IERS Retreat 2003

Observatoire de Paris
March 31- April 1, 2003

Introduction

The most recent "retreats" were taking place in 1996 (IERS TN 22) and 1998 (Potsdam). The reasons for the IERS Retreat 2003 (Paris) are manifold:

- the dramatic increase in accuracy of space geodetic results in the last few years:
  - Site coordinates at 10^{-9},
  - Earth Orientation Parameters at 10^{-9},
  - Gravity field soon at a similar level,
- the Technique Services have been well established:
  - Better coordination of technique products,
  - Much better situation to go for consistent and rigorously combined products,
- many new missions and projects posing new challenges:
  - Gravity missions (CHAMP, GRACE, GOCE, ….),
  - Altimetry missions (JASON-1, ENVISAT, ICESAT, …),
  - Astrometry missions,
  - IGGOS
- and first impression on the new IERS structure (about 2 years old).

The IERS Retreat 2003 was organised by the IERS CB and took place at the Observatoire de Paris from March 31 to April 1, 2003, followed by an IERS Directing Board meeting on April 2, 2003. Representatives from all IERS components and the Technique Services were invited as well as external experts from various fields of interest (altimetry, astronomy, global gravity field, new satellite missions, rigorous combination and consistency considerations, IGGOS). The participants are listed in Annex I.

Course of events

Following the programme (see Annex II) the retreat started with an overview of the present situation presented by the various components:

1. IERS internal components: PCs, GGFC, CRC, CB answering the questions:
   - What is the status of original proposal and the products?
   - What changes are envisaged for the present products?
   - What products are planned for the future?
2. Techniques Services: IGS, IVS, ILRS, IDS and
3. External input about important developments in astronomy, IGGOS, altimetry, new missions, gravity field, combination and consistency of IERS products gave statements concerning the questions:
   - How does the IERS contribute to this project / service?
   - What does the project / service expect to get from the IERS?
   - How can the project / service contribute to the IERS?

To prepare the discussion all presenters were asked to send in a “half page” contribution stating the principle ideas. In Annex III the “half page” statements are summarized for the IERS components (Product Centres (PC), Central Bureau (CB), Global Geophysical Fluid Centres (GGFC), ITRF Combination Centres (ITRF CC), Combination Research Centres (CRC)), the Technique Centres (IGS, ILRS, IVS, IDS) and the external experts.

The IERS vision and goals were worked out in groups to put together a list of future requirements and future products. The groups representing the fields “astronomy”, “gravity and geophysical fluids”, “technique centres” (including altimetry), “combination” and “IGGOS” had to find answers to the following questions:

- What are the future requirements?
- What does the IERS offer already?
- What are the deficiencies of the present IERS to fulfil these requirements?
- What are the future IERS products and how do they look like?

The outcome of the group discussions to the listed five topics is given in Annex IV.

Finally the organizational and structural consequences were discussed with the focus on:

- What are the organizational / structure consequences?
- Working groups, Pilot projects, Call for Participation?
- Action items and persons in charge?

Outcome and decisions by the IERS DB as a consequence of the IERS retreat:

Decisions:

1. New naming of IERS:
   The IERS was renamed in:

   International Earth rotation and Reference systems Service (IERS)
   (Service international de la rotation de la Terre et des systèmes de référence)

   The new name better reflects the fact that the activities of the IERS do not only consist in producing Earth orientation parameters but also in defining and maintaining the celestial and terrestrial reference systems and frames. IAU, IUGG/IAG and FAGS have been informed.

2. Statements concerning IGGOS:
   - IERS, as a joint service of IAU and IUGG, sees its role as contributing to the astronomical as well as to the geodetic and geophysical communities.
   - IERS agrees with and supports the proposed vision and the overall goals of IGGOS.
   - IERS will contribute to IGGOS, as a service, with its multi-technique products including terrestrial and celestial reference frames as well as Earth orientation parameters, Conventions, Global Geophysical Fluids Centre activities and its data base / information system. IERS will also contribute its expertise in combination and co-location of techniques.
   - IERS is interested in a close cooperation with the International Centre for Global Gravity Field Models as a component of the International Gravity Field Service to ensure the consistency of the products.

- To accomplish its goals IERS depends on the contributions of the IGS, ILRS, IVS and the planned IDS. This is formally recognized through the structure of the IERS and of these services.
- The IERS looks forward to working with IGGOS as it proceeds to implement its vision and goals.Gravity field community:

To have a better link to the gravity community,.that is also using the IERS products, a representative of IGFS (especially IGCC) will be invited to the IERS DB meetings as permanent guest. A close relationship is important to ensure the consistency between IERS and gravity field products (including the IERS Conventions).

4. Altimetry:

   The IERS DB would also be interested in a closer connection to the altimetry community.

5. Global Geophyiscal Fluid Centres:

   There was a clear statement of the IERS DB that the GGFC are an essential part of the IERS structure due to the significant interaction between the GGFC and the other IERS components. The GGFC products are of importance for the understanding of temporal and spatial variations of EOP and station positions as well as for numerous applications in geosciences.

6. Combination Pilot Project
   It was decided that the IERS SINEX Combination Campaign should evolve into a pilot phase of **routine product generation**, the ”IERS Combination Pilot Project”. The aim of the combination pilot project is the rigorous combination of station coordinates, EOP series, and quasar coordinates from weekly SINEX files of all major space geodetic techniques including time series of all three components: station- and quasar coordinates as well as EOP.

   The Call for Participation (CfP) will allow for the following type of contributions:

   - Technique Centres (or groups combining at the observation level): They contribute routinely with ”weekly” (=session for VLBI, =week for GPS, SLR, DORIS) technique-specific SINEX files,
   - Combination Centres: They routinely combine ”weekly” SINEX files from all major space geodetic techniques containing station coordinates, EOP and quasar coordinates into combined consistent weekly IERS products (series of weekly station (and quasar coordinates) and daily EOPs),

   Associated Combination Centres: They routinely produce at least one special combined product for the IERS. Examples: combined subdaily EOP series, combined nutation offset series, combined troposphere or ionosphere products etc.

   The Combination Pilot Project will be organized and coordinated by the Working Group on Combination (see below).

Organizational Consequences

Establishment of WGs

1. WG on Combination

   The Combination Pilot Project will be run by the WG on Combination:
   The WG will be set up according to the ToR.
   Initial members are:
   IERS AC, 1 representative of each PC, 1 representative for all CRC, 1 representative of each TC, 1 representative of each ITRF CC, IERS CB and
   representatives of the groups answering the CfP for the “Combination Pilot Project” and being accepted by the proposal evaluation.

The charter of the WG will be drafted till the beginning of May and discussed within the initial members of the WG. The WG will prepare the CfP for the "Combination Pilot Project" and release it by the end of June / beginning of July 2003. All responses received till Sept. 15, 2003 will be evaluated by the WG and a proposal will be sent to the IERS DB for approval. The pilot project will start on January 1, 2004.

Apart from the coordination of the Combination Pilot Project the WG will work on:
Document with guidelines / definitions for a rigorous combination,
Input definitions and standards for combination,
Product specification (routine combined products and long time series of past data),
Handling of and guidelines for site problems,
Validation issues.

2. WG on ITRF datum

   It is planned to reconstitute the WG on ITRF datum within the IERS frame work according to the ToR.

3. WG on Site Co-location

   A WG on Site Co-location will be set up within the IERS in accordance with the CSTG. As chair of the WG John Long is foreseen, who already headed the CSTG subcommission on ISGN. The charter and the initial member list of the WG will be discussed within the IERS DB.

Planned workshops

1. Workshop on Site Co-location

   A first workshop dealing with the main topics of the WG: site surveying, adjustment of local networks, SINEX generation with full variance-covariance information and other co-location issues (e.g. environmental parameters) will be held in Matera / Italy in October 2003.

2. Workshop on Combination

   To discuss the first experiences of the Combination Pilot Project a workshop is planned in the fall of 2004.

Prague, Munich, Frankfurt, April 23, 2003

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