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Surface deformation of the Vrancea region (Romania) from inversion of GPS motion vectors

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We use GPS relative motion data to analyse the surface deformation in the Vrancea region (east-Carpathians, Romania). The relative motions are inverted with the method of Spakman and Nyst (EPSL, 2002) to obtain estimates of the strain- and rotation-rate fields and possible contributions of surface fault creep. We approach the deformation analysis from two perspectives. First, we analyse a regional data set of about 30 GPS motion vectors resulting from the SUBDUCT project (Van der Hoeven et al., EOS, 2004) which focusses on observing the surface motion in Vrancea and directly surrounding regions.

Second, we enlarge the scope by inverting the regional data set jointly with GPS motion vectors of the European area which are collected from different published sources. This allows us to place the surface deformation of the Vrancea region in a European context. Prelimenary results indicate that local deformation (presumably forced by the dynamics of the Vrancea subduction zone) are superimposed on a central European crustal flow field that may be driven by roll-back of the Aegean slab.