Geophysical Research Abstracts
Vol. 19, EGU2017-6533-1, 2017
EGU General Assembly 2017

Impact of GFZ's Effective Angular Momentum Forecasts on Polar Motion Prediction

Robert Dill and Henryk Dobslaw
GFZ, Helmholtz Centre Potsdam, 1.3 Earth System Modelling, Potsdam, Germany (dill@gfz-potsdam.de)

The Earth System Modelling group at GeoForschungsZentrum (GFZ) Potsdam offers now 6-day forecasts of Earth rotation excitation due to atmospheric, oceanic, and hydrologic angular momentum changes that are consistent with its 40 years-long EAM series. Those EAM forecasts are characterized by an improved long-term consistency due to the introduction of a time-invariant high-resolution reference topography into the AAM processing that accounts for occasional NWP model changes. In addition, all tidal signals from both atmosphere and ocean have been separated, and the temporal resolution of both AAM and OAM has been increased to 3 hours. Analysis of an extended set of EAM short-term hindcasts revealed positive prediction skills for up to 6 days into the future when compared to a persistent forecast.

Whereas UT1 predictions in particular rely on an accurate AAM forecast, skillfull polar motion prediction requires high-quality OAM forecasts as well. We will present in this contribution the results from a multi-year hindcast experiment, demonstrating that the polar motion prediction as currently available from Bulletin A can be improved in particular for lead-times between 2 and 5 days by incorporating OAM forecasts. We will also report about early results obtained at Observatoire de Paris to predict polar motion from the integration of GFZ's 6-day EAM forecasts into the Liouville equation in a routine setting, that fully takes into account the operational latencies of all required input products.