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ÚSTAV VIED O ZEMI
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A Catalogue of Nuclear Test Explosions Recorded by Slovak National Network of Seismic Stations

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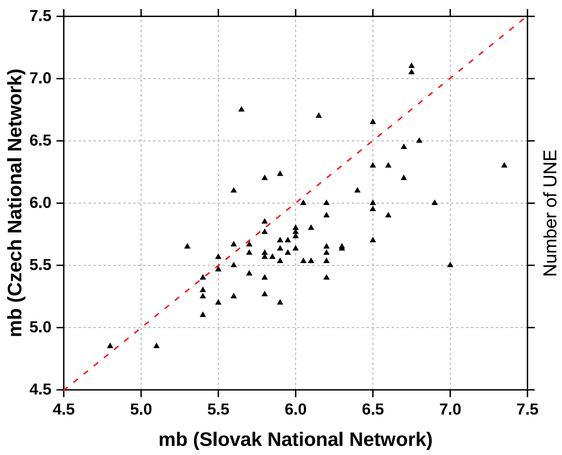
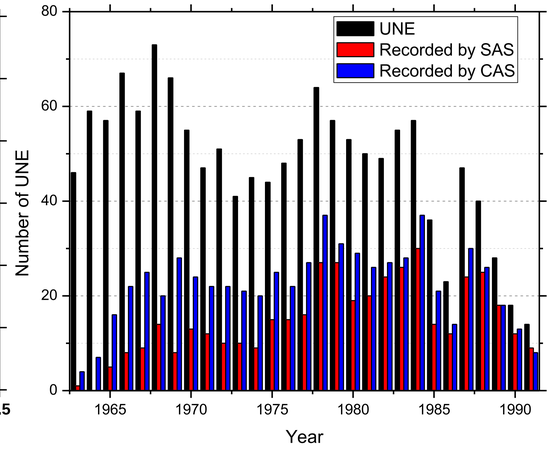
Abstract

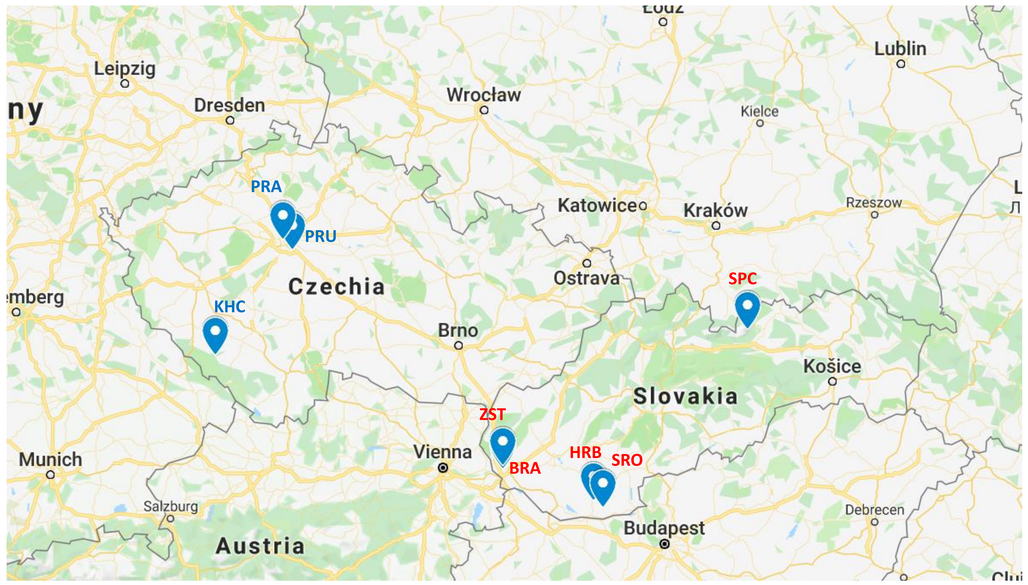
An important part of historical seismographic data research is data archiving and digitization. In the second half of the 20th century the monitoring of seismic events caused by nuclear explosions was an essential goal of each seismological service.

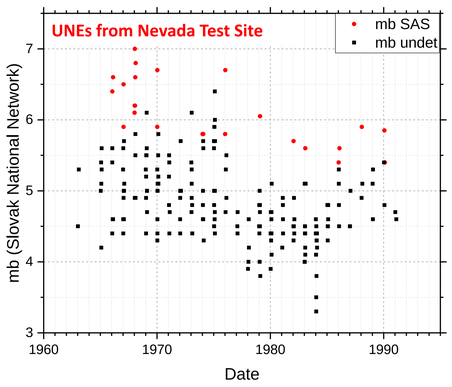
More than 400 of them were recorded by the Slovak National Network of Seismic Stations. So far no special catalogue of seismic events caused by nuclear test explosions recorded by Slovak National Network of Seismic Stations was compiled. To reach this goal, the historical data from the archives of the Slovak National Network of Seismic Stations and bulletins of Czechoslovak and Slovak seismic stations have been investigated.

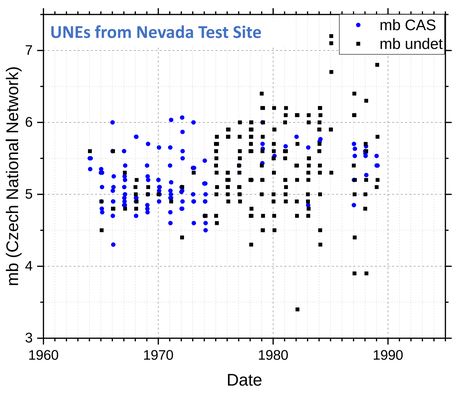
The analog seismograms from the Slovak seismic stations have been checked for presence of data from nuclear test explosions, preserved and prepared for digitization. The catalogue can be integrated to the worldwide database of nuclear test explosions.

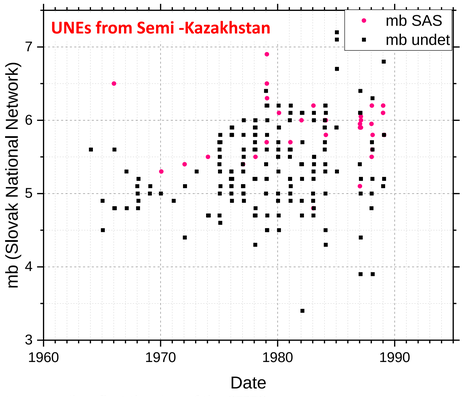


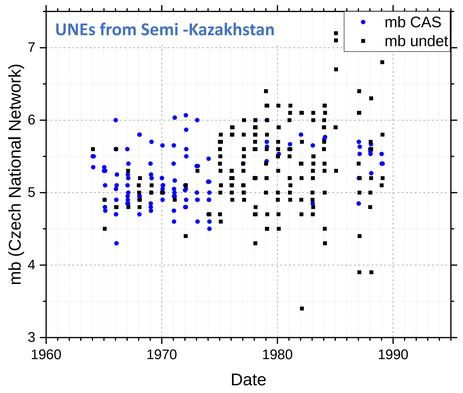












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Underground nuclear explosions executed during years 1963 – 1991											
Country	Total number	Recorded by Slovak Seismic Stations	HRB	SPC	SRO	ZST	BRA	Recorded by Czech Seismic Stations	KHC	PRU	PRA
USA	720	139	0	85	51	72	54	94	94	92	39
USSR	494	156	6	156	83	118	66	202	199	188	112
UK	22	13	0	10	4	10	1	14	14	13	5
France	158	68	0	53	40	59	4	79	79	79	56
China	22	3	0	3	1	2	0	5	5	4	2

Seismic Station (ISC code)	Operated	Latitude (N)	Longitude (E)	Elevation (m)	Foundation
Bratislava (BRA)	1956 – 1977	48° 10´ 06´´	17° 06´ 18´´	270	granite
Hurbanovo (HRB)	since 1902	47° 52´ 25´´	18° 11´ 34´´	115	neogenic sediments
Skalnaté Pleso (SPC)	1943 – 1998	49° 11´ 20´´	20° 14´ 42´´	1 772	granite
Šrobárová (SRO)	since 1964	47° 48´ 48´´	18° 18´ 48´´	150	neogenic sediments
Železná Studnička (ZST)	since 1976	48° 11´ 46´´	17° 06´ 09´´	250	granodiorite
Kašperské Hory (KHC)	since 1961	49° 07’ 50“	14° 32’ 30“	302	algonkian layers
Průhonice (PRU)	since 1957	49° 53’ 18“	14° 32‘ 30“	302	algonkian layers
Praha (PRA)	since 1924	50° 04’ 13“	14° 15’ 59“	225	ordovician schists

Conclusions

- 379 underground nuclear explosions were recorded by the Slovak National Network of Seismic Stations in the period 1963 – 1991. Most of them were recorded by seismic station SPC (307).
- 394 underground nuclear explosions were recoreded by the Czech National Network of Seismic Stations in the period 1963 – 1991. Most of them were recorded by seismic station KHC (391).
- The magnitudes determined by Slovak Seismic Stations are slightly higher than the magnitudes determined by Czech Seismic Stations. The reason is yet unknown.

References

- Bulletins of the Czechoslovak seismological stations (1949 – 1965). Geophysical Institute, Czechoslovak Academy of Sciences, Prague.
- Bulletins of the Slovak seismographic stations (1966 – 1991). Geophysical Institute, Slovak Academy of Sciences, Bratislava.
- Bulletins of the Czech seismographic stations (available online). Geophysical Institute, Czech Academy of Sciences.
- Bergkvist, N.-O. and R. Ferm (2000). Nuclear Explosions 1945 – 1998. Defence Research Establishment, Stockholm.

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