



The Deep Structure and Evolution of Sedimentary Basins of the Margins and Inner Seas

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The comparative examination of the sedimentary basins of marginal Sea of Okhotsk and sedimentary inland basins of the Caspian Sea were carried out using the results obtained in the International Geotraverse Project. Some common regularities in the deep structure and the history of evolution of these rather different sedimentary basins were revealed, and the connection of their origin with the deep processes was examined. The suggestion on the common character of the origin of these basins and the connection of this process with the asthenospheric plums and the relative deep fluid enrichment occurring in the mantle is presented. The interconnection of the processes of origin of these basins with the recent and paleosubduction zones is discussed. The subduction zones are treated as sources of the tensile tectonic stresses and of the deep fluid penetrating the mantle in the recycling process after the subduction. The sedimentary basins of the margins and inner seas are distinguished for their anomalous deep structure in comparison with other regions. Their features are the location of the asthenospheric diapir beneath sedimentary basins; rift structures or spreading centers in their basement; active volcanism at the initial stage of sedimentary basins formation, related to hydrothermal processes and sulfide formation; heat flow high density caused by the asthenospheric rise towards the crust. The asthenospheric diapirs are likely to be channels by which hot mantle fluids penetrate in sedimentary basins, causing organic material transformation and being an additional source of hydrocarbons. The suggested model is used to describe the process of mineralogenes including oil and gas field formation occurring in the sedimentary basins.