



## Local Ties at the Geodetic Observatory Wettzell

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The geodetic space techniques VLBI, SLR and GNSS are realized at the Geodetic Observatory Wettzell since several decades. The space observations are accompanied by an extensive local survey at more or less regular intervals. Beside local tie vectors, which are required for the combination of the different space geodetic techniques, the local survey provides evidence of the long term stability of the geodetic reference points defining the ITRF.

The analysis of the different survey campaigns covering a time span of 24 years and the big number of geodetic markers allow a reliable identification of instable pillars and ground markers, while the reference points of the space geodetic techniques are considered as stable. One observation pillar, being equipped with a tiltmeter, allows conclusions concerning the long term tilt behavior, which is affected by hydrological processes.

A footprint network of 5 permanent GPS stations being installed at distances between 7 and 20 km supplement the local survey and document the geological stability in the vicinity of the observatory.

In addition this paper presents different techniques of determining the invariant reference points of the VLBI and SLR telescopes, which are usually not directly accessible.