



Investigations of atmospheric refraction parameters derived from local VLBI observations

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Space-geodetic techniques, such as Global Navigation Satellite Systems (GNSS) or Very Long Baseline Interferometry (VLBI) play a steadily increasing role in the understanding of the Earth's atmosphere, because atmospheric refraction parameters can be linked to the water vapor content in the atmosphere. However, in the field of geodesy, changing atmospheric conditions are referred to as perturbation effects, since the signals of space-geodetic techniques are delayed and affected by bending and attenuation effects relative to a theoretical path in vacuum.

Local refraction effects are normally investigated by small scale GNSS networks. With a pair of radio telescopes at the Geodetic Observatory Wettzell in Bavaria (Germany), we are now able to carry out similar investigations with geodetic VLBI observations, which are affected by the same refraction phenomena.

In this study, we investigate differential zenith wet delay estimates derived from various local VLBI sessions. For this purpose, specially designed so-called WHISP (Wettzell HIgh SPeed) sessions have been observed consisting of only two VLBI radio telescopes separated by only about 120m. One main advantage of the WHISP sessions is the considerably increased number of observations compared to traditional 24h-sessions.