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Implications from homogenized solutions of permanent and epoch-wise GPS networks on the recent geo-kinematics of Slovakia

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The regular GPS observations aimed for geo-kinematical investigations are performed in Slovakia since 1993, when the epoch-wise Slovak Geodynamic Reference Network (SGRN) was established and observed for the first time. Since that time the SGRN was enlarged and re-observed 8 times and new regional and local epoch network were established and annually or bi-annually re-observed. Moreover, in 1996 the first permanent GPS station in Slovakia started with continual monitoring. Recently, the time series from 10 permanent stations situated in Slovakia or close to Slovakian border are available. This paper is particularly focused to Slovakia and its regional geo-kinematics. In this experiment we tried to consider all data available in mentioned region. We included also the data from local GPS networks extending in small areas in Tatra Mountains (Local Network Tatry) and Geodetic Network EMO surrounding the area of Mochovce Nuclear Power Plant. Generally this work is based on 10 years of permanent and almost 16 years of epoch-wise GPS observations performed within five GPS networks occurring in Slovakia or near its boundaries. During last years started at Slovak University of Technology systematical reprocessing of past epoch and permanent GPS observations with aim to homogenize available data and to perform complex site velocities estimation. This paper refers the outputs from reprocessing and combination of 65 epoch or permanent GPS stations available in Slovakia and its close surroundings. These data were used to estimate velocity field of Slovakia in order to give a true picture of its geo-kinematics. Estimated velocities are used as input data for deformation analysis and indication of regions or sites with anomalous geo-kinematic features.