Hydrological and geological investigations at Trafelberg mountain

Since the superconducting gravimeter GWR CT C025 (SG) was installed at the Conrad Observatory (COBS) in 2007 the influence of environmental effects to the gravity signal are studied. Additional to meteorological effects new investigations concentrate on hydrological effects inside the Trafelberg mountain.

Currently, the investigation of hydrological effects on gravity at COBS is focused on hydrological and geological settings of the Trafelberg mountain.

The geology of this area shows a complicated nappe-structure of the eastern alps. The Trafelberg mountain itself consists of Principal Dolomite rock of the "Reisalpen"-nappe, and "Wetterstein" and "Gutenstein" limestone of the "Unterbergnappe" (Summesberger, 1991, Figure 1).

West of the observatory site a small dip is located, which could act as potential temporal water reservoir with influence to the gravity signal of SG. Further geophysical investigations concentrate on this area till the end of 2011. A refraction seismic and geoelectrical survey will be carried out to find possible water-impermeable layers.

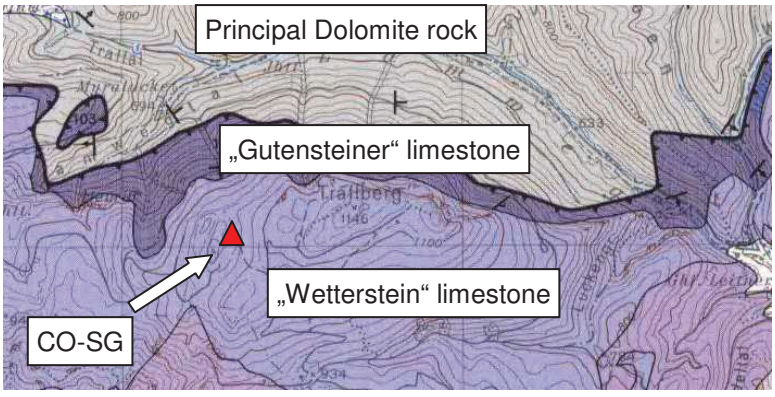

Figure 1: Geological map of the Trafelberg mountain area (from Summesberger, 1991)

Figure 2: Entrance to cave "Traflloch".

Speleological surveys shall bring information about the limestone-Karst behaviour of the mountain. Three caves in the Trafelberg mountain are listed in the speleological registry of Lower Austria (Hartmann, 2000). "Traflloch" (47° 55' 44,2'', 15° 52' 41,3'') is located 300 meter east of the east peak of Trafelberg (1137m), "Traflkluft" and "Luckengrabenhöhle" are on the north side and east side of "Luckengraben".

References:

Summesberger H., 1991. Puchberg am Schneeberg 1:50 000 – Geologische Karte der Republik Österreich, 75, Verl.d. Geologischen Bundesanstalt, Wien.

Hartmann H u. W., 2000. Die Höhlen Niederösterreichs, Band 5. *Wissenschaftliche Beihefte zur Zeitschrift "Die Höhle," 54.* Herausgegeben vom Landesverein für Höhlenkunde in Wien und Niederösterreich, Wien.

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