GGOS Bureau for Networks and Communications

GGOS Steering Committee Meeting

Vienna, Austria

April 18, 2009

GGOS Bureau for Networks and Communications

- Continuation of the GGOS Working Group on Ground Networks and Communication
- NASA Proposal was accepted by the Steering Committee at its meeting on December 14;
- Four year term started on January 1, 2009.

Role

- Develop a strategy to design, integrate and maintain the fundamental geodetic network of co-located instruments and supporting infrastructure in a sustainable way to satisfy the long-term (10 - 20 years) requirements identified by the GGOS Science Council.
- At the base of such a strategy would be the sensors and the observatories situated around the world providing the timely, precise, and fundamental data essential for creating the GGOS products.
- Primary emphasis would be placed on sustaining the infrastructure needed to maintain the evolving global reference frames, while at the same time ensuring the broader support of the scientific applications of the collected data;
- The strategy would exploit synergistic opportunities to better integrate or co-locate with the infrastructure and communications networks of the many other Earth Observation disciplines organized under GEOSS should be considered and exploited.

GGOS Bureau for Networks and Communication
Tasks - 1

It is recognized from the onset, that although the Bureau will provide coordination among the Services, it is really an entity that helps to represent the Services within GGOS and requires their support in order to function. Initially the Bureau will focus on the tasks below.
It is assumed that other tasks will be undertaken as the need arises:

- **Promote communication and integration among the Services;**
- **Develop and maintain a ground network station information base and data product directory;**
- **Develop a model that predicts the accuracy and stability of the reference frame as a function of the number of co-located SLR, VLBI, GNSS, and DORIS stations, their geographic distribution, their data quality and yield, and other properties to address GGOS requirements; utilize the model to provide guidelines for the design of the core ITRF network;**
- **Estimate the size and distribution of the GNSS network necessary to provide reference frame access globally, commensurate with GGOS requirements;**
- **Work with the Satellite Missions Bureau to establish the design of the ground network needed to meet mission POD requirements;**

GGOS Bureau for Networks and Communication
Tasks - 2

- **Work with the IGFS to define its network requirements and to scope the size and geometry of the IGFS ground network;**
- **Establish and maintain a database of co-location survey vectors, data and procedures used to infer these vectors, and a database of misclosures between the co-location vectors and the analysis results**
- **Seek more effective ways to monitor inter-technique vectors at co-location sites;**
- **Maintain a database for co-location-vector time series;**
- **Identify and facilitate the communications services necessary to support data flow from the stations through to archiving of data and data products;**
- **Establish a database of the meteorological instruments, measurements, and procedures at all network stations; review the information for consistency and establish standards for meteorological measurements.**

GGOS Bureau for Networks and Communication

Primary Organization: NASA/GSFC

Supporting Organizations: IGS, IVS, ILRS, IDS, IGFS, IERS

Bureau Director: Dr. Michael Pearlman/CfA

Associate Director: Ms Carey Noll/ NASA GSFC

Science Coordinator: Dr. Erricos Pavlis/JCET

Co-location Coordinator: Dr. Zuheir Altamimi

IAG Service Representatives:

- IERS: Bernd Richter
- IGS: Steve Fisher
- IVS: Dirk Behrend
- IDS: Frank Lemoine
- ILRS: Michael Pearlman
- IGFS: Steve Kenyon

Still need to make connections with other IAG entities

Bureau Activities Underway

- **Promote communication and integration among the Services;**
  - **WG meetings at AGU (fall) and EGU; Next Meeting in at TU on April 22;**
  - **Telephone conferences as appropriate;**
- **Develop and maintain a ground network station information base and data product directory;**
  - **See http://indigo.nasa.gov/indigo_serva.html; still need to incorporate the gravity information;**
  - **See IAG Services Map on GoogleEarth @ ftp://cddis.gsfc.nasa.gov/pub/misc/ilrs_v5.kml;**
- **Network Simulation activity underway at JCET/NASA/IGN**
  - **Scope the size and distribution of the ground based colocation network (VLBI, SLR, GNSS, etc.) to satisfy GGOS requirements (primarily the reference frame, but also POD, etc.);**
  - **Examine the improvement with additional Lageos satellites;**
  - **Quantify the improvement in the reference frame with the addition of SLR ranging to the GNSS satellites – justify the addition of retroreflector arrays;**
- **Establish and maintain a database of co-location survey vectors, data and procedures used to infer these vectors, and a database of misclosures between the co-location vectors and the analysis results;**
  - **Data base on colocation surveys at IGN; working with their Survey Dept to better structure the data base for the users;**
  - **Data base on the misclosures at IGN; also working to define a better structure;**
  - **Working with the IERS Working Group on Local Surveys and Colocation; joint meetings on procedures and results;**

Bureau Activities Underway

- **Seek more effective ways to monitor inter-technique vectors at co-location sites;**
  - **Report on a Workshop on Ground Survey techniques for Colocation conducted at GSFC on 8-10 September; see http://ilrs.gsfc.nasa.gov/docs/TLS_2008Workshop_Report.pdf;**
  - **GRASP satellite concept (inverted colocation concept) underway at JPL;**

- **Establish a database of the meteorological instruments, measurements, and procedures at all network stations; review the information for consistency and establish standards for meteorological measurements.**
  - **Data base structure and station questionnaire underway by Arthur Neill ;**

Reports on some of these items will be given at the
Bureau of Networks and Communications Meeting
Wednesday evening, 6:30 – 9:00
Technical University of Vienna, Room SES 124/CB0302. ,

GGOS Bureau Networks and Communications
Technical University
Room SEM124/CB0308,
April 22, 2009, 18:30 -21:00

• GGOS Bureau for Networks and Communications	Mike Pearlman	15 min
• IAG Service Networks in Google Earth	Carey Noll	10 min
• Network scoping activity	Erricos Pavlis	15 min
• Charter of IERS Working Group on Local Survey	Pierguido Sarti	10 min
• Comments on survey data base/survey priorities	Zuheir Altamimi	5 min
• Workshop on Ground Survey Measurements	John Gipson	15 min
• GRASP – A concept for ground survey with satellites	Yoaz Bar-Sever	10 Min
• Meteorological data base	Arthur Niell/Mike Pearlman	10 min
• GNSS retroreflector update	Mike Pearlman	5 min
• Service Reports (IGS, IVS, ILRS, IDS, IERS, IGFS)	5 minutes each/one chart	

All of the presentations will be posted on the GGOS website