

REOLOGIC DIFFERENCES OF CONTINENTAL AND OCEANIC CRUSTS

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The problem of differences in lithospheric composition of the major oceanic and continental Earth segments was investigated by various scientists during the last century. Old obsolete terms «sial» and «sima» themselves reflect the point of view about principal geologic variabilities of continental and oceanic areas. Geophysical data obtained during the last several tens years (free-air and Bouguer gravity anomalies, anomalous geomagnetic field, deep MCS CDP studies) constrain the evidence for totally different modern state of oceanic and continental parts of the lithosphere. But historical geology data prove the fact of joint evolution of continental and oceanic areas during at least 4 Ga. These facts show the possibility of heterogeneous accretion of protoplanet matter both in vertical and lateral directions. Specifically more light «sial» matter controlled the forming of granitic-metamorphous bases of continents through the pre-Archean time. Reaction of specifically more heavy «sima» matter was the reason of the forming of second and third oceanic layers as well as the forming of plateau-basaltic provinces within continents. Migration of gentle seismic reflectors upwards and downwards the section and the forming of transitional between the mantle and the crust layer with seismic velocity ~ 7 km/s is influenced by heavy substratum submerged under modern continents and variations of thermal and mechanical endogenous regimes. Variable evolution of the major Earth segments is controlled by different reaction of protoplanet matter on the numerous impacts of the heat flow, mechanical stresses and geochemical interactions.