3 Reports of IERS components
3.1 Directing Board

The IERS Directing Board (DB) met twice in the course of the year 2011. Summaries of these meetings are given below.

Meeting No. 52 April 3, 2011, Technical University of Vienna, Gusshausstr. 27, Vienna, Austria

Introduction and approval of agenda The agenda was accepted. The Chair, Chopo Ma, welcomed the guests and the members of the IERS Directing Board.

Formalities Besides minor formal changes the Central Bureau received no further comments for the minutes of IERS DB No. 51.

Reports from the Technique Centres

International DORIS Service (IDS)

L. Soudarin gave the IDS report:

1. Satellite constellation: 6 satellites currently in orbit, in future: HY2A, SARAL/ALTI-KA, SENTINEL3A, JASON-3, JASON-CS, SWOT, GRASP
2. Network: new station at Cold Bay and equipment upgrading at some stations. For the future, major renovations are planned at several stations.
3. DORIS/VLBI compatibility: an experiment is planned to find out how to safely co-locate DORIS and VLBI at VLBI locations. A DORIS/VLBI compatibility status can be found here: <http://ivscc.gsfc.nasa.gov/publications/gm2010/ilin.pdf>
4. Analysis activities: ACs submit 3 months of weekly SINEX solutions every 3 month with a 3-month delay; Combination Center: the IDS 2010 analysis campaign analyses each satellite to determine its contribution to the geocenter and the scale and to determine discrepancies between the ACs; A working group DPOD2008 (chair: Pascal Willis) has been initiated to include new stations in the set of ITRF2008.
5. IDS events: Last event: IDS workshop in Oct. 2010; Next event: analysis WG meeting May 2011 (subject: switch to ITRF2008 and discuss IERS conventions).

Concerning the combination: the Jason-1 satellite is sensitive to radiation at the area of the South Atlantic Anomaly (SAA) and is therefore not included in combination.

International GNSS Service (IGS) U. Hugentobler announced that Tim Springer will take over the responsibility for IGS activities. A report will be finished this month. He gave a presentation with the following subjects:

1. Network: 700 stations are used for IGS products in 2010, from that 91 are core stations.
2. Analysis: calls for next Analysis Center Coordinator, as well as the calls for the next-generation IGS combination system, are still open; Currently 10 ACs are contributing to the IGS; Real time product combined at ESA; Reprocessing campaign starting in ~1 year.
3. IGS08: 232 well performing IGS stations from ITRF2008, information to users is distributed via IGS mail and available on the IGS web site; IGS08 core network: sub-network of IGS08 with 91 core stations.
4. Iterative Calibration of Antenna Offsets: IGS08 has to be consistent with igs08.atx, but ITRF2008 coordinates are consistent with igs05.atx. Due to a scale jump from ITRF2005 to ITRF2008 the antenna calibrations have to be recomputed; IGS08 will be implemented on April 14, 2011.
5. ITRFxx scale wrt. ITRF2008 Scale: IGS recommendation: fix the scale for future ITRF realizations to ITRF2008 scale to avoid scale jumps seen between ITRFxx and ITRF2008 until now.
6. Radome experiment: a campaign to measure the effects of uncalibrated radomes on the realization of IGS reference frame (lasting for several months) is underway. The objective is the calibration for old data.
7. UT1–UTC: comparing the techniques to the rapid service in UT1–UTC, differences to C04 in March 10–30 can be seen.
8. Meetings and Publications. IGS 2010 Workshop Summary Recommendations; Implementation Plan for 2011.

Z. Altamimi mentioned that in ITRF2008 critical sites with discrepancies are probably coming from GPS.

International Laser Ranging Service (ILRS)

E. Pavlis presented a report on the ILRS Analysis Working Group, with the following subjects:

1. ILRS Governing Board Elections
2. ILRS News: Christian Schwatke is the new person under EDC, several NASA stations are undergoing repairs/upgrades.
3. ILRS AWG News: JCET AC beginning end of October 2011; Implementation of ITRF2008 and IERS 08 C05; Adoption of IERS Conventions 2010 after AWG meeting in May; USNO evaluation of daily product completed successfully; ILRS annual report 2009/2010 in preparation.
4. AWG Current Projects: a) Pilot Projects: Orbit products; CRD data format validation; Special issue in Journal of Geodesy;

b) New projects: Use of Starlette, BLITs and Ajisai for EOP (eventually for TRF products); Near real time analysis for SLR data for “station health”.

5. ILRS Meetings: 2 meetings in 2010 (EGU and REFAG 2010); Next meeting at 17th ILRS WS in May, 2011 in Bad Kötzting.

The focus is on improvements and products of IERS.

International VLBI Service for Geodesy and Astrometry (IVS)

R. Haas first transmitted the latest news from the IVS meeting in the past week:

Elections: new representatives from China and Spain in DB, re-elected chair of IVS became Harald Schuh.

The last meeting took place at the end of March in Bonn, Germany. The next meeting will take place in 2012 in Madrid.

R. Haas then gave a short overview on the latest changes within the IVS:

1. IVS operations:
   - Network stations; Japanese stations affected by earthquake. Tsukuba will restart on April 4, Mizusawa telescope damaged, Kashima probably not damaged. New 12m telescopes at Arecibo and Goddard.
   - Correlators and data: Bonn software correlator DiFX fully compatible with geodetic VLBI; New VLBI data structure “OpenDB” based on NetCDF (official use starts January 1, 2010; prepared for VLBI2010)
2. Analysis: New software: VieVS, c5++, nSolve; Upgrade to IERS Conventions 2010 ongoing (remarks on drift observed due to pole coordinate model change from cubic linear model).
3. IVS operations: Intensives. C. Ma proposed to replace Tsukuba by Kokee indefinitely, discussion with IERS Rapid Service/Prediction Center using the results; IVS Task Force on Intensives: Intensive strategy/scheduling, Unified analysis strategy, three levels of INT products.
4. Observing plan 2011; CONT11 on September 15–30, 2011 with 16 stations; Baseline Onsala-Tsukuba for ultra-rapid UT1-UTC for 15 days; Connect VLBI, GNSS and DORIS to an external maser (request from L. Soudarin to connect also DORIS).
5. VLBI2010 development: 20 new telescopes at 17 sites by 2017; 3 stations plan for fully VLBI2010 compliant twin-telescopes (Wettzell, Ny-Ålesund, Onsala), not all will fulfil the VLBI2010 requirements.
6. Simulations: with realistic networks; Mix of VLBI2010 antennas; Source structure simulations at Bordeaux Observatory.

Status of the new GGFC components

T. van Dam presented the status of the new GGFC components:

- Update of GGFC ULUX file server installed.
- New products available through the websites (center of mass, figure, earth); Completion estimated for end of June 2011.
- DB meeting No. 51: generation of AOD loading incomplete; SBA, SBO and SBH accreditation incomplete.
- GGFC meeting/workshop was proposed: perhaps before the AGU 2011.
- GGFC site: operational.
- Validation process of new products incomplete.
- New proposal for AAM products from J. Böhm.

Z. Altamimi proposed to ask the Techniques Centers on used loading models and to study the impact of the models on the results. Testing the models may take a long time for GPS; For SLR at least one year to see first results.

New Action Items:

#52.01 Test loading models

#52.02 Validation procedures

#52.03 Organize Workshop

Earth orientation products

Generating IERS EOP series consistent with ITRF2008

D. Gambis gave a presentation on the EOP series C04:

- Situation before: 70–80 µas in pole difference between EOP(ITRF2008) and 05C04
- Differences between IGS05 and EOP(ITRF2008) and CATREF and EOP(ITRF2008).
- Bias= EOP (ITRF2008) – 08C04 = 0.
- Studies on interpolation methods, study inconsistency between CATREF(IGS) and 08C04.
- UT1 differences with IVS – 08C04 from 24h sessions and intensives; Outliers in intensive session (a combination of intensive sessions may reduce outliers).
- UT1 from 08C04 differences wrt. NEOS, SPACE, IVS combination (intensives from different ACs, 24h sessions combined) and OPA are shown.
- Nutation offsets: T. Herring noted that nutation only comes from IVS within the C04 series, therefore it is unclear from where these offsets come.
- Differences of polar motion due to interpolation method: Lagrange vs Fourier, Spline, Linear
- Practical issues: 08C04 available since February 1, 2011.
- 05C04 available until June 2011.

- Technical documentation on 08C04 can be found in <http://hpiers.obspm.fr/iers/eop/eopc04/C04.guide.pdf>.

C. Ma proposed more points of EOP for next ITRF. T. Herring added that subdaily EOP would be favourable, because EOP rates absorb subdaily effects.

D. Gambis will stop the preliminary version in June.

C. Ma proposed to update the C04 series every day instead of twice per week (every day a point for 30 days back).

IERS Rapid Service/Prediction Center Status Report

A report about the IERS Rapid Service/Prediction Center status was presented by B. Luzum:

1. Recent changes:
   - Adopt 08C04 series.
   - Backup site at <http://toshi.nofs.navy.mil/> (independent site) for combined solution.
   - Use of AAM.
   - Incorporate GSI intensives.
   - More frequently use of eVLBI.
   - Improvements in UT1 predictions.
2. Near-term improvements:
   - IGU LODs into combination.
   - Accuracy check wrt C04 and SPACE.
   - EOP update twice per day (eVLBI data more quickly available).
   - CIO-based EO matrix calculator.
   - Investigate use of AAM/OAM.

Pilot project on EOP Combination and prediction

B. Luzum reported also about this pilot project:

- Pilot Project's objective: collect individual predictions and combined predictions; Near-real-time feedback for all predictions; C04 solution as metric; Goal: recommendations on feasibility of producing EOP predictions.
- Timeline: last issue: interim report to IERS DB; Final report previewed for fall 2012.
- 9 participants.
- Auxiliary data: IERS SB for Atmosphere AAM data; IGS Ultra EOP prediction; GFZ AAM/OAM/HAM.
- Information on web site with contact infos, etc.: <http://maia.usno.navy.mil/eopcppp/> (USNO PP web site); <http://www.cbk.waw.pl/eopcppp/> (SRC, PAS web site).

Near future: additional prediction series/ensemble prediction series, analysis of statistical properties of prediction series.

Decision: Earliest date in the C04 series of an EOP is 31 days in the past.

New Action Items:

#52.04 Announce change

#52.05 Communicate to the user to take EOP from rapid service.

#52.06 Update C04 series every day instead of twice a week.

#52.07 Write Technical Note on 08C04.

ITRS/ITRF

International Committee on GNSS (ICG)

The International Committee on GNSS (ICG) should ensure interoperability between the systems for the users: time and geodetic reference system. Chair of WG D: John Dow and Matt Higgins, 2 Taskforces: time Felicitas Arias, reference frames: Zuheir Altamimi, WG D for geodetic reference: provider agree to be interoperable to ITRF, consensus how to make this possible, IERS' official representative in ICG: Z. Altamimi

C. Ma: DB agrees that Z. Altamimi should be representative. Is a letter from DB requested? Z. Altamimi will ask the secretariat and inform the DB. Next meeting in October.

Status of ITRF2008

Main activities since ITRF2008 release:

- Open access article published in Journal of Geodesy.
- Article on ITRF2008 plate motion model in preparation.
- Technical note of ITRF2008 in preparation (ready by summer).
- Contribution for IERS AR 2009 almost ready.
- Maintenance of ITRF website <http://itrf.ensg.ign.fr/GIS/>.

ITRF2008: Consistency between local ties and space geodesy discrepancies

- GPS co-location improvements necessary.
- Velocity spherical errors for (IDS, IVS and ILRS).
- PMM – Plate Motion Model, comparison to geological models: NNR-Morvel65: most sites on most plates if one wants to compare with ITRF2008, but highest rotations (goal is less than 3 mm/year).

C. Ma asked Z. Altamimi to make a forecast for the services concerning a start for input for next ITRF20xx. Z. Altamimi: wait for two years (probably prepare next ITRF in about 1.5 years).

IERS Working Group on on Site Survey and Co-location

As Perguido Sarti was excused for this DB meeting, B. Richter gave a short overview of his written report:

1. WG meeting: the last meeting took place during EGU 2010 in Vienna, the next meeting is foreseen in December 2011

during AGU Fall meeting in San Francisco.

2. Ongoing activities: the WG and its chairmanship were confirmed by the IERS DB for additional two years. Required actions to push the activity of the WG:
   - A co-chair.
   - Revision of the WG members.
   - Revision of WG charter.

IERS Working Group on Combination at the Observation Level

D. Gambis presented activities of the WG:

1. Charter of the WG and on overview on the last meeting in December 2010.
2. Kick-off Meeting December 2010 in Munich, Germany: (the minutes can be found at the web site <www.iers.org/WGCOL>). CONT08 campaign to compare results
   a. Roadmap: 5 points which should be fulfilled:
      i. Review the approach for the various groups.
      ii. Elaborating benchmarks.
      iii. Ensuring SINEX compatibility.
      iv. Establishing common processing standards.
      v. Optimizing and unifying parameterization.
   b. Activity reports from the Analysis Centers.
   c. Activity reports from the Combination Centers.
   d. Discussion on SINEX format.
   e. Discussion on models.
   f. Discussion on parameters.
   g. Next tasks.
3. Next meeting Tuesday April 5, 2011, 16:30 – 18 h at TU Vienna.

IERS Working Group on SINEX

B. Richter presented the report from D. Thaller who did not participate in DB meeting:

- A First meeting is scheduled for April 6, 2011 during EGU Vienna.
- The list of members contains representatives from the IERS, the Technique Services, the ITRF Combination Centers, the IERS WG on Site Survey and Co-location as well as the GGOS Bureau for Standards and Conventions.
- Goals and objectives:
  - Maintenance and update of the SINEX format.
  - Handle request for SINEX format changes.
  - Mechanism on how the SINEX format is changed and agreed upon.

- Introduction of new parameterizations and models.
- Format description with up-to-date information technology.

T. Herring proposed to better document what models should be used. Z. Altamimi requested that there should be a defined block for models (machine readable, not as a comment).

New Action Items:

#52.08 Contact the ICG secretary and DB will write a letter if necessary.

#52.09 Re-organize the WG on Site Survey and Co-location.

Statements from the IERS Analysis Coordinator

T. Herring gave a short summary about his major tasks as Analysis Coordinator:

1. Work with SINEX definition working group to better define a model specification block in SINEX files. The idea of this block is that when models change, the block written by the analysis software of the different groups contributing to the IERS will need to be changed to reflect the new processing methods. When the IERS conventions are changed, such a block will allow the monitoring of the implementation of new models.
2. Work closely together with the Analysis Coordinators of the individual techniques (e.g., common meetings among the ACs) to achieve better consistency in the models used to generate the results for the IERS products.
3. Work to resolve the C04/rapid EOP product overlap.
4. Start a review of the IERS EOP product availability and consistency.

Status of IERS Conventions

Gérard Petit reported about the status of IERS Conventions:

The Conventions 2010 have been electronically published on December 15, 2010. The printed version is planned to be available at the beginning of May, 2011.

G. Petit presented some results of a survey proposed on the Conventions web site:

- The value of some new features of the Conventions (2010) and of the technical content is found to be high by users.
- Future Conventions: Users favor continuing the same process for gathering information and publishing the Conventions.
- Other comments: Accent on software availability, cover all existing techniques; remove inconsistencies.

The role of the Advisory Board (established 2005 and chaired by J. Ray) was discussed. C. Ma indicated that it is up to the Conventions Center to determine the form in which it continues. Z. Altamimi asked whether the Convention's glossary is suited

to serve as an official document for definition for the IERS Conventions.

New Action Item:

#52.10 Include a survey letter when the printed version of the Conventions will be distributed.

ICRS/ICRF R. Gaume presented ICRS-related issues. The tasks of the ICRS Center are:

A) Reference system and frame:

1. Maintenance and extension of the ICRF: ICRF 2.
2. Investigation of future VLBI realizations of the ICRS: High frequency reference frame: Q-Band = 33-50GHz. Radio source monitoring on <http://ivsopar.obspm.fr>, astro-photometric observations of quasar visibility.
3. Investigation of future non VLBI realizations of the ICRS: Joint MilliArcsecond Pathfinder Survey (JMAPS) and Large Quasar Astrometric Catalogue (LQAC).

B) Extragalactic radio-sources:

4. Monitor structure to assess astrometric quality.
5. Maintenance of the time stability of ICRF.

C) Link of other reference frames to the ICRS:

6. Maintenance of the link to the Hipparcos catalog: USNO CCD Astrograph Catalogue (UCAC) – UCAC4 as final UCAC – and USNO Robotic Astrometric Telescope (URAT) with new camera (10.660x10.660pixel).
7. Information concerning the ICRF objects at other wavelengths.
8. Maintenance of the link to the solar dynamical reference frame through millisecond pulsar analysis.
9. Maintenance of the link to the solar dynamical reference frame through observation of asteroids.
10. Maintenance of the link to the solar dynamical reference frame through LLR. Recent improvements of LLR: New Apollo Station; Meo station.
11. Maintenance of the link to the ITRF.

D) Informational Service:

12. Dissemination of ICRS products.

VLBI intensive series: single baseline: Mk (Hawaii) – Pt (Mexico); intensives start FY12 (fiscal year).

Reports on GGOS and ICSU

Markus Rothacher gave an overview on the GGOS activities.

GGOS

- Retreat in February 2011
- GGOS Vision and Mission (Why GGOS? What is GGOS? Link to the users.)
- GGOS Working Groups: Satellite and Space Missions; Outreach; Data and Information Systems; ITRS Standardization; Contribution to Earth System Modeling.
- Modular 4D Earth System Model (ESM)
- GGOS WG on ESM: Schedule and Milestones; Member list
- GGOS Portal: Lot of progress; Next step is to fill the portal with products, metadata, etc.
- Web Pages: First release finished by GGOS Coordinating Office: <http://www.ggos.org/>
- Outreach: Mention GGOS once in any of your presentation; Promote GGOS.
- Book published “Sea-level rise and variability” and “System Earth via Geodetic-Geophysical Space Techniques”
- Recognition by ICSU as 4th Global Observing System; GGOS then supervised by ICSU and not by IAG.
- GGOS chair selection and appointment.
- Contribution of GGOS to the 3 GGOS Themes:
  1. Global Unified Height System:
  2. Geohazards
  3. Sea-Level Change, Variability and Forecasting
- GIC and GIAC: May 2010: First go for GGOS Inter-Agency Committee (GIAC) supporting GGOS; December 2011: First GIAC meeting; Furthermore: Election of new chair, vice-chair, secretariat.
- IAG/GGOS Declaration.
- GEO development of work plan 2012-2015: 5 task where GGOS should be present:
  - IN-02 Earth Observation Systems
  - IN-05 Gap Analysis
  - DS-01 Disaster Risk Reductions and Early Warning
  - DS-03 Climate Information
  - DS-05 Integrated Water-Cycle Information

  Workshop GEO Work Plan 2012–2015 on May 4–6, 2011 in Geneva.
- Next Meetings and Workshop: GIAC Meeting on Aril 4, 2011 during EGU in Vienna; Unified Analysis Workshop in Zurich on September 16/17, 2011; GEO Plenary 2011 on November 16/17, 2011 in Istanbul.

C. Ma: selection of chair: no official announcement sent out so far, CB distribute to DB; DB members think of possible candidates (no limited number), deadline by end of April 2011.

ICSU Bernd Richter reported about the newly established World Data System (WDS) which is a follow up of the old World Data Services and the Federation of Astronomical and Geophysical Services (FAGS). The WDS has a new structure; details are published under <http://www.icsu-wds.org/> . To become a member, an application form has to be filled which will be reviewed in a formal process by the WDS Scientific Committee. Certain specifications have to be fulfilled but there should be no problems for the existing IAG services. Ruth Neilan (IGS) and Lesley Rickards (PLMSL) are members of the WDS Scientific Committee.

New Action Item:

#52.11 CB will change the ToR according to the decision made at the IERS DB meeting #51, and ask for nominations for a GGOS representative out of the DB members. The election will be made electronically, later the IAG Executive Committee will be informed.

Report from IAU Alexander Brzezinski gave an overview on IAU-related activities:

- 2 important publications in 2010: 1) IAU Highlights of Astronomy Vol. 15, 2) IAU Transactions XXVIIB.
- Final report on International Year of Astronomy 2009.
- General Assemblies: XXVIIIth IAU GA on August 20–31, 2012 in Beijing, China, and XXIXth IAU GA on August 3–14, 2015 in Honolulu, Hawaii, USA.
- Division 1 “Fundamental Astronomy”: report currently under discussion by Organizing Committee; Implementation of IERS 08 C04.
- Commission 19 “Rotation of the Earth”: Co-organization of joint GGOS/IAU Science Workshop 2010 in Shanghai; upcoming events: organization of the Journées 2011 in Vienna; Preparation of IAU GA in Beijing, China; Co-organization of Special Issue on Earth Rotation in Journal Geodynamics (deadline end of April 2011).
- Commission 4 “Ephemerides”: WG on Standardizing Access to the ephemerides (see web pages <www.iaucom4.org>)
- Other commissions and Working Group: Brian Luzum chairman of IAU Div. I WG “Numerical Standards in Fundamental Astronomy”: WG report will be published in “Celestial Mechanics and Dynamical Astronomy”.

Meeting of interest: Journées 2011 Système de référence spatio-temporels, September 19–21, 2011 Vienna, Austria.

Annual Report

B. Richter gave an overview on the current status of the contributions to the Annual Report 2008–2009, pointing out missing and incomplete reports. The AR will be printed together with the Technical Note on ITRS2008.

Next IERS DB meeting / workshop

The next IERS DB meeting will take place in the Washington area in October 2011, e.g. Thursday + Friday at the end of October. The Third GGOS Unified Analysis Workshop will be held right before the Journées which will take place in Vienna.

New Action Item:

#52.13 Ask NGS to provide a meeting room.

Meeting No. 53

December 3, 2011, Westin Hotel, 50 Third Street, San Francisco, California, USA

Introduction and approval of agenda

The agenda was accepted. The Chair, Chopo Ma, welcomed the guests and the members of the IERS Directing Board.

Formalities

Besides minor formal changes the Central Bureau received no further comments for the minutes of IERS DB No. 52.

Reports from the Technique Centres

International DORIS Service (IDS)

Frank Lemoine was not able to attend the meeting. B. Richter gave a short report on IDS activities based on notes from Frank Lemoine:

1. Stations/Network
   Some stations were not operational for various reasons; ongoing problems with US authorities concerning the use of 2 GHz frequency; VLBI/DORIS interference tests are underway or planned.
2. Satellite constellation
   Currently seven satellites used.
3. ACs/Combination Center
   Combination Center producing a quarterly combination with contributions of all ACs; GFZ is a possible candidate for a new AC; the next IDS AWG meeting will be in Prague in May/June 2012.
4. Modeling
   Issues to be resolved for next ITRF: Possible SAA (South Atlantic Anomaly) effect on Spot5; Phase Center Variations; Need of Phase Windup correction will be evaluated; Software by Oscar Colombo to evaluate the 2nd order correction on DORIS measurement; A single-satellite analysis campaign has been conducted; A campaign is underway to assess

the fidelity of the solar radiation pressure (SRP) modeling for current satellites.

5. Atmospheric Loading
   Integration of new geometric correction in the ACs software.

IDS will not be ready for ITRF reprocessing before 2013.

International GNSS Service (IGS)

Rolf Dach gave an overview on IGS activities:

- The real time pilot project will become a product. Data stream including clock and orbit corrections will be distributed via Internet. Two streams: one relying on ITRF coordinates and one on EUREF coordinates.
- The ACC term will end by the end of 2011.
- NGS will continue the combination work for the next 4 years.
- Repro2 campaign will need at least two years.
- An IGS workshop will be held in summer 2012 in Poland.
- An improved sub-daily pole model is necessary.
- A SINEX format update is needed to include CODE into IGS combination.

International Laser Ranging Service (ILRS)

E. Pavlis gave a presentation on ILRS activities:

1. Governing Board Elections
2. Network and Operations
   New responsible person for EDC at DGFI; NASA Network contractor change; Returning stations: Potsdam, Riyadh; New stations: Arkhyz, Komsomolsk, Badari, Zelenchukskaya and Svetloe.
3. New & Upcoming Sites
   GGOS core sites with SLR: San Juan (Argentina), Yebes (Spain), NyAlesund (Norway), Metsahovi (Finnland), Sejong (South Korea).
4. Missions
   New GLONASS satellites, Chinese Altimetry mission HY-2A, new Galileo satellites, RadioAstron, LARES (January 2012).
5. Analysis
   Operational products delivered routinely and on time from nine ACs; New Center of Gravity models for LAGEOS & ETALON; Daily analysis product will become the “official” ILRS product; All pilot projects are expected to be finalized by spring 2012; Switching to new data format (CRD) in early 2012.
6. Last and Future Meetings
   Brief meeting held at the 17th ILRS workshop in Bad Kötzting and before a one day meeting before the Third GGOS Unified

Analysis Workshop in Zürich; Next meeting: prior to EGU 2012 in Vienna (Saturday, April 21, 2012); 18th International Workshop on Laser Ranging will be held in Tokyo in fall 2013.

International VLBI Service for Geodesy and Astrometry (IVS)

C. Ma presented the IVS report:

1. IVS operations
   - Network stations
   - Fortaleza resumed observations in May; AuScope network with new VLBI2010 antennas; Warkworth commenced observing; New telescope in Korea, Arecibo and Goddard under construction; Japanese stations affected by earthquake in March, 2011.
   - Intensives
   - Tsukuba replacements for Int2 and Int3: Int2: Kokee Park and Int3: Seshan; Successful ultra-rapid.
   - Analysis and related topics
   - New software packages: VieVs, C5++, nuSolve; IVS combination operational at BKG with six ACs contributing; CONT11 in September 2011 with 13 participating stations.
2. VLBI2010 development

   eVLBI transfer protocol under development; DiFX correlator fully applicable for geodetic VLBI; discussion on “network cloud”; 3 stations plan for fully VLBI2010-compliant twin-telescopes (Wettzell, Ny-Alesund, Onsala); 14 stations plan to build one fully VLBI2010-compliant telescope each; 11 stations plan VLBI2010 upgrade.

Hansjörg Kutterer informed about the status of TIGO in Chile: Chile is not able to pay for Chilean co-workers at the site (these have to be paid by BKG for the next years); the station will probably be moved to another site in South America.

ITRS/ITRF

IERS Working Group on on Site Survey and Co-location

WG Meetings

A short WG meeting will probably take place during the AGU2011 fall meeting in San.

Ongoing activity

Revision, update of WG members and finalization of co-chairship under progress (planned to be submitted for next DB Meeting).
A draft of the new charter was prepared.

Next ITRF solution issues

Z. Altamimi plans an ITRF2013. IGS reprocessing will take approximately 1 ½ to 2 years. The techniques should provide a test solution as soon as possible.

ISO standardization of ITRS

Claude Boucher presented the current status and background on the ISO standardization. A proposal for an ISO standard on ITRS within ISO TC (Technical Committee) 211 “Geographic information/ Geomatics” is currently developed and a New Work Item Proposal (NWIP) on geodetic references has been submitted. The aim is to establish a permanent structure on geodetic references and to create an ISO standard on ITRS.

New Action Item:

#53.01 Provide unique loading model for the Techniques.

Report on GGFC activities

T. van Dam presented the status of the GGFC.

UAW Action Items:
A project to test the effects on applying atmospheric loading corrections at observation level has been proposed. Status: the displacement data is ready, gravity data still under development.

GGFC:
Reorganization in progress since 2010. First product centers have been recognized; A new call has been drafted and will be distributed to the DB before January 01, 2012 and then distributed in January (deadline mid/end March).

Workshop:
Next workshop on April 20–21, 2012 (Friday and Saturday) before EGU GA in Vienna.

New Action Item:

#53.02 Prepare call for GGFC product centers.

Discussion on IERS Working Group on UT1 distribution

B. Luzum reported about the conclusions from the conference on UT1 redefinition.

Participants mainly came from the International Telecommunication Union and its relevant Study Groups and Working Parties and from other international organizations with interests in this subject. The presentations are available at <http://futureofutc.org/program/>.

Wolfgang Dick provided a summary of the consequences of an UT1 redefinition for the IERS:

- The outcome of the official ITU-R vote in January 2012 is not certain. 70% of Yes-votes necessary of attending people on national base. If successful, there would be no more leap seconds after 2019.
- XML format was suggested for the IERS products to make them more user friendly and more compatible with modern software applications.
- The idea came up to continue to publish pseudo-leap-seconds at IERS.

- If proposal concerning the redefinition of UT1 is adopted, it would provide legal standing to represent civil time by atomic time for concerned countries (e.g. UK).
- UTC will continue to be linked to the rotation of the Earth since the difference UT1–UTC will be available at the level of microseconds from IERS.
- IERS needs to make its products better known and understood.

A press release should be prepared to inform the IERS community about the result of the vote.

In the case that a decision to abolish leap seconds is reached, the IERS should establish an IERS leap second service.

Decision:

Issue a press release, if decision has been made, to inform the IERS community that the IERS is already informed about this issue.

New Action Item:

#53.03 Prepare press release.

Report on GGOS

H. Kutterer gave an overview on latest GGOS activities:

He was elected as GGOS chair after the IUGG 2011 in Melbourne. Ongoing transfer/redefinition from the old GGOS structure to the new structure (new ToR, redefinition of GGOS Vision, Mission, Goals and Tasks, implementation of the new structure).

Components

1. GGOS Consortium (GGOS matters with two representatives from each GGOS component).
2. Election of GGOS Coordination Board: call for nominations has been sent out in November 2011.
3. Executive Committee: GGOS Science Panel (recommendation from GGOS community); Two members of each service to the consortium.

Organization

The objective is to make GGOS operational with the three GGOS themes (Unified Global Height System, Natural Hazards and Understanding Sea-level Rise). The aim is to make the community aware of what GGOS may provide.

Other activities

1. GGOS has established partnership with CEOS.
2. A call for participation for a core system has been sent out.
3. The GGOS Portal has been set up and is now reachable via <www.ggos-portal.org>.

A GGOS retreat is planned for early 2012.

Earth orientation products

T. Herring gave an overview of EOP data within the IERS.

Two aspects of EOP products:

1. Location and access of products

   Access through iers.org or through the product centers? Difficult automation due to unclear naming convention (also via ftp access).
   These aspects lead to the assumption that users get products directly from the product centers (and not from the central IERS web site).

2. Content of products

   Three main bulletins:

   - Bulletin A: Rapid service, available in two forms (weekly and daily updates)
   - Bulletin B: monthly updates
   - C04 series: recently changed

   Different formats, units, file naming schemes.

Suggestions (to be discussed at the IERS Retreat):

- A concise summary for each product useful (how produced, nominal purpose, measures of accuracies of the input contributions).
- Clear indication of date of generation of the product.
- Generation of sets of products in the same machine friendly format and standard comparison statistics (no need to change existing products).
- Introduce a clear file naming convention.
- Comparison statistics and graphics in an easily accessible and marked location.

IERS Retreat and next IERS DB meeting

The IERS Retreat could take place on Wednesday and Thursday before EGU2012 (April 18–19, 2012). A survey should be drafted and sent out to IERS users in order to point out possible topics to be discussed during the Retreat. A problem is to get information from non-scientific users.

B. Richter: External experts should be invited.

C. Ma: A template of self-assessment to be filled out by DB members should be prepared.

New Action Items:

#53.04 Draft a survey to be sent out to IERS users.

#53.05 Draft a template for self-assessment within the IERS DB.

IERS Annual Reports

The annual reports for 2008 and 2009 will be published as a biennial report by end of December 2011. The printed reports will

follow as soon as possible.

The annual reports for 2010 and 2011 should be finished as soon as enough reports are available. The digital versions will contain separate volumes for each year, the printed versions will be published together.

Decisions:

Publish AR 2008–2009 as soon as possible.

Start AR 2010 and 2011.

New Action Items:

#53.07 Publish AR for 2010 as soon as there are enough reports.

#53.08 Send out call for AR 2011.

Miscellaneous

B. Richter informed that he changed to the Geoinformation Section of BKG. In conjunction with this new position he will no longer be the Director of the IERS Central Bureau. He will continue working for the IERS Central Bureau until his successor at BKG is found.

Sabine Bachmann, Wolfgang R. Dick, Bernd Richter