



Comparison of Ionospheric delays between VLBI and GNSS

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VLBI is a differential technique observing at multiple frequencies. Thus, it can independently provide ionospheric delays. GNSS can supply precise ionospheric delays as well, often with comparable or even better spatial coverage. In this presentation, we compare the VLBI differential ionosphere from two sites with multiple VLBI antennas with the co-located GNSS ionospheric calibrations. In S/X VLBI, a linear combination of X-band and S-band delays is used to provide a calibrated group delay measurement that is free of ionospheric effects to first order. In contrast, the VGOS system is designed to provide group delay and ionospheric delay through a simultaneous fit to measurements in 4 frequency bands distributed over a wide frequency range. The CONT17 VGOS data have been calibrated in terms of ionosphere in advance and thus directly provide TEC for each observation. In this work we compare the extracted ionospheric delays from dual-frequency observations of GNSS with the ones from dual-frequency S/X VLBI and from co-located VGOS stations in the CONT17 experiment to better understand how well VLBI can contribute to the study of the ionosphere. Since both source structure and ionosphere effects on geodetic VLBI data analysis are dispersive, in the future we will introduce an optimal match for VLBI and GNSS and compare ionospheric delays obtained from different radio sources to help to improve the modeled structure effect.