



Another view on the study of Earth's crust deformations applied in Adriatic plate

Yüksel Altiner

Federal Agency for Cartography and Geodesy, Frankfurt am Main, Germany (yueksel.altiner@bkg.bund.de)

Works dealing with the study of the Earth's crust deformations are generally restricted to the determination of internal deformation measures (dilatation and elongation), which are derived by velocities estimated using GNSS data acquired within a certain study area. If, despite of the fact that deformations of the Earth's crust movements are of a 3-D nature, comments based on the internal deformation measures can lead to inadequate statements, especially for an area covering plate boundaries or including different kinds of deformation properties. However, for a complete treatment of deformation subject to the Earth's crust supplementary information on the visualization of changes of external geometries within the study area (change of mean curvatures and principle curvatures) is urgently needed.

The change of the mean curvatures describing the relations of external geometry between the neighbor points allows to study area-wise the external change of the surface in 3-D Euclidian space, instead of point-wise considering the vertical movement of stations, and moreover, the evaluation of the change of dominant axes of principle curvatures in the points leads to visualization of the direction of falling gradient of the external geometry, and consequently provides an overlook about the direction of the power necessary for the mass-transportation within the study area.

In this presentation, effects of the splitting of the study area into the triangles or interpolation of velocities into a regular grid area will be described. Applying the velocities derived using GPS data (1994-1998) from the area around the Adriatic plate, the existence of the central tectonic boundary on the basis of external deformation measures will be discussed.