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Comparison of the Total Electron Content obtained from GPS and VLBI observations

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GPS and VLBI observations collected at the IGS (International GPS Service) and the IVS (International VLBI Service for Geodesy and Astrometry) stations over Europe were used to obtain TEC (Total Electron Content) data during the time intervals 1994 - 2004 and 1984 - 2004, respectively. The TEC time series of quiet and disturbed iono-spheric conditions above different European collocation stations, Onsala, Metsahovi, Matera, Wettzel, were analyzed in this study, covering one (TEC from GPS) and two solar cycles (TEC from VLBI). The TEC measurements obtained by GPS and VLBI were compared using the wavelet time-frequency analysis. The wavelet method with the Morlet function allows to detect disturbances of the ionosphere during the considered period, as well as to compute coherences between TEC from GPS and VLBI observations. This time-frequency comparison enables the detection of common signals in the ionosphere above the collocation stations.