Minutes of the 2017 EGU ILRS ASC Meeting
Saturday, April 22, TU Wien, 9:00 – 17:00

OPERATIONAL PRODUCTS: STATUS REPORTS and FUTURE PLANS

ASI: AC performances presented for the routine products: coordinates, EOP and orbits. There is an unexpected improvement of the AC agreement starting from the beginning of March. The LOD residuals for GFZ and NSGF are still high, the NSGF LOD is excluded from the combination since September 2016. The weekly v70 solutions with ITRF2014 as a priori reference frame are delivered by 5 ACs: BKG, GRGS and NSGF are expected to contribute within June 2017. The combination v70 is routinely done even if it is not submitted to the data centers. The AC time series show a good agreement.

With regards to the requested submission for the systematic error pilot project, only ASI, DGFI and JCET have submitted the time series using the new ASC conventions to properly discriminate between multiple wavelengths when reporting the data wavelength in the SINEX file.

The datum comparison among ITRF2014, DTRF2014 and JTRF2014 was shown; no scale difference between SLR and DTRF2014 and JTRF2014. JTRF2014 realizes the SLR geocenter within the formal error of the estimated offsets.

BKG: activities resumed at the end of 2016, epoch issue on SP3 fixed. BKG activities focused on the EGSIEM project (30-d solution for 2006-2007 low-degree GFC estimated) requiring significant adaptation to available procedures. The chain for ITRF2014 is ready to be used, submission expected by the end of May **(AI)**. The submission of the BIAS PP will be done by the end of May too **(AI)**, the time series is under check.

DGFI: all the requested time series have been delivered. Etalon orbits to be checked. Kunming issue, the system was moved by 30 m and the data were delivered with the old site number. The corrected id was recorded in the data starting from January 2017. The erroneously released early data in late 2016 have been marked to be deleted in the Data Handling file.

ESA: none attending. Tim Springer sent an e-mail to justify the absence (NB: Need to send him the questions we need answers to for our planning!)

GFZ: weekly solution v70 is running, time variable gravity not implemented (as in the reanalysis for the ITRF2014 development series) **(AI)**. PP time series is in the queue (v201) **(AI)**. ITRF2014 tests are ongoing, POD in 2014 shows an improved orbital fit around 1 mm w.r.t. SLRF2008.

GRGS: ready to switch to ITRF2014, implemented in GINS. The whole processing system crashed and no backup was available (AGAIN!). Hopefully the bad times are behind and a couple of things to be checked before submitting the operational products, a few days needed. Parallel chains in Paris and Toulouse with the help of D. Coulot. Concerning the systematic error PP, everything should be made again from the beginning, it will be done after the operational products start being delivered routinely again.

NSGF: New CoM tables for LAGEOS, Etalon, LARES, Ajisai, Starlette, Stella (Sosnica pointed out that Starlette and Stella values must be checked for a few stations, as there are mistakes, probably typos, in the new tables) **(AI)**. SW implementation of the gravity field estimation done. Implemented also DTRF2014 for the reference frame comparison as requested by IERS for the Technical Note. Still chasing the LOD problem, work in progress. Switch to ITRF2014 foreseen soon, trying to submit by the end of May **(AI)**. RB PP with new conventions not done yet **(AI)**. Some analysis done on the PP time series, ESA seems to be different from the other ACs, as it was already noted by other ACs in past meeting. The ~1 ppb difference between the standard and the PP solution confirmed.

JCET: Overview of the operational products, the parallel solution with ITRF2014 as a priori, PP bias result. The IERS EOP is aligned with ITRF2014 since February 9, 2017. The mean pole is not available yet, a discussion is ongoing on the effect to be modeled by the mean pole (e.g post-glacial rebound only…). For now, the solution is to use the tabular values. The official IERS routine for 2017 (i.e. IERS_CPM_16.f) is not available, the tabular values online change from one version of the series to the next. JCET made a routine that can be used instead of the tabular data, ILRS_CPM_15.f, based on the IERS routine (2015 version) and extended to 2021. The JCET routine was distributed to ASC by email.
SLRF2014 has been released prior to the ASC meeting. Since the ASC meeting, the file was updated twice, to correct some formatting errors. It is available from the ILRS webpages:

https://ilrs.cddis.eosdis.nasa.gov/science/dataAnalysisResources/index.html; and

https://ilrs.cddis.eosdis.nasa.gov/network/site_information/index.html

The long-wavelength gravity time series has been extended to the end of the year (2017) and is available online for downloading: http://geodesy.jcet.umbc.edu/ILRS_ASC_2017_ITRF2014_IMPLEMENTATION

Eccentricity data base clean-up: the latest release on February 2017 contains the best survey results to date and is available online at the usual ILRS web page and CDDIS:

ftp://ftp.cddis.eosdis.nasa.gov/slr/slrocc/ecc_une.snx

ftp://ftp.cddis.eosdis.nasa.gov/slr/slrocc/ecc_xyz.snx

QC activities and raw/smoothed post-fit RMS series shown for most active stations. La Plata is about to come online. QC reports content from all of the routinely contributing ACs (as well as the historical CSR reports up to early 2000), are available online at JCET's QC page:

http://geodesy.jcet.umbc.edu/QC/

and the use of the website has been demonstrated during the ASC meeting via real-time connection. The station events are linked and the plots can be superimposed to correlate jumps in the time series. Another website gives orbit comparisons: http://geodesy.jcet.umbc.edu/SP3/

IGG: new associate analysis center. Main goal is processing SLR data of the new GNSS systems: GLONASS, Galileo, BeiDou, IRNSS, QZS, and GPS III (in the future). Activities: MGEX project, orbit validation with comparison of SLR and GNSS orbits with daily report to be distributed upon request. Online service (multi-slrgnss.rhcloud.com) to check the SLR data on GNSS: table, statistics, residuals, etc. The stations are kept fixed at the reference frame, the improvement on the coordinates for those stations getting a low number of LAGEOS data and high number of GNSS data (mostly the Russians) could be considered in the future. The

website is shown with a real-time connection. Spacecraft modeling is quite critical. Future activities: GNSS orbits with SLR data, combined LAGEOS+GNSS products.

CODE: Dach is asking the community if it could be interesting to extend the CODE daily report to all GNSS satellites; the daily report could be delayed by 3 days, in order to include the MGEX results. The suggestion is accepted, Dach will check the feasibility **(AI)**. When available, the modified report will be uploaded in the JCET database currently available online with GPS and GLONASS orbits only.

OSTM/JASON-2: T2L2 between SLR stations to determine the time bias between the stations. The impact of TB is not negligible and can reach some millimeters, as in the case of 8834 where there are 6 mm difference in the east component. The cable calibration of the timing system is a critical point. There are 2 apparatus (a French and a German piece of equipment) available to calibrate on the ground, and test the station synchronization, at 100 ns level; the 2 apparatus give the same results with what T2L2 delivered. The QC analysis is able to estimate the TB but the error is large, the direct observation with JASON-2 is much more accurate. The URL for T2L2 results, makes it possible for any SLR station ranging to Jason-2/T2L2, to monitor its time bias: http://www.geoazur.fr/t2l2/en/data/v4/

A report from the T2L2 team is possible; in order to give a feedback to the stations, a daily report is feasible. GRGS/OCA will deliver to the ASC a table of the measured time biases to be compared with the QC analysis results **(AI)**. The topic will be forwarded to the Network and Engineering SC, in order to decide how to plan the calibration at the stations **(AI of the QCB?)**.

Systematic error Pilot Project: the ACs (except ASI, DGFI and JCET) are requested to send the time series with separate bias estimation v20x (period 2005-2008) with the new conventions by the end of June **(AI)**.

ITRF2014 implementation: the switch will be done on June 15th for both daily and weekly (v70 and v170). Time variable gravity and mean pole must be used. The re-analysis of the full data set and the combination must be ready before the meeting in Riga. The deadline for the ACs is the end of August, one month needed for the combination **(AI for all ACs and CCs)**

Next UAW in Paris: Pavlis, Luceri, Ries, Thaller, Koenig. Contribution to be coordinated in the next days.

Riga workshop: the analysis session "How do we evaluate our current performance?" Mueller, Koenig, Rodriguez, Thaller, Pavlis and Luceri will contribute to the session.

JoG ILRS Special issue: On the order of 50 abstracts collected so far, a residual clean-up in the next weeks. After that, next step is to talk with the editor in chief to get them approved. The original submission date was end of May, it will be surely shifted.

SUMMARY of ACTION ITEMS:

AI No.	Responsible Entity	Action Item Description
1	BKG	Submit ITRF2014 products by end of May (at the latest)
2	BKG	Submit Syst. Error PP SINEXs by end of May (at the latest)
3	GFZ	Implement full reanalysis model (ala ITRF2014 development) ASAP
4	GFZ	Deliver v201 SINEX files for the Syst. Error PP ASAP
5	NSGF	Correct typos in CoM tables and re-release with email to ASC ASAP
6	NSGF	Submit ITRF2014 products by end of May (at the latest)
7	NSGF	Deliver v201 SINEX files for the Syst. Error PP ASAP
8	CODE	Check the feasibility to extend daily report to all GNSS satellites
9	OSTM/JASON-2	Deliver to the ASC a table of the measured time biases in the GLTN
10	**ALL ACs & CCs**	TRF switch on June 15th for both daily and weekly series (v70 and v170)
11	**ALL ACs**	Reanalysis of full data set with SLRF2014 ready by end of August '17
12	**ALL CCs**	Combination of all input series must be ready by end of September '17
13	Pavlis, Luceri, Ries, Thaller, Koenig	Plan via email the UAW preparatory work and presentations
14	Mueller, Koenig, Rodriguez, Thaller, Pavlis and Luceri	Preparatory work for the position paper(s) needed for the Riga Workshop

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Saturday, April 22, 9:00 – 17:00

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