Finite element study of the global stress and strain fields

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Our contribution discusses the stress and strain fields obtained by the finite element method. In this approach, the 3D computational domain is a layer bounded by the real Earth's surface represented by SRTM3 model and by the Moho surface that is gained by CRUST2.0 model. Both boundaries are discretized and approximated by series of triangles. The input boundary conditions applied on the upper boundary are in the form of displacement vectors obtained by GPS measurement, while on the lower one we suppose the symmetry boundary conditions, i.e. displacement vector component perpendicular to this boundary is zero. For numerical implementation we use 3D linear elements in FEM software ANSYS and we apply different material properties in different parts of the computational domain. Moreover, we present several local refinements in chosen fault regions, where the detailed study is done. Results are represented in the form of estimates of point's velocity as well as in the form of stress and strain fields.