



Integration of permanent and epoch GPS measurements for estimation of regional intraplate velocity field for Sudety Mts. and adjacent areas

Jan Kaplon (1), Bernard Kontny (1), Piotr Grzempowski (1), Vladimir Schenk (2), Zdenka Schenkova (2), Jan Balek (2), and Jan Holesovsky (2)

(1) Institute of Geodesy and Geoinformatics, Wrocław University of Environmental and Life Sciences, Poland (jan.kaplon@igig.up.wroc.pl), (2) Institute of Rock Structure and Mechanics, Prague, Czech Republic

Geodynamic network of the Sudety Mts. (GEOSUD) was established in 1996 in Poland. Simultaneously on the Czech side of the mountains the geodynamic network EAST SUDETEN was built in 1997 and in 2001 it was extended for sites towards west (the WEST SUDETEN network). Annual GPS campaign measurements were performed on all networks for two days. Satellite observations gathered by the Institute of Geodesy and Geoinformatics (IGG), Wrocław, and by the Institute of Rock Structure and Mechanics (IRSM), Prague, were processed each year using the Bernese GPS Software, versions of 4.0, 4.2 and 5.0. During these processing different time intervals of observations were used with different models for Earth's rotation, satellite ephemeris, pole motions, ocean loadings and antennas calibration parameters. This paper delivers the uniform reprocessing strategy of all sessions realized in 1997-2012 period based on Bernese GPS Software v. 5.0 supported by IGS Final ephemeris and Earth's rotation parameters, absolute antenna phase center models and L5/L3 ambiguity resolution strategy. Two different data reprocessings had been made. The first processing was fitted into datum using minimum coordinate constraining of weekly solutions of the EPN network in the reference frame valid for the date of individual measurements. The second one was fitted into IGS05 reference frame based on the EPN reprocessed weekly solutions (REPRO1). Both solutions put together all campaign measurements and newly calculated velocity vectors for sites of GEOSUD, EAST and WEST SUDETEN networks are presented and compared. Since 2008 the observations from permanent GPS stations of ASG-EUPOS network located in SW Poland were included into processing. These sites with EPN permanent stations (BOR1, GOPE, GRAZ, POTS, WROC, WTZR) were used to establish the reference frame for the velocity estimation. Paper presents also methodology of intraplate velocity estimation and quality assessment of new reprocessing with respect to earlier solutions and network fit into given reference frame. At the end new map of GPS sites velocities is presented for the Sudety Mts. and adjacent area.