

Infrastructure Committee Report 2012

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1. Introduction

The Infrastructure Committee (IC) was established in March 2009 and it is set with the task of studying and advising on infrastructure issues to the IGS Governing Board and the IGS Network Coordinator (NC). The latest status and recent progress of the Committee is detailed below for 2012.

Chair: Ignacio (Nacho) Romero, ESA/ESOC, Ignacio.Romero@esa.int

Membership:

Current Members appointed 3 April, 2011 for terms up to Dec 2013:

1. Carine Bruyninx (ROB)
2. Lou Estey (UNAVCO)
3. Gary Johnston (GA)
4. Nacho Romero – Chairman – (ESOC)
5. Mike Schmidt (NRCan)
6. Georg Weber (BKG)

Ex-officio Members:

7. Steve Fisher - Central Bureau
8. Jim Ray - Analysis Coordinator
9. Mark Caissy - Real time Working Group Chair
10. Bruno Garayt - Reference Frame Coordinator
11. Carey Noll - Data Center Working Group Chair
12. Ken Senior - Clock Products Coordinator

2. Activities in 2012

During 2012 the Infrastructure Committee has been involved in many different activities as detailed in the sections below.

2.1 IGS Site Guidelines

The IC has continued the IGS Site Guidelines refinement with the IGS Central Bureau. The guidelines have been presented at the Governing Board meeting in July 2012, and they are waiting for publication by the IGS Central Bureau after further review by the Real-Time Pilot Project (RTPP), to adapt the real-time station guidelines to the latest know-how.

2.2 IGS 2012 Workshop Participation

Helped and supported the **IGS Workshop** in July 2012 with two presentations (“IGS Network Challenges” and “RINEX Working Group report”, the latter on behalf of the RTPP), plus presented an IC poster on the un-calibrated Dome test campaign, and run a RINEX technical meeting and an IC forum.

2.3 Radome-Off Test Campaign

The IC has continued to support the test campaign to assess the impact of *un-calibrated Domes at co-located sites* (together with IGS Central Bureau, Analysis Center Coordinator, Reference Frame Working Group and Antenna Working Group).

This test campaign aims to find the effect on the marker positions of the uncalibrated radomes installed over the GNSS antennas at co-located sites (sites which have more than one geodetic technique). The effect will be studied by removing the uncalibrated radomes for a number of weeks and then reinstalling them. It was hoped that most of the stations shown in Figure 1 would participate, and that careful post-processing and analysis will show an effect due to the radomes that can later be added to correct the co-location tie vectors at each location to aid in the ITRF generation. So far the stations in Table 1 have participated in the experiment.

Table 1 : Participating Radome-off Test Campaign (2011-2013)

	Removal	Re-installation
CRO1	01-Apr-2011	24-Jun-2011
TSKB	01-Jul-2011	30-Aug-2011
TSK2	01-Jul-2011	30-Aug-2011
AREQ	19-Aug-2011	03-Feb-2012
FAIR	28-Apr-2012	04-Aug-2012
YAR2	28-Apr-2012	28-Sep-2012
GODE	06-Jul-2012	30-Jan-2013
MDO1	On-going	



Figure 1: Co-located stations with uncalibrated radomes

We hope that additional stations will join during 2013, which will be the last year of this experiment in advance of the upcoming ITRF2013 version. The preliminary analysis of the data has found some significant effect that can be calibrated as show in Figure 2.

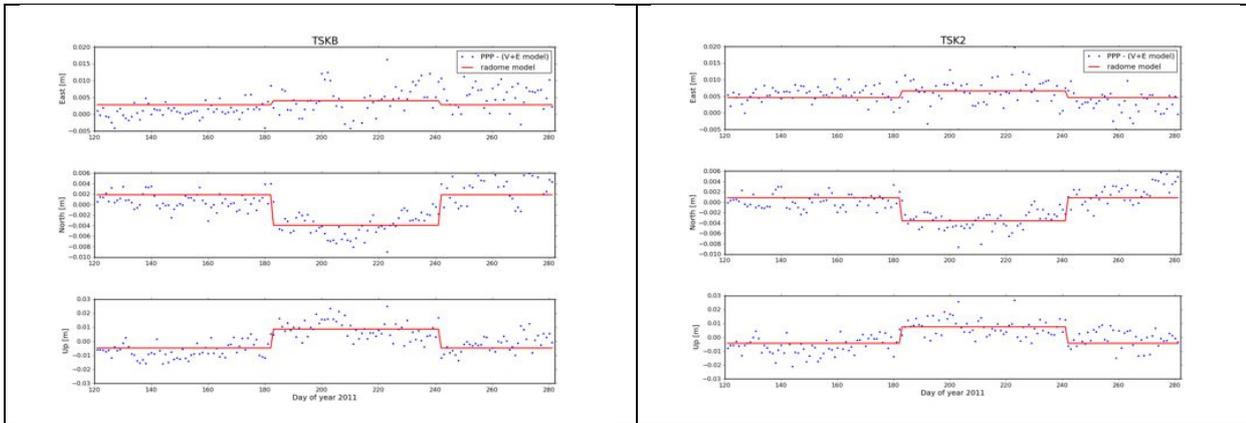


Figure 2: Initial processing of uncalibrated radome effect at TSKB and TSK2 (courtesy of Reference Frame WG Chair)

2.4 Station Issues

Over 2012 the IC has supported the IGS Central Bureau (Robert K., David M.) on **station issues**; handling un-calibrated Antenna+Dome pairs, helping to find ways forward on the NGA station issues, recovering long-term dormant stations, etc.

In particular for the **NGA stations** the IC together with the IGS NC have able to clarify that there is a half-cycle issue with the phase data, which the NGA will correct before publishing the data in the official IGS repositories. Additionally the previously unknown ITT antenna used at most of the NGS sites has now been calibrated by the NGS, and the calibration has been accepted by the IGS Antenna Working Group for inclusion into the official ANTEX calibration file during 2013 ahead of the 2nd IGS data reprocessing campaign.

Participated in the **Real-Time Pilot Project telecons** and discussions on the RTCM-“Multi Signal Message” definition to ensure full compatibility of the streaming standard and of the Rinex 3.02 format and file naming.

3. Continued activities for 2013

During the upcoming year the IC will finalize the un-calibrated radome experiment for co-located stations and promote in-depth analysis with the Reference Frame Working Group with the aim of publishing a set of corrections for the “tie” vectors between the GNSS monument and the other co-located technique.

Additionally the IC together with the Real Time Pilot Project will promote continued progress on the streaming and **RINEX data formats** to accommodate the new Navigation systems (QZSS, etc), and help the IGS in the second reprocessing campaign to take place during 2013 by ensuring all infrastructure issues are addressed in a timely manner.

Move forward with the implementation of the IC Workshop recommendations:

1. **MGEX shall remove the Rinex 2 data requirement and work only with Rinex 3 data** , and that the MGEX requests to the DCs that other past Rinex 3 data appeals be stored together with the MGEX data moving forward.
2. That the IC fully **supports and encourages the new fulltime Network Coordinator at the IGS Central Bureau.**

3. The IC and Network Coordinator will work to **strengthen ties with regional networks to promote the “Network of Networks”** from the IGS.
4. The IC together with the RINEX WG shall investigate together with others the issue of **unique GNSS station identification** (4 char ID codes, etc) and propose a possible way forward for the IGS.
5. That the RINEX WG shall continue to iterate in the proposed direction for **new RINEX 3 data filenames**, incorporating any new GNSS station identifier.
6. The IC will promote that the RINEX WG shall keep the **RINEX 3 format open at all times as a “working draft” and to publish “formats”** as needed.

4. Conclusions

The IC continues to be a relevant part of the IGS in providing advice and support to the Network Coordinator and the ACC. It is also the place where other parts of the IGS turn for coordination and ways forward on infrastructure issues. The IC tries to bring long-term issues to satisfactory conclusions and provides a forum of ideas and infrastructure suggestions for the IGS Governing Board.