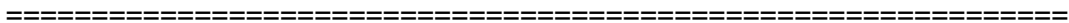


WORLD METEOROLOGICAL ORGANIZATION



GLOBAL SPACE-BASED INTER-CALIBRATION SYSTEM

EXECUTIVE PANEL

SEVENTH MEETING

30 October 2009

Jeju, Republic of Korea

FINAL REPORT



SUMMARY REPORT

1. INTRODUCTION

1.a *Welcome*

The Executive Panel Chair, Mitch Goldberg, welcomed the participants of the seventh meeting of the Global Space-based Inter-calibration System Executive Panel (Annex 1). In addition to the regular participants he was pleased to note the presence of the Director of the Space Programme, Ms Barbara Ryan, of the Chair of the CEOS Working Group on Calibration and Validation (WGCV), Pascal Lecomte from ESA, and of observers from JAXA and ISRO, so that, apart from Roshydromet, all CGMS satellite operators were represented at the meeting.

M. Goldberg introduced the agenda (Annex 2), emphasizing that the outcome of the GSICS User Workshop would be a major item, and suggested to start with presentation on the Quality Assurance Framework for Earth Observation (QA4EO) by P. Lecomte, in his capacity of CEOS WGCV Chair.

1.b *QA4EO*

P. Lecomte recalled the scope of QA4EO and reported on the outcome of the "QA4EO Workshop on Facilitating Implementation" held in Antalya from 29 September to 1 October 2009. Important participation in the workshop has shown that QA4EO attracts interest from an increased number of organizations, space and non-space oriented.

Among the major conclusions of the workshop the following were noted:

- A QA4EO body shall be established, with broader domain of activity than the WGCV, to provide overall coordination and guidance;
- A draft Implementation Plan shall be developed;
- A statement shall be developed to define in a synthetic way the essence of QA4EO, which is what every participating organization is expected to comply with;
- Compliance with QA4EO should be based on a self-declaration, assisted by a checklist that will be developed;
- QA4EO shall be seen as guidance; compliance with QA4EO should not have any compulsory character, and e.g. is not a prerequisite for contributing to GEOSS but should be recommended.

1.c *GSICS Overview*

M. Goldberg gave a general presentation on GSICS for the benefit of the new participants in the meeting. He concluded in inviting JAXA and ISRO to join GSICS.

Dr Kazuo Umezawa expressed JAXA's particular interest in GSICS activities in view of:

- The current exploitation of GOSAT and the plans for the GCOM series;
- The plans for GPM, including the GPM constellation that will require inter-calibration among microwave instruments of different spacecraft.

As a R&D agency, JAXA is planning its activity on a project basis and, for the time being, wished to remain an observer. It was clarified that GSICS and WGCV had complementary activities. The Chair also pointed out that R&D agencies and operational agencies both had an important role to play in GSICS, as illustrated by the strong involvement of NASA and CNES besides the operational agencies (CMA, EUMETSAT, JMA, KMA, NOAA). Notable is the very valuable contribution of well-calibrated, though not continuously available, research instruments as 'anchor points' within the GSICS inter-calibration time series. It was recalled that, at CGMS-37, JAXA had

reported on its calibration activities and plans on ALOS, GOSAT and GCOM and that CGMS had proposed the following action: “*GSICS Executive Panel Chair to send letter to JAXA on the roles and responsibility of JAXA as a GSICS full member.*” The Panel very much encouraged the participation of JAXA in GSICS and invited the Director of the Space Programme to formally contact JAXA in this respect.

Action EP7-1: The Director of WMO Space Programme to send a letter to the Executive Director of JAXA, inviting JAXA to participate in GSICS. (December 2009)

Dr Pradip Pal expressed ISRO’s interest in GSICS activities and indicated that ISRO could consider participation in GSICS as well. The Panel welcomed such participation.

Action EP7-2: The Director of WMO Space Programme to send a letter to the Director of ISRO Earth Observation Systems at ISRO Headquarters in Bangalore, inviting ISRO to participate in GSICS. (December 2009)

2. Reports from GSICS participating organizations

It was noted that comprehensive reports from GSICS participating organizations had been presented at the CGMS Working Group II under item II/2.

3. Report from Working Groups

3.1 GDWG Report

Dr Volker Gaertner, GDWG Chair, presented a comprehensive report on GDWG activities and related issues. He emphasized that GDWG was a small but effective group and informed the Panel of the forthcoming replacement of V. Gaertner by H. Rotfuss as a GDWG member.

He highlighted in particular the following:

- The GSICS home page <http://gsics.wmo.int> is open, with links to the dedicated web sites of each GPRC as they become available; significant updates were agreed and implemented by the GCC on its web site;
- NetCDF is now implemented and migration is ongoing from NetCDF3 to NetCDF4;
- A first GSICS Data and Product Server was implemented by EUMETSAT, corresponding user documentation has been developed, and a second server was implemented by NOAA mirroring the first one; these servers support the exchange of calibration datasets and results.

For the coming year, the following proposals and suggestions were made by the GDWG Chair:

- Other data management servers will be implemented by GPRCs in order to build a network of collaborating servers supporting the exchange of datasets;
- It is proposed to constitute a reference dataset enabling comparison of the correction algorithms;
- GDWG stressed the need to proceed with the official acceptance of first GSICS products using the Product Acceptance Procedure;
- It suggested assessing compliance/compatibility of GSICS practices with QA4EO. (The contribution made by Bob Iacovazzi to the QA4EO Antalya workshop could be useful for such an assessment).

The Executive Panel commended GDWG for its achievements, that were made possible through the dedicated effort of a small, yet active and efficient team, and to the leadership of its Chair.

3.2 GRWG report

On behalf of Fred Wu, GRWG Chair, M. Goldberg presented the GRWG report, focusing first of all on the status of GRWG activities as foreseen in the 2009 Operations Plan.

The working group had held one face-to-face and several web meetings, shared information via a TWIKI, and has successfully led the organization of the first GSICS Users Workshop (See Item 6, below). GRWG members have presented GSICS at several scientific conferences and in scientific reviews (BAMS, CALCON, SPIE). Interactions within the working group have allowed the selection of additional field sites for Visible calibration in Asia and America, that were included by CNES in its SADE database.

Other tasks were still in progress:

- Improvement and harmonization of GSICS results presentation;
- Establish scientific criteria for acceptance of GSICS products;
- Finalize the GSICS correction procedure for IR;
- Assist for preparing the acceptance of initial GSICS LEO-LEO products.

As concerns 2010, the GRWG Chair proposed to complete ongoing actions and to initiate the following ones:

- Defining and finalizing an agreed algorithm for Visible calibration;
- Evaluating IR GSICS corrections, based on feedback from beta-users such as ISCCP;
- Establish two subgroups to focus on inter-calibration of AVHRR against advanced imagers, on one hand, and on Microwave calibration, on the other hand.

It is envisaged to discuss these topics at the next meeting planned in Toulouse on 9-11 February 2010.

The Chair commended the GRWG members for its work and expressed special thanks to Fred Wu for his leadership.

4. Nomination of working group Chairs and Vice-chairs

It was recalled that at its sixth meeting, the Panel had agreed an update of the Terms of Reference of GRWG and GDWG which included the principle of a three-year term for the GSICS working group and Panel chairmanship, and had discussed potential nominations for the two working group Chairs.

The Panel was pleased to confirm the nomination of:

- **Aleksandar Jelenak (NOAA) as GDWG Chair,**
- **Tim Hewison (EUMETSAT) as GRWG Chair.**

The Panel invited JMA to propose a GDWG Vice-chair. After closure of the meeting, JMA informed the Panel that he had nominated **Ms Hiromi Owada**, Senior Scientific Officer at the System Engineering Division, Data Processing Department, of the Meteorological Satellite Centre of JMA.

As concerns GRWG, the Panel highlighted that GRWG was a very large group and wished to nominate two Vice-chairs to assist the Chair. For a smooth continuity in the GRWG leadership, it was furthermore suggested that the outgoing Chair be one of the Vice-chairs. It was thus agreed that the Vice-chairs would be: **Dohyeong Kim (KMA)** and **Fred Wu (NOAA)**.

The Panel renewed its thanks to Dr Volker Gaertner and Dr Fred Wu for their work and leadership. The Panel also unanimously agreed to nominate **Dr Mitch Goldberg** as Executive Panel Chair for a new term.

5. Status of GSICS prototype products and plans for product acceptance

M. Goldberg presented a comprehensive report prepared by Bob Iacovazzi and Fuzhong Weng on the status of the GSICS Procedure for Product Acceptance (GPPA), showing the progress towards acceptance of GEO-LEO (IR) and LEO-LEO (VIS, IR, MW) products.

The Panel noted that a lot of progress had been achieved already towards the acceptance of GEO-LEO products (including completion of ATBD, netCDF format definition, filename and parameter name convention), and to some extent for LEO-LEO products (ATBD elements).

The GCC however suggested that important steps should be completed, in particular as regards:

- Defining and documenting reference standards;
- Defining guidelines for software coding and for product distribution;
- Developing a Directory system for GSICS products on the collaboration servers;
- Reviewing and endorsing file and parameter naming convention;
- Drafting a GSICS Product Acceptance Form;
- Defining approval criteria for GPPA evidence;
- Developing a communication protocol between reviewers of materials;
- Drafting product requirements document, that should help defining relevant quality indicators;
- Documenting the quality of the products (uncertainty budgets, quality indicators).

The Panel stressed that there should be a level of user feedback on the GSICS algorithms and wished to check that this is among the acceptance criteria of the GPPA, or otherwise update the GPPA to include it explicitly.

Action EP7-3: GCC to check that user feedback on algorithms is systematically included among the acceptance criteria in the GPPA, or otherwise update the GPPA in consultation with GRWG to include it. (February 2010)

The Panel appreciated the work done and welcomed the precise analysis of future steps to be taken. GCC should be encouraged to complete the proposed steps, with a priority on the methodological steps and the acceptance of initial GEO-LEO products.

Action EP7-4: M. Goldberg to encourage and assist GCC to complete the methodological steps identified by GCC to enable the implementation of the GSICS Procedure for Product Acceptance. (December 2009)

Action EP7-5: GRWG/GDWG to submit GEO-LEO correction for acceptance in accordance with GPPA. (April 2010)

6. Outcome of the GSICS Users Workshop

M. Goldberg introduced the outcome of the GSICS Users Workshop that was held in Bath, United Kingdom on Tuesday, 22 September, in the context of the 2009 EUMETSAT Meteorological Satellite Conference. The workshop was very successful, attracting more than 60 participants, and providing a valuable feedback and suggestions in spite of the still emerging status of GSICS activities.

The Panel first discussed the suggestion from the workshop to establish an advisory body providing a formal yet flexible channel for interaction with users. V. Gaertner suggested building

on a helpdesk function to interact with users on a day-to-day basis. The GCC could consider how to implement this interface. Johannes Schmetz addressed the implications of the creation of a formal body, and supported a set-up of a flexible helpdesk which would provide responses within a few days.

Jerome Lafeuille proposed the principle of user workshops convened on a regular basis, typically 12/18 months. M. Goldberg considers that actions in response to the workshop will provide ample material for a new workshop in 2010 already. In addition, M. Goldberg expressed the view that in addition to the user interaction and workshops GSICS activities could be exposed to reviewing, like other Space Programme activities, on a regular basis, e.g. by a small group of experts from relevant fields, convened by the Director of the WMO Space Programme.

Action EP7-6: Volker Gaertner to explore possibility of GSICS User Workshop during the EUMETSAT Meteorological Satellite Conference on 20-24 September 2010 in Cordoba, Spain. (December 2009)

The Panel then reviewed the whole list of actions suggested by the workshop and decided to assign these actions as follows:

<i>Actions (From workshop summary)</i>	<i>Responsible, when endorsed by the EP</i>
1. To establish an advisory body providing a formal yet flexible channel for interaction with users.	See Action EP7-6 above
2. To coordinate with NWP centres to ensure that relevant GSICS results can be made available in a time frame compatible with the planned reanalysis activities.	<i>Chair (Action EP7-7)</i>
3. To define references for the heritage datasets collected before the availability of current reference instruments AIRS and IASI.	<i>GRWG</i>
4. To work with ISCCP to define the specifications of GSICS products, based on GSICS correction, to be used in ISCCP for comparative evaluation with the current ISCCP inter-calibration schemes, and to define practical modalities for such a test	<i>Chair (Action EP7-8)</i>
5. To invite the EUMETSAT LSA SAF to evaluate the impact of GSICS correction on Land Surface Temperature or other LSA SAF products.	<i>Jo Schmetz (Action EP7-9)</i>
6. To invite the EUMETSAT CM SAF to evaluate the impact of GSICS correction on the CM SAF Upper Tropospheric Humidity products.	<i>Jo Schmetz (Action EP7-10)</i>
7. GRWG to identify and invite microwave experts to next GRWG meeting.	<i>GRWG</i>
8. To invite RAL to send a representative of the AATSR community to the next GRWG meeting.	<i>GRWG</i>
9. GRWG to consider plans for AVHRR inter-calibration.	<i>GRWG</i>
10. GRWG to refine the definition of GEO-GEO inter-calibration products.	<i>Not relevant at this stage</i>
11. GSICS representatives at CGMS to encourage participation of ISRO and/or IMD in GSICS.	<i>Completed.</i>
12. To consider the definition of a GSICS single point of contact for users, and the establishment of a GSICS users Google group.	<i>GCC</i>

<i>Actions (From workshop summary)</i>	<i>Responsible, when endorsed by the EP</i>
13. GCC to review its website with a view to distinguish GSICS products from other NOAA activities.	GCC
14. To review the GSICS Roster taking into account the suggestions for new products and services, and the need for improved readability by users.	GCC (To be looked at when new products will be accepted)

7. Review of the GSICS Information, Products and Services Roster

It was considered that the Roster should be reviewed when it will be updated on the occasion of the acceptance of the first products.

8. Plans for beta-testing and other GSICS evaluation

Open, to address by e-mail.

Action EP7-11: All Panel members to share suggestions by e-mail about guidance to be given to beta users. (January 2010)

9. Communications and outreach

It was recalled that GSICS had been presented in various conferences, workshops and bulletins, and had regularly raised a lot of interest (BAMS, CalCon, CBS-TECO, CGMS-37, EUMETSAT Meteorological Satellite Conference, SPIE).

GSICS fact sheet (*Discussed between Chair and Secretariat*): CGMS-37 was informed that EUMETSAT had prepared a fact sheet to advertise the contribution of CGMS to climate through GSICS. This is a good initiative to develop CGMS and GSICS outreach. Unfortunately little opportunity was given to GSICS to review the text before printing and minor corrections are needed. WMO wished to review such material and give its agreement before printing, as a GSICS sponsoring organization and as the GSICS Secretariat. CGMS-37 agreed that it should be discussed by the Executive Panel to determine the corrections needed.

It was agreed among the Chair and the GSICS Secretariat that the GSICS and CGMS web addresses had to be corrected on the fact sheet before further distribution.

Action EP7-12: EUMETSAT to correct the CGMS and GSICS addresses on the fact sheet before further distribution. (Before further distribution)

10. Status of actions from previous EP meetings

Action 3.6 is planned to be completed by GCC at GRWG-5. All other actions up to the fifth meeting have been either completed or taken over by a new action.

As concerns the actions agreed at the sixth meeting, the Panel noted the following status:

- Actions 6.10, 6.11, 6.12, 6.13, 6.14, 6.16, 6.17, 6.18, 6.20, 6.21, 6.22, 6.24 and 6.25 were completed and could be closed.
- Actions 6.1, 6.3, 6.4, 6.6 had been assigned to the GRWG who will be reminded to report on its progress.
- Actions 6.2, 6.7, 6.8 had been assigned to the GCC who will be reminded to report on its progress.
- Action 6.5, initially assigned to GRWG with D. Tobin, is still open and will be taken up by M. Goldberg.

- Actions 6.9, 6.15 are still open.
- Action 6.19 is planned to be completed within a week, during the CEOS plenary timeframe.
- Action 6.23 is in progress.

Action EP7-13: GSICS Secretariat (J. Lafeuille) to remind GRWG to report on the progress of Actions 6.1, 6.3, 6.4, and 6.6 and to remind GCC to report on the progress of Actions 3.6, 6.2, 6.7 and 6.8. (December 2009)

11. Updated work plan

Action EP7-14: Executive Panel members to review the 2009 work plan and send comments with a view to prepare the 2010 version. (November 2009)

Action EP7-15: J. Lafeuille, R. Iacovazzi and F. Weng to coordinate a synthesis of the comments and prepare a draft updated work plan for 2010. (December 2009)

12. Summary of actions

The Panel reviewed the list of actions, as contained in Annex 3.

13. Date and place of next meeting

Geneva, April-May TBD (see possible collocation with AOPC)

Action EP7-16: J. Lafeuille, in consultation with M. Goldberg, to confirm date and place for next GSICS EP meeting. (January 2010)

GSICS EXECUTIVE PANEL, SEVENTH MEETING
(Jeju, Republic of Korea 30 October 2009)

LIST OF PARTICIPANTS

Mitch	Goldberg	NOAA	Chair
Pascal	Lecomte	ESA	CEOS WGCV Chair
Jerome	Lafeuille	WMO	Secretary
Barbara	Ryan	WMO	Director, Space Programme
Toshiyuki	Kurino	JMA	Panel Member
Tomoo	Ohno	JMA/MSC	
Dohyeong	Kim	KMA/NSMC	Panel Member
Volker	Gaertner	EUMETSAT	GDWG Chair
Pradip K.	Pal	ISRO	Observer
Kazuo	Umezawa	JAXA	Observer
Tamotsu	Igarashi	JAXA	Observer
Johannes	Schmetz	EUMETSAT	Panel Member
Peng	Zhang	CMA	Panel Member

GSICS EXECUTIVE PANEL, SEVENTH MEETING
(Jeju, Republic of Korea 30 October 2009)

PROVISIONAL AGENDA

1. Introduction and welcome
2. Reports from GSICS participating organizations
3. Report from the working groups
4. Nomination of working group Chairs and Vice-chairs
5. Status of GSICS prototype products and plans for product acceptance
6. Outcome of the GSICS User Workshop
7. Review of the GSICS Information, Services and Product Roster
8. Plans for beta-testing and other GSICS evaluation
9. Communications and outreach
10. Status of actions from previous Executive Panel meetings
11. Updated Work plan
12. Summary of actions
13. Date and place of next meeting

GSICS EXECUTIVE PANEL, SEVENTH MEETING
(Jeju, Republic of Korea 30 October 2009)

SUMMARY OF ACTIONS

I. Outstanding actions from previous meetings

Action 3.6: GCC (F. Weng) will prepare a presentation on absolute calibration for MW channels at GRWG-4. (February 2010)

Action 6.1: GRWG to define what should be the key factors that need to be displayed in the GSICS Instrument Monitoring web sites.

Action 6.2: GCC to communicate to the user community (through GCC web site) the findings related to GOES-13 calibration and spectral response functions.

Action 6.3: GRWG (F. Wu and T. Hewison) to complete the definition of a consensus GSICS Correction for each geostationary satellite (as a starting point), prepare a description of this GSICS correction, and illustrate it by a test data set. (Deadline: 30 June 2009)

Action 6.4: GRWG (F. Wu) to send an early draft of this description to a few beta-testers (ISCCP, ...) for comments in advance of the GSICS User Workshop. (Deadline: 31 August 2009)

Action 6.5: GRWG to consider the possible recommendations to GRUAN regarding coordinated radio-sondes and satellite observations (involving D. Tobin et al.) and report to Executive Panel members. (Deadline: 31 July 2009)

Action 6.6: GRWG to investigate the scene temperature dependence of the bias.

Action 6.7: GCC to include on the GSICS web site an intellectual property statement including that use of GSICS data is subject to proper credit being given to GSICS. (Deadline: 31 August 2009).

Action 6.8: GCC should improve accessibility of Spectral Response Functions on the GSICS web site. (Deadline 31 August 2009)

Action 6.9: J. Lafeuille to draft an updated outline (template ?) of the Implementation Plan in accordance with the documentation plan recommended by EP-6.

Action 6.15: R. Iacovazzi and J. Lafeuille to finalize the updated operations plan for publication on the GSICS web site

Action 6.19: M. Goldberg to investigate relevance of GSICS to Landsat data.

Action 6.23: M. Goldberg and F. Weng to investigate with A. Hou how GSICS activities could assist GPM X-CAL in the inter-calibration of microwave sounders.

II. New actions from EP-7

Action EP7-1: The Director of WMO Space Programme to send a letter to the Executive Director of JAXA, inviting JAXA to participate in GSICS. (December 2009)

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