



News Items:

- Next AWG meeting at EGU 2014, dates to be defined as soon as the EGU program will be available.
- A UAW is being organized by Rothacher, Herring and Gross, in Pasadena, CA, June 27-28, 2014, following the IGS Workshop.

AC and CC Reports

- ASI – AC & CC
 - Revision of the data handling file: a few updates have been proposed to be adopted for the re-analysis: updated systematic errors for the 1992 occupations of Roumelli and Lampedusa, Borowiec in 1993-2002 and Herstmonceux in 1985-1988. Two sets of data (Simeiz 2009-2011, Wettzell 2009-2010) are affected by large errors and will not be considered in the re-analysis.
 - The coordinates of a few stations have been estimated using the combined ILRSA solutions in order to update SLRF2008. Only those stations having large differences w.r.t. SLRF2008 have been considered.
 - Orbit combination: some tests have been made to combine orbits using different weights for each AC solution. The routine orbit combination (products will not publicly available) will start from January 2014 for LAGEOS. The evaluation will probably last for a couple of months, deriving corrective actions, in particular to remove periodic signals evident in the series.
- BKG ; standard products and preparation for ITRF2013.
- DGFI:
 - DOGS status: current version 5.2 includes non tidal atmospheric loading and station dependent CoM.
 - Data quality check: Wettzell data have been collected with different receiver in the same pass (photodiode and PMT) from 2002 to 2005: 7 mm range bias difference between the two. Probably there is a calibration problem for the SPAD.
 - Data Handling file: new flags adopted
 - SLRF2008 coordinate update for 12 stations
 - Some tests have been made to evaluate the impact of LARES data in the

product quality.

- ESA: not attending
- GFZ: not attending
- GRGS/OCA: the AC is now fully operational at the Paris Observatory.
 - A data analysis test has been performed to evaluate the impact of data weighting: the impact is very small except for LOD.
 - Estimation of some coordinate time series
- JCET – AC & CC:
 - NGSLR co-location
 - Investigation on Yarragadee height change.
 - Update of the loading model for the SLR sites distributed to the ACs. JCET will try to provide the GOT4.7 ocean tide model (AI).
 - Investigation on the issues related to the LARES response to ranging, especially from kHz systems.
 - JCET QC viewer.
 - Evaluation of the RMS of fit by station using the DGFI and ASI coordinate estimates. On the basis of the result a table is prepared proposing the coordinates to adopt for the re-analysis.
- LLR WG report:
 - 18100 NP since now, APOLLO didn't release data in 2013, same amount of 2012 data are expected. Apollo 15 continues to be the retro-reflector with more data. The amount of data in the last couple of years is increasing.
 - Comparison of LLR SW ongoing.
 - In the last months there was a debate on the correctness of Lunokhod 2 data. According to the Russian the retroreflector is rotated in such a way that it cannot give returns to the Earth. Murphy made a study on the orientation of Lunokhod 2. The histogram of the returns is larger than the ideal function and it could be explained by a tilted array with a 35 degree azimuth orientation w.r.t. the orientation towards the Earth. More information on physics.ucsd.edu/~tmurphy/Apollo/l2-is-real.html.
 - Many LLR-related talks and papers in the last years.
- NSGF: no report

SLRF2008 updates: e.g. Koganei, Simosato, Concepcion, San Juan and new Russian sites will be considered according to the table made by ECP. DGFI will distribute the new coordinates and also update the discontinuity file (AI). The SINEX file with the covariance matrix, mainly used by the Combination Centers, will be updated by JCET (AI).

New Products, Modeling Issues, New IERS Conventions (2010), etc.:

- **Station Configuration file:** AC need to follow a new procedure for an improved description of station operational modes (replaces SCH/SCI). The new procedure is easy to use and should help the stations to track changes. A file with the complete list of historic SCH and SCI indicators exists and can be used by the analysts; ECP will provide the file (AI). The stations should remind that it is important to increase the release flag when resubmitting the data.
- **Harmonization of the AWG analysis procedures and modeling standards:**
 - Models:
 - gravity fields: at present any model is allowed, similar to or better than GGM02C, EIGEN-GL04S etc. (to 30x30 minimum for LAGEOS). Need to decide model for LARES and for SH estimation PP.
 - time variable gravity (TVG): JCET will ask Cheng if the CSR SLR series for C2,0 S2,1 and C2,1 are available since 1983. DGFI and ASI will compare those series with their own (AI) and, on the basis of the results, a series will be adopted for the re-analysis. This activity should be completed by the end of the week.
 - solid earth tides: IERS2010
 - ocean tides: any model similar to GOT4.7, FES2004, etc. is allowed
 - atmospheric tides: applied to gravity variations but NOT to station deformations. Bode- Biancale 2003 and Ray-Ponte are acceptable.
 - Albedo: applied, any model (e.g Knocke)
 - Thermal forces: none available for the current time period.
 - Ocean tidal load: Pavlis to provide GOT4.7 values in the IERS format from Duncan Agnew's s/w SPOTL.
 - Satellite CoM correction: site and time dependent correction according to Appleby's tables.
 - Revise current AWG rules on the regular estimation of systematic errors for other than the non- core sites.
 - **Yarragadee** has a jump of 16 mm around 2010 but now the performance are ok. JCET will give the exact dates of the anomaly and Varghese will investigate if there is an engineering problem.
 - **Potsdam**: a 1 cm discontinuity exists between the old system and the new KHz system, ECP and CL will talk with Grumwaldt during the week. The jump could be removed by the adoption of the new CoM correction. The last years will be reprocessed to see if it goes away.
 - **Grasse**: 1 cm discontinuity in the time series after the system upgrade. ECP and CL will talk with J.M. Torre for possible explanation before deciding how to proceed in the re-analysis, i.e. the upgraded system will be considered as a new system and no bias will be estimated
 - Revise current AWG list of core sites: The list will be modified adding the new Haleakala (7119), Wettzell (8834) and Tahiti(7124). JCET will check (AI) the starting date for Wettzell and Tahiti. The bias estimation for Wettzell will be

stopped at its starting date as core station. The new list will be used from December 1st. DGFI will update the list (AI) included in the discontinuity file.

- Estimation of low-degree SH of the gravity field (decide a priori gravity & tides model)
- Inclusion of LARES as a 5th satellite in the group of analyzed data is under consideration
- The NT Atm. Loading & Gravity implementation will continue as an internal PP

• **PREPARATION FOR ITRF2013 RE-ANALYSIS:**

- Participating AC and CC and data analysis periods:

Analysis / Combination Center	Time Span of Data Analysis
ASI AC & CC	1983 – 2013
BKG	1993 – 2013 (possibly some years back)
DGFI	1983 – 2013
ESA	???
GFZ	1983 – 2013
GRGS	1983 – 2013
JCET AC & CC	1983 – 2013
NSGF	1983 – 2013

- AC schedule for delivery of products to CC for combination: the schedule defined in the previous AWG meeting has been delayed
 - December 7th: ACs will submit the 2003-2013 time series
 - end of December 2013: full AC submission and first results from the 10 years combination

Other topics, next meeting(s)...

- Data delivery to be checked. It seems that the data from some stations are not included in the daily files immediately. ASI and JCET will check the entire process together with the data center support (AI).

List of attendees, AWG, Nov. 9, 2013, Fujiyoshida, Japan

CHECK ✓	Last name	First name	Institution	e-mail
✓	Appleby	Graham	NERC SGF, UK	gapp@nerc.ac.uk
✓	Arnold	David	SAO, USA	david-arnold@earthlink.net
✓	Bianco	Giuseppe	Agenzia Spaziale Italiana	giuseppe.bianco@asi.it
✓	Bloßfeld	Mathis	Deutsches Geodätisches Forschungsinstitut, Germany	blossfeld@dgfi.badw.de
✓	Botha	Roelf	HartRAO, South Africa	roelf@hartrao.ac.za
✓	Combrick	Ludwig	HartRAO, South Africa	ludwig@hartrao.ac.za
✓	Deleflie	Florent	GRGS/ IMCCE / Paris Observatory	Florent.Deleflie@imcce.fr
✓	Kirco	Arsov	Geosciences Australia	Kirco.arsov@ga.gov.au
✓	Luceri	Cinzia	e-GEOS, Italy	cinzia.luceri@e-geos.it
✓	McCormick	David	NASA/GSFC	david.r.mccormick@nasa.gov
✓	Mueller	Horst	Deutsches Geodätisches Forschungsinstitut, Germany	mueller@dgfi.badw.de
✓	Mueller	Juergen	Leibniz Universität Hannover, Germany	mueller@ife.uni-hannover.de
✓	Otsubo	Toshimichi	Hitotsubashi Univ., Japan	t.otsubo@r.hit.-u.ac.jp
✓	Pavlis	Erricos	Goddard Earth Science and Technology Center, Univ. of Maryland, Baltimore County, USA	epavlis@umbc.edu
✓	Pearlman	Mike	CfA	mpearlman@cfa.harvard.edu
✓	Roggenbuck	Ole	Bundesamt für Kartografie und Geodäsie, Germany	Ole.roggenbuck@bkg.bund.de
✓	Schwatke	Christian	Deutsches Geodätisches Forschungsinstitut, Germany	Schwatke@dgfi.badw.de
✓	Sosnica	Krzysztof	AIUB, University of Bern, Switzerland	krzysztof.sosnica@aiub.unibe.ch
✓	Thaller	Daniela	Bundesamt für Kartografie und Geodäsie, Germany	Daniela.Thaller@bkg.bund.de
✓	Varghese	Thomas	Cybioms, USA	tvarghes@cybioms.com
✓	Wang	Xiaoya	Shanghai, CAS	wxy@shao.ac.cn
✓	Wilkinson	Matt	NERC SGF, UK	matwi@nerc.ac.uk
✓	Zhang	Zhongping	Shanghai, CAS	zzp@shao.ac.cn

Action items:

#	Description	Resp.	deadline	Closure/Note
1	UPDATE AWG pages on ILRS recently launched website (send comments/suggestions to ECP)	all		
4	Orbit combination to be done by the next AWG	CS, ECP	4/28/2014	
9	SLRF2008 should be updated	ECP, CL, HM	15/10/2013	done
10	MATLAB QC viewer stand-- - alone s/w package to be released	ECP		done
11	JM needs to deliver examples of LLR data where the same NPs exist with different information (met, etc.)	JM		
13	Koganei, Simosato and Concepcion coordinates need updates	ECP, CL, HM	15/10/2013	done
14	JCET, DGFI, HITU and SAO to discuss the procedure for quick coordinate updates for QC process	ECP, HM		To be discussed at the next ILRS workshop
16	ACs must send their updated description files for their operational products to Carey	ACs		
18	AC should submit orbits with SLRF2008 and EOP fixed starting from the first submission immediately	GRGS		done
19	ESA & NSGF AC must implement the gravity coefficient parameter estimation	ESA, NSGF	asap	
21	We will start the SH (4x4) Pilot Project after we complete the ITRF2013 reanalysis	ACs	TBD	
23	HM will update the Data Handling file to include an entry for the current CoM model	HM		done
24	ECP will finalize JoG SI TOC and last two abstracts, then submit to journal editor	ECP		
25	The bias values in the data handling file need a revision before the next contribution to ITRF2013	CL, HM, ECP	15/10/2013	done
26	The use of the flags will be decided among the QC analysis centers	ECP, HM		done
27	ECP will deliver the mean pole, C2,0, C2,1 and S2,1 (values and rates for the terms before the GRACE era) and the rates for higher zonal terms	ECP	15/10/2013	done
28	Latest check on the Ocean loading GOT4.7 and add APOLLO site	ECP	30/09/2013	done
29	The new CoM model will be adopted in the operational products starting from October 1st	ACs		done
30	GA will send info on the CoM table and on the related SW to Noll for the ILRS web page	GA	asap	done
31	ECP will prepare the list of constraints and weights to be applied to the sites for the bias PP.	ECP	30/04/2014	
32	Submission of the re-analysis solution time series 1998-2013 (to present really) to the combination	ACs	31/03/2014	

	centers			
33	Submission of the re-analysis solution time series 1983-1997 to the combination centers	ACs	15/04/2014	
34	Submission of the complete re-analysis combined solution time series to ITRS	CCs	15/05/2014	
	NEW ACTIONS			
35	JCET will provide the GOT4.7 ocean tide model	ECP	23/11/2013	done
36	DGFI will distribute the new coordinates and update the discontinuity file	HM	23/11/2013	done
37	ASI/JCET will update the SLRF2008 SINEX file with the covariance matrix	ECP	7/12/2013	done
38	ECP will deliver mean pole and the time variable gravity. DGFI and ASI will compare TVG series with their own	ECP, HM, CL	15/03/2014	done
39	ASI and JCET will check the data flow from the stations delivery to the user availability, with the support of the Data Centers	ECP, CL	31/12/2013	done
40	DGFI will update the list of core sites in the discontinuity file	HM	31/03/2014	

CL – Cinzia Luceri
 CS – Cecilia Sciarretta
 DT – Daniela Thaller
 ECP – E. C. Pavlis
 FD – Florent Deleflie
 GA – Graham Appleby
 HM – Horst Müller

