



Break up of continental margins of the Okhotsk Sea Region

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The structure of the East Eurasian continent margin was investigated under the Inter-MARGINS Project along the deep sections of the tectonosphere, including the lithosphere and the asthenosphere, based on the complex interpretation of geological and geophysical data. The structure of the study region is distinguished by the fact that its upper mantle includes an asthenospheric layer with its diapirs of hot anomalous mantle, responsible for the formation of a transitional zone. This study proved a correlation between the heat flow and tectonomagmatic activity. It is expressed in the growth of heat flow in the younger tectonic zones caused by the intrusion of asthenospheric diapirs into the lithosphere, involving tectonomagmatic reworking. The more elevated is the asthenosphere, the higher is the heat flow and the younger are the tholeiites covering the deep-sea basins of the marginal seas. The following sequence of events has been derived: the upwelling of the asthenosphere toward the base of the island arc crust - breaks of the lithosphere with the formation of inter-arc troughs - the formation of magma chambers in the crust and mantle - the development of rifts with a tholeiitic magma flow and hydrothermal sulfide deposition. Based on these geotraverses, researchers from the Geophysical Center of the Russian Academy of Sciences created a Database including the deep geological and geophysical sections of the lithosphere under the transition zone from Eurasia to the Pacific and the related primary geological and geophysical data.