



Influence of the GNSS processing parameterisation on the tropospheric path delay and its consequence to the long-term analysis

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Zenith Total Delay (ZTD) is a product of advanced processing of GNSS observations, which reflect troposphere influence on GNSS path delay. Its value is correlated with such meteorological parameters like air pressure, temperature and humidity. Consequently, thanks to the long-term observations collected at a permanent networks (e.g. EPN, EUREF Permanent Network) it allows to estimate decadal changes in troposphere and can be useful in climate studies. However, adopting various processing strategies, in terms of e.g. used models or software's, results in differences in ZTD value. These differences can lead to the systematic discrepancies, which affect the linear trend values. ZTD estimation process is also correlated with the coordinates estimation, especially with the vertical component. Therefore, incorrectly modelled or estimated vertical position, due to e.g. equipment related errors, may also cause deterioration in the ZTD reliability. For different processing strategy, the hardware changes have different impact on the homogeneity of ZTD time series. In this paper, study of the influence of GNSS processing parameterisation on the zenith tropospheric path delay and its consequence to the long-time analysis is conducted.