ILRS Workshop

Kötzting, Germany
October 28 - 31, 2003

Recommendations and Action Items

Daylight Ranging

- Stations must place greater stress on daylight ranging for provide better day-night data distribution.

- The CB and the Networks and Engineering Working Group will work with stations that can do daylight mount modeling to make information available about how this capability can be achieved.

Predictions

- HTSI should implement the repair to its IRV tuning process to correct the midnight offset problem.

- The CB will ask GFZ if they can speed up the prediction cycle for CHAMP and GRACE to improve data acquisition.

- The CB will remind ESOC of the offset issue and see if we can offer them any help.

Data Throughput

- The stations, data centers and the prediction centers must reduce the data - prediction update cycle time as much as possible.

- Stations should strive for data submissions after every pass, especially on the low, harder to track satellites such as CHAMP, GRACE, GFO-1, ERS-2, and Envisat

- Data Centers should strive for 10-minute turnaround times.

Dynamic Priorities

- CB will post the new dynamic priority table with daily updated indices on the AIUB server, so it will be available when stations access their prediction updates

On site Data Consistency Checks

- Stations must implement procedures for onsite monitoring of the consistency of their pass-by-pass calibrations, meteorology readings, and systems health-parameters. Time histories of key parameters should be used to reveal performance issues.

- RGO will upgrade its NP check program for easy implementation and make it available for other stations to use in local data screening

- Van Husson will also provide a set of tests for the stations to use to help identify data problems.

Minimum Data Criteria for Normal Points

- Stations may exercise their own discretion in setting minimum data criteria per normal point or disregard them all together. The GB recommends the 2002 criteria (6 data points per NP in daylight and 3 data points per NP at night) for single photoelectrons systems with high data yield. Stations with KHz return

rates may select more stringent criteria. Stations must include their minimum NP data criteria as a note in their Site Logs

Signal Processing and Center-of-Mass Correction

- Stations should use signal return properties such as mean, peak-mean, skew and kurtosis to monitor systems performance. A team should be setup to definition the essential parameters and tests.

- Stations should quantify the range bias effect on specified satellites (e.g. LAGEOS, Ajisai and Envisat) over the pertinent dynamic range of their systems by switching range measurements between minimum and maximum return levels during ranging operations. The Signal Processing Working Group will specify a prescription for the stations to follow.

Two-Color Ranging

- The Signal Processing Working Group will investigate the dependence of retroreflector (internal) range correction on wavelength.

- The Data Formats and Procedures Working Group should address the misalignment of corresponding NP epochs between the two-wavelength data sets when using the standard NP construction procedure.

- The CB will devise a better way to report two-color simultaneous passes in the quarterly report card, rather than or in addition to the present method where the passes are reported separately.

- The CB, the Data Centers, and the Data Formats and Procedures WG will work with the two-wave length stations to implement a mechanism to deliver differential delay to the Data Centers.

Local Survey

- Stations should verify the survey of their system and target at least every two years. Current requirements are 1mm accuracy.

- Local ties between co-located instruments should be determined with an accuracy of 1 mm, with full variance/covariance information, available in SINEX format.

Refraction Model

- The Refraction Study Group and the Analysis Working Group will identify the steps necessary to implement the Ciddor-Mendes refraction model as the standard for the ILRS.

- Stations should strive to increase low-elevation (<20 degrees) tracking to support refraction model testing.

- The Refraction Study Group will draft a letter and suggest some laboratories that the CB might approach to provide the refraction constants.

Analysis and Data Products

- The AWG will investigate new analyses and data combination approaches to expand the SLR data product capability, in particular to further shorten product interval time.

- The AWG will assess the currently used IERS "background" models for tidally coherent signals in the geocenter and EOP and report back to the IERS Conventions Group.

- All analysis groups should have submitted their required benchmark solutions by the end of November 2003; the Benchmark 'judges' (Pavlis, *et al*) are tasked to report the Pilot Project results by the end of 2003.

- All analysis groups participating in the POS+EOP Pilot Projects should implement (1) 7-day data arc lengths and (2) epochs aligned to GPS week by mid-November 2003.

- The analysis coordinator will work with the IERS to determine how best to provide the SLR a weekly, timely ILRS EOP product for the IERS rapid service

General Calibration Recommendations for the stations from the workshops in Florence and Toulouse:

- Standardize the calibration procedure and minimize the manual system changes and re-adjustments
- Calibrate the SLR system at frequent intervals, providing pre and post calibrations for each satellite pass within a maximum time span of one hour.
- Keep a calibration history file of all relevant parameters for consistency verification.
- Collect a sufficient number of valid returns for all calibration sessions.
- Plot a histogram for each calibration session, compare with a Gaussian fit and check for anomalies in the distribution.
- Use optically correct calibration target(s).
- Use efficient spatial filtering.
- Use multiple targets at different azimuths and ranges to check the calibration setup and survey.
- Ensure a perfect alignment of the SPAD optics.
- Apply the gate for the detector early enough (50 ns and 100 ns for APD's) to avoid aliasing
- Keep an appropriate echo data rate < 15% for APD's < 80% for C-SPAD.
- Interpret properly the echo data rate.

The important recommendations from the Colocation Survey Workshop at Matera:

- Local survey measurements should have the same importance as and should be treated like any of the space geodetic techniques. Site coordinates (VLBI, GPS, SLR, DORIS) should be better (??) tied to the ground. The quality of local ties should be such that they can be assumed true for the combination.
- All GPS sites close to other geodetic techniques should be part of the IGS routine processing.
- A database will be established at IERS (Central Bureau and ITRS Product Centre) for all information in connection with site co-location (list of co-location sites, local ties in SINEX, co-located instruments, site maps and pictures, survey reports, survey status, site events and history, etc.).