Method of Computing the Impact of the Environment ("Amplification") on the Way of a Seismic Ray for Strong Earthquakes of Azerbaijan

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ABSTRACT

We consider the strong earthquakes that took place on the territory of Azerbaijan for the period of 2012-2019. Was identified the connection of the observed seismicity and tectonic structure of the region. The analysis of the mechanisms of strong earthquakes for the purpose of research of the stress strain state of the Earth's crust was considered and was identified the nature of shifts in the active parts of the deep faults. The territory of Azerbaijan Republic is one of the seismically active regions of the Alpine fold system. According to historical records there have been strong and destructive earthquakes that led to a change in topography. Strong earthquakes occur at the present stage. The activity of geodynamic processes taking place in the area is caused by ongoing since the late Miocene collision of Arabian and Eurasian continental plates. To represent the character of the distribution of earthquakes' sources in Azerbaijan and the Caspian region was given a map of the epicenters of earthquakes for the period of 2012-2019 with ml ≥ 5. There are allocated separate seismically active areas. This is primarily Shamakhi-Ismayilli, Sheki-Zagatala, Talish zone and the area of the Caspian Sea. During the last years was registered outbreak of seismic activity on the territory of the republic. In 2012, and after a lull, in 2014 here, a series of strong earthquakes took place: Zagatala, with ml =5.6, 5.7, Balaken with ml = 5.8 in 2012, which were felt in the midst of a J0=7 b., as well as the Caspian 10.01.2014, with ml = 5.0, Gadzhi-Gabul 10.02.2014, with ml=5.8, Zagatala 29.06.2014, with m =5.3, the Caspian 06.07.2014 with ml = 5.6, and a series of Gabala 29.09 04.10.2014 with ml max=5.5. They were felt, in the epicentre with the intensity of 6-7b. It is well known that the nature of the movements recorded on the seismogram is defined as a medium in the path of the seismic waves, and the source, requires a comprehensive analysis of the recording, which will allow receiving further information about the earthquake, for better understanding of the source mechanism.

An important consideration in the calculation of dynamic parameters is the transition from the station range to alopecia. For such a transition effect of the environment must be considered ("weakening") and amplification factor in the path of the seismic ray. There are various methods for determining the station amendments, which are described in studies. The study of the conditions of formation of the earthquake source action mechanism is of great importance for the understanding of seismic phenomena and the development of methods of forecasting of seismic hazard. In this study the main parameter is the seismic wave. At present, the dense network of high-sensitivity digital still seismic stations, allowing to record all seismic events with magnitude of ml> 0.1 within Azerbaijan, as well as the extensive factual material obtained according to the network, have allowed to develop many new methodological issues and outline new ways in forecasting earthquakes. The aim of this paper was to determine the source parameters, including focal mechanism solution and dynamic parameters based on seismic signal analysis using the method of Nakamura in the past 7 years.