Geophysical Research Abstracts
Vol. 18, EGU2016-7683, 2016
EGU General Assembly 2016

Numerical simulation of short period Earth rotation variations induced by ocean tides

Andreas Goss (1), Michael Schindelegger (2), and Florian Seitz (1)

(1) Institut für Astronomische und Physikalische Geodäsie, TU München, München, Deutschland (andi.goss@gmx.net), (2) Vienna University of Technology, Department of Geodesy and Geoinformation, 120-4, Vienna, Austria

The Dynamic Model for Earth Rotation and Gravity (DyMEG) has been used in several previous studies for the numerical simulation of Earth rotation (polar motion and length-of-day) on time scales from seasons to decades. Our current activities aim at the extension of the model and its application for the simulation of high frequency Earth rotation signals with periods of a few hours up to several days. This requires several model adaptations, such as the incorporation of additional excitation mechanisms as well as the identification and implementation of an appropriate numerical integrator.

Here we particularly focus on the effect of ocean tides as they – due to their strictly periodic signal characteristics – provide a good possibility to evaluate the performance of the model and to detect potential computational problems. Secondary effects due to atmospheric and non-tidal oceanic influences are incorporated as well. We validate the simulated polar motion and length-of-day time series against hourly GNSS (Global Navigation Satellite System) data and conventional ocean tide routines of the IERS (International Earth Rotation and Reference Systems Service).