

Expansion of the seismological monitoring network on the Kola Peninsula

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Abstract In July 2021, the seismological monitoring network of the Kola Branch of the Geophysical Survey of the Russia Academy of Sciences was expanded by installing a new seismic station. It is installed in the southern part of the Kola Peninsula in the village of Umba (station code UMBA). The expansion of the seismological network to the south has improved the monitoring detail of the Kandalaksha earthquake source zone. According to modern concepts, the Kolvitsky and Kandalaksha grabens are potentially the most seismically hazardous object in the eastern part of the Baltic Shield. To select the location of the new seismic station, reconnaissance work was carried out. This work included an assessment of the level of background seismic noise. The article presents an analysis of noise power spectral density for seismic station UMBA. A low level of background noise is shown in comparison with the NHHM and NLNM models. The following equipment is used at the seismic station: Guralp 6T analog seismometer (registration range 30 s - 50 Hz) and seismic signal recorder “Ermak-5”. Seismic data is transmitted in near real time to the Kola Regional Processing Center via mobile Internet channels. The ability to register weak seismic events with a local magnitude of less than 2 in the area of the Kandalaksha seismic zone and accurately determine the coordinates of their epicenters is shown by the example of a weak earthquake.

Keywords Seismological network, seismic station, noise power spectral density, Kandalaksha seismic zone.

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