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-temporal variations of short-period S wave attenuation field in a region of the North Korea Punggye-Ri nuclear test site

Six underground nuclear explosions (UNEs) were conducted at the DPRK nuclear test site in 2006-2017. Magnitudes of these events varied from 4.3 to 6.3. We analyzed seismograms of UNEs and near earthquakes, obtained by stations MDJ and VLA at distances of ~270-450 km to investigate characteristics of the attenuation field. We studied the ratios of maximum amplitudes of Lg and Pg waves (Lg/Pg parameter). Narrow-band filter with central frequency of 1.25 Hz was used. According to the UNEs data, Lg/Pg parameter diminished essentially from 2006 to 2017. We processed several recordings of earthquakes with epicenters near the Punggye-ri test site. It was shown that in 2017-2024 the mean value of the Lg/Pg parameter for the earthquake recordings is higher essentially than for UNE data in 2017. We compared the new data with data obtained earlier for the Semipalatinsk test site (STS). The mean value of the Lg/Pg parameter for the Balapan area in the STS diminished also essentially from 1980 to 1989. The most natural explanation of temporal variations of the attenuation field connected with ascending deep-seated fluids from the uppermost mantle into the earth's crust as a result of intensive influence of the powerful UNEs on the geological medium.

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