IERS Working Group on the Prediction of Earth Orientation Parameters (PEOP)

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Prediction of Earth Orientation Parameters (PEOP)

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Description

Earth orientation parameters (EOP) comprising of celestial pole offsets, terrestrial pole coordinates, and the Earth's spin rate (i.e., UT1-UTC) represent a critically needed link between the terrestrial and the celestial reference frame. Predictions of EOP are important for a number of operational activities including navigation of deep-space satellite missions, the pointing of astronomical instruments, or satellite-based positioning on Earth. Various agencies and institutions worldwide therefore maintain capacities to rapidly process space geodetic observations to obtain estimates for the Earth orientation parameters with short latencies as a basis for the subsequent prediction. Whereas many users require predictions for only a few days into the future, IERS routinely publishes predictions for up to 1 year ahead within its Bulletin A.

Between 2006 and 2008, the 1st EOP Prediction Comparison Campaign (EOP PCC; Kalarus et al., 2010) assessed various EOP prediction methods in an operational setting. The 2nd EOP PCC took place between 2021 and 2022, organized by CBK Warsaw with support from GFZ Potsdam (Kur et al., 2022; Kur et al. 2024; Śliwińska et al., 2022; Śliwińska-Bronowicz et al., 2024; Wińska et al. 2024). Building on these results, this working group will study current EOP prediction accuracies and explore ways to combine predictions from different institutions for greater reliability, robustness, and accuracy.

Objectives

- regularly collect and compare operationally processed EOP predictions from different agencies/institutions in order to assess accuracy, reliability and robustness of the products from different EOP prediction centers
- assess the quality of operationally processed Effective Angular Momentum forecasts required for many EOP prediction methods
- evaluate the accuracy of final estimates of EOP
- assess stationary and non-stationary uncertainties in present-day EOP predictions
- explore opportunities to rigorously combine EOP predictions from different agencies or scientific institutions

References

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