

FINAL REPORT ON RESEARCH ACTIVITIES WITHIN THE PROJECT CERGOP2/ENVIRONMENT IN CROATIA

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ABSTRACT

Researchers from the Faculty of Geodesy, University of Zagreb, organized and performed various research activities within the project CERGOP2/Environment. The participation in both CEGRN campaigns was ensured with two epoch stations: Brusnik and Hvar. Activities related to the working package 10.4: International geodynamic test area Plitvice Lakes included several hydrographic measurements with the combination of GPS positioning and echosounder bathymetry. Repeated measurements with two frequencies yielded new insight about the sediments on the lake bottom. A structural map of the Lakes has been prepared, too. Geodynamic measurements has been performed on several special points. The foundation for future permanent station in the area of the Plitvice Lakes has been prepared.

CEGRN CAMPAIGNS

The GPS measurements were carried out from 20. – 25. June 2005 on two epoch stations Brusnik and Hvar and. Measurements were successfully conducted yielding with quality data.

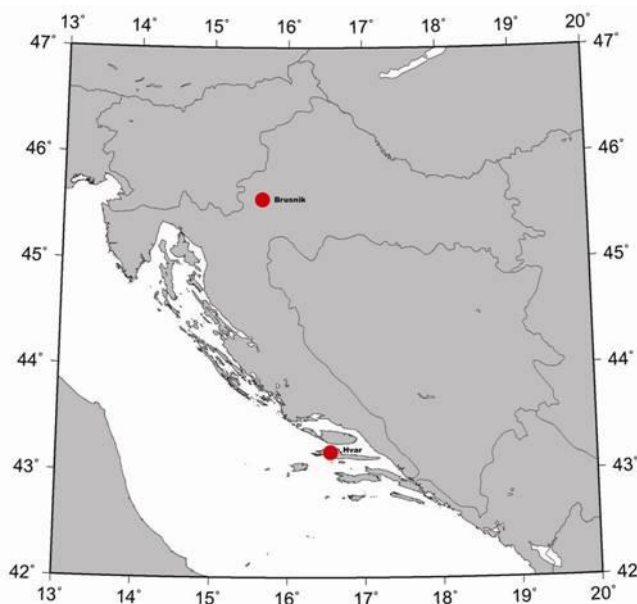


Figure 1. CEGRN points in Croatia

GEODYNAMIC NETWORK OF CITY OF ZAGREB

Geodynamic Network of City of Zagreb consists of 43 specially stabilized GPS points. Network was planned as the basis for investigations of tectonic movements and related seismic activity of the wider area of the City of Zagreb. Research is conducted under the project "Geodynamic Network of the City of Zagreb". After three series of GPS-measurements in years 1997, 2001, and 2004, the analysis of the results with software GAMIT show significant movement on GPS points as a result of geodynamic activity in the research area.

In September 2005 new 5 points were stabilized and a small GPS campaign conducted to include newly stabilized points into the Geodynamic Network of the City of Zagreb. Further measurements on whole Network would yield newer and better results and give newer and better insight of tectonic movements and related seismic activity of wider City area. Figure 2 shows major faults in wider Zagreb area and geodynamic points with new five points painted in red.

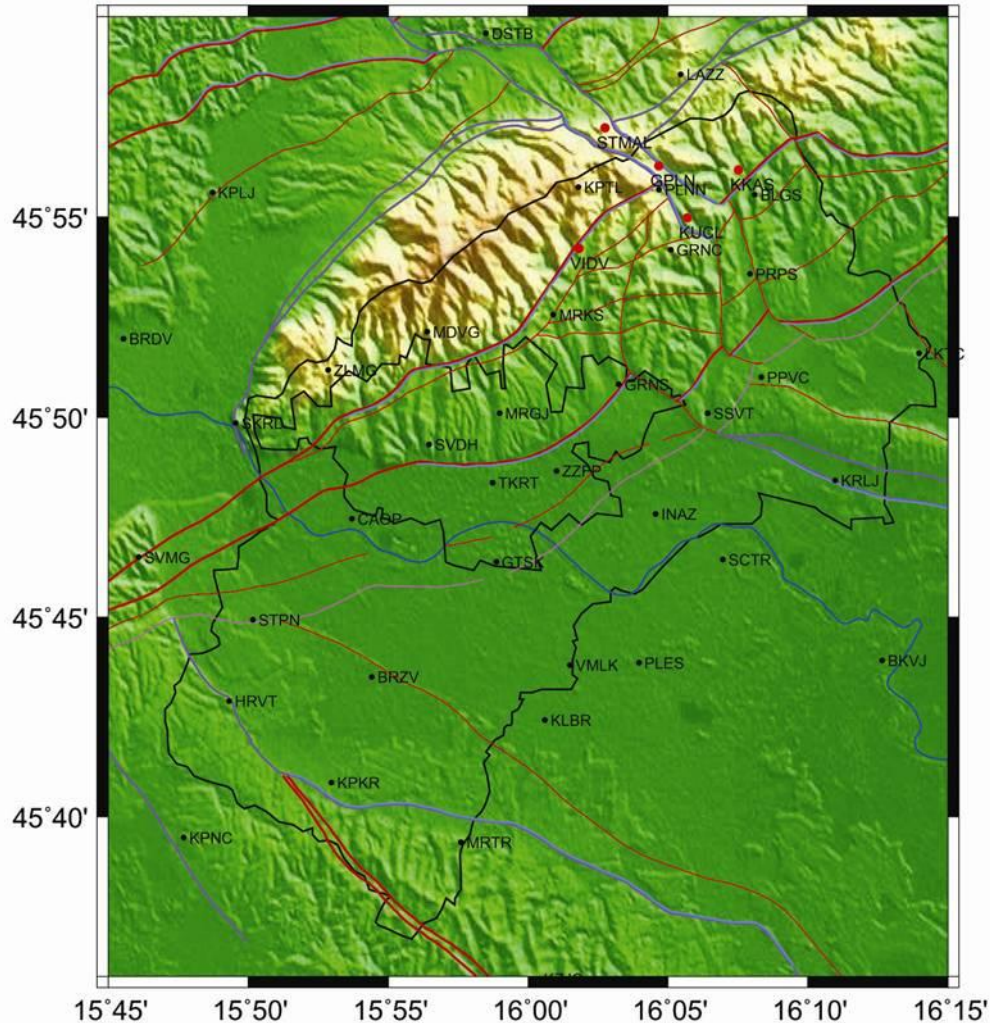


Figure 2. Major faults in wider Zagreb area and geodynamic points

PLITVICE LAKES - HYDROGRAPHY

Faculty of Geodesy, University of Zagreb, recently acquired the latest technology for performing the precise hydrographic surveying. The equipment consists of ATLAS DESO 14 surveying echosounder with two transducers: one with high frequency (210 kHz) and second with low frequency (33 kHz). The position of the transducer is determined with Real Time Kinematics GPS pair of Trimble R8 receivers. Thus, it is possible to use single-frequency DESO 14 for two-frequencies bathymetry through repeating the course of the vessel on exactly the same points with both transducers.

The combination of GPS/echosounder measurements with two transducer frequencies have shown that the lake bottom is not built of compact material, but the thick layer of material is present. Monitoring of this layer through repetitive measurements using the modern hydrographic instruments is necessary to gain more insight about the past, present and the future of the travertine formation in the international geodynamic test area of the Plitvice lakes.

CONCLUSIONS

Researchers from the Faculty of Geodesy, University of Zagreb, organized and performed various research activities within the project CERGOP2/Environment. The participation in both CEGRN campaigns was ensured with two epoch stations: Brusnik and Hvar. Activities related to the working package 10.4: International geodynamic test area Plitvice Lakes included several hydrographic measurements with the combination of GPS positioning and echosounder bathymetry. Repeated measurements with two frequencies yielded new insight about the sediments on the lake bottom. A structural map of the Lakes has been prepared, too. Geodynamic measurements has been performed on several special points. The foundation for future permanent station in the area of the Plitvice Lakes has been prepared.

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