Geophysical Research Abstracts
Vol. 12, EGU2010-2972-1, 2010
EGU General Assembly 2010

An assessment of the actual CPO prediction accuracy

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Accurate prediction of the celestial pole offset (CPO) is of great importance for such applications as Terrestrial and Space Navigation, operational processing of the VLBI single-base rapid (intensives) observations of UT1, etc. Currently, accurate CPO values can be obtained only from the 24h VLBI sessions. Due to rather large time needed to transport all the data to correlator and correlation, CPO estimates are usually available with delay from two to four weeks, and hence CPO predictions are necessarily used in the real-time and near-real-time applications.

In this paper, the real accuracy of CPO prediction is investigated using the actual data computed in IERS and Pulkovo Observatory in 2007-2009. Three models are investigated: CPO models used in the IERS Rapid Service/Prediction Center (USNO) and Pulkovo Observatory, and the FCN model recommended by the IERS Conventions as a substitution for CPO for highly accurate applications.

Two estimates of the prediction accuracy were obtained. The CPO prediction accuracy was computed using the differences between predicted values and final IVS combined solution. For the second estimate, the differences between predicted values for each CPO/FCN model and final series of the same model were analyzed to assess the "internal" prediction errors for models under investigation.