

3 Reports of IERS components

3.1 Directing Board

The IERS Directing Board (DB) met twice in the course of the year 2014. Summaries of these meetings are given below.

Meeting No. 58 April 27, 2014, Technical University of Vienna, Gusshausstr. 27, Vienna, Austria

Introduction and approval of agenda The agenda was accepted. Daniela Thaller welcomed the guests and the members of the IERS Directing Board.

Formalities The minutes of IERS DB Meeting #57 were distributed together with the agenda of DB Meeting #58.

IAG service review Tom Herring presented the main questions raised by the under-going review of the IAG services: How are the services working and what is written in the Terms of Reference? Is there a single point of failure or redundancy (or focused on individual institution running the service)? Certification of ICSU for the services is in progress over the next few years.

Report on GGFC activities Tonie van Dam gave a summary of the IERS Retreat in May 2013, followed by discussions on the main topics:

- GGFC continues, new data from GFZ, but delayed.
- Working for ITRF2013 providing non-atmospheric loading model used in ITRF2013.
- Working on REFAG meeting in October, registration online on Friday.

Zuheir Altamimi will provide a full list of ITRF2013 sites to T. van Dam who will construct a model that will then be available on the IERS ftp server at BKG.

New Action Item:

#58.01 Provide a list of ITRF2013 sites to Tonie van Dam.

Report on GGOS Hansjörg Kutterer reported on the latest GGOS activities:

- GGOS Coordinating Board (CB) Elections.
- GGOS CB semiannual meetings and GGOS Consortium annual meetings; monthly telecons.
- A GGOS reception will take place on December 14, 2014 in San Francisco.
- Unified Analysis Workshop (UAW) will take place on June 27–28, 2014 in Pasadena, USA.

Presentation of the GGOS strategic plan:

- Executive summary provided from IAG and GGOS leadership.
- Key concepts: GGOS as IAG Observing System and “integrator of services”.
- GGOS’s role centring upon advocacy, integration, and international relations.
- Next steps: adopt the Strategic Plan and re-align the organization; implement the plan at the Bureau Level; reporting.

Presentation on implementation of the 2011 GGOS structure and reorganization – Alignment of GGOS:

- Reporting between the GGOS components and new Bureau restructuring.
- Relation between GGOS and IERS on the strategic level and on the operational level.

A discussion on interaction between IERS and GGOS followed, particularly on the question which are the IERS core products.

For the Unified Analysis Workshop potential topics are requested from the services. Registration will be via the IGS Workshop web site.

New Action Item:

#58.02 Communicate additional possible topics for UAW if necessary.

Reports from the Technique Centres ***International DORIS Service (IDS)***

Frank Lemoine presented the current status of DORIS missions and network and summarized activities:

- 5 current missions + 5 future missions planned.
- Network evolution: several new stations are planned; some stations will be shut down or moved.
- Ground Antenna Characterizations: Phase variations measurements for Starec antenna in anechoic chamber; successful phase law implementation by the ACs.
- Analysis update: 6 active DORIS ACs.
- ITRF2013 contribution: 1st version (V0) has been submitted to the data server, a 2nd and 3rd version are planned to follow after EGU2014.
- Past meetings: Analysis Working Group (AWG) meetings in October 2013 and March 2014.
- Next meetings: IDS Workshop planned for October 2014 in Konstanz, Germany, IDS AWG meeting in 2015.
- IDS Governing Board: Elections for Member at Large and Analysis Coordinator in 2014.

International GNSS Service (IGS)

Tom Herring reported on IGS activities:

- IGS 2nd Reprocessing (full summary of analysis standards can be found at <http://acc.igs.org/reprocess2.html>); Main analysis features: Longer data span, updated models, frames & methodologies, sub-daily alias and draconitic errors will remain.
- Some contributions still missing, but expected soon.
- First combined solution expected for June 2014.

International Laser Ranging Service (ILRS)

Erricos Pavlis gave a report about the ILRS activities:

- New Russian stations Badary, Zelenchukskaya, Svetloe validated and Mendeleevo soon to be validated.
- Past meetings: 18th Laser Workshop in November 2013 + AWG Meeting.
- Site Log Viewer for enhanced display and comparison online at <http://ilrs.gsfc.nasa.gov/SiteLogViewer/>.
- Station Change History log now operational.
- ILRS/GGOS Study Group on tracking GNSS constellations established, campaign during the summer.
- ILRS elections for renewal of the Governing Board membership completed.
- First version of ILRS solution by the end of May/beginning July.
- ILRS Report 2011–2012 is under preparation, also the ILRS contribution to IERS Annual Report 2013.
- Future meetings: 19th Int. Workshop on Laser Ranging, October 2014 at GSFC, USA; AWG meeting in April 2014, Vienna, Austria; 20th Int. Workshop on Laser Ranging in 2015 in Potsdam, Germany; Technical Workshop in Matera, Italy in early 2015.

International VLBI Service for Geodesy and Astrometry (IVS)

Rüdiger Haas on the latest IVS activities:

- IVS Directing Board: New committee on training and education; new WG on VLBI observations of satellites.
- Past meetings: 8th IVS General Meeting and 15th IVS Analysis Workshop in Shanghai, China in March 2014.
- Upcoming meetings: 3rd Int. VLBI Technology Workshop in the Netherlands in November 2014; 8th IVS Technical Operations Workshop in Haystack, USA in May 2015; 22th EVGA Meeting and 16th IVS Analysis Workshop in Ponta Delgada, Portugal in May 2015; 9th IVS General Meeting and 2nd IVS VLBI School in South Africa in March 2016.

- CONT14 campaign starting on May 06, 2014 (17 stations at 16 sites).
- ITRF2013 contribution in work; 9–10 contributions expected from the ACs.
- Monitoring of ICRF2 defining sources and Gaia transfer sources.
- Several VGOS systems will commence operations within the next few years.

Reports from the Working Groups

IERS Working Group on Combination at the Observation Level (COL)

Richard Biancale reported on the COL activities.

- 4 years of COL working group: Goal of the WG, COL Analysis Centres.
- COL Meetings: regular annual meetings; past meeting in May 2013 in Munich, Germany; next meeting in May 2014 in Paris.
- Future of COL: homogenizing technique processing and upgrading software packages; discussion of COL activities and results at next COL meeting and at the UAW in June 2014; redefinition of combination activities within the IERS afterwards.

IERS Working Group on on Site Survey and Co-location

Sten Bergstrand reported on the current activities of the WG.

- Recent activities in the working group: a resolution on the nomenclature of space-geodetic reference points and local tie measurements.
- Coming activities: monitoring OSO VLBI antenna during CONT14 campaign; WG meeting intended at REFAG2014; establishment of GNSS/TPS combined local tie monitoring at Onsala and Metsähovi; participation in EMRP Long Distance Surveying WP5: Local Tie Metrology (2013–2016); revise WG charter.

IERS Working Group on SINEX Format

Daniela Thaller reported on the activities of the WG on SINEX Format.

- Station parameterization (e.g. post-seismic station movements) being investigated at IGN by Paul Rebischung in the frame of ITRF2013 generation.
- Clarification of the Statistics block and the definition of the number of parameters (reduced parameters and pseudo-observations).

Zuheir Altamimi pointed out that progress in the SINEX format is needed, e.g. for periodic signals and for seismic deformations to be corrected.

ITRS/ITRF <i>Report from ITRS Combination Center at DGFI</i>	Detlef Angermann reported on the status of the DGFI CC. • Presentation of the combination strategy at DGFI and the requirements for SINEX input data on normal equations and solutions. • Summary of which information is needed from the Technique Centres in order to generate a combined solution
<i>Report from ITRS Combination Center at JPL</i>	Richard Gross reported on recent activities at the JPL CC: • Continuing to develop Kalman filter-based approach to determining combined TRFs. • Examine effects of atmospheric loading. • Applying three-corner-hat technique to data from co-located stations.
<i>Report from ITRS Center</i>	Zuheir Altamimi reported on the activities of the ITRS Centre. • UN GGIM: 5 delegates from the GGRF WG will attend an UN mission briefing in May; a short video has been produced in order to explain the concerns to the delegates (<https://vimeo.com/89695290>). • ITRS Centre activities: new ITRF web site will be ready in 2014. • Ongoing development by the operational entity for local surveys; Operational entity should be recognized by the IERS as fundamental component of the ITRS Centre (change the ToR?). • New ties available for several new stations since ITRF2008. • ITRF2013 status: new schedule: first results are previewed by End of June–July, final solution by Sep–Oct 2014.
<i>New Action Item:</i> #58.03 Send video to DB.	
Status of ICRS/ICRF and IAU Working Group	Ralph Gaume gave a presentation on the current activities of ICRS/ICRF. • ICRS Centre update: maintenance of the link to Hipparcos; LQAC-3 (Large Quasar Astrometric Catalogue) scheduled mid 2014; Rotation between VLBI catalogues; Gaia launched in December 2013. • ICRF-3: working group member list has been updated; one of the goal is amongst others to improve the X/Ka Band and the lack of sources on the southern hemisphere. • WG meeting took place in March 2014 in Shanghai. • Status of the VLBA: needed to improve the ICRF, but at risk for closing. Letters of support written.

Zuheir Altamimi added that VLBA stations are all co-location sites with GNSS, and to increase the observations on these sites would be positive for the ITRF. It could be helpful to send out other letters of support to the Director of the US Science Foundation who is responsible for the VLBA (also from IVS and IERS).

IERS Conventions

Gérard Petit summarized the activities on updating the IERS Conventions 2010:

- Several parts have been updated in the description of reference systems and in the conventional physical models.
- Possible directions for the evolution of the IERS Conventions:
- Update models as needed; Technique-specific conventions; Conventional treatment of non-tidal loading; Conventions to describe the models chosen in analysis; Conventions for vertical references.
- Several models have to be updated.
- Organization of the Conventions Centre: start forming the “Editorial Board” where dedicated people are responsible for one main topic or chapter each.
- What should be the role of the “Advisory Board”?

New Action Item:

#58.04 Ask people to join the Editorial Board and provide a list.

Earth orientation products Report from Earth Orientation Centre

Christian Bizouard presented the report of Earth Orientation Centre:

- Virtual Observatory: EOP data available in XML format.
- ASCII file for TAI–UTC history.
- Need of authoritative file for leap second announcements: on-going development at Paris Observatory for such a protocol.
- Geodetic excitation as an official IERS product? Should this product be made official?
- EOP C04 consistency with IGS and IVS.

Report from Rapid Service/ Prediction Centre

Brian Luzum reported about minor modifications to the operational software.

Annual Reports

Daniela Thaller gave an overview on the current status of the annual reports: AR 2012 has been published online and will be printed soon. The call for contributions for the IERS Annual Report 2013 will be sent out in May.

Next DB Meeting

DB meeting #59 is planned to be held before the AGU meeting on Sunday, December 14, 2014 in San Francisco.

Meeting No. 59	December 14, 2014, Hotel Marriott Marquis, 780 Mission Street, San Francisco, USA
Introduction and approval of agenda	The agenda was accepted. The Chair, Brian Luzum, welcomed the guests and the members of the IERS Directing Board.
Formalities	The minutes of IERS DB Meeting #58 were distributed together with the agenda of DB Meeting #59.
Action Items of previous DB meetings	52.01 Test loading models: Tonie van Dam reported that GGFC will not do such tests; tests will be available only if other groups are working on it (e.g., Ole Roggenbuck from BKG). 52.02 Validation procedures: Tonie van Dam reported that GGFC will not set up such procedures. 58.01 Provide a list of ITRF2013 sites to T. van Dam: Zuheir Altamimi will provide this list as soon as all ITRF input solutions are available. 58.02 Communicate additional possible topics for UAW if necessary: done 58.03 Send video to DB: done 58.04 Set up Editorial Board for Conventions Update: done 58.05 Prepare DB meeting #59: done
Changes in IERS Directing Board	Brian Luzum handed over the responsibility for the Rapid Service/Prediction Centre to Christine Hackman as of December 2014. Ralph Gaume, primary scientist of the ICRS Centre at USNO, moved to the US National Science Foundation; USNO is in the process of finding a replacement.
Possible changes in IERS Terms of Reference	A change of the ToR was proposed concerning the Chairperson of the IERS DB to be selected from the members of the DB and the IERS Associate Members. The DB decided to vote on the proposal by email. <i>New Action Item:</i> #59.02 Set up email voting for ToR.
Report on IAG REFAG2014 meeting	Tonie van Dam reported on the IAG Commission 1 Symposium 2014 on Reference Frames for Applications in Geosciences (REFAG2014): • REFAG2014 took place on October 12–17, 2014 in Luxembourg. • 100 participants from 24 countries met to discuss the role of global and regional reference frames in science and practice.

- 60 oral presentations and 18 posters were presented within sessions on six topics.
- The abstracts and presentations are available on the meeting website <<http://iag.uni.lu>>.
- Proceeding will be published in the IAG Symposia Series (Pascal Willis, Editor). About 20 papers have been proposed so far. For the IAG Proceedings, 30–40 contributions are needed.

Unified Analysis Workshop (UAW) 2014

Tom Herring summarized the UAW 2014 results.

Report

The following topics were addressed:

- (1) ~1ppb scale difference between VLBI and SLR.
- (2) Antenna phase centre models for DORIS systems.
- (3) Time variable gravity field effects (DORIS LEO satellites).
- (4) Sub-daily loading and S1/S2 loading.
- (5) Update time scales for atmospheric and hydrographic loading.
- (6) Diurnal and semidiurnal EOP variations.
- (7) EOP parameterization for high-time resolution representation.
- (8) Collocation issues.
- (9) Monument stability (Large and small, physical and electrical).
- (10) Intersystem observations.
- (11) Error models for data and parameter estimates.
- (12) Unification of gravity contributions.
- (13) Combination at the Observation Level (COL) results.

A Mean Pole inconsistency for ITRF contributions was reported. Concerning monument stability it has to be checked whether In-SAR can help. J.-P. Boy will be able to study S1/S2 issues.

Formal requests to the Technique Services:

- IVS: Antenna deformation to be measured.
- IDS: Determine models for satellites in orbit (only possible empirically).
- ILRS: Effect of range bias will be studied.
- IGS: The antenna phase centre of Galileo will not be published. However, an information for one satellite would be enough and could be used to calibrate all others.

All presentations and the detailed report are available at <<http://www.iers.org/UAW2014>>.

Recommendations relevant for IERS

- The Chair of the IERS Conventions Centre should have a sub-group reassessing the relativity models being used by the techniques.
- Re-assess the solid-Earth pole tide model being used in operational processing and make recommendations on how to best implement and update these models in the future.

Update of the IERS Conventions

G rard Petit presented a list of the IERS Conventions Editorial Board and reported on the following open topics:

- Chapter 6 (Geopotential): Conventional geopotential model; Solid Earth Tides; Solid Earth Pole Tides.
- Chapter 7 (Displacement of reference points): Conventional mean pole; Ocean pole tide; S1-S2 atmospheric loading; Non-tidal loading.
- Chapter 8 (Tidal variations in the Earth's rotation): Long-period tidal variations in LOD; Diurnal Earth rotation variations from ocean tides.
- Chapter 9 (Models for atmospheric propagation delays): Compatibility of the refractivity coefficients for optical and microwave techniques.
- Chapter 11 (General relativistic models for propagation): VLBI model; VLBI and SLR models in view of the persistent scale difference between the two techniques.

In general, a documentation of the impact of new models (especially a quantification) along with the Conventions would be helpful (e.g. as an extension of Tables 0.1 and 0.2 of the IERS Conventions).

Tonie van Dam proposed to publish the IERS Conventions together with the GGOS Standards and Conventions document (if the timeline of the development of both documents goes parallel).

New Action Items:

#59.03 Study S1/S2 issues.

#59.04 Documentation (quantification) of the impact of new models.

Status of ICRS/ICRF and IAU Working Group

Brian Luzum presented the status of ICRS/ICRF for Chris Jacobs.

ICRS Centre update:

- Maintenance of the link to Hipparcos with USNO Robotic Astrometric Telescope (URAT).
- Construction of the LQAC (Large Quasar Astrometric Catalogue). Objectives: Compilation of all the recorded quasars; Strategy insisting on astrometric quality; Catalogue flag (A→M) for cross-identifications; Extended photometry & redshift; Calculation of absolute magnitudes M_I & M_B ; Basis

for regular updates (Gaia); Final ASCII file with VO tools in parallel; Comparisons / statistics / coherence.

Other activities of the ICRS Centre:

- Rotations between VLBI catalogues of different Analysis Centres.
- Spectroscopic follow-up of ICRF sources.
- Photometric follow-up of ICRF sources.

Gaia successfully launched on December 19, 2013, but there is a stray light problem. Final Gaia catalogue may replace VLBI catalogue as ICRF.

IAU ICRF-3 WG update:

ICRF-3 goals:

- Improving VLBA Cal Survey's 2000+ positions.
- Improving southern observations.
- Improving number, accuracy, and southern coverage of high frequency frames (24, 32, 43 GHz).
- ICRF-3 will be completed by August 2018 in time for comparisons & alignment with Gaia optical frame.

IAU WG update:

- Meetings in Shanghai in March 2014 and in October 2014 in Luxembourg.
- Proposal to extend the *defining source* concept to multiple wavelengths for ICRF-3.
- S/X, K, X/Ka observations continue.
- VLBA re-observing VCS at S/X.
- Plans for S/X-band for Southern improvements with telescopes in Parkes, DSS45, Hobart26 and HartRAO and for X/Ka-band with baselines in Argentina (Fort Irwin, Tidbinbilla, Malargüe, Robledo de Chevela).

Other issues:

- Status of VLBA: It is needed to improve ICRF2 (ICRF3), but there is a risk for closing, which would have a significant impact on ICRF3.

Proposal: UT1 in NTP messages

Brian Luzum presented NTP and its possible use for distributing UT1:

- NTP (Network Time Protocol) used to transfer time over packet-based networks.
- Client/Server model with connectionless transmissions.
- Operates on Stratum hierarchy (lower Stratum values indicate better time reference).

- NTP for UT1 transmission:
 - Could provide dedicated NTP Server broadcasting UT1.
 - Use NTPv4 Extension field to transmit values.
- User Equipment: dedicated UT1 NTP servers may be easiest solution.

Broadcasting UT1 with msec accuracy should be possible. The user list/access needs to be controlled to ensure that users understand the implications of receiving UT1 instead of UTC.

The values will be put into the “Extension Field” of NTP Packet Format for NTP version 4 only (see slides).

If USNO should do this, there should be a formal request by IERS.

New Action Items:

#59.05 Prepare and sign a letter to USNO asking to distribute UT1.

Distribution of EOP and leap seconds information

Richard Biancale made a presentation for Daniel Gambis on the Web Service for EOP and leap seconds.

Following the IAU Working Group recommendation on distributing UT1–UTC information, 4 developments are presented:

- An ASCII file is available (“Leap second file”).
- EOP data available in XML format by ftp at <hpiers.obspm.fr>.
- Leap second Web Service.
- Secure protocol (via NTP) to give information on leap second announcements for servers synchronization (under development).

Report on GGOS

Bernd Richter presented a report for GGOS:

- Meetings and telecons: monthly telecons of the GGOS Executive Committee (EC); semiannual meetings of the GGOS Coordinating Board (CB) and annual meetings of the GGOS Consortium.
- Participation at the UAW in Pasadena in June 2014 and at the UN-GGIM.
- Main EC Topics: Revision of GGOS Strategic Plan with four major themes:
 - Geodetic Information and Expertise
 - Global Geodetic Infrastructure
 - Service, Standardization and Support
 - Communication, Education and Outreach.

Under development are the GGOS Component Realignment, the GGOS Component Implementation Plans and the cooperation with UN-GGIM, especially with the WG GGRF.

The following main topics have to be considered:

- Improved interaction of GGOS components, of GGOS with IAG services and of geometry and gravity.
- Improved outreach: UN-GGIM (interaction with GIAC), GEO, CEOS.
- Develop dedicated, unique GGOS products.
- Improve reporting, assure successful termination of tasks.
- Organize dedicated workshops.
- Make GGOS operational and provide better visibility.

Metadata:

- Make it mandatory for the GGOS basic products.
- Support the creation of metadata by the GGOS board and the other IAG services.
- Guidelines can be produced if necessary.

Reports from the Technique Centres

International DORIS Service (IDS)

Frank Lemoine presented the IDS report:

- DORIS Constellation Status: Currently 5 missions (Jason-2, Cryosat-2, HY-2A, SARAL and SPOT-5).
- SPOT-5 to be decommissioned by ~May 2015.
- Future missions: 5 missions (Sentinel-3A,-3B, Jason-3, HY-2B, C, D, Jason-CS A, B, SWOT).
- DORIS data modelling for ITRF2013: Time variable gravity field used: harmonic fit to 5x5 SLR+DORIS (Lemoine et al. 2011); Atmospheric loading is not applied; Non-conservative force models are updated/improved; Troposphere gradient estimation by some ACs (2–3 of 6 ACs); Beacon frequency offset now estimated by all the ACs; Phase centre antenna corrections.
- Launch of Jason-3 delayed (maybe in summer 2015).
- Network Operational Status: 58 stations of which 8 beacons are out of order (4 for more than one year).
- Network evolution:
 - Short term (next 6 months): 3 new stations in Chatham, NZ, Kitab, UZ and Socorro, MX;
 - Longer term: new stations in Goldstone, CA, Managua, Nicaragua, Chichijima & Hokkaido, JP, relocation of station Easter Island (Chile), closing stations in Santiago (move to San Juan, Argentina?), Port Moresby, PG and Miami, FL.
- IDS projects: Guam, US: new station planned; Wettzell, Germany: IDS GB agrees to beacon deployment.
- Publication: DORIS Special Issue (Advances in Space Research), theme: ITRF2013-related analysis and results.

3.1 Directing Board

- IDS workshop held in Konstanz, Germany on October 27–31, 2014, papers online at <<http://ids-doris.org/>>.
- Next meeting: IDS AWG meeting in May 2015.
- Analysis update: 6 ACs contributed for ITRF with the latest contribution (v7) submitted December 2014.
- Deadline Feb. 2015 only possible with data up to ~September 4, 2014 mainly due to time-variable gravity.

International GNSS Service (IGS)

Paul Rebischung reported on IGS activities:

- Analysis Centre submissions to repro2: 7 contributions from operational ACs + 2 TIGA contributions. Submission products include satellite orbit and clocks, Terrestrial frames and EOPs (daily SINEX files).
- Several re-submissions due to outliers for several ACs in their WRMS station position residuals.
- Next steps: re-submissions of 2 ACs + extensions to 2014.
- Final combined solution due by end of February 2015.
- In 2014 probably only few ACs available.
- GRGS: problem of yearly signal found (GPT-2 model); total reprocessing needed starting with observations, which is not possible for ITRF2013.

International Laser Ranging Service (ILRS)

Erricos Pavlis presented the ILRS report:

- Network operations continued without major issues.
- Recent meetings: 19th Int. Laser Workshop in Annapolis, MD, October 27–31, 2014; Fall AWG Meeting on October 26, 2014.
- ILRS Supported Missions: 3rd Indian GNSS s/c IRNSS-1C successfully launched on October 16, 2014.
- ILRS GB decided to establish a SG on Space Debris tracking, after an international interest in this activity.
- Main LLR activities: IfE LLR solution submitted for ITRF2013; proposal for a new LLR site at NTT Nasmyth (ESO) was not successful; studies on combined use of LLR, GRAIL and LRO data continue.
- ILRS AWG: Operational products delivered routinely from 8 AC/CCs; 7 ACs and 2 CCs contributed the entire 1983–2013 analysis product to ITRF2013; Focusing at present on the ITRF2014 extension.
- 2 ACs for 2014 up to September.
- Remaining input until mid-January available.
- Future ILRS Meetings: 20th Int. Workshop on Laser Ranging in 2016 in Potsdam, Germany; A technical workshop in Matera, Italy; Next AWG meeting is scheduled during the EGU 2015 week.

***International VLBI Service for
Geodesy and Astrometry (IVS)***

Chopo Ma reported on the latest IVS activities.

Four main topics were addressed:

- IVS submission for ITRF2013/2014: 10 AC contributions with data until 2013; No significant offset of an AC for the scale parameter between the individual AC and the VTRF2013 (VLBI TRF from IVS contribution to ITRF2013); IVS combined solution submission to ITRS Centre planned for February 27, 2015 containing data including 2014 and missing sessions from 2013. For December 2014, only the R1/R4 sessions will be included.
- Recent and upcoming VLBI meetings:
 - 8th IVS Technical Operations Workshop in Haystack, USA, May 4–7, 2015.
 - 22nd EVGA Meeting, Ponta Delgada (Portugal), May 17–21, 2015.
 - 16th IVS Analysis Workshop, Ponta Delgada (Azores, Portugal), 21 May 2015.
 - 33rd IVS DB meeting, Ponta Delgada (Azores, Portugal), 22 May 2015.
 - 9th IVS GM 2016 in South Africa, March 2016.
 - 2nd IVS VLBI School, South Africa, March 2016.
- CONT14 (Continuous VLBI Campaign 2014): Observed May 6–20, 2014 (0–24h UT); 17 stations at 16 sites; Correlation completed within two months; 302,115 observations for the campaign.
- The VGOS world: 13 VGOS stations in roll-out progress; New VGOS Radio Telescopes in NY-Ålesund (NO), Zelenchukskaya (RU), Badary (RU), GGAO (US) and Ishioka (JP); RAEGE Project in progress.

ITRS/ITRF

***Report from ITRS Combination
Center at DGFI***

Detlef Angermann reported on the status of the ITRS CC at DGFI.

- ILRS and IDS contributions analysed.
- A poster will be presented at AGU meeting: “The 2013 DGFI realization of the ITRS”.
- Analysis of the ILRS scale time series: scale difference between DTRF2013 and DTRF2008: 0.2 mm and 0.2 mm/yr.
- DTRF2013 origin in good agreement with DTRF2008 (translation < 0.7 mm, rates < 0.3 mm/yr).
- Analysis of IDS contribution: draconitics higher than those of DTRF2008 input (effect of Jason2 data?).

Report from ITRS Combination Center at JPL

Richard Gross gave an overview on the CC work at JPL:

- Recent activities:
 - Applying three-corner-hat technique to data from co-located stations.
 - Continuing to develop Kalman filter-based approach to determining combined TRFs.
 - Prepare ITRF2013 solution.
- Future plans:
 - Continue Kalman filter-based approach to determining combine TRFs.
 - Submit solution for ITRF2013 (time series of past and future station positions).

Report from ITRS Center

Zuheir Altamimi presented the status:

- ~10 additional local ties since ITRF2008.
- ITRF2013 products:
 - Usual products: Station positions, velocities and residuals, EOP.
 - Additional/new products: Geocentre motion model; post-seismic parametric models and periodic signals (amplitudes & phases) on request.
- ITRF2013 – ITRF2014 schedule:
 - I. Stick to ITRF2013 and start analysis of solutions submitted so far, together with the coming IGS solution.
 - II. Ask all the techniques to process the data for 2014.
Go for ITRF2014 if all the technique combined solutions for 2014 are ready by Friday, 27 February 2015.
- Problems with 5 LT-SINEX files (non-invertible).
- ~3 month are needed for ITRF combination itself.

UN-GGIM GGRF resolution

Zuheir Altamimi reported on the forthcoming UN-GGIM Resolution on the Global Geodetic Reference Frame (GGRF):

- UN-GGIM objectives: the promotion of global geospatial information to address key global challenges & to support improved decision-making, like a global geodetic reference system.
- 3rd Session of the Committee of Experts took place in July 2013 in Cambridge, UK.
- Creating of a working group to develop a GGRF.
- ~30 countries + IAG are members of the WG.
- The resolution aims at encouraging member states to enhance global cooperation, to open geodetic data sharing, to

improve and maintain national geodetic infrastructure and to have multilateral cooperation.

- Next steps: referral of the draft resolution to the UN GA; developing FAQ document.

The text of the UN resolution is available at the UN-GGIM website (see <http://ggim.un.org/UN_GGIM_wg1.html>). Frank Lemoine mentioned that the tide gauges should not be forgotten in the resolution.

IERS Annual Reports

Daniela Thaller informed about the status of IERS Annual Reports:

- AR 2012: published online in April 2014, corrected version in May; printed and distributed in June 2014.
- AR 2013: Last contributions received; IGS report still missing; will be published online by December 22, 2014 and printed and distributed in January or February 2015.
- AR 2014: Call for contributions will be sent out in January 2015; proposed deadline: February 28, 2015.

New Action Item:

#59.07 Issue Call for contributions to Annual Report 2014.

Changes in address management at the Central Bureau

Daniela Thaller reported that a new IERS User and Address Management System was introduced at the IERS Central Bureau:

- Users and members of the IERS may log in to the private user area of the IERS website and may update their contact data and subscribe to newsletters and printed publications.
- New users can register directly at the IERS website.

Symposium on Earth Rotation

Richard Gross reported that the next Symposium on Earth Rotation will take place between June 27 and July 1, 2016 in Wuhan, China, similar to the last Symposium in Shanghai, China, in 2010.

Next IERS DB Meeting

The next DB meeting will be an all-day meeting and will take place on Sunday, April 12, 2015 before the EGU meeting.

New Action Item:

#59.06 Prepare next DB meeting in Vienna.

Miscellaneous

Voting for IAU Commission 19 (Earth Rotation) is not that high and Commission 19 might be merged with other commissions.

Daniela Thaller, Sabine Bachmann, Wolfgang R. Dick