Geophysical Research Abstracts
Vol. 12, EGU2010-10616, 2010
EGU General Assembly 2010

Understanding and treating seasonal signals of station positions in the ITRF computation

Manuela Seitz (1), Mathis Blossfeld (1), Laura Sanchez (1), and Florian Seitz (2)
(1) DGFI, Munich, Germany (seitz@dgfi.badw.de), (2) TUM, Munich., Germany

The computation of the actual International Terrestrial Reference Frame, the ITRF2008, is based on the assumption that the movement of station positions is dominated by a linear trend, and that seasonal variations can be neglected. However, it is well known and confirmed by the results of ITRF2008, that seasonal height variations of station positions reach the level of Centimetres and have to be considered (modeled or parameterized) in ITRF computation, if highest accuracy and consistency for the frame shall be guaranteed. Besides, a large number of applications exists for which precise knowledge of station positions is required for arbitrary epochs with an accuracy better than one centimetre.

Since a large part of the seasonal variations is induced by geophysical mass load
variations, we want to study to which extent the variations of the stations included in ITRF2008 can be explained by geophysical models. By comparing stations at co-location sites, we will also investigate, if there are systematic differences between the variations seen by the different techniques. The results of this comparison allow for conclusions w.r.t. technique-specific and model-induced deficiencies. Finally, we will demonstrate the effect of neglecting seasonal signals in the ITRF computation on the alignment of weekly regional reference frames and want to discuss the question, if temporally resolved reference frames might be appropriate for some applications or even
in general.