# The Geodynamics Models of the Active Continental Margins of East Eurasia

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The active continental margins of the transition zone from Eurasian continent to the Pacific Ocean are characterized by high seismicity, volcanic eruption and natural cataclysms hazardous for the people living there. It is also area of recent intense tectonic movements and hydrothermal processes, place of accumulation of different kinds of useful minerals. The task of the research is (1) to study the deep structure and processes in the subduction and paleosubduction zones, beneath seismic hazardous zones, volcanic areas, mineragenetic fields, and sedimentary basins; (2) to determine the role of the deep processes going on in the upper mantle in the formation of major structural units of active continental and oceanic margins; (3) the study of the deep causes of geological phenomena to assess, predict and mitigate the natural disasters, specifically earthquakes, and volcanic eruptions. The distinctive feature of the deep structure of the continental margins is the presence of an asthenosphere in the upper mantle. The tectonically active regions, such as the island arcs and the rifts of the marginal seas, correlate with a thick asthenosphere. The asthenosphere resides in a depth of 50-80 km under the old Paleogene deep basins of the marginal seas, at about 30 km under the Neogene basins, and at a depth of 10-20 km under the Pliocene-Quaternary and recent inter-arc basins, causing the breaks of the lithosphere, the formation of rifts, basalt lava eruptions, and hydrothermal activity. The asthenospheric diapirs are marked on the surface by rift formations and mainly tholeiitic magma eruption. Rifts in the marginal seas and island arcs may by accompanied by intense mineralization. The asthenospheric diapirs represent the channels by which hot mantle fluids from the asthenosphere penetrate to the geological structures of the transition zone from Eurasian Continent to the Pacific Ocean.