



New gravity model of the lithosphere of Siberia and its geodynamic implications

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A new density model of the lithosphere and upper mantle is constructed for East Siberia and surrounding area. This model is based on a joint inversion of the gravity field (including new satellite data from CHAMP and GRACE) and existing seismic data imaging crustal structure. A new inversion technique has been developed, which provides us with better vertical resolution. The amplitude of density perturbations reaches 0.05 g/cm³ according to the obtained model. The 3-D density structure has been compared with the mantle velocities from long-range seismic sections. Although there exists some correspondence of these images (e.g. general position of the lithosphere-asthenosphere boundary and low-velocity/density anomaly under West Siberia), we find many differences, which are particularly remarkable in the area of Tungus plateau. This gives clear evidences for different types of lithosphere blocks, which are characterized by different composition. We discuss a relationship of these differences to the magmatic underplating - one of the key processes, which formed the lithosphere structure of East Siberia.