



Towards a realistic spatio-temporal description of GNSS station position time series

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Once corrected for long-term trends, discontinuities and post-seismic deformation, GNSS station position time series exhibit a variety of periodic signals (at harmonics of the tropical year, at harmonics of the GPS draconitic year and at several fortnightly periods) overlaying a flicker noise background with modest white noise at the highest frequencies. The origins of these features are diverse and not fully understood. Nevertheless, all of them would ideally need to be taken into account when deriving a Terrestrial Reference Frame (TRF) from GNSS time series. Besides, all these components are, to some extent, spatially correlated, and using information about their spatial correlations would be beneficial to the determination of GNSS-based TRFs.

This presentation will first review the various periodic and aperiodic components of GNSS time series and characterize their spatial structures. Possible ways of incorporating a realistic spatio-temporal description of GNSS time series into the determination of GNSS-based TRFs will then be discussed.