ILRS Governing Board Meeting

Technical University of Vienna
Vienna, Austria

Monday, May 3, 2010
18:00-21:00

Attendees:

Governing Board members:

M. Pearlman	J. Mueller
Z. Altamimi	C. Noll
G. Appleby	E. Pavlis
P. Bianco	G. Kirchner
C. Luceri	

Invited guests:

F. Deleflie	J. Horvath
D. Kucharski	R. Ricklefs
U. Schreiber	M. Torrence
S. Wetzel	

Opening Remarks

G. Appleby welcomed everyone and thanked all for coming. M. Pearlman announced that W. Seemueller was ill and unable to attend.

Central Bureau Report

Pearlman thanked C. Noll for assembling the charts for the CB report (see attachment). As shown in the network chart, currently 29 stations support ILRS activities whereas there were close to 40 stations supplying data in 2009. Several stations are down at the moment for repairs. The usual stations are providing the majority of tracking data; approximately one half of the stations in the network track 1500 passes per year. The SLR system at Concepcion is back online (data under quarantine) after the earthquake; data shows that the system has moved about 3 meters and continues to move. The SLR station manager, B. Sierk, will leave the station and BKG for a position at ESA shortly. U. Schreiber reported that Sierk has been the main force behind the dramatic tracking improvements at TIGO and thus his resignation will be a big loss for BKG and TIGO. J. Bernhardt has left Hartebeesthoek for a position at Riyadh, also a big loss to the stations, but a great help to the SALRO. L. Combrink is actively seeking a replacement. The APOLLO system has recently tracked the Lunokhod 17 array following its detection by LRO.

R. Ricklefs gave an update on the implementation of the CRD format and restricted tracking capability in the network (see attachment). There remain a number of stations

that have not provided any updates on either activity. Most of the high producing stations have implemented or are in the process of implementing the CDR format. We will need to consider how the ILRS will handle stations that do not comply.

M. Torrence reviewed the proposal for changing the normal point formulation algorithm. The proposal will permit improved satellite multiplexing at high-rate stations; several stations and ACs have commented on the proposal. The AWG will review the proposed recommendation to terminate the normal point window when 100 data points have been accumulated or after the maximum normal point interval is reached (current implementation). The proposal stipulates that normal points must still be separated by the conventional normal point window interval. E. Pavlis expressed concern that the station may not obtain enough data during the tracking interval. Pearlman requested that the AWG not focus on the idea of 100 data points but rather determine an appropriate quantity for our requirements, namely that the precision of each normal point should ideally reach 1mm. The consensus was that the proposal should incorporate the recent comments and the AWG conclusions and then be issued as a recommendation for the stations.

ITRF 2008 Report

Z. Altamimi summarized the IERS Directing Board meeting held on May 01. The preliminary IGN solution for the reference frame (ITRF2008P) was delivered to the Services for their review several weeks ago. The ILRS is making its evaluation, but so far there are no major problems with the products. The IERS Board approved Altamimi's proposal to adopt the IGN version of ITRF2008. Altamimi plans to publish ITRF2008 by the end of May 2010. DGFI has also completed its version of the ITRF; there is a 6-7 mm difference in frame definition of the two versions. The differences appear to be in the means of evaluating scale and the weighting on local ground ties. Altamimi will accept addition input on ITRF2008P until May 14. An evaluation campaign of both the IGN and DGFI approaches/solutions has been proposed, providing results in time for the IAG Commission I Symposium scheduled for October 4-8, 2010 in Marne la Vallee France. Each Service must document its procedure for developing its ITRF contribution.

Action: The ILRS will document its procedure for developing its ITRF contribution.

Working Group Reports

Appleby asked that the working group chairs review their charters and ask their members to provide their views on whether goals are being accomplished.

Analysis Working Group

E. Pavlis stated that an AWG meeting will be held on May 8 (see attachment). The ESOC benchmark is ready for evaluation; the BKG solutions are ready for evaluation as well (BKG changed their analysis package from UTOPIA to Bernese). The Pulkovo EOP and Reference Systems Analysis Center (PERSAC) has been accepted as an ILRS AAC; they will provide EOP only. The proceedings from the Metsovo workshop are available on the web and will be distributed on a DVD as well. The guest editors for the ILRS special issue have been identified (Pavlis, Luceri, Pearlman, and Appleby); a proposed table of

contents has also been created and will be forwarded to the editors of the journal for their review.

Mission Working Group

Appleby summarized the recent missions that had been processed by MWG, all of which the WG had recommended for support by the ILRS. Missions included CryoSat-2.Appleby inquired if the ILRS should add another GLONASS satellite, or even possibly all the 19 or so active vehicles, to the tracking list now that GPS-35 has failed. Pearlman believes we should wait until a formal request is made. Appleby also pointed out that the Galileo IOVs will launch late this year or early next year. Herstmonceux is tracking all GLONASS satellites using predictions generated from the CODE rapid orbit predictions as a test of network capability. A MWG meeting is scheduled for May 4.

Data Formats and Procedures Working Group

R. Ricklefs gave more details on CRD and restricted tracking software implementations (see attachment). He continues to send emails to stations to try to bring them to closure. He has had particular difficulty making contact with Russian and Asian station personnel. Ricklefs has received a request from a Chinese station that wanted to obtain a normal point program for comparison purposes. He asked if the ILRS should provide a sample normal point program to interested parties.

Issue: Should the ILRS make a sample normal point program available? Who will do it?

Networks and Engineering Working Group

G. Kirchner pointed out that ANDE predictions have not been adequate for routine ILRS tracking (see attachment). On the other hand, the ANDE mission requirements are not very stringent and the sparse data is adequate for their needs. This problem points out that perhaps the ILRS should review the effort required to track satellites that are difficult to acquire; station personnel become frustrated and devote too much time to problem targets. Problems also occur with new missions and their initial prediction sets which may be poor; the CB has implemented procedures for new missions, but problems continue to occur (e.g., initial CryoSat-2 predictions). The real-time bias exchange available through EUROSTAT is very helpful, but not all stations are contributing to it. Kirchner also suggested sending reminder emails to stations to ask that they identify any system changes before implementation; the CB has sent an initial message to the station contacts.

Issue: We still have an unresolved issue on how we decide which stations must undergo quarantine and Q/C procedures after maintenance and upgrading activities. At the moment the CB makes the decision.

Transponder Working Group

U. Schreiber discussed the ESA ACES mission, which includes a time transfer experiment using an onboard SPAD optical laser detector and a CHAMP/GRACE-type retroreflector. Preliminary timing tests have been performed at Wettzell. ACES will use a maser clock from its microwave system for time comparison. T2L2 has shown time transfer results at the level of 100 ps. A three-month experiment with the FTLRS stationed at the Paris Observatory will be undertaken shortly. The ACES has a time transfer goal of a few ps. LRO-LR tracking is going well; he is also hoping to resume support of LRO-LR from Wettzell soon.

Network Reports

EUROLAS

G. Bianco reported that LLR resumed at both Grasse and Matera. Appleby pointed out that many EUROLAS stations seem to stop tracking around midnight (according to the EUROSTAT program); Bianco is not aware of this situation. He pointed out that Matera tracks 24 hours/day, seven days/week. Appleby is not sure whether the "midnight issue" that he sees is one of scheduling or software. FTLRS will begin an occupation in Paris at the end of May.

Schreiber stated that the Wettzell system is recovering from a telescope drive problem; the staff decided to replace the drive system before it developed major problems. The telescope will be assembled again; sky tests will be performed this month with plans to begin operations in June. Interleaving tracking, as well as low elevation tracking, will now be possible. A lunar capability will also be installed.

NASA

S. Wetzel reported that a hardware issue at one of the NASA systems has impacted other systems, and the NASA network is temporarily down, with the exception of Arequipa and Maui. (The network was back in operation within a few days.) Yarragadee is the only NASA system to have 24x7 operations, but others are running 2 – 3 shifts a week. HTSI is looking into developing a test GPS satellite array based on the ETS-8 design. MLRS has been able to continue LLR using LRO funding.

LLR

J. Mueller stated that thus far, 2010 has been a very successful year for LLR. Using imaging from LRO, the long-lost Lunokhod array was rediscovered on the lunar surface and was recently tracked by APOLLO. Matera is now tracking LLR and LRO funding has enabled continue lunar ranging at MLRS. LLR has also resumed at Grasse; staff there will soon begin generating predictions. Bianco stated that it would be desirable to obtain more immediate LLR analysis feedback; J. Williams/JPL has provided feedback in short turnaround in the past. LLR analysis centers met in Berne in 02/2010. One outcome was a plan to conduct a pilot project on software intercomparison to test for differences and systematics, and to improve modeling. The group hopes to make such meetings a regular event.

M. Torrence gave an update on LRO-LR (see handout). Nine stations in the ILRS network have provided successful one-way ranging data to LRO, totaling over 324 hours. Although the data are being used to understanding time on spacecraft, the data has not yet been fully utilized for orbital improvement of LRO. He stated that the experiment has been very successful: "Worked right out of the box".

GGOS

Pearlman gave an update on GGOS (see charts). He is currently completing the Call for Proposals for fielding co-located, fundamental stations in support of GGOS. The largest activity for the network stations is supporting the reference frame. Tests have shown that GGOS will need ~30 co-located stations to reach the required accuracies (two orders of magnitude better than has been achieved today). Pearlman is also leading a task within GEO on global geodetic observing system networks. GEO (Group on Earth Observations) is a high-level international program.

New/Other Business

Appleby opened the floor for any new business. Schreiber reported that BKG has been discussing plans for the next International Laser Ranging Workshop, planned for January 2011 in Concepcion. At this time, it is unclear whether facilities and staff can be ready for such an event. BKG has stated that funding of TIGO is in jeopardy due to lack of sufficient funding from Chilean universities participating in the support agreements. Four Chilean universities originally formed a consortium to support TIGO; at this time, only two institutions remain. The station may have to close at the end of 2010 and the unfortunate earthquake did not help this situation. If the workshop cannot be held in Concepcion, BKG will host it in a location near Wettzell in the April/May 2011 timeframe; there should be a decision on this issue by June 2010. A meeting was scheduled for May 4 to begin program planning discussions.

Pavlis reported on recent residual testing performed on BLITS. Results show the retroreflector is a very good design but there are some unresolved biases.

Next meeting of the GB is scheduled for the International Workshop on Laser Ranging in Concepción in January 2011. If the workshop is relocated and delayed, the next meeting will be held at the fall AGU in San Francisco the evening of Monday December 13, 2010.

Appleby closed the meeting at 21:00.

Actions Remaining from December 2009 ILRS Governing Board Meeting

Action: The CB will remind the stations of the importance of participating in the EUROLAS real-time tracking status/bias information exchange.
Action: The CB and the AWG will formulate a plan to test the new proposal for populating normal points.