



Seismotectonic zoning of Azerbaijan territory

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Studying of the space-time correlation and consequences effect between tectonic events and other geological processes that have created modern earth structure still remains as one of the most important problems in geology. This problem is especially important for the East Caucasus-South Caspian geodynamic zone. Being situated at the eastern part of the Caucasian strait, this zone refers to a center of Alpine-Himalayan active folded belt, and is known as a complex tectonic unit with jointing heterogeneous structural-substantial complexes arising from different branches of the belt (Doburja-Caucasus-Kopetdag from the north and Pyrenean-Alborz from the south with Kura and South Caspian zone). According to GPS and precise leveling data, activity of regional geodynamic processes shows intensive horizontal and vertical movements of the Earth's crust as conditioned by collision of the Arabian and Eurasian continental plates continuing since the end of Miocene.

So far studies related to the regional of geology-geophysical data, periodically used for the geological and tectonic modeling of the environment mainly based on the fixing ideology. There still remains a number of uncertainties in solution of issues related to regional geology, tectonics and magmatism, structure and interrelation of different structural zones, space-time interrelations between onshore and offshore complexes, etc. At the same time large dataset produced by surface geological surveys, deep geological mapping of on- and offshore areas with the use of seismic and electrical reconnaissance and geophysical field zoning methods, deep well drilling and remote sensing activities.

Conducted new studies produced results including differentiation of formerly unknown nappe complexes of the different ages and scales within the structure of mountain-fold zones, identification of new zones containing ophiolites in their section, outlining of currently active faulting areas, geophysical interpretation of the deep structure of Greater and Lesser Caucasus, detailed description of the deep structure of Caspian zone, Kur and Caspian megadepressions, identification of nappe-folded structure of the Absheron Peninsula and the Absheron threshold at the border of Middle and South Caspian, justification of the possible hydrocarbon concentration at the tectonically stratified substantial complexes of mountain and foothill areas, etc. Based on the outcomes of implemented researches, some general conclusions and schemes were drawn for some parts of the project region within the plate tectonics conceptual frameworks, to include the territories of Lesser Caucasus and South Caspian. Analysis and comparison of these data with macroseismic and instrumental data allowed us to conduct seismotectonic studies in a region and develop a new scheme of seismotectonic map with outlined recent and forecasted seismic activity. There also correlated foci zones of earthquakes with subhorizontal and subvertical borders in earth crust, which shows their structure-dynamic relationship. In the one hand, the earthquake foci zones belong to the faults of the basement which extend to sedimentary cover and their intersection knots. On the other hand, there appearing inner-block seismogenic levels, namely, in seismic generation acts all the earth crust: tectonic stress results on movements along fault zones, as well as lateral displacements along non-stable contacts of the structure-substance complexes of different competency.