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The structure of the oceanic and continental margins in the Eurasia-Pacific Transition Zone

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The structure of the oceanic and continental margins in the Eurasia-Pacific transition zone was investigated under the InterMARGINS Project along the deep cross-sections of the lithosphere, on based the complex interpretation of geological and geophysical data. The first deep section crossed the region of the Okhotsk Sea. The second deep section crossed the region of the Japan Sea and the third deep section crossed of the Philippine Sea and the North China Plain. The distinctive feature of the deep structure of the oceanic and 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 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 combination of high heat flow, volcanicity and hydrothermal activity in these structures, in the past and at present, can lead to the formation of sulfides and other mineral deposits. 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.