March 27, 2017

ILRS Quality Control Board (QCB)
Telecon
March 23, 2017

Participants: Horst Mueller, Matt Wilkinson, Erricos C. Pavlis, Alexandre Couhert, Mike Pearlman, Tom Varghese, Toshi Otsubo, Frank Lemoine

Data Bias Pilot Project (Erricos)

The ASC continues to work on the Station Systematics Pilot Project: each participating AC is estimating station systematics from loosely constrained weekly arcs for L1, L2, and L1 +L2 over a 4-year period (2005 – 2008) to characterize the long-term behavior of each station. The first combination by JCET was presented at the 2016 EGU and an updated version at the workshop in Potsdam. The good stations have systematics at the few mm level; poorer stations have more significant errors, reaching the few cm level.

ASI is working on the final combination for presentation at the ASC meeting in Vienna. The participating AC's are being asked to submit updated versions of their solutions properly flagged for wavelength and updated conventions; this combination will be the basis for discussion on the transition into an operational Station Systematics Data Product at the Vienna ASC Meeting. The question remains whether AC's not participating in this activity can continue on AC status.

Web-Based Station Performance Tool (Erricos)

Five ACs currently provide station performance parameters on a pass-by-pass basis on LAGEOS-1 and -2 for consolidation into the ILRS report cards compiled by Mark Torrence. JCET has been developing an on-line tool to digest the pass-by-pass inputs from the AC's and display them in different modes (plots, fits, moving averages, etc.). This tool will provide users with a basis for comparing AC results, making detailed examinations of the data, and making standardized reports that can be interpreted by station personnel and augmented with highlights and recommended actions. Erricos has circulated 2 posters from the Fujiyoshida workshop on the web tool.

They are still waiting for Mark Torrence to make his Report Card results available in a flat text format accessible by ftp or such. Erricos expects the beta version of the web tool (http://geodesy.jcet.umbc.edu/QC/) will be ready for testing by EGU.

Cinzia was looking for automated screening tool that could be used to alert stations promptly to pass discontinuities in the time series. This new web-based station performance tool along with a mechanism for rapid communication should be able to

provide this service. We will need to determine what would be meaningful and how we ascribe a confidence level to those criteria.

Additional tools for examining systems biases

Using the CODE submissions format as an example, Alexandre has provided a pass-by-pass tabulation of Jason-2 mean offsets and rms. They used a combination DORIS/GPS orbits for 10-day periods as the reference orbit, which is totally divorced from SLR. Some strange features in the Yarragadee and Greenbelt were noticed. He was asked to include mean offset and rms for each 10 cycle (as done by CODE) so these can be more directly compared to the SLR derived results from the Pilot Project. Discussion should be held with Carey to decide how the submissions should be archive and disseminated.

Frank offered to do a similar procedure using his combination DORIS/SLR orbits as a basis.

Site Logs

Errors on the Site Logs, usually caused by long delays in making updates, are causing errors that may propagate through the system. We have cleaned up some inconsistencies between the ILRS Survey Files and the Site Logs, but other delays in filing systems changes have been recently found.

David and others are looking into the current process to suggest how we might standardize and document the Site Log procedure.

A team including Horst, Matt, and Randy Ricklefs are working on efforts to update the Site Logs to include more historical information and more detail on some areas.

Range Dependent Errors

Horst has been looking at data on the geodetic satellites (from Starlette to Etalon) for any evidence of systematic trends in range bias. He has seen nothing to date, but he hopes to have something to say at the ASC. At the Etalon level, system noise may be masking any trend information.

Full-Rate Data

Six or so stations now provide FR data with their general data submissions. Other archive the FR at their stations. The user survey now in process will tell us who needs FR data. In the meantime, FR data is being requested by the T2L2 project for help improve time synchronization among the round stations. In particular, the Russian stations have not been providing FR data. We will remind all the stations of the importance of the data and specifically ask selected stations to begin sending Jason-2 FR data.

ACTION Frank: Draft a message for the stations to begin sending FR data on Jason-2 and identify the target stations.

Normal Point Tests

Horst has been trying to validate that normal point calculations at the stations are done in a consistent manner by computing NP's from FR data and comparing the station provided NP's. The process is limited to only a few stations that presently submit FR data. From what he has seen the results appear very consistent. Matt is also looking at the issue. Once the data available is examines, be can decide if more FR is required. They are targeting report at the Riga Workshop.

ACTION HORST (DFPSC) and MATT (NESC): continue work on the NP tests.

Displaying System Performance

It has been noted that we tend to display data quantity charts, but less often, data quality (short and long term stability) charts that would be useful to our users. We will have the results from the Pilot Project to provide station systematics that may be worth adding to the report card.

Low Elevation Data Modeling

Low elevation data can help us separate range bias errors from errors in height. It may also be helpful in testing refraction models and extending pass coverage, although the refraction in the region between 10 and 20 degrees is very well modeled (~1 mm). A few stations (MOBLAS-5, MOBLAS-5, Changchun, Matera, and Graz) can track down to 10 degrees. LARES would be a good target in terms of low elevation access.

Horst has used the available low elevation data to test its impact on the residuals; he has seen nothing yet. It might be worth using the available data to study the effect on the separation of range bias and height. This will require some thought since the effect might depend in the sampling strategy used over the whole pass.

Since he station are already working to as low an elevation as allowable, no further action is necessary at this time.

Data Population on LAGEOS Passes

We still have stations that are taking too small a NP sample on passes; in particular, the Changchun station is tracking many satellites but has a very sparse sampling on the LAGEOS passes. In response to our inquiry, they have said that they are reviewing their

operational procedures and will try to expand LAGEOS coverage. Let's see what happens.

ACTION Horst and Erricos: Check on whether the Changchun station has expanded LAGEOS coverage.

The ILRS has formed a Study Group to recommend new criteria for evaluating (and rewarding) station performance than just pass numbers and estimated biases. Mark Torrence is the Study Committee lead and they are targeting a recommendation by the Riga Workshop.

Station Tools

We need to define tools/procedures/suggestions to help the stations detect system problems on-site, and to address issues when diagnostics are received from the QC process. Matt has started discussion on this within the Networks and Engineering Standing Committee; input from the stations on practices that they use might be useful.

Matt has established the on-line forum tool. It currently has about 70 members. Some messages have already been posted. Take a look.

Other Topics

In our 1 mm long-term interest, it probably is a good idea to do a rigorous component-by-component examination of the SLR systems, trying to understand all error sources in measurements. We should discuss this with Ivan Prochazka.

Next meeting: April 19 at 13:00 UTC (watch Daylight Savings Time)
09:00 EDT in Eastern US, 14:00 in UK; 15:00 in Central Europe; 23:00 in Japan

Please check that we have the correct application of Daylight Savings Time

Telecon info:
Passcode: 317382

USA (toll free)	1-844-467-4685
Austria (toll free)	0 800 006 089
Austria, Vienna	+43 (0) 1 25301 0163
France (national)	0 811 655 211
France (toll free)	0 800 949 765
France (toll free)	0 805 101 207
France, Paris	+33 (0) 1 70 37 14 61
Germany (national)	0 1801 003 798
Italy (toll free)	0 800 977 597
Italy, Rome	+39 06 452 366 22
Japan (toll free)	0 066 3386 1015
Japan, Osaka	+81 (0) 6 4560 2100
Japan, Tokyo	+81 (0) 3 4560 1264
UK (national)	0 845 355 5040
UK (toll free)	0 800 358 8173
UK (toll free)	0 800 279 4867

Germany (toll free)	0 800 320 2291
Germany (toll free)	0 800 589 1850
Germany, Frankfurt	+49 (0)69 66777 5747
Germany, Munich	+49 (0) 89 7104 24681
UK London	+44 (0) 20 7154 2976