Geophysical Research Abstracts
Vol. 21, EGU2019-3164, 2019
EGU General Assembly 2019

Investigating Possible Combinations of Atmospheric, Ocean, and other Geophysical Angular Momentum Data to Improve Operational Earth Orientation Information

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Near real-time estimates of Earth orientation parameters (EOPs) and their short-term predictions can be enhanced by the use of Atmospheric Angular Momentum (AAM), Ocean Angular Momentum (OAM), and other geodetic analysis and forecast data sets. The US Navy will have provided almost one year of NAVGEM atmospheric and HYCOM ocean analysis and prediction time series, with consistency between the NAVGEM and HYCOM model; in addition, the GeoForschungsZentrum, German Research Centre for Geosciences, has been providing forecasts of effective angular momentum (EAM) functions that include not only AAM and OAM, but also Hydrological Effective Angular Momentum functions (HAM) and Sea-Level Angular Momentum (SLAM). Various combination and optimal estimation processes are being investigated to use these momenta data series, in conjunction with the existing USNO (IERS RS/PC) EOP series, to improve accuracy and robustness of short-term predictions of EOPs. Numerical accuracy comparisons and a metric of increased robustness are to be presented.