03/11	17:11:04.5	-1.9
TANN	4.33	274.6	Sg	2021/03/11	17:12:01.7	-0.8
MARR	4.43	142.7	P	2021/03/11	17:10:51.7	0.3
ROTZ	4.54	266.4	Sg	2021/03/11	17:12:07.0	-2.5
BURAR	4.76	121.6	P	2021/03/11	17:10:55.3	-0.6
MOX	4.87	277.4	Sg	2021/03/11	17:12:20.4	0.6
SURR	4.92	155.5	P	2021/03/11	17:10:57.5	-0.4
BZS	4.92	160.0	P	2021/03/11	17:10:58.4	0.4
BANR	5.05	164.5	P	2021/03/11	17:10:59.7	0.0
GZR	5.43	152.5	P	2021/03/11	17:11:04.7	-0.4



12.03.2021. Zona seismica Vrancea

$t_0 = 20:11:39$ ;  $\varphi = 45,61^\circ N$ ;  $\lambda = 26,55^\circ E$ ;  $h = 131 \text{ km}$ ;  $ML_v = 2,6$

Date	Time	Latitude	Longitude	Depth	Mag
2021/03/12	20:11:39.1	45.61	26.55	131	MLv 2.6

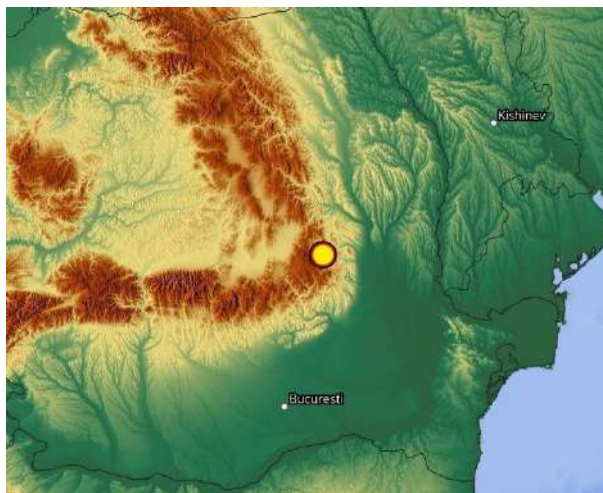
ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.3	16	P	2021/03/12	20:11:58.2	0.1
PLOR	0.3	16	S	2021/03/12	20:12:12.9	0.1
VRI	0.3	26	P	2021/03/12	20:11:58.5	0.2
VRI	0.3	26	S	2021/03/12	20:12:13.4	0.2



## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

MLR	0.4	255	P	2021/03/12	20:11:59.0	-0.1
MLR	0.4	255	S	2021/03/12	20:12:14.4	-0.3
VOIR	1.1	261	P	2021/03/12	20:12:02.8	0.0
ARR	1.4	260	P	2021/03/12	20:12:06.5	0.4
DEV	2.6	277	P	2021/03/12	20:12:20.2	-0.0
PLVB	2.6	213	P	2021/03/12	20:12:20.1	-0.7
PLVB	2.6	213	S	2021/03/12	20:12:53.2	-0.3
BAL3X	3.1	41	P	2021/03/12	20:12:26.9	-0.6
MI05	3.2	69	P	2021/03/12	20:12:28.3	-0.1



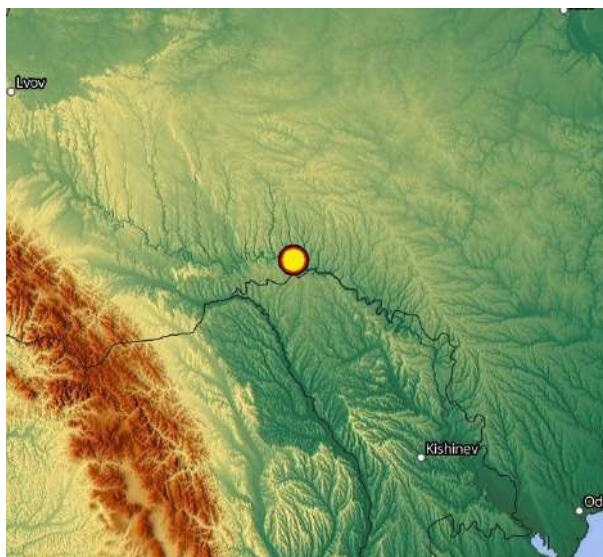
### 14.03.2021. Україна, Чернівецька обл.

$t_0 = 16:23:31$ ;  $\varphi = 48,55^\circ N$ ;  $\lambda = 27,34^\circ E$ ;  $h = 4$  км;  $ML_v = 1,9$

Date	Time	Latitude	Longitude	Depth	Mag
2021/03/14	16:23:30.9	48.55	27.34	5	MLv 1.9

#### UKRAINE

Sta	Dist	EvAz	Phase	Date	Time	Res
SORM	0.8	122	P	2021/03/07	16:23:46.3	-0.7
LUBAR	1.4	12	P	2021/03/07	16:23:54.7	-1.2
BURAR	1.7	237	P	2021/03/07	16:24:01.4	0.6
XAEC5	1.9	349	S	2021/03/07	16:24:27.8	-0.5
TESR	2.1	192	P	2021/03/07	16:24:07.2	0.3
MI28	2.4	6	P	2021/03/07	16:24:09.8	-0.5
MI28	2.4	6	S	2021/03/07	16:24:40.5	-0.1
AKBB	2.5	30	P	2021/03/07	16:24:12.0	0.4
AKBB	2.5	30	S	2021/03/07	16:24:43.6	0.6
VRI	2.7	188	S	2021/03/07	16:24:49.9	-0.2



UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

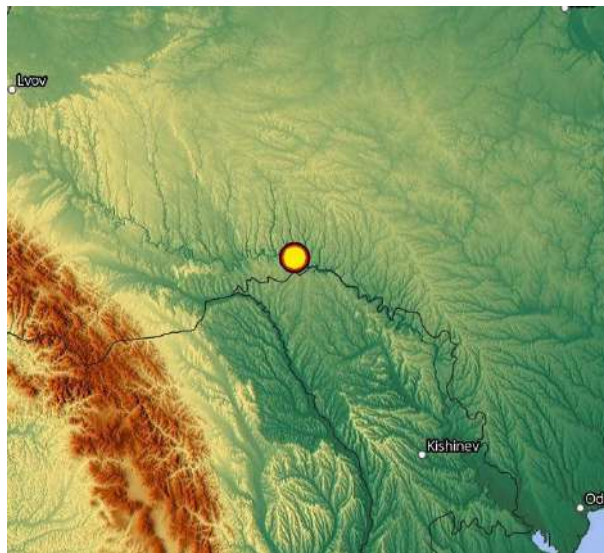
**14.03.2021. Україна, Чернівецька обл.**

$t_0 = 19:09:48$ ;  $\varphi = 48.66^\circ N$ ;  $\lambda = 27.40^\circ E$ ;  $h = 5 \text{ км}$ ;  $ML_v = 2,2$

Date	Time	Latitude	Longitude	Depth	Mag
2021/03/14	19:09:48.3	48.66	27.40	5	MLv 2.2

UKRAINE

Sta	Dist	EvAz	Phase	Date	Time	Res
KPD	0.6	262	P	2021/03/14	19:10:00.7	-0.1
SORM	0.8	129	P	2021/03/14	19:10:04.1	-0.2
SORM	0.8	129	S	2021/03/14	19:10:14.8	-1.0
LUBAR	1.3	10	P	2021/03/14	19:10:11.6	-0.3
LUBAR	1.3	10	S	2021/03/14	19:10:29.0	-0.5
XAEC2	1.6	346	P	2021/03/14	19:10:16.6	-0.0
XAEC1	1.7	344	P	2021/03/14	19:10:17.5	-1.0
XAEC3	1.7	344	P	2021/03/14	19:10:17.4	-1.2
BURAR	1.8	236	P	2021/03/14	19:10:18.8	-0.8
XAEC5	1.8	346	S	2021/03/14	19:10:44.7	0.5
TESR	2.2	194	P	2021/03/14	19:10:26.6	1.0
TESR	2.2	194	S	2021/03/14	19:10:54.9	0.7
AK13	2.2	28	P	2021/03/14	19:10:26.9	1.0
MI28	2.3	4	S	2021/03/14	19:10:56.1	0.1
AKBB	2.3	30	P	2021/03/14	19:10:27.1	-0.0
AKBB	2.3	30	S	2021/03/14	19:10:55.3	-1.6



**15.03.2021. Zona seismică Vrancea**

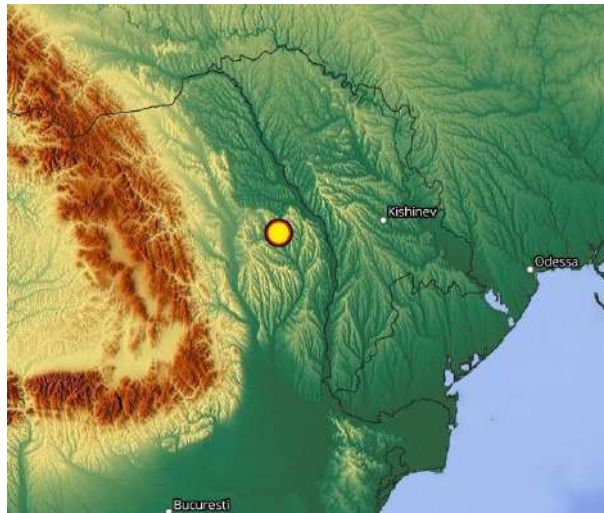
$t_0 = 08:39:57$ ;  $\varphi = 46.89^\circ N$ ;  $\lambda = 27.51^\circ E$ ;  $h = 5 \text{ км}$ ;  $ML_v = 2,3$

Date	Time	Latitude	Longitude	Depth	Mag
2021/03/15	08:39:57.7	46.89	27.51	5	MLv 2.3

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
SORM	1.4	24	Pg	2021/03/15	08:40:23.8	-0.1
SORM	1.4	24	Sg	2021/03/15	08:40:42.3	-0.7
BURAR	1.7	296	Pn	2021/03/15	08:40:28.6	-0.0
BURAR	1.7	296	Sn	2021/03/15	08:40:51.2	-1.0
KPD	1.8	337	Pn	2021/03/15	08:40:30.4	0.8
KPD	1.8	337	Sn	2021/03/15	08:40:54.8	0.8
AKBB	3.9	16	Lg	2021/03/15	08:41:59.5	-0.2

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



**15.03.2021. Zona seismică Vrancea**

$t_0 = 12:19:22$ ;  $\varphi = 45,45^\circ N$ ;  $\lambda = 26,43^\circ E$ ;  $h = 120 \text{ km}$ ;  $ML_v = 2,7$

Date	Time	Latitude	Longitude	Depth	Mag
2021/03/15	12:19:22.8	45.45	26.43	120	MLv 2.7

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
MLR	0.3	278	P	2021/03/15	12:19:41.6	0.5
PLOR	0.4	21	P	2021/03/15	12:19:41.7	0.1
VRI	0.5	27	P	2021/03/15	12:19:42.0	0.2
VOIR	1.0	270	P	2021/03/15	12:19:44.5	-0.2
VOIR	1.0	270	S	2021/03/15	12:20:01.3	-0.4
TESR	1.1	8	P	2021/03/15	12:19:45.7	-0.0
TESR	1.1	8	S	2021/03/15	12:20:03.3	-0.1
ARR	1.3	267	P	2021/03/15	12:19:48.0	0.3
ARR	1.3	267	S	2021/03/15	12:20:07.7	0.6
HUMR	1.4	229	P	2021/03/15	12:19:49.4	0.4
HUMR	1.4	229	S	2021/03/15	12:20:08.6	-0.7
CJR	2.3	304	P	2021/03/15	12:20:00.3	-0.3
BURAR	2.4	339	P	2021/03/15	12:20:00.4	-0.3
BURAR	2.4	339	S	2021/03/15	12:20:30.4	0.0



**17.03.2021. Poland**

$t_0 = 02:44:44$ ;  $\varphi = 51,37^\circ N$ ;  $\lambda = 16,16^\circ E$ ;  $h = 10 \text{ km}$ ;  $ML_v = 3,4$

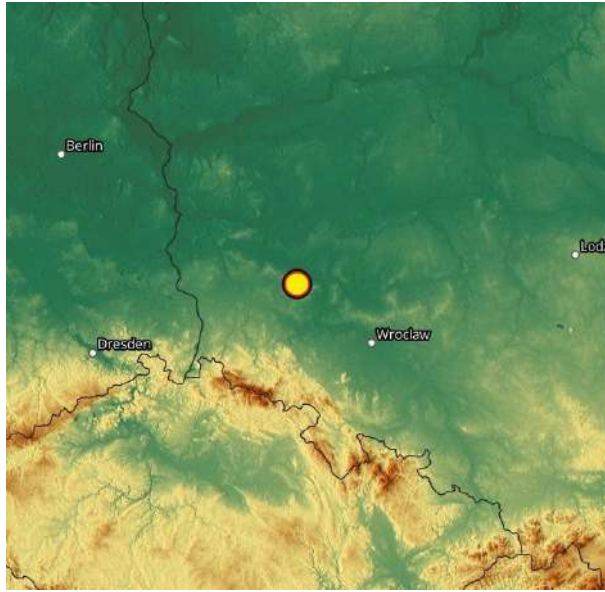
Date	Time	Latitude	Longitude	Depth	Mag
2021/03/17	02:44:44.7	51.37	16.16	10	MLv 3.4

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
KSP	0.5	171	P	2021/03/17	02:44:56.0	0.3
CHVC	0.8	185	P	2021/03/17	02:45:00.7	0.6

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

OSTC	0.8	178	P	2021/03/17	02:45:01.3	0.7
UPC	0.9	186	P	2021/03/17	02:45:02.1	0.5
DPC	1.0	174	P	2021/03/17	02:45:04.6	0.4
PVCC	1.3	231	P	2021/03/17	02:45:08.5	-0.1
KRLC	1.3	161	P	2021/03/17	02:45:09.7	0.7
PRU	1.7	217	P	2021/03/17	02:45:14.4	-0.1
MORC	1.8	151	P	2021/03/17	02:45:15.8	-0.2
HSKC	1.9	247	P	2021/03/17	02:45:16.6	-0.3
GKP	2.0	19	P	2021/03/17	02:45:20.4	1.7
NKC	2.6	246	P	2021/03/17	02:45:25.9	-1.1
KHC	2.8	218	P	2021/03/17	02:45:28.9	-0.5
CKRC	2.8	206	P	2021/03/17	02:45:29.9	0.2
KWP	4.5	110	P	2021/03/17	02:45:51.9	-1.4
KOLS	4.6	119	P	2021/03/17	02:45:53.6	-1.0
SIRR	6.3	142	P	2021/03/17	02:46:17.1	0.0
DRGR	6.3	134	P	2021/03/17	02:46:17.9	0.5
BURAR	7.0	119	P	2021/03/17	02:46:26.1	-0.6
LUBAR	7.5	97	P	2021/03/17	02:46:34.2	-0.0



### 23.03.2021. Zona seismică Vrancea

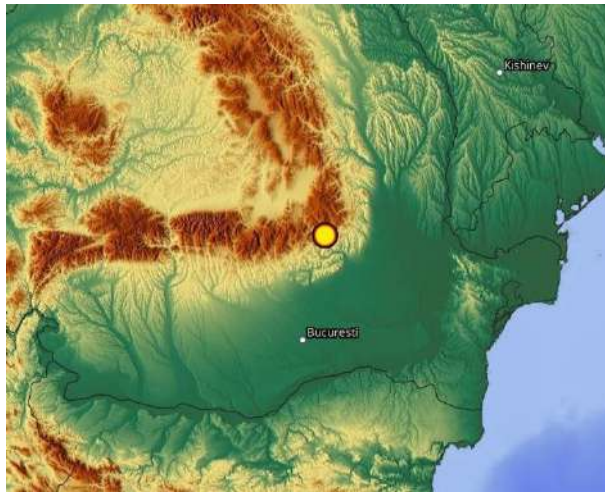
$t_0 = 06:26:53$ ;  $\varphi = 45,45^\circ N$ ;  $\lambda = 26,28^\circ E$ ;  $h = 123 \text{ km}$ ;  $ML_V = 3,7$

Date	Time	Latitude	Longitude	Depth	Mag
2021/03/23	06:26:53.5	45.45	26.28	123	ML <sub>V</sub> 3.7

#### ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
MLR	0.2	280	P	2021/03/23	06:27:11.9	0.4
MLR	0.2	280	S	2021/03/23	06:27:25.7	0.3
PLOR	0.5	33	P	2021/03/23	06:27:12.6	-0.2
VRI	0.5	37	P	2021/03/23	06:27:13.0	-0.0
VOIR	0.9	270	P	2021/03/23	06:27:15.1	0.1
TESR	1.1	13	P	2021/03/23	06:27:17.2	0.5
TESR	1.1	13	S	2021/03/23	06:27:34.5	-0.3
ARR	1.2	266	P	2021/03/23	06:27:18.2	0.7
HUMR	1.3	225	P	2021/03/23	06:27:19.4	0.3
HUMR	1.3	225	S	2021/03/23	06:27:37.7	-1.1
PLVB	2.4	211	P	2021/03/23	06:27:32.0	0.1
SORM	3.0	27	P	2021/03/23	06:27:39.9	-0.5
PDU0	4.1	54	P	2021/03/23	06:27:55.0	0.5
LUBAR	4.6	12	P	2021/03/23	06:28:00.3	-0.5
RNPP9	6.0	358	P	2021/03/23	06:28:19.3	-0.2

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



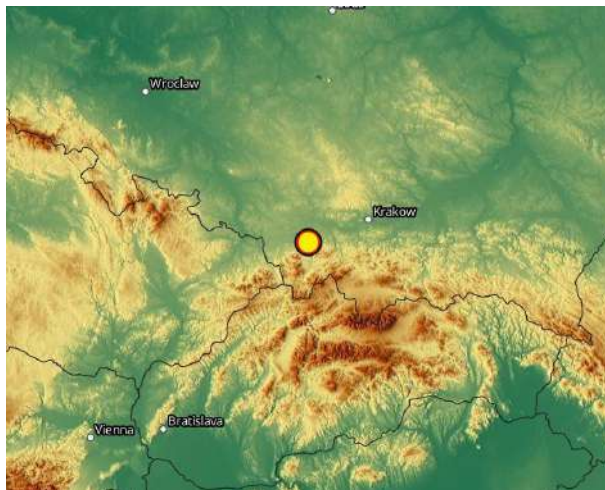
**25.03.2021. Poland**

$t_0 = 13:44:27$ ;  $\varphi = 49,87^\circ N$ ;  $\lambda = 19,16^\circ E$ ;  $h = 10 \text{ km}$ ;  $ML_v = 2,8$

Date	Time	Latitude	Longitude	Depth	Mag
2021/03/25	13:44:27.2	49.87	19.16	10	MLv 2.8

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
OKC	0.7	267	P	2021/03/25	13:44:39.6	-0.7
OKC	0.7	267	S	2021/03/25	13:44:50.7	0.7
MORC	1.0	265	P	2021/03/25	13:44:46.2	-0.9
MORC	1.0	265	S	2021/03/25	13:45:02.3	0.7
VYHS	1.4	189	P	2021/03/25	13:44:52.5	0.3
KRLC	1.5	279	P	2021/03/25	13:44:53.2	-0.8
KRLC	1.5	279	S	2021/03/25	13:45:13.6	-0.6
DPC	1.9	286	P	2021/03/25	13:44:58.5	-0.9
DPC	1.9	286	S	2021/03/25	13:45:24.1	0.1
OSTC	2.0	291	P	2021/03/25	13:45:01.5	0.4
KSP	2.1	299	P	2021/03/25	13:45:02.2	0.2
UPC	2.1	289	P	2021/03/25	13:45:03.4	0.8
BEL	2.2	27	P	2021/03/25	13:45:04.4	0.4



**28.03.2021. Zona seismică Vrancea**

$t_0 = 14:58:55$ ;  $\varphi = 45,71^\circ N$ ;  $\lambda = 26,86^\circ E$ ;  $h = 67 \text{ km}$ ;  $ML_v = 2,3$

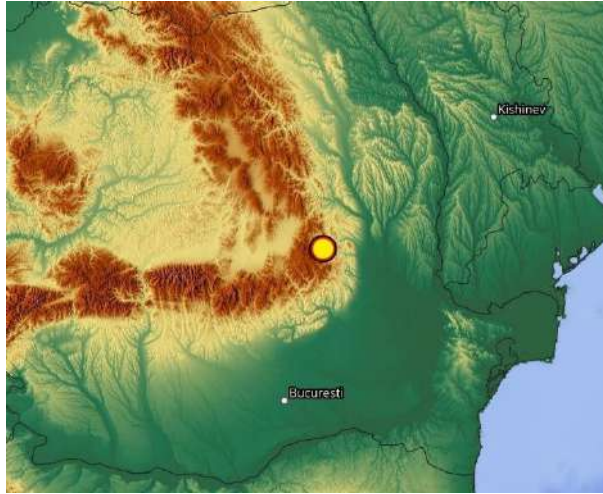
Date	Time	Latitude	Longitude	Depth	Mag
2021/03/28	14:58:55.9	45.71	26.86	67	MLv 2.3

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VRI	0.2	329	P	2021/03/28	14:59:08.2	1.0
PLOR	0.2	314	P	2021/03/28	14:59:08.0	0.7
MLR	0.7	251	P	2021/03/28	14:59:11.5	0.0

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

MLR	0.7	251	S	2021/03/28	14:59:22.6	-0.8
TESR	0.8	350	P	2021/03/28	14:59:12.7	0.0
TESR	0.8	350	S	2021/03/28	14:59:24.5	-0.9
BURAR	2.2	330	P	2021/03/28	14:59:31.1	0.4
AKBB	5.2	17	P	2021/03/28	15:00:10.9	0.0



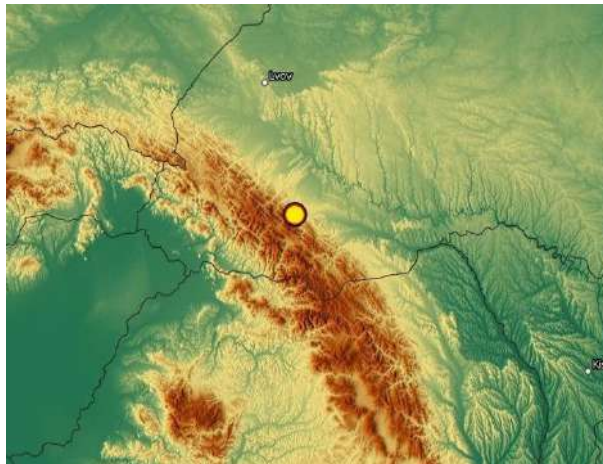
### 30.03.2021. Україна, Івано-Франківськ region

$t_0 = 10:16:53$ ;  $\varphi = 48,56^\circ N$ ;  $\lambda = 24,48^\circ E$ ;  $h = 3$  км;  $ML_V = 2,5$

Date	Time	Latitude	Longitude	Depth	Mag
2021/03/30	10:16:53.7	48.56	24.48	3	MLv 2.5

#### UKRAINE

Sta	Dist	EvAz	Phase	Date	Time	Res
BURAR	1.0	152	Pg	2021/03/30	10:17:14.5	1.0
KPD	1.3	89	Pg	2021/03/30	10:17:18.0	-1.0
KPD	1.3	89	Sg	2021/03/30	10:17:36.2	-0.7
TRPA	1.4	252	Pg	2021/03/30	10:17:18.5	-1.3
KOLS	1.5	285	Pg	2021/03/30	10:17:22.8	0.2
KWP	1.6	313	Pn	2021/03/30	10:17:22.6	-0.1
DRGR	2.1	215	Pn	2021/03/30	10:17:30.2	-0.0
DRGR	2.1	215	Sn	2021/03/30	10:17:57.9	-0.0
XAEC2	2.2	42	Pn	2021/03/30	10:17:33.2	1.6
XAEC1	2.3	38	Pn	2021/03/30	10:17:32.4	0.5
XAEC1	2.3	38	Sn	2021/03/30	10:18:00.7	-0.2
XAEC3	2.3	38	Pn	2021/03/30	10:17:31.6	-0.3
XAEC3	2.3	38	Sn	2021/03/30	10:18:00.6	-0.2
LUBAR	2.5	56	Pn	2021/03/30	10:17:35.9	0.0
LUBAR	2.5	56	Sn	2021/03/30	10:18:08.0	-0.1
SORM	2.6	98	Pn	2021/03/30	10:17:37.3	0.4
SORM	2.6	98	Sn	2021/03/30	10:18:09.7	-0.2
MI28	3.2	40	Pn	2021/03/30	10:17:44.2	-0.0
MI28	3.2	40	Sn	2021/03/30	10:18:22.6	-0.5



## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

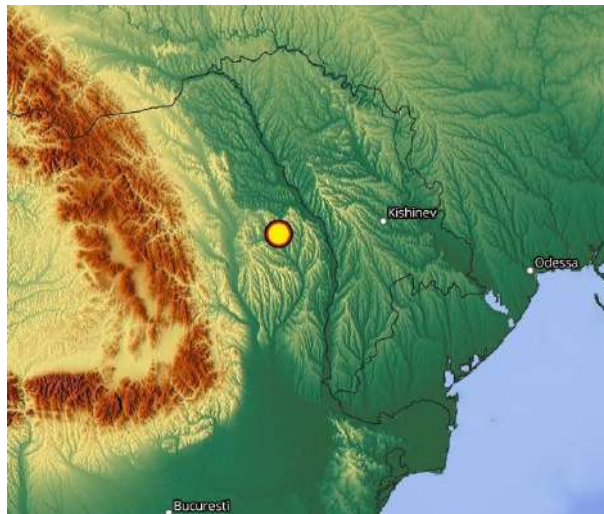
### 02.04.2021. Zona seismică Vrancea

$t_0 = 19:28:24$ ;  $\varphi = 46,88^\circ N$ ;  $\lambda = 27,59^\circ E$ ;  $h = 8 \text{ km}$ ;  $ML_V = 2,4$

Date	Time	Latitude	Longitude	Depth	Mag
2021/04/02	19:28:24.6	46.88	27.59	8	MLv 2.4

#### ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
TESR	0.7	241	P	2021/04/02	19:28:39.1	-0.1
TESR	0.7	241	S	2021/04/02	19:28:50.1	0.4
VRI	1.2	211	P	2021/04/02	19:28:46.5	0.0
PLOR	1.2	213	P	2021/04/02	19:28:46.8	-0.2
PLOR	1.2	213	S	2021/04/02	19:29:03.4	-0.4
SORM	1.4	22	P	2021/04/02	19:28:49.2	0.0
SORM	1.4	22	S	2021/04/02	19:29:07.1	-0.5
BURAR	1.8	296	P	2021/04/02	19:28:56.2	0.5
BURAR	1.8	296	S	2021/04/02	19:29:19.3	-0.2
PDU0	2.6	68	S	2021/04/02	19:29:40.1	0.4



### 03.04.2021. Zona seismică Vrancea

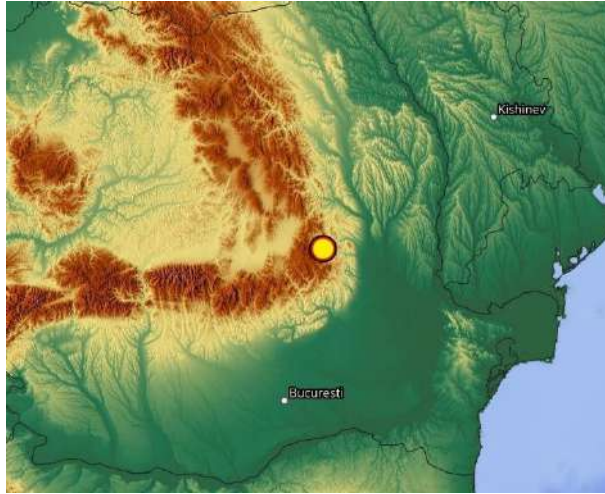
$t_0 = 03:42:30$ ;  $\varphi = 45,75^\circ N$ ;  $\lambda = 26,45^\circ E$ ;  $h = 109 \text{ km}$ ;  $ML_V = 2,2$

Date	Time	Latitude	Longitude	Depth	Mag
2021/04/03	03:42:30.2	45.75	26.45	109	MLv 2.2

#### ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.2	56	P	2021/04/03	03:42:46.1	-0.1
VRI	0.2	60	P	2021/04/03	03:42:46.3	-0.2
VRI	0.2	60	S	2021/04/03	03:42:59.7	0.6
MLR	0.4	233	P	2021/04/03	03:42:48.0	0.1
MLR	0.4	233	S	2021/04/03	03:43:01.0	-0.5
TESR	0.8	10	P	2021/04/03	03:42:49.5	-0.4
VOIR	1.0	253	P	2021/04/03	03:42:52.4	0.7

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



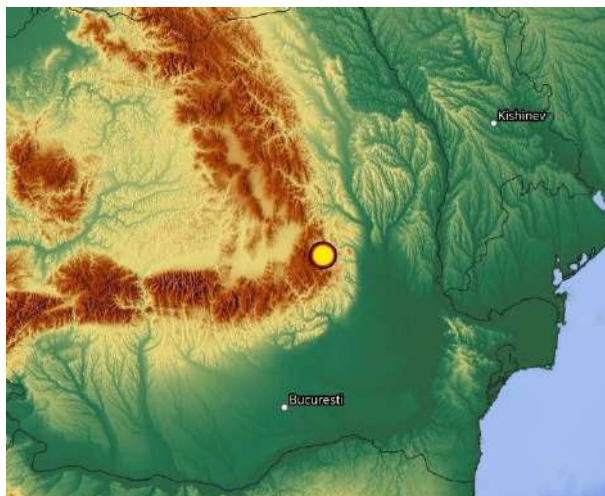
**08.04.2021. Zona seismică Vrancea**

$t_0 = 19:54:48$ ;  $\varphi = 45,66^\circ N$ ;  $\lambda = 26,57^\circ E$ ;  $h = 145 \text{ km}$ ;  $ML_v = 3,3$

Date	Time	Latitude	Longitude	Depth	Mag
2021/04/08	19:54:48.1	45.66	26.57	145	MLv 3.3

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.2	16	P	2021/04/08	19:55:08.3	-0.1
VRI	0.2	28	P	2021/04/08	19:55:08.6	-0.0
MLR	0.5	249	P	2021/04/08	19:55:09.5	-0.3
TESR	0.9	4	P	2021/04/08	19:55:11.1	-0.5
VOIR	1.1	259	P	2021/04/08	19:55:13.4	0.1
ARR	1.4	258	P	2021/04/08	19:55:16.5	0.3
HUMR	1.6	225	P	2021/04/08	19:55:18.5	0.1
BURAR	2.2	335	P	2021/04/08	19:55:26.3	1.1
CJR	2.3	298	P	2021/04/08	19:55:25.7	-0.9
DEV	2.6	276	P	2021/04/08	19:55:31.0	1.1
PLVB	2.7	212	P	2021/04/08	19:55:31.0	-0.0
SORM	2.8	26	P	2021/04/08	19:55:32.2	0.1
MDVR	3.5	257	P	2021/04/08	19:55:41.6	-0.6
TRPA	3.7	313	P	2021/04/08	19:55:43.9	-0.3
PDU0	3.8	55	P	2021/04/08	19:55:46.7	1.0
LUBAR	4.3	10	P	2021/04/08	19:55:53.3	0.8
KOLS	4.4	320	P	2021/04/08	19:55:53.1	-0.1
MI28	5.3	8	P	2021/04/08	19:56:05.1	-0.5
AKBB	5.3	18	P	2021/04/08	19:56:05.6	-0.2
RNPP6	5.6	357	P	2021/04/08	19:56:10.6	1.2
SSM2	6.0	70	P	2021/04/08	19:56:14.1	-0.1





UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

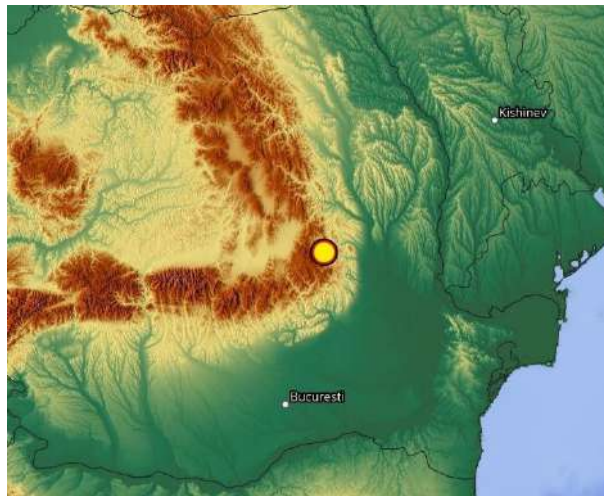
09.04.2021. Zona seismică Vrancea

$t_0 = 18:36:45$ ;  $\varphi = 45,91^\circ N$ ;  $\lambda = 26,74^\circ E$ ;  $h = 75 \text{ km}$ ;  $mb = 4,7$

Date	Time	Latitude	Longitude	Depth	Mag
2021/04/09	18:36:45.8	45.91	26.74	75	mb 4.7

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.1	230	P	2021/04/09	18:36:57.8	0.7
PLOR	0.1	230	S	2021/04/09	18:37:05.7	-0.1
MLR	0.7	234	P	2021/04/09	18:37:01.5	-0.6
VOIR	1.3	249	P	2021/04/09	18:37:07.6	-0.5
ARR	1.6	251	P	2021/04/09	18:37:11.8	-0.1
CJR	2.3	291	P	2021/04/09	18:37:22.1	0.3
DEV	2.7	271	P	2021/04/09	18:37:26.6	-0.1
DRGR	2.9	289	P	2021/04/09	18:37:30.0	-0.0
SIRR	3.6	278	P	2021/04/09	18:37:38.4	-0.1
TRPA	3.6	309	P	2021/04/09	18:37:39.5	-0.0
AMBH	4.2	278	P	2021/04/09	18:37:47.6	0.3
PHSR	4.3	172	P	2021/04/09	18:37:48.7	-0.1
KLYT	4.9	159	P	2021/04/09	18:37:57.2	-0.2
PSZ	5.1	296	P	2021/04/09	18:37:59.7	0.0
BUD	5.5	289	P	2021/04/09	18:38:05.1	-0.4
MORH	5.6	276	P	2021/04/09	18:38:06.8	-0.2
YLV	5.7	159	P	2021/04/09	18:38:08.3	0.9
CSKK	6.0	287	P	2021/04/09	18:38:12.7	0.6
KOVH	6.0	275	P	2021/04/09	18:38:12.0	-0.2
EZN	6.1	183	P	2021/04/09	18:38:13.0	-0.0
BALB	6.3	172	P	2021/04/09	18:38:16.5	0.4
MDUB	6.3	148	P	2021/04/09	18:38:16.8	0.4
MODS	6.9	294	P	2021/04/09	18:38:24.3	0.0
SOP	7.2	288	P	2021/04/09	18:38:28.6	0.2
BR106	8.0	138	P	2021/04/09	18:38:38.5	-0.3



18.04.2021. Zona seismică Vrancea

$t_0 = 10:03:16$ ;  $\varphi = 45,49^\circ N$ ;  $\lambda = 26,27^\circ E$ ;  $h = 131 \text{ km}$ ;  $ML_v = 3,1$

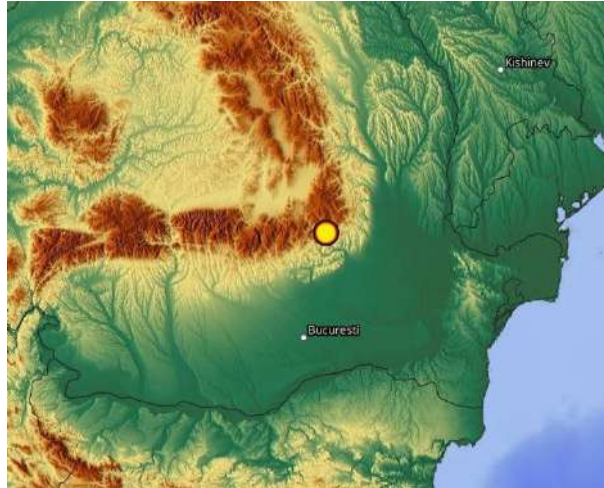
Date	Time	Latitude	Longitude	Depth	Mag
2021/04/18	10:03:16.2	45.91	26.74	131	MLv 3.1

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
MLR	0.2	270	P	2021/04/18	10:03:35.7	0.6
MLR	0.2	270	S	2021/04/18	10:03:50.3	0.5
PLOR	0.4	36	P	2021/04/18	10:03:36.2	-0.1
VRI	0.5	40	P	2021/04/18	10:03:36.5	-0.0
VOIR	0.9	267	P	2021/04/18	10:03:38.7	0.2
VOIR	0.9	267	S	2021/04/18	10:03:55.9	0.2
TESR	1.1	14	P	2021/04/18	10:03:40.4	0.6
TESR	1.1	14	S	2021/04/18	10:03:58.0	-0.1
ARR	1.2	264	P	2021/04/18	10:03:41.6	0.7
HUMR	1.3	224	P	2021/04/18	10:03:42.9	0.2
HUMR	1.3	224	S	2021/04/18	10:04:01.8	-1.3
CJR	2.2	304	P	2021/04/18	10:03:53.9	0.9

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

BURAR	2.3	341	P	2021/04/18	10:03:55.6	1.9
DEV	2.4	281	P	2021/04/18	10:03:55.7	0.5
PLVB	2.4	210	P	2021/04/18	10:03:55.4	-0.0
DJES	2.8	254	P	2021/04/18	10:03:58.6	-1.4
DRGR	2.8	299	P	2021/04/18	10:04:00.5	0.3
SORM	3.0	28	P	2021/04/18	10:04:02.5	-0.4
MDVR	3.3	259	P	2021/04/18	10:04:06.1	-0.7
MDVR	3.3	259	S	2021/04/18	10:04:44.9	-1.5
SIRR	3.3	285	P	2021/04/18	10:04:07.3	0.4
TRPA	3.7	317	P	2021/04/18	10:04:11.9	0.2
PDU0	4.1	54	P	2021/04/18	10:04:17.8	0.7
RDO	4.4	187	P	2021/04/18	10:04:21.7	0.7
LUBAR	4.5	12	P	2021/04/18	10:04:23.0	-0.1



### 22.04.2021. Zona seismică Vrancea

$t_0 = 13:46:16$ ;  $\varphi = 45,30^\circ N$ ;  $\lambda = 28,86^\circ E$ ;  $h = 26 \text{ km}$ ;  $ML = 2,7$

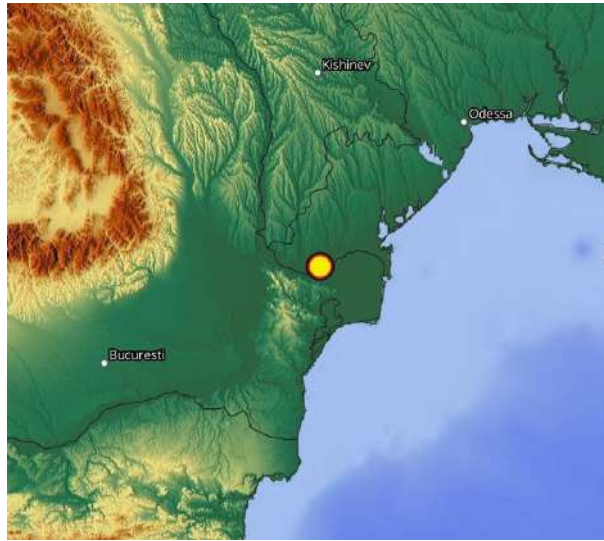
Date	Time	Latitude	Longitude	Depth	Mag
2021/04/22	13:46:16.01	45.30	28.86	26	ML 2.7

#### ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
TLCR	0.04	80.8	P	2021/04/22	13:46:19.7	0.2
TLCR	0.04	80.8	S	2021/04/22	13:46:22.8	-0.0
TPGR	0.40	216.7	P	2021/04/22	13:46:23.8	0.1
CFR	0.44	270.0	P	2021/04/22	13:46:23.9	-0.3
GIUM	0.49	308.5	P	2021/04/22	13:46:25.1	-0.0
TATR	0.65	310.3	P	2021/04/22	13:46:27.7	-0.1
SCHLR	0.71	294.4	P	2021/04/22	13:46:28.5	-0.4
NEGRR	0.72	300.3	P	2021/04/22	13:46:28.6	-0.2
SCTR	0.73	313.0	P	2021/04/22	13:46:29.1	-0.0
SCHL	0.73	296.5	P	2021/04/22	13:46:29.3	0.3
TIRR	0.76	198.9	P	2021/04/22	13:46:29.6	0.0
HARR	0.76	230.4	P	2021/04/22	13:46:29.8	0.2
IZVR	0.79	297.9	P	2021/04/22	13:46:30.0	-0.0
TPGR	0.40	216.7	S	2021/04/22	13:46:30.1	0.0
VLDR	0.82	324.7	P	2021/04/22	13:46:30.3	-0.2
CFR	0.44	270.0	S	2021/04/22	13:46:30.7	-0.3
TLBR	0.81	218.7	P	2021/04/22	13:46:30.7	0.3
TUDR	0.87	298.8	P	2021/04/22	13:46:31.3	-0.0
VARL	0.96	318.8	P	2021/04/22	13:46:32.7	-0.1
GIUM	0.49	308.5	S	2021/04/22	13:46:32.7	0.2
CVDA	0.99	211.4	P	2021/04/22	13:46:33.4	0.3
MFTR	1.03	193.5	P	2021/04/22	13:46:33.9	0.1
TATR	0.65	310.3	S	2021/04/22	13:46:37.2	0.0
SCHL	0.73	296.5	S	2021/04/22	13:46:39.0	-0.2
SCHLR	0.71	294.4	S	2021/04/22	13:46:39.1	0.0
NEGRR	0.72	300.3	S	2021/04/22	13:46:39.2	0.3
SCTR	0.73	313.0	S	2021/04/22	13:46:39.7	0.3
TIRR	0.76	198.9	S	2021/04/22	13:46:40.0	-0.3
HARR	0.76	230.4	S	2021/04/22	13:46:40.4	0.0
IZVR	0.79	297.9	S	2021/04/22	13:46:40.7	-0.4
VLDR	0.82	324.7	S	2021/04/22	13:46:41.7	-0.2
TLBR	0.81	218.7	S	2021/04/22	13:46:42.0	0.3
TUDR	0.87	298.8	S	2021/04/22	13:46:43.7	0.3

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

VARL	0.96	318.8 S	2021/04/22	13:46:46.2	0.2
CVDA	0.99	211.4 S	2021/04/22	13:46:46.8	0.0
TSCT	1.02	184.1 S	2021/04/22	13:46:47.4	-0.2
MFTR	1.03	193.5 S	2021/04/22	13:46:48.0	-0.1
EFOR	1.11	184.7 S	2021/04/22	13:46:49.8	-0.1



**28.04.2021. Poland**

$t_0 = 23:34:41$ ;  $\varphi = 51,70^\circ N$ ;  $\lambda = 16,08^\circ E$ ;  $h = 5 \text{ km}$ ;  $mb = 4,0$

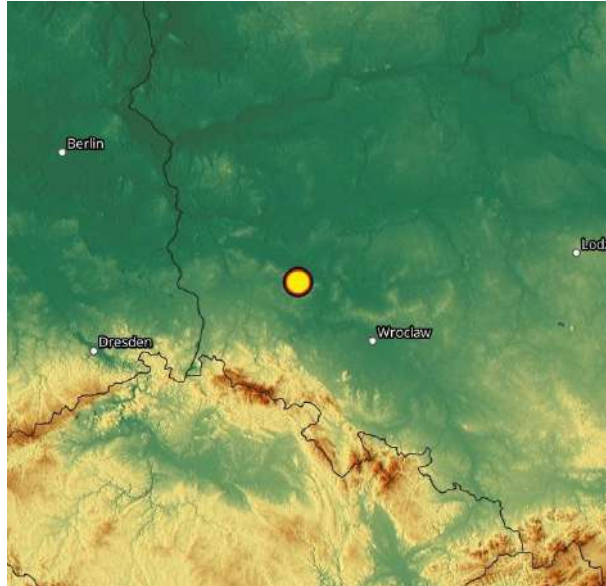
Date	Time	Latitude	Longitude	Depth	Mag
2021/04/28	23:34:41.9	51.70	16.08	5	mb 4.0

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
KSP	0.9	171	P	2021/04/28	23:34:57.9	-0.8
CHVC	1.1	181	P	2021/04/28	23:35:02.4	-0.5
CHVC	1.1	181	S	2021/04/28	23:35:18.6	0.4
OSTC	1.1	176	P	2021/04/28	23:35:03.1	-0.3
OSTC	1.1	176	S	2021/04/28	23:35:19.6	0.3
UPC	1.2	182	P	2021/04/28	23:35:03.8	-0.4
DPC	1.4	173	P	2021/04/28	23:35:06.5	-0.2
PVCC	1.5	220	P	2021/04/28	23:35:09.2	0.2
PVCC	1.5	220	S	2021/04/28	23:35:29.7	0.2
RUE	1.6	300	P	2021/04/28	23:35:11.4	0.7
KRLC	1.7	163	P	2021/04/28	23:35:11.5	0.0
KRLC	1.7	163	S	2021/04/28	23:35:34.0	0.0
PRU	2.0	210	P	2021/04/28	23:35:15.5	-0.3
PRU	2.0	210	S	2021/04/28	23:35:41.8	-0.1
HSKC	2.0	238	P	2021/04/28	23:35:16.3	0.1
HSKC	2.0	238	S	2021/04/28	23:35:42.2	-0.3
MORC	2.1	154	P	2021/04/28	23:35:17.5	-0.7
MORC	2.1	154	S	2021/04/28	23:35:46.5	0.5
NKC	2.7	239	P	2021/04/28	23:35:26.1	-0.1
OJC	2.8	121	P	2021/04/28	23:35:27.3	0.3
BEL	2.9	85	P	2021/04/28	23:35:29.7	0.7
KHC	3.0	213	P	2021/04/28	23:35:30.0	-0.4
CKRC	3.1	202	P	2021/04/28	23:35:31.1	-0.3
MODS	3.4	166	P	2021/04/28	23:35:35.8	0.0
VYHS	3.7	150	P	2021/04/28	23:35:39.4	0.2
SOP	4.0	175	P	2021/04/28	23:35:44.2	-0.0
RETH	4.3	287	P	2021/04/28	23:35:48.0	0.7
PSZ	4.5	145	P	2021/04/28	23:35:51.1	0.2
CSKK	4.6	161	P	2021/04/28	23:35:51.7	0.2
KWP	4.7	114	P	2021/04/28	23:35:54.3	0.9
KOLS	4.8	122	P	2021/04/28	23:35:55.8	0.6
BSZH	5.2	147	P	2021/04/28	23:36:00.6	0.6
BEHE	5.3	175	P	2021/04/28	23:36:01.6	0.6
TRPA	5.5	128	P	2021/04/28	23:36:04.4	0.1
MORH	5.7	162	P	2021/04/28	23:36:07.4	-0.3
KOVH	5.8	166	P	2021/04/28	23:36:07.8	-0.3
RNPP8	6.1	90	P	2021/04/28	23:36:13.0	0.2
AMBH	6.2	148	P	2021/04/28	23:36:13.6	0.1
SIRR	6.6	144	P	2021/04/28	23:36:18.9	-0.1

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

TUE	6.8	223	P	2021/04/28	23:36:22.6	-0.3
BURAR	7.2	121	P	2021/04/28	23:36:27.8	0.4
MI28	7.3	92	P	2021/04/28	23:36:29.5	0.3
KPD	7.4	111	P	2021/04/28	23:36:31.0	0.9
LUBAR	7.6	99	P	2021/04/28	23:36:34.2	0.9
MDVR	7.9	149	P	2021/04/28	23:36:36.9	-0.0
AKBB	8.3	92	P	2021/04/28	23:36:42.4	-0.6
PDU0	10.5	106	P	2021/04/28	23:37:12.7	-0.7
FIA0	11.2	25	P	2021/04/28	23:37:22.1	-0.3
PLT	11.9	93	P	2021/04/28	23:37:33.1	0.9



### 05.05.2021. Poland

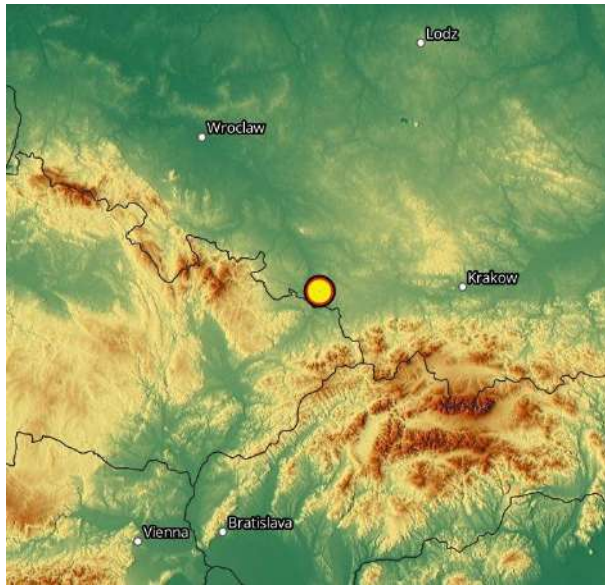
$t_0 = 07:44:13$ ;  $\varphi = 50,03^\circ N$ ;  $\lambda = 18,35^\circ E$ ;  $h = 33 \text{ km}$ ;  $ML_v = 3,2$

Date	Time	Latitude	Longitude	Depth	Mag
2021/05/05	07:44:13.0	50.03	18.35	10	MLv 3.2

#### POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
OKC	0.2	215	P	2021/05/05	07:44:18.3	-0.5
MORC	0.6	245	P	2021/05/05	07:44:24.4	-0.3
KRLC	1.0	275	P	2021/05/05	07:44:31.1	-0.7
KRLC	1.0	275	S	2021/05/05	07:44:45.1	-0.2
DPC	1.3	285	P	2021/05/05	07:44:37.5	0.3
NIE	1.4	115	P	2021/05/05	07:44:38.1	-0.2
OSTC	1.5	292	P	2021/05/05	07:44:39.4	0.3
KSP	1.5	303	P	2021/05/05	07:44:40.0	-0.2
VYHS	1.6	168	P	2021/05/05	07:44:40.2	-0.3
CHVC	1.6	292	P	2021/05/05	07:44:41.3	0.6
UPC	1.6	289	P	2021/05/05	07:44:41.3	0.7
MODS	1.8	203	P	2021/05/05	07:44:44.3	0.4
KECS	2.1	137	P	2021/05/05	07:44:48.6	0.7
PSZ	2.3	154	P	2021/05/05	07:44:51.5	-0.0
KHC	3.2	256	P	2021/05/05	07:45:03.9	0.3
SIRR	4.4	148	P	2021/05/05	07:45:18.6	-0.7
SUW	5.0	35	P	2021/05/05	07:45:26.7	-1.0
BURAR	5.1	115	P	2021/05/05	07:45:29.3	-0.2
BURAR	5.1	115	pP	2021/05/05	07:45:33.0	1.0

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



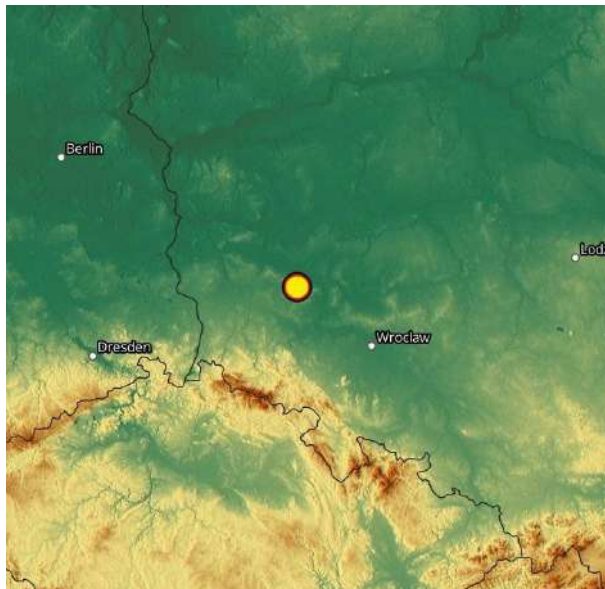
**05.05.2021. Poland**

$t_0 = 17:34:59$ ;  $\varphi = 51,43^\circ N$ ;  $\lambda = 16,15^\circ E$ ;  $h = 9 \text{ km}$ ;  $ML_v = 3,3$

Date	Time	Latitude	Longitude	Depth	Mag
2021/05/05	17:34:59.6	51.43	16.15	9	MLv 3.3

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
KSP	0.6	171	P	2021/05/05	17:35:10.9	-0.6
CHVC	0.8	184	P	2021/05/05	17:35:15.7	-0.3
CHVC	0.8	184	S	2021/05/05	17:35:28.2	0.3
OSTC	0.9	177	P	2021/05/05	17:35:16.4	-0.1
UPC	0.9	186	P	2021/05/05	17:35:16.9	-0.6
UPC	0.9	186	S	2021/05/05	17:35:29.9	-0.5
DPC	1.1	174	P	2021/05/05	17:35:20.1	0.0
DPC	1.1	174	S	2021/05/05	17:35:34.4	-0.7
PVCC	1.3	229	P	2021/05/05	17:35:23.5	-0.5
PRU	1.8	216	P	2021/05/05	17:35:31.4	1.1
RUE	1.8	306	P	2021/05/05	17:35:29.7	-1.1
MORC	1.9	151	P	2021/05/05	17:35:31.9	0.1
HSKC	1.9	246	P	2021/05/05	17:35:33.1	0.9
NKC	2.6	244	P	2021/05/05	17:35:41.9	-0.5
KHC	2.8	217	P	2021/05/05	17:35:45.2	0.2
CKRC	2.9	205	P	2021/05/05	17:35:46.4	0.9
SOP	3.8	176	P	2021/05/05	17:35:57.8	0.1
SOP	3.8	176	pP	2021/05/05	17:36:01.2	1.3
CSKK	4.3	161	P	2021/05/05	17:36:04.8	-0.3



UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

09.05.2021. Zona seismică Vrancea

$t_0 = 00:15:29$ ;  $\varphi = 45,56^\circ N$ ;  $\lambda = 26,32^\circ E$ ;  $h = 3 \text{ km}$ ;  $ML_v = 3,0$

Date	Time	Latitude	Longitude	Depth	Mag
2021/05/09	00:15:29.6	45.56	26.32	3	MLv 3.0

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
MLR	0.3	255	P	2021/05/09	00:15:34.5	-0.7
MLR	0.3	255	S	2021/05/09	00:15:39.5	0.6
PLOR	0.4	39	P	2021/05/09	00:15:36.1	-1.0
VRI	0.4	43	P	2021/05/09	00:15:37.2	-0.8
VOIR	0.9	262	P	2021/05/09	00:15:45.7	-1.1
VOIR	0.9	262	S	2021/05/09	00:16:00.3	1.1
ARR	1.2	261	P	2021/05/09	00:15:51.9	-0.1
HUMR	1.4	223	P	2021/05/09	00:15:55.2	0.0
TIRR	1.9	126	P	2021/05/09	00:16:02.3	0.3
TIRR	1.9	126	S	2021/05/09	00:16:26.8	0.2
BURAR	2.2	340	P	2021/05/09	00:16:06.9	-0.3
DEV	2.4	279	P	2021/05/09	00:16:09.5	-0.4
PLVB	2.5	210	P	2021/05/09	00:16:10.9	-0.0
DRGR	2.8	297	P	2021/05/09	00:16:14.8	-0.2
DJES	2.8	253	P	2021/05/09	00:16:14.8	-0.8
KPD	3.0	2	P	2021/05/09	00:16:19.4	1.5
BAL3X	3.3	42	P	2021/05/09	00:16:23.3	1.5
SIRR	3.3	284	P	2021/05/09	00:16:22.0	-0.4
MDVR	3.3	258	P	2021/05/09	00:16:21.5	-1.2
LUBAR	4.5	12	P	2021/05/09	00:16:38.7	0.6
KWP	4.7	330	P	2021/05/09	00:16:41.9	-0.0
MORH	5.4	280	P	2021/05/09	00:16:51.9	1.1
AKBB	5.5	20	P	2021/05/09	00:16:51.7	-0.5
PDG	6.0	241	P	2021/05/09	00:16:59.4	0.6



10.05.2021. Zona seismică Vrancea

$t_0 = 14:13:54$ ;  $\varphi = 45,66^\circ N$ ;  $\lambda = 26,62^\circ E$ ;  $h = 83 \text{ km}$ ;  $ML_v = 3,4$

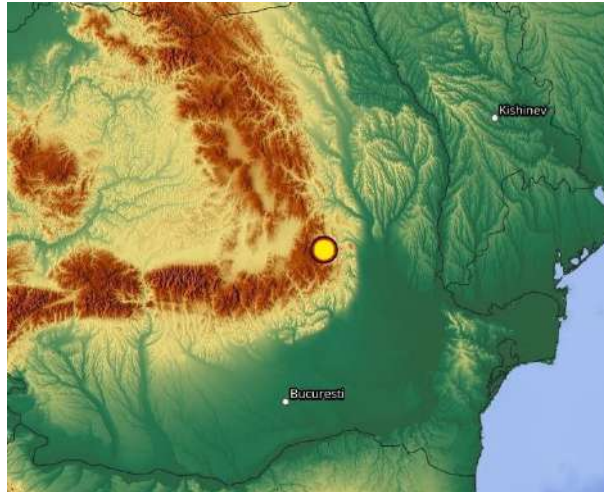
Date	Time	Latitude	Longitude	Depth	Mag
2021/05/10	14:13:54.3	45.66	26.62	83	MLv 3.4

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.2	7	P	2021/05/10	14:14:06.9	-0.6
PLOR	0.2	7	S	2021/05/10	14:14:16.7	-0.8
VRI	0.2	20	P	2021/05/10	14:14:07.2	-0.5
VRI	0.2	20	S	2021/05/10	14:14:19.3	1.4
MLR	0.5	251	P	2021/05/10	14:14:09.5	-0.2
VOIR	1.1	259	S	2021/05/10	14:14:31.3	0.3
ARR	1.4	259	P	2021/05/10	14:14:19.0	0.2
HUMR	1.6	226	P	2021/05/10	14:14:21.2	-0.1
TIRR	1.7	133	P	2021/05/10	14:14:23.4	0.4
TIRR	1.7	133	S	2021/05/10	14:14:44.8	-0.4
BURAR	2.2	334	P	2021/05/10	14:14:29.0	-0.0
PLVB	2.7	213	P	2021/05/10	14:14:35.3	0.0
SORM	2.8	25	P	2021/05/10	14:14:35.6	-0.6

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

MDVR	3.6	258	P	2021/05/10	14:14:47.4	0.0
PDU0	3.8	54	P	2021/05/10	14:14:51.2	0.8



### 12.05.2021. Poland

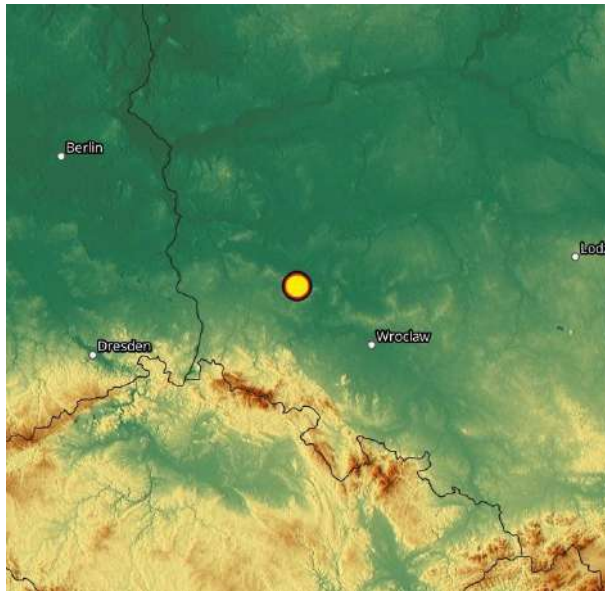
$t_0 = 14:42:22$ ;  $\varphi = 51,50^\circ N$ ;  $\lambda = 16,12^\circ E$ ;  $h = 10 \text{ km}$ ;  $mb = 4,1$

Date	Time	Latitude	Longitude	Depth	Mag
2021/05/12	14:42:22.0	51.50	16.12	10	mb 4.1

#### POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
KSP	0.7	171	Pg	2021/05/12	14:42:34.8	-0.2
CHVC	0.9	183	Pg	2021/05/12	14:42:39.5	-0.1
OSTC	1.0	176	Pg	2021/05/12	14:42:40.2	-0.0
UPC	1.0	184	Pg	2021/05/12	14:42:40.6	-0.6
DPC	1.2	174	Pg	2021/05/12	14:42:43.6	-0.7
PVCC	1.4	226	Pg	2021/05/12	14:42:47.2	-1.3
KRLC	1.5	162	P	2021/05/12	14:42:48.9	0.7
RUE	1.7	305	P	2021/05/12	14:42:51.6	-0.5
PRU	1.8	214	P	2021/05/12	14:42:53.0	-0.2
GKP	1.9	21	Pn	2021/05/12	14:42:55.6	1.3
MORC	2.0	152	Pn	2021/05/12	14:42:55.2	0.1
OKC	2.1	142	Pn	2021/05/12	14:42:56.5	-0.7
NKC	2.7	243	Pn	2021/05/12	14:43:05.2	0.5
OJC	2.7	117	Pn	2021/05/12	14:43:04.3	-0.6
KHC	2.9	215	Pn	2021/05/12	14:43:07.9	0.0
CKRC	2.9	204	Pn	2021/05/12	14:43:08.7	0.2
MODS	3.2	166	Pn	2021/05/12	14:43:12.7	0.1
NIE	3.4	126	Pn	2021/05/12	14:43:15.1	0.2
VYHS	3.5	149	Pn	2021/05/12	14:43:15.9	-0.2
SRO	4.0	158	Pn	2021/05/12	14:43:23.9	1.2
RETH	4.3	289	Pn	2021/05/12	14:43:28.3	0.4
BUD	4.4	154	Pn	2021/05/12	14:43:30.3	1.0
KOLS	4.7	121	Pn	2021/05/12	14:43:33.1	0.0
UZH	4.9	124	Pn	2021/05/12	14:43:37.2	1.5
RNPP9	6.1	87	Pn	2021/05/12	14:43:53.6	1.4
SIRR	6.4	143	Pn	2021/05/12	14:43:56.5	0.4
TUE	6.7	224	Pn	2021/05/12	14:44:00.7	0.1
XAEC3	6.8	96	Pn	2021/05/12	14:44:01.9	0.6
BURAR	7.1	120	Pn	2021/05/12	14:44:05.8	0.6
MI28	7.3	90	Pn	2021/05/12	14:44:06.6	-1.7
KPD	7.3	110	Pn	2021/05/12	14:44:09.7	1.4
LUBAR	7.6	98	Pn	2021/05/12	14:44:10.3	-1.7
MI29	7.6	91	Pn	2021/05/12	14:44:14.1	1.0
MDVR	7.7	149	Pn	2021/05/12	14:44:14.9	0.9
AKBB	8.3	90	Pn	2021/05/12	14:44:21.2	-0.9
PDU0	10.5	105	Pn	2021/05/12	14:44:50.4	-1.4

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



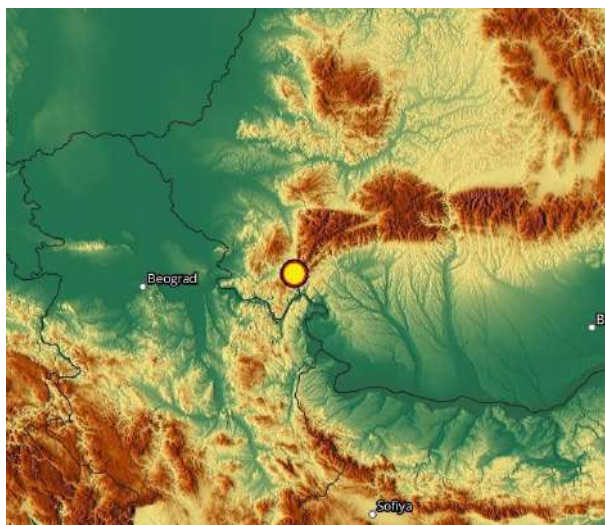
**23.05.2021. Zona seismică Vrancea**

$t_0 = 04:36:09$ ;  $\varphi = 45,03^\circ N$ ;  $\lambda = 22,53^\circ E$ ;  $h = 5 \text{ km}$ ;  $ML_v = 2,9$

Date	Time	Latitude	Longitude	Depth	Mag
2021/05/23	04:36:09.9	45.03	22.53	5	MLv 2.9

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
DJES	0.4	182	Pg	2021/05/23	04:36:17.3	0.3
DJES	0.4	182	Sg	2021/05/23	04:36:20.8	-1.2
MDVR	0.6	247	Pg	2021/05/23	04:36:23.1	1.0
DEV	0.9	16	Pg	2021/05/23	04:36:26.7	-0.4
DEV	0.9	16	Sg	2021/05/23	04:36:39.1	-0.4
SIRR	1.4	334	P	2021/05/23	04:36:35.5	0.4
SIRR	1.4	334	Sg	2021/05/23	04:36:54.5	-1.0
DRGR	1.8	4	Pn	2021/05/23	04:36:42.2	1.1
DRGR	1.8	4	Sn	2021/05/23	04:37:05.2	0.4
VOIR	1.8	76	Pn	2021/05/23	04:36:42.7	0.8
VOIR	1.8	76	Sn	2021/05/23	04:37:05.8	-0.5
CJR	1.8	23	Pn	2021/05/23	04:36:41.9	-0.3
CJR	1.8	23	Sn	2021/05/23	04:37:06.4	-0.3
MORH	3.0	295	Pn	2021/05/23	04:36:57.3	-0.4
TRPA	3.1	0	Pn	2021/05/23	04:36:58.4	-1.1
BURAR	3.2	34	Pn	2021/05/23	04:37:02.0	1.2
KOLS	3.9	357	Pn	2021/05/23	04:37:10.9	0.3





UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

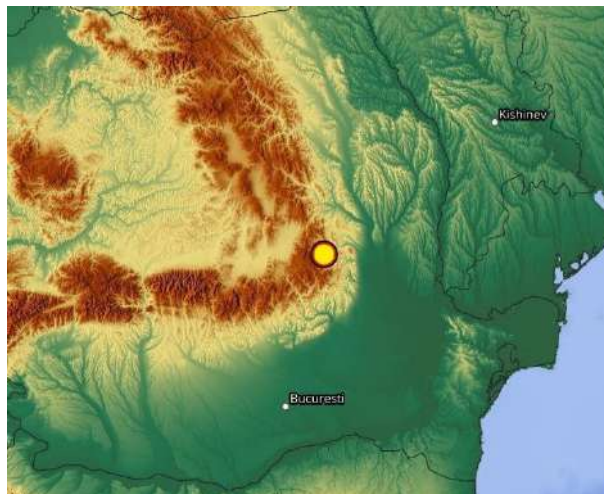
25.05.2021. Zona seismică Vrancea

$t_0 = 21:30:37$ ;  $\varphi = 45,57^\circ N$ ;  $\lambda = 26,57^\circ E$ ;  $h = 125 \text{ km}$ ;  $mb = 4,5$

Date	Time	Latitude	Longitude	Depth	Mag
2021/05/25	21:30:37.4	45.57	26.57	125	mb 4.5

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
ISR	0.4	183	P	2021/05/25	21:30:57.2	0.4
MLR	0.4	261	P	2021/05/25	21:30:57.0	0.2
TESR	0.9	3	P	2021/05/25	21:31:00.3	0.7
KIS	2.1	47	P	2021/05/25	21:31:13.6	1.0
PURM	2.5	66	P	2021/05/25	21:31:18.1	0.8
SORM	2.8	25	P	2021/05/25	21:31:22.0	0.2
KPD	3.0	359	P	2021/05/25	21:31:23.8	0.0
BAL3X	3.2	40	P	2021/05/25	21:31:25.2	-0.7
MI26	3.2	40	P	2021/05/25	21:31:26.1	0.1
MI05	3.2	68	P	2021/05/25	21:31:27.0	0.5
PDU0	3.9	53	P	2021/05/25	21:31:36.5	1.2
UZH	4.2	318	P	2021/05/25	21:31:40.5	0.3
LUBAR	4.4	10	P	2021/05/25	21:31:42.4	-0.3
XAEC2	4.6	2	P	2021/05/25	21:31:46.9	1.4
KWP	4.8	329	P	2021/05/25	21:31:48.9	0.7
YLV	5.4	157	P	2021/05/25	21:31:55.7	-0.1
MI28	5.4	7	P	2021/05/25	21:31:55.3	-0.6
AKBB	5.4	18	P	2021/05/25	21:31:55.8	-0.4
KIEV	5.4	18	P	2021/05/25	21:31:55.8	-0.4
MORH	5.6	280	P	2021/05/25	21:31:58.1	-0.0
SSM3	5.7	68	P	2021/05/25	21:31:58.7	-0.7
RNPP5	5.7	356	P	2021/05/25	21:31:59.6	0.1
NIE	5.7	315	P	2021/05/25	21:32:00.9	0.8
MPLH	6.5	288	P	2021/05/25	21:32:10.0	0.1
BZK	6.5	121	P	2021/05/25	21:32:09.0	-1.2
OJC	6.5	318	P	2021/05/25	21:32:10.0	-0.7
ANTO	7.3	139	P	2021/05/25	21:32:21.2	-0.2
BR131	7.8	136	P	2021/05/25	21:32:28.1	-0.3
KHA	7.9	52	P	2021/05/25	21:32:28.3	-0.8
DPC	8.4	309	P	2021/05/25	21:32:34.9	-1.0
KSP	8.7	311	P	2021/05/25	21:32:38.5	-1.0
KHC	9.5	297	P	2021/05/25	21:32:51.3	0.2
OBN	11.5	30	P	2021/05/25	21:33:15.7	-1.6
NC600	17.6	335	P	2021/05/25	21:34:33.4	-0.7
NB200	17.9	335	P	2021/05/25	21:34:37.1	-0.3
ARTI	22.6	50	P	2021/05/25	21:35:26.2	-0.6
ZAA0B	37.6	56	P	2021/05/25	21:37:40.0	0.7
MK31	37.9	68	P	2021/05/25	21:37:43.0	0.9
MK04	37.9	68	P	2021/05/25	21:37:43.0	0.7
SONB3	52.5	57	P	2021/05/25	21:39:38.3	1.4
CM05	64.8	89	P	2021/05/25	21:41:03.3	0.2



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

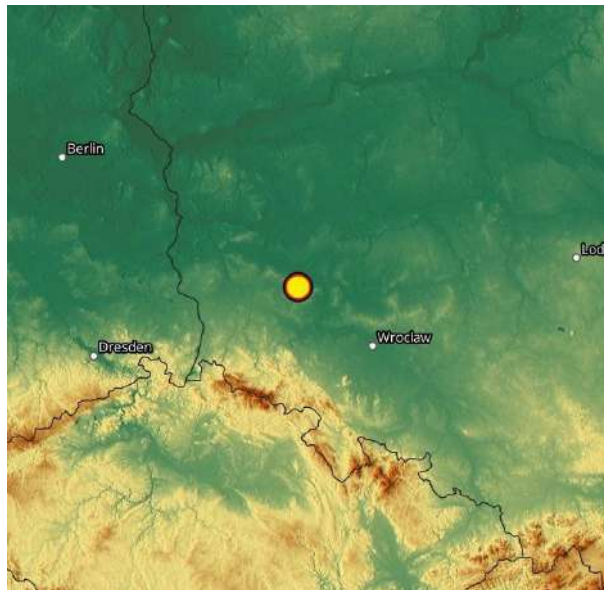
**26.05.2021. Poland**

$t_0 = 17:11:48$ ;  $\varphi = 51,57^\circ N$ ;  $\lambda = 15,99^\circ E$ ;  $h = 10 \text{ km}$ ;  $ML = 3,5$

Date	Time	Latitude	Longitude	Depth	Mag
2021/05/26	17:11:48.2	51.57	15.99	10	ML 3.5

**POLAND**

Sta	Dist	EvAz	Phase	Date	Time	Res
KSP	1.0	173	P	2021/05/26	17:12:01.8	-1.0
CHVC	1.2	182	P	2021/05/26	17:12:06.4	-0.5
CHVC	1.2	182	S	2021/05/26	17:12:23.7	0.3
OSTC	1.2	177	P	2021/05/26	17:12:07.1	-0.3
OSTC	1.2	177	S	2021/05/26	17:12:22.7	-1.7
UPC	1.3	183	P	2021/05/26	17:12:07.7	-0.5
UPC	1.3	183	S	2021/05/26	17:12:25.5	-0.2
DPC	1.5	175	P	2021/05/26	17:12:10.5	-0.2
PVCC	1.6	218	P	2021/05/26	17:12:13.3	0.3
PVCC	1.6	218	S	2021/05/26	17:12:35.3	0.9
KRLC	1.8	165	Pn	2021/05/26	17:12:15.4	-0.2
KRLC	1.8	165	Sn	2021/05/26	17:12:38.4	-1.0
PRU	2.1	209	Pn	2021/05/26	17:12:19.4	-0.4
PRU	2.1	209	Sn	2021/05/26	17:12:46.5	-0.4
MORC	2.2	155	Pn	2021/05/26	17:12:21.6	-0.3
MORC	2.2	155	Sn	2021/05/26	17:12:52.4	1.8
OKC	2.3	146	Pn	2021/05/26	17:12:23.5	-0.1
NKC	2.8	237	Pn	2021/05/26	17:12:30.1	0.3
OJC	2.8	123	Pn	2021/05/26	17:12:30.3	0.3
KHC	3.1	212	Pn	2021/05/26	17:12:34.3	-0.1
CKRC	3.2	202	Pn	2021/05/26	17:12:35.7	0.3
MODS	3.5	167	Pn	2021/05/26	17:12:39.7	0.1
SOP	4.1	176	Pn	2021/05/26	17:12:48.3	0.2
PSZ	4.6	146	Pn	2021/05/26	17:12:54.5	0.1
MORH	5.8	162	Pn	2021/05/26	17:13:11.8	0.3
KOVH	5.9	166	Pn	2021/05/26	17:13:12.3	0.4



**29.05.2021. Zona seismica Vrancea**

$t_0 = 17:10:23$ ;  $\varphi = 45,12^\circ N$ ;  $\lambda = 23,12^\circ E$ ;  $h = 14 \text{ km}$ ;  $MLv = 2,9$

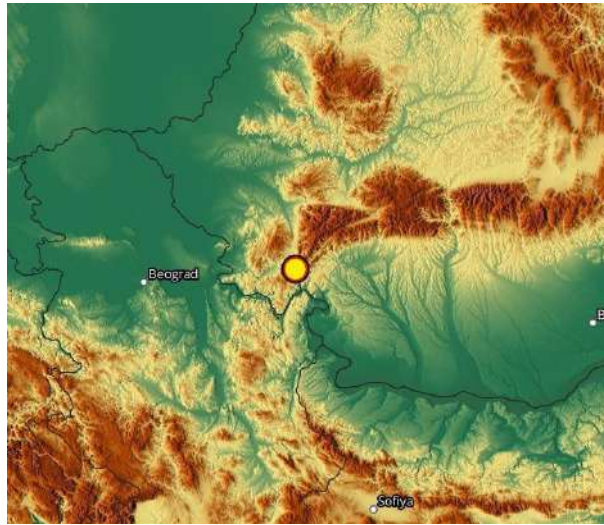
Date	Time	Latitude	Longitude	Depth	Mag
2021/05/29	17:10:23.6	45.12	23.12	14	MLv 2.9

**ROMANIA**

Sta	Dist	EvAz	Phase	Date	Time	Res
MDVR	1.1	252	P	2021/05/29	17:10:43.7	0.3
MDVR	1.1	252	S	2021/05/29	17:10:57.7	-0.2
ARR	1.1	77	P	2021/05/29	17:10:43.6	-0.5
VOIR	1.4	76	P	2021/05/29	17:10:49.1	0.7
VOIR	1.4	76	S	2021/05/29	17:11:06.4	-0.8
SIRR	1.5	319	P	2021/05/29	17:10:50.2	-0.2
SIRR	1.5	319	S	2021/05/29	17:11:10.0	-0.6

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

DRGR	1.7	351	P	2021/05/29	17:10:52.3	-0.4
PLVB	2.0	148	P	2021/05/29	17:10:57.5	-0.1
BURAR	2.9	29	P	2021/05/29	17:11:10.4	1.0
BSZH	2.9	319	P	2021/05/29	17:11:09.8	-0.1
MORH	3.3	291	P	2021/05/29	17:11:15.1	-0.0
PSZ	3.6	323	P	2021/05/29	17:11:18.4	-0.2
NIE	4.7	337	P	2021/05/29	17:11:35.2	1.1



### 31.05.2021. Poland

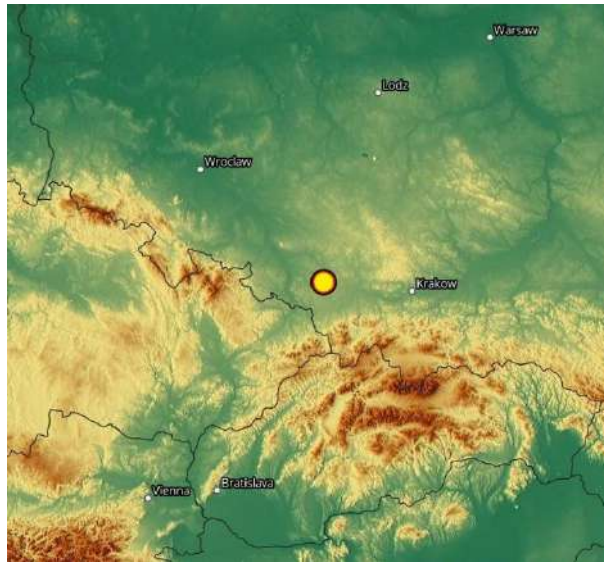
$t_0 = 03:19:20$ ;  $\varphi = 50,14^\circ N$ ;  $\lambda = 18,73^\circ E$ ;  $h = 5 \text{ km}$ ;  $ML_v = 2,9$

Date	Time	Latitude	Longitude	Depth	Mag
2021/05/31	03:19:20.8	50.14	18.73	5	MLv 2.9

#### POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
OKC	0.5	232	P	2021/05/31	03:19:30.1	-0.4
OJC	0.7	83	P	2021/05/31	03:19:34.2	-0.1
MORC	0.8	245	P	2021/05/31	03:19:37.6	0.4
MORC	0.8	245	S	2021/05/31	03:19:49.1	-0.0
KRLC	1.2	269	P	2021/05/31	03:19:43.8	0.3
KRLC	1.2	269	S	2021/05/31	03:20:00.4	0.2
NIE	1.3	124	P	2021/05/31	03:19:43.9	0.0
DPC	1.6	279	P	2021/05/31	03:19:48.7	0.1
VYHS	1.6	178	P	2021/05/31	03:19:50.1	0.1
OSTC	1.7	286	P	2021/05/31	03:19:50.5	0.3
KSP	1.7	295	P	2021/05/31	03:19:51.0	0.1
CHVC	1.8	286	P	2021/05/31	03:19:51.6	-0.2
UPC	1.8	283	P	2021/05/31	03:19:51.8	-0.2
MODS	2.0	209	P	2021/05/31	03:19:55.1	-0.1
KECS	2.0	145	P	2021/05/31	03:19:55.3	-0.0
SRO	2.3	187	P	2021/05/31	03:19:59.8	-0.0
PSZ	2.3	161	P	2021/05/31	03:19:59.9	-0.1
KOLS	2.6	116	P	2021/05/31	03:20:03.6	0.2
KWP	2.6	100	P	2021/05/31	03:20:03.6	-0.1
PVCC	2.7	280	P	2021/05/31	03:20:04.4	-0.3
PRU	2.7	268	P	2021/05/31	03:20:04.6	-0.2
CKRC	3.2	247	P	2021/05/31	03:20:11.0	-0.2
TRPA	3.2	127	P	2021/05/31	03:20:11.8	0.1
KHC	3.5	255	P	2021/05/31	03:20:15.6	-0.1
BURAR	4.9	118	P	2021/05/31	03:20:35.8	0.2

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



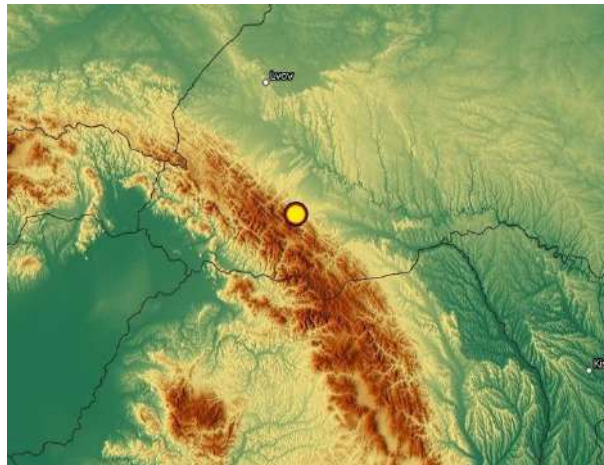
**08.06.2021. Ivano-Frankivsk region**

$t_0 = 13:32:42$ ;  $\varphi = 48,55^\circ N$ ;  $\lambda = 24,48^\circ E$ ;  $h = 4 \text{ km}$ ;  $ML_v = 2,4$

Date	Time	Latitude	Longitude	Depth	Mag
2021/06/08	13:32:42.7	48.55	24.48	4	MLv 2.4

UKRAINE

Sta	Dist	EvAz	Phase	Date	Time	Res
BURAR	1.0	152	Pg	2021/06/08	13:33:03.4	0.9
KPD	1.3	89	Pg	2021/06/08	13:33:06.8	-1.1
TRPA	1.4	253	Pg	2021/06/08	13:33:07.3	-1.5
KOLS	1.5	285	Pg	2021/06/08	13:33:12.7	1.1
LUBAR	2.5	56	Pn	2021/06/08	13:33:25.1	0.3
LUBAR	2.5	56	Sn	2021/06/08	13:33:57.5	0.4
LUBAR	2.5	56	sP	2021/06/08	13:33:26.7	0.3
AKBB	3.8	53	Lg	2021/06/08	13:34:39.9	-0.6
AKBB	3.8	53	Sn	2021/06/08	13:34:27.2	0.2



**13.06.2021. Poland**

$t_0 = 02:00:16$ ;  $\varphi = 51,49^\circ N$ ;  $\lambda = 16,05^\circ E$ ;  $h = 5 \text{ km}$ ;  $ML_v = 3,4$

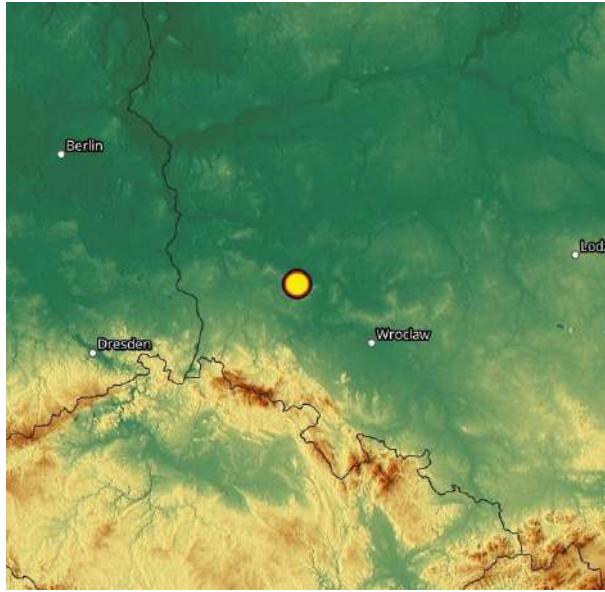
Date	Time	Latitude	Longitude	Depth	Mag
2021/06/13	02:00:16.0	51.49	16.05	5	MLv 3.4

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
KSP	0.7	167	P	2021/06/13	02:00:28.6	-0.0
KSP	0.7	167	S	2021/06/13	02:00:38.3	-0.0
CHVC	0.9	180	P	2021/06/13	02:00:33.6	0.4
CHVC	0.9	180	S	2021/06/13	02:00:45.9	0.0
OSTC	0.9	174	P	2021/06/13	02:00:34.1	0.2
OSTC	0.9	174	S	2021/06/13	02:00:46.9	-0.1

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

UPC	1.0	182	P	2021/06/13	02:00:34.7	-0.1
DPC	1.1	171	P	2021/06/13	02:00:37.5	0.0
PVCC	1.3	225	P	2021/06/13	02:00:40.7	0.2
PVCC	1.3	225	S	2021/06/13	02:00:58.8	0.0
KRLC	1.5	160	P	2021/06/13	02:00:43.2	0.6
KRLC	1.5	160	S	2021/06/13	02:01:02.6	-0.0
RUE	1.7	306	P	2021/06/13	02:00:46.2	-0.1
PRU	1.8	213	P	2021/06/13	02:00:47.1	-0.1
GKP	1.9	22	P	2021/06/13	02:00:50.2	0.9
MORC	2.0	151	P	2021/06/13	02:00:49.6	-0.2
MORC	2.0	151	S	2021/06/13	02:01:16.1	0.6
OKC	2.1	140	P	2021/06/13	02:00:52.7	0.7
NKC	2.6	243	P	2021/06/13	02:00:59.1	0.4
OJC	2.7	117	P	2021/06/13	02:01:00.0	0.1
KHC	2.8	215	P	2021/06/13	02:01:01.9	-0.1
CKRC	2.9	203	P	2021/06/13	02:01:02.8	0.1
VYHS	3.5	148	P	2021/06/13	02:01:11.6	0.7
BURAR	7.1	119	P	2021/06/13	02:02:00.3	0.1



### 14.06.2021. Zona seismică Vrancea

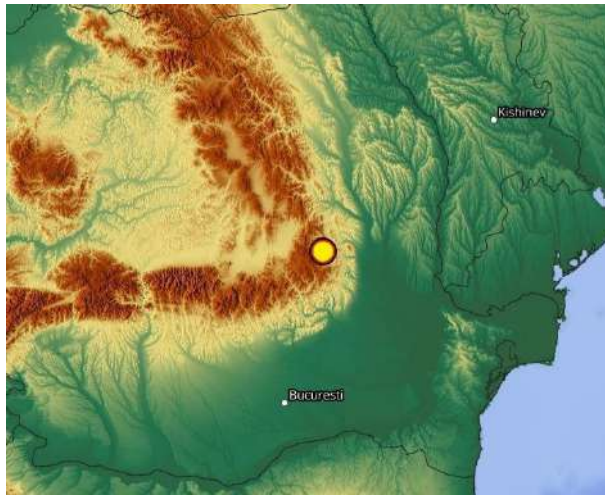
$t_0 = 09:54:05$ ;  $\varphi = 45,63^\circ N$ ;  $\lambda = 26,71^\circ E$ ;  $h = 17 \text{ km}$ ;  $ML_v = 3,2$

Date	Time	Latitude	Longitude	Depth	Mag
2021/06/14	09:54:05.2	45.63	26.71	17	ML <sub>v</sub> 3.2

#### ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.2	349	Pg	2021/06/14	09:54:10.7	0.3
PLOR	0.2	349	Sg	2021/06/14	09:54:14.1	-0.1
VRI	0.2	3	Pg	2021/06/14	09:54:10.9	0.4
VRI	0.2	3	Sg	2021/06/14	09:54:13.8	-0.6
MLR	0.6	256	Pg	2021/06/14	09:54:16.1	-0.1
TESR	0.9	357	Pg	2021/06/14	09:54:22.4	0.1
VOIR	1.2	261	Pg	2021/06/14	09:54:26.6	-1.5
HUMR	1.7	229	Pn	2021/06/14	09:54:33.8	0.5
TIRR	1.7	134	Pn	2021/06/14	09:54:33.6	-0.2
TIRR	1.7	134	Sn	2021/06/14	09:54:54.5	-1.3
BURAR	2.3	333	Pn	2021/06/14	09:54:42.7	0.9
CJR	2.4	298	Pn	2021/06/14	09:54:44.5	0.5
PLVB	2.7	214	Pn	2021/06/14	09:54:48.6	0.8
SORM	2.7	24	Pn	2021/06/14	09:54:48.5	0.1
SORM	2.7	24	Sn	2021/06/14	09:55:21.1	-0.9
KPD	2.9	357	Pn	2021/06/14	09:54:51.1	0.0
KPD	2.9	357	Sn	2021/06/14	09:55:25.2	-1.5
DRGR	3.0	294	Pn	2021/06/14	09:54:51.3	-0.8
LUBAR	4.3	9	Pn	2021/06/14	09:55:10.7	0.3
RDO	4.6	191	Pn	2021/06/14	09:55:13.6	0.2
MI28	5.3	7	Pn	2021/06/14	09:55:22.6	-1.4
AKBB	5.3	17	Pn	2021/06/14	09:55:24.9	0.8

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



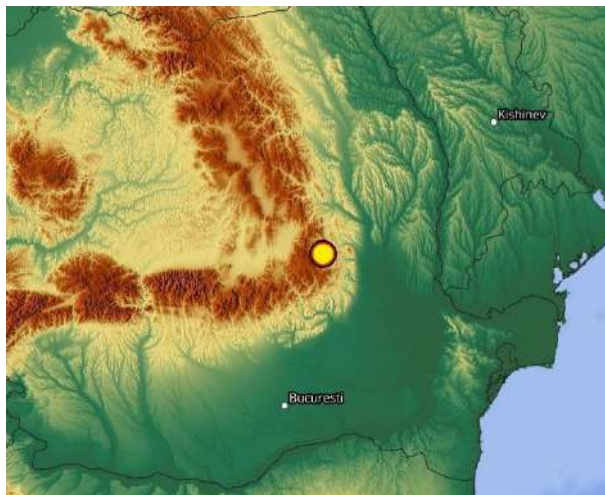
**14.06.2021. Zona seismică Vrancea**

$t_0 = 10:36:20$ ;  $\varphi = 45,63^\circ N$ ;  $\lambda = 26,70^\circ E$ ;  $h = 17 \text{ km}$ ;  $ML_v = 3,3$

Date	Time	Latitude	Longitude	Depth	Mag
2021/06/14	10:36:20.7	45.63	26.70	17	MLv 3.3

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.2	351	Pg	2021/06/14	10:36:26.2	0.2
PLOR	0.2	351	Sg	2021/06/14	10:36:29.6	-0.3
VRI	0.2	4	Pg	2021/06/14	10:36:26.3	0.1
MLR	0.5	256	Pg	2021/06/14	10:36:31.6	0.0
MLR	0.5	256	Sg	2021/06/14	10:36:39.2	-0.4
TESR	0.9	358	Pg	2021/06/14	10:36:38.1	0.2
TIRR	1.7	133	Pn	2021/06/14	10:36:48.8	-0.4
BURAR	2.3	333	Pn	2021/06/14	10:36:57.9	0.6
SORM	2.8	24	Pn	2021/06/14	10:37:04.1	0.1
SORM	2.8	24	Sn	2021/06/14	10:37:36.9	-0.7
KPD	2.9	357	Pn	2021/06/14	10:37:06.5	-0.0
LUBAR	4.4	9	Pn	2021/06/14	10:37:25.7	-0.3
RDO	4.6	191	Pn	2021/06/14	10:37:29.2	0.4
AKBB	5.3	17	Pn	2021/06/14	10:37:39.4	0.2



**15.06.2021. Zona seismică Vrancea**

$t_0 = 00:07:59$ ;  $\varphi = 45,65^\circ N$ ;  $\lambda = 26,62^\circ E$ ;  $h = 14 \text{ km}$ ;  $ML_v = 3,3$

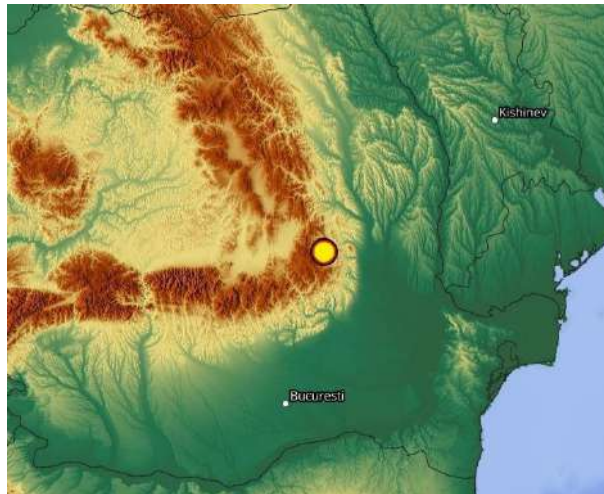
Date	Time	Latitude	Longitude	Depth	Mag
2021/06/15	00:07:59.6	45.65	26.62	14	MLv 3.3

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.2	5	Pg	2021/06/15	00:08:04.8	0.7
PLOR	0.2	5	Sg	2021/06/15	00:08:06.6	-0.8

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

VRI	0.2	19	Pg	2021/06/15	00:08:05.0	0.5
VRI	0.2	19	Sg	2021/06/15	00:08:07.6	-0.5
MLR	0.5	251	Pg	2021/06/15	00:08:10.3	0.8
MLR	0.5	251	S	2021/06/15	00:08:18.4	0.1
TESR	0.9	1	Pg	2021/06/15	00:08:16.7	0.5
VOIR	1.1	260	Lg	2021/06/15	00:08:34.1	-1.0
VOIR	1.1	260	P	2021/06/15	00:08:20.4	-0.0
ARR	1.4	259	P	2021/06/15	00:08:25.7	0.9
HUMR	1.6	227	P	2021/06/15	00:08:28.3	0.8
BURAR	2.2	334	Pn	2021/06/15	00:08:37.0	1.1
CJR	2.4	298	Pn	2021/06/15	00:08:38.4	0.6
DEV	2.6	276	Pn	2021/06/15	00:08:41.9	0.5
SORM	2.8	25	Pn	2021/06/15	00:08:42.4	-0.9
KPD	2.9	358	Pg	2021/06/15	00:08:55.5	0.1
KPD	2.9	358	Pn	2021/06/15	00:08:46.0	0.5
DRGR	2.9	294	P	2021/06/15	00:08:45.4	-0.5
BAL3X	3.1	41	Pn	2021/06/15	00:08:48.2	0.5
MI26	3.1	41	Pn	2021/06/15	00:08:48.6	0.9
SIRR	3.5	282	Pn	2021/06/15	00:08:53.6	-0.1
MDVR	3.6	258	Pn	2021/06/15	00:08:55.5	0.9
AMBH	4.2	282	Pn	2021/06/15	00:09:02.7	-0.0
LUBAR	4.3	10	Pn	2021/06/15	00:09:05.5	0.5
RDO	4.6	190	Pn	2021/06/15	00:09:07.7	-0.6
BSZH	4.7	293	Pn	2021/06/15	00:09:09.9	0.0
XAEC5	4.8	1	Pn	2021/06/15	00:09:11.1	0.2
PSZ	5.1	299	Pn	2021/06/15	00:09:15.4	-0.8
MI29	5.2	11	Pb	2021/06/15	00:09:29.7	-0.5
MI29	5.2	11	Pn	2021/06/15	00:09:16.5	-0.4
MI28	5.3	7	Pn	2021/06/15	00:09:18.4	-0.2
AKBB	5.3	18	Pn	2021/06/15	00:09:18.7	-0.1
BUD	5.6	292	Pn	2021/06/15	00:09:21.4	-0.3
MORH	5.6	279	Pn	2021/06/15	00:09:21.0	-1.3
RNPP5	5.6	355	Pn	2021/06/15	00:09:22.4	0.1
EZN	5.8	182	Pn	2021/06/15	00:09:24.4	-1.1
SSM6	5.9	68	Pn	2021/06/15	00:09:26.6	0.2
SRO	6.1	294	Pn	2021/06/15	00:09:29.2	-0.2
KRLC	7.9	308	Pn	2021/06/15	00:09:54.6	0.1



### 16.06.2021. Zona seismică Vrancea

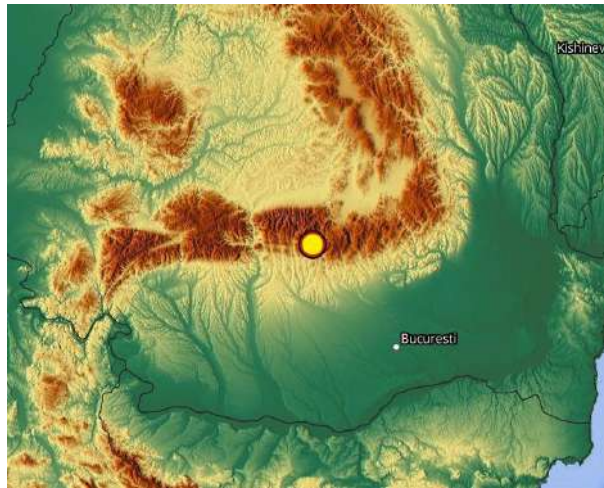
$t_0 = 17:57:19$ ;  $\varphi = 45,34^\circ N$ ;  $\lambda = 25,17^\circ E$ ;  $h = 3 \text{ km}$ ;  $ML_v = 2,7$

Date	Time	Latitude	Longitude	Depth	Mag
2021/06/16	17:57:19.9	45.34	25.17	3	MLv 2.7

#### ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VOIR	0.1	319	P	2021/06/16	17:57:22.5	-0.4
MLR	0.6	74	Pg	2021/06/16	17:57:29.4	-1.4
MLR	0.6	74	Sg	2021/06/16	17:57:39.4	1.0
ISR	1.0	102	P	2021/06/16	17:57:39.9	1.0
VRI	1.2	64	P	2021/06/16	17:57:41.4	-1.1
TESR	1.6	41	P	2021/06/16	17:57:46.4	-1.6
BUR07	2.3	1	P	2021/06/16	17:57:59.7	1.0
BUR31	2.3	0	P	2021/06/16	17:57:59.7	1.0
KPD	3.3	15	P	2021/06/16	17:58:13.4	0.4

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



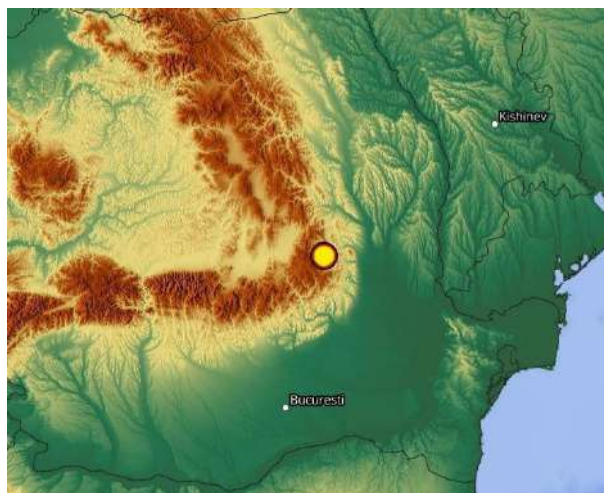
**17.06.2021. Zona seismica Vrancea**

$t_0 = 02:25:34$ ;  $\varphi = 45,76^\circ N$ ;  $\lambda = 26,69^\circ E$ ;  $h = 81 \text{ km}$ ;  $ML = 3,0$

Date	Time	Latitude	Longitude	Depth	Mag
2021/06/17	02:25:34.5	45.76	26.69	81	ML 3.0

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time
PLOR	0.09	342.1	P	2021/06/17	02:25:46.3
VRI	0.10	14.7	P	2021/06/17	02:25:46.4
SAHR	0.04	184.5	P	2021/06/17	02:25:46.5
COVR	0.35	283.6	P	2021/06/17	02:25:47.3
NEHR	0.44	219.4	P	2021/06/17	02:25:48.3
TURR	0.55	302.0	P	2021/06/17	02:25:49.3
MLR	0.59	242.5	P	2021/06/17	02:25:49.7
OZUR	0.71	298.1	P	2021/06/17	02:25:50.4
TESR	0.75	357.8	P	2021/06/17	02:25:50.9
VRI	0.10	14.7	S	2021/06/17	02:25:54.9
PLOR	0.09	342.1	S	2021/06/17	02:25:54.9
SAHR	0.04	184.5	S	2021/06/17	02:25:55.6
CFR	1.17	119.5	P	2021/06/17	02:25:55.8
GRER	0.43	152.5	S	2021/06/17	02:25:58.7
NEHR	0.44	219.4	S	2021/06/17	02:25:59.2
TURR	0.55	302.0	S	2021/06/17	02:25:59.4
MLR	0.59	242.5	S	2021/06/17	02:26:00.4
GHRR	0.58	59.1	S	2021/06/17	02:26:00.8
ISR	0.65	189.1	S	2021/06/17	02:26:01.4
OZUR	0.71	298.1	S	2021/06/17	02:26:01.8
TLCR	1.60	110.5	P	2021/06/17	02:26:01.9
TUDR	0.70	103.7	S	2021/06/17	02:26:02.2
TESR	0.75	357.8	S	2021/06/17	02:26:02.3





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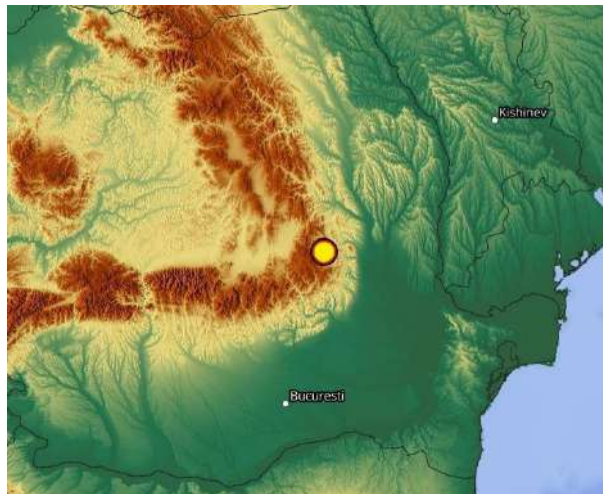
17.06.2021. Zona seismică Vrancea

$t_0 = 07:02:55$ ;  $\varphi = 45,75^\circ N$ ;  $\lambda = 26,73^\circ E$ ;  $h = 67 \text{ km}$ ;  $ML = 3,3$

Date	Time	Latitude	Longitude	Depth	Mag
2021/06/17	07:02:55.2	45.75	26.73	67	ML 3.3

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
SAHR	0.04	228.7	P	2021/06/17	07:03:08.2	0.3
PLOR	0.11	329.8	P	2021/06/17	07:03:08.3	0.3
VRI	0.11	358.9	P	2021/06/17	07:03:08.4	0.5
COVR	0.38	284.1	P	2021/06/17	07:03:09.2	0.2
NEHR	0.45	223.1	P	2021/06/17	07:03:09.5	-0.0
GHRR	0.56	56.8	P	2021/06/17	07:03:10.6	0.3
TURR	0.58	301.4	P	2021/06/17	07:03:11.0	0.4
ISR	0.65	191.8	P	2021/06/17	07:03:11.4	0.1
MLR	0.61	244.7	P	2021/06/17	07:03:11.4	0.4
TUDR	0.67	103.4	P	2021/06/17	07:03:11.6	0.3
OZUR	0.74	297.8	P	2021/06/17	07:03:12.0	-0.2
TESR	0.76	355.7	P	2021/06/17	07:03:12.1	-0.2
BOSR	0.81	293.7	P	2021/06/17	07:03:12.7	-0.1
VARL	0.79	79.0	P	2021/06/17	07:03:13.2	0.7
DOPR	0.96	283.3	P	2021/06/17	07:03:14.6	0.2
VLDR	0.95	84.1	P	2021/06/17	07:03:14.7	0.5
TATR	0.93	99.2	P	2021/06/17	07:03:14.7	0.5
MNTR	1.15	28.5	P	2021/06/17	07:03:16.5	-0.1
CFR	1.14	119.8	P	2021/06/17	07:03:16.6	0.1
VASR	1.15	39.2	P	2021/06/17	07:03:16.8	0.2
NGRR	1.19	24.1	P	2021/06/17	07:03:16.9	-0.1
PDRR	1.14	25.3	P	2021/06/17	07:03:17.1	0.6
VOIR	1.22	255.5	P	2021/06/17	07:03:17.6	0.0
VRI	0.11	358.9	S	2021/06/17	07:03:17.7	-0.0
PLOR	0.11	329.8	S	2021/06/17	07:03:17.8	-0.0



17.06.2021. Zona seismică Vrancea

$t_0 = 09:48:37$ ;  $\varphi = 45,52^\circ N$ ;  $\lambda = 26,48^\circ E$ ;  $h = 101 \text{ km}$ ;  $ML = 3,2$

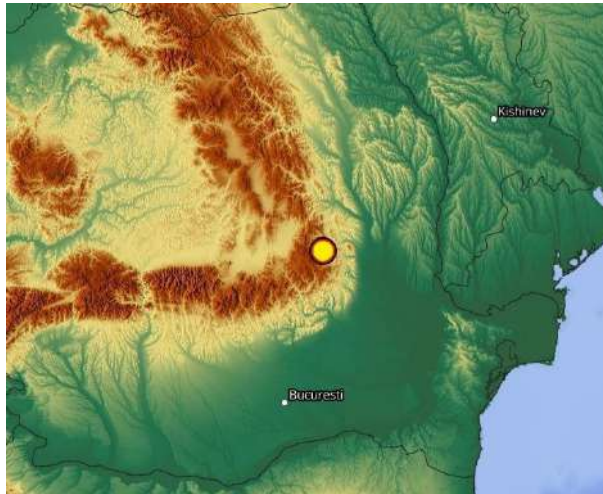
Date	Time	Latitude	Longitude	Depth	Mag
2021/06/17	09:48:37.04	45.52	26.48	101	ML 3.2

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
SAHR	0.25	33.8	P	2021/06/17	09:48:53.1	0.5
PLOR	0.36	19.1	P	2021/06/17	09:48:53.1	0.2
COVR	0.38	329.6	P	2021/06/17	09:48:53.2	0.1
GRER	0.37	111.2	P	2021/06/17	09:48:53.3	0.4
VRI	0.39	26.0	P	2021/06/17	09:48:53.4	0.3
ISR	0.40	173.9	P	2021/06/17	09:48:53.5	0.3
MLR	0.38	266.5	P	2021/06/17	09:48:53.9	0.6
TURR	0.63	329.1	P	2021/06/17	09:48:54.6	-0.2
ODBI	0.47	58.1	P	2021/06/17	09:48:54.8	1.3
OZUR	0.76	320.3	P	2021/06/17	09:48:55.2	-0.6
DOPR	0.89	301.0	P	2021/06/17	09:48:56.6	-0.4
GHRR	0.84	49.5	P	2021/06/17	09:48:57.1	0.5

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

IZVR	0.90	87.7	P	2021/06/17	09:48:57.3	0.2
TESR	1.00	6.5	P	2021/06/17	09:48:57.5	-0.6
NEGRR	0.98	88.2	P	2021/06/17	09:48:58.3	0.4
VOIR	1.01	266.1	P	2021/06/17	09:48:58.4	0.1
TATR	1.10	85.2	P	2021/06/17	09:48:59.1	-0.2
BIR	1.08	48.0	P	2021/06/17	09:48:59.5	0.5
VLDR	1.16	73.0	P	2021/06/17	09:49:00.2	0.3



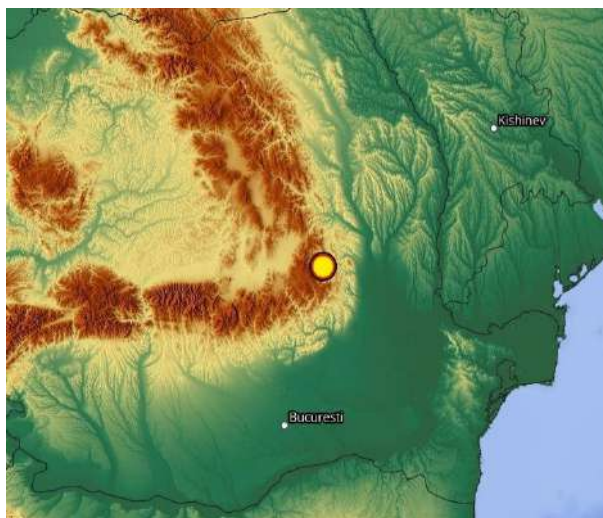
**19.06.2021. Zona seismica Vrancea**

$t_0 = 15:10:14$ ;  $\varphi = 45,76^\circ N$ ;  $\lambda = 26,72^\circ E$ ;  $h = 70 \text{ km}$ ;  $ML_v = 2,1$

Date	Time	Latitude	Longitude	Depth	Mag
2021/06/19	15:10:14.5	45.76	26.72	70	MLv 2.1

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
BISRR	0.2	183	P	2021/06/19	15:10:27.4	1.1
MLR	0.6	244	P	2021/06/19	15:10:29.4	-0.3
MLR	0.6	244	S	2021/06/19	15:10:40.1	-1.1
TESR	0.8	356	P	2021/06/19	15:10:29.9	-1.0
VOIR	1.2	255	P	2021/06/19	15:10:36.3	0.6
BUR07	2.1	332	P	2021/06/19	15:10:48.5	0.4
BUR07	2.1	332	S	2021/06/19	15:11:14.5	0.3
BUR31	2.2	332	P	2021/06/19	15:10:48.6	0.4
LUBAR	4.2	9	P	2021/06/19	15:11:15.9	-0.4



**20.06.2021. Zona seismica Vrancea**

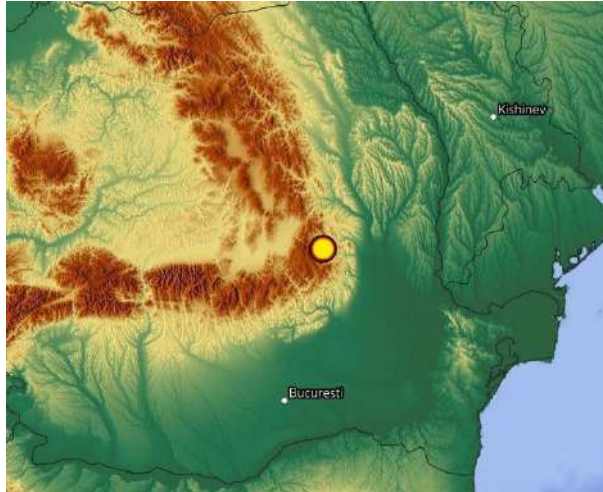
$t_0 = 04:50:24$ ;  $\varphi = 45,84^\circ N$ ;  $\lambda = 26,83^\circ E$ ;  $h = 66 \text{ km}$ ;  $ML_v = 3,2$

Date	Time	Latitude	Longitude	Depth	Mag
2021/06/20	04:50:24.8	45.84	26.83	66	MLv 3.2

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

### ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VRI	0.1	293	P	2021/06/20	04:50:35.3	0.3
VRI	0.1	293	S	2021/06/20	04:50:43.4	0.6
TESR	0.7	350	P	2021/06/20	04:50:39.4	-0.9
MLR	0.7	241	P	2021/06/20	04:50:40.3	-0.2
MLR	0.7	241	S	2021/06/20	04:50:51.5	-1.1
VOIR	1.3	253	P	2021/06/20	04:50:47.2	0.1
TIRR	1.8	140	P	2021/06/20	04:50:54.1	0.8
BUR07	2.1	329	P	2021/06/20	04:50:58.8	1.0
BUR31	2.1	329	P	2021/06/20	04:50:58.6	0.6
KPD	2.7	355	P	2021/06/20	04:51:06.5	0.2
AKBB	5.0	18	P	2021/06/20	04:51:36.9	0.0
MI29	5.0	10	P	2021/06/20	04:51:36.8	-0.3
RNPP9	5.6	354	P	2021/06/20	04:51:44.9	-0.7



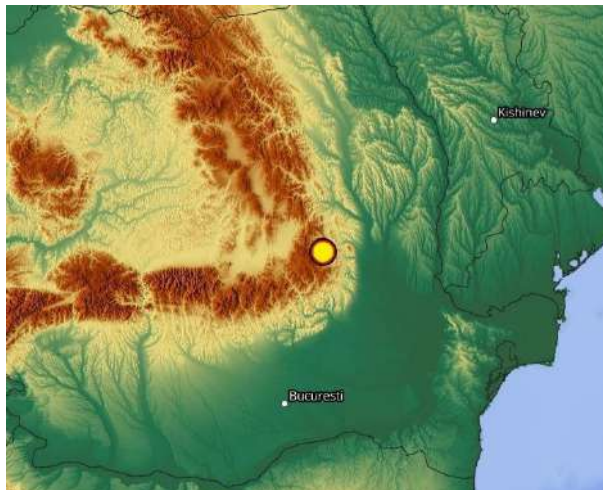
### 20.06.2021. Zona seismică Vrancea

$t_0 = 21:06:47$ ;  $\varphi = 45,79^\circ N$ ;  $\lambda = 26,80^\circ E$ ;  $h = 5 \text{ km}$ ;  $ML_v = 2,3$

Date	Time	Latitude	Longitude	Depth	Mag
2021/06/20	21:06:47.8	45.79	26.80	5	MLv 2.3

### ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VRI	0.1	324	P	2021/06/20	21:06:49.4	-0.9
VRI	0.1	324	S	2021/06/20	21:06:52.3	0.2
BISRR	0.3	195	P	2021/06/20	21:06:53.1	-0.1
TESR	0.7	352	P	2021/06/20	21:07:02.3	0.3
VOIR	1.3	255	P	2021/06/20	21:07:10.8	-0.7
VOIR	1.3	255	S	2021/06/20	21:07:29.7	0.7
TIRR	1.8	139	P	2021/06/20	21:07:18.9	0.2
BUR07	2.1	330	P	2021/06/20	21:07:24.3	-0.0
BUR31	2.2	330	P	2021/06/20	21:07:23.9	-0.5
KPD	2.8	355	P	2021/06/20	21:07:33.8	0.8



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

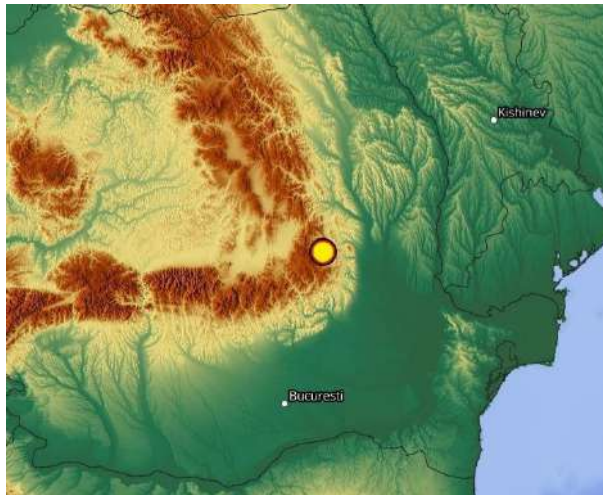
**23.06.2021. Zona seismică Vrancea**

$t_0 = 00:29:56$ ;  $\varphi = 45,78^\circ N$ ;  $\lambda = 26,58^\circ E$ ;  $h = 70 \text{ km}$ ;  $ML_v = 2,1$

Date	Time	Latitude	Longitude	Depth	Mag
2021/06/23	00:29:56.8	45.78	26.58	70	MLv 2.1

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VRI	0.1	50	P	2021/06/23	00:30:08.2	0.2
BISRR	0.3	159	P	2021/06/23	00:30:08.9	-0.0
MLR	0.5	237	P	2021/06/23	00:30:10.8	-0.5
ISR	0.7	182	P	2021/06/23	00:30:12.3	-0.1
TESR	0.7	4	P	2021/06/23	00:30:13.0	0.1
VOIR	1.1	253	P	2021/06/23	00:30:17.4	0.5
TIRR	1.9	135	P	2021/06/23	00:30:26.7	0.3
KPD	2.8	358	P	2021/06/23	00:30:39.2	0.2
LUBAR	4.2	10	P	2021/06/23	00:30:57.9	-0.6
AKBB	5.2	19	P	2021/06/23	00:31:12.1	0.0
RNPP2	5.6	356	P	2021/06/23	00:31:17.1	0.2
EZN	6.0	182	P	2021/06/23	00:31:22.2	-0.1



**24.06.2021. Poland**

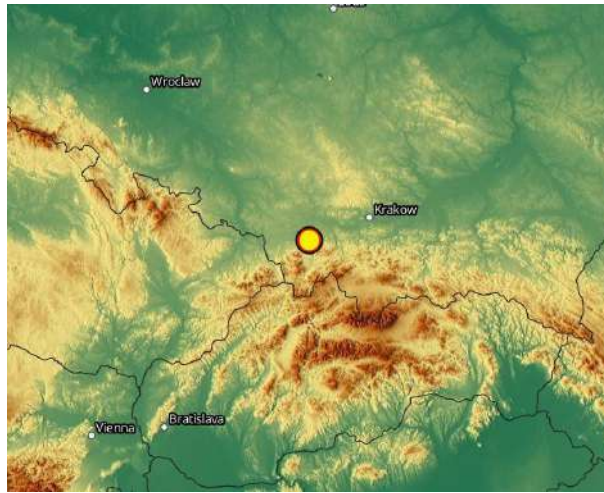
$t_0 = 01:27:12$ ;  $\varphi = 49,91^\circ N$ ;  $\lambda = 19,16^\circ E$ ;  $h = 4 \text{ km}$ ;  $ML_v = 2,8$

Date	Time	Latitude	Longitude	Depth	Mag
2021/06/24	01:27:12.7	49.91	19.16	4	MLv 2.8

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
NIE	0.9	123	P	2021/06/24	01:27:29.2	-0.8
NIE	0.9	123	S	2021/06/24	01:27:42.8	0.5
DPC	1.9	285	P	2021/06/24	01:27:44.6	-0.9
DPC	1.9	285	S	2021/06/24	01:28:11.5	1.1
KSP	2.1	298	P	2021/06/24	01:27:47.8	-0.2
KWP	2.3	96	P	2021/06/24	01:27:51.3	-0.2
KWP	2.3	96	S	2021/06/24	01:28:22.5	1.2
MORH	3.7	186	P	2021/06/24	01:28:11.3	0.4
BUR31	4.6	117	P	2021/06/24	01:28:21.9	-0.9
BUR07	4.6	117	P	2021/06/24	01:28:22.9	-0.2

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



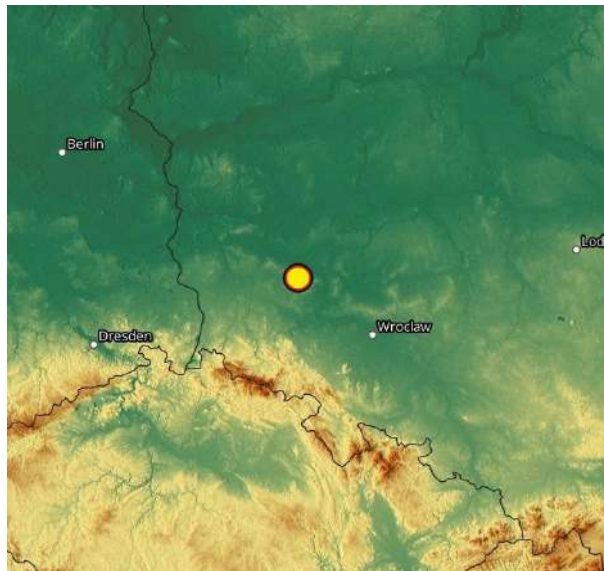
**24.06.2021. Poland**

$t_0 = 03:58:47$ ;  $\varphi = 51,56^\circ N$ ;  $\lambda = 16,10^\circ E$ ;  $h = 10 \text{ km}$ ;  $ML_v = 3,4$

Date	Time	Latitude	Longitude	Depth	Mag
2021/06/24	03:58:47.4	51.56	16.10	10	MLv 3.4

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
KSP	0.7	170	P	2021/06/24	03:59:00.6	-1.1
DPC	1.2	173	P	2021/06/24	03:59:09.1	-0.6
CLL	2.0	264	P	2021/06/24	03:59:20.5	-0.0
KHC	2.9	215	P	2021/06/24	03:59:33.9	0.1
NIE	3.4	127	P	2021/06/24	03:59:41.4	0.5
KWP	4.6	112	P	2021/06/24	03:59:56.9	-0.4
MORH	5.6	162	P	2021/06/24	04:00:11.9	1.2
RNPP1	6.0	88	P	2021/06/24	04:00:17.3	0.6
BUR31	7.1	120	P	2021/06/24	04:00:31.9	0.8
BUR07	7.1	120	P	2021/06/24	04:00:32.7	1.3
LUBAR	7.6	98	P	2021/06/24	04:00:37.0	-0.8
AKBB	8.3	91	P	2021/06/24	04:00:47.4	-0.3



**30.06.2021. Zona seismica Vrancea**

$t_0 = 06:46:35$ ;  $\varphi = 45,58^\circ N$ ;  $\lambda = 26,68^\circ E$ ;  $h = 18 \text{ km}$ ;  $ML_v = 2,9$

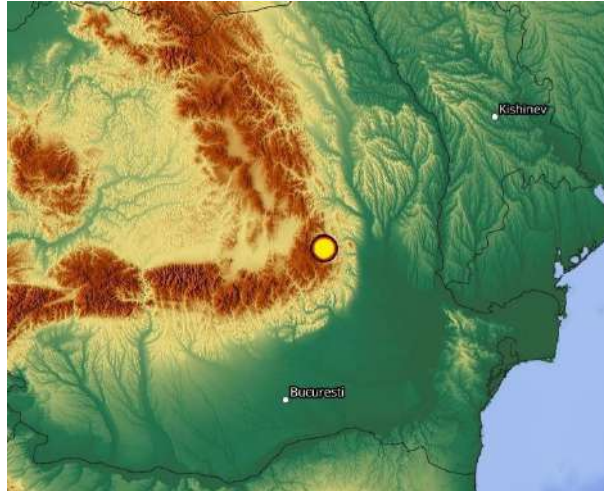
Date	Time	Latitude	Longitude	Depth	Mag
2021/06/30	06:46:35.9	45.58	26.68	18	MLv 2.9

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
BISRR	0.0	143	P	2021/06/30	06:46:40.4	0.7

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

VRI	0.3	7	P	2021/06/30	06:46:43.0	-0.6
VRI	0.3	7	S	2021/06/30	06:46:49.2	0.1
ISR	0.5	192	P	2021/06/30	06:46:46.5	0.1
MLR	0.5	261	P	2021/06/30	06:46:47.0	-0.2
MLR	0.5	261	S	2021/06/30	06:46:55.0	-0.5
TESR	0.9	359	P	2021/06/30	06:46:54.1	0.4
VOIR	1.2	264	P	2021/06/30	06:46:57.1	0.2
TIRR	1.7	132	P	2021/06/30	06:47:03.5	-0.6
BUR07	2.3	335	P	2021/06/30	06:47:14.0	1.2
BUR31	2.3	334	P	2021/06/30	06:47:13.4	0.5
LUBAR	4.4	9	P	2021/06/30	06:47:41.4	-0.4
AKBB	5.3	18	P	2021/06/30	06:47:53.8	0.3



### 06.07.2021. Zona seismică Vrancea

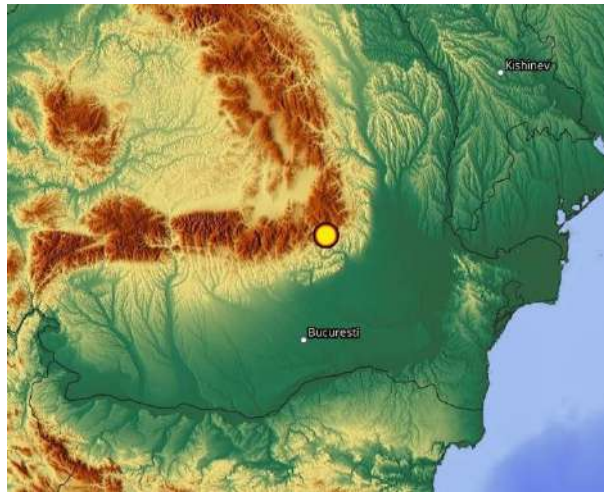
$t_0 = 11:20:00$ ;  $\varphi = 45,62^\circ N$ ;  $\lambda = 26,49^\circ E$ ;  $h = 136 \text{ km}$ ;  $ML_v = 3,9$

Date	Time	Latitude	Longitude	Depth	Mag
2021/07/06	11:20:00.3	45.62	26.49	136	ML <sub>v</sub> 3.9

#### ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.3	26	P	2021/07/06	11:20:19.6	-0.3
VRI	0.3	34	P	2021/07/06	11:20:20.0	-0.1
MLR	0.4	251	P	2021/07/06	11:20:20.3	-0.4
TESR	0.9	7	P	2021/07/06	11:20:23.3	0.1
VOIR	1.0	260	P	2021/07/06	11:20:24.0	0.1
ARR	1.3	260	P	2021/07/06	11:20:27.2	0.1
TIRR	1.8	130	P	2021/07/06	11:20:32.5	0.4
BURAR	2.2	337	P	2021/07/06	11:20:38.5	1.5
DEV	2.5	277	P	2021/07/06	11:20:41.1	0.1
PLVB	2.6	212	P	2021/07/06	11:20:41.7	-0.3
SORM	2.8	26	P	2021/07/06	11:20:44.8	0.1
DRGR	2.9	295	P	2021/07/06	11:20:45.0	-0.4
SIRR	3.4	283	P	2021/07/06	11:20:52.5	-0.1
LUBAR	4.4	11	P	2021/07/06	11:21:05.2	-0.0
RDO	4.5	189	P	2021/07/06	11:21:07.3	0.2
PSZ	5.1	299	P	2021/07/06	11:21:13.8	-0.6
AKBB	5.4	19	P	2021/07/06	11:21:18.6	-0.1
MORH	5.5	279	P	2021/07/06	11:21:20.5	0.4

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**



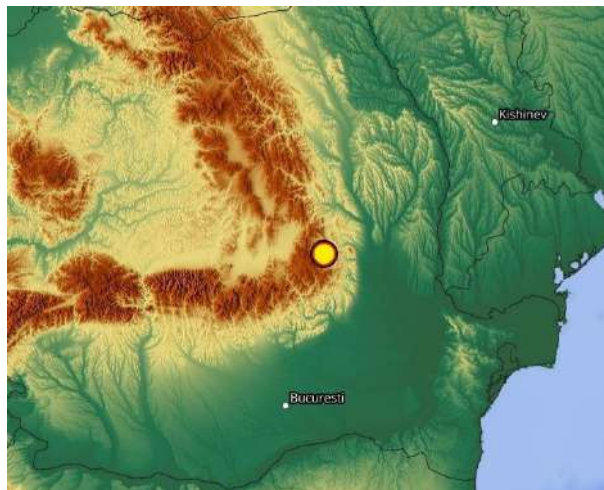
**09.07.2021. Zona seismică Vrancea**

$t_0 = 12:37:42$ ;  $\varphi = 45,65^\circ N$ ;  $\lambda = 26,57^\circ E$ ;  $h = 141 \text{ km}$ ;  $ML = 3,2$

Date	Time	Latitude	Longitude	Depth	Mag
2021/07/09	12:37:42.1	45.65	26.57	141	ML 3.2

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.21	16.2	P	2021/07/09	12:38:01.4	-0.1
VRI	0.24	27.7	P	2021/07/09	12:38:01.5	-0.0
NEHR	0.29	220.3	P	2021/07/09	12:38:02.1	0.4
MLR	0.46	249.9	P	2021/07/09	12:38:02.6	0.1
TURR	0.56	316.6	P	2021/07/09	12:38:02.7	-0.1
ODBI	0.36	71.8	P	2021/07/09	12:38:02.8	1.0
ISR	0.53	181.8	P	2021/07/09	12:38:03.3	0.5
GRER	0.39	133.5	P	2021/07/09	12:38:03.4	1.4
GHRR	0.71	54.8	P	2021/07/09	12:38:04.3	0.5
TESR	0.86	3.8	P	2021/07/09	12:38:04.3	-0.6
NEGRR	0.92	96.7	P	2021/07/09	12:38:05.8	0.4
SULR	1.00	192.9	P	2021/07/09	12:38:06.4	0.4
VOIR	1.08	259.1	P	2021/07/09	12:38:06.4	-0.5
VLDR	1.07	79.2	P	2021/07/09	12:38:07.0	0.3
CFR	1.20	112.7	P	2021/07/09	12:38:07.9	0.0
HARR	1.36	134.6	P	2021/07/09	12:38:09.7	0.2
ARR	1.39	258.8	P	2021/07/09	12:38:10.2	0.2
TPGR	1.53	120.7	P	2021/07/09	12:38:11.3	-0.1
TIRR	1.77	131.8	P	2021/07/09	12:38:14.1	0.1
PLOR	0.21	16.2	S	2021/07/09	12:38:16.2	-0.3
VRI	0.24	27.7	S	2021/07/09	12:38:16.5	-0.0
NEHR	0.29	220.3	S	2021/07/09	12:38:17.2	0.7
ISR	0.53	181.8	S	2021/07/09	12:38:17.9	-0.9



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

**09.07.2021. Zona seismică Vrancea**

$t_0 = 13:38:32$ ;  $\varphi = 45,52^\circ N$ ;  $\lambda = 26,43^\circ E$ ;  $h = 128 \text{ km}$ ;  $ML_v = 3,7$

Date	Time	Latitude	Longitude	Depth	Mag
2021/07/09	13:38:32.2	45.52	26.43	128	MLv 3.7

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
BISRR	0.2	81	P	2021/07/09	13:38:51.3	0.8
MLR	0.3	266	P	2021/07/09	13:38:51.1	-0.2
MLR	0.3	266	S	2021/07/09	13:39:06.0	-0.0
VRI	0.4	31	P	2021/07/09	13:38:51.4	-0.2
ISR	0.4	168	P	2021/07/09	13:38:51.7	0.1
VOIR	1.0	266	P	2021/07/09	13:38:54.7	0.0
TESR	1.0	9	P	2021/07/09	13:38:54.5	-0.4
TIRR	1.8	126	P	2021/07/09	13:39:03.6	0.4
TIRR	1.8	126	S	2021/07/09	13:39:26.7	-0.6
KIS	2.2	47	P	2021/07/09	13:39:09.4	0.7
BUR07	2.3	339	P	2021/07/09	13:39:09.5	0.0
BUR31	2.3	339	P	2021/07/09	13:39:09.7	0.1
SORM	2.9	26	P	2021/07/09	13:39:17.5	-0.2
AKBB	5.5	19	P	2021/07/09	13:39:51.8	-0.1
KIEV	5.5	19	P	2021/07/09	13:39:52.0	-0.0
AK04	5.5	18	P	2021/07/09	13:39:51.9	-0.1



**12.07.2021. Zona seismică Vrancea**

$t_0 = 00:09:28$ ;  $\varphi = 45,61^\circ N$ ;  $\lambda = 26,49^\circ E$ ;  $h = 109 \text{ km}$ ;  $ML_v = 3,8$

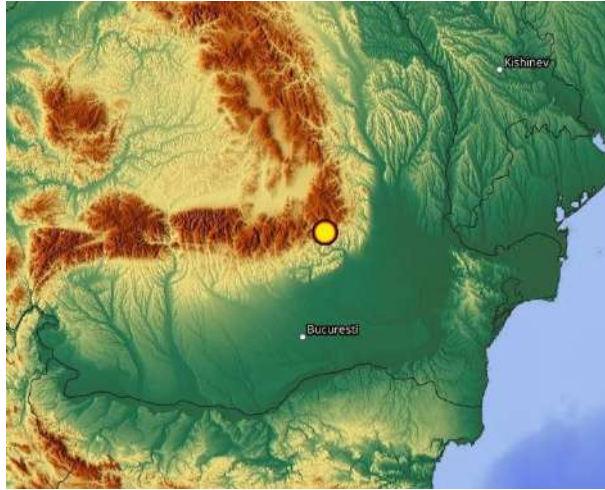
Date	Time	Latitude	Longitude	Depth	Mag
2021/07/12	00:09:28.8	45.61	26.49	109	MLv 3.8

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
BISRR	0.2	113	P	2021/07/12	00:09:45.1	0.4
VRI	0.3	33	P	2021/07/12	00:09:45.4	-0.1
MLR	0.4	253	P	2021/07/12	00:09:45.8	-0.3
ISR	0.5	176	P	2021/07/12	00:09:46.3	-0.5
TESR	0.9	7	P	2021/07/12	00:09:49.6	0.3
VOIR	1.0	261	P	2021/07/12	00:09:50.5	0.4
TIRR	1.8	130	P	2021/07/12	00:09:58.7	-0.3
PURM	2.5	67	P	2021/07/12	00:10:08.8	0.3
SORM	2.8	26	P	2021/07/12	00:10:12.4	0.1
BAL3X	3.2	41	P	2021/07/12	00:10:16.7	-0.1
AKBB	5.3	19	P	2021/07/12	00:10:44.9	-0.1
RNPP5	5.6	356	P	2021/07/12	00:10:50.2	0.2
RNPP8	5.7	356	P	2021/07/12	00:10:51.2	-0.3
SSM5	5.8	67	P	2021/07/12	00:10:51.9	0.1
EZN	5.8	181	P	2021/07/12	00:10:52.3	0.2



UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



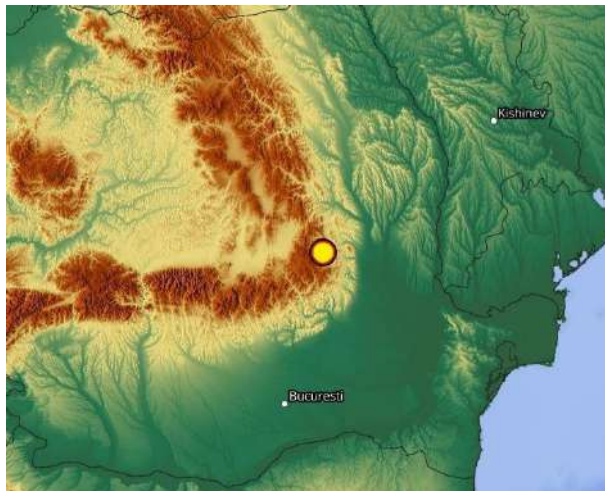
**12.07.2021. Zona seismica Vrancea**

$t_0 = 23:51:16$ ;  $\varphi = 45,83^\circ N$ ;  $\lambda = 26,86^\circ E$ ;  $h = 108 \text{ km}$ ;  $ML_V = 3,5$

Date	Time	Latitude	Longitude	Depth	Mag
2021/07/12	23:51:16.4	45.83	26.86	108	ML <sub>V</sub> 3.5

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VRI	0.1	292	P	2021/07/12	23:51:32.4	0.5
BISRR	0.3	201	P	2021/07/12	23:51:33.2	0.1
TESR	0.7	348	P	2021/07/12	23:51:35.0	-0.6
ISR	0.7	198	P	2021/07/12	23:51:36.2	0.3
VOIR	1.3	254	P	2021/07/12	23:51:40.6	-0.7
TIRR	1.8	141	P	2021/07/12	23:51:46.5	0.2
KIS	1.8	48	P	2021/07/12	23:51:47.1	0.4
KIS	1.8	48	S	2021/07/12	23:52:09.4	-0.8
BUR07	2.1	329	P	2021/07/12	23:51:51.4	0.4
BUR31	2.1	328	P	2021/07/12	23:51:52.4	1.2
PURM	2.2	70	P	2021/07/12	23:51:52.1	0.1
PURM	2.2	70	S	2021/07/12	23:52:19.5	-0.2
SORM	2.5	23	P	2021/07/12	23:51:56.1	0.1
TRPA	3.7	309	P	2021/07/12	23:52:11.7	-0.6
BSZH	4.8	290	P	2021/07/12	23:52:25.5	-0.7
AKBB	5.0	17	P	2021/07/12	23:52:29.4	0.1



UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

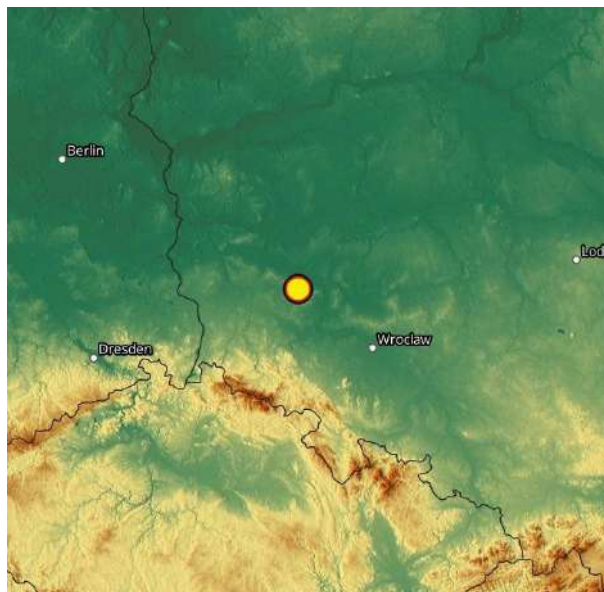
17.07.2021. Poland

$t_0 = 15:57:28$ ;  $\varphi = 51,51^\circ N$ ;  $\lambda = 15,91^\circ E$ ;  $h = 10 \text{ km}$ ;  $mb = 3,5$

Date	Time	Latitude	Longitude	Depth	Mag
2021/07/17	15:57:28.1	51.51	15.91	10	mb 3.5

POLAND

Sta	Dist	Phase	Date	Time	Res
UPC	1.01	P	2021/07/17	15:57:46.4	0.2
DPC	1.19	P	2021/07/17	15:57:49.3	0.1
PVCC	1.30	P	2021/07/17	15:57:52.2	-0.3
KRLC	1.53	P	2021/07/17	15:57:54.4	0.2
RUE	1.63	P	2021/07/17	15:57:55.3	-0.2
PRU	1.76	P	2021/07/17	15:57:58.4	-0.1
CLL	1.83	P	2021/07/17	15:57:58.6	0.1
WANN	1.94	P	2021/07/17	15:57:59.8	0.3
MORC	2.02	P	2021/07/17	15:58:00.6	-0.3
OKC	2.20	P	2021/07/17	15:58:07.1	0.4
TREC	2.24	P	2021/07/17	15:58:05.1	0.3
VRAC	2.25	P	2021/07/17	15:58:05.9	-0.6
TANN	2.43	P	2021/07/17	15:58:08.0	-0.3
KRUC	2.47	P	2021/07/17	15:58:08.5	-0.1
NKC	2.53	P	2021/07/17	15:58:09.7	-0.2
OJC	2.77	P	2021/07/17	15:58:16.8	0.1
KHC	2.81	P	2021/07/17	15:58:14.6	0.1
FALKS	2.89	P	2021/07/17	15:58:18.8	0.2
GEC2	3.02	P	2021/07/17	15:58:16.8	0.3
WET	3.06	P	2021/07/17	15:58:16.9	0.4
MODS	3.26	P	2021/07/17	15:58:20.9	0.5
GRA3	3.40	P	2021/07/17	15:58:21.6	0.4
GRA2	3.44	P	2021/07/17	15:58:22.6	0.2
GRB4	3.44	P	2021/07/17	15:58:22.9	0.1
GRA1	3.49	P	2021/07/17	15:58:23.3	0.3
GRC3	3.81	P	2021/07/17	15:58:27.4	0.4
MOA	3.82	P	2021/07/17	15:58:27.2	0.5
KBA	4.74	P	2021/07/17	15:58:36.2	0.4
KOLS	4.82	P	2021/07/17	15:58:38.8	0.2
TNS	4.88	P	2021/07/17	15:58:38.0	0.1
DRGR	6.48	P	2021/07/17	15:59:01.5	0.2



17.07.2021. Zona seismică Vrancea

$t_0 = 17:15:39$ ;  $\varphi = 45,68^\circ N$ ;  $\lambda = 26,49^\circ E$ ;  $h = 145 \text{ km}$ ;  $ML = 3,6$

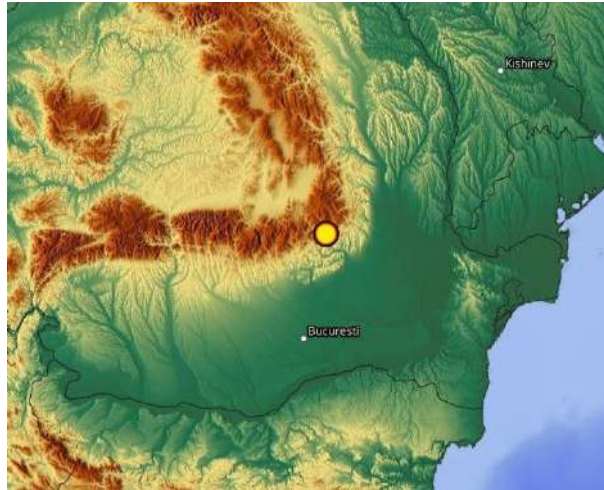
Date	Time	Latitude	Longitude	Depth	Mag
2021/07/17	17:15:39.18	45.68	26.49	145	ml 3.6

ROMANIA

Sta	Dist	Phase	Date	Time	Res
PLOR	0.25	P	2021/07/17	17:16:00.2	0.3
VRI	0.29	P	2021/07/17	17:16:00.5	0.2

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

BISRR	0.19	P	2021/07/17	17:16:00.7	0.2
NEHR	0.25	P	2021/07/17	17:16:00.8	0.1
MLR	0.40	P	2021/07/17	17:16:00.9	0.1
ODBI	0.43	P	2021/07/17	17:16:01.1	0.2
TURR	0.52	P	2021/07/17	17:16:01.3	0.1
OZUR	0.66	P	2021/07/17	17:16:01.4	0.3
BOSR	0.71	P	2021/07/17	17:16:01.5	0.4
GRER	0.44	P	2021/07/17	17:16:01.6	0.5
ISR	0.52	P	2021/07/17	17:16:01.9	0.4
PLAR	0.79	P	2021/07/17	17:16:02.2	0.2
TESR	0.88	P	2021/07/17	17:16:03.3	0.1
TUDR	0.84	P	2021/07/17	17:16:03.3	0.5
SULR	0.97	P	2021/07/17	17:16:04.4	0.3
NEGRR	0.99	P	2021/07/17	17:16:04.8	0.1
AMRR	1.20	P	2021/07/17	17:16:06.6	0.2
LEHL	1.19	P	2021/07/17	17:16:06.7	0.2



### 28.07.2021. Zona seismică Vrancea

$t_0 = 04:01:17$ ;  $\varphi = 45,16^\circ N$ ;  $\lambda = 28,07^\circ E$ ;  $h = 8 \text{ km}$ ;  $ML_v = 3,6$

Date	Time	Latitude	Longitude	Depth	Mag
2021/07/28	04:01:17.6	45.16	28.07	8	ML <sub>v</sub> 3.6

#### ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
TIRR	0.7	161	Pg	2021/07/28	04:01:32.1	0.2
VRI	1.2	307	Pg	2021/07/28	04:01:40.4	0.3
PLOR	1.2	305	Pg	2021/07/28	04:01:40.5	-0.3
MLR	1.5	283	Pn	2021/07/28	04:01:44.7	-0.5
TESR	1.7	324	Pn	2021/07/28	04:01:47.3	0.2
TESR	1.7	324	Sn	2021/07/28	04:02:09.0	-0.6
VOIR	2.1	278	Pg	2021/07/28	04:01:59.0	0.3
VOIR	2.1	278	Sn	2021/07/28	04:02:21.4	0.1
SORM	3.0	4	Pb	2021/07/28	04:02:10.5	-0.3
SORM	3.0	4	Sn	2021/07/28	04:02:41.9	0.1
BURAR	3.2	322	Pn	2021/07/28	04:02:08.3	0.5
LUBAR	4.8	358	Sb	2021/07/28	04:03:42.9	0.4
XAEC2	5.1	351	Sn	2021/07/28	04:03:34.3	-0.2
AKBB	5.6	8	Lg	2021/07/28	04:04:12.2	-0.6
AKBB	5.6	8	Sb	2021/07/28	04:04:06.8	-0.2
MI28	5.8	357	Sb	2021/07/28	04:04:13.5	1.1
RNPP9	6.4	348	Pn	2021/07/28	04:02:51.7	-0.5

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



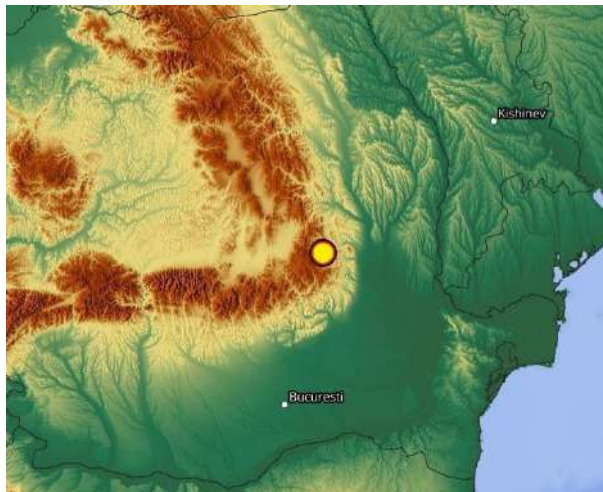
**31.07.2021. Zona seismică Vrancea**

$t_0 = 11:09:32$ ;  $\varphi = 45,81^\circ N$ ;  $\lambda = 26,64^\circ E$ ;  $h = 86 \text{ km}$ ;  $ML_v = 3,1$

Date	Time	Latitude	Longitude	Depth	Mag
2021/07/31	11:09:32.0	45.81	28.64	86	MLv 3.1

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.0	5	P	2021/07/31	11:09:44.5	0.1
VRI	0.1	46	P	2021/07/31	11:09:44.8	0.1
VRI	0.1	46	S	2021/07/31	11:09:54.5	0.1
MLR	0.6	237	P	2021/07/31	11:09:47.9	-0.5
TESR	0.7	0	P	2021/07/31	11:09:48.7	-0.5
VOIR	1.2	252	P	2021/07/31	11:09:53.9	0.2
ARR	1.5	253	P	2021/07/31	11:09:57.6	0.2
HUMR	1.7	223	P	2021/07/31	11:10:00.9	0.2
TIRR	1.8	137	P	2021/07/31	11:10:02.0	0.0
BURAR	2.1	332	P	2021/07/31	11:10:05.4	0.2
SORM	2.6	26	P	2021/07/31	11:10:12.1	0.1
PLVB	2.8	212	P	2021/07/31	11:10:15.0	-0.0
DRGR	2.9	291	P	2021/07/31	11:10:15.7	-0.3
AKBB	5.1	19	P	2021/07/31	11:10:45.9	-0.0



**31.07.2021. Zona seismică Vrancea**

$t_0 = 21:09:12$ ;  $\varphi = 45,52^\circ N$ ;  $\lambda = 26,38^\circ E$ ;  $h = 116 \text{ km}$ ;  $ML_v = 3,3$

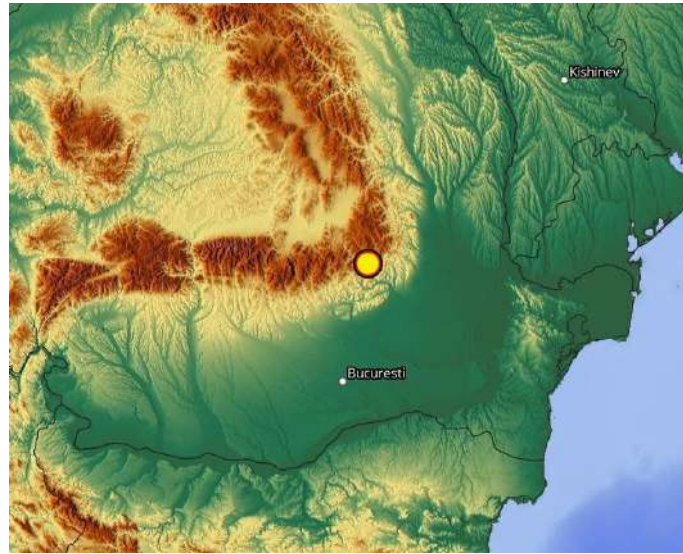
Date	Time	Latitude	Longitude	Depth	Mag
2021/07/31	21:09:12.2	45.52	26.38	116	MLv 3.3

ROMANIA

Sta	Phase	Date	Time	Res
PLOR	P	2021/07/31	21:09:30.4	-0.2
NEHR	P	2021/07/31	21:09:30.5	-0.2
MLR	P	2021/07/31	21:09:30.8	-0.6

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

BISRR	P	2021/07/31	21:09:30.9	-0.2
SAHR	P	2021/07/31	21:09:31.1	0.4
VRI	P	2021/07/31	21:09:31.1	0.5
GRER	P	2021/07/31	21:09:31.1	0.1
ISR	P	2021/07/31	21:09:31.7	-0.3
TURR	P	2021/07/31	21:09:31.9	0.1
OZUR	P	2021/07/31	21:09:32.5	0.2
ODBI	P	2021/07/31	21:09:32.8	-0.6
COSR	P	2021/07/31	21:09:33.4	0.2
DOPR	P	2021/07/31	21:09:33.4	-0.5
TUDR	P	2021/07/31	21:09:34.6	-0.2
SULR	P	2021/07/31	21:09:34.6	0.1
VOIR	P	2021/07/31	21:09:34.8	0.2
GHRR	P	2021/07/31	21:09:34.9	0.4
PLVB	P	2021/07/31	21:09:52.5	-0.1
GZR	S	2021/07/31	21:10:23.9	0.2
RMGR	S	2021/07/31	21:10:26.9	0.1



### 01.08.2021. Zona seismică Vrancea

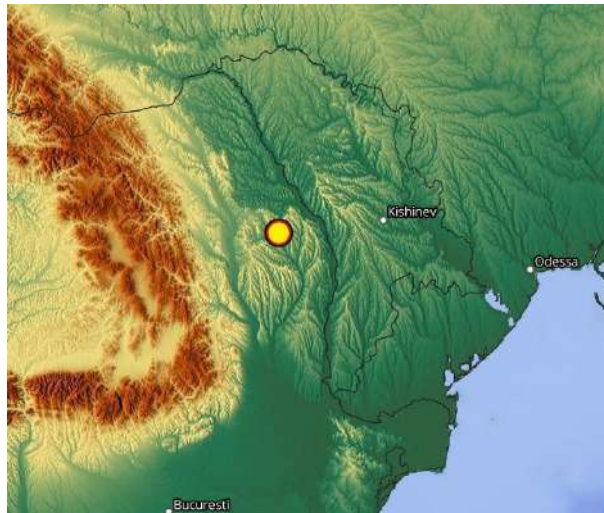
$t_0 = 17:57:10$ ;  $\varphi = 46,77^\circ N$ ;  $\lambda = 27,40^\circ E$ ;  $h = 10 \text{ km}$ ;  $mb = 4,1$

Date	Time	Latitude	Longitude	Depth	Mag
2021/08/01	17:57:10.1	46.77	27.40	10	mb 4.1

#### ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
MLR	1.6	219	Pn	2021/08/01	17:57:39.5	0.6
BUR07	1.7	301	Pn	2021/08/01	17:57:41.1	1.0
PURM	1.7	97	Pn	2021/08/01	17:57:40.0	-0.1
BUR31	1.7	301	Pn	2021/08/01	17:57:41.3	1.0
KPD	1.9	341	Pn	2021/08/01	17:57:42.3	-0.3
BAL3X	1.9	51	Pn	2021/08/01	17:57:42.5	-0.0
MI26	1.9	51	Pn	2021/08/01	17:57:42.5	-0.1
VOIR	2.1	232	Pn	2021/08/01	17:57:45.6	0.1
TIRR	2.4	163	Pn	2021/08/01	17:57:50.9	1.2
LUBAR	3.2	4	Pn	2021/08/01	17:58:00.2	0.3
MI27	3.2	4	Pn	2021/08/01	17:57:59.1	-0.8
XAEC2	3.5	354	Pn	2021/08/01	17:58:05.4	1.5
ZOL	3.5	333	Pn	2021/08/01	17:58:04.7	0.2
XAEC1	3.6	352	Pn	2021/08/01	17:58:06.3	0.8
TRPA	3.6	294	Pn	2021/08/01	17:58:05.3	-0.2
MI29	3.7	4	Pn	2021/08/01	17:58:07.2	0.5
UZH	3.9	300	Pn	2021/08/01	17:58:10.0	-0.3
AKBB	4.1	16	Pn	2021/08/01	17:58:12.8	-0.1
KIEV	4.1	16	Pn	2021/08/01	17:58:12.8	-0.1
MI28	4.2	2	Pn	2021/08/01	17:58:12.4	-1.3
OKP	4.2	27	Pn	2021/08/01	17:58:12.6	-1.3
RNPP5	4.6	348	Pn	2021/08/01	17:58:18.4	-0.8
SSM5	4.8	77	Pn	2021/08/01	17:58:21.4	-1.0

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



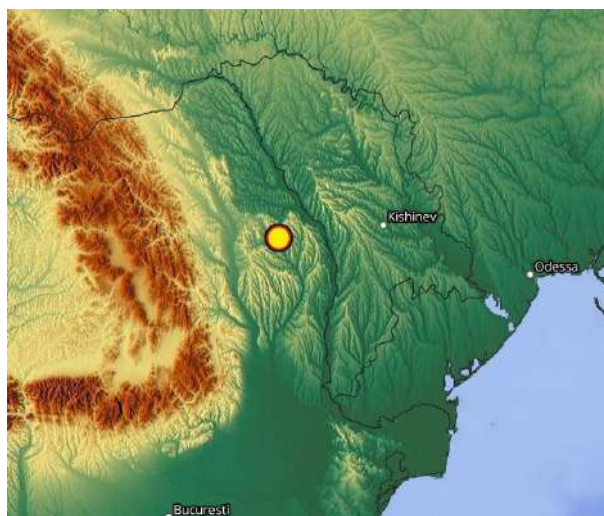
**01.08.2021. Zona seismica Vrancea**

$t_0 = 18:09:25$ ;  $\varphi = 46,83^\circ N$ ;  $\lambda = 27,37^\circ E$ ;  $h = 10 \text{ km}$ ;  $mb = 2,7$

Date	Time	Latitude	Longitude	Depth	Mag
2021/08/01	18:09:25.8	46.83	27.37	10	mb 2.7

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
MLR	1.7	217	Pn	2021/08/01	18:09:54.2	-0.9
BUR07	1.7	300	Pn	2021/08/01	18:09:54.9	-0.1
BUR31	1.7	300	Pn	2021/08/01	18:09:55.3	0.0
ISR	1.8	199	Pn	2021/08/01	18:09:56.9	-0.0
KPD	1.8	341	Pn	2021/08/01	18:09:57.3	-0.0
BAL3X	1.9	53	Pn	2021/08/01	18:09:57.9	0.0
MI26	1.9	53	Pn	2021/08/01	18:09:58.1	0.2
VOIR	2.1	230	Pn	2021/08/01	18:10:00.9	-0.5
TIRR	2.5	163	Pn	2021/08/01	18:10:07.0	0.8
LUBAR	3.1	5	Pn	2021/08/01	18:10:15.2	0.5
XAEC2	3.4	354	Pn	2021/08/01	18:10:19.5	0.8
TRPA	3.5	293	Pn	2021/08/01	18:10:21.2	0.6
AKBB	4.1	17	Pb	2021/08/01	18:10:36.3	-1.0
KIEV	4.1	17	Pb	2021/08/01	18:10:36.9	-0.4
MI28	4.1	3	Pb	2021/08/01	18:10:37.7	-0.4
RNPP9	4.7	349	Pn	2021/08/01	18:10:36.6	0.1
NIE	5.4	301	Pn	2021/08/01	18:10:46.4	0.3



UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

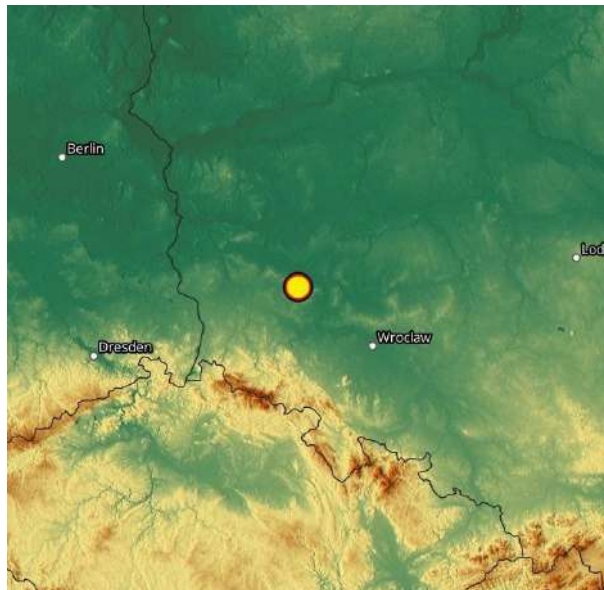
05.08.2021. Poland

$t_0 = 13:19:42$ ;  $\varphi = 51,44^\circ N$ ;  $\lambda = 16,13^\circ E$ ;  $h = 7 \text{ km}$ ;  $ML = 3,4$

Date	Time	Latitude	Longitude	Depth	Mag
2021/08/05	13:19:42.0	51.44	16,13	7	ML = 3.4

POLAND

Sta	Dist	Phase	Date	Time	Res
BRG	1.48	Pn	2021/08/05	13:20:08.4	-0.1
CLL	1.95	Pn	2021/08/05	13:20:14.2	-0.8
CLZ	3.59	Sg	2021/08/05	13:21:36.5	-1.3
CLZ	3.59	Pn	2021/08/05	13:20:37.6	-1.3
DPC	1.12	Sg	2021/08/05	13:20:17.8	-0.1
DPC	1.12	Pg	2021/08/05	13:20:02.8	-0.1
GEC2	3.04	Sg	2021/08/05	13:21:17.6	-0.3
GEC2	3.04	Pn	2021/08/05	13:20:31.5	0.5
GRA1	3.58	Sg	2021/08/05	13:21:36.2	-0.3
KSP	0.63	Sg	2021/08/05	13:20:03.2	0.5
KSP	0.63	Pg	2021/08/05	13:19:54.1	0.2
MORC	1.92	Sn	2021/08/05	13:20:38.4	1.5
MORC	1.92	Pn	2021/08/05	13:20:14.5	-0.8
MOX	2.94	Sg	2021/08/05	13:21:16.8	0.2
MOX	2.94	Pg	2021/08/05	13:20:36.7	-0.1
OJC	2.65	Sg	2021/08/05	13:21:06.9	0.1
OJC	2.65	Pg	2021/08/05	13:20:31.1	-0.1
OKC	2.08	Sg	2021/08/05	13:20:48.2	-0.3
OKC	2.08	Pn	2021/08/05	13:20:16.5	0.6
ROTZ	3.00	Sg	2021/08/05	13:21:16.6	0.4
ROTZ	3.00	Pn	2021/08/05	13:20:30.1	0.2
TANN	2.53	Sg	2021/08/05	13:21:00.9	-0.1
TANN	2.53	Pn	2021/08/05	13:20:23.3	0.1
WERD	2.60	Sg	2021/08/05	13:21:03.3	0.6
WERD	2.60	Pn	2021/08/05	13:20:24.2	0.4
WET	3.10	Pn	2021/08/05	13:20:31.2	0.2



05.08.2021. Poland

$t_0 = 19:19:31$ ;  $\varphi = 50,02^\circ N$ ;  $\lambda = 17,97^\circ E$ ;  $h = 10 \text{ km}$ ;  $MLv = 2,5$

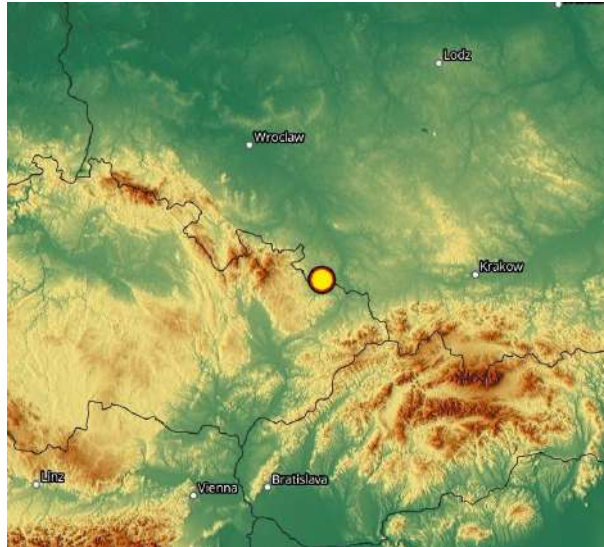
Date	Time	Latitude	Longitude	Depth	Mag
2021/08/05	19:19:31.6	50.02	17.97	10	MLv 2.5

POLAND

sta	Dist	EvAz	Phase	Date	Time	Res
MORC	0.4	228	P	2021/08/05	19:19:36.9	-2.9
VRAC	1.1	232	P	2021/08/05	19:19:50.1	-2.8
JAVC	1.2	189	P	2021/08/05	19:19:55.8	2.3
KRUC	1.4	227	P	2021/08/05	19:19:55.6	-1.1
MODS	1.7	196	P	2021/08/05	19:20:04.8	3.5
TREC	1.8	247	P	2021/08/05	19:20:05.6	3.5
PSZ	2.5	148	P	2021/08/05	19:20:08.5	-3.3

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

MPLH 2.9 186 P 2021/08/05 19:20:27.5 10.1  
 TRPA 3.5 121 P 2021/08/05 19:20:27.4 0.7



**07.08.2021. Zona seismică Vrancea**

$t_0 = 08:24:40$ ;  $\varphi = 45,69^\circ N$ ;  $\lambda = 26,59^\circ E$ ;  $h = 135 \text{ km}$ ;  $ML = 3,1$

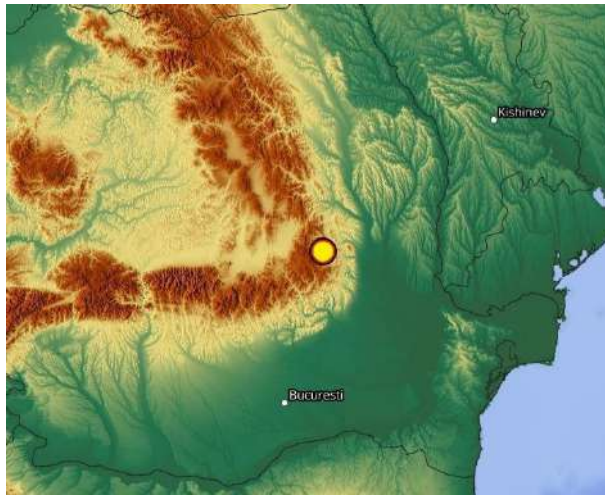
Date	Time	Latitude	Longitude	Depth	Mag
2021/08/07	08:24:40.6	45.69	26.5900	135	ML 3.1

ROMANIA

Sta	Dist	Phase	Date	Time	Res
SAHR	0.08	P	2021/08/07	08:25:00.9	1.0
SAHR	0.08	S	2021/08/07	08:25:15.1	0.6
BISRR	0.16	P	2021/08/07	08:25:00.9	0.8
PLOR	0.17	P	2021/08/07	08:25:00.5	0.4
PLOR	0.17	S	2021/08/07	08:25:15.5	0.6
VRI	0.20	P	2021/08/07	08:25:00.5	0.4
VRI	0.20	S	2021/08/07	08:25:14.8	-0.2
VRI	0.20	Pn	2021/08/07	08:25:00.3	0.4
VRI	0.20	Sn	2021/08/07	08:25:15.4	0.8
ODBI	0.33	P	2021/08/07	08:25:01.2	0.8
NEHR	0.33	P	2021/08/07	08:25:01.4	0.9
NEHR	0.33	S	2021/08/07	08:25:16.1	0.5
ODBI	0.33	S	2021/08/07	08:25:16.2	0.7
GRER	0.41	P	2021/08/07	08:25:01.6	0.9
GRER	0.41	S	2021/08/07	08:25:17.2	1.2
MLR	0.49	P	2021/08/07	08:25:01.8	0.4
MLR	0.49	S	2021/08/07	08:25:17.6	0.5
COSR	0.53	S	2021/08/07	08:25:18.2	0.9
TURR	0.54	P	2021/08/07	08:25:01.8	0.2
TURR	0.54	S	2021/08/07	08:25:17.6	0.1
ISR	0.57	P	2021/08/07	08:25:02.6	0.8
ISR	0.57	S	2021/08/07	08:25:18.7	0.8
GHRR	0.68	P	2021/08/07	08:25:03.3	0.9
GHRR	0.68	S	2021/08/07	08:25:20.1	1.0
TUDR	0.76	P	2021/08/07	08:25:03.2	0.3
TUDR	0.76	S	2021/08/07	08:25:19.8	-0.2
TESR	0.82	P	2021/08/07	08:25:03.0	-0.4
TESR	0.82	S	2021/08/07	08:25:20.0	-0.8
IZVR	0.84	P	2021/08/07	08:25:02.5	-1.0
IZVR	0.84	S	2021/08/07	08:25:20.5	-0.5
PLAR	0.87	S	2021/08/07	08:25:21.7	0.1
DOPR	0.88	P	2021/08/07	08:25:04.0	0.0
SCHL	0.89	S	2021/08/07	08:25:21.7	-0.2
SCHLR	0.90	S	2021/08/07	08:25:21.4	-0.6
VARL	0.90	P	2021/08/07	08:25:04.2	0.1
VARL	0.90	S	2021/08/07	08:25:21.8	-0.3
NEGRR	0.92	P	2021/08/07	08:25:04.5	0.3
BIR	0.92	P	2021/08/07	08:25:04.5	0.2
BIR	0.92	S	2021/08/07	08:25:22.1	-0.3
NEGRR	0.92	S	2021/08/07	08:25:22.4	0.1



UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



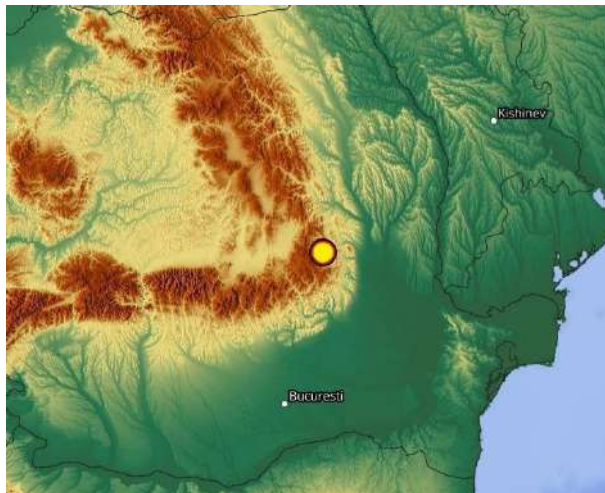
**11.08.2021. Zona seismică Vrancea**

$t_0 = 09:31:20$ ;  $\varphi = 45,48^\circ N$ ;  $\lambda = 26,26^\circ E$ ;  $h = 132 \text{ km}$ ;  $ML_v = 4,0$

Date	Time	Latitude	Longitude	Depth	Mag
2021/08/11	09:31:20.9	45.48	26.26	132	MLv 4.0

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
MLR	0.2	273	P	2021/08/11	09:31:40.1	0.2
BISRR	0.3	77	P	2021/08/11	09:31:41.2	0.7
ISR	0.4	150	P	2021/08/11	09:31:41.3	0.3
VRI	0.5	40	P	2021/08/11	09:31:41.6	0.1
VOIR	0.9	268	P	2021/08/11	09:31:43.6	0.3
VOIR	0.9	268	S	2021/08/11	09:31:59.0	-1.5
TESR	1.1	15	P	2021/08/11	09:31:45.4	0.7
TIRR	1.8	123	P	2021/08/11	09:31:53.5	0.3
TIRR	1.8	123	S	2021/08/11	09:32:17.5	-0.7
BUR07	2.3	342	P	2021/08/11	09:32:00.0	1.6
KIS	2.3	49	P	2021/08/11	09:31:59.7	0.6
PURM	2.7	66	P	2021/08/11	09:32:04.6	0.5
SORM	3.0	28	P	2021/08/11	09:32:07.7	-0.1
KPD	3.1	3	P	2021/08/11	09:32:08.1	-0.6
LUBAR	4.6	12	P	2021/08/11	09:32:27.9	-0.2
XAEC4	4.8	4	P	2021/08/11	09:32:32.0	0.4
AKBB	5.6	20	P	2021/08/11	09:32:41.9	0.0
KIEV	5.6	20	P	2021/08/11	09:32:41.9	0.1
RNPP9	5.9	358	P	2021/08/11	09:32:46.8	0.3



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

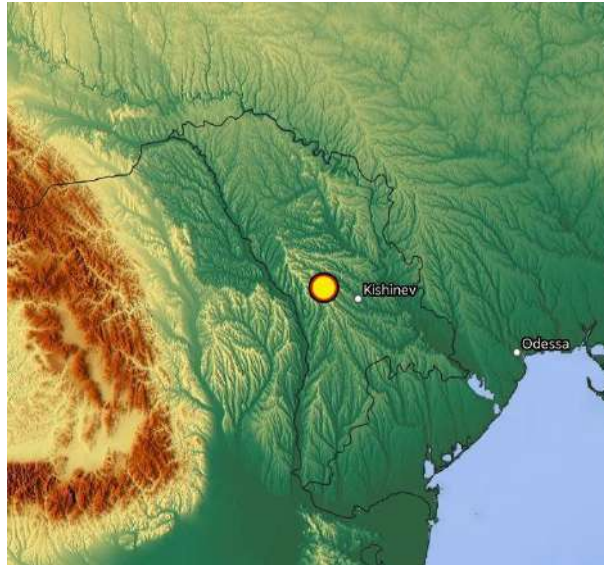
**27.08.2021. Moldova**

$t_0 = 07:35:46$ ;  $\varphi = 47,09^\circ N$ ;  $\lambda = 28,43^\circ E$ ;  $h = 5 \text{ km}$ ;  $ML_v = 2,0$

Date	Time	Latitude	Longitude	Depth	Mag
2021/08/27	07:35:46.4	47,09	28,43	5	MLv 2.0

**MOLDOVA**

Sta	Dist	EvAz	Date	Phase	Time	Res
SORM	1.0	357	21/08/27	Pg	07:36:05.5	-1.0
SORM	1.0	357	21/08/27	Sg	07:36:20.2	-0.9
NDNU	1.7	335	21/08/27	Pn	07:36:17.4	1.2
NDNU	1.7	335	21/08/27	Sn	07:36:39.5	0.6
KPD	2.0	319	21/08/27	Sn	07:36:48.5	1.8
BURAR	2.3	285	21/08/27	Pg	07:36:28.9	-0.8
BURAR	2.3	285	21/08/27	Sg	07:37:00.5	-0.8



**07.09.2021. Zona seismica Vrancea**

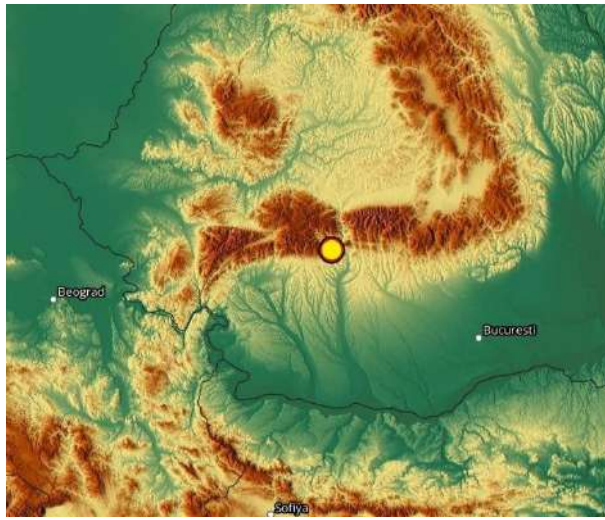
$t_0 = 02:01:17$ ;  $\varphi = 45,27^\circ N$ ;  $\lambda = 24,15^\circ E$ ;  $h = 10 \text{ km}$ ;  $ML_v = 3,6$

Date	Time	Latitude	Longitude	Depth	Mag
2021/09/07	02:01:17.3	45.27	24.15	10	MLv 3.6

**ROMANIA**

Sta	dist	EvAz	Phase	Date	Time	Res
ARR	0.4	74	Pg	2021/09/07	02:01:23.3	-1.0
ARR	0.4	74	Sg	2021/09/07	02:01:29.5	-0.0
VOIR	0.7	75	Pg	2021/09/07	02:01:28.8	-1.2
VOIR	0.7	75	Sg	2021/09/07	02:01:38.4	-0.8
HUMR	0.9	141	Pg	2021/09/07	02:01:36.1	0.5
DEV	1.1	306	Pg	2021/09/07	02:01:36.0	-1.9
MLR	1.3	79	Pg	2021/09/07	02:01:41.2	-0.8
DJES	1.3	243	P	2021/09/07	02:01:40.8	-0.1
CJR	1.5	345	P	2021/09/07	02:01:43.9	0.1
DRGR	1.8	327	Pn	2021/09/07	02:01:48.0	-0.6
PLOR	1.9	71	Pn	2021/09/07	02:01:49.5	0.5
VRI	1.9	71	Pn	2021/09/07	02:01:50.3	0.5
PLVB	1.9	170	Pn	2021/09/07	02:01:50.0	0.1
TESR	2.1	54	Pn	2021/09/07	02:01:54.1	1.0
AMBH	2.6	296	Pn	2021/09/07	02:01:59.5	-0.2
TRPA	3.1	339	Pn	2021/09/07	02:02:04.7	-1.1
KOLS	3.9	341	Pn	2021/09/07	02:02:17.3	0.4
PSZ	4.0	314	Pn	2021/09/07	02:02:18.5	0.7
MORH	4.0	286	Pn	2021/09/07	02:02:17.8	-0.3
RDO	4.2	166	Pn	2021/09/07	02:02:22.2	0.3
LUBAR	5.3	26	Pn	2021/09/07	02:02:36.2	0.4
RNPP5	6.1	10	Pn	2021/09/07	02:02:47.5	0.4
AKBB	6.4	30	Pn	2021/09/07	02:02:51.7	0.0

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



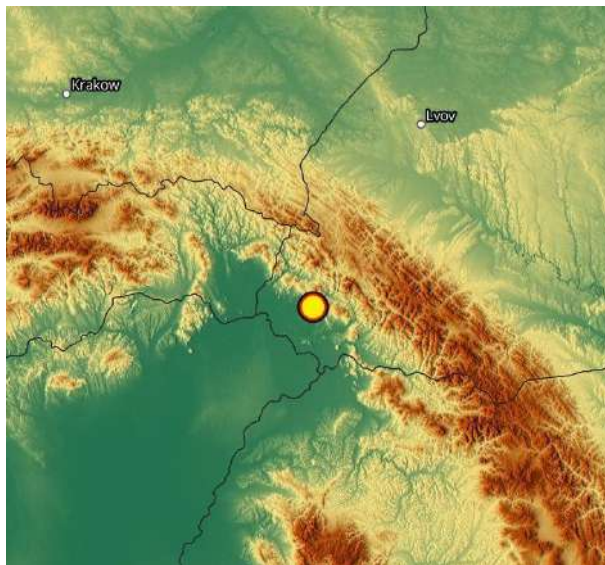
**08.09.2021. Україна, Transcarpathian region**

$t_0 = 13:32:26$ ;  $\varphi = 48,46^\circ N$ ;  $\lambda = 22,79^\circ E$ ;  $h = 2 \text{ км}$ ;  $ML = 2,1$

Date	Time	Latitude	Longitude	Depth	Mag
2021/09/08	13:32:26.2	48.46	22.79	2	ML 2.1

UKRAINE

Sta	Dist	EvAz	phase	Date	Time	Res
BRIU	0.2	151	Pg	21/09/08	13:32:30.9	-0.5
BERU	0.3	206	Pg	21/09/08	13:32:33.4	-0.1
UZH	0.4	285	Pg	21/09/08	13:32:35.0	0.2
MEZ	0.4	100	Pg	21/09/08	13:32:34.7	-0.8
MEZ	0.4	100	Sg	21/09/08	13:32:41.2	0.2
TRSU	0.5	202	Pg	21/09/08	13:32:36.7	0.5
KOLS	0.6	316	Pg	21/09/08	13:32:37.7	-0.3
SHIU	0.8	25	Pg	21/09/08	13:32:42.0	-0.0
STNU	1.1	80	Pg	21/09/08	13:32:48.9	0.6
BURAR	1.8	119	Pn	21/09/08	13:32:59.4	0.3



**09.09.2021. Zona seismică Vrancea**

$t_0 = 05:10:14$ ;  $\varphi = 45,37^\circ N$ ;  $\lambda = 25,19^\circ E$ ;  $h = 5 \text{ км}$ ;  $MLv = 3,0$

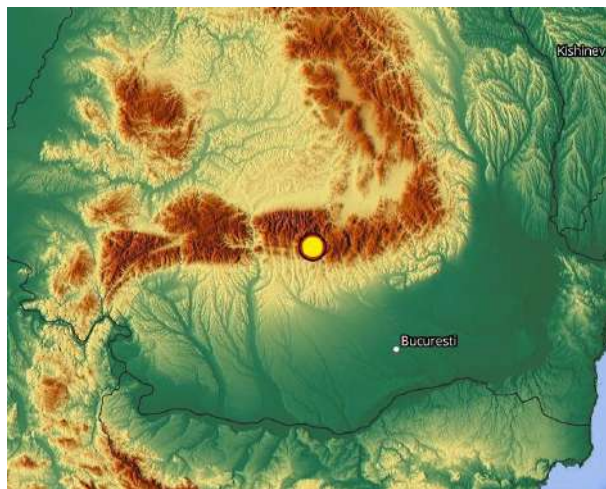
Date	Time	Latitude	Longitude	Depth	Mag
2021/09/09	05:10:14.0	45.37	25.19	5	MLv 3.0

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VOIR	0.1	303	P	2021/09/09	05:10:16.4	-0.7
ARR	0.4	270	P	2021/09/09	05:10:21.3	-0.8
MLR	0.5	77	P	2021/09/09	05:10:23.2	-1.5
HUMR	0.9	190	P	2021/09/09	05:10:30.4	-0.1

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

PLOR	1.1	64	P	2021/09/09	05:10:35.2	-0.0
VRI	1.2	65	P	2021/09/09	05:10:35.6	-0.4
TESR	1.5	41	P	2021/09/09	05:10:41.3	-0.0
PLVB	2.0	192	P	2021/09/09	05:10:48.4	-0.4
DRGR	2.2	310	P	2021/09/09	05:10:51.4	-0.3
BURAR	2.3	0	P	2021/09/09	05:10:52.8	0.7
TIRR	2.5	111	P	2021/09/09	05:10:56.2	1.5
SIRR	2.6	291	P	2021/09/09	05:10:57.4	0.4
TRPA	3.3	327	P	2021/09/09	05:11:06.1	-0.3
KPD	3.3	15	P	2021/09/09	05:11:06.1	-0.3
SORM	3.5	37	P	2021/09/09	05:11:08.3	-1.0
BSZH	3.9	301	P	2021/09/09	05:11:14.5	-0.3
KOLS	4.1	332	P	2021/09/09	05:11:17.8	0.8
RDO	4.2	176	P	2021/09/09	05:11:19.0	-0.0
PSZ	4.5	307	P	2021/09/09	05:11:22.4	0.4
LUBAR	4.9	20	P	2021/09/09	05:11:27.3	-0.5
XAEC1	5.0	11	P	2021/09/09	05:11:30.6	0.6
MI29	5.4	19	P	2021/09/09	05:11:35.1	0.6
VYHS	5.4	308	P	2021/09/09	05:11:34.7	0.2
YLV	5.7	146	P	2021/09/09	05:11:39.8	0.6
RNPP5	5.9	4	P	2021/09/09	05:11:42.0	0.3
AKBB	6.0	25	P	2021/09/09	05:11:42.9	-0.1



### 09.09.2021. Zona seismică Vrancea

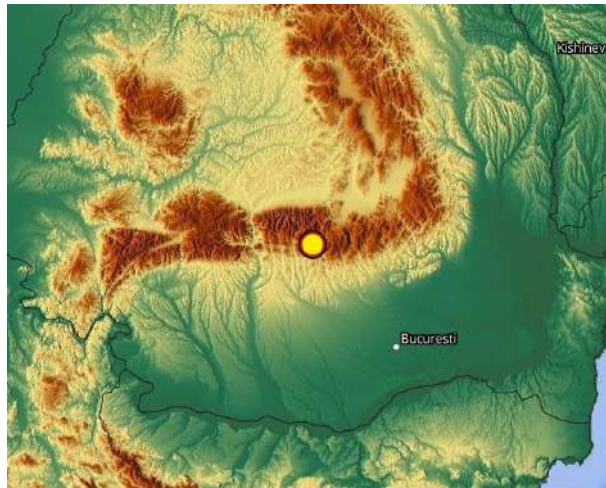
$t_0 = 08:57:13$ ;  $\varphi = 45,34^\circ N$ ;  $\lambda = 25,24^\circ E$ ;  $h = 5 \text{ km}$ ;  $ML_v = 3,5$

Date	Time	Latitude	Longitude	Depth	Mag
2021/09/09	08:57:13.7	45.34	25.24	5	MLv 3.5

#### ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VOIR	0.2	305	P	2021/09/09	08:57:15.9	-1.7
ARR	0.4	273	P	2021/09/09	08:57:20.8	-1.6
MLR	0.5	73	P	2021/09/09	08:57:22.8	-1.3
PLOR	1.1	62	P	2021/09/09	08:57:34.0	-0.7
VRI	1.2	63	P	2021/09/09	08:57:35.8	0.2
TESR	1.5	40	P	2021/09/09	08:57:40.9	-0.2
DEV	1.7	289	P	2021/09/09	08:57:44.1	-0.1
CJR	1.8	321	P	2021/09/09	08:57:45.9	0.9
PLVB	2.0	193	P	2021/09/09	08:57:49.3	1.1
DRGR	2.3	310	P	2021/09/09	08:57:52.6	0.7
BURAR	2.3	359	P	2021/09/09	08:57:53.2	0.9
KPD	3.3	14	P	2021/09/09	08:58:06.4	0.0
SORM	3.5	36	P	2021/09/09	08:58:07.9	-1.1
UZH	3.9	330	P	2021/09/09	08:58:13.7	0.1
BAL3X	4.0	48	P	2021/09/09	08:58:15.7	0.5
MORH	4.7	283	P	2021/09/09	08:58:25.6	0.5
LUBAR	4.9	19	P	2021/09/09	08:58:26.7	-1.1
XAEC5	5.2	11	P	2021/09/09	08:58:32.1	0.3
MI29	5.4	18	P	2021/09/09	08:58:35.1	0.6
EZN	5.6	171	P	2021/09/09	08:58:37.7	0.5
MI30	5.8	19	P	2021/09/09	08:58:40.0	0.3
RNPP5	5.9	4	P	2021/09/09	08:58:42.4	0.7
AKBB	6.0	25	P	2021/09/09	08:58:41.7	-1.3
SSM6	6.9	68	P	2021/09/09	08:58:56.2	0.6

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



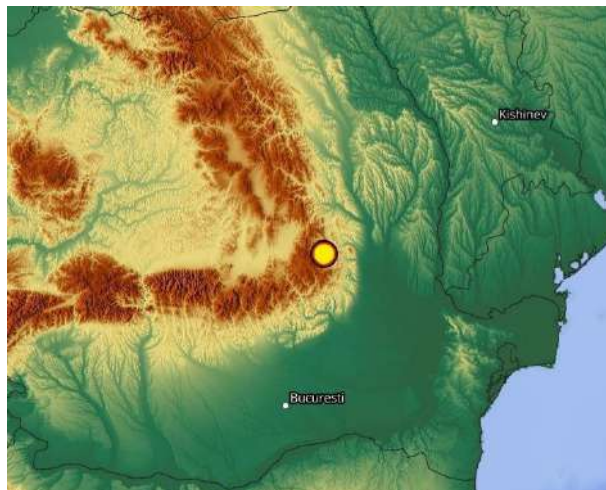
**10.09.2021. Zona seismica Vrancea**

$t_0 = 17:31:14$ ;  $\varphi = 45,56^\circ N$ ;  $\lambda = 26.48^\circ E$ ;  $h = 139 \text{ km}$ ;  $ML_v = 3,8$

Date	Time	Latitude	Longitude	Depth	Mag
2021/09/10	17:31:14.2	45.56	26.48	139	ML <sub>v</sub> 3.8

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
BISRR	0.2	94	P	2021/09/10	17:31:34.1	0.5
VRI	0.4	29	P	2021/09/10	17:31:34.1	-0.4
MLR	0.4	260	P	2021/09/10	17:31:34.4	-0.4
ISR	0.4	175	P	2021/09/10	17:31:34.5	-0.5
TESR	1.0	7	P	2021/09/10	17:31:37.5	-0.1
VOIR	1.0	264	P	2021/09/10	17:31:37.7	-0.3
TIRR	1.8	128	P	2021/09/10	17:31:46.0	0.2
KIS	2.2	48	P	2021/09/10	17:31:51.3	0.7
BUR07	2.3	338	P	2021/09/10	17:31:53.0	1.4
BUR31	2.3	337	P	2021/09/10	17:31:53.0	1.2
PURM	2.6	66	P	2021/09/10	17:31:55.8	0.5
SORM	2.9	26	P	2021/09/10	17:31:59.4	-0.0
KPD	3.0	360	P	2021/09/10	17:32:01.3	0.2
BAL3X	3.2	41	P	2021/09/10	17:32:03.1	-0.6
MI26	3.2	41	P	2021/09/10	17:32:03.6	-0.0
AMBH	4.1	283	P	2021/09/10	17:32:14.9	-0.4
LUBAR	4.4	11	P	2021/09/10	17:32:20.2	0.3
XAEC2	4.6	3	P	2021/09/10	17:32:23.4	0.8
KLYT	4.7	156	P	2021/09/10	17:32:23.2	0.0
XAEC5	4.9	2	P	2021/09/10	17:32:25.5	-0.0
MI29	4.9	10	P	2021/09/10	17:32:26.7	0.2
MI30	5.3	12	P	2021/09/10	17:32:30.9	-0.6
AKBB	5.5	19	P	2021/09/10	17:32:33.4	0.0
KIEV	5.5	19	P	2021/09/10	17:32:33.4	0.0
MORH	5.5	280	P	2021/09/10	17:32:34.2	0.1
RNPP8	5.8	356	P	2021/09/10	17:32:37.9	0.0
RNPP9	5.9	356	P	2021/09/10	17:32:38.5	-0.4



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

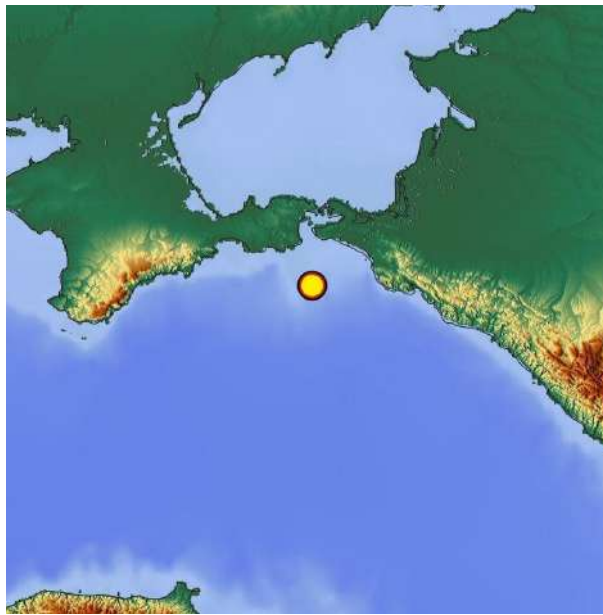
**11.09.2021. Black Sea, Crimea region**

$t_0 = 06:33:10$ ;  $\varphi = 44,71^\circ N$ ;  $\lambda = 36,58^\circ E$ ;  $h = 10 \text{ км}$ ;  $ML_v = 3,5$

Date	Time	Latitude	Longitude	Depth	Mag
2021/09/11	06:33:10.3	44.71	36.58	10	MLv 3.5

UKRAINE, CRIMEA REGION

Sta	Dist	EvAz	Phase	Date	Time	Res
SSM6	3.2	336	Pn	2021/09/11	06:34:00.9	1.0
SSM6	3.2	336	Sn	2021/09/11	06:34:37.0	-1.6
KIV	4.4	98	Pn	2021/09/11	06:34:18.3	0.6
KBZ	4.6	100	Pn	2021/09/11	06:34:20.0	-0.5
BR104	5.5	205	Pn	2021/09/11	06:34:30.6	-1.0
TIRR	5.8	270	Pn	2021/09/11	06:34:37.0	0.2
SORM	6.6	304	Pn	2021/09/11	06:34:48.7	1.0
AKBB	7.8	323	Pn	2021/09/11	06:35:02.9	-0.2
AKBB	7.8	323	pP	2021/09/11	06:35:05.2	-0.4



**11.09.2021. Zona seismica Vrancea**

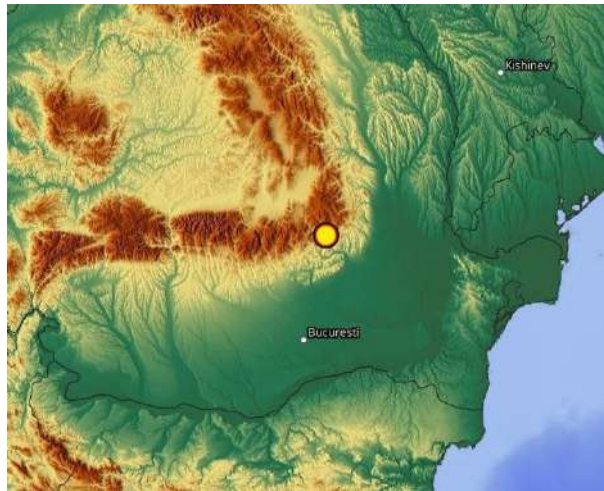
$t_0 = 08:27:00$ ;  $\varphi = 45,44^\circ N$ ;  $\lambda = 26,31^\circ E$ ;  $h = 128 \text{ км}$ ;  $ML_v = 3,0$

Date	Time	Latitude	Longitude	Depth	Mag
2021/09/11	08:27:00.6	45.44	26.31	128	MLv 3.0

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
MLR	0.3	280	P	2021/09/11	08:27:19.7	0.4
PLOR	0.5	31	P	2021/09/11	08:27:20.4	-0.1
VRI	0.5	35	P	2021/09/11	08:27:20.6	-0.1
VOIR	0.9	270	P	2021/09/11	08:27:22.8	0.1
TESR	1.1	12	P	2021/09/11	08:27:24.7	0.4
ARR	1.2	267	P	2021/09/11	08:27:25.1	-0.1
ARR	1.2	267	S	2021/09/11	08:27:44.2	-0.1
TIRR	1.8	123	P	2021/09/11	08:27:32.6	0.6
TIRR	1.8	123	S	2021/09/11	08:27:56.0	-0.4
DRGR	2.8	300	P	2021/09/11	08:27:44.9	-0.2
SORM	3.0	27	P	2021/09/11	08:27:47.2	-0.3

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



14.09.2021. Poland

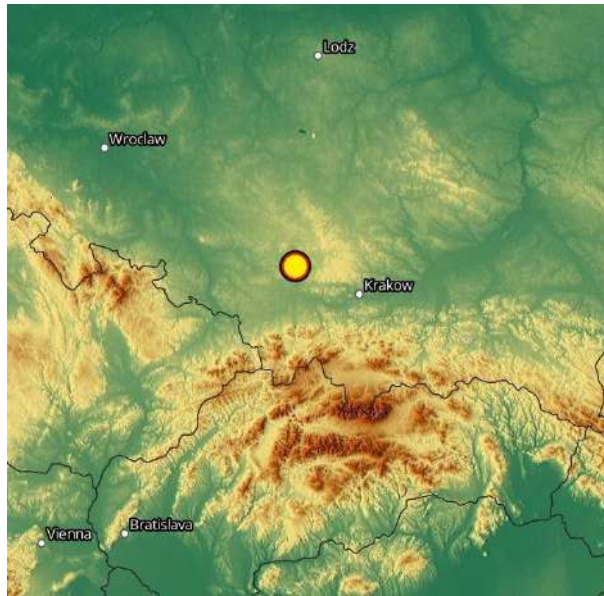
$t_0 = 17:10:43$ ;  $\varphi = 50,24^\circ N$ ;  $\lambda = 18,95^\circ E$ ;  $h = 5 \text{ km}$ ;  $ML_v = 3,4$

Date	Time	Latitude	Longitude	Depth	Mag
2021/09/14	17:10:43.9	50.24	18.95	5	MLv 3.4

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
OKC	0.7	232	P	2021/09/14	17:10:56.5	-0.1
MORC	1.0	243	P	2021/09/14	17:11:02.9	-0.5
NIE	1.2	133	P	2021/09/14	17:11:05.0	-1.3
KRLC	1.4	265	P	2021/09/14	17:11:09.0	0.1
DPC	1.7	275	P	2021/09/14	17:11:13.9	0.2
VYHS	1.7	183	P	2021/09/14	17:11:14.1	-0.5
OSTC	1.8	281	P	2021/09/14	17:11:16.2	1.2
KSP	1.8	291	P	2021/09/14	17:11:15.0	-0.4
CHVC	1.9	282	P	2021/09/14	17:11:16.9	0.2
KECS	2.0	150	P	2021/09/14	17:11:18.4	-0.2
MODS	2.2	211	P	2021/09/14	17:11:21.8	1.2
PSZ	2.4	165	P	2021/09/14	17:11:24.9	1.0
SRO	2.5	190	P	2021/09/14	17:11:25.1	0.4
KOLS	2.5	120	P	2021/09/14	17:11:25.2	-0.3
UZH	2.7	125	P	2021/09/14	17:11:28.3	0.2
PVCC	2.8	278	P	2021/09/14	17:11:29.5	-0.0
PRU	2.8	267	P	2021/09/14	17:11:30.0	-0.0
CSKK	2.9	189	P	2021/09/14	17:11:30.9	0.0
TRPA	3.2	131	P	2021/09/14	17:11:34.4	0.2
GKP	3.2	341	P	2021/09/14	17:11:34.9	-0.1
HSKC	3.5	278	P	2021/09/14	17:11:39.2	-0.4
KHC	3.7	254	P	2021/09/14	17:11:41.2	0.1
KHC	3.7	254	Pb	2021/09/14	17:11:48.1	-1.0
KHC	3.7	254	Pg	2021/09/14	17:11:53.5	-0.6
MORH	4.0	183	P	2021/09/14	17:11:46.1	-0.1
DRGR	4.3	143	P	2021/09/14	17:11:48.9	-0.5
SIRR	4.4	155	P	2021/09/14	17:11:50.5	-0.4
RNPP8	4.5	73	P	2021/09/14	17:11:52.6	-0.2
BURAR	4.9	120	P	2021/09/14	17:11:57.4	-0.3
XAEC1	4.9	86	P	2021/09/14	17:11:58.4	-0.3
KPD	5.2	106	P	2021/09/14	17:12:02.2	0.2
LUBAR	5.7	90	P	2021/09/14	17:12:09.1	0.3
MI29	5.7	85	P	2021/09/14	17:12:09.9	0.7
AK21	6.4	81	P	2021/09/14	17:12:19.2	-0.3
AK21	6.4	81	pP	2021/09/14	17:12:20.7	-0.1
SORM	6.5	105	P	2021/09/14	17:12:20.7	0.4
AK06	6.5	83	P	2021/09/14	17:12:21.0	0.1
AKBB	6.5	82	P	2021/09/14	17:12:21.1	0.0
AKBB	6.5	82	pP	2021/09/14	17:12:22.8	0.4
BAL3X	7.3	104	P	2021/09/14	17:12:31.6	-0.3

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



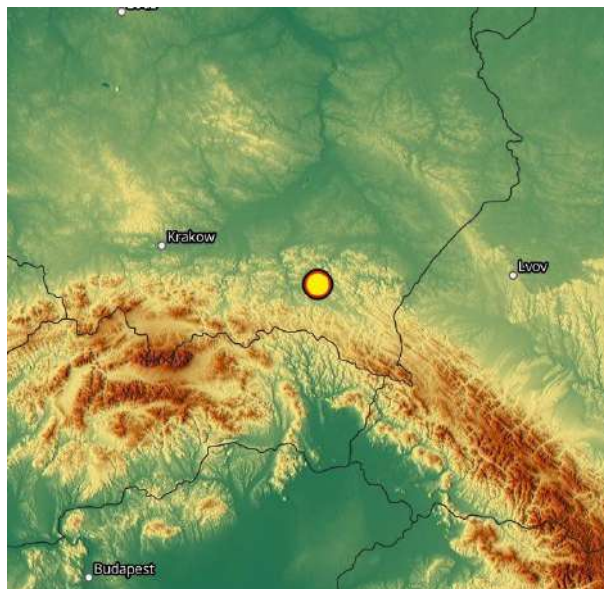
**17.09.2021. Poland**

$t_0 = 03:54:48$ ;  $\varphi = 49,77^\circ N$ ;  $\lambda = 21,76^\circ E$ ;  $h = 2 \text{ km}$ ;  $ML_v = 2,6$

Date	Time	Latitude	Longitude	Depth	Mag
2021/09/17	03:54:48.5	49.77	21.76	2	MLv 2.6

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
KOLS	0.9	158	Pg	21/09/17	03:55:06.8	0.9
NIE	1.0	250	Pg	21/09/17	03:55:07.5	-0.3
NIE	1.0	250	Sg	21/09/17	03:55:21.1	-0.3
SHIU	1.2	117	Pg	21/09/17	03:55:11.2	0.1
UZH	1.2	163	Pg	21/09/17	03:55:12.0	0.6
UZH	1.2	163	Sg	21/09/17	03:55:27.3	-0.4
MORS	1.5	114	Pn	21/09/17	03:55:16.5	-0.2
TRSU	1.8	161	Sn	21/09/17	03:55:42.9	-0.8
NSLU	1.9	144	Pn	21/09/17	03:55:21.7	-0.6
STNU	2.1	120	Pn	21/09/17	03:55:24.3	-0.1
BEL	2.2	344	Sn	21/09/17	03:55:52.9	-0.5
RNPP5	3.0	59	Sn	21/09/17	03:56:14.6	0.2
XAEC1	3.2	79	Pn	21/09/17	03:55:39.7	0.0
XAEC3	3.2	79	Sn	21/09/17	03:56:19.3	0.2
KPD	3.3	110	Sn	21/09/17	03:56:21.6	0.3
KMPU	3.3	110	Sn	21/09/17	03:56:20.7	-1.2
KMPU	3.3	110	Pg	21/09/17	03:55:52.7	0.7
XAEC4	3.3	79	Pn	21/09/17	03:55:41.3	0.0
LUBAR	3.9	86	Pg	21/09/17	03:56:03.0	0.1





UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

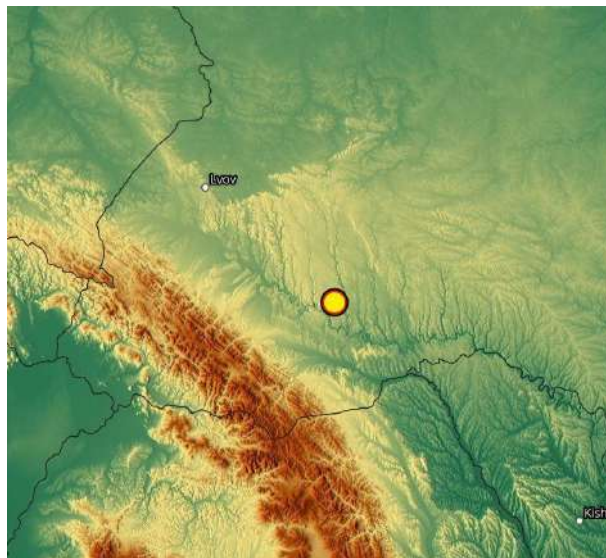
23.09.2021. Ukraine, Ternopil region

$t_0 = 03:18:04$ ;  $\varphi = 48,87^\circ N$ ;  $\lambda = 25,68^\circ E$ ;  $h = 6 \text{ км}$ ;  $mb = 4,3$

Date	Time	Latitude	Longitude	Depth	Mag
2021/09/23	03:18:04.4	48.87	25.68	6	mb 4.3

UKRAINE

Sta	Dist	EvAz	Phase	Date	Time	Res
BMR	1.90	231.4	P	2021/09/23	03:18:33.1	-1.3
ARCR	2.00	207.1	P	2021/09/23	03:18:33.7	-2.2
TRPA	2.22	251.6	P	2021/09/23	03:18:38.0	-0.9
KOLS	2.25	272.7	P	2021/09/23	03:18:40.6	1.3
TESR	2.45	164.3	P	2021/09/23	03:18:43.1	1.1
CJR	2.58	213.9	P	2021/09/23	03:18:42.3	-1.6
DRGR	2.89	225.0	P	2021/09/23	03:18:47.4	-0.8
KIEV	2.91	50.1	P	2021/09/23	03:18:45.4	-2.9
GHRR	3.05	156.9	P	2021/09/23	03:18:53.6	3.4
MLR	3.39	177.0	P	2021/09/23	03:18:58.2	3.2
KECS	3.47	265.4	P	2021/09/23	03:18:56.0	0.1
DEV	3.54	213.3	P	2021/09/23	03:18:55.4	-1.5
LOT	3.67	201.6	P	2021/09/23	03:18:57.3	-1.5
SIRR	3.77	227.8	P	2021/09/23	03:18:59.5	-0.6
PSZ	3.98	258.2	P	2021/09/23	03:19:00.2	-2.8
GZR	4.01	210.8	P	2021/09/23	03:19:03.3	-0.1
BZS	4.28	221.9	P	2021/09/23	03:19:06.8	-0.2
VYHS	4.55	267.8	P	2021/09/23	03:19:09.0	-1.8
VRSS	4.79	220.1	P	2021/09/23	03:19:12.7	-1.4
MDVR	4.92	215.1	P	2021/09/23	03:19:17.6	1.7
OKC	5.02	283.9	P	2021/09/23	03:19:17.7	0.5
JAVC	5.29	272.8	P	2021/09/23	03:19:21.7	0.7
MORC	5.40	282.7	P	2021/09/23	03:19:22.5	0.0
MODS	5.60	268.0	P	2021/09/23	03:19:27.3	2.2
MPLH	5.72	255.7	P	2021/09/23	03:19:29.0	2.2
KRLC	5.92	285.0	P	2021/09/23	03:19:29.3	-0.4
VRAC	5.99	277.6	P	2021/09/23	03:19:30.9	0.4
KRUC	6.12	275.2	P	2021/09/23	03:19:32.8	0.5
DPC	6.26	287.1	P	2021/09/23	03:19:31.0	-3.3
OSTC	6.37	288.9	P	2021/09/23	03:19:36.1	0.4
CHVC	6.47	289.0	P	2021/09/23	03:19:37.1	0.0
TREC	6.71	277.4	P	2021/09/23	03:19:40.0	-0.4
PABE	6.72	351.6	P	2021/09/23	03:19:42.3	1.9
PRU	7.35	282.9	P	2021/09/23	03:19:49.4	0.3
PVCC	7.39	287.1	P	2021/09/23	03:19:49.3	-0.4
CKRC	7.51	273.9	P	2021/09/23	03:19:54.9	3.6
PBUR	7.51	343.7	P	2021/09/23	03:19:50.5	-0.8
GEC2	7.90	274.3	P	2021/09/23	03:19:58.9	2.1
KHC	7.97	276.4	P	2021/09/23	03:19:58.3	0.7
WET	8.42	276.6	P	2021/09/23	03:20:03.0	-0.9
TANN	8.72	285.2	P	2021/09/23	03:20:07.9	0.0
MOX	9.27	286.3	P	2021/09/23	03:20:16.3	0.8
GRC4	9.31	276.6	P	2021/09/23	03:20:15.4	-0.6
HAKT	17.28	124.2	P	2021/09/23	03:22:01.9	-0.7



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

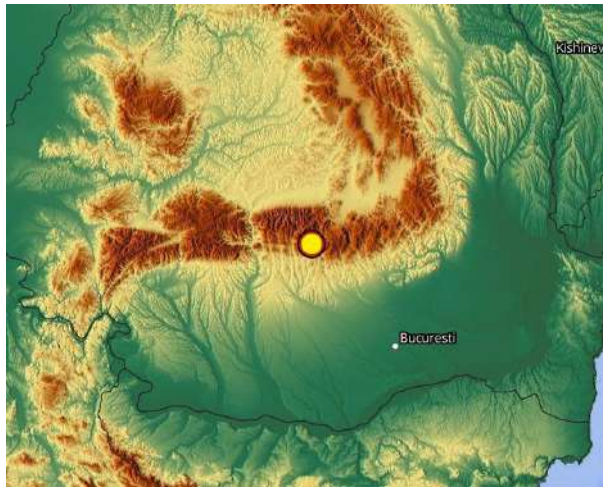
**25.09.2021. Zona seismică Vrancea**

$t_0 = 05:48:20$ ;  $\varphi = 45,35^\circ N$ ;  $\lambda = 24,64^\circ E$ ;  $h = 6 \text{ km}$ ;  $ML_v = 3,0$

Date	Time	Latitude	Longitude	Depth	Mag
2021/09/25	05:48:20.7	45.35	24.64	6	MLv 2.98

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
ARR	0.0	333	P	2021/09/25	05:48:20.7	-1.2
HUMR	0.9	164	P	2021/09/25	05:48:36.9	-0.5
MLR	0.9	81	P	2021/09/25	05:48:37.1	-1.5
DEV	1.3	294	P	2021/09/25	05:48:44.2	-0.9
PLOR	1.5	70	P	2021/09/25	05:48:47.7	0.2
CJR	1.5	332	P	2021/09/25	05:48:48.4	0.2
VRI	1.6	70	P	2021/09/25	05:48:48.5	0.2
DJES	1.7	246	P	2021/09/25	05:48:49.5	-0.4
TESR	1.8	50	P	2021/09/25	05:48:53.2	0.9
PLVB	2.0	180	P	2021/09/25	05:48:55.3	0.8
DRGR	2.0	318	P	2021/09/25	05:48:55.2	0.7
MDVR	2.2	256	P	2021/09/25	05:48:57.5	0.4
SIRR	2.3	295	P	2021/09/25	05:48:58.9	0.2
BURAR	2.3	9	P	2021/09/25	05:49:00.1	0.7



**28.09.2021. Poland**

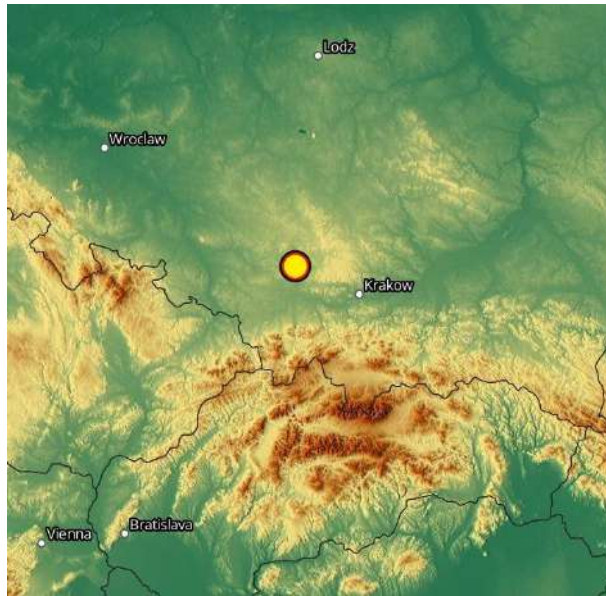
$t_0 = 23:34:14$ ;  $\varphi = 50,17^\circ N$ ;  $\lambda = 18,94^\circ E$ ;  $h = 5 \text{ km}$ ;  $ML_v = 2,9$

Date	Time	Latitude	Longitude	Depth	Mag
2021/09/28	23:34:14.4	50.17	18.94	5	MLv 2.91

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
OKC	0.6	238	P	2021/09/28	23:34:26.7	0.2
OKC	0.6	238	S	2021/09/28	23:34:35.4	0.2
MORC	1.0	247	P	2021/09/28	23:34:33.0	-0.3
MORC	1.0	247	S	2021/09/28	23:34:46.8	-0.1
NIE	1.2	130	P	2021/09/28	23:34:35.4	-0.7
NIE	1.2	130	S	2021/09/28	23:34:52.4	0.2
KRLC	1.4	268	P	2021/09/28	23:34:39.5	0.4
KRLC	1.4	268	S	2021/09/28	23:34:57.7	0.1
VYHS	1.7	182	P	2021/09/28	23:34:43.9	-0.1
DPC	1.7	277	P	2021/09/28	23:34:44.5	0.3
OSTC	1.8	284	P	2021/09/28	23:34:45.8	0.1
OSTC	1.8	284	S	2021/09/28	23:35:10.0	0.5
KSP	1.8	293	P	2021/09/28	23:34:46.6	0.4
KSP	1.8	293	S	2021/09/28	23:35:10.7	0.3
CHVC	1.9	284	P	2021/09/28	23:34:47.1	-0.2
CHVC	1.9	284	S	2021/09/28	23:35:11.3	-1.1
PSZ	2.3	164	P	2021/09/28	23:34:53.7	0.3
KOLS	2.5	118	P	2021/09/28	23:34:54.9	-0.7
KOLS	2.5	118	S	2021/09/28	23:35:28.0	0.7

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



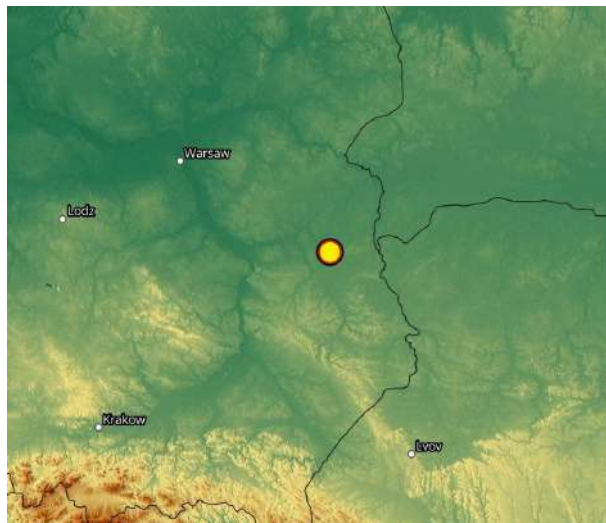
**02.10.2021. Poland**

$t_0 = 23:16:01$ ;  $\varphi = 51,51^\circ N$ ;  $\lambda = 22,97^\circ E$ ;  $h = 8 \text{ km}$ ;  $ML_v = 3,2$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/02	23:16:01.2	51.51	22.97	8	MLv 3.23

POLAND

sta	Dist	EvAz	Phase	Date	Time	Res
RNPP8	1.8	94	Pn	2021/10/02	23:16:33.0	0.3
RNPP8	1.8	94	Sn	2021/10/02	23:16:57.0	0.4
LVV	1.8	158	Pn	2021/10/02	23:16:32.4	-0.3
LVV	1.8	158	Sn	2021/10/02	23:16:57.1	0.2
RNPP5	1.8	98	Pn	2021/10/02	23:16:33.4	0.2
RNPP5	1.8	98	Sn	2021/10/02	23:16:57.6	0.1
KWP	1.9	185	Pn	2021/10/02	23:16:33.4	-0.3
KWP	1.9	185	Sn	2021/10/02	23:16:58.3	-0.2
SHIU	2.3	174	Pn	2021/10/02	23:16:39.7	0.3
MORS	2.5	166	Pn	2021/10/02	23:16:42.0	0.5
XAEC5	2.6	113	Pn	2021/10/02	23:16:44.1	0.4
XAEC5	2.6	113	Sn	2021/10/02	23:17:16.1	-0.5
NIE	2.7	220	Pn	2021/10/02	23:16:44.8	0.0
AKBB	4.0	99	Pn	2021/10/02	23:17:03.0	-0.0
KIEV	4.0	99	Pn	2021/10/02	23:17:02.8	-0.2
BUR07	4.1	158	Pn	2021/10/02	23:17:04.7	0.1



UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

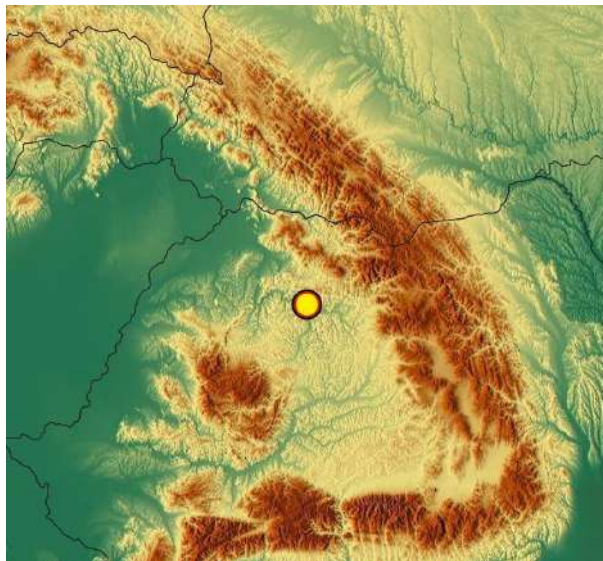
03.10.2021. Zona seismică Vrancea

$t_0 = 15:17:40$ ;  $\varphi = 47,24^\circ N$ ;  $\lambda = 23,88^\circ E$ ;  $h = 7 \text{ km}$ ;  $ML_v = 2,5$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/03	15:17:40.9	47.24	23.88	7	MLv 2.51

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	res
CJR	0.6	200	P	2021/10/03	15:17:52.2	-0.0
CJR	0.6	200	S	2021/10/03	15:18:00.5	0.0
BURAR	1.0	65	P	2021/10/03	15:18:00.0	0.2
BURAR	1.0	65	S	2021/10/03	15:18:13.3	-0.2
DEV	1.5	207	P	2021/10/03	15:18:07.9	-0.1
SIRR	1.8	238	P	2021/10/03	15:18:12.2	-0.2
SIRR	1.8	238	S	2021/10/03	15:18:36.4	0.1
KOLS	2.0	328	P	2021/10/03	15:18:15.2	-0.0
KPD	2.2	52	P	2021/10/03	15:18:17.7	0.1



03.10.2021. Zona seismică Vrancea

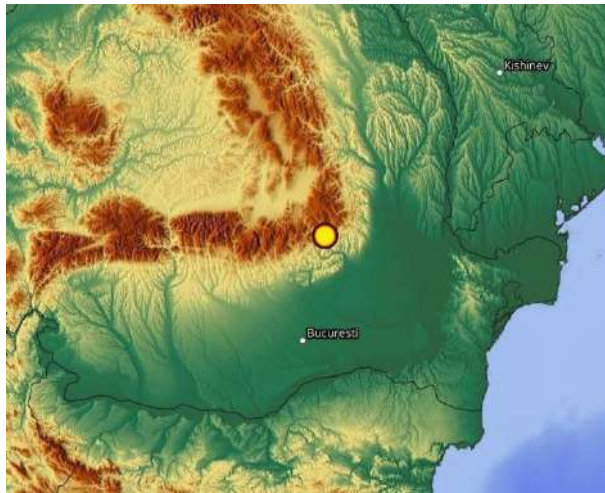
$t_0 = 19:22:42$ ;  $\varphi = 45,53^\circ N$ ;  $\lambda = 26,47^\circ E$ ;  $h = 114 \text{ km}$ ;  $ML = 2,9$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/03	19:22:42.94	45.53	26.47	114	ML 2.9

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
NEHR	0.17	216.0	P	2021/10/03	19:22:59.3	0.2
SAHR	0.23	47.0	P	2021/10/03	19:22:59.3	0.1
COVR	0.32	329.5	P	2021/10/03	19:22:59.5	-0.1
BISRR	0.19	95.6	P	2021/10/03	19:22:59.8	0.5
PLOR	0.32	27.2	P	2021/10/03	19:22:59.9	0.3
VRI	0.36	33.8	P	2021/10/03	19:23:00.6	0.4
MLR	0.36	257.8	P	2021/10/03	19:23:00.4	0.5
TUDR	0.86	87.8	P	2021/10/03	19:23:03.1	-0.2
DOPR	0.84	299.0	P	2021/10/03	19:23:03.3	0.1
VLDR	1.18	75.8	P	2021/10/03	19:23:06.9	0.5
CFR	1.25	107.5	P	2021/10/03	19:23:07.8	-0.1
NEHR	0.17	216.0	S	2021/10/03	19:23:11.6	0.0
COVR	0.32	329.5	S	2021/10/03	19:23:11.9	-0.6
BISRR	0.19	95.6	S	2021/10/03	19:23:12.1	0.4
SAHR	0.23	47.0	S	2021/10/03	19:23:12.5	0.6
VRI	0.36	33.8	S	2021/10/03	19:23:12.8	0.1
PLOR	0.32	27.2	S	2021/10/03	19:23:12.9	0.4
MLR	0.36	257.8	S	2021/10/03	19:23:13.0	0.0
TUDR	0.86	87.8	S	2021/10/03	19:23:18.4	-0.6
SULR	0.90	188.5	S	2021/10/03	19:23:20.2	0.5
SCTR	1.09	83.8	S	2021/10/03	19:23:23.2	0.1
VLDR	1.18	75.8	S	2021/10/03	19:23:24.5	-0.2
CFR	1.25	107.5	S	2021/10/03	19:23:25.9	-0.3

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



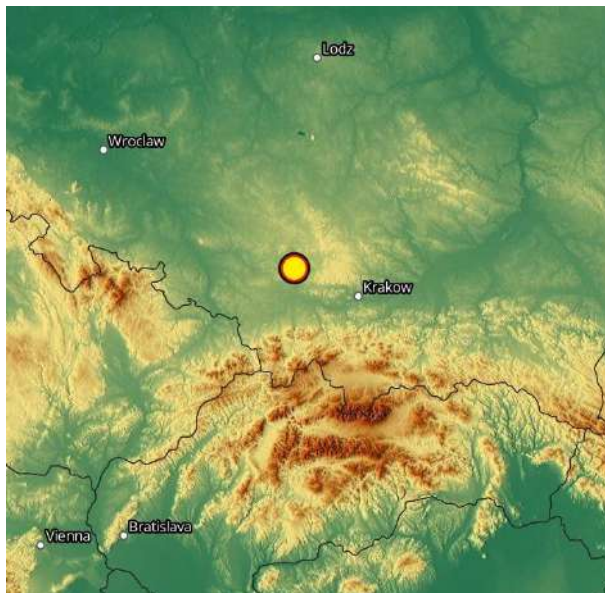
**07.10.2021. Poland**

$t_0 = 22:43:36$ ;  $\varphi = 50,16^\circ N$ ;  $\lambda = 18,72^\circ E$ ;  $h = 8 \text{ km}$ ;  $ML_v = 2,5$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/07	22:43:36.7	50.16	18.72	8	MLv 2.52

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
OKC	0.5	229	P	2021/10/07	22:43:47.3	0.4
MORC	0.9	244	P	2021/10/07	22:43:53.2	0.0
KRLC	1.2	268	P	2021/10/07	22:43:58.9	-0.3
NIE	1.3	125	P	2021/10/07	22:43:59.9	-0.1
DPC	1.6	278	P	2021/10/07	22:44:04.1	-0.1
DPC	1.6	278	S	2021/10/07	22:44:25.6	0.6
OSTC	1.7	285	P	2021/10/07	22:44:05.2	-0.5
OSTC	1.7	285	S	2021/10/07	22:44:27.9	0.2
KSP	1.7	295	P	2021/10/07	22:44:05.1	-1.2
CHVC	1.8	285	P	2021/10/07	22:44:06.6	-0.7
KOLS	2.6	117	P	2021/10/07	22:44:18.8	-0.5
TRPA	3.2	128	P	2021/10/07	22:44:28.1	0.5
RNPP1	4.6	72	P	2021/10/07	22:44:47.5	0.6
CJR	4.7	135	P	2021/10/07	22:44:48.4	0.1
BURAR	5.0	118	P	2021/10/07	22:44:51.4	0.0
KPD	5.3	105	P	2021/10/07	22:44:55.4	-0.8
AK21	6.6	81	P	2021/10/07	22:45:14.3	0.1
AK12	6.7	82	P	2021/10/07	22:45:15.9	0.7
AK06	6.7	82	P	2021/10/07	22:45:15.3	-0.3



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

**09.10.2021. Zona seismică Vrancea**

$t_0 = 19:34:34$ ;  $\varphi = 45,62^\circ N$ ;  $\lambda = 26,50^\circ E$ ;  $h = 10 \text{ km}$ ;  $ML_v = 2,9$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/09	19:34:34.1	45.62	26.50	10	MLv 2.93

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.3	24	P	2021/10/09	19:34:39.5	0.1
PLOR	0.3	24	S	2021/10/09	19:34:44.7	-0.1
VRI	0.3	33	P	2021/10/09	19:34:40.2	0.1
VRI	0.3	33	S	2021/10/09	19:34:46.5	0.5
MLR	0.4	252	Lg	2021/10/09	19:34:48.6	0.1
MLR	0.4	252	P	2021/10/09	19:34:42.4	0.3
MLR	0.4	252	S	2021/10/09	19:34:49.3	0.0
TESR	0.9	7	P	2021/10/09	19:34:51.4	-0.1
TESR	0.9	7	S	2021/10/09	19:35:04.7	0.5
VOIR	1.0	260	Lg	2021/10/09	19:35:06.7	0.1
VOIR	1.0	260	P	2021/10/09	19:34:53.8	0.1
VOIR	1.0	260	S	2021/10/09	19:35:08.4	0.3
ARR	1.3	260	P	2021/10/09	19:34:58.3	0.0
ARR	1.3	260	S	2021/10/09	19:35:16.2	-0.2
HUMR	1.5	225	P	2021/10/09	19:35:01.2	0.1
HUMR	1.5	225	S	2021/10/09	19:35:21.4	-0.2
TIRR	1.8	130	Lg	2021/10/09	19:35:30.9	0.8
TIRR	1.8	130	P	2021/10/09	19:35:04.9	-0.0
TIRR	1.8	130	S	2021/10/09	19:35:28.0	-0.4
BURAR	2.2	337	P	2021/10/09	19:35:10.8	-0.2
CJR	2.3	300	P	2021/10/09	19:35:12.0	-0.1
DEV	2.5	277	P	2021/10/09	19:35:15.4	0.1
PLVB	2.6	212	P	2021/10/09	19:35:16.1	-0.2
DRGR	2.9	296	P	2021/10/09	19:35:20.2	0.1



**11.10.2021. Bulgaria**

$t_0 = 03:49:33$ ;  $\varphi = 43,13^\circ N$ ;  $\lambda = 27,50^\circ E$ ;  $h = 9 \text{ km}$ ;  $ML_v = 3,5$

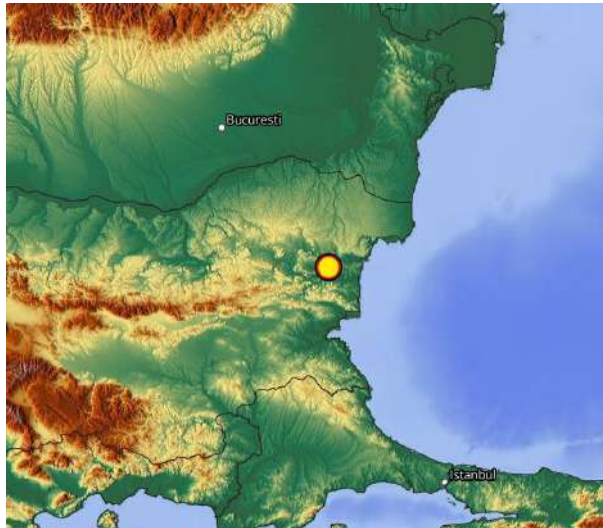
Date	Time	Latitude	Longitude	Depth	Mag
2021/10/11	03:49:33.3	43.13	27.50	9	MLv 3.52

BULGARIA

Sta	Dist	EvAz	Phase	Date	Time	Res
TIRR	1.5	26	P	2021/10/11	03:49:59.8	0.0
PHSR	1.5	179	P	2021/10/11	03:49:59.9	-0.0
PLVB	2.1	278	P	2021/10/11	03:50:10.2	1.4
HUMR	2.3	308	P	2021/10/11	03:50:11.0	-0.3
RDO	2.5	217	P	2021/10/11	03:50:12.5	-1.0
ARR	3.0	318	P	2021/10/11	03:50:21.2	-0.3
TESR	3.4	350	P	2021/10/11	03:50:27.1	0.2
BALB	3.5	175	P	2021/10/11	03:50:28.1	0.5
BURAR	4.8	341	P	2021/10/11	03:50:46.8	1.1
DRGR	5.0	319	P	2021/10/11	03:50:48.4	0.0
SORM	5.0	7	P	2021/10/11	03:50:49.4	0.4
SIRR	5.2	309	P	2021/10/11	03:50:50.5	-0.8
NDNU	5.5	359	P	2021/10/11	03:50:54.5	-0.4

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

KPD 5.5 353 P 2021/10/11 03:50:54.1 -0.9



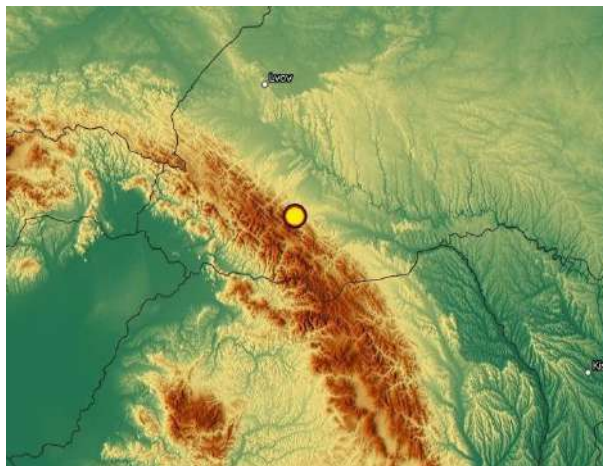
**12.10.2021. Україна, Івано-Франківськ region**

$t_0 = 07:25:53.1$ ;  $\varphi = 48,73^\circ N$ ;  $\lambda = 24,43^\circ E$ ;  $h = 5 \text{ км}$ ;  $ML_v = 2,0$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/12	07:25:53.1	48.73	24.43	5	MLv 1.95

UKRAINE

Sta	Dist	EvAz	Phase	Date	Time	Res
BUR31	1.2	154	Pg	2021/10/12	07:26:16.2	-0.1
BUR07	1.2	153	Pg	2021/10/12	07:26:16.4	-0.1
KPD	1.4	96	Pg	2021/10/12	07:26:19.5	0.3
TRPA	1.4	245	Pg	2021/10/12	07:26:19.9	0.1
AK20	3.6	54	Pg	2021/10/12	07:27:01.9	0.0
AK07	3.6	58	Pg	2021/10/12	07:27:02.3	0.3
AK06	3.6	57	Pg	2021/10/12	07:27:02.5	0.2
AK05	3.6	57	Pg	2021/10/12	07:27:02.5	-0.2
AK10	3.6	57	Pg	2021/10/12	07:27:02.8	-0.2
AK02	3.7	56	Pg	2021/10/12	07:27:03.1	0.0
AKBB	3.7	56	Pg	2021/10/12	07:27:03.4	-0.3



**14.10.2021. Zona seismică Vrancea**

$t_0 = 05:14:11$ ;  $\varphi = 45,27^\circ N$ ;  $\lambda = 27,20^\circ E$ ;  $h = 11 \text{ км}$ ;  $ML_v = 2,6$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/14	05:14:11.3	45.27	27.20	11	MLv 2.56

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VRI	0.7	331	P	2021/10/14	05:14:25.0	0.1
PLOR	0.7	326	P	2021/10/14	05:14:25.2	0.0
MLR	0.9	284	P	2021/10/14	05:14:28.8	-0.1

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

TIRR	1.2	133	P	2021/10/14	05:14:33.2	-0.1
TIRR	1.2	133	S	2021/10/14	05:14:49.5	0.1
TESR	1.3	343	P	2021/10/14	05:14:34.8	-0.1
VOIR	1.5	277	P	2021/10/14	05:14:38.3	0.1
KPD	3.3	351	P	2021/10/14	05:15:03.4	0.1



**15.10.2021, Zona seismica Vrancea**

$t_0 = 03:06:53$ ;  $\varphi = 45,55^\circ N$ ;  $\lambda = 26,87^\circ E$ ;  $h = 127 \text{ km}$ ;  $ML_v = 3,2$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/15	05:14:11.3	45.27	27.20	127	MLv 3.16

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VRI	0.3	342	P	2021/10/15	03:07:12.4	0.1
PLOR	0.3	332	P	2021/10/15	03:07:12.9	0.6
PLOR	0.3	332	S	2021/10/15	03:07:27.0	-0.0
MLR	0.7	265	P	2021/10/15	03:07:14.0	-0.1
MLR	0.7	265	S	2021/10/15	03:07:30.2	0.1
TESR	1.0	351	P	2021/10/15	03:07:16.0	0.2
TESR	1.0	351	S	2021/10/15	03:07:32.6	-0.6
VOIR	1.3	265	P	2021/10/15	03:07:19.1	0.1
HUMR	1.7	233	P	2021/10/15	03:07:23.1	-0.4
SORM	2.8	21	P	2021/10/15	03:07:36.7	-0.1



**17.10.2021. Ukraine, Transcarpathian region**

$t_0 = 23:20:26$ ;  $\varphi = 48,15^\circ N$ ;  $\lambda = 22,60^\circ E$ ;  $h = 5 \text{ km}$ ;  $ML_v = 2,5$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/17	23:20:26.4	48.15	22.60	5	MLv 2.5

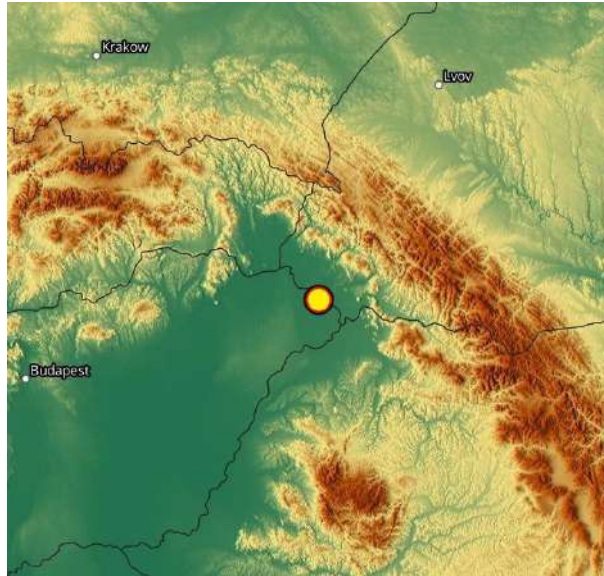
UKRAINE

Sta	Dist	EvAz	Phase	Date	Time	Res
TRPA	0.1	269	Pg	21/10/17	23:20:28.1	1.3



## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

UZH	0.5	337	Pg	21/10/17	23:20:35.4	-0.4
UZH	0.5	337	Sg	21/10/17	23:20:42.0	-1.1
KOLS	0.8	344	Pg	21/10/17	23:20:42.5	1.1
KOLS	0.8	344	Sg	21/10/17	23:20:52.7	0.0
DRGR	1.3	177	Pg	21/10/17	23:20:50.3	-0.8
KWP	1.5	2	Pn	21/10/17	23:20:52.7	-0.4
KWP	1.5	2	Sn	21/10/17	23:21:14.0	0.0
CJR	1.6	154	Pn	21/10/17	23:20:53.9	-0.1
BURAR	1.8	105	Pn	21/10/17	23:20:57.1	-0.2
PSZ	1.8	264	Pn	21/10/17	23:20:57.4	-0.4
NIE	2.0	311	Pn	21/10/17	23:21:00.3	0.4
VYHS	2.5	280	Pn	21/10/17	23:21:08.7	-0.1
VYHS	2.5	280	sP	21/10/17	23:21:08.3	-0.0
VYHS	2.5	280	pP	21/10/17	23:21:07.5	-0.0
KPD	2.6	79	Pn	21/10/17	23:21:41.2	0.1
KPD	2.6	79	Sn	21/10/17	23:21:08.3	0.0
KPD	2.6	79	Pn	21/10/17	23:21:09.6	0.1
LUBAR	3.8	60	Pn	21/10/17	23:21:25.6	0.5



### 19.10.2021. Ukraine, Ivano-Frankivsk region

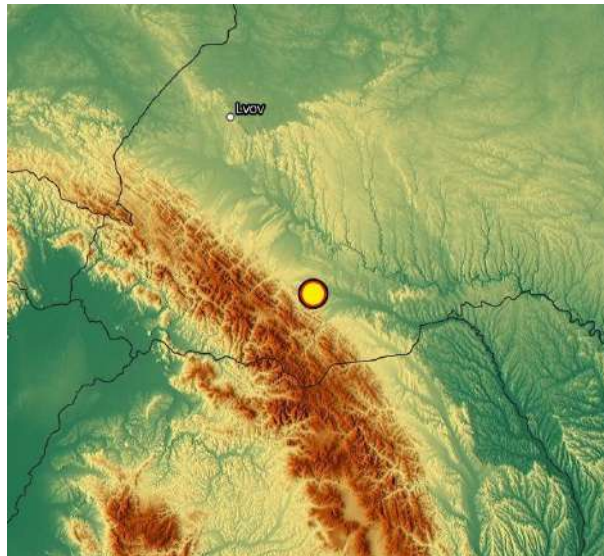
$t_0 = 09:21:19$ ;  $\varphi = 48,46^\circ N$ ;  $\lambda = 25,02^\circ E$ ;  $h = 5 \text{ km}$ ;  $ML_V = 2,5$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/17	23:20:26.4	48.15	22.60	5	ML <sub>V</sub> 2.5

#### UKRAINE

Sta	Dist	EvAz	Phase	Date	Time	Res
BURAR	0.8	172	Pn	21/10/19	09:21:29.4	-5.5
BURAR	0.8	172	Sn	21/10/19	09:21:48.7	2.6
KPD	1.0	83	Pn	21/10/19	09:21:32.1	-5.3
KPD	1.0	83	Sn	21/10/19	09:21:52.7	2.2
XAEC4	2.2	32	Pn	21/10/19	09:22:20.4	-4.1
LUBAR	2.3	50	Pn	21/10/19	09:21:59.1	1.1
LUBAR	2.3	50	Sn	21/10/19	09:22:25.2	-2.5
AK07	3.4	51	Pn	21/10/19	09:22:15.0	1.6
AK06	3.5	50	Pn	21/10/19	09:22:15.0	1.4
AK16	3.5	49	Pn	21/10/19	09:22:15.2	1.5
AK05	3.5	50	Pn	21/10/19	09:22:15.5	1.5
AK10	3.5	51	Pn	21/10/19	09:22:15.7	1.5
AK02	3.5	49	Pn	21/10/19	09:22:15.5	1.2
AK01	3.5	49	Pn	21/10/19	09:22:16.0	1.3
AKBB	3.5	49	Pn	21/10/19	09:22:16.3	1.5

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



**20.10.2021. Poland**

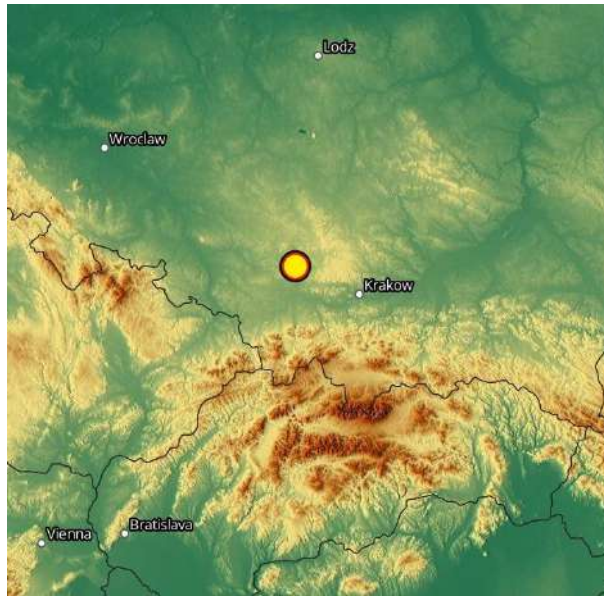
$t_0 = 16:07:49$ ;  $\varphi = 51,45^\circ N$ ;  $\lambda = 16,12^\circ E$ ;  $h = 9 \text{ km}$ ;  $ML_v = 3,2$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/20	16:07:49.2	51.45	16.12	9	MLv 3.22

POLAND

Sta	dist	EvAz	Phase	Date	Time	Res
CHVC	0.9	183	P	2021/10/20	16:08:05.6	-0.4
OSTC	0.9	176	P	2021/10/20	16:08:06.2	-0.2
UPC	0.9	184	P	2021/10/20	16:08:07.1	-0.2
DPC	1.1	173	P	2021/10/20	16:08:09.6	-0.4
PVCC	1.3	227	P	2021/10/20	16:08:13.8	0.3
KRLC	1.4	161	P	2021/10/20	16:08:15.9	1.1
KRLC	1.4	161	S	2021/10/20	16:08:34.1	0.1
RUE	1.8	306	Pn	2021/10/20	16:08:18.6	-1.4
PRU	1.8	215	Pn	2021/10/20	16:08:19.9	-0.0
PRU	1.8	215	S	2021/10/20	16:08:42.2	-1.0
HSKC	1.9	245	Pn	2021/10/20	16:08:22.4	0.8
HSKC	1.9	245	S	2021/10/20	16:08:47.0	0.6
MORC	1.9	151	Pn	2021/10/20	16:08:21.7	-0.1
MORC	1.9	151	S	2021/10/20	16:08:45.9	-0.8
NKC	2.6	244	Pn	2021/10/20	16:08:31.8	0.1
KHC	2.8	216	Pn	2021/10/20	16:08:35.1	0.5
CKRC	2.9	205	Pn	2021/10/20	16:08:35.6	0.5
MODS	3.2	166	Pn	2021/10/20	16:08:38.5	-0.7
NIE	3.4	126	Pn	2021/10/20	16:08:41.9	0.0
KWP	4.6	111	Pn	2021/10/20	16:08:59.3	0.7
KOLS	4.7	120	Pn	2021/10/20	16:09:00.2	0.2
RNPP5	6.1	88	Pn	2021/10/20	16:09:19.3	-0.4
BURAR	7.0	119	Pn	2021/10/20	16:09:31.5	-0.7
MDVR	7.7	149	Pn	2021/10/20	16:09:41.8	1.2
AK19	8.2	90	Pn	2021/10/20	16:09:48.6	1.1
AK21	8.2	90	Pn	2021/10/20	16:09:47.8	0.1
AK22	8.2	90	Pn	2021/10/20	16:09:46.4	-1.6
AK16	8.2	90	Pn	2021/10/20	16:09:48.9	0.4
AK04	8.3	90	Pn	2021/10/20	16:09:48.4	-0.5
AK03	8.3	90	Pn	2021/10/20	16:09:49.7	0.3
AK02	8.3	90	Pn	2021/10/20	16:09:49.9	0.5

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



**20.10.2021. Zona seismica Vrancea**

$t_0 = 18:12:46$ ;  $\varphi = 45,81^\circ N$ ;  $\lambda = 26,46^\circ E$ ;  $h = 9 \text{ km}$ ;  $ML = 1,9$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/20	18:12:46.64	45.81	26.46	9	ML 1.9

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.22	23.4	P	2021/10/20	18:13:03.7	1.1
SAHR	0.13	56.6	P	2021/10/20	18:13:03.7	-0.7
VRI	0.25	33.4	P	2021/10/20	18:13:04.4	0.5
MLR	0.44	248.4	P	2021/10/20	18:13:05.2	0.4
DOPR	0.85	292.0	P	2021/10/20	18:13:07.9	0.1
CFR	1.23	112.2	P	2021/10/20	18:13:12.4	-0.1
SAHR	0.13	56.6	S	2021/10/20	18:13:14.5	0.2
PLOR	0.22	23.4	S	2021/10/20	18:13:15.8	0.4
VRI	0.25	33.4	S	2021/10/20	18:13:15.9	1.1
MLR	0.44	248.4	S	2021/10/20	18:13:17.7	0.5
DOPR	0.85	292.0	S	2021/10/20	18:13:23.1	0.3



**22.10.2021. Zona seismica Vrancea**

$t_0 = 21:46:59$ ;  $\varphi = 45,63^\circ N$ ;  $\lambda = 26,62^\circ E$ ;  $h = 125 \text{ km}$ ;  $ML = 3,3$

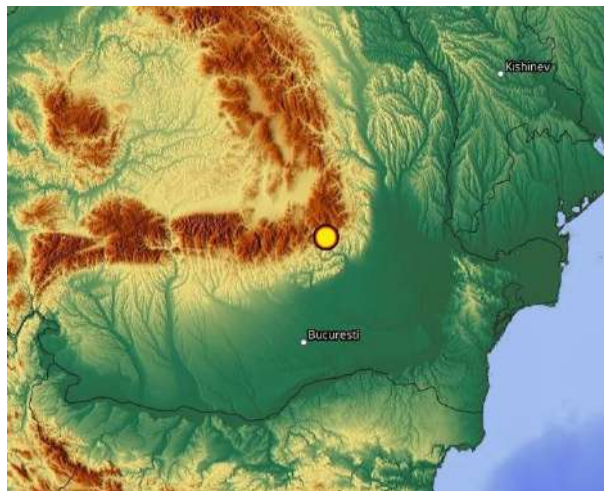
Date	Time	Latitude	Longitude	Depth	Mag
2021/10/22	21:46:59.13	45.63	26.62	125	ML 3.3

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.24	6.7	P	2021/10/22	21:47:18.2	0.2

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

VRI	0.27	17.9	P	2021/10/22	21:47:18.4	0.3
COVR	0.37	309.7	P	2021/10/22	21:47:18.4	-0.0
SAHR	0.13	24.8	P	2021/10/22	21:47:18.6	0.8
NEHR	0.29	230.1	P	2021/10/22	21:47:18.8	0.7
MLR	0.48	255.7	P	2021/10/22	21:47:19.4	0.2
TESR	0.90	1.7	P	2021/10/22	21:47:21.4	-0.6
DOPR	0.92	293.1	P	2021/10/22	21:47:22.1	-0.1
NEGRR	0.89	94.4	P	2021/10/22	21:47:22.7	0.9
BIR	0.95	48.8	P	2021/10/22	21:47:22.8	0.3
VLDR	1.05	76.7	P	2021/10/22	21:47:23.9	0.5
CFR	1.16	111.5	P	2021/10/22	21:47:24.8	0.4
VASR	1.32	38.1	P	2021/10/22	21:47:25.8	-0.3
HARR	1.31	134.3	P	2021/10/22	21:47:26.6	0.6
BIZ	1.37	345.4	P	2021/10/22	21:47:27.1	0.4
TPGR	1.48	120.0	P	2021/10/22	21:47:27.8	-0.1
TLBR	1.47	135.9	P	2021/10/22	21:47:28.5	0.8
HUMR	1.58	227.3	P	2021/10/22	21:47:29.2	0.2
TLCR	1.61	104.6	P	2021/10/22	21:47:29.9	0.6
TIRR	1.72	131.5	P	2021/10/22	21:47:31.0	0.4
ICOR	1.72	150.1	P	2021/10/22	21:47:31.6	1.0
VRI	0.27	17.9	S	2021/10/22	21:47:31.8	-0.1
COVR	0.37	309.7	S	2021/10/22	21:47:31.8	-0.8
PLOR	0.24	6.7	S	2021/10/22	21:47:31.9	0.1
SAHR	0.13	24.8	S	2021/10/22	21:47:32.1	0.8
NEHR	0.29	230.1	S	2021/10/22	21:47:32.2	0.2
GRER	0.35	132.1	S	2021/10/22	21:47:32.7	0.4
MFTR	1.92	137.5	P	2021/10/22	21:47:33.3	0.1
ODBI	0.35	63.9	S	2021/10/22	21:47:33.7	1.4
MLR	0.48	255.7	S	2021/10/22	21:47:33.9	0.1
GHRR	0.71	50.8	S	2021/10/22	21:47:36.2	0.0
BURAR	2.25	335.0	P	2021/10/22	21:47:37.6	0.4
DOPR	0.92	293.1	S	2021/10/22	21:47:38.3	-1.1
NEGRR	0.89	94.4	S	2021/10/22	21:47:39.0	0.3
VARL	0.91	71.2	S	2021/10/22	21:47:39.2	0.2
BIR	0.95	48.8	S	2021/10/22	21:47:39.5	-0.2
SCTR	0.97	85.8	S	2021/10/22	21:47:40.4	0.4
TATR	1.01	90.3	S	2021/10/22	21:47:40.7	-0.1
VLDR	1.05	76.7	S	2021/10/22	21:47:41.1	-0.3
SULR	0.97	195.2	S	2021/10/22	21:47:41.4	1.5
CFR	1.16	111.5	S	2021/10/22	21:47:43.1	-0.1
VASR	1.32	38.1	S	2021/10/22	21:47:45.2	-1.0
HARR	1.31	134.3	S	2021/10/22	21:47:45.3	-0.8
BIZ	1.37	345.4	S	2021/10/22	21:47:47.2	-0.2
TPGR	1.48	120.0	S	2021/10/22	21:47:48.3	-1.3
TLBR	1.47	135.9	S	2021/10/22	21:47:48.3	-0.9
SGRR	1.46	198.2	S	2021/10/22	21:47:49.0	-0.0
HUMR	1.58	227.3	S	2021/10/22	21:47:50.8	-0.7
TLCR	1.61	104.6	S	2021/10/22	21:47:51.7	-0.2
TIRR	1.72	131.5	S	2021/10/22	21:47:53.1	-1.2
ICOR	1.72	150.1	S	2021/10/22	21:47:54.0	-0.3
MFTR	1.92	137.5	S	2021/10/22	21:47:58.1	-0.9



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

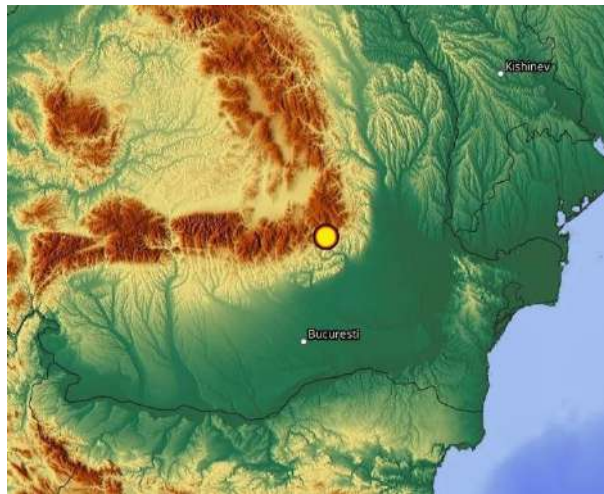
**26.10.2021. Zona seismică Vrancea**

$t_0 = 08:22:18$ ;  $\varphi = 45,87^\circ N$ ;  $\lambda = 25,32^\circ E$ ;  $h = 9 \text{ km}$ ;  $ML_v = 2,4$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/26	08:22:18.6	45.87	25.32	9	MLv 2.37

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VOIR	0.5	204	P	2021/10/26	08:22:28.3	-0.1
VOIR	0.5	204	S	2021/10/26	08:22:35.9	0.3
MLR	0.6	130	P	2021/10/26	08:22:30.2	-0.1
ARR	0.7	224	P	2021/10/26	08:22:31.8	-0.6
ARR	0.7	224	S	2021/10/26	08:22:42.6	0.2
TESR	1.1	55	P	2021/10/26	08:22:40.0	0.3
BURAR	1.8	357	P	2021/10/26	08:22:49.1	-0.3
BURAR	1.8	357	S	2021/10/26	08:23:12.8	0.1
DRGR	2.0	298	P	2021/10/26	08:22:53.3	0.4
DRGR	2.0	298	S	2021/10/26	08:23:19.1	-0.1



**27.10.2021. Ukraine, Transcarpathian region**

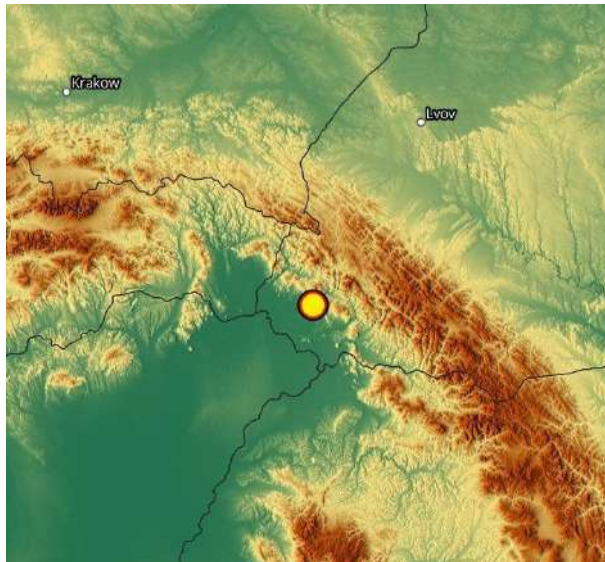
$t_0 = 01:44:57$ ;  $\varphi = 48,11^\circ N$ ;  $\lambda = 22,94^\circ E$ ;  $h = 7 \text{ km}$ ;  $ML_v = 3,1$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/27	01:44:57.5	48.11	22.94	7	MLv 3.1

UKRAINE

Sta	Dist	EvAz	Phase	Date	Time	Res
TRPA	0.3	273	P	21/10/27	01:45:03.8	0.4
TRPA	0.3	273	S	21/10/27	01:45:07.2	-0.6
UZH	0.7	320	P	21/10/27	01:45:10.9	0.2
UZH	0.7	320	S	21/10/27	01:45:20.2	-0.1
KOLS	0.9	332	P	21/10/27	01:45:15.9	0.5
DRGR	1.3	187	P	21/10/27	01:45:22.2	0.4
CJR	1.5	162	P	21/10/27	01:45:24.7	0.8
KWP	1.5	354	P	21/10/27	01:45:24.3	-0.4
BURAR	1.6	106	P	21/10/27	01:45:26.0	0.3
SIRR	2.0	206	P	21/10/27	01:45:32.0	-0.3
PSZ	2.1	266	P	21/10/27	01:45:31.8	-0.6
NIE	2.2	308	P	21/10/27	01:45:35.4	1.4
KPD	2.4	78	P	21/10/27	01:45:36.3	-0.7
VYHS	2.8	279	P	21/10/27	01:45:42.0	-0.2
MDVR	3.4	195	P	21/10/27	01:45:51.2	-0.3
SORM	3.6	88	P	21/10/27	01:45:53.2	-0.9
LUBAR	3.7	59	P	21/10/27	01:45:54.4	-0.0
MORC	3.9	297	P	21/10/27	01:45:57.8	-0.3
AK06	4.8	57	P	21/10/27	01:46:09.8	-0.1
AK05	4.8	56	P	21/10/27	01:46:10.6	0.5
AK10	4.8	57	P	21/10/27	01:46:10.5	0.1
AK02	4.8	56	P	21/10/27	01:46:10.4	-0.0

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



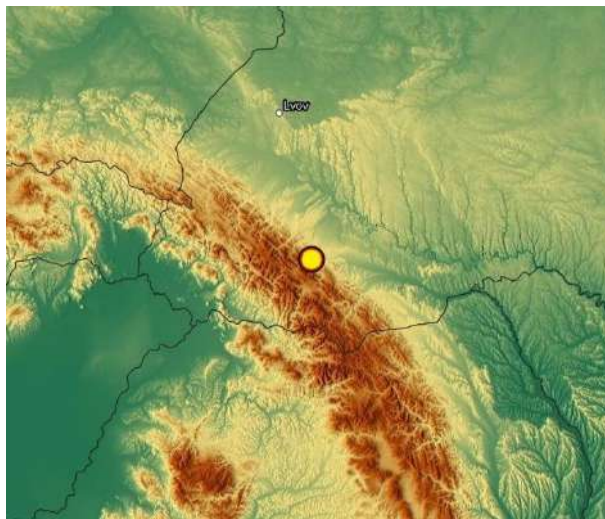
**29.10.2021. Ukraine, Ivano-Frankivsk region**

$t_0 = 12:16:21$ ;  $\varphi = 48,55^\circ N$ ;  $\lambda = 24,47^\circ E$ ;  $h = 2 \text{ км}$ ;  $ML=2,5$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/29	12:16:21.2	48.55	24.47	2	ML 2.5

UKRAINE

Sta	Dist	EvAz	Phase	Date	Time	Res
STNU	0.2	7	Pg	21/10/29	12:16:23.4	-0.8
KSV	0.5	121	Pg	21/10/29	12:16:29.5	0.0
MEZ	0.7	262	Pg	21/10/29	12:16:33.4	0.5
NSLU	0.8	243	Pg	21/10/29	12:16:33.7	-1.2
KORU	1.0	247	Pg	21/10/29	12:16:37.0	-1.7
BRIU	1.0	258	Pg	21/10/29	12:16:40.8	1.9
BERU	1.3	256	Pg	21/10/29	12:16:44.5	0.8
KPD	1.3	89	Pg	21/10/29	12:16:45.2	0.3
KPD	1.3	89	Sg	21/10/29	12:17:03.1	0.0
LUBAR	2.6	56	Pn	21/10/29	12:17:03.4	-0.3
AKBB	3.8	53	Pg	21/10/29	12:17:29.1	0.5



**30.10.2021. Poland**

$t_0 = 18:04:19$ ;  $\varphi = 51,33^\circ N$ ;  $\lambda = 23,19^\circ E$ ;  $h = 10 \text{ км}$ ;  $MLv = 2,9$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/30	18:04:19.1	51.33	23.19	10	MLv 2.91

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
RNPP2	1.7	89	P	2021/10/30	18:04:48.0	-0.6

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

RNPP9	1.7	86	P	2021/10/30	18:04:37.2	-11.3
RNPP9	1.7	86	S	2021/10/30	18:05:07.0	-3.9
OJC	2.4	244	P	2021/10/30	18:04:50.8	-7.9
XAEC5	2.4	111	P	2021/10/30	18:04:56.7	-2.0
XAEC5	2.4	111	S	2021/10/30	18:05:29.2	-0.1
XAEC3	2.4	114	P	2021/10/30	18:04:59.1	0.3
XAEC3	2.4	114	S	2021/10/30	18:05:29.1	-0.3
XAEC4	2.5	113	P	2021/10/30	18:04:59.6	-0.7
XAEC4	2.5	113	S	2021/10/30	18:05:31.3	-1.0
XAEC2	2.6	115	S	2021/10/30	18:05:33.4	0.7
MI28	2.9	96	P	2021/10/30	18:05:04.8	0.2
MI28	2.9	96	S	2021/10/30	18:05:40.0	0.1
LUBAR	3.2	114	S	2021/10/30	18:05:49.9	0.5
AKBB	3.9	98	P	2021/10/30	18:05:19.3	0.8
AKBB	3.9	98	S	2021/10/30	18:06:06.6	1.8



### 31.10.2021. Poland

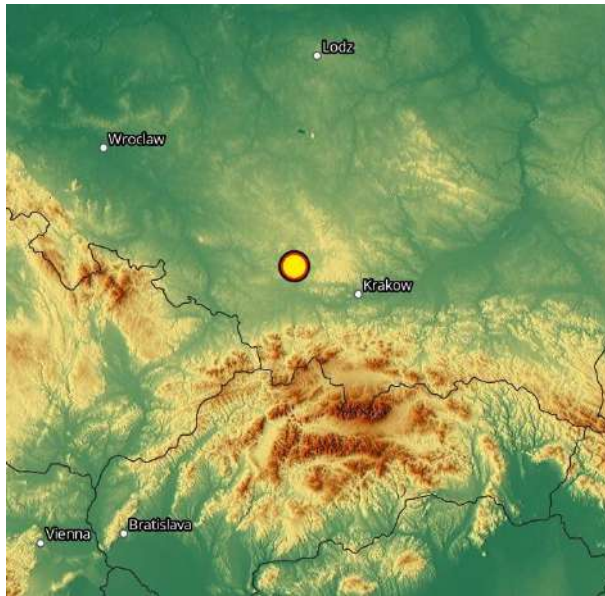
$t_0 = 01:13:07$ ;  $\varphi = 51,37^\circ N$ ;  $\lambda = 16,12^\circ E$ ;  $h = 11 \text{ км}$ ;  $ML_v = 3,4$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/31	01:13:07.7	51.37	16.12	11	MLv 3.38

#### POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
KSP	0.5	168	P	2021/10/31	01:13:18.6	-0.3
CHVC	0.8	183	P	2021/10/31	01:13:23.2	0.1
OSTC	0.8	176	P	2021/10/31	01:13:24.0	0.3
UPC	0.9	184	P	2021/10/31	01:13:24.6	0.0
DPC	1.0	173	P	2021/10/31	01:13:27.4	0.1
PVCC	1.3	230	P	2021/10/31	01:13:30.9	-0.3
KRLC	1.4	160	P	2021/10/31	01:13:32.2	0.1
PRU	1.7	216	P	2021/10/31	01:13:36.6	-0.7
PRU	1.7	216	S	2021/10/31	01:14:00.3	0.5
MORC	1.8	150	P	2021/10/31	01:13:38.6	-0.6
MORC	1.8	150	S	2021/10/31	01:14:02.4	-0.8
HSKC	1.9	247	P	2021/10/31	01:13:39.5	0.0
OKC	2.0	139	P	2021/10/31	01:13:42.3	0.7
GKP	2.0	19	P	2021/10/31	01:13:42.0	0.3
NKC	2.6	245	P	2021/10/31	01:13:48.7	-0.8
OJC	2.6	115	P	2021/10/31	01:13:50.1	0.4
KHC	2.8	217	P	2021/10/31	01:13:52.1	0.0
CKRC	2.8	205	P	2021/10/31	01:13:53.2	0.7
MODS	3.1	166	P	2021/10/31	01:13:57.0	0.5
NIE	3.3	124	P	2021/10/31	01:14:00.1	0.5
PSZ	4.2	143	P	2021/10/31	01:14:12.3	0.1
KOLS	4.7	119	P	2021/10/31	01:14:16.9	-0.9
TRPA	5.3	125	P	2021/10/31	01:14:25.8	-0.6
MORH	5.4	161	P	2021/10/31	01:14:28.9	0.4
KOVH	5.4	165	P	2021/10/31	01:14:29.0	0.2
SIRR	6.3	142	P	2021/10/31	01:14:40.1	-0.2
DRGR	6.3	134	P	2021/10/31	01:14:41.0	0.5
BURAR	7.0	119	P	2021/10/31	01:14:49.7	-0.2

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



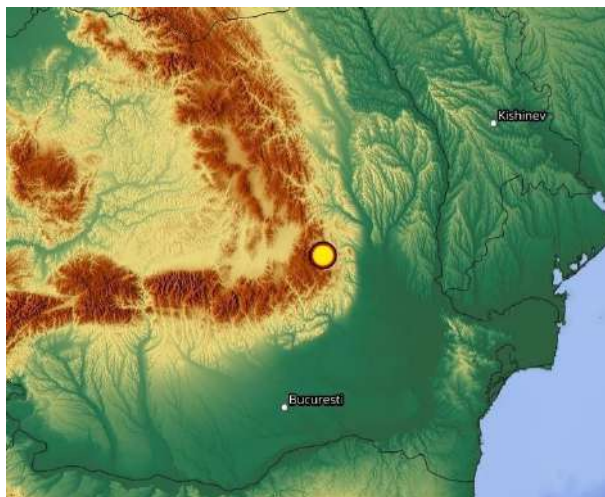
**31.10.2021. Zona seismică Vrancea**

$t_0 = 18:44:27$ ;  $\varphi = 45,90^\circ N$ ;  $\lambda = 26,98^\circ E$ ;  $h = 53 \text{ km}$ ;  $ML = 2,2$

Date	Time	Latitude	Longitude	Depth	Mag
2021/10/31	18:44:27.1	45.90	26.98	53	MLv 2.2

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VRI	0.2	260	P	2021/10/31	18:44:37.0	0.2
VRI	0.2	260	S	2021/10/31	18:44:44.4	0.2
PLOR	0.2	259	P	2021/10/31	18:44:37.1	-0.3
PLOR	0.2	259	S	2021/10/31	18:44:45.3	0.1
TESR	0.7	339	P	2021/10/31	18:44:41.2	-0.3
MLR	0.8	241	P	2021/10/31	18:44:42.5	-0.7
VOIR	1.4	252	P	2021/10/31	18:44:50.4	-0.3
VOIR	1.4	252	S	2021/10/31	18:45:08.7	-0.2
ARR	1.7	253	P	2021/10/31	18:44:54.9	0.2
TIRR	1.8	144	P	2021/10/31	18:44:55.4	0.3
DRGR	3.1	288	P	2021/10/31	18:45:13.4	0.1
SIRR	3.7	278	P	2021/10/31	18:45:22.2	0.3
BSZH	4.8	289	P	2021/10/31	18:45:37.5	0.3





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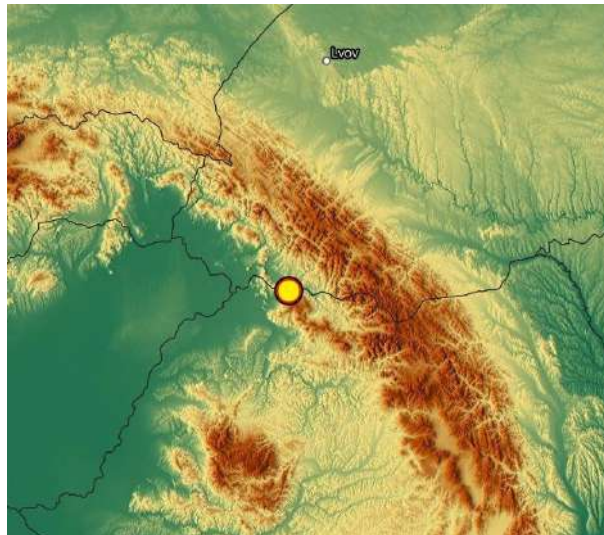
**02.11.2021. Zona seismică Vrancea**

$t_0 = 07:56:54$ ;  $\varphi = 47,97^\circ N$ ;  $\lambda = 23,57^\circ E$ ;  $h = 8 \text{ km}$ ;  $ML_v = 3,0$

Date	Time	Latitude	Longitude	Depth	Mag
2021/11/02	07:56:54.9	47.97	23.57	8	MLv 2.95

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
TRPA	0.7	284	Pg	2021/11/02	07:57:09.1	0.6
UZH	1.1	308	Pg	2021/11/02	07:57:15.3	-0.3
UZH	1.1	308	Sg	2021/11/02	07:57:30.6	-0.1
CJR	1.3	179	Pg	2021/11/02	07:57:19.1	0.1
KOLS	1.3	319	Pg	2021/11/02	07:57:19.6	-0.2
DRGR	1.3	207	Pg	2021/11/02	07:57:19.4	-0.7
DRGR	1.3	207	Sg	2021/11/02	07:57:38.2	-0.1
KWP	1.8	341	Pn	2021/11/02	07:57:27.0	1.3
KWP	1.8	341	Sn	2021/11/02	07:57:48.8	-0.3
KPD	2.0	72	Pn	2021/11/02	07:57:29.2	-0.1
KPD	2.0	72	sP	2021/11/02	07:57:32.5	0.1
DEV	2.1	193	Pn	2021/11/02	07:57:30.7	-0.0
SIRR	2.1	218	Pn	2021/11/02	07:57:32.1	1.2
PSZ	2.5	270	Pn	2021/11/02	07:57:34.7	-0.7
NIE	2.6	305	Pn	2021/11/02	07:57:37.5	0.3
VYHS	3.2	281	Pn	2021/11/02	07:57:45.1	-0.5
LUBAR	3.4	53	Pn	2021/11/02	07:57:48.4	0.4
MI28	4.0	41	Pn	2021/11/02	07:57:56.6	0.3
AKBB	4.6	51	Pn	2021/11/02	07:58:04.7	-0.1



**04.11.2021. Poland**

$t_0 = 05:50:07$ ;  $\varphi = 51,61^\circ N$ ;  $\lambda = 16,20^\circ E$ ;  $h = 10 \text{ km}$ ;  $ML_v = 3,0$

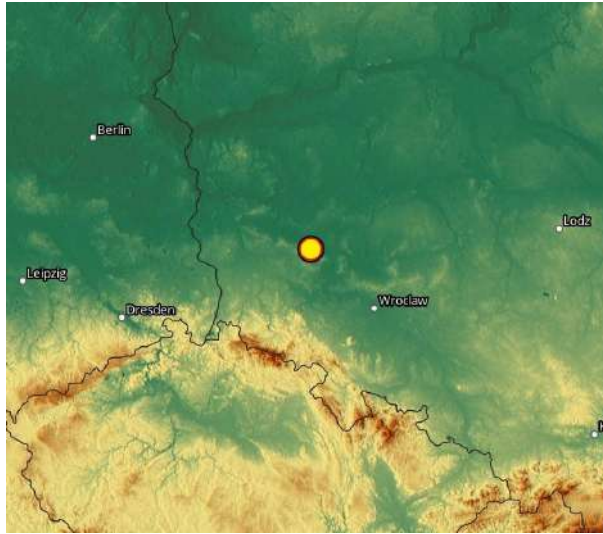
Date	Time	Latitude	Longitude	Depth	Mag
2021/11/04	05:50:07.0	51.61	16.20	10	MLv 2.95

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
KSP	0.8	176	P	2021/11/04	05:50:22.1	0.1
CHVC	1.0	185	P	2021/11/04	05:50:26.2	-0.2
CHVC	1.0	185	S	2021/11/04	05:50:40.0	-0.7
OSTC	1.1	179	P	2021/11/04	05:50:26.8	-0.1
OSTC	1.1	179	S	2021/11/04	05:50:41.0	-0.5
UPC	1.1	186	P	2021/11/04	05:50:27.5	-0.3
UPC	1.1	186	S	2021/11/04	05:50:42.1	-0.9
DPC	1.3	176	P	2021/11/04	05:50:30.1	0.1
PVCC	1.5	224	P	2021/11/04	05:50:33.7	0.3
KRLC	1.6	165	P	2021/11/04	05:50:35.2	0.7
RUE	1.7	301	P	2021/11/04	05:50:36.9	0.1
MORC	2.0	155	P	2021/11/04	05:50:41.4	0.3
NKC	2.7	241	P	2021/11/04	05:50:51.1	0.1
KHC	3.0	215	P	2021/11/04	05:50:54.4	-0.0
VYHS	3.6	150	P	2021/11/04	05:51:02.9	0.8
KWP	4.6	113	P	2021/11/04	05:51:17.2	0.9
KWP	4.6	113	S	2021/11/04	05:52:10.7	0.0

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

TRPA	5.4	128	P	2021/11/04	05:51:27.5	0.3
MORH	5.6	162	P	2021/11/04	05:51:31.0	0.3
RNPP5	6.1	90	P	2021/11/04	05:51:37.4	0.7
KPD	7.3	111	P	2021/11/04	05:51:53.5	0.4
LUBAR	7.5	98	P	2021/11/04	05:51:56.4	-0.2
AKBB	8.2	91	P	2021/11/04	05:52:06.1	-0.2



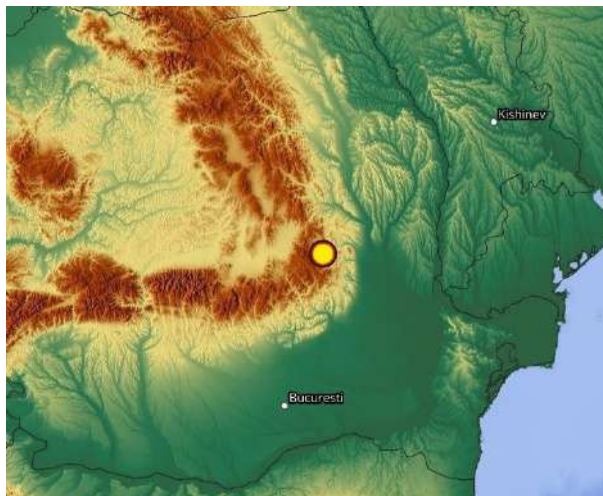
### 05.11.2021. Zona seismică Vrancea

$t_0 = 08:09:14$ ;  $\varphi = 45,85^\circ N$ ;  $\lambda = 26,79^\circ E$ ;  $h = 93 \text{ km}$ ;  $ML_v = 1,8$

Date	Time	Latitude	Longitude	Depth	Mag
2021/11/05	08:09:14.8	45.85	26.79	93	ML <sub>v</sub> 1.8

#### ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VRI	0.0	289	P	21/11/05	08:09:28.5	0.5
PLOR	0.1	270	P	21/11/05	08:09:28.3	-0.1
TESR	0.7	352	P	21/11/05	08:09:32.7	0.3
MLR	0.7	239	P	21/11/05	08:09:31.8	-0.8
VOIR	1.3	252	P	21/11/05	08:09:37.7	-0.5
TIRR	1.8	140	P	21/11/05	08:09:44.8	0.2
BURAR	2.1	329	P	21/11/05	08:09:49.5	1.2
KPD	2.7	355	P	21/11/05	08:10:28.8	-0.5
AKBB	5.1	18	P	21/11/05	08:11:27.0	-0.3



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

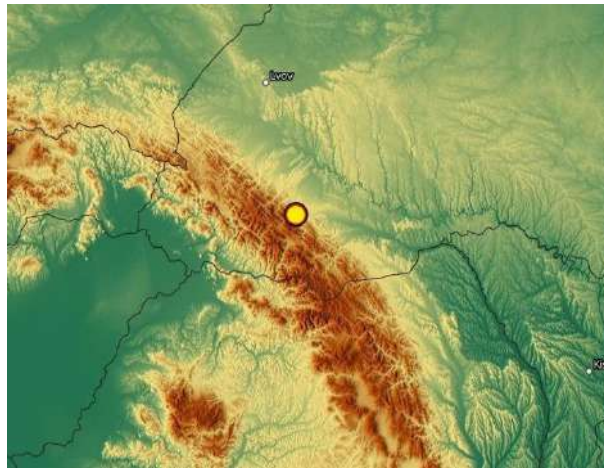
**09.11.2021. Ukraine, Ivano-Frankivsk region**

$t_0 = 12:07:25$ ;  $\varphi = 48,64^\circ N$ ;  $\lambda = 24,61^\circ E$ ;  $h = 3 \text{ km}$ ;  $ML_v = 2,3$

Date	Time	Latitude	Longitude	Depth	Mag
2021/11/09	12:07:25.3	48.64	24.61	3	MLv 2.3

UKRAINE

Sta	Dist	EvAz	Phase	Date	Time	Res
BURAR	1.1	158	Pg	2021/11/09	12:07:47.0	1.2
BURAR	1.1	158	Sg	2021/11/09	12:08:00.1	-0.5
KPD	1.2	93	Pg	2021/11/09	12:07:49.3	0.4
KPD	1.2	93	Sg	2021/11/09	12:08:04.6	-1.3
TRPA	1.5	250	Pg	2021/11/09	12:07:53.4	-0.0
KOLS	1.6	282	Pg	2021/11/09	12:07:54.5	-0.8
XAEC2	2.1	42	Pg	2021/11/09	12:08:06.4	0.6
XAEC4	2.2	41	Pg	2021/11/09	12:08:06.6	-0.8
XAEC4	2.2	41	Sg	2021/11/09	12:08:38.0	0.2
LUBAR	2.4	57	Sn	2021/11/09	12:08:36.6	-0.1
MI28	3.0	40	Pg	2021/11/09	12:08:22.9	-0.4
MI28	3.0	40	Pn	2021/11/09	12:08:14.2	0.3
MI28	3.0	40	sP	2021/11/09	12:08:16.4	1.0
AKBB	3.6	54	Pg	2021/11/09	12:08:34.9	-0.0
AK03	3.7	53	Pg	2021/11/09	12:08:35.3	0.1



**09.11.2021. Zona seismică Vrancea**

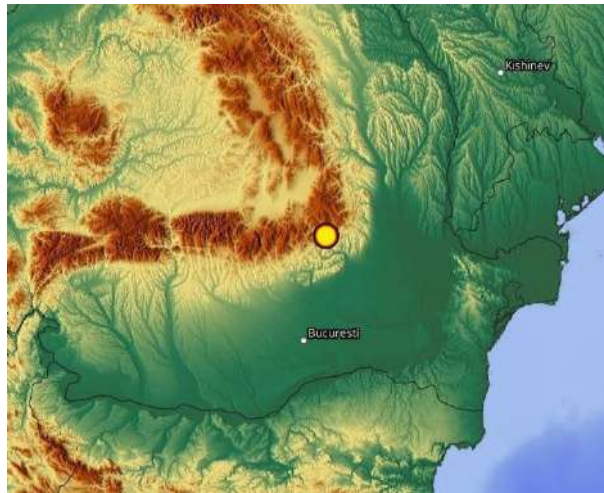
$t_0 = 15:20:23$ ;  $\varphi = 45,41^\circ N$ ;  $\lambda = 25,91^\circ E$ ;  $h = 65 \text{ km}$ ;  $ML_v = 3,2$

Date	Time	Latitude	Longitude	Depth	Mag
2021/11/09	15:20:23.3	45.41	25.91	65	MLv 3.2

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
MLR	0.1	17	S	2021/11/09	15:20:41.3	0.1
VOIR	0.6	273	P	2021/11/09	15:20:37.8	-0.3
VOIR	0.6	273	S	2021/11/09	15:20:49.3	-0.0
PLOR	0.7	49	P	2021/11/09	15:20:37.8	-0.9
VRI	0.7	51	P	2021/11/09	15:20:38.6	-0.5
VRI	0.7	51	S	2021/11/09	15:20:51.7	0.4
ARR	0.9	268	P	2021/11/09	15:20:40.9	0.3
HUMR	1.1	217	P	2021/11/09	15:20:42.8	-0.1
HUMR	1.1	217	S	2021/11/09	15:20:58.4	0.6
TESR	1.2	25	P	2021/11/09	15:20:44.3	-0.1
PLVB	2.2	205	P	2021/11/09	15:20:57.6	-0.2
BURAR	2.3	348	P	2021/11/09	15:20:58.6	-0.0
SIRR	3.1	288	P	2021/11/09	15:21:09.3	-0.2
KPD	3.2	7	P	2021/11/09	15:21:11.2	0.5
SORM	3.2	31	P	2021/11/09	15:21:11.0	-0.0
TRPA	3.6	321	P	2021/11/09	15:21:15.7	-0.4
RDO	4.3	184	P	2021/11/09	15:21:25.8	0.1
LUBAR	4.7	15	P	2021/11/09	15:21:32.1	0.8
MI28	5.6	11	P	2021/11/09	15:21:44.5	0.0
AKBB	5.7	22	P	2021/11/09	15:21:46.6	0.9

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



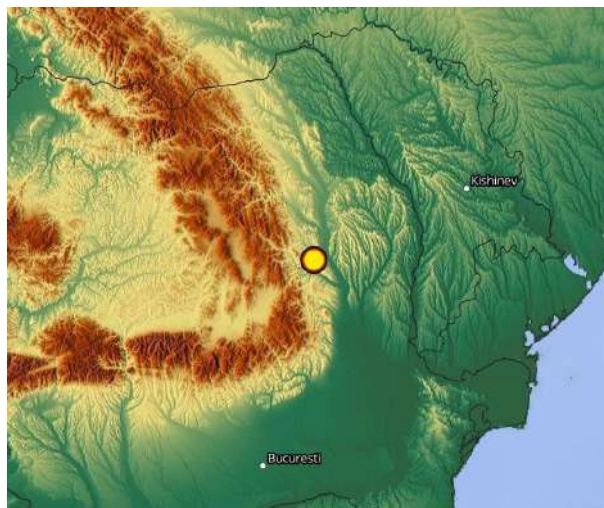
**14.11.2021. Zona seismica Vrancea**

$t_0 = 14:59:26$ ;  $\varphi = 46,35^\circ N$ ;  $\lambda = 26,80^\circ E$ ;  $h = 9 \text{ km}$ ;  $ML_v = 2,3$

Date	Time	Latitude	Longitude	Depth	Mag
2021/11/14	14:59:26.7	46.35	26.80	9	MLv 2.33

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
TESR	0.2	327	P	2021/11/14	14:59:31.8	0.3
VRI	0.5	186	P	2021/11/14	14:59:36.3	-0.4
PLOR	0.5	192	P	2021/11/14	14:59:36.8	-0.3
BURAR	1.7	320	P	2021/11/14	14:59:56.5	0.2
ARR	1.8	238	P	2021/11/14	14:59:59.1	1.3
SORM	2.1	30	P	2021/11/14	15:00:03.1	1.5
TIRR	2.2	148	P	2021/11/14	15:00:03.3	-0.2
DRGR	2.9	280	P	2021/11/14	15:00:12.2	-0.1
TRPA	3.4	303	P	2021/11/14	15:00:18.7	-1.3
LUBAR	3.6	10	P	2021/11/14	15:00:22.6	-0.4
XAEC3	4.0	359	P	2021/11/14	15:00:27.7	0.2
MI30	4.5	11	P	2021/11/14	15:00:34.8	-0.2
AKBB	4.6	19	P	2021/11/14	15:00:37.2	0.3
AKBB	4.6	19	S	2021/11/14	15:01:31.1	-0.8



**17.11.2021. Zona seismica Vrancea**

$t_0 = 18:52:53$ ;  $\varphi = 45,59^\circ N$ ;  $\lambda = 27,14^\circ E$ ;  $h = 24 \text{ km}$ ;  $ML_v = 3,2$

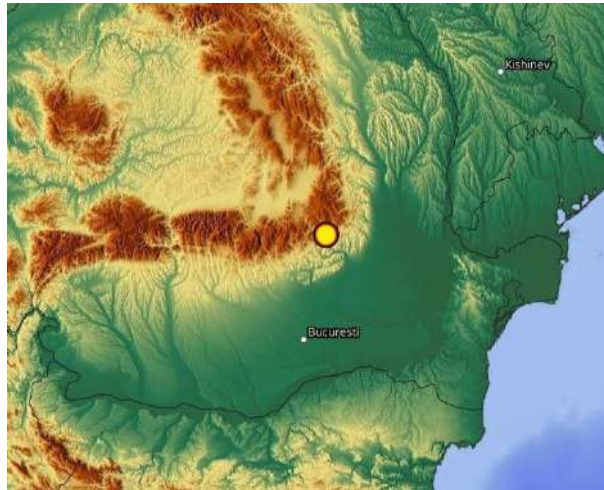
Date	Time	Latitude	Longitude	Depth	Mag
2021/11/17	18:52:53.0	45.59	27.14	24	MLv 3.21

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VRI	0.4	314	P	2021/11/17	18:53:02.7	-0.1
VRI	0.4	314	S	2021/11/17	18:53:10.8	0.8

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

PLOR	0.4	308	P	2021/11/17	18:53:03.0	-0.2
PLOR	0.4	308	S	2021/11/17	18:53:10.0	-0.8
MLR	0.8	264	P	2021/11/17	18:53:08.9	-0.2
MLR	0.8	264	S	2021/11/17	18:53:21.5	0.3
TESR	1.0	340	P	2021/11/17	18:53:11.8	0.7
TIRR	1.5	141	P	2021/11/17	18:53:18.6	1.0
VOIR	1.5	265	P	2021/11/17	18:53:18.1	0.1
VOIR	1.5	265	S	2021/11/17	18:53:37.3	0.2
ARR	1.8	264	P	2021/11/17	18:53:23.3	1.2
HUMR	1.9	236	P	2021/11/17	18:53:23.3	0.0
BURAR	2.4	328	P	2021/11/17	18:53:31.8	0.4
SORM	2.7	18	P	2021/11/17	18:53:34.8	0.3
PLVB	2.8	220	P	2021/11/17	18:53:35.4	-1.5
BAL3X	2.9	35	P	2021/11/17	18:53:37.8	0.2
KMPU	3.0	351	P	2021/11/17	18:53:38.4	-0.7
KPD	3.0	351	P	2021/11/17	18:53:38.5	-0.6
SIRR	3.9	282	P	2021/11/17	18:53:51.3	0.3
TRPA	4.0	311	P	2021/11/17	18:53:52.3	-1.0
LUBAR	4.4	5	P	2021/11/17	18:53:56.8	-0.8
RDO	4.6	195	P	2021/11/17	18:54:00.5	-0.4
KOLS	4.7	317	P	2021/11/17	18:54:03.0	0.6
XAEC4	4.7	358	P	2021/11/17	18:54:02.9	0.5
AKBB	5.3	15	P	2021/11/17	18:54:10.4	-0.2
PSZ	5.5	298	P	2021/11/17	18:54:13.0	-0.2



**19.11.2021. Ukraine, Ivano-Frankivsk region**

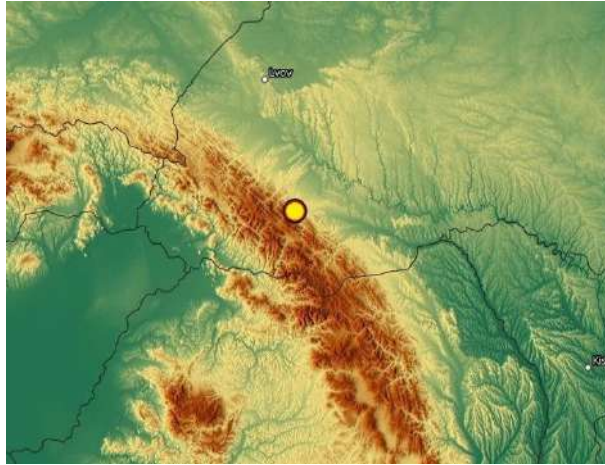
$t_0 = 09:06:34$ ;  $\varphi = 48,64^\circ N$ ;  $\lambda = 24,50^\circ E$ ;  $h = 5 \text{ km}$ ;  $ML_v = 2,6$

Date	Time	Latitude	Longitude	Depth	Mag
2021/11/19	09:06:34.3	48.64	24.50	5	ML <sub>v</sub> 2.6

**UKRAINE**

Sta	Dist	EvAz	Phase	Date	Time	Res
BUR31	1.1	153	Pg	2021/11/19	09:06:55.2	0.1
BUR07	1.1	152	Pg	2021/11/19	09:06:55.9	0.6
KPD	1.3	91	Pg	2021/11/19	09:06:58.8	-0.9
KPD	1.3	91	Sg	2021/11/19	09:07:16.6	-1.2
XAEC3	2.2	39	Pg	2021/11/19	09:07:15.9	-0.7
XAEC3	2.2	39	Pn	2021/11/19	09:07:12.2	0.4
XAEC3	2.2	39	Sn	2021/11/19	09:07:40.8	0.4
LUBAR	2.5	57	Pn	2021/11/19	09:07:16.3	0.3
LUBAR	2.5	57	Sn	2021/11/19	09:07:47.7	-0.3
LUBAR	2.5	57	sP	2021/11/19	09:07:19.2	1.7
TESR	2.6	144	Pn	2021/11/19	09:07:17.0	0.4

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



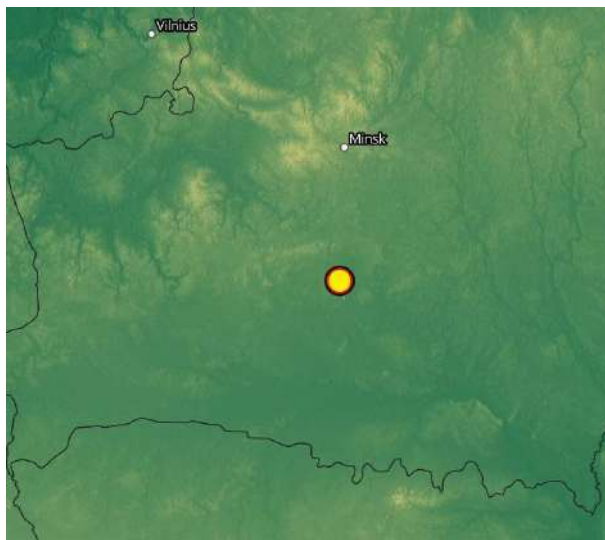
**22.11.2021. Belarus**

$t_0 = 18:59:51$ ;  $\varphi = 52,95^\circ N$ ;  $\lambda = 27,52^\circ E$ ;  $h = 15 \text{ км}$ ;  $ML_v = 2,7$

Date	Time	Latitude	Longitude	Depth	Mag
2021/11/22	18:59:51.0	52.95	27.52	15	ML <sub>v</sub> 2.7

BELARUS

Sta	Dist	EvAz	Phase	Date	Time	Res
RNPP9	1.8	214	Pn	21/11/22	19:00:22.2	0.2
RNPP8	1.8	213	Pn	21/11/22	19:00:22.6	-0.5
RNPP5	1.9	211	Pn	21/11/22	19:00:24.5	0.3
MI28	2.0	176	Pn	21/11/22	19:00:23.3	-1.6
MI28	2.0	176	Sn	21/11/22	19:00:50.0	-0.7
AK21	2.3	154	Pn	21/11/22	19:00:28.8	-1.1
AK21	2.3	154	Sn	21/11/22	19:00:59.4	-0.3
AK22	2.4	154	Pn	21/11/22	19:00:29.5	-0.7
AK22	2.4	154	Sn	21/11/22	19:00:59.9	-0.4
AK23	2.4	153	Pn	21/11/22	19:00:30.2	-0.2
AK04	2.4	153	Pn	21/11/22	19:00:31.0	0.0
AK17	2.4	155	Pn	21/11/22	19:00:31.1	0.0
AK15	2.4	154	Pn	21/11/22	19:00:31.3	0.1
AK16	2.5	155	Pn	21/11/22	19:00:31.5	0.1
AKBB	2.5	153	Pn	21/11/22	19:00:31.6	0.1
AKBB	2.5	153	Sn	21/11/22	19:01:03.2	0.5
AK11	2.5	154	Pn	21/11/22	19:00:31.5	-0.1
AK01	2.5	153	Pn	21/11/22	19:00:31.4	-0.2
AK14	2.5	155	Pn	21/11/22	19:00:32.2	0.3
AK12	2.5	154	Pn	21/11/22	19:00:31.8	-0.2
MI29	2.5	174	Sn	21/11/22	19:01:04.5	0.9
MI29	2.5	174	Pn	21/11/22	19:00:32.3	0.3
XAEC4	2.6	188	Pn	21/11/22	19:00:35.6	1.7
LUBAR	3.0	176	Pn	21/11/22	19:00:39.5	0.8
KPD	4.4	189	Pn	21/11/22	19:00:56.4	-1.5



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

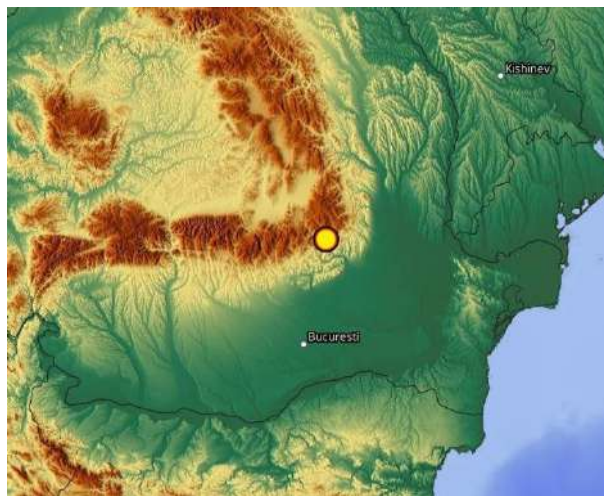
**24.11.2021. Zona seismică Vrancea**

$t_0 = 03:03:33$ ;  $\varphi = 45,43^\circ N$ ;  $\lambda = 26,51^\circ E$ ;  $h = 103 \text{ km}$ ;  $ML_v = 2,1$

Date	Time	Latitude	Longitude	Depth	Mag
2021/11/24	03:03:33.6	45.43	26.51	103	ML <sub>v</sub> 2.09

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
MLR	0.4	279	P	2021/11/24	03:03:53.3	0.1
MLR	0.4	279	S	2021/11/24	03:04:08.6	0.1
PLOR	0.4	13	P	2021/11/24	03:03:53.5	0.0
PLOR	0.4	13	S	2021/11/24	03:04:08.2	-0.6
VRI	0.5	19	P	2021/11/24	03:03:53.9	0.3
VRI	0.5	19	S	2021/11/24	03:04:09.3	0.3
VOIR	1.0	271	P	2021/11/24	03:03:56.6	-0.2
TESR	1.1	5	P	2021/11/24	03:03:57.7	0.3
ARR	1.3	268	P	2021/11/24	03:03:59.6	-0.3
HUMR	1.4	231	P	2021/11/24	03:04:00.9	0.1
BURAR	2.4	338	P	2021/11/24	03:04:12.6	0.2
SORM	3.0	24	P	2021/11/24	03:04:19.6	-0.4



**24.11.2021. Zona seismică Vrancea**

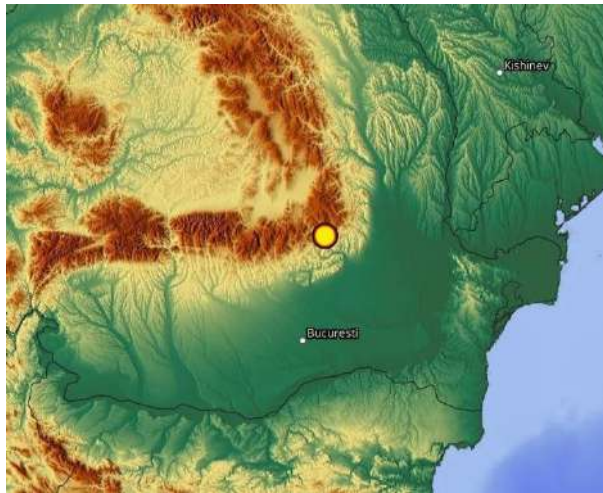
$t_0 = 19:30:14$ ;  $\varphi = 45,51^\circ N$ ;  $\lambda = 26,36^\circ E$ ;  $h = 131 \text{ km}$ ;  $ML_v = 2,1$

Date	Time	Latitude	Longitude	Depth	Mag
2021/11/24	19:30:14.5	45.51	26.36	131	ML <sub>v</sub> 2.09

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
MLR	0.3	266	P	21/11/24	19:30:34.2	0.5
PLOR	0.4	31	P	21/11/24	19:30:34.3	0.0
VRI	0.4	36	P	21/11/24	19:30:34.4	-0.2
VRI	0.4	36	S	21/11/24	19:30:50.1	0.1
VOIR	0.9	266	P	21/11/24	19:30:37.2	0.1
VOIR	0.9	266	S	21/11/24	19:30:54.8	0.2
TESR	1.0	11	P	21/11/24	19:30:37.3	-0.4
ARR	1.2	264	P	21/11/24	19:30:40.0	0.1
HUMR	1.4	225	P	21/11/24	19:30:41.9	0.2
HUMR	1.4	225	S	21/11/24	19:31:02.0	-0.6
TIRR	1.8	125	P	21/11/24	19:30:46.4	0.3
TIRR	1.8	125	S	21/11/24	19:31:10.6	-0.2
BURAR	2.3	340	P	21/11/24	19:30:51.7	-0.2

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



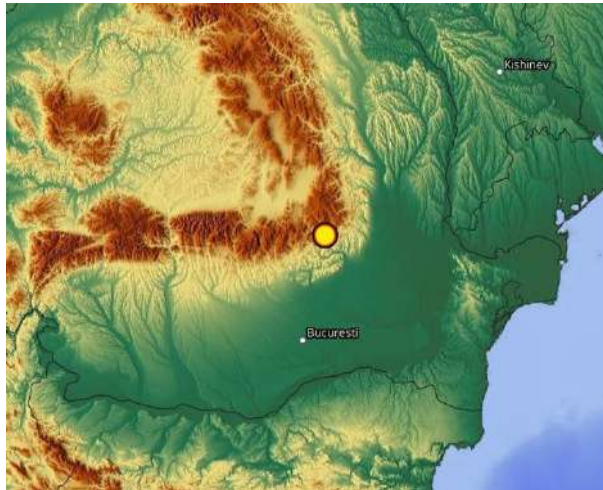
**28.11.2021. Zona seismica Vrancea**

$t_0 = 15:40:57$ ;  $\varphi = 45,59^\circ N$ ;  $\lambda = 26,44^\circ E$ ;  $h = 109 \text{ km}$ ;  $ML_v = 1,8$

Date	Time	Latitude	Longitude	Depth	Mag
2021/11/28	15:40:57.4	45.59	26.44	109	ML <sub>v</sub> 1.8

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.3	29	P	21/11/28	15:41:13.7	-0.5
PLOR	0.3	29	S	21/11/28	15:41:27.7	0.5
VRI	0.3	36	P	21/11/28	15:41:14.4	-0.1
MLR	0.4	255	P	21/11/28	15:41:14.7	0.1
MLR	0.4	255	S	21/11/28	15:41:27.6	-0.3
TESR	0.9	9	P	21/11/28	15:41:18.5	0.3
TESR	0.9	9	S	21/11/28	15:41:33.8	-0.4
VOIR	1.0	262	S	21/11/28	15:41:34.8	0.0
VOIR	1.0	262	P	21/11/28	15:41:18.8	0.3
ARR	1.3	261	S	21/11/28	15:41:40.9	0.1
ARR	1.3	261	P	21/11/28	15:41:21.7	-0.2



**30.11.2021. Zona seismica Vrancea**

$t_0 = 16:20:57$ ;  $\varphi = 45,79^\circ N$ ;  $\lambda = 26,72^\circ E$ ;  $h = 125 \text{ km}$ ;  $ML_v = 4,0$

Date	Time	Latitude	Longitude	Depth	Mag
2021/11/30	16:20:57.8	45.79	26.72	125	ML <sub>v</sub> 3.96

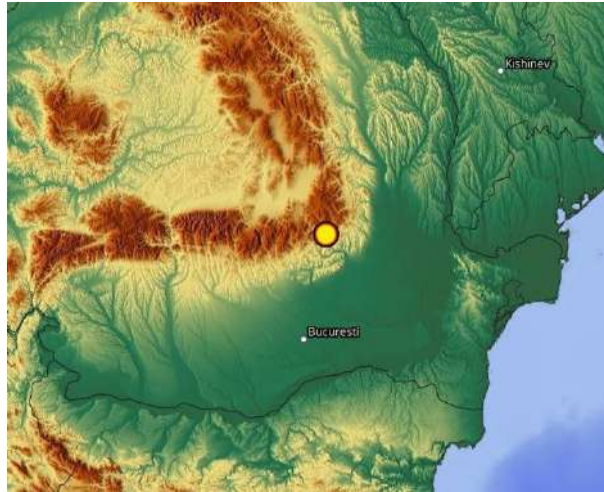
ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VRI	0.1	2	P	2021/11/30	16:21:15.5	0.4
VRI	0.1	2	S	2021/11/30	16:21:29.4	0.9
BISRR	0.2	182	P	2021/11/30	16:21:15.6	-0.3
MLR	0.6	241	P	2021/11/30	16:21:17.6	-0.3
ISR	0.7	191	P	2021/11/30	16:21:17.9	-0.2



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

TESR	0.7	356	P	2021/11/30	16:21:18.2	0.0
TESR	0.7	356	S	2021/11/30	16:21:32.8	-1.3
VOIR	1.2	254	P	2021/11/30	16:21:22.5	0.0
KIS	1.9	50	P	2021/11/30	16:21:30.9	0.9
SORM	2.6	25	P	2021/11/30	16:21:39.2	0.2
KPD	2.8	356	P	2021/11/30	16:21:41.1	-0.2
BAL3X	2.9	42	P	2021/11/30	16:21:43.1	-0.1
MI26	2.9	42	P	2021/11/30	16:21:43.3	0.2
LUBAR	4.2	9	P	2021/11/30	16:22:00.3	0.5
ZOL	4.2	344	P	2021/11/30	16:21:59.5	-1.1
XAEC3	4.5	359	P	2021/11/30	16:22:03.0	-1.2
MI29	4.7	9	P	2021/11/30	16:22:06.8	0.2
AKBB	5.2	18	P	2021/11/30	16:22:13.2	0.0
RNPP5	5.5	354	P	2021/11/30	16:22:17.3	0.3



**02.12.2021. Zona seismica Vrancea**

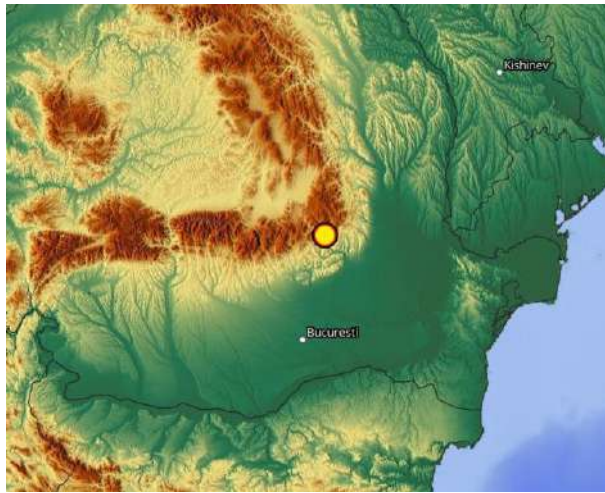
$t_0 = 16:20:54$ ;  $\varphi = 45,46^\circ N$ ;  $\lambda = 26,38^\circ E$ ;  $h = 125 \text{ km}$ ;  $ML_v = 2,8$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/02	16:20:54.8	45.46	26.38	125	MLv 2.79

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
MLR	0.3	276	P	2021/12/02	16:21:13.8	0.3
MLR	0.3	276	S	2021/12/02	16:21:28.2	0.3
PLOR	0.4	25	P	2021/12/02	16:21:13.9	-0.2
PLOR	0.4	25	S	2021/12/02	16:21:29.3	0.3
VRI	0.5	31	P	2021/12/02	16:21:14.4	0.1
VRI	0.5	31	S	2021/12/02	16:21:29.9	0.5
VOIR	0.9	269	P	2021/12/02	16:21:17.2	0.2
TESR	1.1	10	S	2021/12/02	16:21:34.7	-1.2
ARR	1.2	266	P	2021/12/02	16:21:20.4	0.7
HUMR	1.4	227	P	2021/12/02	16:21:21.2	-0.0
HUMR	1.4	227	S	2021/12/02	16:21:40.6	-1.1
TIRR	1.8	124	P	2021/12/02	16:21:26.2	0.7
TIRR	1.8	124	S	2021/12/02	16:21:49.2	-0.3
BURAR	2.3	340	P	2021/12/02	16:21:33.9	1.3
DRGR	2.9	299	P	2021/12/02	16:21:39.0	-0.6
SORM	3.0	26	P	2021/12/02	16:21:40.3	-0.9
MDVR	3.4	260	P	2021/12/02	16:21:46.0	-0.1

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



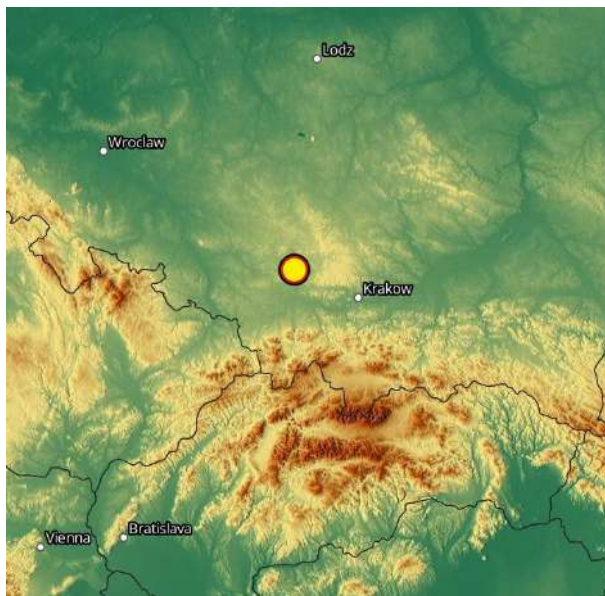
**04.12.2021. Poland**

$t_0 = 07:52:21$ ;  $\varphi = 50,28^\circ N$ ;  $\lambda = 18,82^\circ E$ ;  $h = 5 \text{ km}$ ;  $ML_v = 3,0$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/04	07:52:21.4	50.28	18.82	5	MLv 2.97

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
OJC	0.6	96	P	2021/12/04	07:52:33.8	0.1
OKC	0.6	225	P	2021/12/04	07:52:33.2	-0.6
MORC	1.0	239	P	2021/12/04	07:52:39.4	-0.6
MORC	1.0	239	S	2021/12/04	07:52:53.4	-0.0
KRLC	1.3	262	P	2021/12/04	07:52:45.2	0.1
KRLC	1.3	262	S	2021/12/04	07:53:03.1	0.2
NIE	1.3	131	P	2021/12/04	07:52:45.8	0.6
DPC	1.6	273	S	2021/12/04	07:53:12.2	0.7
OSTC	1.7	280	P	2021/12/04	07:52:50.6	-0.6
OSTC	1.7	280	S	2021/12/04	07:53:14.3	0.5
KSP	1.7	290	P	2021/12/04	07:52:51.1	-0.4
VYHS	1.8	180	P	2021/12/04	07:52:53.0	0.3
CHVC	1.8	281	P	2021/12/04	07:52:52.6	-0.2
UPC	1.8	278	P	2021/12/04	07:52:53.0	-0.1
PSZ	2.5	163	P	2021/12/04	07:53:02.6	0.3
KWP	2.6	103	P	2021/12/04	07:53:03.9	0.0
KOLS	2.6	120	P	2021/12/04	07:53:03.9	-0.4



# UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

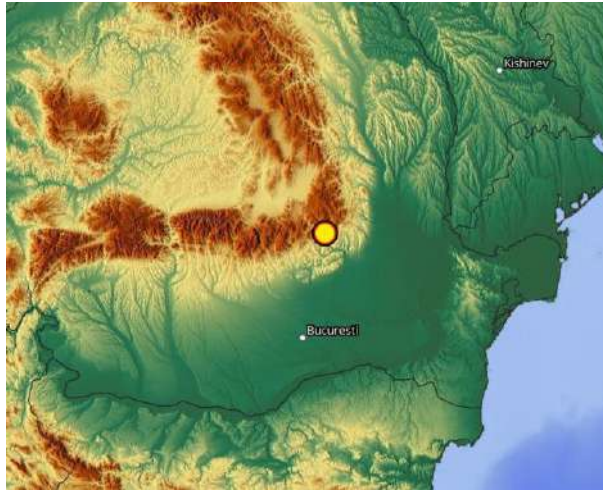
## 06.12.2021. Zona seismică Vrancea

$t_0 = 07:22:10$ ;  $\varphi = 45,82^\circ N$ ;  $\lambda = 26,65^\circ E$ ;  $h = 88 \text{ km}$ ;  $ML_v = 3,1$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/06	07:22:10.5	45.82	26.65	88	ML <sub>v</sub> 3.1

### ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VRI	0.1	48	P	2021/12/06	07:22:23.8	0.5
VRI	0.1	48	S	2021/12/06	07:22:33.1	-0.0
MLR	0.6	237	P	2021/12/06	07:22:26.8	-0.4
TESR	0.7	360	P	2021/12/06	07:22:27.4	-0.4
VOIR	1.2	252	P	2021/12/06	07:22:32.9	0.5
TIRR	1.8	137	P	2021/12/06	07:22:40.4	-0.2
KPD	2.7	357	P	2021/12/06	07:22:51.9	-0.6
LUBAR	4.2	10	P	2021/12/06	07:23:11.7	-0.1
AK13	5.1	18	P	2021/12/06	07:23:24.0	0.2
AK14	5.1	18	P	2021/12/06	07:23:24.5	0.4
AK12	5.1	18	P	2021/12/06	07:23:25.0	0.6
AK16	5.1	18	P	2021/12/06	07:23:24.6	-0.1
AK17	5.1	17	P	2021/12/06	07:23:24.6	-0.1
AK18	5.2	17	P	2021/12/06	07:23:25.0	-0.2
AK20	5.2	17	P	2021/12/06	07:23:25.3	0.0
AK22	5.2	17	P	2021/12/06	07:23:25.5	-0.2
AK23	5.2	18	P	2021/12/06	07:23:25.9	0.1



## 06.12.2021. Poland

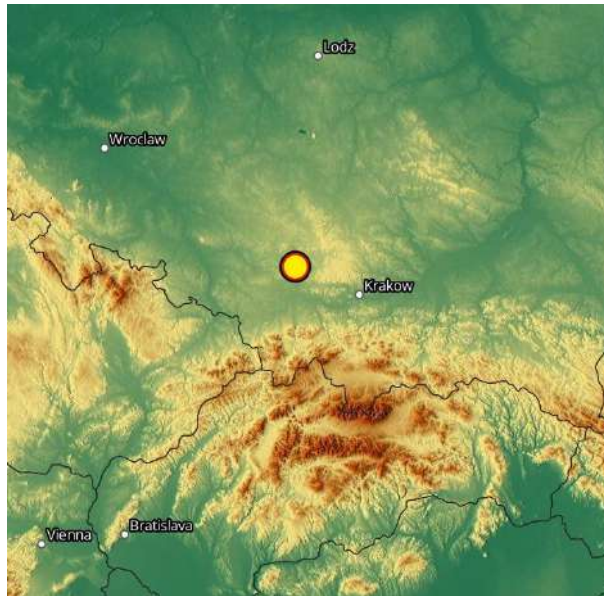
$t_0 = 18:46:41$ ;  $\varphi = 50,27^\circ N$ ;  $\lambda = 18,96^\circ E$ ;  $h = 5 \text{ km}$ ;  $ML_v = 2,9$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/06	18:46:41.4	50.27	18.96	5	ML <sub>v</sub> 2.85

### POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
OJC	0.5	95	P	2021/12/06	18:46:51.6	-0.4
OJC	0.5	95	S	2021/12/06	18:46:59.4	0.0
NIE	1.2	134	P	2021/12/06	18:47:04.3	0.3
NIE	1.2	134	S	2021/12/06	18:47:20.8	0.2
DPC	1.7	274	P	2021/12/06	18:47:11.9	0.5
DPC	1.7	274	S	2021/12/06	18:47:33.7	-0.3
KSP	1.8	290	P	2021/12/06	18:47:13.3	0.3
TRPA	3.2	131	P	2021/12/06	18:47:31.2	-0.8
KHC	3.7	254	P	2021/12/06	18:47:38.6	-0.4
BUR31	4.9	120	P	2021/12/06	18:47:55.4	-0.0
BUR07	4.9	120	P	2021/12/06	18:47:56.2	0.5

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



**07.12.2021. Zona seismică Vrancea**

$t_0 = 13:40:01$ ;  $\varphi = 45,70^\circ N$ ;  $\lambda = 26,80^\circ E$ ;  $h = 95 \text{ km}$ ;  $ML_v = 3,5$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/07	13:40:01.6	45.70	26.80	95	MLv 3.46

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VRI	0.2	342	P	2021/12/07	13:40:16.1	0.2
VRI	0.2	342	S	2021/12/07	13:40:27.4	0.5
PLOR	0.2	324	P	2021/12/07	13:40:16.0	0.0
PLOR	0.2	324	S	2021/12/07	13:40:27.5	0.4
MLR	0.6	251	P	2021/12/07	13:40:19.3	0.1
MLR	0.6	251	S	2021/12/07	13:40:32.0	-0.6
TESR	0.8	352	P	2021/12/07	13:40:19.4	-0.9
VOIR	1.3	258	P	2021/12/07	13:40:24.8	0.1
VOIR	1.3	258	S	2021/12/07	13:40:42.2	-0.4
ARR	1.6	258	P	2021/12/07	13:40:28.8	0.4
ARR	1.6	258	S	2021/12/07	13:40:48.9	-0.3
TIRR	1.7	137	P	2021/12/07	13:40:30.6	0.6
TIRR	1.7	137	S	2021/12/07	13:40:51.7	-0.3
HUMR	1.7	228	P	2021/12/07	13:40:30.8	0.1
BURAR	2.2	331	P	2021/12/07	13:40:37.3	0.3
SORM	2.7	23	P	2021/12/07	13:40:41.4	-1.1
DEV	2.7	275	P	2021/12/07	13:40:43.6	-0.1
KPD	2.9	355	P	2021/12/07	13:40:45.0	-0.4
AK13	5.1	16	P	2021/12/07	13:41:15.9	-0.1
AK10	5.2	18	P	2021/12/07	13:41:17.2	0.9
AK14	5.2	17	P	2021/12/07	13:41:16.5	0.1
AKBB	5.3	17	P	2021/12/07	13:41:18.1	0.5
AKBB	5.3	17	S	2021/12/07	13:42:17.1	-0.3



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

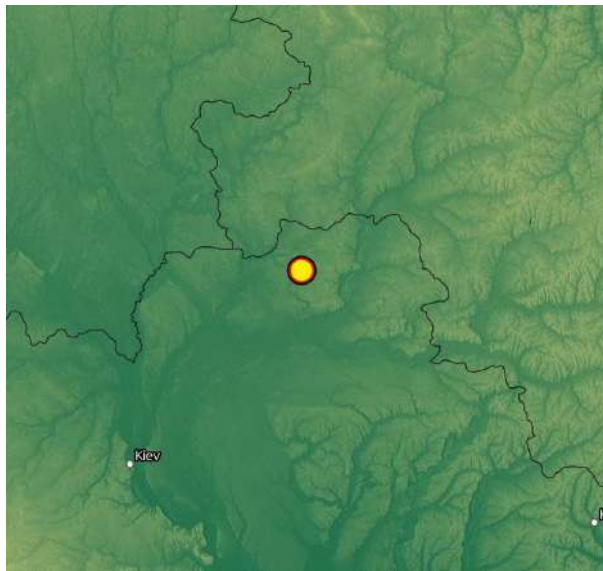
**07.12.2021. Ukraine, Chernihiv region**

$t_0 = 14:45:28$ ;  $\varphi = 51,94^\circ N$ ;  $\lambda = 32,61^\circ E$ ;  $h = 10 \text{ км}$ ;  $ML_v = 3,4$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/07	14:45:28.3	51.94	32.61	10	MLv 3.41

UKRAINE

Sta	Dist	EvAz	Phase	Date	Time	Res
AK03	2.4	242	Pn	2021/12/07	14:46:08.4	0.1
AK03	2.4	242	Sn	2021/12/07	14:46:39.0	-0.0
AKBB	2.5	241	Pn	2021/12/07	14:46:08.5	0.1
AKBB	2.5	241	Sn	2021/12/07	14:46:39.5	0.1
KIEV	2.5	241	Pn	2021/12/07	14:46:08.7	0.3
AK01	2.5	241	Pn	2021/12/07	14:46:08.2	-0.3
AK01	2.5	241	Sn	2021/12/07	14:46:39.6	-0.0
AK09	2.5	239	Pn	2021/12/07	14:46:08.6	0.0
AK09	2.5	239	Sn	2021/12/07	14:46:39.5	-0.2
AK08	2.5	239	Pn	2021/12/07	14:46:08.7	0.0
AK08	2.5	239	Sn	2021/12/07	14:46:39.9	0.0
AK04	2.5	242	Pn	2021/12/07	14:46:08.8	0.2
AK04	2.5	242	Sn	2021/12/07	14:46:39.8	-0.1
AK23	2.5	243	Pn	2021/12/07	14:46:08.7	0.0
AK23	2.5	243	Sn	2021/12/07	14:46:40.1	0.2
AK10	2.5	239	Pn	2021/12/07	14:46:09.0	0.0
AK10	2.5	239	Sn	2021/12/07	14:46:40.4	-0.0
AK22	2.5	243	Pn	2021/12/07	14:46:09.1	-0.0
AK21	2.5	244	Pn	2021/12/07	14:46:09.0	-0.3
AK12	2.5	240	Pn	2021/12/07	14:46:09.6	0.2
AK17	2.6	242	Pn	2021/12/07	14:46:09.9	0.1
AK19	2.6	243	Pn	2021/12/07	14:46:09.6	-0.3
AK13	2.6	241	Pn	2021/12/07	14:46:10.3	0.0
AK13	2.6	241	Sn	2021/12/07	14:46:42.7	-0.1
MI28	3.3	254	Pn	2021/12/07	14:46:19.4	0.1
OBN	4.0	35	Sn	2021/12/07	14:47:16.2	-0.1
XAEC5	4.0	250	Pn	2021/12/07	14:46:29.8	0.3
XAEC3	4.1	249	Sn	2021/12/07	14:47:19.5	-0.3
SSM6	4.6	162	Pn	2021/12/07	14:46:37.2	-0.1



**09.12.2021. Poland**

$t_0 = 21:37:33$ ;  $\varphi = 51,44^\circ N$ ;  $\lambda = 16,08^\circ E$ ;  $h = 7 \text{ км}$ ;  $ML_v = 4,1$

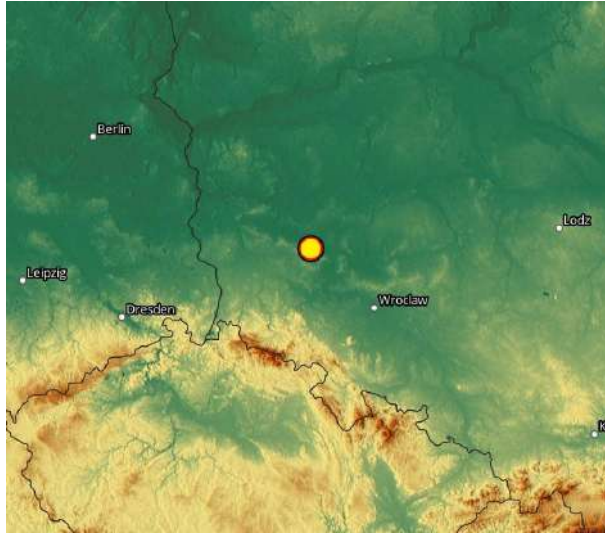
Date	Time	Latitude	Longitude	Depth	Mag
2021/12/09	21:37:33.0	51.44	16.08	7	MLv 4.06

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
KSP	0.6	167	P	2021/12/09	21:37:45.3	0.1
DPC	1.1	172	P	2021/12/09	21:37:53.6	-0.2
CLL	1.9	267	P	2021/12/09	21:38:06.3	0.1
KHC	2.8	216	P	2021/12/09	21:38:19.9	1.5
SOP	3.8	175	P	2021/12/09	21:38:31.0	-0.5

**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

SOP	3.8	175	Pn	2021/12/09	21:38:31.1	-0.5
CSKK	4.3	160	Pn	2021/12/09	21:38:39.2	0.1
KWP	4.6	111	P	2021/12/09	21:38:43.4	0.6
KWP	4.6	111	Pn	2021/12/09	21:38:42.5	-0.4
MORH	5.5	161	Pn	2021/12/09	21:38:55.3	0.1
KOVH	5.5	165	Pn	2021/12/09	21:38:55.4	-0.1
BFO	5.9	241	Pn	2021/12/09	21:38:59.9	-0.8
RNPP1	6.1	87	Pn	2021/12/09	21:39:03.2	0.3
RNPP8	6.1	87	Pn	2021/12/09	21:39:04.2	0.4
RNPP9	6.1	86	Pn	2021/12/09	21:39:03.4	-0.5
PABE	6.2	46	P	2021/12/09	21:39:05.1	-0.0
XAEC3	6.8	96	P	2021/12/09	21:39:12.4	-0.5
BUR31	7.0	119	Pn	2021/12/09	21:39:16.9	0.5



**17.12.2021. Zona seismică Vrancea**

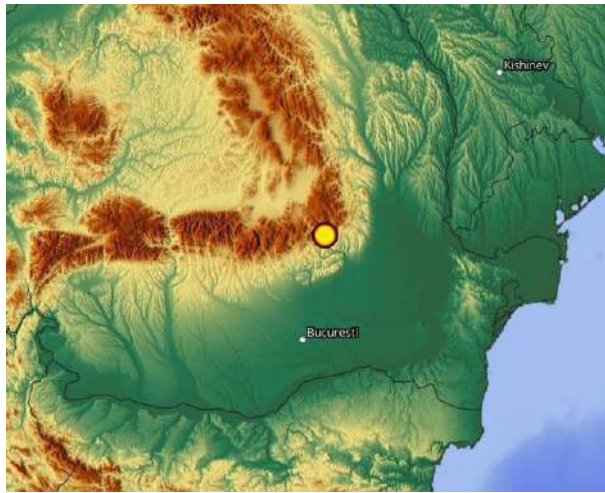
$t_0 = 00:04:17$ ;  $\varphi = 45,64^\circ N$ ;  $\lambda = 26,58^\circ E$ ;  $h = 104 \text{ km}$ ;  $mb = 4,1$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/17	00:04:17.9	45.64	26.58	104	mb 4,12

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.2	13	P	2021/12/17	00:04:33.7	0.1
VRI	0.2	25	P	2021/12/17	00:04:34.0	0.2
MLR	0.5	251	P	2021/12/17	00:04:34.8	-0.4
TESR	0.9	3	P	2021/12/17	00:04:38.1	0.3
VOIR	1.1	260	P	2021/12/17	00:04:39.7	-0.1
ARR	1.4	259	P	2021/12/17	00:04:43.3	0.0
HUMR	1.6	226	P	2021/12/17	00:04:45.0	-0.6
TIRR	1.8	132	P	2021/12/17	00:04:48.3	0.7
BURAR	2.2	335	P	2021/12/17	00:04:54.8	1.4
BURAR	2.2	335	S	2021/12/17	00:05:20.3	-0.8
CJR	2.3	298	P	2021/12/17	00:04:54.9	-0.0
DEV	2.6	277	P	2021/12/17	00:04:58.6	0.3
PLVB	2.7	213	P	2021/12/17	00:04:58.6	-0.6
SORM	2.8	25	P	2021/12/17	00:05:00.9	0.2
DRGR	2.9	295	P	2021/12/17	00:05:02.0	-0.7
KPD	2.9	358	P	2021/12/17	00:05:02.4	-0.3
SIRR	3.5	282	P	2021/12/17	00:05:10.5	0.3
MDVR	3.5	258	P	2021/12/17	00:05:10.0	-1.0
TRPA	3.7	313	P	2021/12/17	00:05:13.5	0.2
PHSR	4.1	170	P	2021/12/17	00:05:18.4	0.4
LUBAR	4.4	10	P	2021/12/17	00:05:21.8	0.0
KOLS	4.4	320	P	2021/12/17	00:05:23.9	1.3
RDO	4.6	190	P	2021/12/17	00:05:24.2	-0.5
XAEC2	4.6	2	P	2021/12/17	00:05:26.1	1.5
XAEC3	4.7	1	P	2021/12/17	00:05:25.0	-1.0
BSZH	4.7	293	P	2021/12/17	00:05:26.6	0.5
XAEC5	4.8	1	P	2021/12/17	00:05:28.7	1.1
MI29	4.9	10	P	2021/12/17	00:05:28.7	0.1
PSZ	5.1	299	P	2021/12/17	00:05:32.5	0.2
AKBB	5.4	18	P	2021/12/17	00:05:35.6	0.2
RNPP5	5.6	356	P	2021/12/17	00:05:38.9	0.1

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



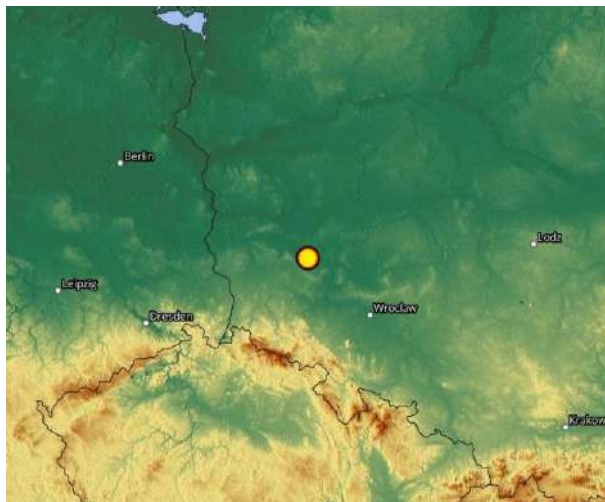
**17.12.2021. Poland**

$t_0 = 13:00:51$ ;  $\varphi = 51,54^\circ N$ ;  $\lambda = 16,17^\circ E$ ;  $h = 7 \text{ km}$ ;  $ML_V = 3,2$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/17	13:00:51.8	51.54	16.17	7	ML <sub>V</sub> 3.21

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
CHVC	1.0	184	LR	2021/12/17	13:01:26.8	-0.0
CHVC	1.0	184	P	2021/12/17	13:01:09.2	-1.0
OSTC	1.0	178	P	2021/12/17	13:01:09.9	-0.7
UPC	1.0	186	P	2021/12/17	13:01:10.6	-1.0
UPC	1.0	186	Sg	2021/12/17	13:01:26.3	0.1
DPC	1.2	175	P	2021/12/17	13:01:13.4	-0.5
DPC	1.2	175	Pg	2021/12/17	13:01:15.0	0.3
PVCC	1.4	226	P	2021/12/17	13:01:17.8	0.3
PVCC	1.4	226	Sg	2021/12/17	13:01:39.4	0.3
KRLC	1.5	163	Pb	2021/12/17	13:01:19.8	-0.2
RUE	1.7	303	Pg	2021/12/17	13:01:25.4	0.1
RUE	1.7	303	Pn	2021/12/17	13:01:22.5	0.0
RUE	1.7	303	Sg	2021/12/17	13:01:50.0	0.3
PRA	1.8	218	P	2021/12/17	13:01:23.2	-0.3
PRU	1.9	214	P	2021/12/17	13:01:24.0	0.1
HSKC	2.0	243	P	2021/12/17	13:01:25.9	0.5
MORC	2.0	153	P	2021/12/17	13:01:25.5	0.0
MORC	2.0	153	Sg	2021/12/17	13:01:58.0	1.0
OKC	2.1	143	Lg	2021/12/17	13:01:58.5	0.4
OKC	2.1	143	P	2021/12/17	13:01:27.6	0.1
NKC	2.7	242	P	2021/12/17	13:01:35.3	-0.2
KHC	2.9	216	P	2021/12/17	13:01:38.7	0.1
CKRC	3.0	204	P	2021/12/17	13:01:39.4	0.1



## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

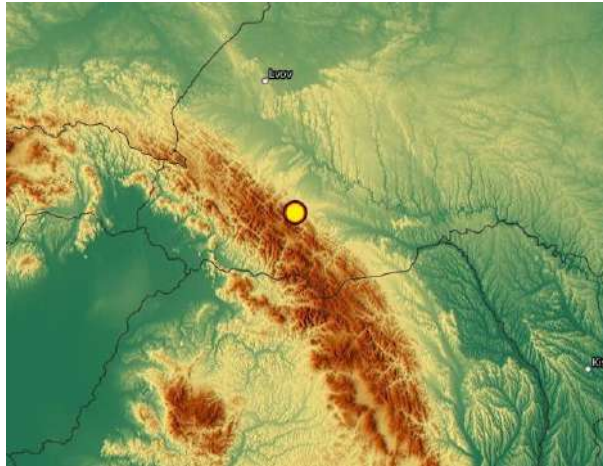
### 21.12.2021. Ukraine, Ivano-Frankivsk region

$t_0 = 15:06:25$ ;  $\varphi = 48,61^\circ N$ ;  $\lambda = 24,48^\circ E$ ;  $h = 4 \text{ km}$ ;  $ML_V = 2,6$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/21	15:06:24.7	48.61	24.48	4	MLv 2.64

UKRAINE

Sta	Dist	EvAz	Phase	Date	Time	Res
BURAR	1.1	152	Pg	2021-12-21	15:06:46.0	0.9
KPD	1.3	90	Pg	2021-12-21	15:06:49.0	-1.2
KPD	1.3	90	Sg	2021-12-21	15:07:08.4	-0.2
TRPA	1.4	251	Pg	2021-12-21	15:06:49.9	-0.7
UZH	1.4	273	Pg	2021-12-21	15:06:51.7	-0.5
KOLS	1.5	285	Pg	2021-12-21	15:06:54.0	0.9
KWP	1.6	313	Pg	2021-12-21	15:06:54.2	-0.3
LUBAR	2.5	57	Sn	2021-12-21	15:07:39.3	0.3
TESR	2.5	143	Pn	2021-12-21	15:07:06.7	0.0
SORM	2.6	98	Sn	2021-12-21	15:07:41.1	-0.1
AK13	3.6	54	Pn	2021-12-21	15:07:21.3	-0.2
AK13	3.6	54	pP	2021-12-21	15:07:23.1	0.7
AK10	3.7	55	Pn	2021-12-21	15:07:22.2	-0.6
AK04	3.7	53	Pn	2021-12-21	15:07:23.4	0.3
AKBB	3.8	54	Pn	2021-12-21	15:07:23.8	0.5



### 26.12.2021. Ukraine, Chernivtsi region

$t_0 = 21:45:21$ ;  $\varphi = 48,52^\circ N$ ;  $\lambda = 27,35^\circ E$ ;  $h = 4 \text{ km}$ ;  $ML_V = 2,4$

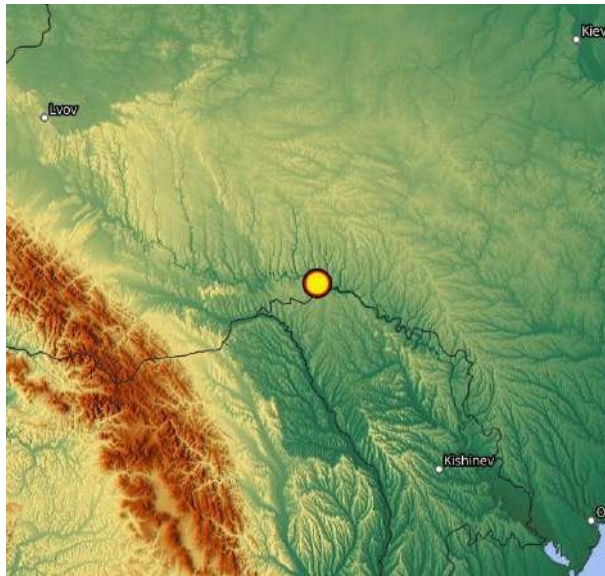
Date	Time	Latitude	Longitude	Depth	Mag
2021/12/26	21:45:21.3	48.52	27.35	4	MLv 2.4

UKRAINE

Sta	Dist	EvAz	Phase	Date	Time	Res
KPD	0.6	275	P	21/12/26	21:45:32.1	-1.0
KPD	0.6	275	S	21/12/26	21:45:41.5	0.2
SORM	0.8	119	P	21/12/26	21:45:36.4	0.2
SORM	0.8	119	S	21/12/26	21:45:46.3	-0.7
LUBAR	1.4	11	P	21/12/26	21:45:46.6	-0.7
BURAR	1.7	240	S	21/12/26	21:46:14.7	1.0
XAEC3	1.8	346	P	21/12/26	21:45:53.0	-0.6
XAEC5	1.9	348	S	21/12/26	21:46:20.1	-0.6
AK06	2.4	29	S	21/12/26	21:46:32.6	0.7
AK06	2.4	29	P	21/12/26	21:46:01.6	0.3
AK17	2.4	26	S	21/12/26	21:46:33.9	0.9
AK17	2.4	26	P	21/12/26	21:46:02.2	0.3



UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



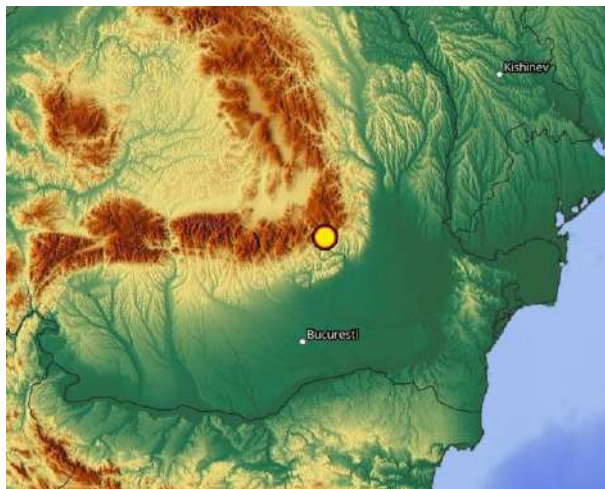
**26.12.2021. Zona seismica Vrancea**

$t_0 = 21:45:23$ ;  $\varphi = 45,62^\circ N$ ;  $\lambda = 26,44^\circ E$ ;  $h = 140 \text{ km}$ ;  $ML_v = 2,4$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/26	21:45:23.5	45.62	26.44	140	MLv 2.39

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.3	32	P	2021/12/26	21:45:43.4	-0.3
PLOR	0.3	32	S	2021/12/26	21:46:00.0	0.7
VRI	0.3	39	P	2021/12/26	21:45:43.7	-0.2
VRI	0.3	39	S	2021/12/26	21:45:59.6	-0.1
MLR	0.4	250	P	2021/12/26	21:45:44.0	-0.2
MLR	0.4	250	S	2021/12/26	21:45:59.8	-0.4
TESR	0.9	9	P	2021/12/26	21:45:46.6	-0.2
VOIR	1.0	260	P	2021/12/26	21:45:47.5	0.2
ARR	1.3	259	P	2021/12/26	21:45:50.6	0.3
HUMR	1.5	224	P	2021/12/26	21:45:52.5	0.0
TIRR	1.8	129	P	2021/12/26	21:45:56.2	0.2
TIRR	1.8	129	S	2021/12/26	21:46:21.1	-0.1
CJR	2.3	300	P	2021/12/26	21:46:01.5	0.4
DEV	2.5	277	P	2021/12/26	21:46:04.6	0.6
PLVB	2.6	211	P	2021/12/26	21:46:05.2	-0.0
DRGR	2.8	296	P	2021/12/26	21:46:07.6	-0.8



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

**28.12.2021. Zona seismică Vrancea**

$t_0 = 11:53:05$ ;  $\varphi = 45,53^\circ N$ ;  $\lambda = 26,52^\circ E$ ;  $h = 118 \text{ km}$ ;  $ML_v = 3,3$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/28	11:53:05.4	45.53	26.52	118	MLv 3.33

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.3	17	P	2021/12/28	11:53:23.4	-0.0
VRI	0.4	24	P	2021/12/28	11:53:23.8	0.2
MLR	0.4	264	P	2021/12/28	11:53:24.0	0.1
MLR	0.4	264	S	2021/12/28	11:53:37.9	-0.2
TESR	1.0	5	P	2021/12/28	11:53:27.8	0.6
VOIR	1.0	265	P	2021/12/28	11:53:28.1	0.4
ARR	1.3	263	P	2021/12/28	11:53:30.8	-0.2
HUMR	1.5	228	P	2021/12/28	11:53:32.3	-0.4
TIRR	1.7	128	P	2021/12/28	11:53:36.1	0.6
TIRR	1.7	128	S	2021/12/28	11:53:58.3	-0.5
BURAR	2.3	337	P	2021/12/28	11:53:42.1	-0.4
PLVB	2.5	213	P	2021/12/28	11:53:45.7	0.1
SORM	2.9	25	P	2021/12/28	11:53:49.9	-0.3



**28.12.2021. Zona seismică Vrancea**

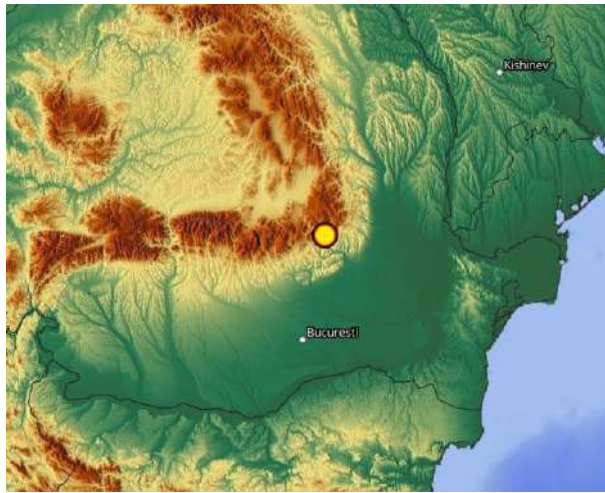
$t_0 = 15:35:37$ ;  $\varphi = 45,34^\circ N$ ;  $\lambda = 26,10^\circ E$ ;  $h = 128 \text{ km}$ ;  $ML_v = 3,1$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/28	15:35:37.3	45.34	26.10	128	MLv 3.05

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
MLR	0.2	324	P	2021/12/28	15:35:56.3	0.6
PLOR	0.6	36	P	2021/12/28	15:35:58.0	-0.2
VRI	0.7	39	P	2021/12/28	15:35:58.4	0.0
VOIR	0.8	278	P	2021/12/28	15:35:58.7	-0.0
ARR	1.0	272	P	2021/12/28	15:36:00.6	0.1
ARR	1.0	272	S	2021/12/28	15:36:18.4	-0.0
HUMR	1.1	225	P	2021/12/28	15:36:01.8	0.3
HUMR	1.1	225	S	2021/12/28	15:36:19.3	-0.9
TESR	1.2	18	P	2021/12/28	15:36:03.2	0.6
TIRR	1.9	117	P	2021/12/28	15:36:09.4	-0.1
PLVB	2.2	209	P	2021/12/28	15:36:14.5	0.6
BURAR	2.4	345	P	2021/12/28	15:36:16.2	0.1
SORM	3.2	28	P	2021/12/28	15:36:26.2	-0.2
LUBAR	4.7	13	P	2021/12/28	15:36:45.7	-0.9

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



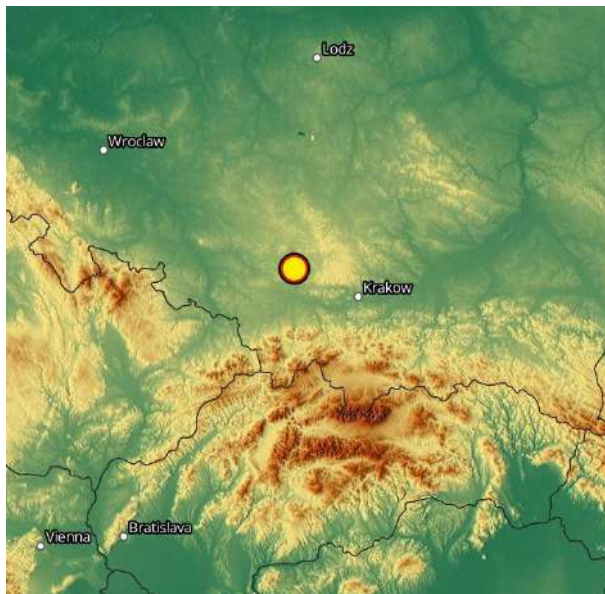
**28.12.2021. Poland**

$t_0 = 19:13:38$ ;  $\varphi = 50,22^\circ N$ ;  $\lambda = 18,98^\circ E$ ;  $h = 3 \text{ km}$ ;  $ML_V = 3,0$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/28	19:13:38.9	50.22	18.98	3	MLv 3.0

POLAND

Sta	Dist	EvAz	Phase	Date	Time	Res
OJC	0.5	90	P	2021/12/28	19:13:48.8	-0.4
OJC	0.5	90	S	2021/12/28	19:13:56.5	0.3
MORC	1.0	245	P	2021/12/28	19:13:58.1	-0.5
MORC	1.0	245	S	2021/12/28	19:14:12.6	0.0
NIE	1.2	133	P	2021/12/28	19:14:00.9	-0.1
VYHS	1.7	183	P	2021/12/28	19:14:09.2	-0.4
VYHS	1.7	183	S	2021/12/28	19:14:32.6	-0.1
KSP	1.8	291	P	2021/12/28	19:14:11.6	0.6
BEL	2.0	35	P	2021/12/28	19:14:13.2	-0.0
KECS	2.0	150	P	2021/12/28	19:14:13.7	0.2
MODS	2.2	212	P	2021/12/28	19:14:16.3	0.5
PSZ	2.4	165	P	2021/12/28	19:14:19.0	0.2
SRO	2.5	191	P	2021/12/28	19:14:20.0	0.2
KWP	2.5	102	P	2021/12/28	19:14:20.0	-0.1
KOLS	2.5	120	P	2021/12/28	19:14:20.3	-0.1
BUD	2.7	179	P	2021/12/28	19:14:23.7	-0.0
TRPA	3.1	131	P	2021/12/28	19:14:28.9	-0.2
GKP	3.2	341	P	2021/12/28	19:14:30.2	-0.3
MORH	4.0	183	P	2021/12/28	19:14:40.9	-0.4
KOVH	4.2	188	P	2021/12/28	19:14:43.6	0.1
DRGR	4.2	143	P	2021/12/28	19:14:44.4	0.2
SIRR	4.3	155	P	2021/12/28	19:14:45.9	0.1
KPD	5.2	106	P	2021/12/28	19:14:57.0	0.1



**UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021**

**29.12.2021. Zona seismică Vrancea**

$t_0 = 03:21:22$ ;  $\varphi = 45,44^\circ N$ ;  $\lambda = 27,45^\circ E$ ;  $h = 18 \text{ km}$ ;  $ML_v = 2,1$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/28	03:21:22.4	45.44	27.45	18	MLv 2.1

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VRI	0.7	311	P	2021/12/29	03:21:35.9	0.0
PLOR	0.7	307	P	2021/12/29	03:21:36.6	0.2
PLOR	0.7	307	S	2021/12/29	03:21:46.6	-0.1
MLR	1.1	273	P	2021/12/29	03:21:41.8	-0.2
TIRR	1.2	145	P	2021/12/29	03:21:44.0	0.0
TIRR	1.2	145	S	2021/12/29	03:22:00.1	-0.0
TESR	1.2	333	P	2021/12/29	03:21:43.9	-0.3
VOIR	1.7	271	P	2021/12/29	03:21:50.2	-0.7
HUMR	2.0	243	P	2021/12/29	03:21:54.6	-0.2
ARR	2.0	269	P	2021/12/29	03:21:56.2	1.1
SORM	2.8	13	P	2021/12/29	03:22:05.9	0.1



**29.12.2021. Ukraine, Ivano-Frankivsk region**

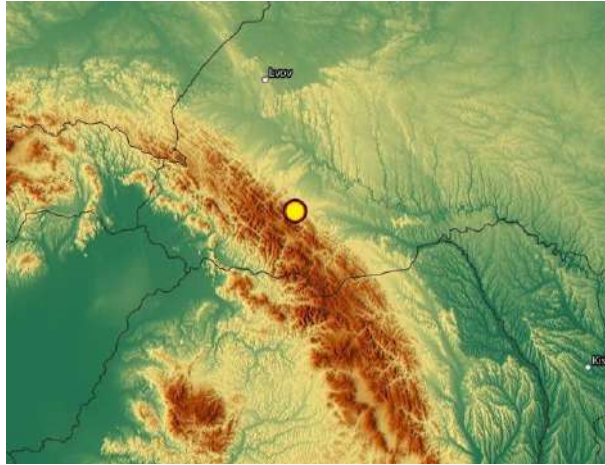
$t_0 = 14:17:34$ ;  $\varphi = 48,59^\circ N$ ;  $\lambda = 24,51^\circ E$ ;  $h = 3 \text{ km}$ ;  $ML_v = 2,4$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/29	14:17:34.7	48.59	24.51	3	MLv 2.4

UKRAINE

Sta	Dist	EvAz	Phase	Date	Time	Res
BURAR	1.0	154	P	2021/12/29	14:17:55.0	0.5
KPD	1.3	90	P	2021/12/29	14:17:58.4	-0.1
KPD	1.3	90	S	2021/12/29	14:18:15.6	-0.3
TRPA	1.4	252	P	2021/12/29	14:17:58.8	-1.5
KOLS	1.5	284	P	2021/12/29	14:18:03.3	1.0
KWP	1.6	312	P	2021/12/29	14:18:03.2	-0.0
DRGR	2.2	215	P	2021/12/29	14:18:12.3	0.8
XAEC2	2.2	42	P	2021/12/29	14:18:12.7	0.6
XAEC3	2.2	38	P	2021/12/29	14:18:10.8	-1.5
XAEC3	2.2	38	S	2021/12/29	14:18:39.7	-1.2
XAEC1	2.2	38	P	2021/12/29	14:18:13.5	1.3
XAEC5	2.3	37	P	2021/12/29	14:18:13.3	-0.8
LUBAR	2.5	56	sP	2021/12/29	14:18:17.7	0.1
LUBAR	2.5	56	P	2021/12/29	14:18:16.7	0.4
LUBAR	2.5	56	S	2021/12/29	14:18:47.4	-0.8
SORM	2.6	98	P	2021/12/29	14:18:17.0	-0.4
SORM	2.6	98	S	2021/12/29	14:18:49.9	-0.3
RNPP5	2.8	18	P	2021/12/29	14:18:19.4	-0.8
MI29	2.8	48	S	2021/12/29	14:18:58.1	1.6
MI29	2.8	48	P	2021/12/29	14:18:20.4	-0.5
MI28	3.1	40	S	2021/12/29	14:19:04.4	1.2
AKBB	3.7	53	P	2021/12/29	14:18:33.7	0.7

UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021



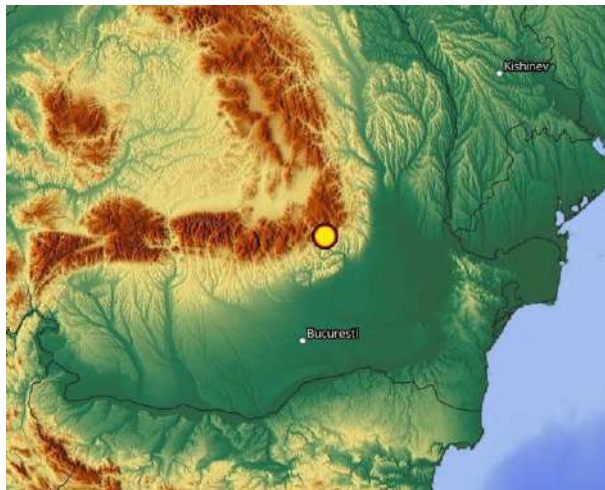
**29.12.2021. Zona seismica Vrancea**

$t_0 = 23:20:37$ ;  $\varphi = 45,48^\circ N$ ;  $\lambda = 26,74^\circ E$ ;  $h = 131 \text{ km}$ ;  $ML_v = 2,5$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/29	23:20:37.8	45.48	26.74	131	MLv 2.46

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
PLOR	0.4	351	P	2021/12/29	23:20:58.8	1.2
VRI	0.4	359	P	2021/12/29	23:20:58.0	0.4
VRI	0.4	359	S	2021/12/29	23:21:12.6	-0.3
MLR	0.6	272	P	2021/12/29	23:20:58.4	-0.0
MLR	0.6	272	S	2021/12/29	23:21:14.4	-0.0
TESR	1.0	357	P	2021/12/29	23:21:01.2	-0.0
VOIR	1.2	269	P	2021/12/29	23:21:02.9	0.2
ARR	1.5	266	P	2021/12/29	23:21:06.1	0.2
HUMR	1.6	233	P	2021/12/29	23:21:08.0	1.2
TIRR	1.6	130	P	2021/12/29	23:21:07.1	0.2
BURAR	2.4	335	P	2021/12/29	23:21:17.2	0.2
CJR	2.5	301	P	2021/12/29	23:21:18.5	0.4
DEV	2.7	280	P	2021/12/29	23:21:20.9	-0.0
SORM	2.9	22	P	2021/12/29	23:21:22.5	-0.4
DRGR	3.1	297	P	2021/12/29	23:21:24.6	-1.1
DJES	3.1	256	P	2021/12/29	23:21:25.0	-0.7



**30.12.2021. Zona seismica Vrancea**

$t_0 = 14:57:00$ ;  $\varphi = 45,85^\circ N$ ;  $\lambda = 26,86^\circ E$ ;  $h = 74 \text{ km}$ ;  $ML_v = 3,7$

Date	Time	Latitude	Longitude	Depth	Mag
2021/12/30	14:57:00.3	45.85	26.86	74	MLv 3.7

ROMANIA

Sta	Dist	EvAz	Phase	Date	Time	Res
VRI	0.1	278	P	2021/12/30	14:57:12.0	0.4

## UKRAINIAN NATIONAL SEISMOLOGICAL BULLETIN 2021

VRI	0.1	278	S	2021/12/30	14:57:20.4	0.1
PLOR	0.1	269	P	2021/12/30	14:57:11.8	-0.2
PLOR	0.1	269	S	2021/12/30	14:57:21.1	0.1
TESR	0.7	348	P	2021/12/30	14:57:15.4	-0.9
MLR	0.7	241	P	2021/12/30	14:57:16.3	-0.5
VOIR	1.3	252	P	2021/12/30	14:57:22.8	-0.4
ARR	1.6	253	P	2021/12/30	14:57:27.4	0.2
TIRR	1.8	141	P	2021/12/30	14:57:29.6	0.5
HUMR	1.9	226	P	2021/12/30	14:57:30.2	-0.1
BURAR	2.1	328	P	2021/12/30	14:57:34.2	0.6
CJR	2.4	292	P	2021/12/30	14:57:37.5	-0.1
SORM	2.5	24	P	2021/12/30	14:57:38.7	-0.0
DEV	2.8	272	P	2021/12/30	14:57:42.5	0.2
SIRR	3.6	278	P	2021/12/30	14:57:53.9	-0.3
KOLS	4.4	316	P	2021/12/30	14:58:04.8	0.6
MI29	4.6	8	P	2021/12/30	14:58:08.5	1.0
AK07	5.0	18	P	2021/12/30	14:58:12.0	-0.1
AK14	5.0	17	P	2021/12/30	14:58:12.6	-0.2
MI28	5.1	6	P	2021/12/30	14:58:13.5	-0.7
RNPP8	5.5	353	P	2021/12/30	14:58:19.7	-0.2

