

## Geophysical Research at the Conrad Observatory - 2011

Geophysical processes continuously influence our living conditions. Visible witnesses of the Earth's dynamics are earthquakes, volcanism, melting of ice masses, increase of sea level, and also the current large decline of the geomagnetic shield as well as fluctuations in global temperature and water vapour distribution. An accurate measurement and continuous monitoring of these effects is essential to our understanding of cause and effect of underlying geophysical processes. Only through this knowledge, we can better understand their impact on our environment and hence learn about the consequences of the varying physical constraints on earth.

The Conrad observatory is a geophysical observatory for monitoring important physical parameters of our planet. It is named after the Austrian geophysicist Victor Conrad (1876 - 1962), who worked many years at the Central Institute for Meteorology and Geodynamics (ZAMG) in Vienna. It is located 50 km southwest of Vienna, Austria, in a nature reserve on the Trafelberg, just above 1000 m altitude. The observatory is almost entirely underground and guarantees, among other things, constant temperature for all employed instruments and techniques. With its range of supported measurement techniques, instrumentation and the layout of the underground facilities, the Conrad Observatory represents a unique research and development location for earth scientists of all disciplines.

The Conrad Observatory includes two main facilities: (1) The seismo-gravimetric observatory (SGO) which was opened in 2002. (2) The geomagnetic observatory (GMO) is under construction which will last until end of 2011. The GMO will then commence operations during 2012.

The basic task for each earth observatory is the observation of physical relevant parameters, which are crucial to our understanding of processes on earth. At the Conrad observatory earthquake activity (seismology), changes in gravity and mass distribution, geomagnetic field variations, geodetic parameters, atmospheric waves and meteorological data is continuously monitored. Observatories are characterized by

long term recording at widely stable measurement conditions. In addition to observation, the Conrad observatory provides several piers, socket and drilling holes for instrument development, calibration and research projects. National and international groups already use both the observational data as well as the measurement facilities for research and development, although the setup of the Conrad observatory is not fully completed yet. In the following, reports are presented which provide a brief overview about observation, research and development at and in the vicinity of the Conrad observatory. Because of the international character of partners and geophysical research, the reports are written in English. I would like to thank all authors and co-workers for their contributions.



*The entrance of the SGO at the Conrad observatory.*

Roman Leonhardt  
Head of the Conrad Observatory

### **Conrad Observatory**

Central Institute for Meteorologie and  
Geodynamics

Hohe Warte 38

1190 Vienna

Austria

Web: <http://www.conrad-observatory.at>

e-mail: [conrad.observatory@zamg.ac.at](mailto:conrad.observatory@zamg.ac.at)