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# 3D strength map of the Asia region

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The Southern and Central Asia is a tectonically complex region which characterized by the great collision between the Asian and Indian plates. Its tectonic evolution is strongly related to the active subduction process along the Pacific border. Stress investigation in the continental crust is a very important problem not only for science but also for the practical purposes. There are four main factors which produce tectonic stresses: gravity anomalies of the crust, density inhomogeneities, deformation from area with intraplate collision, residual elastic deformations and underthrust stresses conditions from convective mantle.
We present the stress model of the crust and lithosphere for the Central and Southern Asia on the basis of the finite element modeling. For the crust we take the elasto-plastic rheology with Drucker-Prager criterion. In the lithosphere the elasto-plastic model with von Mises criterion is assumed. We investigated stresses which are produced by the crustal density inhomogeneities and surface relief. The calculations are done using the U-WAY finite element code developed at the Institute of Applied Mechanics Russian Academy of Sciences. (similar to the Nastran program) Density inhomogeneities are based on the AsCRUST-08 crustal model (Baranov, 2008), which has resolution of 1 x 1 degree. AsCRUST-08 was built using the data of deep seismic reflection, refraction and receiver functions studies from published papers. The complex 3D crustal model consists of three layers: upper, middle, and lower crust. Besides depth of the boundaries, we provided average P-wave velocities in the upper, middle and lower parts of the crystalline crust and sediments. The seismic P-velocity data was also recalculated to the densities and the elastic moduli of the crustal layers using the rheological properties and geological constraints. Strength parameters of rocks strongly depend on temperature, tectonic and fluid pressure. Fluid pressure can reduce resistance forces in faulting rock, tectonic pressure increases these forces.