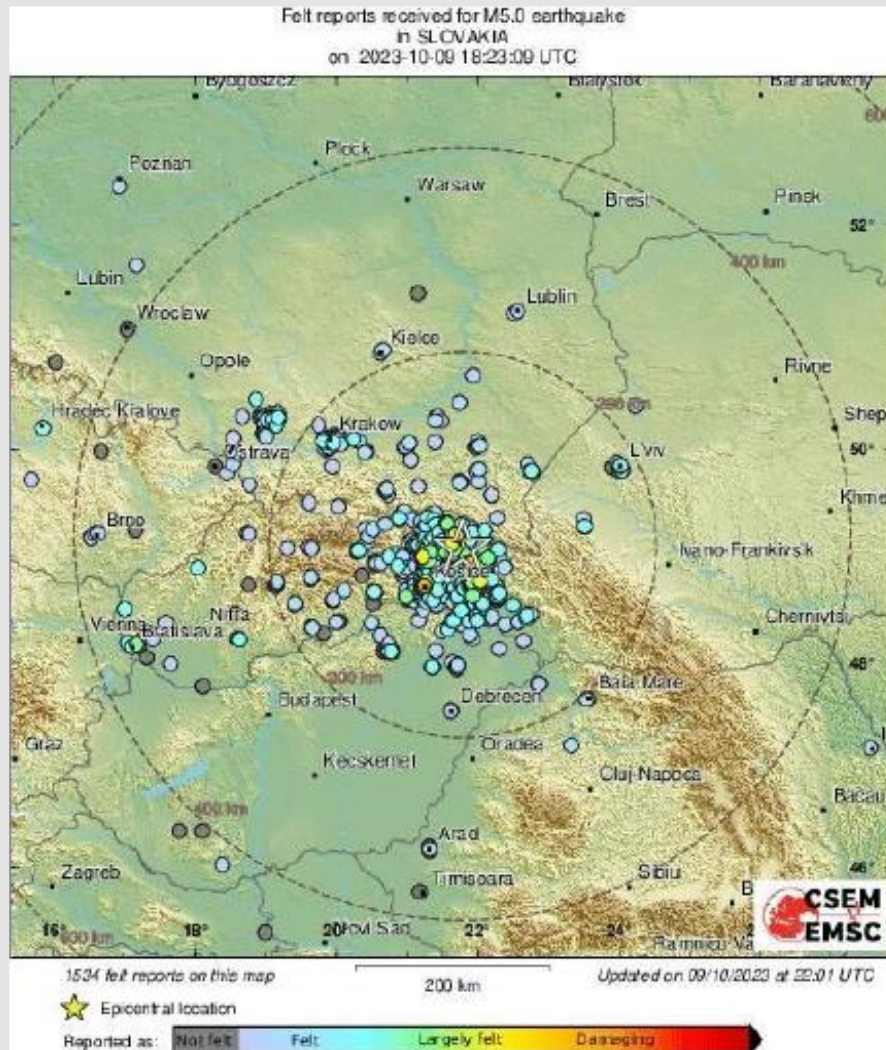




Seismic Activity and the event Oct 9th, 2023, M5.0 in Slovakia

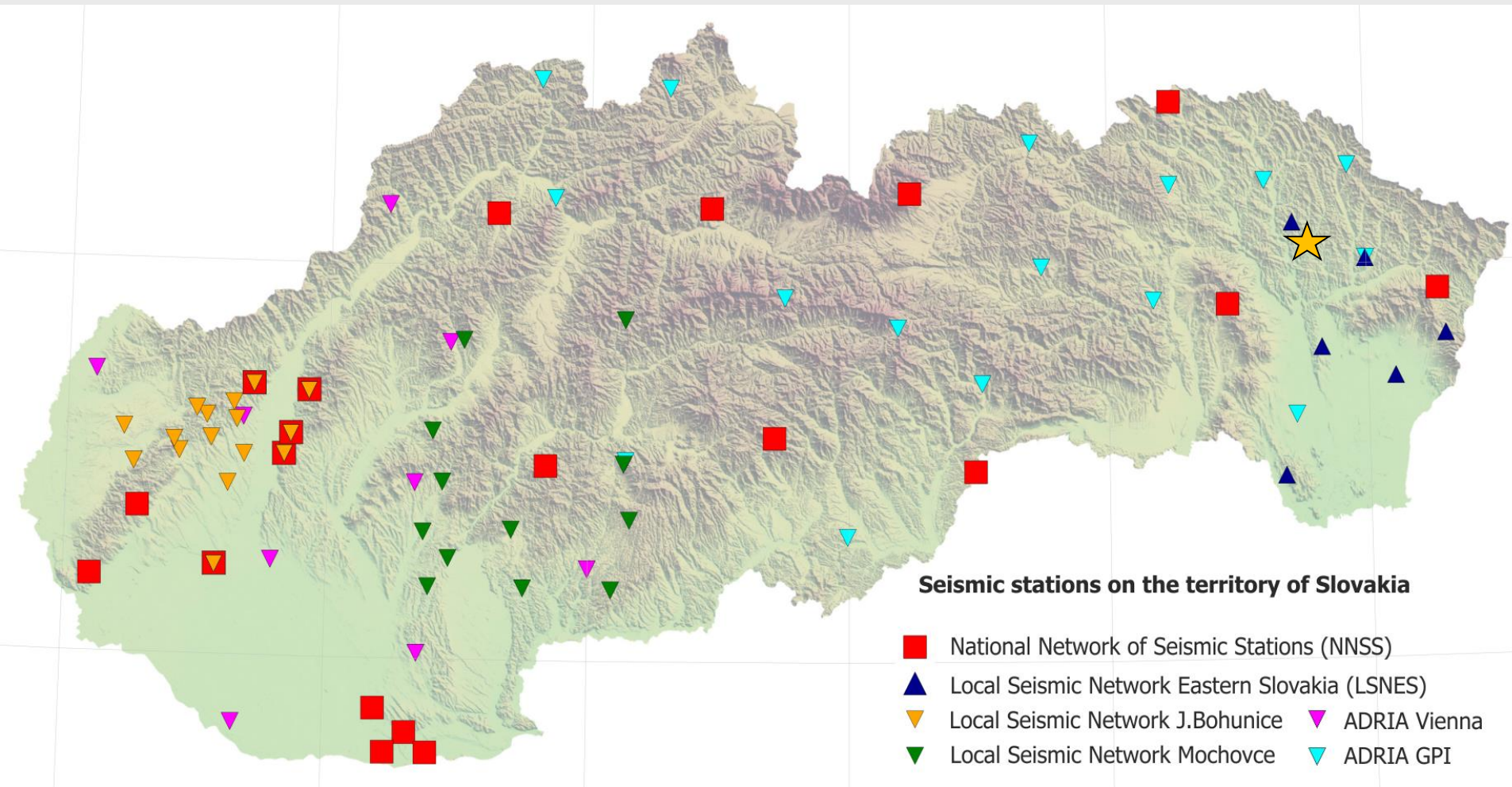
Lucia Fojtíková, Kristian Csicsay, Andrej Cipciar, Peter Pažák,
Jozef Kristek, Miriam Kristeková, Róbert Kysel, Martin Gális,
Renata Lukešová, Luděk Vecsey, Hana Kampfová Exnerová,
Petr Jedlička, Dmytro Malytsky

Earthquake Oct 9th, 2023, M5.0 in Slovakia



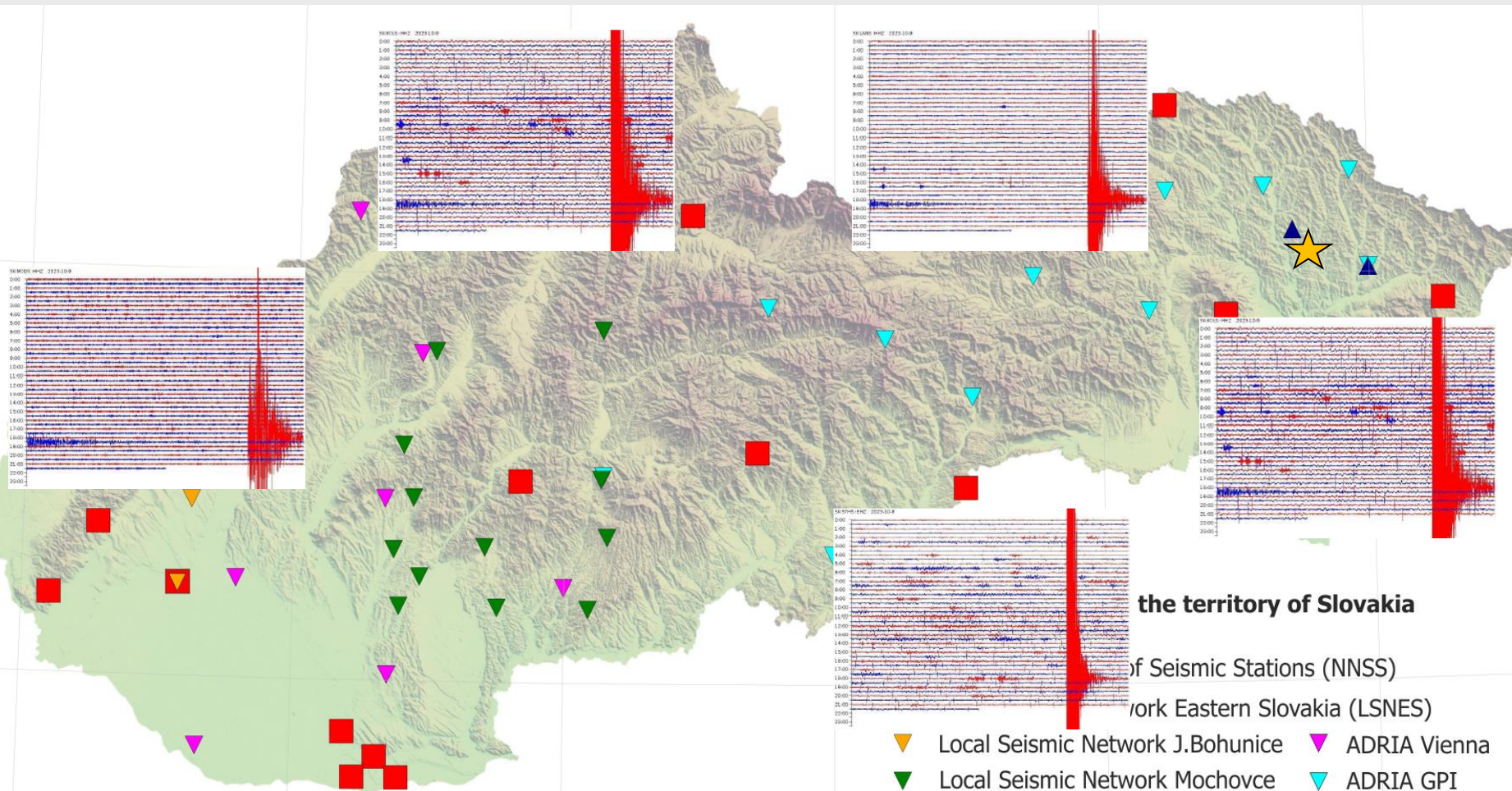
Seismic stations on the territory of Slovakia

- ❑ 2 local seismic networks around the nuclear power plants Mochovce and Jaslovské Bohunice
- ❑ 5 seismic stations in cooperation between Progseis, ESI SAV and IRSM ASCR
- ❑ 2 seismic networks in international cooperation under the ADRIA Array initiative



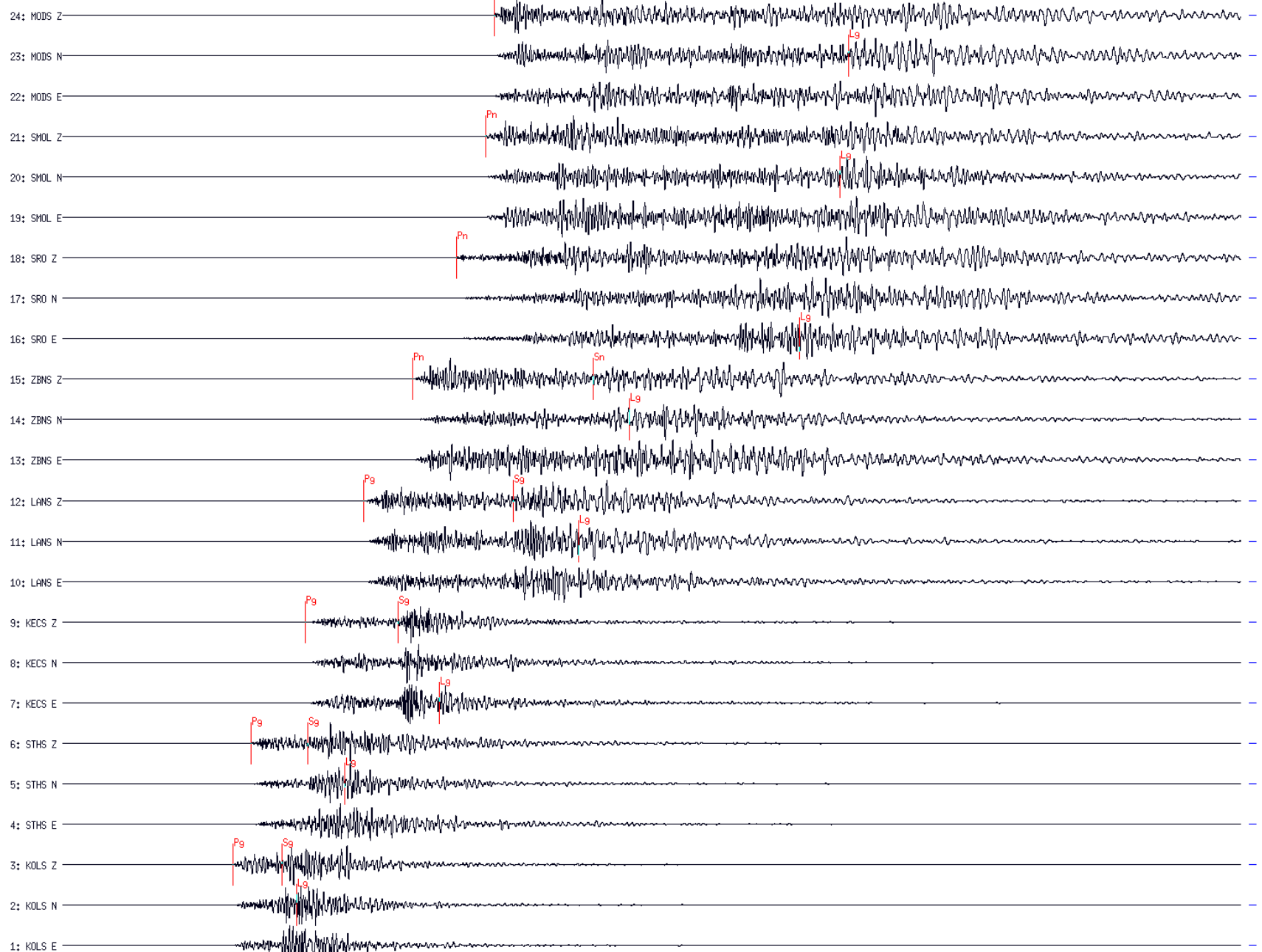
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9-OCT-2023_18:24:41.677 >3.04< Filter: SHM_BP_1S_10HZ_3

LastCmd: Set Time Mdw

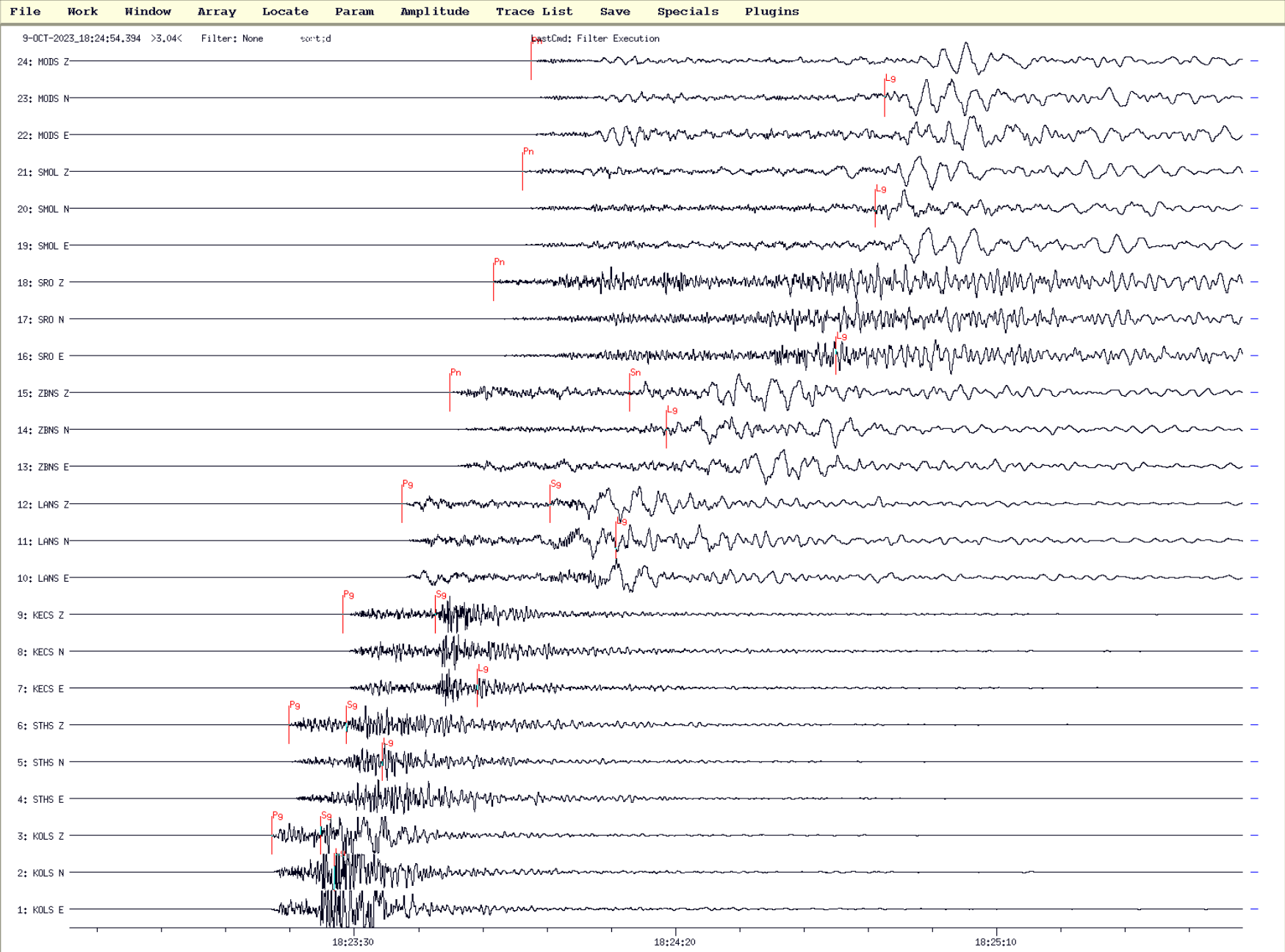


18:23:35

18:24:25

18:25:15

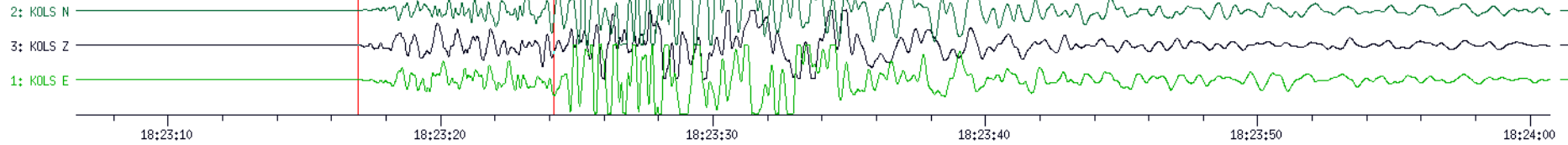
Earthquake Oct 9th, 2023, M5.0 in Slovakia



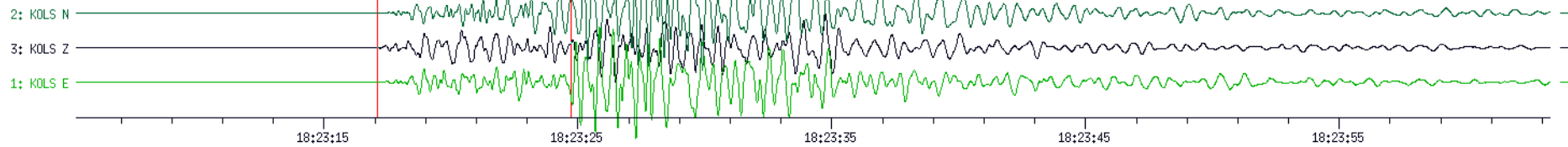
Earthquake Oct 9th, 2023, M5.0 in Slovakia

KOLS

width 54.09 sec min:-4269764.00 max:4381312.00



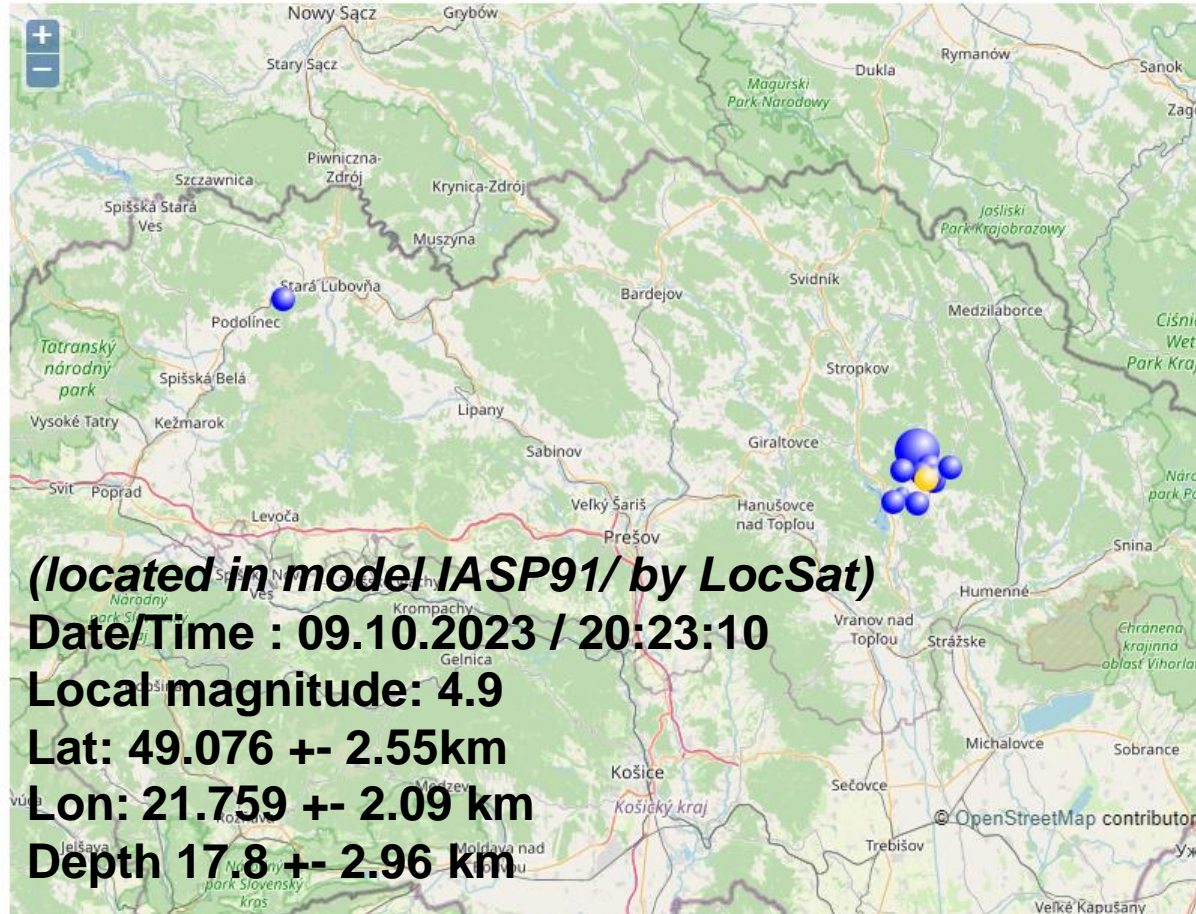
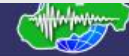
width 58.06 sec min:-4063239.75 max:3825200.50



Earthquake Oct 9th, 2023, M5.0 in Slovakia

LOKÁLNE ZEMETRASENIA

Lokalizácie z Národnej siete seizmických staníc



Zoznam lokálnych zemetrasení:

dátum, lokálny čas, magnitúda
09.11.2023, 12:44:04, MI = 2.1
08.11.2023, 16:24:45, MI = 1.3
06.11.2023, 00:37:37, MI = 1.2
30.10.2023, 14:59:14, MI = --
29.10.2023, 05:04:01, MI = 1.1
26.10.2023, 07:43:26, MI = 1.1
25.10.2023, 22:51:52, MI = -0.1
25.10.2023, 09:50:45, MI = 1.3
21.10.2023, 07:10:39, MI = 0.5
18.10.2023, 23:03:37, MI = 1.2
18.10.2023, 03:20:36, MI = 0.9
17.10.2023, 21:28:07, MI = 1.4
17.10.2023, 08:00:04, MI = 1.5
16.10.2023, 06:23:29, MI = 2.8
11.10.2023, 23:04:17, MI = 3.2
11.10.2023, 04:15:36, MI = 1.5
09.10.2023, 20:39:49, MI = 1.3
09.10.2023, 20:23:10, MI = 4.9
07.10.2023, 14:59:25, MI = 1.9
28.09.2023, 13:34:11, MI = 1.4
28.09.2023, 05:37:10, MI = 1.4
27.09.2023, 10:51:02, MI = 1.2
23.09.2023, 19:26:18, MI = 1.0
13.09.2023, 01:24:55, MI = 2.1

(located in model IASP91/ by LocSat)

Date/Time : 09.10.2023 / 20:23:10

Local magnitude: 4.9

Lat: 49.076 +- 2.55km

Lon: 21.759 +- 2.09 km

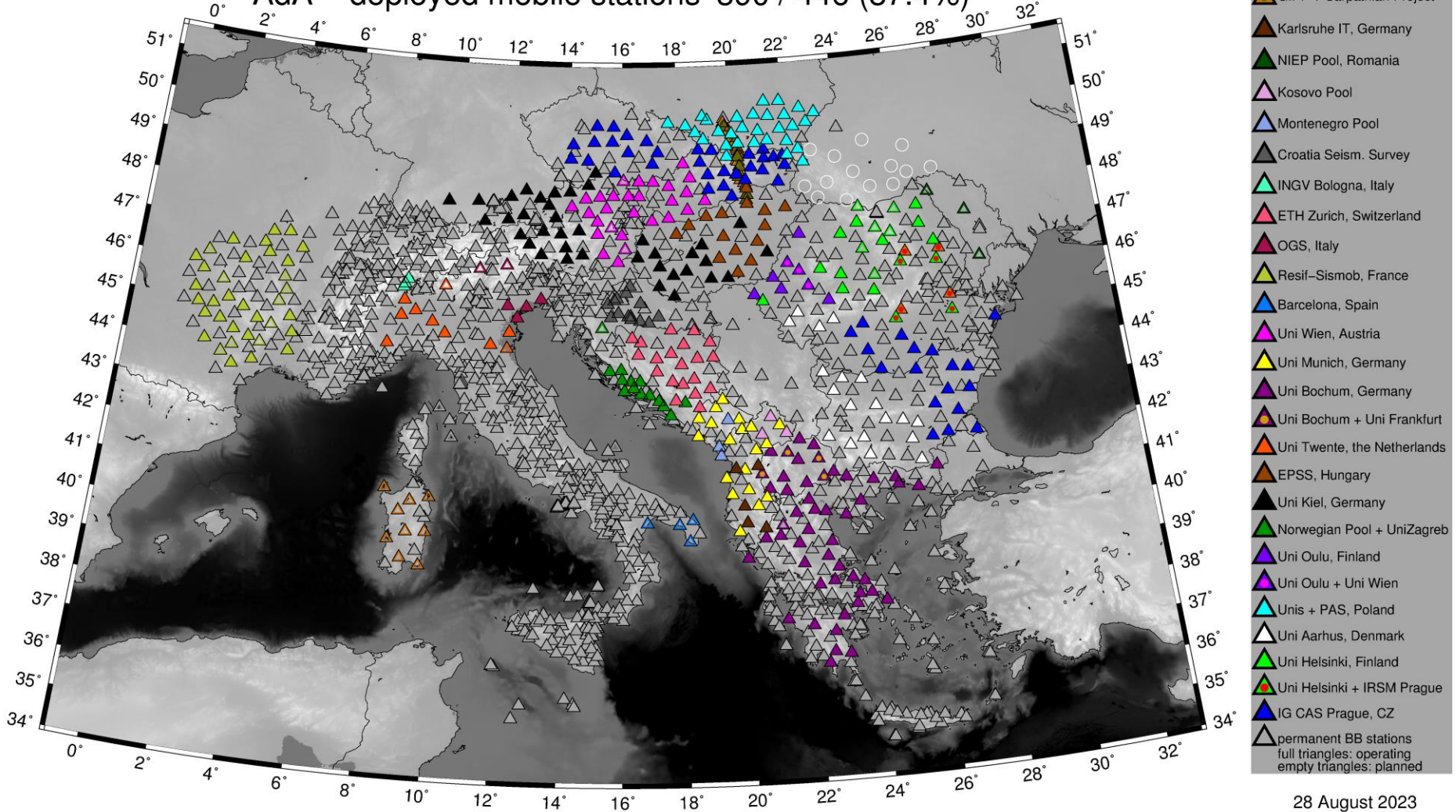
Depth 17.8 +- 2.96 km

● last 2 days ● last 2 weeks ● last 2 months

local magnitude: ○ below 1 ○ 1 - 2 ○ 2 - 3 ○ 3 - 4 ○ more than 4

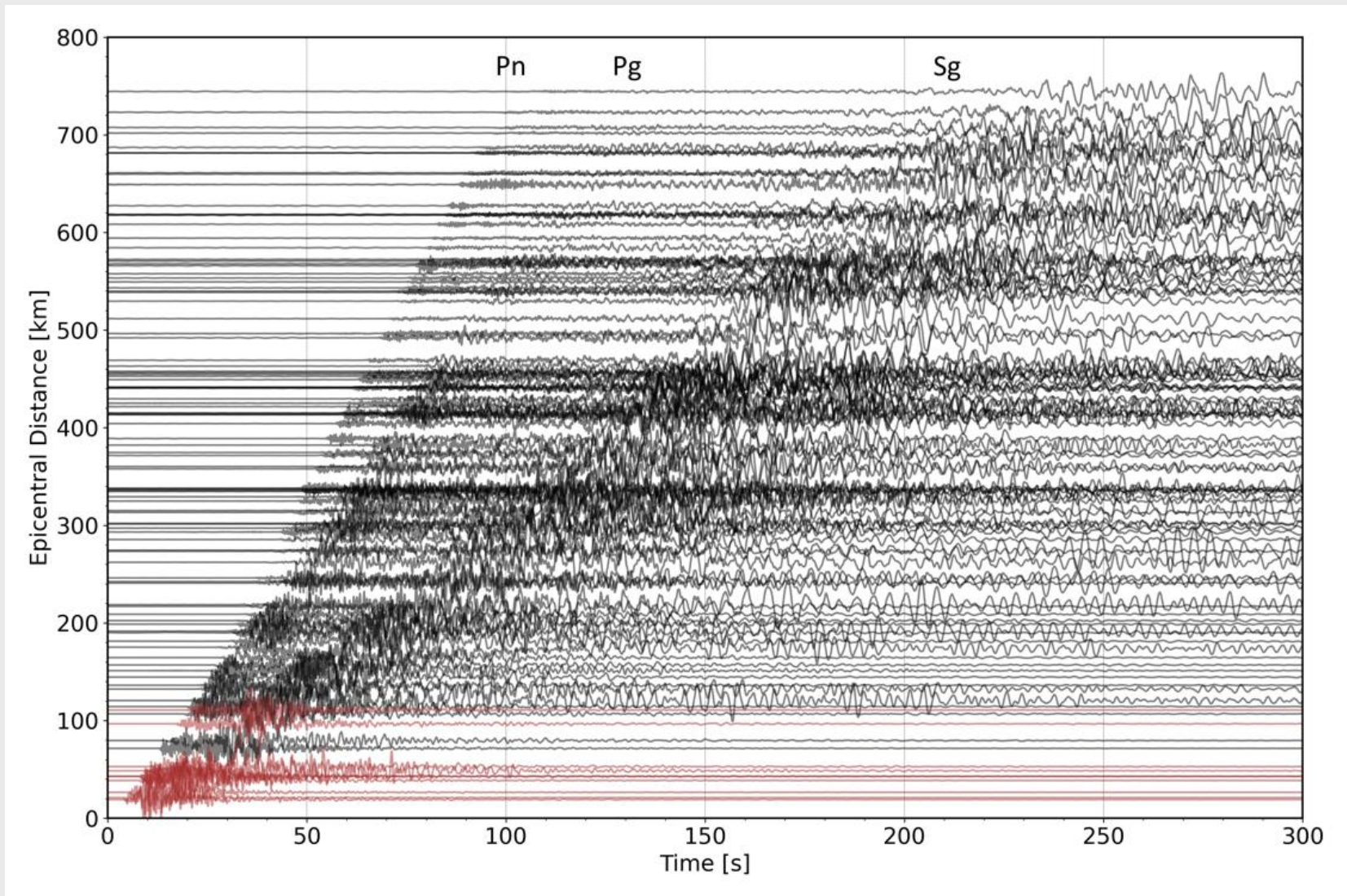
AdriaArray

AdA – deployed mobile stations 390 / 446 (87.4%)

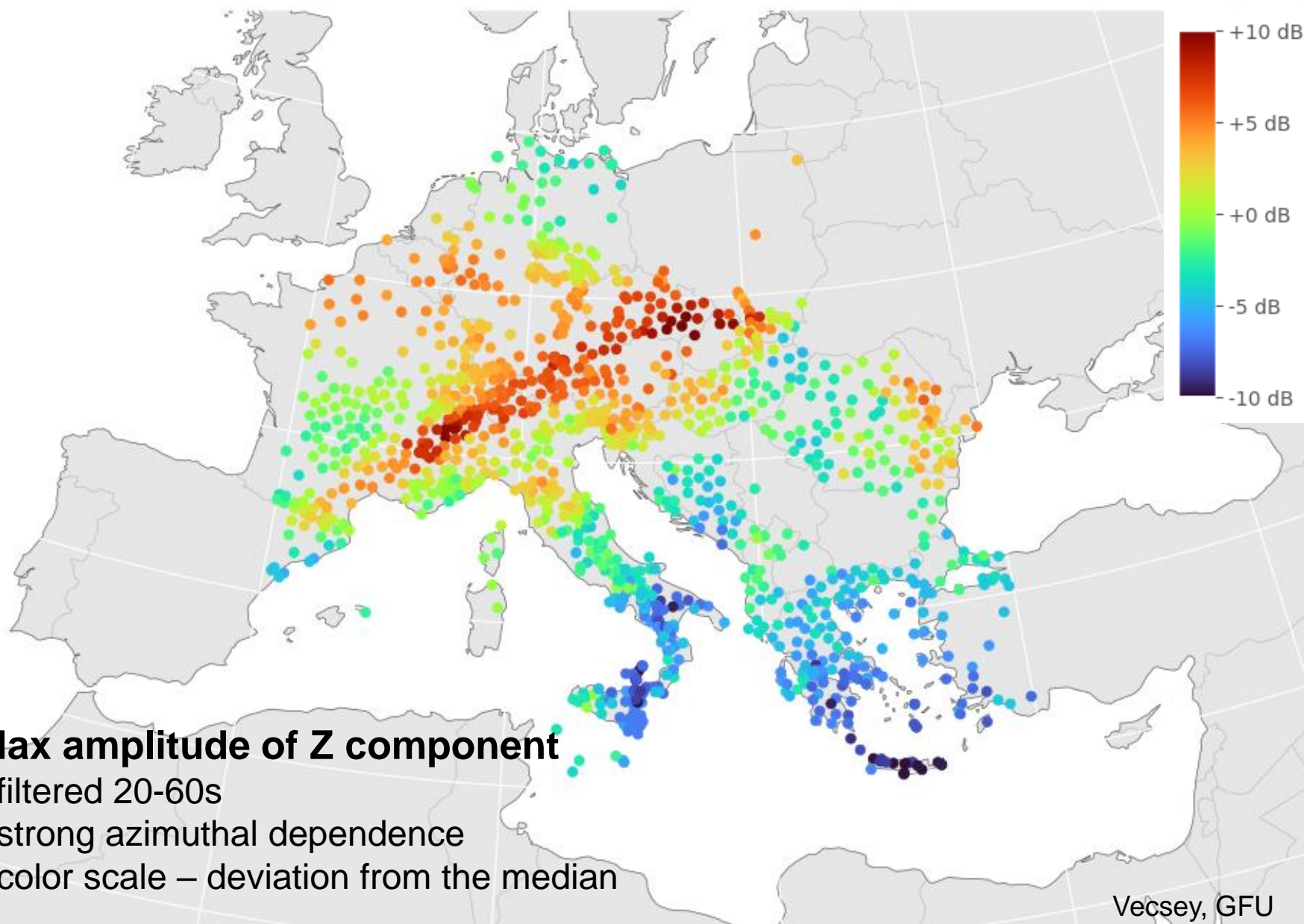


Earthquake Oct 9th, 2023, M5.0 in Slovakia

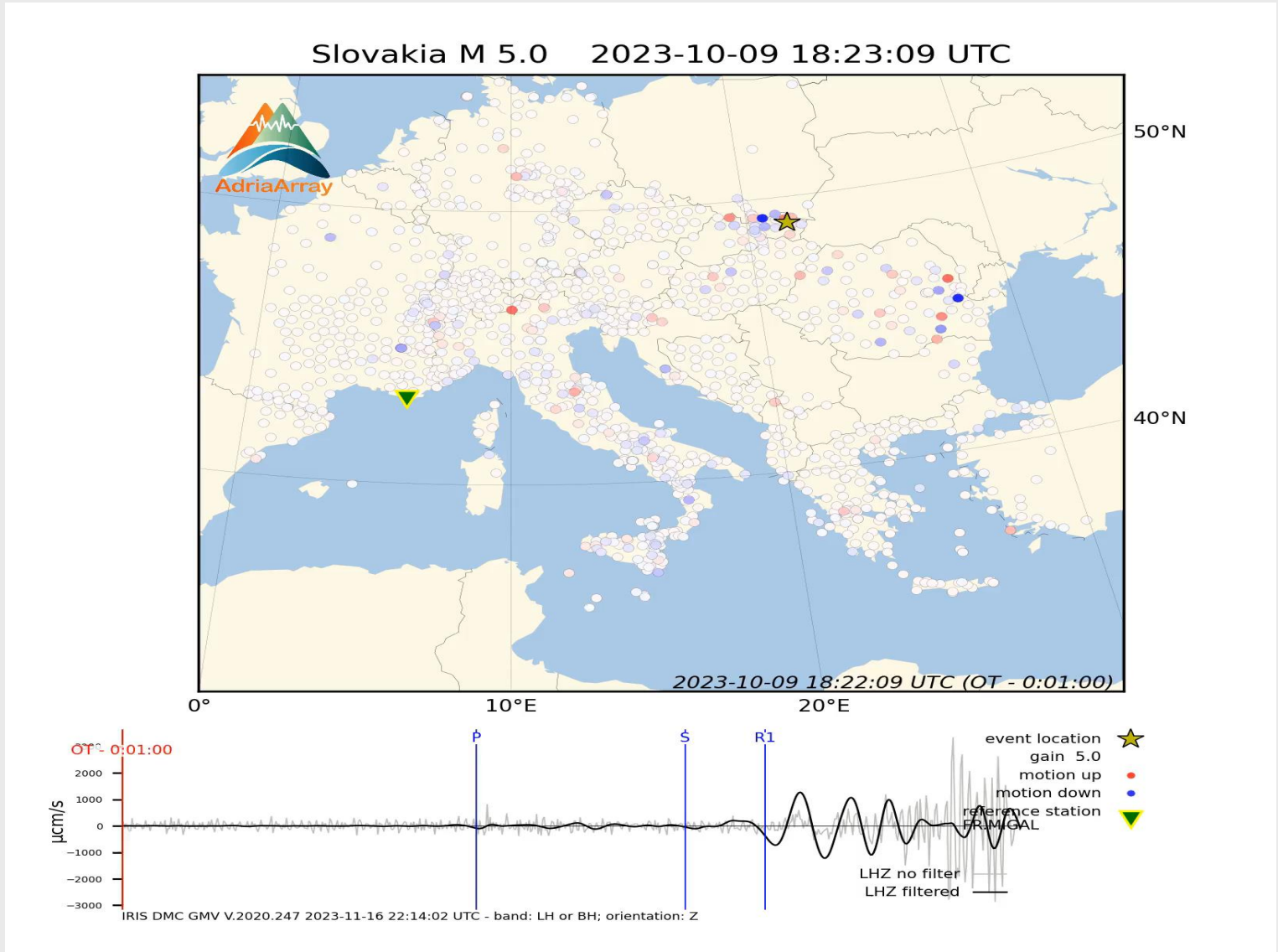
Z component



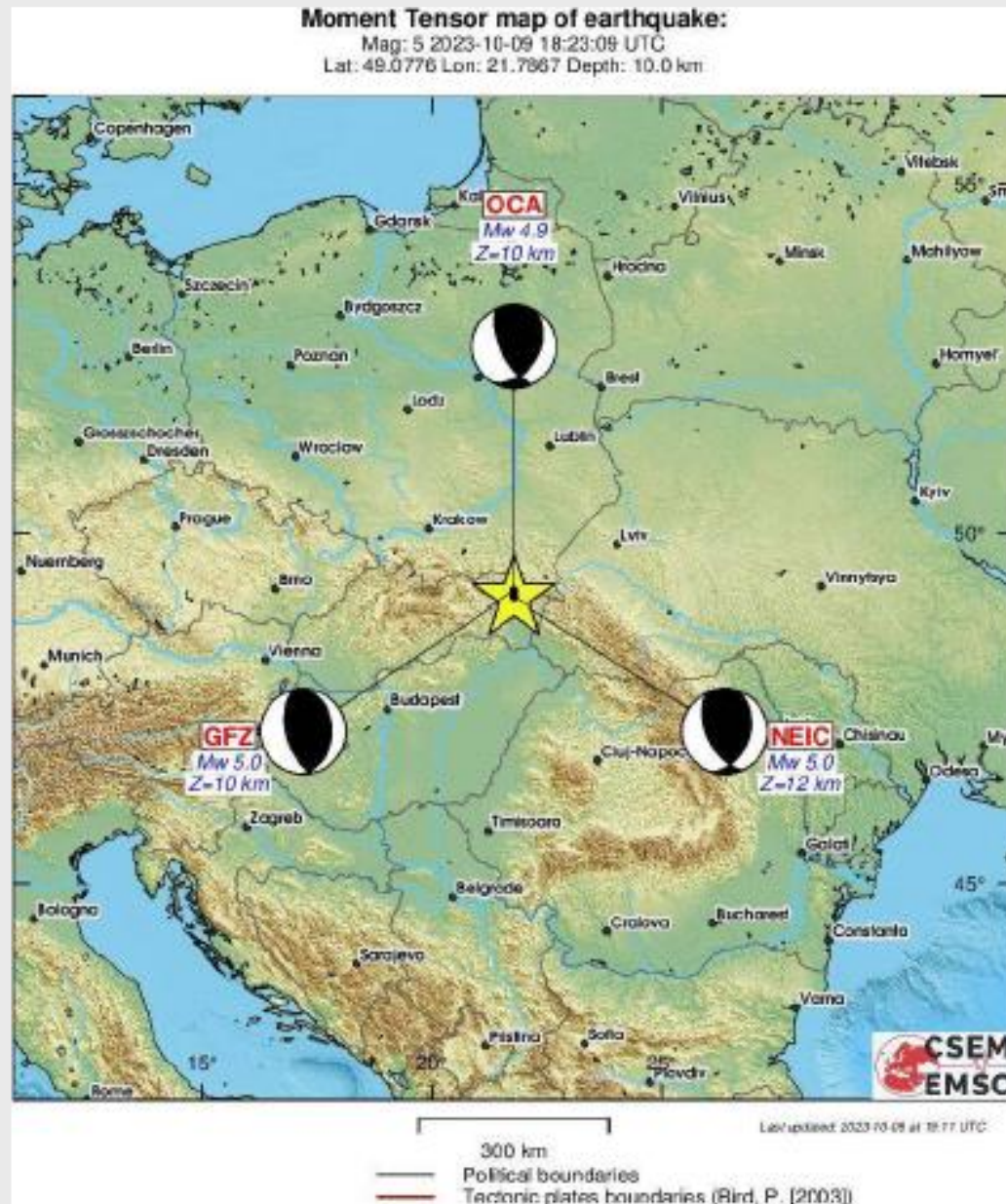
Earthquake Oct 9th, 2023, M5.0 in Slovakia



Earthquake Oct 9th, 2023, M5.0 in Slovakia



Earthquake Oct 9th, 2023, M5.0 in Slovakia



Earthquake Oct 9th, 2023, M5.0 in Slovakia

Location by PACASE – AdriaArray stations

(located in local model derived from CELL06 and CELL11 / by fastHYPO)

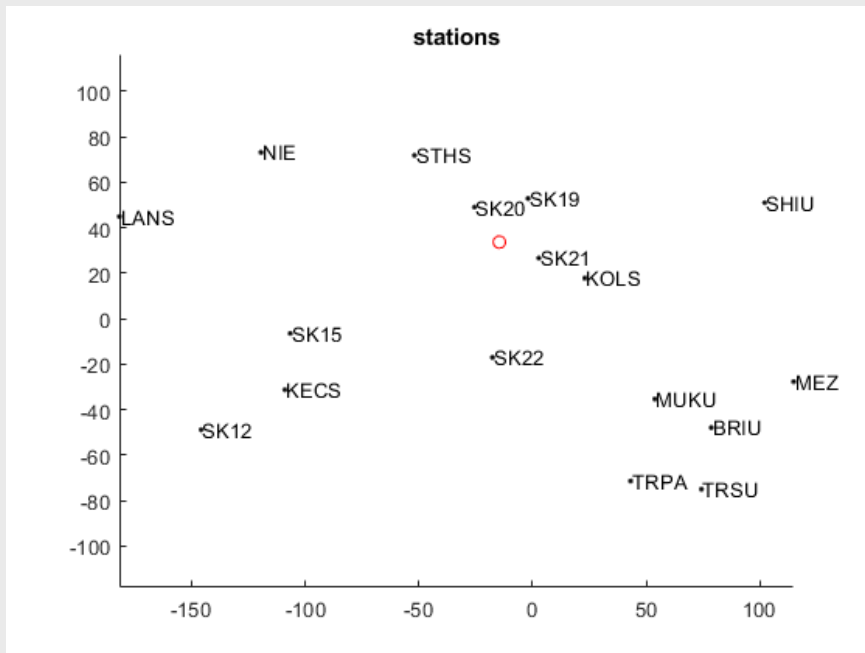
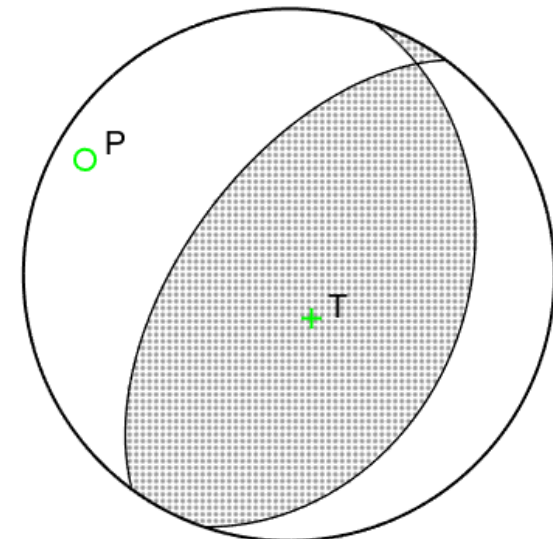
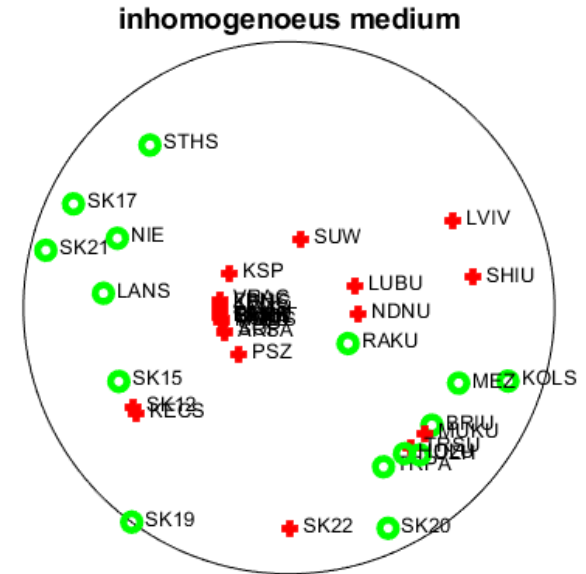
Date/Time : 09.10.2023 / 20:23:08.9

Local magnitude: 4.9

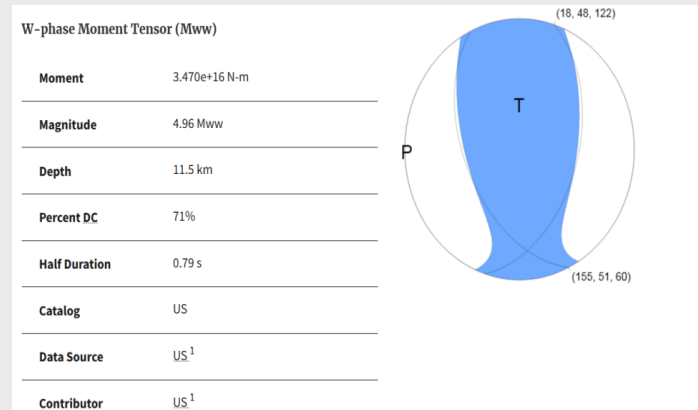
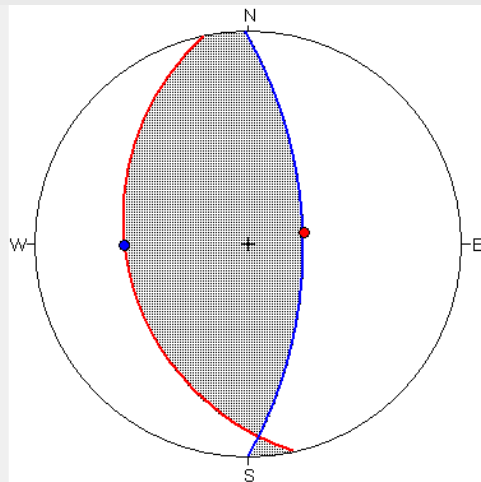
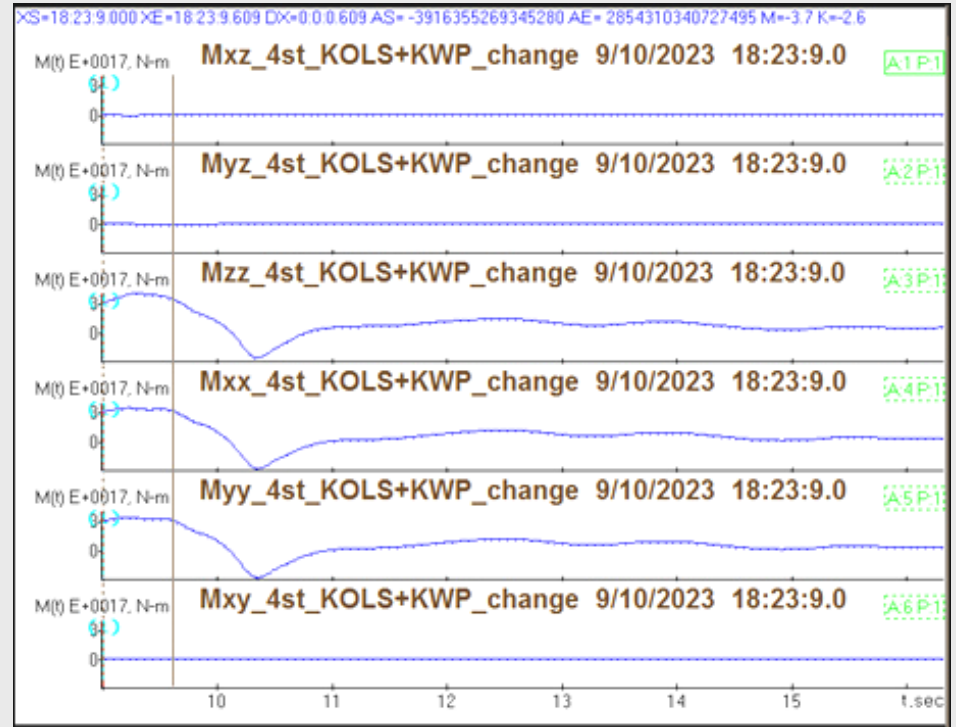
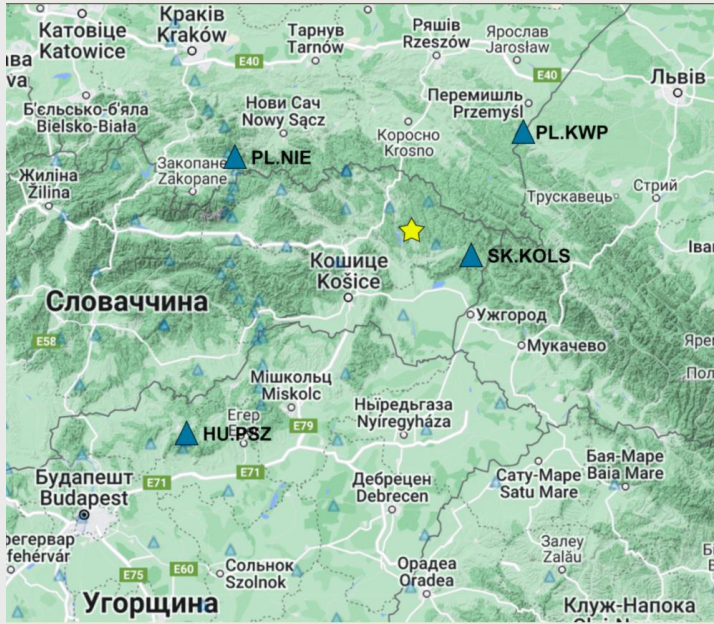
Lat: 49.0575+- 0.8556km

Lon:21.7173+- 0.7508km

Depth 7.32+- 2.02km



Earthquake Oct 9th, 2023, M5.0 in Slovakia



EventID: Plane 1: (168, 30, 80)

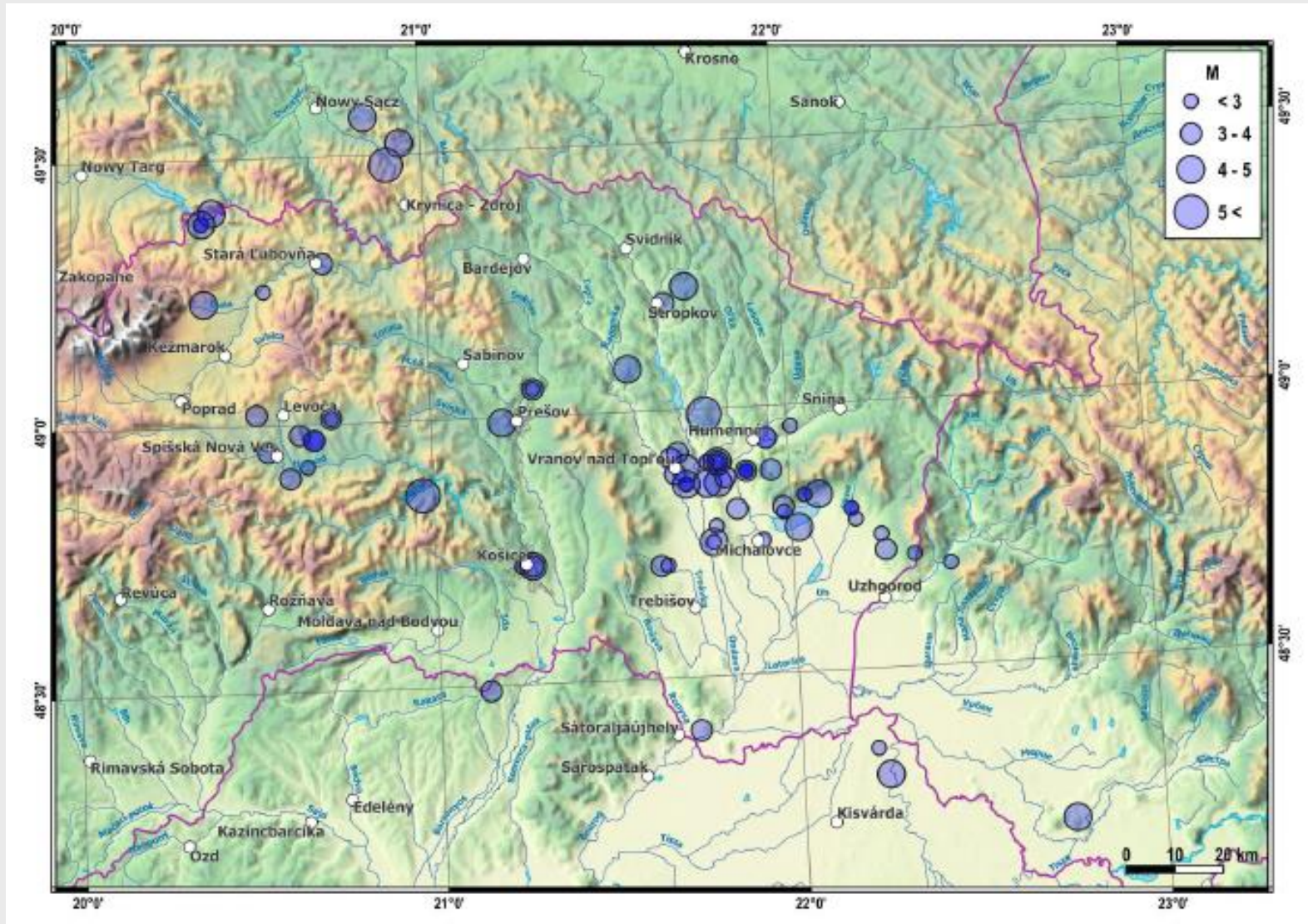
Plane 2: (359, 60, 95)

CSIR

Malytsky – in preparation

Earthquake Oct 9th, 2023, M5.0 in Slovakia

Slovak katalog – 1643-2020

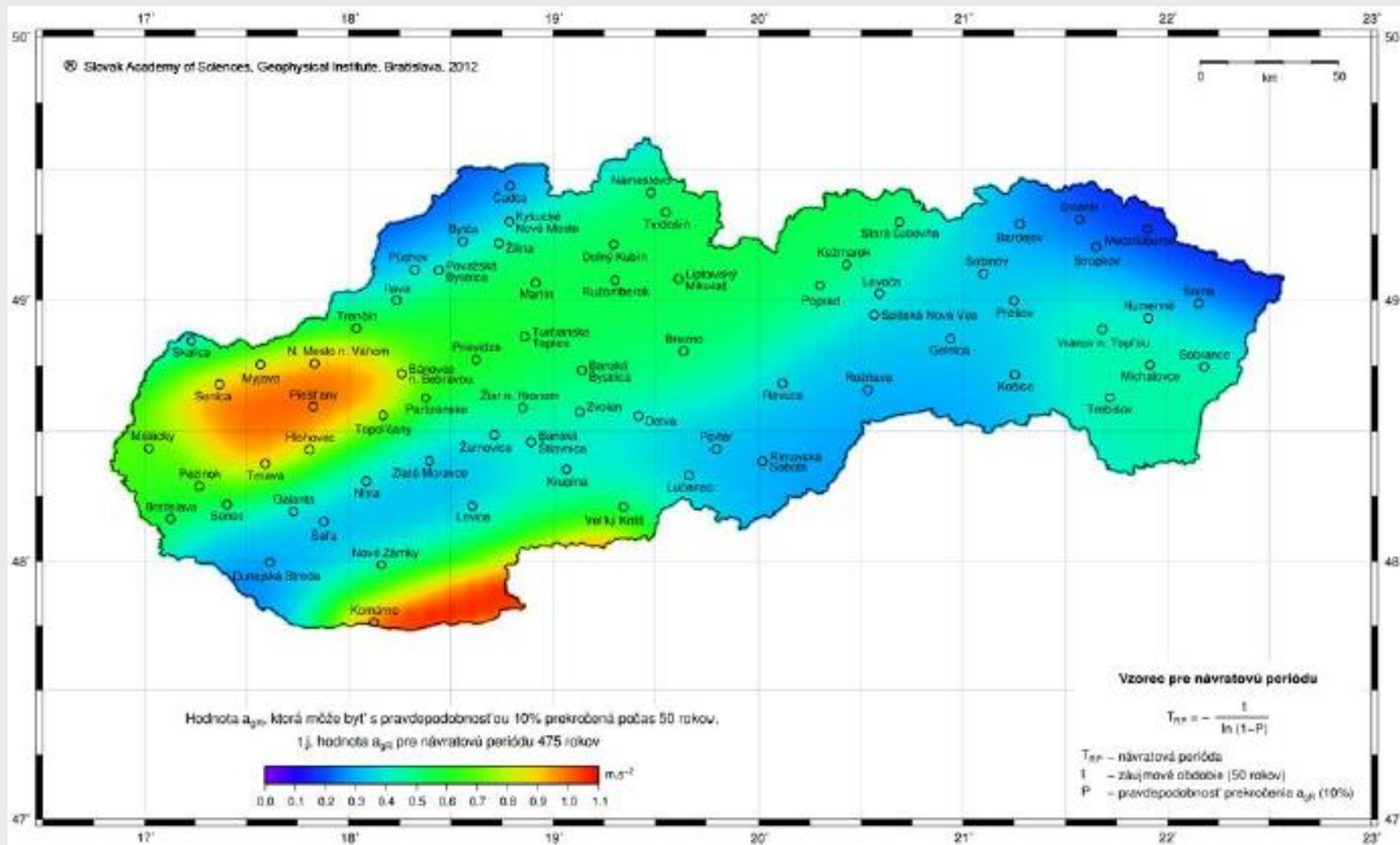


Earthquake Oct 9th, 2023, M5.0 in Slovakia

Slovak katalog – 1643-2020

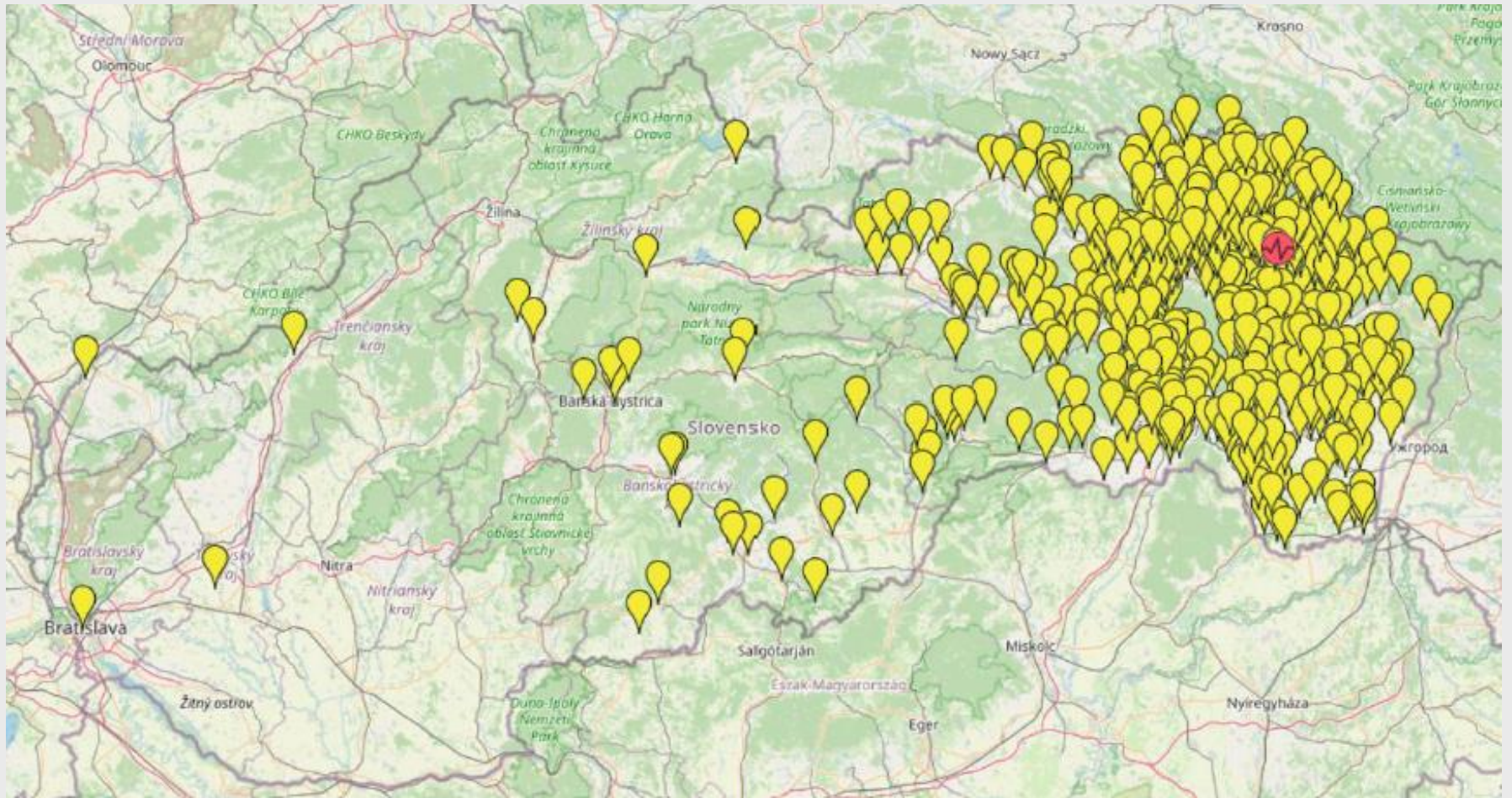
1	cislo zt	year	mounth	day	hour	min	sec	latitude	longitude	depth	IO	M(10)	ML	region
2	27	1643	6	5	11			49,23	20,37		6	4,1		Spis
3	29	1652	3	7				48,72	21,27		5	3,6		Kosice
4	32	1656						49,01	20,72		5	3,6		Spis
5	35	1669	2	27				48,95	20,54		5	3,6		Spis
6	36	1676	3	26				48,72	21,27		7	4,6		Kosice
7	41	1703	7	28				48,86	20,97		8	5,2		Gelnica
8	44	1724	3	10	21			48,97	20,67		5	3,6		Spis
9	45	1724	3	12				48,97	20,67		5	3,6		Spis
10	46	1724	3	13	7			48,97	20,67		5	3,6		Spis
11	47	1724	6	12				48,9	20,6		5	3,6		Spis
12	48	1724	6	13				48,98	20,63		5	3,6		Spis
13	118	1778	12	19	8			48,99	21,77	12	7	5		HUMENNE - VRANOV
14	122	1778	12	23	6			48,86	21,71		7	4,8		HUMENNE - VRANOV
15	123	1779	4	6	3	15		48,86	21,77		7	4,8		HUMENNE - VRANOV
16	128	1780	4	4	2			48,94	21,94		5	3,7		HUMENNE - VRANOV
17	162	1787	7	12				48,4	21,72		5	3,7		Slovenske Nove Mesto
18	176	1809	11	17	21	40		48,99	21,2		7	4,8		Saris
19	224	1840	4	23				49,38	20,37		7	4,8		Spis
20	349	1885	8	17	18	35		48,89	21,71		6	4,3		HUMENNE - VRANOV
21	360	1890	12	28	11	32		48,9	21,8	10	6,5	4,6		HUMENNE - VRANOV
22	367	1893	4	15	4	48		49,23	21,73	9	6,5	4,6		HUMENNE - VRANOV
23	377	1901	10	21	1	20		49,4	20,4		6,5	4,5		Spis
24	505	1914	5	26	20	29		49,08	21,56		7	4,8		HUMENNE - VRANOV
25	556	1932	2	18	23	15		48,75	21,76	9	5,5	4,1		HUMENNE - VRANOV
26	565	1941	6	5	2	49	57	48,86	21,8	3	7	4,4		HUMENNE - VRANOV
27	566	1941	6	5	5	15		48,87	21,82		5	3,7		HUMENNE - VRANOV
28	624	1978	3	22	19	20		48,91	21,67	6	5	3,3		HUMENNE - VRANOV
29	625	1978	7	19	0	57		48,88	21,88		5	3,7		Puste Cemerne - East Slovakia
30	630	1982	7	1	5	50	1	48,3	22,24	7	6	4		Ukraina
31	651	1992	6	28	23	19	30,6	49,57	20,84	24	5	4,2		Poland - Krynica
32	652	1992	6	29	0	29	47,6	49,52	20,94	14	5,5	4,2		Poland - Krynica
33	654	1992	9	22	8	24	42,5	48,88	21,95	11	5	3,9		HUMENNE - VRANOV
34	655	1993	3	1	7	42	39,2	49,48	20,9	12	7	5		Poland - Krynica
35	703	2003	5	20	20	13	39,8	48,83	22,08	4,5	6,5	4,3	3,7	EASTERN SLOVAKIA - Vihorlat
36	723	2006	11	23	7	15	20,4	48,2	22,75	21	6,5	4,9	4,3	UKRAJINA
37	787	2020	4	23	23	18	27,21	48,77	22,02	16	5,5	4,2	3,3	Vihorlatské vrchy

Earthquake Oct 9th, 2023, M5.0 in Slovakia



Earthquake Oct 9th, 2023, M5.0 in Slovakia – Macroseismic Intensity EMS-98

www.seismology.sk

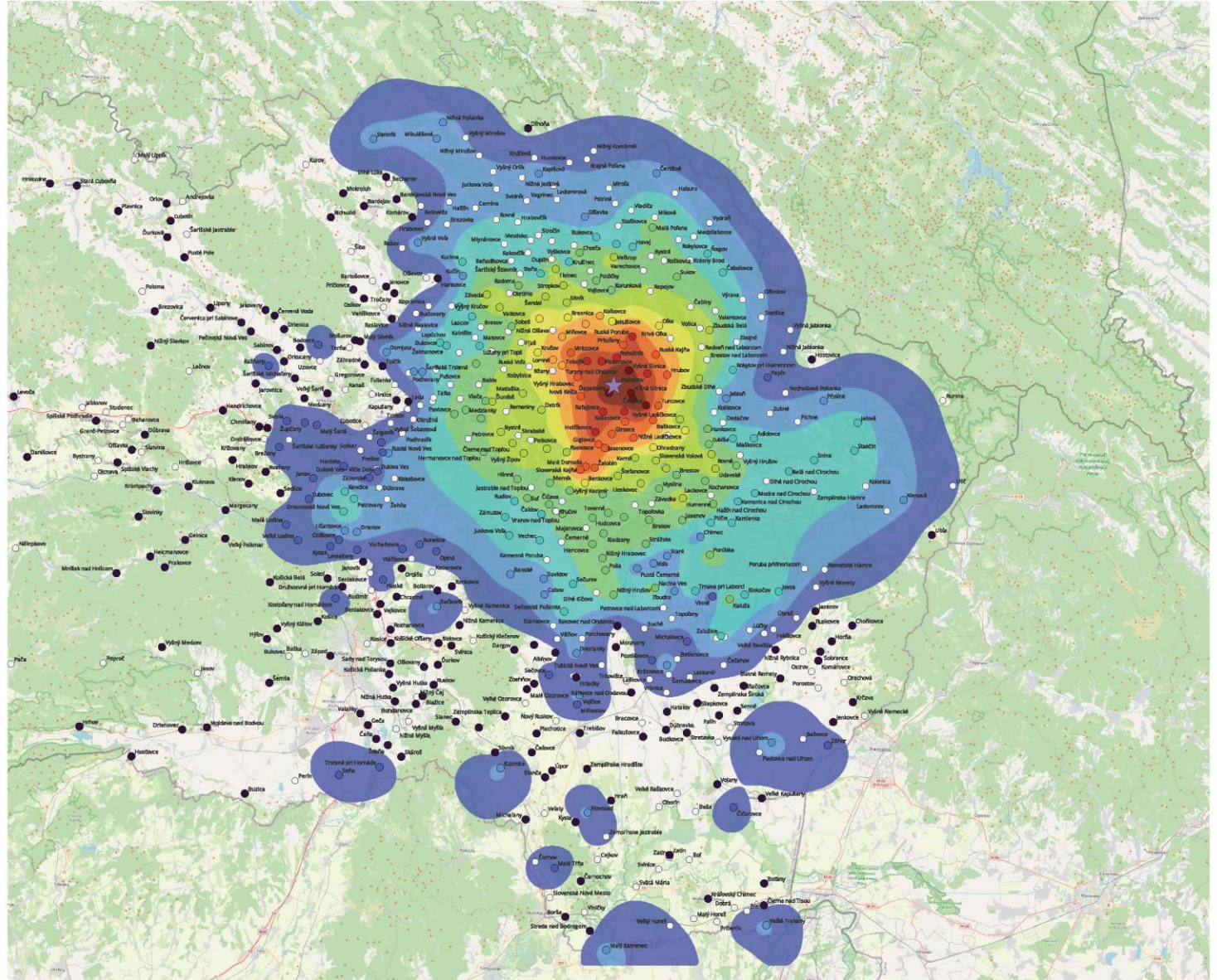


Earthquake Oct 9th, 2023, M5.0 in Slovakia – Macroseismic Intensity EMS-98

★ epicentrum

Makroseizmická intenzita

- 3
- 3-4
- 4
- 4-5
- 5
- 5-6
- 6
- 6-7
- 7
- 7-8
- 8



Earthquake Oct 9th, 2023, M5.0 in Slovakia



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Nižná Sitnca

Earthquake Oct 9th, 2023, M5.0 in Slovakia



Nižná Sitnca

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Earthquake Oct 9th, 2023, M5.0 in Slovakia

CONCLUSION

- the earthquake verified the team work of (not only) Slovak seismologists
- AdriaArray stations played a key role in the determination of the earthquake parameters
- www.seismology.sk

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Thank you for you attention