Global-scale signals and systematic errors in GPS site height time series

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Site height time series from global continuous GPS network provide valuable information of various geophysical processes, which cover wide range of spectrum and are no longer dominated by tectonic motion. With the improvements in GPS global network and data analysis, we are approaching the stage of using GPS site height time series to investigate post-glacial rebound, mass loading caused seasonal, inter-seasonal and intra-seasonal crustal deformation, tidal deformation, aquifer water table undulation, and tectonics caused vertical motion.

The major obstacle is that the systematic errors in GPS data analysis are mixed with the signals in the site height time series. Due to the high correlation among the estimated parameters of GPS data analysis, small un-modeled systematic errors can be easily amplified into the site height solutions. Here, I will discuss on the satellite elevation angle dependent systematic errors. Then I will present the preliminary results and applications from the site height time series of the global continuous GPS network.

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