

# T2.5-P5 NUCLEAR TEST EXPLOSIONS RECORDED BY SEISMIC STATIONS OF THE SLOVAK ACADEMY OF SCIENCES

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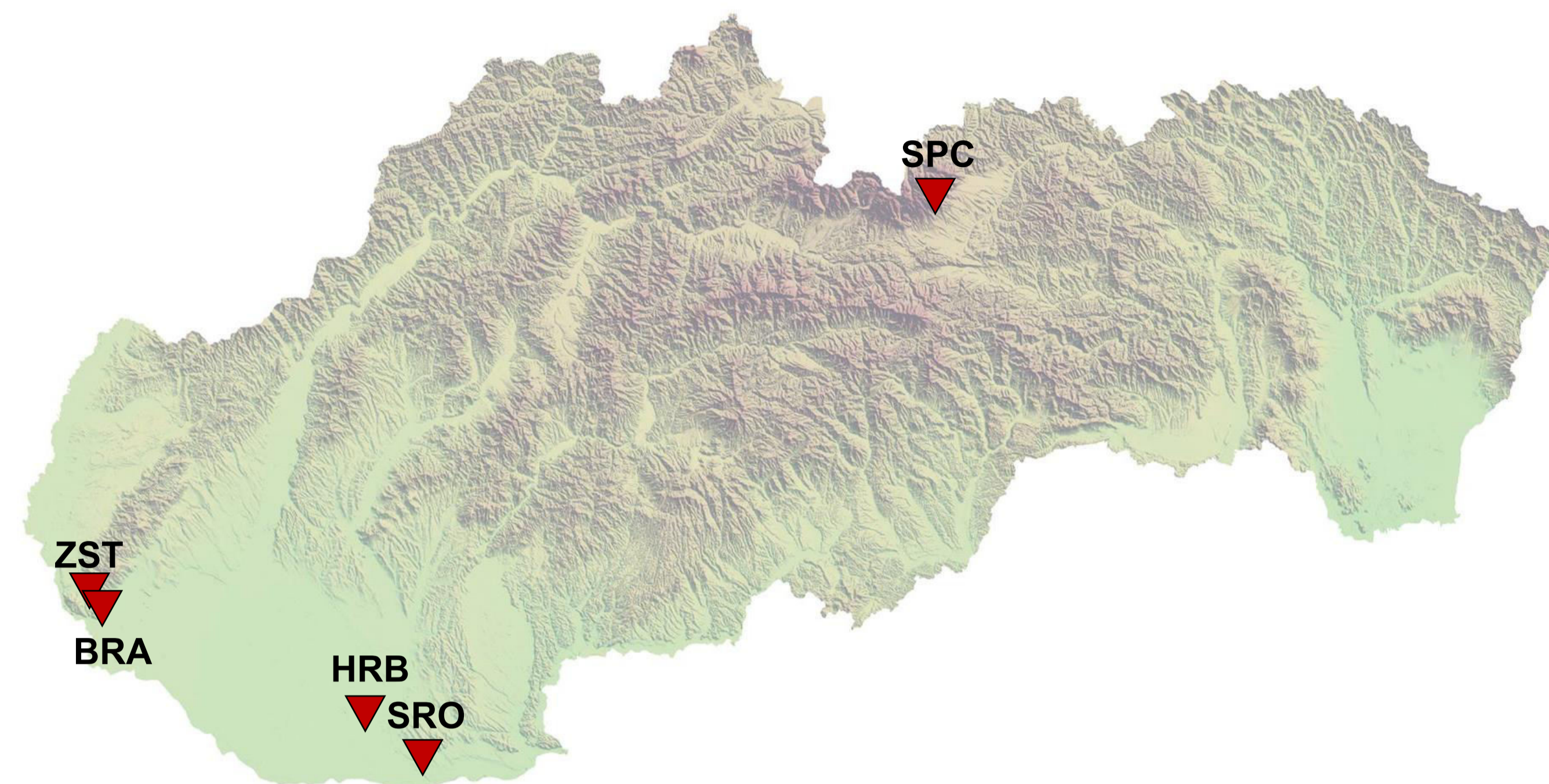
## Abstract

Archiving, retrieval and digitization of the historical seismographic data from nuclear test monitoring is an inevitable step before the data can be further investigated. Since the very first nuclear weapon test in 1945, several nuclear explosions took place around the world during the 20th century.

Naturally one would like to investigate the corresponding seismic recordings obtained by the Slovak National Network of Seismic Stations operated by the Slovak Academy of Sciences. So far, a complex processing of the relevant data has yet not been performed, except for standard reporting in the yearly bulletins and reports.

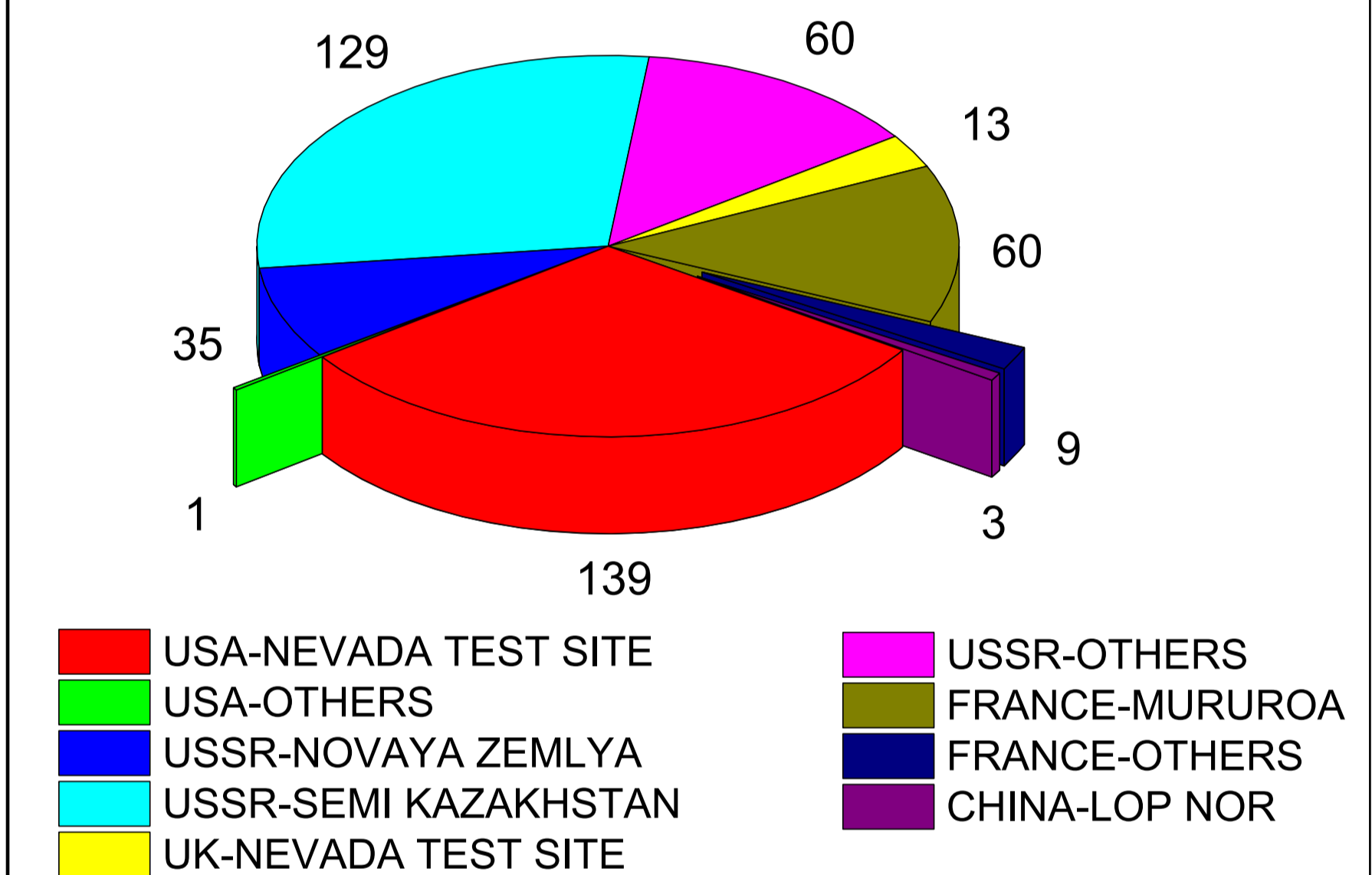
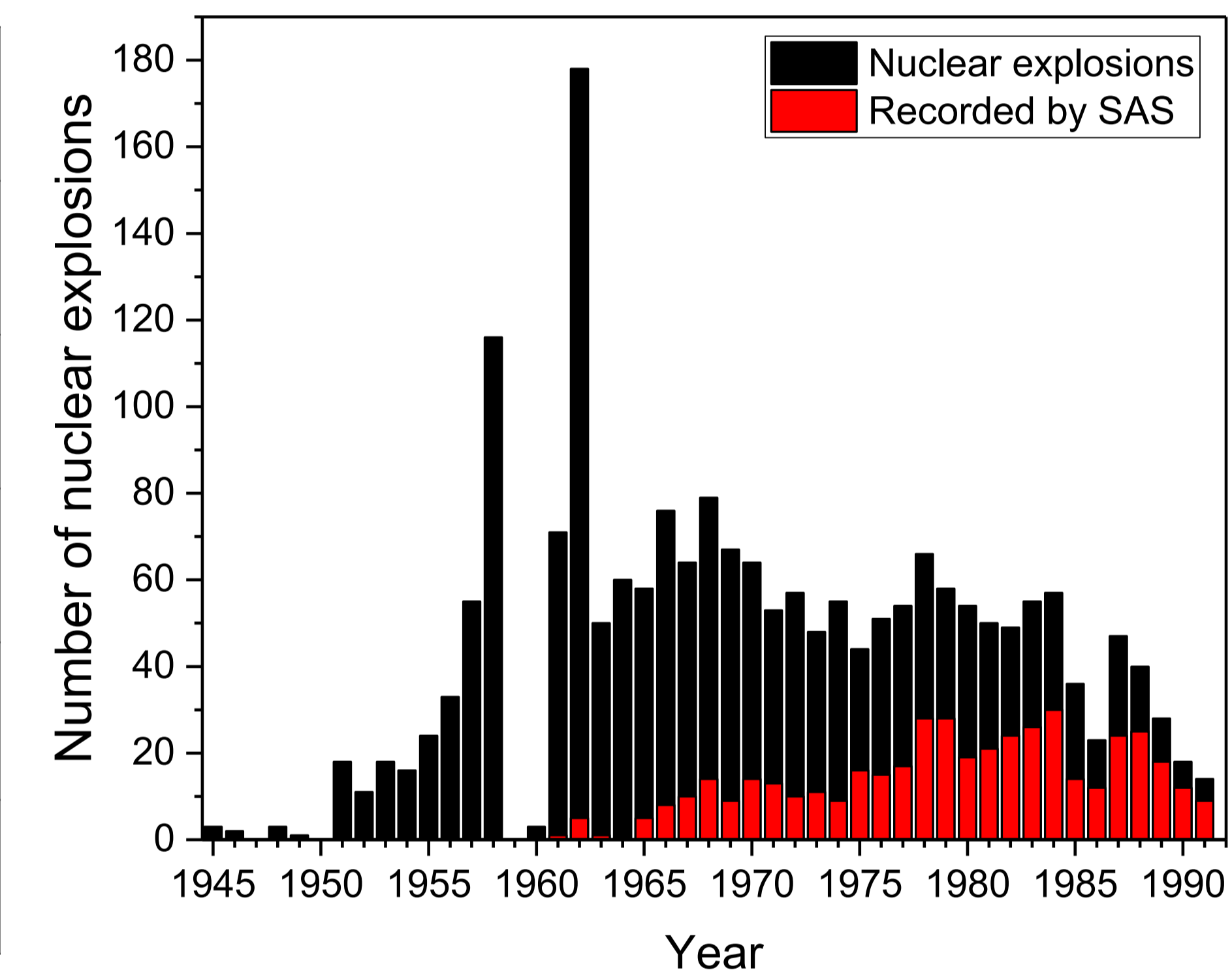
In order to accomplish this goal, the historical data from the Slovak National Network of Seismic Stations have been investigated and checked for the presence of data corresponding to nuclear test explosions. The main sources of data have been the bulletins of both the Czechoslovak and Slovak seismographic stations published on an early basis. Besides this, the analog recordings from the Slovak seismic stations have been checked for the presence of data from nuclear explosions.

We present the summary of the historical seismic data for the nuclear explosions, recorded by the seismic stations on the territory of Slovakia.

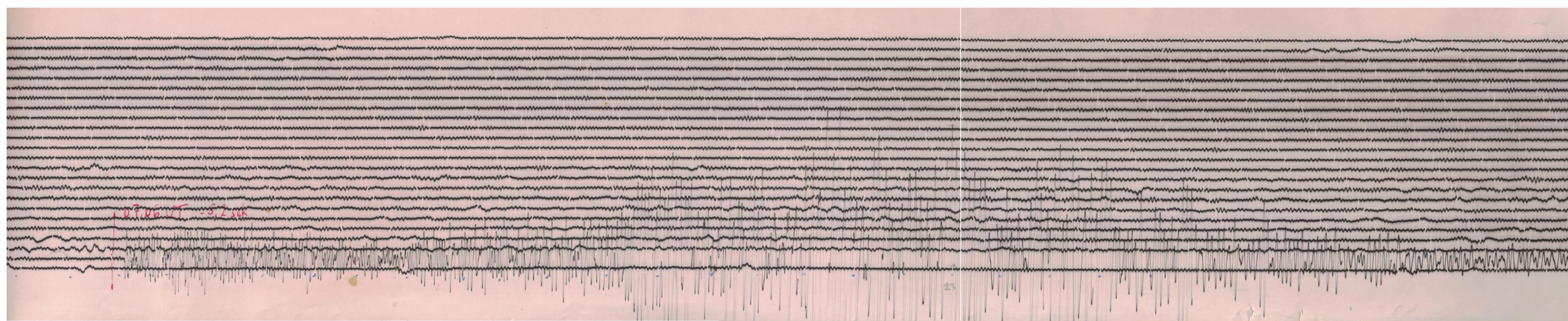


Seismic Station (ISC code)	Operated	Latitude (N)	Longitude (E)	Elevation (m)	Foundation	Seismometer
Bratislava (BRA)	1956 - 1977	48° 10' 06"	17° 06' 18"	270	granite	Vegik
Hurbanovo (HRB)	since 1902	47° 52' 25"	18° 11' 34"	115	neogenic sediments	Mainka (horizontal)
Skalnate Pleso (SPC)	1943 – 1998	49° 11' 20"	20° 14' 42"	1 772	granite	Vegik
Šrobárová (SRO)	since 1964	47° 48' 48"	18° 18' 48"	150	neogenic sediments	Kimos (1966 – 1981) SK-D (1982 – 1987) SKM-3 (1985 – 1991)
Železná Studnička (ZST)	since 1976	48° 11' 46"	17° 06' 09"	250	granodiorite	Kimos (1966 – 1981) SKM-3 (1982 – 1991)

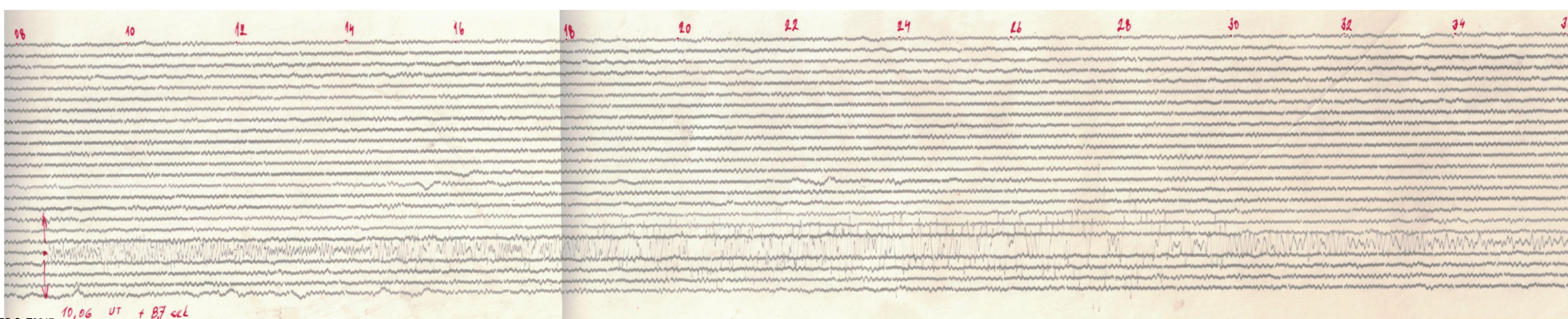
Country	Total number	Recorded by Slovak Seismic Stations					
		HRB	SPC	SRO	ZST	BRA	
USA	1026	0	85	51	72	54	
USSR	715	10	161	84	120	73	
UK	45	0	10	4	10	1	
France	204	0	53	40	59	4	
China	36	0	3	1	2	0	



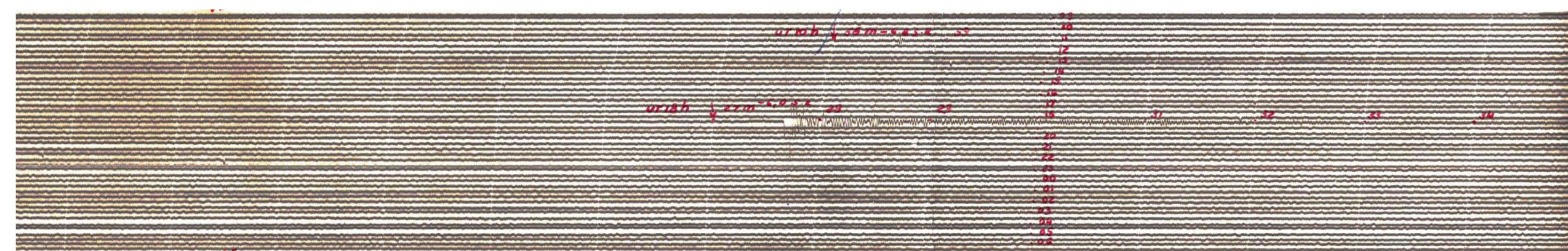
12.9.1973, 06:59:54,3 UT, **Novaya Zemlya (USSR)**, 73.3 N 55.2 E, yield 150 – 10 000 kt, type – tunnel, UGS mb = 6.8, UGS Ms = 5.0  
SRO N-S component, mb = 7.3, MLH = 6.6



2.11.1974, 04:59:56,37 UT, **Novaya Zemlya (USSR)**, 70.817 N 54.063 E, yield 1500 – 10 000 kt, type – shaft, UGS mb = 6.7, UGS Ms = 7.5  
SRO N-S component, mb = 7.03



19.1.1968, 18:15:02,2 UT, **C. NEVADA (USA)**, 37.31 N -116.41 E, yield 1300 kt, type – shaft, ISC mb = 6.3  
BRA Z component, mb from horizontal components 6.6 and 7.3



## Conclusions

- 448 nuclear test explosions were recorded by the Slovak National Network of Seismic Stations in the period 1945 – 1991
- Most of the 448 nuclear test explosions were recorded by seismic stations SPC (312) and ZST (263)
- A digitization of the nuclear explosion seismograms is possible in the future

## 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.
- Bergkvist, N.-O. and R. Ferm (2000). Nuclear Explosions 1945 – 1998. Defence Research Establishment, Stockholm.

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