EGU21-9860
https://doi.org/10.5194/egusphere-egu21-9860
EGU General Assembly 2021

Influence of non-tidal atmospheric and oceanic loading defor on the stochastic properties of over 10,000 GNSS vertical lanc motion time series

Kevin Gobron et al.

Over the past two decades, numerous studies demonstrated that the stochastic variability in GNSS position time series – often referred to as noise – is b spatially correlated. The time correlation of this stochastic variability can be well approximated by a linear combination of white noise and power-law s with different amplitudes. Although acknowledged in many geodetic studies, the presence of such power-law processes in GNSS position time ser unexplained. Considering that these power-law processes are the primary source of uncertainty for velocity estimates, it is crucial to identify their or reduce their influence on position time series.

Using the Least-Squares Variance Component Estimation method, we analysed the influence of removing surface mass loading deformation on the stoc vertical land motion time series (VLMs). We used the position time series of over 10,000 globally distributed GNSS stations processed by the Nevada Geo the University of Nevada, Reno, and loading deformation time series computed by the Earth System Modelling (ESM) team at GFZ-Potsdam. Our results s of stochastic parameters, namely, white noise amplitude, spectral index, and power-law noise amplitude, but also the spatial correlation, are systemat non-tidal atmospheric and oceanic loading deformation. The observed change in stochastic parameters often translates into a reduction of trend uncert to -75% when non-tidal atmospheric and oceanic loading deformation is highest.

How to cite: Gobron, K., Rebischung, P., de Viron, O., Van Camp, M., and Demoulin, A.: Influence of non-tidal atmospheric and oceanic loading deformatic properties of over 10,000 GNSS vertical land motion time series, EGU General Assembly 2021, online, 19–30 Apr 2021, EGU21-9860, https://doi.org/10.519 egu21-9860, 2021.

Display materials

Display link | Display file