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Geodetic component of the monitoring of tectonic and hydrogeological activities in Kopacki Rit Nature Park

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Based on the European and global experience, the amplitude change in the structural arrangement caused by recent tectonic movements, can be most accurately determined by repeated precise GPS measurements on specially stabilized geodetic and geodynamic points. Because of these reasons, the GPS method to determine the movements on specially stabilized points in the Nature park Kopacki rit is also applied in this project.
Kopacki rit Nature Park is the biggest preserved natural flooded area on the Danube. It is spread over 23 000 hectares between the rivers Danube and Drava and is one of the biggest fluvial wetland valleys in Europe. In 1993 it was listed as one of internationally valuable wetlands according to the Ramsar Convention. By now in Kopacki rit there have been sights of about 295 bird species, more than 400 species of invertebrates and 44 types of fish. Many of them are globally endangered species like, white tailed eagle, black stork and prairie hawk. It's not rare to come across some deer herds, wild boars or others.
Today's geological and geomorphological relations in the Nature park Kopacki rit are largely the result of climate, sedimentary, tectonic and anthropogenic activity in the last 10,000 years. Unfortunately the phenomenon of the Kopacki rit Nature park is in danger to be over in the near future due to those and of course man made activities on the Danube river.
It is trough scientific investigations of tectonic and hydrogeological activities that scientist from University of Zagreb are trying to contribute to wider knowledge and possible solutions to this problem.
In the year 2009 the first GPS campaign was conducted, and the first set of coordinates of stabilized points was determined which can be considered zero-series measurements. In 2010 a second GPS campaign was conducted and the first set of movements on the Geodynamic Network of Kopacki Rit Nature Park was determined.
Processing GPS measurements from 2009 and 2010 was carried out in a scientific software with multipoint solutions GAMIT / GLOBK, using Kalman filter to determine the velocity from discrete campaigns. This paper presents the performed measurements, processing and analysis of the results, which indicate that there are geodynamicaly significant developments.