

Analysis Coordinator Report

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Abstract

IVS analysis coordination issues in 2002 are reported here. Two sessions per week are now being processed in a rapid turn-around mode. A second IVS combined EOP series now contains almost all VLBI network sessions from 1979. This series is updated at quarterly intervals.

1. General Issues

In connection with the Second IVS General Meeting at Tsukuba, Japan, the “Third IVS Analysis Workshop” was held at the Tsukuba Epochal Conference Center on February 8, 2002. This workshop was dominated by extensive discussions on various topics including the Second IVS Analysis Research Project, the Second IVS Analysis Pilot Project - Tropospheric Parameters, the extension of the SINEX format for VLBI and the Platform Independent VLBI Exchange Format (PIVEX) (for more details see [1]).

2. IVS Operational Data Analysis and Combination

2.1. IVS Rapid Service EOP Series

Routine analysis and combination of the EOP series submitted by the six IVS Analysis Centers has been continued. Owing to a change in the general IVS observing programme two sessions per week are now being observed and processed in a rapid turn-around mode [2]. As a consequence the IVS Analysis Centers are now able to produce EOP twice per week for the IVS combined EOP product. The EOP of both days are included in the IVS Rapid Service EOP Series (e.g. *ivs02r1e.eops*).

The two weekly sessions, IVS-R1 and IVS-R4, are being observed with two different base networks and additional observatories which participate in bi-weekly or monthly sequences. From a detailed analysis of the combination residuals it became obvious that the IVS-R1 sessions have a larger scatter in the residuals than the IVS-R4 sessions. These residuals are computed from the six individual input series and the combined EOP series for a given day. Using the same observations as input they, thus, just reflect the differences in the analysis of the individual centers.

A number of test computations have been carried out in order to investigate possible reasons for the increased scatter which is also reflected in the formal errors of the combined products. Outlier elimination procedures which are different for the individual analysis centers as well as reference frame differences have been found to cause significant deviations in the EOP series. However, none of them is large enough to explain the differences in the EOP results which are sometimes as large as 500 μ sec.

2.2. IVS Quarterly EOP Series

As of summer 2002 the IVS Analysis Coordinator's office has started to regularly compute a combined EOP series containing all VLBI network sessions suitable for the determination of EOP from 1979 onwards. This combined series is updated quarterly with all sessions processed by the

IVS Analysis Centers at that time (e.g., ivs02q1e.eops). A number of hurdles had to be negotiated for the combination software to cover all possible inconsistencies in the input data. Analysis centers had to be convinced that session identifiers in the EOP files are absolutely necessary for the combination since this is the only way of discerning the results of multiple sessions observed on the same day. Currently combined EOP are still listed by session even though there may be more than one on a single day.

3. Implications of IAU2000 Resolutions

In 2000 the IAU approved several resolutions giving recommendations for a new representation of the kinematics of the celestial pole. However, the IERS has decided that the old-style nutation offsets will have to be reported during a certain transition period. For this reason, the old and the new representations will be listed in parallel for some time to come. Since the IAU has finalized a few of the numerical values of the models to be used only in the second half of 2002, software development for an implementation of the resolutions has been delayed significantly. Currently, preparations are being carried out to use a transformation routine to deduce the celestial pole offsets dX and dY from the IAU1980 nutation offsets. The IVS data file names of session EOP series (.eops) will be distinguishable by characters “e” as the eighth character of the file name for the old nutation offsets and “X” for the IAU2000 celestial pole offsets (e.g. ivs02r1e and ivs02r1X).

4. Combination of Wettzell - Kokee Park UT1-UTC Intensive Series

Software has been developed for a combination of submissions of UT1-UTC results from Wettzell - Kokee Park Intensive observations. Investigations are currently being carried out on the stability of the combined results. Owing to the many changes of the analysis centers in their processing strategies, a large number of discontinuities has had to be taken into account.

References

- [1] Nothnagel A. (2002): *Summary of the 3rd IVS Analysis Workshop*; IVS General Meeting Proceedings, NASA/CP-2002-210002, Hanover MD, 394–397
- [2] Vandenberg N.R. (2003): *Coordinating Center Report*, this issue
- [3] Nothnagel A., C. Steinforth (2002): *IVS Analysis Coordination*; CSTG Bulletin No. 17, 84–90, Munich