Geophysical Research Abstracts
Vol. 16, EGU2014-10012, 2014
EGU General Assembly 2014

Investigation on empirical estimation of minor tides

Wolfgang Bosch (1), Matthias Madzak (2), Jan Hagedorn (3), Harald Schuh (3,2), and Sigrid Böhm (2)

(1) DGFI, München, Germany (bosch@dgfi.badw.de), (2) Vienna University of Technology, Department of Geodesy and Geoinformation, (3) GFZ German Research Centre for Geosciences, Potsdam, Germany

In general recent global ocean tide models provide tidal constants for the most dominant semi-diurnal, diurnal, selected shallow water and some long period tides, typically M2, N2, N2 , K2, 2N2, O1 , P1 , Q1 , K1, S1, M4, Mf and Mm. Contributions of minor tidal terms and modulations of the main terms are in general considered by inferring admittance assumptions and nodal corrections. The rather new hydrodynamic model FES2012 extends this list and now provides additional tables for tidal constants for some 18 complementary minor tides. We investigate here if the long time series of precise multi-mission altimeter data (e.g. on the repeated ground tracks of TOPEX/Jason1/Jason2) allows a robust empirical estimation of those minor tides which appear to be (after the major tides listed above) the next dominant tidal waves. Candidate minor tidal waves are M1, J1, σ1, ν2, L2, T2, μ2. Can these partial tides empirically separated from tides with adjacent frequencies (e.g. μ2 versus 2N2 or T2 versus S2)? How do the tidal constant for those minor tides compare with those of the hydrodynamic model FES2012? What are the quantitative differences between applying admittance theory and using the tidal constants derived empirically? These investigations are performed in the context of the SPOT-project, aiming to improve the transfer function from ocean tide angular momentum to Earth rotation parameters, the variations of polar motion and LOD.