Modernization of the system of seismological observations in the territory of Azerbaijan

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Received June 24, 2022

Abstract The study of the seismicity of territories, the identification of potential sources of earthquakes and other seismological, seismotectonic studies ultimately serve to assess the seismic risk and determine ways to reduce it. According to the schematic map of seismic zoning, the background level of seismic hazard in the territory of Azerbaijan is 8 points. Thus, the creation of modern seismic monitoring, an alarm system and warning of seismic danger from tectonic earthquakes, is relevant for the territory of the republic. The article describes the historical process of upgrading old analog instruments to modern digital seismometers. The beginning of instrumental seismological observations in Azerbaijan began in 1902. In 1903, the stations "Baku" and "Balakhani" were founded, in 1908 the station "Zurnabad". During 1980-1986 seven new seismic stations ("Lokbatan", "Sumgayit", "Imishli", "Jabrayil", "Kalbajar", "Jalilabad" and "Nardaran") were organized on the territory of Azerbaijan, and the number of stations reached 18. The beginning of the 2000s is marked by a new stage in the development of the seismological observation network in Azerbaijan. Digital stations with a telemetric communication channel began to be introduced into the observation network. In order to ensure a higher level of integrated seismological and geophysical research, from 2008 to 2022, the total number of digital seismic stations reached 84. Four of these stations were located in the Nakhchivan Autonomous Republic. In addition, there is a network of 10 stationary basalt seismic stations on the Absheron Peninsula, which record strong ground vibrations. Recorded earth vibrations from telemetry stations are transmitting in real time via satellite to the seismic processing and earthquake analysis center, where processing, archiving and analysis of seismic data is carried out using the Antelope Real Time System version 5.6 software system. The Antelope data acquisition and processing software runs on Mac OS X computers. Along with the "Kinemetrics" system, new equipment "Seistronix" (made in the USA) has been introduced into the RSSC at ANAS, which allows studying the velocity section in the upper layers of the earth's crust. This information is extremely important when carrying out seismic microzoning.

Keywords Analog seismic stations, digital seismic stations, seismometers, accelerometers, earthquakes.

For citation Etirmishli, G.J., Kazimova, S.E., Ismailova, S.S., & Kerimova, R.D. (2022). [Modernization of the system of seismological observations in the territory of Azerbaijan]. *Rossiiskii seismologicheskii zhurnal* [Russian Journal of Seismology], *4*(3), 25–35. DOI: https://doi.org/10.35540/2686-7907.2022.3.02. EDN: EYOWCQ

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