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Comparison of Tropospheric Zenith Wet Delay from VLBI and GNSS Estimations

Vicky Jia Liu[1], Maaria Nordman[1], and Nataliya Zubko[2]
[1]Department of Built Environment, Aalto University, Espoo, Finland (maaria.nordman@aalto.fi)
[2]Department of Geodesy and Geodynamics, Finnish Geospatial Research Institute FGI, Helsinki, Finland (nataliya.zubko@nls.fi)

Tropospheric delay is one of the major error sources for space geodetic techniques such as Very Long Baseline Interferometry (VLBI) and Global Navigation Satellite System (GNSS). In this study, we compared the agreement of tropospheric zenith wet delay (ZWD) seasonal variations derived from VLBI and GNSS observations at 8 stations that are located at all around the globe. We have analysed time series of 8 years, starting in 2012 until end of 2019. Results show that VLBI_ZWD present clear seasonal variations which depend on the location of each station, in the tropics the variability is more pronounced than in mid-latitudes or polar regions. Furthermore, the VLBI_ZWD also shows a reasonably good agreement with seasonal fit model. When comparing zenith wet delays derived from co-located GNSS and VLBI stations at cut-off elevation angle, they agree quite well, which is proved by the high correlation coefficients, varying from 0.6 up to 0.95. The biases between the techniques are in mm level and standard errors of the whole time series are in few centimetres.