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The International Earth Rotation and Reference Systems Service (IERS) Rapid Service/ Prediction Center (RS/PC) produces daily and weekly EOP combination and prediction solutions. The daily solutions are produced after 1700 UTC while the weekly EOP solutions are produced Thursday after 1700 UTC. These solutions include data from Atmospheric Angular Momentum (AAM) analysis and forecasts, Global Positioning System (GPS) solutions, Satellite Laser Ranging (SLR) solutions, and Very Long Baseline Interferometry (VLBI) solutions. The solutions are sent to roughly 700 people by e-mail per week and are picked up in roughly 40000 ftp downloads per month.

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Current Status and Future Directions of the IERS RS/PC Predictions of UT1

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1. IERS RS/PC

The International Earth Rotation and Reference Systems Service (IERS) Rapid Service/Prediction Center (RS/PC) produces daily and weekly EOP combination and prediction solutions. The daily solutions are produced after 1700 UTC while the weekly EOP solutions are produced Thursday after 1700 UTC. These solutions include data from Atmospheric Angular Momentum (AAM) analysis and forecasts, Global Positioning System (GPS) solutions, Satellite Laser Ranging (SLR) solutions, and Very Long Baseline Interferometry (VLBI) solutions. The solutions are sent to roughly 700 people by e-mail per week and are picked up in roughly 40000 ftp downloads per month.

2. IERS RS/PC Changes

Several new or modified data sets have been incorporated into the IERS RS/PC operations. Starting in October 2007, the AAM forecasts lengths were extended from 5 days to 7.5 days. This change led to a roughly 15% improvement in UT1−UTC predictions out to 10 days in the future (Stamatakos *et al.* (2008)). In March 2009, a new version of the USNO UTGPS solution was incorporated into the IERS RS/PC solution that makes use of more satellites and more sophisticated orbital modeling. Starting in roughly September 2007, electronically transferred (e-transfer) VLBI intensives became available with the creation of the 'Int3' intensives. These have the potential of being available in less than 12 hours after observations. These quick-turnaround solutions appear to halve the error of the most recent combination data point in UT1−UTC and reduce the 1-day prediction error by roughly 25% (Luzum & Nothnagel (2009)).

3. Conclusions

Recent improvements in the IERS RS/PC predictions have been due to improvements in the input data series. This leads to some interesting questions. With improving data latency and increased frequency of solutions, how frequently should EOP solutions be updated? Also, what prediction length should the algorithms be optimized for? If combination and prediction solutions are made with increasing frequency, then predictions algorithms should be optimized for relatively short-term (less than 10 day) predictions.

References

Luzum, B. & Nothnagel, A. 2009, submitted to *Geophys. Res. Lett.*

Stamatakos, N., Luzum, B., Stetzler, B., Wooden, W., & Schultz, E. 2008, accepted in *Proc. Journées Système de Référence Spatio-Temporels*, Dresden, 22–24 Sept. 2008.