

## Disclaimer

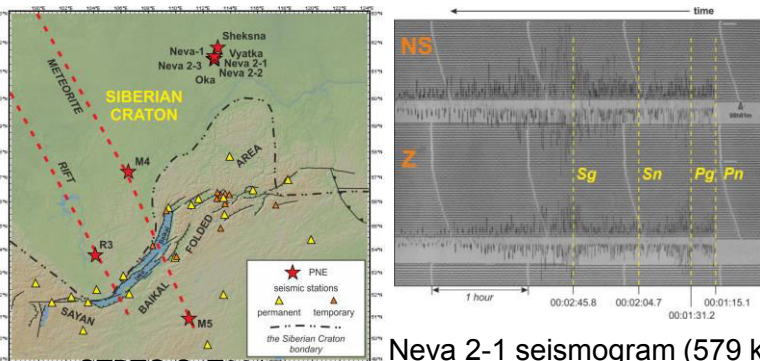
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# NUCLEAR EXPLOSIONS IN THE EASTERN SIBERIA (THE FORMER USSR) IN 1976-1987

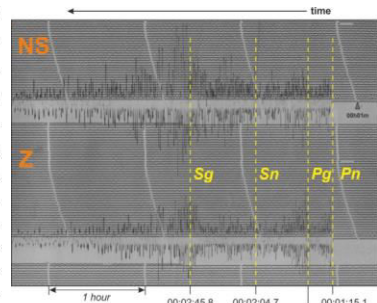
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**Highlight:** During 1976–1987 in the territory of the Eastern Siberia and Yakutia 10 peaceful nuclear explosions were conducted in scientific and commercial applications. 9 events were measured by regional analog seismic stations located in the Baikal rift system and surroundings at the distances from 246 to 1407 km. The poster shows the first results of the treatment of these seismograms. Regional travel time curves for the both crustal and mantle seismic phases ( $P_n$ ,  $P_g$ ,  $S_n$  and  $S_g$ ) were constructed using arrival times. Based on these data the regional velocities of seismic waves were determined:  $P_n=8.25\pm 0.03$  km/s,  $P_g=6.12\pm 0.03$  km/s,  $S_n=4.57\pm 0.03$  km/s,  $S_g=3.58\pm 0.02$  km/s. The velocities obtained are well correlated with the data known on the velocity structure of the Baikal rift.

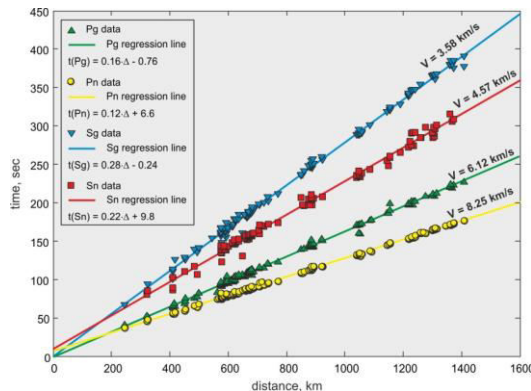
During 1976-1987 the Baikal network consisted of 20 permanent and 12 temporary analog seismic stations equipped with short-period and long-period seismometers SKM and SKD. The registration of seismic events was conducted in a continuous mode with the fixation on photographic paper, the sweep speed was 1 and 2 mm/s.



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Baikal seismic network and PNEs.

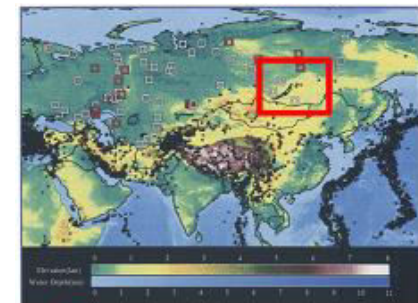


Neva 2-1 seismogram (579 km) displaying regional seismic phases:  $P_n$ ,  $P_g$ ,  $S_n$ ,  $S_g$ .

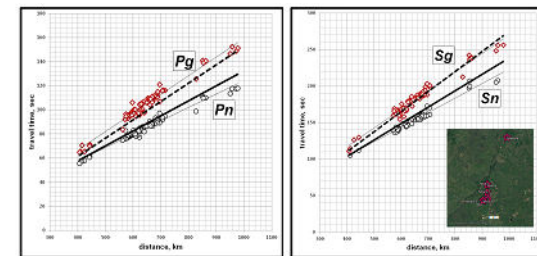


Travel time curves based on the PNEs.

According to the Neva serial records obtained by the Yakutia network, the P and S wave velocities in the crust and upper mantle of the Siberian Craton were calculated [Mackey et al. 2005, Burkhard et al. 2016]. The velocities of seismic waves in the upper mantle obtained in this work are lower:  $\sim 0.2$ – $0.8$  % for P waves and  $\sim 0.4$ – $2.7$  % for S waves, while in the crust, on the contrary, they are higher –  $0.6$ – $1.3$  %. Such a spatial distribution of the velocities of seismic waves agrees well with the SibCrust model [Cherepanova et al. 2013].



Locations of Soviet PNEs from [Sultanov et al., 1999].



Theoretical (thick) and observed (thin) travel time curves obtained for Yakutia PNEs (locations in Insert).