



Earth's crust thickness, isostasy disturbances and tectonic evolution of Scotia sea, West Antarctica.

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The depths of Mohorovicic (M) were obtained by correlation “ seismic depth M – Buge gravity anomaly”. Glenny gravity anomalies were calculated. In this calculation the depths M, obtained in present work, were used, and sediments gravitational effect was taken in account. To estimate isostatic condition of the considering region, coefficients of overcompensation ($p_{Gl} = \frac{\Delta g_{Gl}}{-\delta g_{nz}} - 1$, where Δg_{Gl} - Glenny gravity anomalies, δg_{nz} - near zone correction) was produced. So, if coefficient of overcompensation is close to zero, isostatic condition is close to non-disturbed.

The geoid heights were analysed. The long-wave and short-wave components of geoid were considered. From this consideration the estimation of density anomalies in lithosphere and mantle was obtained and some conclusions about tectonic and tectonic evolution of the considered region was made.

The most important results are following.

1. The considering region is close to isostasy, except for Atlantic shelf of South America, including Faulkland islands and tectonic system “Chile trench and Andes – Scotia island arc – Antarctic peninsula and its western and northern shelves”.
2. Faulkland plateau and Scotia island arc have the thickening crust (the depths M greater than 15 km).

3. The Atlantic shelf of South America, including Falkland islands, has continental crust (the depths M are greater than 20 km).
4. The transient type of crust, is, practically, absent in considering region (zone, which separates area with continental crust from those with oceanic crust is very narrow). The thickening of crust in the region of Scotia island arc and Falkland plateau is, obviously, concerned with subduction, which existed or, maybe, exists there. It ought to note, that the least disturbances of isostasy have a place in the southern part of Scotia island arc and on Falkland plateau. It indicates the less activity of this part of subduction zone.
5. It was achieved, that at Shackleton fracture zone the spacious plum was existed. At the time between 90 Ma and 65 Ma this plum was replaced to the east. At present it locates at the Bouvet triple junction.

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