

## Intercomparison of Daily Length-of-Day and Universal Time Measurements Acquired With GPS and VLBI

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Daily estimates of Universal Time (UT1) have been available for almost a decade from IRIS VLBI. Within the past year, daily estimates of UT1 or of length of day (LOD) have been made with GPS by a number of centers around the world. Unlike the IRIS measurements, whose purpose is specifically to monitor Earth rotation, GPS analysis centers have a number of competing goals in their daily GPS data analyses. In addition to Earth orientation, they are also estimating for public distribution GPS satellite orbits, station locations, and a number of other quantities. Hence the GPS analysis strategies are not necessarily optimized for monitoring Earth rotation. GPS estimates of daily polar motion have been shown to be of high quality, and these estimates are in routine use by the International Earth Rotation Service (IERS). The GPS estimates of Earth rotation, both UT1 and LOD, tend to be less precise and prone to systematic errors, however, as they are intrinsically more difficult to measure with satellite based techniques.

We have intercompared several months of Earth rotation values obtained by five organizations processing GPS data. We have also compared these GPS series with the daily IRIS intensive UT1 series and with a JPL Kalman filter estimate of UT1 and LOD (obtained by combining a variety of geodetic data sets). We have investigated differences in the time series, as well as studied the spectral characteristics of the different data sets. Our preliminary results indicate that GPS is capable of obtaining measurements of LOD comparable in quality to those of IRIS, although the quality of the GPS data is highly dependent on the GPS data processing strategies employed and the degree of independence sought from a priori Earth rotation information (provided primarily from VLBI).

1. 1993 AGU Fall Meeting
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- 5a. G1 O Temporal Variations of  
the Earth's Rotation and  
Geopotential
- 5b. 1239 Rotational Variations  
1294 Instruments and  
Techniques
- SC. —
6. —
7. None
8. Charge \$50 to  
A.P. Freedman  
VISA  
exp.
9. C
10. Willing to preside over  
session
11. No