



Monitoring and modeling of water storage in karstic area (Larzac, France) with a continuous supraconducting gravimeter

Fores Benjamin, Champollion Cédric, Lemoigne Nicolas, and Chéry Jean

Géosciences Montpellier, UMR 5243, Université Montpellier II, France (fores@gm.univ-montp2.fr)

Quantitative knowledge of the groundwater storage and transfer in karstic area is crucial for water resources management and protection. As the karst hydro-geological properties are highly heterogeneous and scale dependent, geophysical observations such as time dependant gravity could be helpful to fill the gap between local (based on boreholes, moisture sensors, ...) and global (based on chemistry, river flow, ...) studies.

Since more than 2 years, the iGrav #002 supraconducting gravimeter is continuously operating in the French GEK observatory(Géodésie de l'Environnement Karstique, OSU OREME, SNO H+) in the Larzac karstic plateau (south of France). The observatory is surrounding more than 250m karstified dolomite, with an unsaturated zone of \sim 150m thickness. First, the evaluation of the iGrav data (calibration, steps and drift) will be presented. Then a careful analysis of the global, topographic and building effects will be done to evaluate the local water storage only. The gravity data will be integrated with the water level data in nearby boreholes and petrophysical data from core samples. Finally, simple hydrological models will be presented to help the interpretation on the karst groundwater storage and transfer and to merge the whole dataset.