



New VLBI Infrastructure for Earth Rotation Monitoring at Wettzell

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Very Long Baseline Interferometry (VLBI) is a key technology for precise monitoring of Earth's rotation. VLBI is the only space geodetic technique that allows for the determination of the absolute orientation of the Earth's rotation axis in space (nutation) and the absolute rotation angle of the Earth's body (UT1). VLBI is used to realize the International Celestial Reference Frame (ICRF) and contributes to the realization of the International Terrestrial Reference Frame (ITRF). In order to further improve accuracy, latency and availability of VLBI observations the International VLBI Service for Geodesy and Astrometry (IVS) developed the VLBI2010 concept aiming at more observations, larger bandwidth, and near-real time correlation. The implementation of the concept would allow for an uninterrupted high-accuracy monitoring of Earth's rotation.

The Geodetic Observatory Wettzell is operated by the German Federal Agency for Cartography and Geodesy (BKG) together with Technische Universität München (TUM) in the context of the Research Group Satellite Geodesy (FGS), a consortium of BKG, TUM, German Geodetic Research Institute (DFGI) and University of Bonn, Germany. The Wettzell observatory is on its way to operate a radio telescope triple: The 20 m radio telescope has been involved into geodetic VLBI observations since 1983. Recently two new 13.2 m VLBI telescopes were installed – the TWIN telescope – which adhere to the VLBI2010 concept and which will be part of VGOS, the newly developed VLBI Global Observing System of the International VLBI Service for Geodesy and Astrometry (IVS). Currently the high-frequency electronics, broadband receivers and feed horns, are being integrated and first operation is expected this year. The two telescopes allow for novel observation strategies, also in conjunction with the existing 20 m telescope. The upcoming new VLBI infrastructure will lead to more accurate, continuous and short-latency monitoring of the rotation of the Earth in space.