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Focal and dynamic parameters of strong earthquakes on the territory of Azerbaijan for the period 2005-2015 yy.

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The territory of Azerbaijan Republic is one of the seismic 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. The character of the distribution of earthquakes' sources in Azerbaijan and the Caspian region for the period of 2005-2015 yy. with ml$\geq$4, allows us to allocated separate seismic active areas. This is primarily Shamakhi-Ismayilli, Sheki-Zagatala, Talish zone and the area of the Caspian Sea. During the last years was registered increasing 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 p., as well as the Caspian 10.01.2014, with ml = 5.0, Hajigabul 10.02.2014, with ml = 5.8, Zagatala 29.06.2014, with ml = 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 epicenter with the intensity of 6-7p.

On the basis of modern approaches to the analysis of seismotectonic deformations, were processed, interpreted and summarized seismic materials on the focal mechanisms of 620 earthquakes and revealed the characteristic features of seismotectonic deformations in separated seismogenic zones of the republic. In constructing the mechanisms was noted a well-established algorithm using the method of waveforms inversion – Time-Domain Moment Tensor INVerseCode (TDMT INVC). This pack is used to calculate both the seismic moment tensor, as well as Mw.

Activation of 2012 and 2014 is due to the accumulation of stress and post-discharge strike-slip shift interface of Middle Kura and Vandam tectonic zones through Ganikh-Ayrichay-Alat deep thrust. Discharge occurs in the weakest portions crossing between them and with the deep thrust.

The spatial distribution of epicenters shows that the events of 2014 with ml$\geq$5 are confined to cross (the north-western, north-eastern and sub-meridional strikes) disjunctive dislocations, but epicentral zones as a whole have a "common Caucasian" elongation and are located along Vandam tectonic zone of Ganikh Ayrichay-Alat deep thrust. The reason of seismic activity of the area is a combination of lateral compression forces with tensile forces. Modern features of the area geodynamics are determined by the effect of discharges and emissions on the cross Caucasus stretch and transverse shifts SW-NE, intensified on post Alpine tectogenesis stage.

Also we studed the environment impact of site-effect of the station ("amplification") on the way of seismic ray at the share wave's propagation from the strong earthquakes. The calculation of station corrections for the earthquakes with magnitude over 5 and occurred in 2012-2015 yy. (by three components HGE, HGN, HGZ, 17 earthquakes totally) had been done with Nakamura method application .

The duration of time interval of the record was 60 sec. through studies. The present method is based on notions that the impact of thin layer (small layer of the Earth crust under the seismic station directly) of the studied object is mostly corresponded to the share waves (S-wave), which are intensified by this structure and practically don't modify the longitudinal waves (P-waves). Then, the ratio of the spectral characteristics of two horizontal components to the spectrum of vertical component will characterize the so-called transfer function which depends strongly upon the thin layer under the examined object.

Thus, it had been determined that the amplification in 2.5-3.0 times in frequencies range 4-10 Hz from the earthquakes located in the south-southwestern direction, is typical for ATG, NAX and GLB stations. For ZKT, LKR, QSR, QZX ALI stations the amplification in 2.5-3.0 times in frequencies range 0.3-1 Hz is typical. No deviations are observed for IML and AST stations. The amplification in 2.5-3.0 times in the frequencies range 3-10 Hz is typical for AST LRK QZX XNQ stations.