Product Description Document

EOP predictions collected during the operational phase of the Second Earth Orientation Parameters Prediction Comparison Campaign (2nd EOP PCC)

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General information

This database contains predictions of Earth orientation parameters (EOP) submitted during the Second Earth Orientation Parameters Prediction Comparison Campaign (2nd EOP PCC).

The 2nd EOP PCC has been carried out by Centrum Badań Kosmicznych Polskiej Akademii Nauk CBK PAN in Warsaw (Poland) in cooperation with Deutsches GeoForschungsZentrum GFZ in Potsdam (Germany) and under the auspices of the International Earth Rotation and Reference Systems Service (IERS) within the IERS Working Group on the 2nd EOP PCC. The purpose of the campaign was to re-assess the current capabilities of EOP forecasting and to find most reliable prediction approaches.

The operational part of the campaign lasted between September 1, 2021 and December 28, 2022. Throughout the duration of the 2nd EOP PCC, registered campaign participants submitted forecasts for all EOP parameters, including dX, dY, dPsi, dEps (components of celestial pole offsets), polar motion, differences between universal time and coordinated universal time, and its time-derivative length-of-day change. These submissions were made to the EOP PCC Office every Wednesday before the 20:00 UTC deadline. The predictions were then evaluated once the geodetic final EOP observations from the forecasted period became available. Each participant could register more than one method, and each registered method was assigned an individual ID, which was used, e.g., for file naming.

The EOP PCC office would like to thank all campaign participants for their submissions, without which the campaign would not be so fruitful.

More detailed information about the 2nd EOP PCC can be found on the campaign website: http://eoppcc.cbk.waw.pl/.

Information about IERS Working Group on the 2nd EOP PCC can be found on the IERS website: https://www.iers.org/IERS/EN/Organization/WorkingGroups/PredictionComparison/predictionComparison.html

List of files:

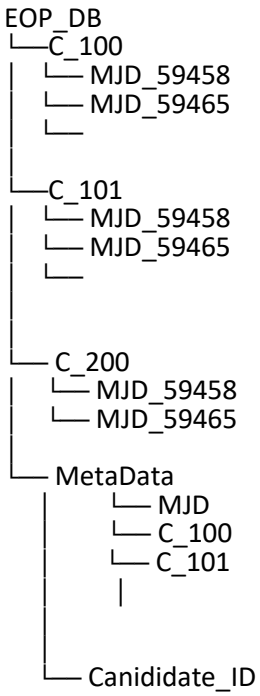
1) EOPPCC_general_rules.pdf – this document contains a description of the general rules for participation in the 2nd EOP PCC and data format standards that were required the campaign participants. In particular, it includes a description of file naming conventions, the data sequence within files, and units.

2) DescriptionOfMethods.pdf – this document includes detailed descriptions of prediction approaches utilized by campaign participants to make their EOP forecasts. This document has been developed based on the input provided by the campaign participants. For each ID (unless the submission was anonymous), information about the authors, the forecasting method used, and the input data is provided.

3) folder \data\TextFiles contains the original files with predictions submitted to the EOP PCC Office by campaign participants. The dataset is divided into two folders, 2021 and 2022, corresponding to the years in which the campaign took place. Within each of these two folders, there are subfolders whose names correspond to the week number in the respective year. In each of the folders labelled with a week number, there are files submitted by participants during that week. Note that only proper files (i.e., with proper naming, units, dates and submitted before the deadline) are stored here.

4) folder \data\MatlabDataBase contains a MATLAB file (EOP_DB_Campaign.mat), which is a database with all correct predictions from each participant loaded into a structure. The file can be used to perform analyses in MATLAB or can be easily exported to comma separated values (*.csv). Apart from predictions provided for all ID for each week, the database contains predictions from IERS (denoted with ID 200) accessed from finals.daily (IAU1980 convention for dPsi and dEpsilon) and finals.2000A.daily (IAU2000A convention) files saved by the EOP PCC Office each Wednesday before

the deadline set for participants. Part “Metadata” in the database contains list of all IDs and list of MJD dates for the first and last EOP values in each prediction file for each ID. The structure of EOP database is given below.



Data citation

When using this dataset, please include following citations for the data:

Śliwińska, J., Dobslaw, H., Kur, T., Nastula, J., Wińska, M., Partyka, A., Belda, S., Bizouard, C., Boggs, D., Bruni, S., Chen, L., Chin, M., Dhar, S., Dill, R., Duan, P., Ferrandiz, J.M., Gou, J., Gross, R., Guessoum, S., Han, S., Heinkelmann, R., Huang, C., Irrgang, C., Kudrys, J., Li, J., Ligas, M., Liu, L., Lu, W., Mayer, V., Miao, W., Michalczak, M., Modiri, S., Otten, M., Ratcliff, T., Raut, S., Saynisch-Wagner, J., Schartner, M., Schoenemann, E., Schuh, H., Kiani Shahvandi, M., Soja, B., Su, X., Thaller, T., Thomas, M., Wang, G., Wu, Y., Xu, C., Xu, X., Yang, X., Zhao, X., Zhou, Z. (2023 EOP predictions collected during the operational phase of the Second Earth Orientation Parameters Prediction Comparison Campaign. GFZ Data Services. https://doi.org/10.5880/GFZ.1.3.2023.001

and for the 2nd EOP PCC papers:

Kur, T., Dobslaw, H., Śliwińska, J., Nastula, J., & Wińska, M. (2022). Evaluation of selected short - term predictions of UT1 - UTC and LOD collected in the Second Earth Orientation Parameters Prediction Comparison Campaign. Earth, Planets and Space, 74. https://doi.org/10.1186/s40623-022-01753-9

Śliwińska, J., Kur, T., Wińska, M., Nastula, J., Dobslaw, H., & Partyka, A. (2022). Second Earth Orientation Parameters Prediction Comparison Campaign (2nd EOP PCC): Overview. Artificial Satellites, 57(S1), 237–253. https://doi.org/10.2478/arsa-2022-0021