



Accuracy and stability of a global GPS network: Analysis of homogeneously reprocessed station coordinate time series

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Since the official start of the IGS in 1994, the models applied in the data analysis as well as the processing strategies have considerably improved. In order to obtain homogeneous and consistent time series of global geodetic parameters the Universities of Technology in Dresden and Munich decided to perform a reprocessing of a global GPS network. Up to now almost 12 years of data have been processed in a joint effort.

Although reference frame realizations benefit from the combination of different space geodetic observing techniques, it is evident that the modeling for each technique seems to be one of the limiting factors for further improvements regarding the accuracy and stability of the reference frame. Therefore, a careful examination of the results obtained by one specific technique is necessary.

Station positions within the International Terrestrial Reference Frame have been described so far by one epoch-specific coordinate set and one related velocity set. In view of a refined reference frame realization the focus of this presentation will be turned on remaining non-linear components in station position time series that are assigned to effects not captured by the linear station position changes. Therefore, the residuals of the coordinate time series will be discussed in the context of changes of the technical setup at the GPS sites (e.g. receiver radomes and elevation mask), specific modeling deficiencies (e.g. troposphere and ionosphere) and displacements of the solid earth (e.g. atmospheric loading and earthquakes). We will discuss the relevance of these

effects for a reference frame realization and for geophysical interpretations of station coordinate time series.