



Time series analysis for the GPS permanent station Bucharest

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In the framework of the Collaborative Research Centre CRC 461 "Strong Earthquakes" subproject B1: "Three dimensional plate kinematics in Romania" the Geodetic Institute of Karlsruhe (GIK) mainly carried out GPS measurement campaigns since approximately 10 years.

In addition to these temporarily occupied sites for a couple of stations permanent measurements are available. 1999 the Bundesamt fuer Karthographie und Geodäsie (BKG) established the first permanent GPS station BUCU in Bucharest and is providing the RINEX data.

To evaluate the campaign results and discover seasonal effects all available GPS data of the station BUCU have been analysed. BUCU was embedded in a network of six surrounding IGS stations.

After data processing with Bernese GPS Software 5.0 and removing the Eurasian trend, the results are displayed and analysed for the North, East and Height component. A movement of the Height component with annual period is clearly observed. To evaluate this visual result and determine periodical effects for the plane components Fourier analyses are accomplished.

The apparent annual height movement could be verified. It is a superposition of frequencies with mainly annual, biannual and quarterly period. A 40-days period is dominating the time series of the East component. For the North component a biannual period is commanding.

The main focus is to present the results of the Fourier analyses. Furthermore the correlation between detected periodical effects and atmospheric as well as groundwater influences will be discussed.