ID: **O2.5-417** Type: **Oral**

Spatio-temporal Variations of Short-period S Wave Attenuation Field in the Region of the Semipalatinsk Test Site (Using Recordings of Nuclear and Chemical Explosions)

Tuesday, June 20, 2023 3:00 PM (15 minutes)

We have been considering spatio-temporal variations of S wave attenuation field structure in the region of the Semipalatinsk test site (STS). We studied variations of amplitude ratio for Lg and Pg waves (parameter Lg/Pg) using seismograms of underground nuclear explosions (UNEs) and also calibration and quarry explosions, obtained by stations TLG and MKAR. We revealed essential temporal variations of parameter Lg/Pg for the UNEs at three main sites of the STS. At the end of 1980s mean Lg/Pg values are considerably lower for the Balapan site in comparison with two other sites. We have studied characteristics of S coda envelopes using recordings of the chemical explosions, obtained by close stations on the STS territory. The data obtained show that minimal quality values for temporal stations in the STS region (~40-55 for frequency 1.25 Hz) are considerably lower than in the seismically active North Tien Shan region (~60-80). It is supposed that the spatio-temporal variations of the attenuation field structure in the STS region are connected with deep-seated fluids migration in the earth's crust and uppermost mantle, stipulated by long term intensive UNEs influence on the geological medium.

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Promotional text

The data obtained are useful for discrimination of the UNEs and studying geodynamic processes in the regions of large test sites.

Oral preference format

in-person

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Session Classification: O2.5 Historical Data from Nuclear Test Monitoring

Track Classification: Theme 2. Events and Nuclear Test Sites: T2.5 Historical Data from Nuclear Test Monitoring