Analysis Working Group Report

ILRS Governing Board Meeting

Grasse, France, - 28 Sept., 2007

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Analysis Coordinator

AWG Projects

- ASI (AC & CC), BKG, DGFI (AC & CC), GA, GFZ, JCET, NSGF and a new AC: ***GRGS/OCA***
- Operational products delivered routinely on time
- Site range biases currently central focus of AWG investigations
  - Stanford ET biases treated in late 2006 with wrong sign
  - Re-analysis to be redone for 1993 to present
- Historical data analysis nearly completed (DGFI & GFZ)

AWG New Projects

- Pilot Projects currently in progress:
  - *Orbit products (SP3C files) -- three ACs in testing with two CCs*
  - *Daily solutions of 7-day arcs for 1^d EOP for NEOS (one AC)*
- New Potential projects:
  - *Generation of a "geocenter to ITRF origin vector" series*
  - *Use of Starlette and Ajisai initially for EOP and eventually for TRF products with improved modeling (e.g. atmospheric effects)*
  - *Near real-time analysis of SLR data for "station health"/bias Rpts.*
  - *Two new task-force groups with AWG participation, one to formulate bias issues and analyst-operator communications, and one to tackle the precise computation of the best estimates of s/c CoM offsets for given station-s/c configuration (automatically)*

AWG Action Items

- **Open action items from past AWG meetings**

• Müller (Horst)	**develop SLR discontinuities file (1976-2007)**
• Müller (Jürgen)	**develop validation plan for (new) LLR stations**
• *Task Group*	**homogenization of QC reports**
• *Task Group*	**report with pos+eop use for stations managers**
• Pavlis, Luceri, …	**guest editorial board for JoG special issue**

- **New action items**

• Pavlis	**test dataset of atmospheric loading and gravity**
• *Task Group*	**pilot project for the generation of a bias list, etc.**

AWG Meetings, Past/Future

- The AWG met three times so far in 2007:
  - *EGU 2007, Vienna, Austria*
  - *IUGG 2007, Perugia, Italy and*
  - *ILRS Tech. Workshop, Grasse, France*
- Other meetings in 2007:
  - *Unified Analysis Workshop of GGOS, Monterey, CA, 5-7 Dec., 2007*
    - AWG representatives will present aspects of ILRS processing/modeling/analysis/interpretation
    - Near real-time analysis of SLR data for "station health"/bias Rpts.

AWG @ UAW

- E. C. Pavlis, AWG overview on operations, products, future plans
- V. Luceri, Analysis procedures review, bias estimation, etc.
- C. Sciarretta, Combination procedures review, SLR_TRF, Orbits, etc.
- G. Appleby, Range modeling improvements, CoM, calibrations, etc.
- Horst Müller, Station performance monitoring, qualifying, feedback…
- Jürgen Müller LLR overview, status, science, products, future…

  - *Michael Pearlman, CB Rep*
  - *Werner Gurtner (?), GB Rep*

AWG Documentation

- All ACs and CCs have submitted online documentation (required by IAG/IERS) describing the models and standards used in their routine analysis

- A LR-dedicated special issue of the *Journal of Geodesy* to be compiled in the coming year for better and wider documentation of ILRS (ground segment, space segment, data analysis and interpretation)

J of G Guest EB

- DORIS Special Issue Editors: P. Willis
  - Too restricted (one person)
- IVS Special Issue Editors: Shuh, Ma, Nothnagel
  - Balanced
- ***ILRS Special Issue Editors: Gurtner, Pearlman, Pavlis***

ILRS DF&P WG

Governing Board Meeting, 28.09.2007, Grasse ILRS Workshop

1. Prediction and Laser Ranging Format SG
   Consolidated Prediction Format (CPF)
- nearly all SLR stations use the CPF
- prediction errors seems to be minimal (SLR)
- CPF in use at MLRS (LLR)
- good test results with LRO predictions

Consolidated laser Ranging Data format (CRD)
- Format complete, probably Analysis WG will give some additional input
- little difference between CPF and IRV
- parallel test starts end of the year (finish of IVS generation and delivery)

2. Refraction SG
   Erricos?

Mission Working Group
Fall 2007 Report to Governing Board

- Two Missions have applied for ILRS tracking support since the last Report (April 2007)

1. **Jason-2:** CNES / EUMETSAT / NASA / NOAA (2008 June)
   Mission support request fully completed, including all requested details of LRA (same as on JASON-1)
   Missions WG recommended that ILRS track the mission.

2. **Lunar Reconnaissance Orbiter** – Laser Ranging: NASA

- MWG comment: This is an interesting and important project and gives to many of the ILRS stations, for the very first time, the opportunity to perform observations outside of Earth orbit.

- Missions WG recommended that ILRS support ranging;
- Details/scheduling of stations to be handled by NASA–SLR

• A Missions WG meeting was held at the Fall ILRS workshop in Grasse France on 26th September 2007. Topics covered (presentations available):

- The QZS array and the successes and challenges of GEO orbit arrays – Shinichi Nakamura;
- The SOHLA satellite - – Shinichi Nakamura;
- New Spherical Spacecraft – V Vasilliev
- Meeting with the GOES-R folks – Jan McGarry
- TERRASAR-X – Ludwig Grunwalt
- LARES – Pippo Bianco

Grasse 2007 / NEWG Summary

- **Main Activities: Active Support of SLR Stations Upgrade to kHz SLR**
  - **Metsahovi**
  - **Zimmerwald**
  - **Potsdam**
  - **Herstmonceux**

- **Metsahovi Update:**
  - **2 kHz Laser / HighQ delivered, installed;**
  - **C-SPAD, GPS Time & Frequency receiver etc. ordered / delivered**
  - **Graz will assist also with Control System**
  - **Main Problem: Old Telescope not really adaptable for kHz SLR;**
    - **Trying to get new telescope;**
  - **Things are progressing, but will need some time ….**

- **ANDE: Predictions are bad; Time Bias up to +- 300 ms;**
  - **Night Time: Few Passes**
  - **Day Time: Almost impossible to track**
    - **Should inform Ande Team that ILRS will stop Daylight tracking**
  - **Graz is testing now TLE based predictions**
    - **Maybe some improvement possible**
    - **We successfully track e.g. Reflector using TLE based predictions (special Graz activity to determine spin / motions / orientations)**