ITRF, Combinations and Site Co-locations

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This keynote to the Workshop held on Matera was given both as responsible of the ITRF Product Center of IERS and as new president of the IAG Sbu-Commission 1.2 on Global Reference Frames. I consider here three major topics, differents but closely imbricated.

1 Site equipments and surveys

A site is a topographic location with permanent or temporary instruments, and markers.

A site survey is any connexion between points with conventional or GPS surveys.

Several issues of interest for us should be reminded here, in particular:

- Perennity of the site (partial destructions)
- Stability of various componentsof the site
- Calibration of instruments (e g SLR)
- Footprint, or linking to the crust
- Availability of relevant informations to users (site catalogue)

2 Site co-locations

The current definition is a site with multiple instruments

- Same technique or not
- Simultaneous or not

Site co-location give additional importance of site survey information for the following purposes:

- Comparisons or combinations of solutions
- Mono- or multiple-technique analysis strategy

In the currently accepted organisational scheme of IERS, site survey should be actually considered as a specific technique.

3 Global Geodetic Observatories

The Global Geodetic Observatory (GGO) concept has already been the topic for various investigations, such as

- In former CSTG, ISGN label
- Global Observing Systems, IGGOS…

We must also consider GGO as a High level Site co-location

- Through the multiplicity of techniques
- Realizing interdisciplinarity between geodesy and others (meteorological equipments, time and frequency equipments, tide gauges, sismometers…)
- Focusing on the perennity of datum definition

4 The ITRF point of view

As already expressed many times, ITRF activity focuses on:

- Importance of site co-locations in ITRF determination
  - Multi-technique combination (ties between tracking instruments)
  - Redundancy for quality assesment, statistical tests
  - Datum definition (ITRF Core Co-location Site)
- Importance of local survey, as additional technique , like SLR…
  - SINEX with time variations

5 The IAG SC 1.2 point of view

We propose to establish a joint WG with IERS. For SC1.2 we have identified it as WG2 on Global geodetic observatories. The topics of investigation for such a group could be, without limitation:

- Concept of GGO
- Site surveys
- Site effects
- Co-location strategies

The SC will concentrate on research issues, while IERS on operational aspects.

In conclusion, I want to reassess the leading role of IERS for these issues, and welcome the close joint work between IERS and IAG.

I also express once again the critical impact of local survey informations for ITRF activities (see the following paper by Zuheir Altamimi).