GREF - The German Integrated Geodetic Reference Network

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Abstract

The Federal Agency for Cartography and Geodesy (BKG), Branch Office Leipzig, runs the federal, nationwide geodetic reference network GREF. The network contributes to the German realizations of the geodetic dates and consists of 25 GNSS reference stations, a majority of them being ground based markers such as pillars in geologically solid formations.

While most of the stations contribute to international GNSS networks and deliver data to the international GNSS data centers plenty more data is available for all kind of research at request, i.e. high rate RINEX data for primary and secondary GNSS receivers up to 1 Hz, RINEX data for collocated secondary antenna markers, data from peripheral sensors such as weather, tide or ground water gauge. Some stations can be used for additional measurements or temporarily adapted to measure additional data such as RTK or high rate GNSS observations faster 1 Hz.

A GREF station consists of at least one geodetic pillar for the GNSS antenna. Ground based markers are in a height of one to two meters above the ground. At some stations BKG installed corner reflectors usable as passive reflectors for InSAR missions. All geodetic markers are linked by terrestrial levelling and local surveying measurement. Also, the BKG conducts absolute gravity measurements periodically.

The GREF stations are designed as GNSS reference stations. By inclusion of peripheral sensors and terrestrial measurements, they can be used to combine GNSS with other earth observation techniques.