



A new high frequency Earth rotation model based on an empirical ocean tide model from satellite altimetry

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A new model for Earth rotation variations based on ocean tide models is highly desirable in order to close the gap between geophysical Earth rotation models and geodetic observations. The current high frequency Earth rotation model mentioned in the IERS Conventions 2010 and thus used by most analysis institutions was developed in 1994. Since then several satellite missions have collected lots of altimetry data and were used to obtain new ocean tide models. Due to the increase of accuracy and resolution of these models, we will develop an improved Earth rotation model for (sub-) daily periods.

In order to reduce (hydrodynamic) modeling effects, we use the empirical ocean tide model EOT11a, provided by DGFI, Munich. Global oceanic currents, which are required for ocean tidal angular momentum but not included in empirical models, are obtained using a linearized and simplified Navier-Stokes equation (Ray, 2001).

We compare the new model with the model from the IERS Conventions 2010 as well as with an empirical Earth rotation model (Artz et al., 2011) and show the expected differences in the analysis of VLBI observations. For this purpose we use the Vienna VLBI Software (VieVS).