

WORLD METEOROLOGICAL ORGANIZATION

GLOBAL SPACE-BASED INTER-CALIBRATION SYSTEM

EXECUTIVE PANEL

EIGHTH SESSION

GENEVA, SWITZERLAND

29-30 APRIL 2010

FINAL REPORT



1. OPENING OF THE SESSION

The eighth session of the GSICS Executive Panel opened on 29 April at 2 pm, following the closure of the fifth meeting of ET-SAT, by Ms Barbara J. Ryan, Director of the WMO Space Programme. Ms Ryan welcomed the participants (See Annex 1) and highlighted the important and pilot role of GSICS to advance the integration of space-based observations, thereby directly contributing to a strategic priority for WMO Members, especially in support of climate monitoring and the detection of climate change.

The Chairman, Dr Mitch Goldberg, welcomed the Executive Panel Members. On behalf of all GSICS members, he expressed his appreciation for the decision of ISRO, represented by Mr A.S. Kiran Kumar, to join GSICS and for the participation of JAXA, represented by Mr Kazuo Umezawa, as an Observer.

The agenda was adopted (See Annex 2).

All GSICS members were reminded of updating their GSICS presentation material, including the web sites, to reflect the new membership that now includes: CMA, CNES, EUMETSAT, ISRO, JMA, KMA, NASA, NIST, NOAA, and WMO as members, JAXA as an observer, and CEOS WGCV, ISCCP SCOPE-CM and GPM X-Cal as partners.

Action EP 8.1: WMO, GCC, all, to update GSICS web sites, presentation slides, fact sheets, to include reference to all members, observers and partners. (May 2010)

M. Goldberg presented his Chairman's overview of GSICS in which he restated the mission objectives: (i) To provide sustained calibration and validation of satellite observations; (ii) More specifically to inter-calibrate critical components of the global observing system to climate quality benchmark observations and/or reference sites; and (iii) to provide corrected observations and/or correction algorithms to the user community for current and historical data. This implies that calibration discrepancies must be quantified (magnitude and uncertainty), diagnosed (root cause) and corrected (empirical removal based on physical interpretation). Accurate calibration is a prerequisite to evaluate decadal trends of climate variables. Feedback from NWP centres shows that inter-calibration and subsequent bias analysis and correction are also of great benefit to NWP. He suggested the following priorities for the new GSICS Action Plan be considered:

- Finalize GSICS Produce Acceptance Procedure;
- Launch official GSICS products (GEO to LEO IR Corrections; GEO to LEO VIS Corrections; Microwave FCDRs; AVHRR FCDRs);
- Prepare the 2nd GSICS Users' Workshop;
- Develop a GSICS Annual Progress Report.

J. Lafeuille reported the outcome of ET-SAT-5 regarding GSICS. ET-SAT considers GSICS as an essential activity to pursue integration of observations, both for climate change monitoring and for NWP that needs independent bias assessment. ET-SAT thus strongly supported the efforts undertaken in GSICS. As concerns the orientations for future work ET-SAT stressed the need to define reliable, indisputable reference instruments, and to verify and demonstrate their reliability, which has not yet been done for Visible or Microwave channels, nor for older datasets. In addition, ET-SAT recalled the requirement for traceability to absolute standards, which will be facilitated with dedicated missions that provide such traceability (e.g. CLARREO). ET-SAT expressed the wish that ultimately all space agencies involved in Earth observation could join and participate in GSICS.

2. REPORT FROM GCC

F. Weng and R. Iacovazzi reported (remotely, by telephone) on GCC activities.

- The GCC has implemented the GEO-LEO IR intercomparison baseline algorithm, which provides a reference to compare results with the different GPRCs, which highlighted the need for adopting a common format within the GSICS community for presenting the results.
- The GSICS Procedure for Product Acceptance (GPPA) was refined.
- The NOAA GPRC web site was initiated, distinct from the GCC web site.
- GSICS Quarterly is issued regularly and appreciated by a growing audience.

- An update of the Operations Plan was prepared, incorporating the actions agreed at EP and GRWG/GDWG meetings, for submission to the EP.

The near-term goals of GCC in 2010 are:

- To complete implementation of the GPPA and run it for the first products;
- To seek endorsement of the 2010 Operations Plan;
- To update the Implementation Plan;
- To support implementation of the baseline algorithm at NOAA GPRC;
- To complete the differentiation between the GCC and the NOAA-GPRC web sites (expected by end of June).

The Panel thanked the GCC for its very useful support to GSICS coordination, operation and outreach.

3. REPORT FROM GDWG

A. Jelenak, incoming GDWG Chair, reported on activities of the GDWG including the progress made during the joint meeting with GRWG in Toulouse, France in February 2010 as well as the outcome of intermediate web meetings.

Since the last report to the Executive Panel, major developments have occurred on:

- Adoption of a GSICS netCDF convention (<https://cs.star.nesdis.noaa.gov/GSICS/NetcdfConvention>);
- Adoption of a File naming convention (<https://cs.star.nesdis.noaa.gov/GSICS/FilenameConvention>);
- Definition of a Common data server directory structure;
- Refining the GSICS Procedure for Product Acceptance work flow;
- Restructuring the GSICS mailing lists (GRWG, GDWG, GSICS Development, GSICS Users);
- Enhancing the GPRC web sites;
- The wiki ATBD system is on stand-by.

A number of specific actions related to these issues have been agreed among the GDWG members. The most important task for GDWG is now to support GSICS products through the GPPA process.

It is planned to finalize a definition of data “sub-categories” (in the meaning of Common Code Table C-13 of the WMO Manual of Codes) for the category “Calibration data sets (Satellite)”, in view of its submission to the CBS Extraordinary meeting of November 2010.

In response to some points made in the reports from GDWG and the GCC, it was agreed to develop a unified web page to display GSICS GEO-LEO Infrared Correction results. JMA accepted to develop a prototype (subject to confirmation that was provided in May).

Action EP 8.2: JMA, in consultation with GCC, to develop a prototype of a unified web page to display GSICS GEO-LEO IR results, along the lines of the sketch discussed among GRWG/GDWG. (End of 2010)

The Panel thanked the GDWG for the progress made.

4. REPORT FROM GRWG

T. Hewison, incoming GRWG Chair, reported on activities of the GRWG including the progress made during the joint meeting with GDWG in Toulouse, France in February 2010 as well as the outcome of intermediate web meetings.

The main focus of the GRWG meeting in Toulouse was develop a strategy to review and evaluate a range of methods for solar channel calibration, each one being entrusted to a Principal Investigator.

GRWG representatives also initiated collaboration with the Intersatellite Calibration Working Group of the Global Precipitation Measurement mission (GPM X-Cal) on microwave calibration methods.

The Panel encouraged this collaboration to continue with the expectation that the procedures developed by GSICS for operational products could be of interest for GPM X-Cal and that ultimately common procedures would be adopted.

The Panel thanked the GRWG for the progress made. It also thanked CNES for having hosted the joint GRWG-GDWG meeting that led to such successful outcomes.

5. HIGHLIGHTS OF GPRCs AND CSS ACTIVITIES

CNES, EUMETSAT, JMA and NOAA reported on the highlights of their respective activities.

The presentations are available at: <http://www.wmo.int/pages/prog/sat/meetings/GSICS-ExecutivePanel-8.html>.

5.1 CNES

Didier Renaut reported that CNES has developed an “Export web site” of the SADE database to provide the GSICS community with TOA calibrated reflectance measured over desert sites and relevant sensor characteristics. The site is planned to open end of May 2010. The contents of the SADE database was also expanded in response to GSICS needs to include two new sites in Asia and one in America (still to be determined by NOAA). Geostationary observations are being included, starting with Meteosat.

CNES will contribute to the methodology development for solar channels (PI for two methods).

The AIRS-IASI intercomparison software was developed and is under evaluation. Collaboration also initiated with Laboratoire de Météorologie Dynamique (LMD) in this area.

D. Renaut also recalled the 2nd International IASI Conference held in Annecy in January 2010, where excellent performances of IASI were reported.

5.2 EUMETSAT

Tim Hewison reported that EUMETSAT has implemented, in an operational framework, the monitoring and correction of MSG/SEVIRI infrared channels to IASI. An analysis of the uncertainty of this correction was performed.

A first NWP bias monitoring dataset of Meteosat-9/SEVIRI and MetOp-A/IASI was delivered.

Three-way comparisons of Meteosat-8/SEVIRI, Meteosat-9/SEVIRI, and METOP/IASI were performed.

Work is also being done on METOP/GOME-2 in comparison with AVHRR and analysis of GOME-2 desert reflectance spectra.

5.3 JMA

Tomoo Ohno reported on the progress made by JMA/MSU on visible channel calibration. The use of Deep Convective Clouds (DCC) as reference targets is investigated in comparison with the use of clear ocean, land and liquid-cloud targets. DCC radiative transfer characteristics are simulated, using NWP outputs.

As an intermediate result, the combined use of these calibration targets has enabled generating global composite imagery from several geostationary satellites in a consistent manner.

5.4 NOAA

Fred Wu reported on NOAA GPRC activities.

NOAA routinely performs infrared inter-calibration of its GOES-11, -12, and -13 to IASI and AIRS. (In addition, NOAA performs inter-calibration of Meteosat-9, Meteosat-7, MTSAT-1R, FY-2C and FY-2D, as part of the GCC activity mentioned in 2.1 above).

Corrections are produced daily for both near-real time use and reanalysis, the latter being averaged over a 30-day window.

Instrument performance monitoring was enhanced, for GOES imager and sounder.

A NOAA GPRC web site was created, distinct from the GCC web pages.

Work is in progress to propose new GSICS correction products by SNO related to MSU/AMSU, SSMI and AVHRR.

5.5 JAXA

JAXA, being now a regular observer at GSICS meetings was invited to present an overview of its calibration activities at a future session. In particular it was agreed that JAXA and CNES would report on GOSAT-IASI inter-calibration at the tenth session.

Action EP-8.3: JAXA to present an overview on its calibration activities and plans at an Executive Panel session. (November 2010 or June 2011)

Action EP-8.4: JAXA and CNES to report at EP-10 on GOSAT-IASI inter-calibration. (June 2011)

5.6 ISRO

ISRO, as a new GSICS Member was invited to present an overview of its calibration activities at a future session. In particular it was agreed that ISRO in coordination with the GCC would report on Kalpana intercalibration with IASI and AIRS at the ninth session.

Action EP-8.5: ISRO to present an overview on its calibration activities and plans at EP-9. (November 2010)

Action EP-8.6: ISRO to initiate Kalpana inter-calibration against IASI and AIRS, in coordination with GCC and report progress at EP-9. (November 2010)

5.7 NIST

Raju Datla reported on the completion and adoption of the "[Best Practice Guidelines for Pre-Launch Characterization and Calibration of Instruments for Passive Optical Remote Sensing](#)" (Link available on the GCC web site under "[GSICS Quality Assurance/Standards and best practices](#)"). In this best-practice document, the currently available radiometric standards and calibration facilities at the US National Institute of Standards and Technology (NIST) are described, and examples of best practice calibrations and intercomparisons needed to build an SI-traceable uncertainty budget in the instrumentation used for preflight satellite sensor calibration and validation are presented.

The Panel thanked R. Datla and NIST for these guidelines, which constitute for GSICS a significant deliverable and an important tool.

6. GSICS PRODUCTS

6.1 GSICS Procedure for Product Acceptance (GPPA)

The Panel confirmed the usefulness of a product acceptance procedure to enable GSICS users to quantify the uncertainty in their satellite data.

Bob Iacovazzi reported on the latest update of the GPPA, following the conclusions of the GDWG meeting. The procedure itself is described step by step on the GSICS wiki (See: "Procedure for Product Acceptance"): <https://cs.star.nesdis.noaa.gov/GSICS/WebHome>. In particular, the GPPA now refers to the following three stages: Demonstration, Pre-operational, Operational. It was also clarified that the

timeline indicated in the procedure was a maximum that could be reduced if all the steps went smoothly.

The Panel requested an addition in Section III.1 of the procedure with effect to request in the submission phase a draft ATBD, or flowchart, or journal reference, which could provide the reviewer with a physical basis for a first level of judgment that the product proposed for demonstration is scientifically relevant.

Action EP-8.7: GCC to update the GPPA to include a high-level description of the algorithm, or reference to existing publication, upon submission of a product to allow checking the science background before accepting a demonstration. (End May 2010)

With this amendment, the procedure was endorsed. The Panel appreciated the great work done by the GCC and GDWG to prepare and finalize the procedure and forms.

6.2 Status of acceptance of planned GSICS products

The following products were said to be ready for submission to the GPPA for Demonstration:

- GSICS GEO-LEO infrared correction for Meteosat-9/IASI (EUMETSAT)
- GSICS GEO-LEO infrared correction for MTSAT-2/IASI (JMA)
- GSICS GEO-LEO infrared correction for GOES-12/IASI (NOAA)

The actual finalization and acceptance of these products was regarded by the Panel as important short-term targets in the work plan.

Furthermore, following the work done by NOAA on LEO-LEO inter-calibration, some correction products for AVHRR, SSMI and AMSU are relatively mature and could be submitted for demonstration soon, provided that the methodology is reviewed by the GRWG.

The Panel stressed that the GSICS products should be presented in a harmonized way throughout the GPRCs, and recalled the agreed action EP-8.2. (See section: 3)

6.3 Guidance for definitions of new GSICS products

Tim Hewison introduced the GRWG proposal to distinguish the following GSICS products.

- GSICS Bias Monitoring Product;
- GSICS Near Real-Time Correction;
- GSICS Re-Analysis Correction.

The Panel endorsed these proposals and encouraged the GRWG, GDWG and GCC to finalize their definition as well as the unified web page for displaying the results.

It also recalled the outcome of the first GSICS Users' Workshop which had requested extending GSICS activities to:

- Microwave sounder and imager data
- Solar channels from GEO and LEO
- ATSR and AVHRR
- GPS radio-occultation
- Imagery from Highly Elliptical Orbit (Molnyia orbits) missions.

6.4 Beta testing status and outcome

The Panel recalled that the first GSICS Users' Workshop had identified several key applications and beta-testers, in particular in the area of NWP for either operational bias adjustment or reanalysis. The following status was drawn:

- UK MetOffice/Hadley Centre: Peter Francis is regularly providing feedback to EUMETSAT about NWP bias monitoring (See Section 5.2);
- CM-SAF: the CM-SAF contribution to the SCOPE-CM Pilot Project on Upper Tropospheric Humidity has requested from EUMETSAT a GSICS Correction for the Indian Ocean Meteosat (IODC) archive;
- Land-SAF: the proposed Land-SAF action remains open;
- ISCCP: the NOAA action to detail with ISCCP the specifications of a GSICS product meeting the needs of ISCCP remains open;
- NOAA/SEVIRI: NOAA is analyzing the impact of the GSICS correction to Meteosat/SEVIRI for radiance assimilation;
- NOAA/MSU.

The Panel emphasized the importance of seeking feedback from beta-testers in order to guide the evolution of GSICS production.

7. SECOND GSICS USERS' WORKSHOP

The Panel confirmed the decision to hold the Second GSICS Users' Workshop on the afternoon of Tuesday, 21 September 2010, in Cordoba, Spain, as a parallel session of the annual EUMETSAT Meteorological Satellite Conference.

The Panel established a Workshop Programme Committee comprising: Tim Hewison, Fred Wu, Bob Iacovazzi, Didier Renaut, Raju Datla, Jérôme Lafeuille. The workshop announcement should be sent to a list of targeted invitees, but will be open to other interested participants. The goal is to send out invitations by early June 2010. In addition to a description of GSICS objectives and products, the workshop agenda shall include reports from beta-testers and SCOPE-CM Pilot Projects and a briefing on practical aspects such as: GSICS wiki, GPPA, registration issues, netCDF implementation, and other agreed working practices.

Considering the registration approach proposed by GRWG, the Panel agreed that registration should be compulsory to grant access to GSICS products, in order to maintain a link between GSICS and its users. The registration procedure should be implemented on the wiki and should be explained and introduced at the workshop.

Action EP-8.8: GDWG to define how to implement the compulsory registration of users on the GSICS web sites. (September 2010 (TBC))

Action EP-8.9: The GSICS 2nd Users' Workshop Programme Committee (T. Hewison, F. Wu, R. Iacovazzi, D. Renaut, R. Datla, J. Lafeuille) to prepare draft programme and invitations for mailing early June. (June 2010)

8. STATUS OF ACTIONS FROM PREVIOUS MEETINGS

The Panel reviewed the status of all the actions that were outstanding at previous meetings as recorded in the table below.

Action	Status as of 30 April 2010
Action 3.6: GCC (F. Weng) will prepare a presentation on absolute calibration for MW channels at GRWG-4. (February 2010)	OPEN. Action is carried forward to a future GRWG meeting in 2011, taking into account ongoing contacts with the GPM X-Cal Working Group.
Action 6.1: GRWG to define what should be the key factors that need to be displayed in the GSICS Instrument Monitoring web sites.	OPEN. NOAA will address the issue in a Working Paper for CGMS-38.
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.	Completed.
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)	Completed. Included in the ATBD.
Action 6.4: GRWG (F. Wu) to send an early draft of this description to a few beta-testers (including ISCCP) for comments in advance of the GSICS User Workshop. (Deadline: 31 August 2009)	Completed.
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)	OPEN. GSICS confirms its interest for GRUAN. Although GRUAN is not expected to provide absolute calibration, it will help refining the Radiative Transfer calculations to derive simulated radiances. NOAA (Ms Antonia Gambacorta) will report on this issue. Space agencies are not considering funding GRUAN activities, except possible radio-sonde campaigns during new satellite commissioning phases (e.g. Metop-B, or IASI-2).
Action 6.6: GRWG to investigate the scene temperature dependence of the bias.	Completed.
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).	OPEN. The disclaimer states that credit shall be given to NOAA/NESDIS/STAR instead of GSICS. Should be solved after separation of GCC and GPRC web sites.
Action 6.8: GCC should improve accessibility of Spectral Response Functions on the GSICS web site. (Deadline 31 August 2009)	Completed.
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.	Closed. This action is ongoing, but was reformulated as a new action (See Action EP-8.10 below.)

Action	Status as of 30 April 2010
Action 6.15: R. Iacovazzi and J. Lafeuille to finalize the updated operations plan for publication on the GSICS web site	OPEN. Should be updated with the outcome of this Executive Panel meeting and posted on the wiki.
Action 6.19: M. Goldberg to investigate relevance of GSICS to Landsat data.	Closed. This action is ongoing, but was reformulated and will be reported at the next session. (See Action EP-8.11 below)
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.	Completed. See summary report below.
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)	Completed. Letter sent on 19 February. Reply received on 12 March. JAXA participates as an observer and will present calibration plans and opportunities at EP-9 (New Action EP-8.3)
Action EP7-2: The Director of WMO Space Programme to send a letter to the Director of ISRO Earth Observation Systems at ISRO Headquarters, Bangalore, inviting ISRO to participate in GSICS. (December 2009)	Completed on 19 February. ISRO has replied and joined GSICS. Points of contacts to be designated (See Action EP-8.14 below)
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)	Completed. Included in the updated procedure.
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)	Completed.
Action EP7-5: GRWG/GDWG to submit GEO-LEO correction for acceptance in accordance with GPPA. (April 2010)	OPEN. EP-8 was informed that EUMETSAT, JMA and NOAA would submit GEO/LEO correction products shortly.
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)	Completed. Workshop planned on 21 September 2010 (See item 7)
Action EP7-7: M. Goldberg to coordinate with NWP centres to ensure that relevant GSICS results can be made available in a timeframe compatible with the planned reanalysis activities. (January 2010)	Completed. These results should be made available in 2012-2013.
Action EP7-8: M. Goldberg 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. (January 2010)	OPEN. Action carried forward to May 2010.
Action EP7-9: J. Schmetz to invite the EUMETSAT LSA SAF to evaluate the impact of GSICS correction on Land Surface Temperature or other LSA SAF products. (December 2009)	Completed.
Action EP7-10: J. Schmetz to invite the EUMETSAT CM SAF to evaluate the impact of GSICS correction on the CM SAF Upper Tropospheric Humidity products. (December 2009)	Completed.
Action EP7-11: All Panel members to share suggestions by e-mail about guidance to be given to beta users. (January 2010)	Completed. The Panel noted the ongoing dialogue with beta-users.

Action	Status as of 30 April 2010
Action EP7-12: EUMETSAT to correct the CGMS and GSICS addresses on the fact sheet before further distribution.	OPEN. EUMETSAT is invited to provide corrected fact sheets for possible use and distribution by other GSICS partners.
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)	Completed. This was addressed at the joint GRWG-5/GDWG-4 meeting.
Action EP7-14: EP members to review the 2009 work plan and send comments with a view to prepare the 2010 version. (November 2009)	Completed at the EP-8 session.
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)	Cancelled. See Actions 7.14 and 6.15.
Action EP7-16: J. Lafeuille, in consultation with M. Goldberg to confirm date and place for next GSICS EP meeting. (January 2010)	Completed.

The Panel recorded the following additional comments on the actions.

Documentation Plan (with reference to Action 6.9):

The Panel agreed that the "Scope of GSICS" should be better documented. The revised GSICS Implementation Plan should focus on: overview, objectives, structure, priorities (TBC), and members' responsibilities.

Action EP-8.10: WMO (J.Lafeuille) to circulate a draft revised documentation plan with more detailed contents of each document, as a prerequisite for developing these documents. (End June 2010)

Relevance of GSICS to Landsat data (with reference to Action 6.19):

D. Renaut informed the Panel that ESA had issued a Call for Proposals on the inter-calibration of medium-resolution sensors, and that CNES was involved.

Action EP-8.11: M. Goldberg to give a presentation at EP-9 on the relevance of GSICS for terrestrial applications of Landsat data. (November 2010)

GPM X-Cal WG and GSICS Collaboration:

Following discussions among M. Goldberg, F. Weng and A. Hou (NASA) on collaboration opportunities, it is suggested that GPM X-Cal WG should be affiliated to GRWG, and that the Precipitation Processing System (PPS) at NASA/GSFC could be regarded as a GPRC. Such collaboration is expected to benefit through:

- Learning from each other, enhancing the exchange of scientific knowledge through cross representation on working groups;
- Sharing development of common standards for algorithm development;
- Sharing management standards including product acceptance procedures needed to make data and information open and transparent and consistent from different efforts;
- Links to GPM X-Cal web sites from GSICS for top-down access to satellite inter-calibration information by the international community;
- Shared concepts to harmonize visualization and access to information.

It was noted that GPM was planning to reprocess the suite of TRMM products and may even backtrack to the beginning of SSM/I data. GPM is devoting considerable resources to a MW transfer standard within the GPM Microwave Inter-calibration Framework (GMIF). The GMIF has three major components: (1) a process for accepting and vetting candidate radiometers, (2) a procedure for inter-calibrating into an existing constellation, and software tools to assist the monitoring, and (3) the creation of inter-calibrated Tb products. Within the GPM mission context, NASA is to produce a set of GMIF

inter-calibration specifications, ATBDs, and inter-calibrated radiometer data products as mission deliverables.

The Panel agreed that GPM can be a major contributor to the GSICS inter-calibration effort by making GMIF inter-calibrated Tbs produced by the Precipitation Processing System (PPS) at GSFC available to GSICS and the wider precipitation community. The collaboration with GPM X-Cal should be mentioned on the GSICS web sites.

9. GSICS WORK PLAN FOR 2010

9.1 Overall approach

The Panel underlined that, while substantial progress had been achieved along the previously agreed lines of actions, the work plan had not been formally updated by lack of time at the previous Executive Panel session. Maintaining an agreed work plan is, however, essential to ensure a common understanding of the priorities among the GSICS community, to provide visibility to the participating organizations and the users, and to monitor the actual progress made. In particular, it is important for the Executive Panel to deliver clear guidance on what the GSICS components (GPRCs, GCC, GDWG and GRWG) are expected to achieve.

The Panel agreed that the work plan should identify the main high-level, overarching actions, be structured along these overarching actions, and that the individual actions assigned to the GSICS components should be related to these high-level actions. The Panel furthermore agreed that the seven high-level actions of the 2010 work plan would be:

- Developing and delivering products, which includes the four lines of actions below:
 - GSICS corrections for current infrared channels
 - GSICS corrections for heritage instruments
 - GSICS corrections for visible channels
 - Microwave activities
- Consolidation of infrastructure and general methodology
- Enhancing interaction with users
- Expanding membership and partnerships

9.2 NIST proposal on uncertainty estimation

Raju Datla reported that the current ISO Guide on Uncertainty in Measurement (GUM) needed to be expanded to fully cover GSICS activities and indicated that NIST was ready to undertake this development as a NIST contribution to GSICS. A first step would be to define an extension of GUM vocabulary suited to GSICS uncertainty evaluations. A second step would be to develop the Guide itself, as a supplement to the ISO GUM.

The Panel welcomed this proposal and agreed Action 8.12.

Action EP-8.12: NIST (R. Datla) to develop a draft vocabulary, as part of a future guide on uncertainty for GSICS. (September 2010)

9.3 Priority actions for 2010

In this framework, the Executive Panel agreed that the following priority actions should be included in the 2010 work plan:

GSICS Correction for Current Infrared Channels

- (1.) Complete the validation and acceptance of the GEO-to-LEO correction product, in accordance with the GSICS Product Acceptance Procedure (involves all GPRCs)
- (2.) Review the methodology for LEO-to-LEO GSICS correction
- (3.) Report on JAXA/GOSAT and IASI comparisons

GSICS corrections for heritage instruments

- (4.) Review of the methodology for LEO-to-LEO heritage instruments (AVHRR, MSU, HIRS)

GSICS Correction for Visible Channels

- (5.) Focus collaborative scientific activities on refining Visible channel correction methodology

Microwave activities

- (6.) Continued collaboration with GPM inter-calibration team towards joint procedures

Consolidation of Infrastructure and General Methodology

- (7.) Commissioning the export functionality of the CNES database of reference sites (SADE)
- (8.) IASI/AIRS traceability report
- (9.) Guide for Estimation of Uncertainty in GSICS intercomparisons
- (10.) Unified web monitoring system for GSICS GEO-to-LEO Infrared Correction
- (11.) Implementation of a user registration system

Enhancing Interaction with Users

- (12.) Seek feedback from beta users
- (13.) Convene the second GSICS Users' Workshop in September 2010

Expanding Membership and Partnerships

- (14.) Seek involvement of Roshydromet
- (15.) Continue collaboration with CEOS WGCV
- (16.) Continue collaboration with SCOPE-CM

9.4 Membership and Partnerships

The Panel was glad to underline the participation of ISRO and JAXA as well as the collaboration with CEOS WGCV and GPM X-Cal. It wished that other important players such as ESA and ROSHYDROMET could soon be involved in GSICS as well.

Action EP-8.13: The WMO Space Programme (B. Ryan) to invite ROSHYDROMET to participate in GSICS in relation with Meteor-M and Electro-L missions. (End June 2010)

Action EP-8.14: ISRO, JAXA to consider nominating points of contacts for GRWG and GDWG in advance of the next sessions of these working groups. (End 2010)

10. GSICS COMMUNICATION AND OUTREACH

The Panel noted and supported the actions taken by GDWG, GCC, WMO and the GPRCs with respect to the GSICS home page (<http://gsics.wmo.int>) and other GSICS web sites.

11. GSICS IMPLEMENTATION PLAN UPDATE

No further discussion. See Item 8: "Documentation Plan".

12. DATE AND PLACE OF NEXT GSICS MEETINGS

12.1 Next GRDG-GRWG meeting

The Panel was informed of the parallel proposals made by both KMA and CMA to host the next joint working group meeting. Anticipating the launch of COMS-1 during the third quarter of 2010, and the possible participation of KMA experts involved in COMS calibration and processing, the Panel expressed particular interest in holding the next GDWG-GRWG meeting in Korea in March or April 2011.

12.2 Next Executive Panel meeting

The Panel stressed that sufficient time should be planned for the main annual meeting (typically three days) while it was convenient to hold a short meeting (1/2 day) immediately after the CGMS Plenary. In addition, it was agreed to set up regular (typically bi-monthly) teleconferences to follow-up the agreed actions.

Accordingly, and assuming that the joint working group meeting would be held in the Republic of Korea, it was suggested to explore with CMA holding the next main Executive Panel session in China in June 2011. The agenda of this meeting should include a detailed review of the progress made and related issues on each of the priority areas of the work plan. It was recalled that the CEOS WGCV should be routinely invited to attend the Executive Panel sessions.

Action EP-8.15: The Chairman (M. Goldberg) and Secretariat (J. Lafeuille) to set-up a bi-monthly Executive Panel teleconference. (July 2010)

Action EP-8.16: WMO (B. Ryan/J. Lafeuille) to communicate to KMA the appreciation of GSICS for the offer to host the next GRWG/GDWG meeting in the Republic of Korea in March/ April 2011. (End May 2010)

Action EP-8.17: WMO (B. Ryan/J. Lafeuille) to consult CMA for possible EP-10 meeting in China in June 2011. (July 2010)

Action EP-8.18: J. Lafeuille to include status reports on GSICS overarching activities in the agenda of future Executive Panel sessions. (November 2010)

Action EP-8.19: Secretariat (J. Lafeuille) to ensure that the CEOS WGCV Chair is included in invitation list for future Executive Panel meetings. (September 2010)

13. ANY OTHER BUSINESS

No other business was raised.

14. CLOSURE OF THE SESSION

The meeting was closed on 30 April 2010 at 6 pm.

GSICS EXECUTIVE PANEL, EIGHTH SESSION
(Geneva, Switzerland, 29-30 April 2010)

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GSICS EXECUTIVE PANEL, EIGHTH SESSION
(Geneva, Switzerland, 29-30 April 2010)

AGENDA

1. OPENING OF THE SESSION
 - 1.1. Introduction and welcome
 - 1.2. Adoption of the agenda
 - 1.3. Chairman's address
 2. REPORT FROM GCC
 3. REPORT FROM GDWG
 4. REPORT FROM GRWG
- Break*
5. HIGHLIGHTS OF GPRCs AND CSS ACTIVITIES
 6. GSICS PRODUCTS
 - 6.1. Status of acceptance of GSICS products
 - 6.2. Executive Panel guidance for new products
 - 6.3. Beta testing status and outcome
 7. SECOND GSICS USERS' WORKSHOP
 - 7.1. Practical arrangements, agenda, participants, action plan
- Adjourn for Day 1*
8. STATUS OF ACTIONS FROM PREVIOUS MEETINGS
 9. GSICS WORK PLAN FOR 2010
 - 9.1. Structure
 - 9.2. Contents
- Break*
10. GSICS COMMUNICATION AND OUTREACH
 - 10.1. GSICS home page (<http://gsics.wmo.int>)
 - 10.2. GCC home page
 - 10.3. GPRC home pages
 - 10.4. Conferences and publications
 11. GSICS IMPLEMENTATION PLAN UPDATE
 - 11.1. Terms of References
 - 11.2. Documentation Plan
 - 11.3. Overall Implementation Plan structure and contents
 12. DATE AND PLACE OF NEXT GSICS MEETINGS
 - 12.1. Next GRDG-GRWG meeting
 - 12.2. Next Executive Panel meeting
 13. ANY OTHER BUSINESS
 14. CLOSURE OF THE SESSION

GSICS EXECUTIVE PANEL, EIGHTH SESSION
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SUMMARY LIST OF ACTIONS

Outstanding actions from previous meetings (with updated due date)

Action	New due date
Action EP-3.6: GCC (F. Weng) will prepare a presentation on absolute calibration for MW channels at GRWG-5.	March 2011
Action EP-6.1: GRWG to define what should be the key factors that need to be displayed in the GSICS Instrument Monitoring web sites.	End 2010 (NOAA paper in November 2010)
Action EP-6.5: GRWG to consider the possible recommendations to GRUAN regarding coordinated radio-sondes and satellite observations (report expected from NOAA/ A. Gambacorta) and report to Executive Panel members.	March 2011
Action EP-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.	End 2010
Action EP-6.15: R. Iacovazzi and J. Lafeuille to finalize the updated operations plan for publication on the GSICS web site.	September 2010
Action EP7-5: GRWG/GDWG to submit GEO-LEO correction for acceptance in accordance with GPPA.	End 2010
Action EP7-8: M. Goldberg 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.	May 2010
Action EP7-12: EUMETSAT to correct the CGMS and GSICS addresses on the fact sheet before further distribution.	20 September 2010

New Actions from GSICS EP-8

Actions	Due date
Action EP-8.1: WMO, GCC, all, to update GSICS web sites, presentation slides, fact sheets, to include reference to all Members, observers and partners.	May 2010
Action EP-8.2: JMA, in consultation with GCC, to develop a prototype of a unified web page to display GSICS GEO-LEO IR results, along the lines of the sketch discussed among GRWG/GDWG.	End 2010
Action EP-8.3: JAXA to present an overview on its calibration activities and plans at an Executive Panel session.	November 2010 or June 2011.
Action EP-8.4: JAXA and CNES to report at EP-10 on GOSAT-IASI inter-calibration.	June 2011
Action EP-8.5: ISRO to present an overview on its calibration activities and plans at EP-9.	November 2010

Actions	Due date
Action EP-8.6: ISRO to initiate Kalpana inter-calibration against IASI and AIRS, in coordination with GCC and report progress at EP-9.	November 2010
Action EP-8.7: GCC to update the GPPA to include a high-level description of the algorithm, or reference to existing publication, upon submission of a product to allow checking the science background before accepting a demonstration.	End of May 2010
Action EP-8.8: GDWG to define how to implement the compulsory registration of users on the GSICS web sites.	September 2010 (TBC)
Action EP-8.9: The GSICS 2 nd User Workshop Programme Committee (T. Hewison, F. Wu, R. Iacovazzi, D. Renaut, R. Datla, J. Lafeuille) to prepare draft programme and invitations for mailing early June.	June 2010
Action EP-8.10: WMO (J. Lafeuille) to circulate a draft revised documentation plan with more detailed contents of each document, as a prerequisite for developing these documents.	End June 2010.
Action EP-8.11: M. Goldberg to give a presentation at EP-9 on the relevance of GSICS for terrestrial applications of Landsat data.	November 2010
Action EP-8.12: NIST (R. Datla) to develop a draft vocabulary, as part of a future guide on uncertainty for GSICS.	September 2010
Action EP-8.13: The WMO Space Programme (B. Ryan) to invite ROSHYDROMET to participate in GSICS in relation with Meteor-M and Electro-L missions.	End June 2010
Action EP-8.14: ISRO, JAXA to consider nominating points of contacts for GRWG and GDWG in advance of the next sessions of these working groups.	End 2010
Action EP-8.15: The Chairman (M. Goldberg) and Secretariat (J. Lafeuille) to set-up a bi-monthly Executive Panel teleconference.	July 2010
Action EP-8.16: WMO (B. Ryan/J. Lafeuille) to communicate to KMA the appreciation of GSICS for the offer to host the next GRWG/GDWG meeting in Korea in March/ April 2011.	End May 2010
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