



True Multi-GNSS-Signal processing, signal specific biases and their variations

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Within the next years the existing GNSS, GPS and GLONASS, will be modernised, whilst at the same time new systems like QZSS, Galileo, and Compass are launched. The modernisations of the existing and the deployment of new GNSS systems will call for a realignment of the GNSS processing strategy.

In addition the extremely high stability of the future satellite clocks means, that any form of differencing observations to cancel out the satellite clock offsets, effectively leads to a very significant loss of information. Therefore differencing should be avoided.

The fundamentally new aspect of the approach for GNSS analysis presented here for a multi-GNSS and multi-signal environment is that it avoids the formation of differences as well as of linear combinations. Thus all available observations from all GNSS systems as observed by the receivers in a network are incorporated in the parameter estimation. This leads to an enormous simplification in the data analysis, as no pre-selection of any observations is required.

The presentation explains our new estimation approach and shows first results. The anticipated improvements depend on our understanding and handling of the signal specific biases that will inevitably exist between the different systems and signals. Different signal dependent bias characteristics and their effect on the processing and the results will be demonstrated.