



Global Space-based Inter-calibration System (GSICS)



GSICS EXECUTIVE PANEL

TENTH SESSION

Geneva, 6-8 June 2011

FINAL REPORT



Participants in the tenth session of the GSICS Executive Panel in Geneva. From left to right: Tim Hewison, Jérôme Lafeuille, Ashok Kumar Sharma, James Butler, Yoshihiko Tahara, Aleksandar Jelenak, Mitch Goldberg, Jack Xiong. Not visible on this picture: Patrice Henry, Nils Hettich, Barbara Ryan, Johannes Schmetz, Kazuo Umezawa.

REPORT

1. Opening of the session

Dr Mitch Goldberg, Chairman, welcomed the participants to the tenth Executive Panel meeting (See Annex 1), noting the participation of Dr A.K. Sharma from IMD as a new member. In his opening remarks he first highlighted that infrared GEO to LEO inter-calibration had advanced in a remarkable manner thanks to the availability of excellent reference instruments IASI and AIRS, and that extending this activity to solar channel inter-calibration had raised a number of challenges that were being addressed. He also mentioned that GSICS had received very good user feedback, with confirmation of the usefulness of GSICS inter-calibration products for NWP and for level 2 product generation. Finally, the publication of a joint scientific paper on GSICS in the Bulletin of the American Meteorological Society (BAMS) in April 2011 was a significant milestone in GSICS outreach programme.

Jérôme Lafeuille welcomed the participants on behalf of WMO and highlighted that GSICS activities were now recognized as an important component of the space-based observing system, which will be reflected in future updates of the Manual on the GOS, as well as the Guide on Instruments and Methods of Observation. Along with this recognition, there are strong expectations that GSICS products be operationally, openly accessible and easily searchable by all WMO Members, hence the importance of looking at the whole chain activity ranging from the scientific development issues to the data management and user uptake aspects.

The provisional agenda was adopted as contained in Annex 2, with the addition of two points under Any other business:

- GSICS input to the CIMO Guide
- Use of “Accuracy” and “Uncertainty” concept in the GCOS Implementation Plan

2. Review of outstanding actions from previous EP meetings

The status of outstanding actions from previous meetings was reviewed as follows:

Action	New due date	Status as of June 2011
Action EP-3.6: GCC (F. Weng) will prepare a presentation on absolute calibration for MW channels at GRWG.	Next GRWG (New date)	Open. The panel noted that it had not been possible to address this subject at GRWG-5 but confirmed the action for a later GRWG meeting.
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 of 2010	Closed. Discussed by EP-10 as part of GCC report, which led to new Actions EP-10.09 and EP-10.10.
Action EP-6.5: GRWG to consider the possible recommendations to GRUAN regarding coordinated radiosondes and satellite observations (report to AOPC expected from NOAA/Tony Reale) and report to Executive Panel members.	End of 2011	Closed. Discussed by EP-10 under item 8 (partnership) and subsequently closed.
Action EP-6.15: R. Iacovazzi and J. Lafeuille to finalize the updated operations plan for publication on the GSICS web site.	September 2010	Closed. R. Iacovazzi is regularly updating the Operations plan and making the current version available on the GSICS wiki.

<p>Action EP-7.8: 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.</p>	<p>End of 2011 (New date)</p>	<p>Open. The action is ongoing. GSICS data have been provided to ISCCP for evaluation. ISCCP still needs to clarify its user requirements (e.g. monthly values instead of weekly values?)</p>
<p>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.</p>	<p>June 2011</p>	<p>Closed. GDWG has reviewed the web sites and actions have been assigned to members, and partly completed.</p>
<p>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.</p>	<p>End of 2010</p>	<p>Closed. Action completed and reviewed by GDWG as reported under item 6.</p>
<p>Action EP-8.3: JAXA to present an overview on its calibration activities and plans at an Executive Panel session.</p>	<p>June 2011</p>	<p>Closed. A report on GCOM-W and GCOM-C calibration plans was given by JAXA under item 3.</p>
<p>Action EP-8.4: JAXA and CNES to report at EP-10 on GOSAT-IASI inter-calibration.</p>	<p>June 2011</p>	<p>Closed. A report on GOSAT-IASI inter-calibration was presented by JAXA on 7 June 2011.</p>
<p>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.</p>	<p>June 2011 (New date)</p>	<p>Open.</p>
<p>Action EP-8.12: NIST (R. Datla) to develop a draft vocabulary, as part of a future guide on uncertainty for GSICS.</p>	<p>June 2011 (New date)</p>	<p>Open. The Panel confirmed the interest of terminology guidelines.</p>
<p>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.</p>	<p>End 2010</p>	<p>Closed. Completed by JAXA, new action opened for ISRO only.</p>
<p>Action EP-8.15: The Chairman (M. Goldberg) and Secretariat (J. Lafeuille) to set-up a bi-monthly Executive Panel teleconference.</p>	<p>January 2011 (New date)</p>	<p>Open. Could use either the CENTRA system, offered by EUMETSAT, or the WEBEX system, offered by WMO. Recommended time slot is 11:00 UTC (Summer) or 11:30 UTC (Winter)</p>
<p>Action EP-9.1: ISRO and the GCC to coordinate for the implementation of GEO-to-LEO algorithms by ISRO.</p>	<p>June 2011</p>	<p>Open. Following an ISRO visit to NOAA at the end of 2010,</p>

		there was no feedback from ISRO. Points of contacts are Fred Wu and Fangfang Yu on NOAA side, need to be designated on ISRO side.
Action EP-9.2: M. Goldberg will correspond with A. Hou (NASA) and propose a way forward for developing joint procedures among GSICS and GPM X-Cal when relevant.	June 2011	Open
Action EP-9.3: GDWG to implement a systematic request for user contact information on the GSICS web sites.	June 2011	Closed. See GDWG Report (item 6).
Action EP-9.4: GRWG and GDWG to review the recommendations from the Second GSICS Users Workshop and address them as appropriate.	March 2011	Closed. Was addressed under item 9.
Action EP-9.5: WMO to discuss with EUMETSAT the possibility of adapting the EUMETSAT/GSICS fact sheet to create a "GSICS fact sheet", taking due account of EUMETSAT copyright.	June 2011	Closed. Was discussed further by EP-10 under item 9.4 (Outreach/Fact sheet) and led to new actions.
Action EP-9.6: GCC to investigate the consistency of sensor SRF information among the GCC and the WGCV web sites and inform WGCV with a view to establish web links if appropriate.	June 2011	Open.
Action EP-9.7: GRWG Chair to invite USGS to report on relevance of GSICS for terrestrial applications of Landsat data at GRWG.	March 2011	Closed. Completed at the joint meeting of GRWG/GDWG. The report from USGS was welcomed.
Action EP 9.8: WMO to send a letter to the Director General of IMD inviting IMD to join GSICS.	February 2011	Closed. Completed and responded. IMD is a member.
Action EP-9.9: GRWG Chair to invite Marc Bouvet (ESA/ESTEC) and Jack Xiong (NASA/GSFC) to present DMITRI and MODIS calibration at GRWG	January 2011	Closed. Marc Bouvet (remotely) and Jack Xiong did participate.
Action EP-9.10: M. Goldberg to invite SCOPE-CM to issue a Statement of Needs describing the deliverables expected from GSICS.	June 2011	Closed. SCOPE-CM has responded by a statement of needs to be discussed under item 8.

3. Reports from GPRC and other Members

3.1 **CMA**: N/A

3.2 **CNES**

CNES reported on the operational processing for AIRS/IASI inter-calibration implemented in the IASI Technical Expertise Center (TEC-IASI). It is activated on a regular basis and the obtained results are close to those provided by NOAA/NESDIS. A method for IASI1 and IASI2 intercalibration

during the METOP2 Cal/Val phase was described. It is planned to be validated using IASI and AIRS data.

The report of CNES studies for the designation of stable reference Asian and Australian deserts showed that the sites under investigation were not suitable for long term inter-calibration.

SADE data base has been first opened to several beta-testers; despite limited feedback it has been then decided to open the access to GSICS and CEOS partners. A complete reprocessing of data will be performed in October; before that date, the data base could be accessed on special request to CNES.

3.3 **EUMETSAT**

T. Hewison reported EUMETSAT's contributions to GSICS over the last year. These included:

- The successful submission of the Meteosat/SEVIRI-Metop/IASI inter-calibration products to the GSICS Procedure for Product Acceptance (GPPA) and subsequently entering *demonstration mode*, as well as the provision of a beta tester of these products, independent of the team who developed them;
- The continued provision of a GSICS Data and Products Server, which has been re-structured to allow clearer distinction between products and to allow JMA to upload datasets for re-distribution;
- Restructuring the GSICS pages of the EUMETSAT web site to provide easier navigation to the GSICS products and associated documentation;
- Analysis of NWP bias monitoring statistics to investigate the feasibility of using these for the inter-calibration of pairs of satellite instruments, using the *double differencing* technique;
- Analysis of the SEVIRI Solar Channel Calibration system in support of the development of new GSICS products;
- Arranging to extract SEVIRI observations of the moon and supply these to USGS for application of the lunar calibration using the ROLO-based model;
- Supporting the 2010 Users' Workshop;
- Initiating a new activity aiming to inter-calibrate the archive of data from the whole Meteosat series using an homogenized time-series of HIRS observations.

3.4 **IMD**

The Panel welcomed the intercomparison of Kalpana and NOAA/AVHRR data. It encouraged IMD to go one step further and engage in the inter-calibration of Kalpana against reference instruments following the GSICS agreed methodology. The intercomparison of Kalpana-1 data with AVHRR was based on ISCCP procedure, so that once the procedure is standardized IMD is able to calibrate the old data of INSAT satellites (since 1984) and calibrated data can be used for climatological purposes. The data is available in the Archives on DLTs.

Action EP-10.01: IMD (A.K. Sharma) with the assistance of GCC (R. Iacovazzi) to get hold of the technical information on the GSICS Correction ATBD for GEO-LEO Infrared channels, and implement it for Kalpana.

The Panel noted with interest that the location of the Jaisalmer test site should allow supporting calibration of not only Kalpana and INSAT-3D, but also Meteosat/IODC, Elektro-L1, or FY-2-West, as well as LEO satellites. It encouraged IMD to propose the Jaisalmer test site to the CEOS Working Group on Calibration Validation (WGCV), which maintains an inventory of calibration validation sites worldwide.

Action EP-10.02: M. Goldberg, as GSICS EP Chairman, to communicate to the GEOS WGCV Chairman the recommendation from the GSICS Executive Panel that the Jaisalmer test site of IMD be considered by CEOS WGCV as a candidate cal/val site.

Action EP-10.03: IMD to take the necessary steps to submit the Jaisalmer test site to the CEOS WGCV as a cal/val site.

3.5 **ISRO:** N/A

3.6 **JAXA**

JAXA reported on GCOM Calibration Plans and GOSAT/IASI Cross-Calibration Results responding to Actions EP 8.3 and 8.4, and indicated that calibration mechanisms of both pre-launch and post-launch were installed on SGLI and AMSR2 instruments. The Panel was also informed on the detailed status of GOSAT including early results of GOSAT/IASI cross-calibration. It was also noted that there were some impacts of the earthquake that occurred on 11 March 2011 to the Long-term Plan of JAXA's Earth Observation Programs, but GCOM-W1 would be launched on schedule.

3.7 **JMA**

JMA reported on MTSAT-IR and visible calibration activities. In the report, it was noted that MTSAT-AIRS comparison in night time (1:30 am descending orbit) was affected by midnight stray light, and that the current ATBD did not foresee any particular processing to account for such diurnal perturbations.

Action EP-10.04: GRWG to investigate methods to filter out erroneous data in order to mitigate diurnal effects such as midnight stray light, and recommend an update of the GSICS correction ATBD if relevant.

3.8 **KMA:** N/A

3.9 **NASA**

NASA reported on MODIS Terra and Aqua and AIRS monitoring activities and indicated that both the instruments and the Aqua and Terra satellites should remain functional for several years. Collection 6 reprocessing of Terra/MODIS and Aqua/MODIS are planned to start in Fall 2011 and should address most of the issues identified in the monitoring activities. Having regard to the valuable support provided by MODIS and AIRS instruments to inter-calibration activities, the Panel recommended that NASA extend their operation and ensure a significant overlap with NPP (scheduled for launch by the end of October 2011) and if possible JPSS-1 in order to allow intercomparisons of VIIRS and CrIS with MODIS and AIRS.

Being informed that the CLARREO programme is currently in an extended pre-Phase A formulation period, the Panel reaffirmed the benefit expected from such a mission to provide the necessary traceability of space-based climate observations and to improve instrument inter-calibration, and wished that a decision could be made in the future to reschedule the CLARREO mission.

Action EP-10.05: WMO to communicate to NASA its support to the CLARREO project and express in particular the views of GSICS that a mission such as CLARREO would bring a unique benefit in providing absolute traceability and improved instrument inter-calibration, and therefore increase the value, of a number of other, either research or operational, environmental missions; WMO to express furthermore the expectation that the CLARREO mission be reconsidered for implementation in the coming years.

Patrice Henry highlighted that some advanced features of the CLARREO project (e.g. phase change black body) were extremely valuable and could be considered to improve the traceability of other reference missions such as IASI follow-on. NASA offered to share information with EUMETSAT and CNES on the outcome of these developments.

Action EP-10.06: WMO to emphasize to EUMETSAT and CNES the great benefit gained from IASI as a reference instrument in addition to its direct use for atmospheric sounding, and to

encourage further developments that could reinforce this role of reference instrument and further improve traceability of measurements for IASI follow-on instrument.

NASA also reported on instrument intercomparison activities being performed by the following institutions on the instruments:

- NASA Langley Research Center on the MODIS and GEO instruments using deep convective clouds,
- NASA Goddard Space Flight Center on the MODIS and Hyperion, ETM+, AVHRR, IASI, and AIRS instruments,
- NASA Jet Propulsion Laboratory on the AIRS and IASI instruments, and
- The University of Wisconsin on the AIRS, IASI, MODIS, and GEO instruments.

A possible shift of the SRF of the MODIS 13.9 μm Channel was noted from the results of the University of Wisconsin's comparison between MODIS and AIRS but no physical cause was identified.

Action EP-10.07: NASA and the GRWG to investigate possible root causes for the SRF shift observed on the 13.9 μm Channel of MODIS.

3.10 **NIST:** N/A

3.11 **NOAA (GPRC)**

NOAA GPRC reported on new products, including the GEO-LEO inter-calibration for GOES sounder and LEO-LEO inter-calibrations for AVHRR and MSU/AMSU. A new product on GEO-GEO intercomparison is emerging. Preliminary results show that the GEO-GEO intercomparison can also play an important role, complementary to GEO-LEO inter-calibration to evaluate the radiometric calibration accuracy. An outlier filtering method is proposed to remove the outliers of the collocation data. NOAA also presented some examples of using GEO-LEO inter-calibration to evaluate, identify and diagnose the GOES calibration anomalies, such as correction of spectral response functions, and evaluations of the scan-mirror emissivity correction, the midnight blackbody calibration correction (MBCC) and stray light effect.

Similar midnight effects (MBCC residual and stray light effect) are seen on MTSAT-2 spacecraft.

Action EP-10.08: JMA to analyze the midnight stray light behaviour of MTSAT-2 using as an example the analysis performed by NOAA on GOES-11 (See NOAA /GPRC Report to GSICS EP-10) and report its results to GRWG.

3.12 **ROSHYDROMET:** N/A

3.13 **USGS:** N/A

4. Report from NOAA/GCC

The GCC report focused on GCC progress since November 2010. This report included a description of updates to the GSICS Operation Plan; a summary of GEO-LEO Infrared baseline algorithm and GSICS Procedure for Product Acceptance (GPPA) implementation activities; a discussion of GSICS instrument event log formulation; and summaries of GSICS Quarterly and GSICS meeting support activities. Also part of the presentation was GCC Near-term Goals for 2011. Highlights from the report are given below.

The GSICS Operation Plan was updated to include all actions and recommendations generated during the GSICS Joint GRWG-VI and GDWG-V meeting held 21-25 March 2011 in Daejeon, South Korea. Status updates of actions and recommendations from past meetings were also

recorded. In addition, actions for each GSICS organizational entity were placed on different sheets within the Operation Plan spreadsheet.

The GSICS GEO-LEO Infrared baseline algorithm is currently being applied to GOES-11 to GOES-13, Meteosat-7 and Meteosat-9, MTSAT-1R and MTSAT-2, and FY-2C and FY-2D from 2007/2008 to present. Meanwhile, back-processing inter-calibration of then-operational GEOs with AIRS from 2003 to 2006 is underway at the University of Wisconsin. During the presentation, two issues were discussed regarding the MTSAT-2 water vapour channel spectral response function ambiguity, as well as possible detection of FY-2D non-linearity and stray light issues.

The GCC brief of the GPPA activities revealed progress of potential products in the Demonstration Phase. For the GEO-LEO infrared products proposed by EUMETSAT, JMA, and NOAA, this progress included 1) achieved flow of near-real time data to GSICS Collaboration Servers, 2) acceptance of ATBD and Traceability to SI Standards documents, and 3) documentation of use of associated radiative transfer models and cal/val supporting measurements. These proposed products are also in various stages of being tested by two or more potential users of product, and they are expected to reach pre-operational phase by August 2011. Another proposed product in Demonstration Phase of the GPPA is the Patmos-X AVHRR solar reflective channel corrections based on MODIS. This proposed product has achieved flow of near-real time data to GSICS Collaboration Server at NOAA, has submitted ATBD and Traceability to SI Standards documents, and is under testing by two or more potential users of the product.

The presentation of a proposed GSICS instrument event log was motivated by Action GDWG03_06, which states that "all GSICS partners shall propose contents of the performance monitoring pages which they intend to display on their own web sites." The GCC update revealed that NOAA has up-and-running monitoring systems for GEO and LEO satellites, and that attempts have been made during the course of 2009 to solicit instrument monitoring or anomaly information web sites from members. Due to a lack of GSICS member response to this Action, the GCC asked for guidance from the GSICS Executive Panel regarding a way forward for Action GDWG03_06. The GCC also presented in its update minutes from recent GSICS meetings regarding the possible creation of instrument event logs, which would work in conjunction of instrument performance monitoring tools.

The GCC showed that it continues to support GSICS outreach through its seasonal periodical GSICS Quarterly, as well as its participation in the GSICS Users' Workshop. In addition, the GCC also faithfully participates in the GSICS GRWG and GDWG face-to-face and Centra web meetings.

At the end of their briefing, the GCC presented their near-term 2010-2011 goals. These goals include shepherding all four current Demonstration Phase potential products to Pre-Operational Phase and beyond. It also included getting the following new proposed product submissions: GSICS Correction for CMA VISSR IR Channels based on IASI; GSICS Correction for EUMETSAT SEVIRI, MTSAT Imager and GOES Imager solar reflective channels based on MODIS; and GSICS Correction for MSU/AMSU-A data based on simultaneous nadir overpasses. The GCC also plans to continue to coordinate efforts to establish the GSICS baseline algorithm at NOAA GPRC. The GCC plans to hold a web meeting with the GRWG and GDWG regarding instrument performance monitors and event logs to get feedback on prototype designs. The GCC also plans to continue to create and distribute GSICS Quarterly to the GSICS community, make changes to the GCC web site based on recommendations made at the Joint meeting, and proposed to support the GSICS 3rd Users Workshop (6 September 2011), QA4EO Workshop (18 - 20 October 2011), and GSICS Web Meetings.

The panel welcomed the proposal for a centralized monitoring of instrument events that would greatly improve the accessibility of such information. This would respond, for one part, to the request from CGMS and would require full collaboration of CGMS satellite operators to share this information and feed it in a timely manner. The Panel underlined that another important aspect of instrument monitoring was to provide time series of key housekeeping parameters (e.g. ΔT , gain, black body temperature, local oscillator temperature) as provided by NOAA in the Integrated Calibration Validation System website.

Action EP-10.09: GCC (R. Iacovazzi) to formulate the proposal for a centralized event monitoring log in the form of a CGMS working paper for submission to CGMS-39 in October 2011 by Mitch Goldberg, on behalf of GSICS. It is recommended to circulate the paper to CGMS members well in advance of the plenary meeting (early September) and invite members to provide feedback at the meeting.

Action EP-10.10: Executive Panel members to review the NOAA instrument performance monitoring provided on the STAR Integrated Calibration Validation System (ICVS): http://www.star.nesdis.noaa.gov/smcd/spb/icvs/satMonitoring_n19_amax.php, (also described in CGMS-38 NOAA-WP-21), to provide comments, and to indicate whether they would be ready to publish equivalent information for the instruments they are operating.

5. GRWG Report on current and planned scientific activities

5.1 *Baseline Algorithm Discussion*

The Panel discussed the concept of baseline algorithm on the basis of the report of the GCC, on one hand, and of the synthesis presented by the GRWG Chair, on the other hand. It was acknowledged that the implementation of the GEO-LEO Infrared inter-calibration by the various GPRCs was converging and that, when the products will reach the operational stage, there would be no significant differences between the implementation of the algorithm by the GPRCs and the baseline algorithm run by the GCC. However, as concerns inter-calibration of solar band channels, multiple methods would be used and the implementation of the GSICS correction is likely to be different depending on the respective fields of view of the spacecraft, which raises the issue of to what extent a difference between a GPRC algorithm and the baseline algorithm is acceptable.

The Panel stressed that the priority for operational production was to ensure consistency of products, rather than consistency of methods. This consistency was the most likely to be achieved if the product quality is optimized, therefore, within the range of GSICS approved methods and subject to the GPPA, a GPRC should not “penalize” itself in refraining to use calibration methods which are not applicable to other GPRC if it enables a better quality.

As concerns the baseline algorithm, its priority is on consistency of processing with the same algorithm for all spacecraft. The main purpose is to provide the GPRCs with a robust reference with which the GPRC production can be compared. Because of its constraint to apply the same algorithm to all, the baseline algorithm might be sub-optimal; although the differences with the operational results are expected to be small, it is anticipated that the results of the baseline algorithm could be slightly lower quality than the operational products generated by the GPRCs if the latter are properly optimized.

The Panel clarified that the possibility that the production of a GPRC be taken over centrally by the GCC was not relevant in this discussion. Whilst such possibility might be helpful as a back-up measure in exceptional circumstances, it is not in line with the guiding principles of GSICS, which is a joint undertaking of satellite operators developing and sharing best practices to strengthen their collective capabilities to monitor and calibrate their satellite instruments.

5.2 *Traceability*

The Panel welcomed the traceability statement that was prepared by GRWG members to provide evidence to demonstrate the suitability of the hyperspectral spectrometers, AIRS and IASI as inter-calibration references. This discusses the various pre-flight and in-orbit tests that have been performed on these instruments. Particular attention is paid to their relative stability, as this is critical if they are to be used inter-changeably. Various methods are described which show that AIRS and IASI offer consistent radiometric calibration – each with uncertainties $\sim 0.1K$ ($k=1$). The statement also discusses the traceability chain of AIRS and IASI to the SI international reference standards, which is needed to achieve the long-term goal of GSICS.

Action EP-10.11: GRWG Chair to propose to give a presentation on GSICS traceability approach to WGCV/IVOS with a view to seek feedback from WGCV/IVOS on this matter.

5.3 ***Uncertainty***

The Panel welcomed the work done by EUMETSAT to evaluate the uncertainty of Meteosat-IASI corrections and recommended to pursue similar evaluations by all GPRCs for their GEO-LEO infrared products. It was noted that the evaluation would be different for other product types. The Panel recalled the open action of NIST to develop a terminology and a guide on uncertainty evaluation for GSICS; and it confirmed the relevance of this action.

Action EP-10.12: GPRCs to undertake drafting an evaluation of uncertainty of the GEO-LEO Infrared product, taking advantage of the work done by EUMETSAT for its product.

Action EP-10.13: NASA to designate an expert from the NASA/JPL IRS team to participate in GRWG activities on traceability.

5.4 ***Multiple references***

The GRWG Chair outlined the metrological problems of using multiple references in the development and application of inter-calibration products, and briefed the Panel on a proposed solution, which has been accepted in principle by the GRWG. That is to define only one instrument as *the* reference, while regarding others as transfer standards, through which the calibration is transferred by defining *delta correction* functions. In the case of GEO-LEO IR products, Metop-A/IASI is currently defined as the reference and delta functions need to be developed based on comparisons of AIRS and IASI to allow AIRS comparisons to be included in the GSICS Corrections.

6. **GDWG report on GSICS data management issues**

The GDWG Chairman presented the latest news and accomplishments of the Data Working Group. He began with introduction of the new Working Group members who were nominated by their organizations since the last EP meeting. He proceeded with the action items update. All GDWG04 action items were closed, with majority of them being successfully completed. Several action items needed refocusing due to the changes since they were introduced so these were re-assigned as new GDWG05 action items. There was already progress on GDWG05 actions with about one-third of them being already completed.

The work on unifying bias monitoring web pages content and disposition among GPRCs resulted in a recommendation to create a centralized, interactive web page where plots for all GPRCs will be displayed. For now, only the time series of brightness temperature biases for standard scenes are to be available for plotting from this new web page. The development of such a web page requires very specific development skills so currently the effort is undergoing to scope the requirements and identify who among the GPRCs may be able to carry out this work. In the meantime, GPRCs will be asked to standardize the format of their plots on their current web pages.

The Working Group has developed a netCDF template for the current GEO-LEO IR products which will further standardize the content of these files. It is a requirement for the GEO-LEO IR products in the Demonstration phase to adopt the template in order to transition to the Preoperational phase.

Update on the GSICS data servers mentioned that the two currently functional servers, at EUMETSAT and NOAA, are receiving regular file uploads. The work has just began on standardizing configuration of the THREDDS software which is responsible with providing users with data access.

In closing remarks, the Chairman listed the current issues affecting the Working Group and main future goals. The two most important current issues for the Working Group are availability of resources to carry out agreed tasks and the need to identify real GSICS data users and determine

their needs. The main goals for the period till the 2012 Joint Working Group meeting are: supporting GSICS products in the product acceptance procedure, finishing common THREDDS configuration, continuing the work on the bias monitoring web page design, and interfacing with the WMO Information System (WIS).

Action EP-10.14: WMO (Nils Hettich), GDWG Chair (Aleksandar Jelenak), and EUMETSAT (Peter Miu) to evaluate the proposal to develop centrally an interactive page for instrument bias monitoring (technical complexity, effort needed, security constraints, sustainability) and report to the Executive Panel with recommendations for a way forward.

In the short term, all GPRCs should strive to provide at least static plots with a pre-determined selection of variables and scales. Advantage should be taken of the User Workshop (September 2011) to seek feedback on the proposed selection of graphic plots.

Action EP-10.15: GDWG Chair to ensure that the workshop is invited to provide feedback on the proposed bias monitoring interfaces.

The Panel discussed the possibility and need to archive all collocated datasets in order to facilitate further reprocessing of GSICS corrections, as initially envisaged.

Action EP-10.16: GPRCs to report to GDWG Chair (through their GDWG representative) on details of collocated datasets generated on a regular basis (what instrument pairs, file size, format, etc) with a view to evaluate the feasibility of archiving this data and making it available in an harmonized fashion.

7. GSICS user interactions

7.1 *outcome of 2nd Users' Workshop (Related to Action EP-9.4)*

The Panel noted a request to GSICS to monitor the navigation, which has not been considered so far. For the time being, the Panel considered that this new activity was not among the GSICS priorities, and recommended to rely on the work done by WGCV in this area.

Action: EP-10.17: GRWG Chair to ensure that the GRWG is kept abreast of the progress made by WGCV/IVOS on navigation issues

7.2 *SCOPE-CM Statement of needs*

The Panel welcomed the fact that SCOPE-CM had started to formulate a "Statement of Needs" to GSICS in response to GSICS Action EP-9.10. It noted that the preliminary version of this statement included requests for: calibration coefficients and corrections, navigation monitoring and corrections, Spectral Response Functions, derived analyses such as the impact of satellite orbit drift or diurnal cycle. Some of the requests were fully within the scope of GSICS, others not. The Panel acknowledged that SCOPE-CM was considering to refine this early version and to provide a revised version in the coming months. The Panel assigned Mitch Goldberg and Tim Hewison to liaise with the SCOPE-CM Pilot Projects in order to get more insight into the needs and help SCOPE-CM to refine its statement.

Action: EP-10.18: NOAA (Mitch Goldberg) and EUMETSAT (Tim Hewison) to liaise with the SCOPE-CM Pilot Projects (1), (3) and (5) respectively, in order to better understand their needs and facilitate the finalization of the Statement of Needs.

A.K. Sharma informed the Panel of UTH product generated on a routine basis by IMD from INSAT-3A (93.5 °E) and Kalpana-1 (74°E) data, with inter-comparison of the product in the overlapping area. It was recommended to inform the SCOPE-CM Pilot Project on UTH of this capability.

7.3 *User registration issues (Related to Action EP 9.3)*

Aleksandar Jelenak presented a proposal for the official GSICS user registration and messaging system. This system's purpose is to provide GSICS with the ability to account who its users are and collect some very basic contact information for future communication with them. The proposed system is using the services of an email marketing company and consequently offers a full range of capabilities, including a sign-up form. A draft design of the GSICS sign-up was shown and its features discussed. The proposal calls for making this system ready in time for the User's Workshop in September of 2011. The Panel welcomed the proposal from the GDWG Chair to rely on a "free-forever" system for user registration.

Action EP-10.19: GDWG Chair to send the proposed texts of the registration form and emails for review (due date: 15 June 2011, due date for reply: 15 July 2011)

Action EP-10.20: GCC to implement the user registration system as proposed, as far as possible in advance of the 3rd User Workshop.

7.4 ***Terms of Use for products – Acknowledgements, etc.***

The Panel agreed that the delivery of GSICS information should be accompanied by appropriate mentions delivering three main messages:

- GSICS products are freely available;
- GSICS is not responsible for the consequences of using these products;
- Credit must be given to GSICS when using GSICS products for operational, commercial or scientific purpose.

Action EP-10.21: Executive Panel members to review the existing "disclaimers" displayed on the GCC web site and provide guidance to the GCC (R. Iacovazzi) regarding the "Disclaimers" and "Terms of Use" needed for GSICS products.

Action EP-10.22: GDWG Chair to propose updated "Disclaimers" and "Terms of Use" to be displayed on all GSICS web sites, including the GPRC web sites, the GCC, and the data servers, in the pages used to access technical information.

8. **GSICS partnerships**

8.1 ***Coordination with CEOS WGCV IVOS subgroup***

The CEOS Working Group on Calibration and Validation (WGCV) has subgroups for Microwave, for QA4EO, and for Infrared and Visible Optical Sensors (IVOS). Since IVOS is dealing with inter-calibration methodologies, metrology and standards, which is of relevance to GSICS, interaction among the two groups is encouraged, and overlap is to be avoided. The participation of the WGCV Chair in the GSICS Executive Panel, and the GSICS EP Chair in WGCV, should help to ensure that WGCV and GSICS have a complementary focus that builds on each other's. The core activity of GSICS is operational inter-calibration which is and should remain its area of strength; WGCV has a strong experience in other areas such as pre-flight calibration, cal/val sites and field campaigns. If an inter-calibration activity is going to be developed by IVOS, IVOS should be encouraged to do it in collaboration with GSICS. It would be helpful to share information on our respective practices (e.g. ATBD templates) with a view to adopt them if relevant, or adapt them as appropriate. Finally, it was noted that cross-participation of several experts in both GRWG and WGCV/IVOS was contributing to the synergy among the two groups.

Action EP-10.23: GSICS Executive Panel Chair to communicate with WGCV Chair the understanding of the respective focus of GSICS and of WGCV and the proposed topics of cooperation.

8.2 ***Cooperation with GRUAN***

The Panel noted the conclusion of the Joint GRWG-GDWG about the relevance of GRUAN for GSICS. It confirmed that GRUAN is an important activity, with the primary benefit for GSICS to allow validation of the use of GSICS corrections for Level 2 products. This would be mainly in the framework of downstream communities like SCOPE-CM and in the framework of CAL-VAL activities for new systems. This would require a three-way interaction with those groups. GSICS also sees the benefit of GRUAN to provide critical datasets to improve radiative transfer model development.

GSICS acknowledges the potential benefit of coordinating radiosonde and satellite observations in the framework of post-launch cal/val campaigns of new satellite instruments. This should be discussed on a case-by-case basis by agencies bilaterally with GRUAN. With this statement, the Panel agreed to close Action EP 6.5.

Furthermore, GSICS could benefit to GRUAN as a provider of “traveling references”. In this respect, Jo Schmetz informed the Panel that the Working Group on Atmospheric Reference Observations (WG-ARO) had been established in 2006 to support the implementation of GRUAN. He reported that the WG-ARO Terms of Reference were currently under review and GCOS was seeking comments. The Panel supported the suggestion by Jo Schmetz to include in the Terms of Reference, under “Governance”, the following task: *“To advise and direct the GRUAN with regard to interaction and cooperation with relevant international initiatives, notably the Global Space-based Inter-calibration System (GSICS) “.*

8.3 **Cooperation with GPM X-Cal**

The Panel noted that Chris Ruf, University of Michigan, represents the GPM X-Cal in the GSICS Microwave subgroup.

9. **GSICS outreach**

9.1 **GSICS Quarterly**

The GSICS Quarterly is a very much appreciated vector of information, thanks to its Chief Editor, Bob Iacovazzi. GSICS members are encouraged to submit contributions to the Editor (Bob.Iacovazzi@noaa.gov) on their inter-calibration activities and related subjects.

9.2 **Users’ Workshops – 2011 and beyond**

The workshop will be held in Oslo, Norway in the context of the EUMETSAT Meteorological Satellite Conference. It is scheduled on 6 September 2011 from 13:00 to 17:00, including a Poster session. The Panel nominated the GRWG Chairman to chair the workshop, and Jérôme Lafeuille as Rapporteur, assisted by Marianne Koenig, Fred Wu and Bob Iacovazzi. The Workshop Organizing Committee will comprise: Tim Hewison, Fred Wu, Bob Iacovazzi, Marianne Koenig, Jérôme Lafeuille, and other interested GSICS members.

Action EP-10.24: GSICS Executive Panel members willing to contribute to the preparation of the GSICS User Workshop to nominate a representative to the Workshop Organization Committee and inform Tim Hewison accordingly.

9.3 **Special issue of scientific journal**

The Panel warmly welcomed the suggestion from the Joint GRWG-GDWG to prepare a special issue on “Inter-calibration of Satellite instruments” in a scientific journal such as IEE Transactions on Geoscience and Remote Sensing, Remote Sensing of the Environment, or Canadian Journal for Remote Sensing. Deadline for submission of manuscripts would be December 2011 for a publication by November 2012. The Panel furthermore suggested that GSICS be referred to explicitly, e.g. on the front cover or through a short introduction.

Action EP-10.25: Tim Hewison, Gyanesh Chander and Xiangqian (Fred) Wu to proceed with the preparation of a special issue of the journal as proposed to the Executive Panel.

9.4 **GSICS fact sheet**

In the context of GSICS EP Action 9.5, while recognizing that every GSICS member should feel free to describe its own contribution to GSICS with its own words, the Executive Panel recommended that, if new communication material is produced to describe the collective GSICS undertaking, such material be circulated to the GSICS Panel members for review. In this regard, the Panel noted that the EUMETSAT fact sheet had been withdrawn. It encouraged WMO to develop a GSICS fact sheet in consultation with Executive Panel members.

Jo Schmetz informed the Panel that EUMETSAT, as the CGMS Secretariat, had led the development of a new CGMS web site (www.cgms-info.org) and that this new web site included a short description of GSICS.

Action EP-10.26: J. Schmetz to circulate the GSICS description in the CGMS web site to Executive Panel members for comments. (15 June 2011, comments by 15 July 2011).

Action EP-10.27: WMO (J. Lafeuille) to circulate the proposed GSICS fact sheet to Executive Panel members for comments (October 2011).

9.5 **Conferences**

The Second Asia/Oceania Meteorological Satellite User's Conference will be held in Tokyo from 6 to 9 December 2011. Yoshihiko Tahara will report on GSICS activities at the conference and communicate with users attending the conference.

10. **GSICS Operations Plan for 2011/2012**

The Panel took note of the new structure of the GSICS Operations Plan (<https://gsics.nesdis.noaa.gov/wiki/bin/view/Development/GsicsOperationsPlan>) which is aligned with the overarching priority actions identified by the Panel at its eighth session. It noted that the Operations Plan included one overall sheet consolidating all actions and specific sheets for the respective actions of GCC, GDWG, GRWG, GPRC, or the Executive Panel. It congratulated the GCC for maintaining the Operations Plan. It considered it in a very good shape and agreed to address it in more details at its next teleconference.

Action EP-10.28: All Executive Panel members to review the Operations Plan (once updated with the actions from the EP-10) and provide feedback at the next teleconference.

11. **GSICS in the future CGMS and GOS baseline (Related to outcome of ET-SAT-6)**

Jérôme Lafeuille informed the Panel on the update of the CGMS baseline for the space-based Global Observing system. This baseline will describe the commitments of CGMS Member agencies to support the GOS. It was first discussed at CGMS-38 and is being finalized to be submitted for adoption to CGMS-39 in October 2011. He pointed out that the baseline contained a list of missions and addressed the following cross-cutting aspects: contingency planning, inter-calibration, data availability and dissemination. The Executive Panel was invited to review the statement on inter-calibration and approved the following text.

Instruments should be inter-calibrated on a routine basis against reference instruments or calibration sites. The routine inter-calibration and corrections shall be performed in accordance with relevant standards agreed by the Global Space-based Inter-calibration System (GSICS).

The Panel furthermore confirmed that it was important to include statements along the same lines in the Manual on the GOS and recommended the following text:

1.5 Inter-calibration system

Instruments should be inter-calibrated on a routine basis against reference instruments or calibration targets, using common methodologies.

...

2.5 Provisions for inter-calibration

2.5.1 At least two Infrared and two high-quality Visible and, ultimately, UV and Microwave instruments should be maintained in LEO orbits to provide reference measurements for inter-calibration of operational instruments in geostationary or LEO orbit. Advantage should be taken of satellite collocation to perform instrument inter-calibration.

2.5.2 A range of ground-based calibration targets should be maintained, with precise characterization, in order to support routine Visible channel calibration operations.

Action EP-10.29: WMO (J. Lafeuille) to communicate to CGMS the proposed statement on inter-calibration to be included in the new CGMS baseline for the space-based GOS.

12. Internal matters

12.1 *Format of future joint working group meetings*

The Panel welcomed the suggestion from Aleksandar Jelenak that future Joint Working Group meetings be organized in starting with parallel “working group workshops” followed by the joint working group meeting.

12.2 *GSICS Documentation Plan*

No discussion.

12.3 *GSICS Members representation in GRWG and GDWG*

The Panel agreed to close Action 8.14 and replaced it by a new action.

Action EP-10.30: ISRO to nominate points of contacts for the GSICS working groups (GRWG and GDWG).

12.4 *Evolution of GSICS Membership*

No discussion.

12.5 *Status of GSICS teleconferences*

Web meetings are regularly held by the GRWG, sometimes jointly with GDWG. This way of collaborative work is strongly encouraged. The Executive Panel will consider holding such a web conference before its eleventh session.

13. Any other business

- *CIMO Guide*

The Panel agreed a reference document such as the Guide on Instruments and Methods of Observation (CIMO Guide) was an important way to spread good practices. GSICS should contribute to the CIMO Guide for satellite calibration aspects. Such a contribution could build on existing material; in particular as a lot of useful reference information is contained in the report on the workshop on [Achieving Satellite Calibration for Climate Change \(ASIC3\)](#) published by NOAA/NESDIS in 2007. NOAA volunteered to support this effort.

Action EP-10.31: In the light of the material readily available from the ASIC3 report, WMO to send a more precise request to NOAA to contribute to the section on Calibration and Validation issues in the CIMO Guide update.

Jo Schmetz recommended that the Calibration section should also address instrument characterization.

- *Use of “Accuracy” and “Uncertainty” in GCOS Implementation Plan*

Mitch Goldberg pointed out the importance of a precise understanding of the concepts of “Accuracy” and “Uncertainty”. He drew the attention of the Panel to the risk of confusion arising from improper definitions of these terms in the Draft Satellite Supplement to the new GCOS Implementation Plan. It was recalled that the Bureau International des Poids et Mesures (BIPM) was the internationally recognized reference for the definition of such terms.

14. Summary of decisions and actions

The Panel reviewed the list of actions presented by the Secretariat. The consolidated list of new actions and outstanding actions from previous meetings is provided in Annex 3.

15. Date and place of next meetings

The Panel agreed to hold its next meeting tentatively on Sunday 2 October, afternoon, in St Petersburg, Russian Federation before the start of CGMS-39. For subsequent meetings, it was agreed that the organizations willing to host the meetings should make a firm proposal by the time of the CGMS meeting.

Action EP-10.32: GSICS members willing to host future Executive Panel meetings to submit a firm proposal to WMO in advance of, or at the latest by the time of, the CGMS plenary meeting.

In conclusion, the Chairman and the Secretariat thanked all participants for their contribution to what had been a very productive meeting. Particular thanks were expressed to the GDWG, the GRWG, the GCC, and to the scientific and technical teams in the GPRCs for their hard work that made the success of GSICS. The meeting was adjourned on Wednesday, 9 June 2011, at 13:45.

LIST OF PARTICIPANTS

Mr James Butler
Code 614.4
Goddard Space Flight Center
National Aeronautics and Space
Administration
GREENBELT, MD 20771
United States of America
Tel: +1 (301) 614 5942
Fax: +1 (301) 614 6695
E-mail: james.j.butler@nasa.gov

Mr Mitchell D. Goldberg (Chairman)
Chief, Satellite Meteorology and
Climatology Division
E/RA2, Rm 711 WWB
NOAA/NESDIS
5200 Auth Road
CAMP SPRINGS, MD 20746-4304
United States of America
Tel: +1 (301) 763 8078 ext. 125
Fax: +1 (301) 763 8580
Email: Mitch.Goldberg@noaa.gov

Mr Patrice Henry
Centre spatial de Toulouse
18 avenue Edouard Belin
31401 TOULOUSE Cedex 9
France
Tel: +33 (5) 61 27 47 12
Email: patrice.henry@cnes.fr

Dr Tim Hewison
EUMETSAT
Eumetsat-Allee 1
D-64295 DARMSTADT
Germany
Tel: +49 (6151) 807 3640
Email: Tim.Hewison@eumetsat.int

Dr Aleksandar Jelenak
Center for Satellite Applications and
Research (STAR)
NOAA/NESDIS
5200 Auth Road
CAMP SPRINGS, MD 20746-4304
United States of America
Email: Aleksandar.Jelenak@noaa.gov

Dr Ashok Kumar Sharma
India Meteorological Department
Mausam Bhawan
Lodi Road
NEW DELHI 110 003
India
Tel: +91 (11) 2462 6021
Mob: +91 (98) 1057 2203
Fax: +91 (11) 2462 3220
+91 (11) 2464 2249
Email: aksimd@hotmail.com
aksimd@gmail.com

Dr Johannes Schmetz
EUMETSAT
Eumetsat-Allee 1
D-64295 DARMSTADT
Germany
Tel: +49 (6151) 70 7590
Fax: +49 (6151) 80 7555
Email: Johannes.Schmetz@eumetsat.int

Mr Yoshihiko Tahara
Head,
Satellite Engineering Division
Meteorological Satellite Center
3-235 Nakakiyoto, Kiyose
TOKYO 100-8122
Japan
Tel: +81 (42) 493 4970
Fax: +81 (42) 292 2433
Email: y-tahara@met.kishou.go.jp

Mr Kazuo Umezawa
Japan Aerospace Exploration Agency
Tsukuba Space Center
2-1-1 Sengen, Tsukuba shi
IBARAKI 305-8505
Japan
Tel: +81 (50) 3362 2669
Fax: +81 (29) 868 2961
Email: umezawa.kazuo@jaxa.jp

Mr Jack Xiong
Goddard Space Flight Center
NASA/GSFC
GREENBELT, MD 20771
United States of America
Email: Xiaoxiong.Xiong-1@nasa.gov

BY TELEPHONE

Mr Robert Iacovazzi
Center for Satellite Applications and
Research (STAR)
National Environmental Satellite, Data, and
Information Service (NESDIS)/NOAA)
5200 Auth Road
CAMP SPRINGS, MD 20746-4304
United States of America
Tel: +1 (301) 763 8346 x358
+1 (301) 286 7856 (Tues, Wed)
Fax: +1 (301) 763 8580
Email: Bob.Iacovazzi@noaa.gov

Dr Kei Shiomi
Japan Aerospace Exploration Agency
Tsukuba Space Center
2-1-1 Sengen, Tsukuba shi
IBARAKI 305-8505
Japan
Tel: +81 (50) 3362 3542
Fax: +81 (29) 868 2961
Email: shiomi.kei@jaxa.jp

Mr Fred Wu
Center for Satellite Applications and
Research (STAR)
NOAA/NESDIS
E/RA2, Office 7214, 5200 Auth Road
CAMP SPRINGS, MD 20746-4304
United States of America
Tel: +1 (301) 763 8136 ext. 138
Fax: +1 (301) 763 8580
Email: Xiangqian.Wu@noaa.gov

Ms Fangfang Yu
Center for Satellite Applications and
Research (STAR)
NOAA/NESDIS
E/RA2, Office 7214, 5200 Auth Road
CAMP SPRINGS, MD 20746-4304
United States of America
Email: Fangfang.Yu@noaa.gov

SECRETARIAT

Mr Jérôme Lafeuille
Chief, Space-based Observing
System Division
WMO Space Programme
OBS Department
World Meteorological Organization
7 bis, Avenue de la Paix
Case Postale 2300
CH-1211 GENEVA 2
Switzerland

Tel: +41 (22) 730 82 28
Fax: +41 (22) 730 80 21
E-mail: JLafeuille@wmo.int

Mr Nils Hettich
WMO Space Programme
OBS Department
World Meteorological Organization
7 bis, Avenue de la Paix
Case Postale 2300
CH-1211 GENEVA 2
Switzerland
Tel: +41 (22) 730 82 92
Fax: +41 (22) 730 80 21
Email: NHettich@wmo.int

PROVISIONAL AGENDA

1. **Opening of the session**
 - Introduction and welcome
 - Adoption of the agenda
2. **Review of outstanding actions from previous EP meetings**
3. **Reports from GPRC and other Members**
 - 3.1 CMA
 - 3.2 CNES
 - 3.3 EUMETSAT
 - 3.4 IMD
 - 3.5 ISRO
 - 3.6 JAXA
 - 3.7 JMA
 - 3.8 KMA
 - 3.9 NASA
 - 3.10 NIST
 - 3.11 NOAA (GPRC)
 - 3.12 Roshydromet
 - 3.13 USGS
4. **Report from NOAA/GCC**
 - GPPA and related activities
 - Status and utilization of Baseline Algorithm
 - Other GCC issues
5. **GRWG Report on current and planned scientific activities**
 - 5.1 Baseline Algorithm Discussion
 - 5.2 IASI/AIRS traceability
 - 5.3 CLARREO and TRUTHS mission concepts - relevance to GSICS
 - 5.4 Instrument events logs (Related to Action EP 6.1)
 - 5.5 Draft Guide on Uncertainty (Related to Action EP 8.12)
 - 5.6 Other GRWG issues
6. **GDWG report on GSICS data management issues**
 - Data and metadata, Data servers,
 - Data and product accessibility (Related to Action EP 8.2)
 - Websites, GDWG membership and members engagement
7. **GSICS user interactions**
 - 7.1 Outcome of 2nd Users' Workshop (Related to Action EP 9.4)
 - 7.2 SCOPE-CM Statement of needs (Related to Action EP 9.10)
 - 7.3 User registration issues (Related to Action EP 9.3)
 - 7.4 Code sharing with users
 - 7.5 Terms of Use for products – Acknowledgements, etc.
8. **GSICS partnerships**
 - 8.1 Coordination with CEOS WGCV IVOS subgroup – roles, responsibilities, alignment of stated aims
 - 8.2 Cooperation with GRUAN (Related to Action EP 6.5)
 - 8.3 Cooperation with GPM X-Cal (Related to Action EP 9.2)

- 9. GSICS outreach**
 - 9.1 GSICS Quarterly
 - 9.2 Users' Workshops – 2011 and beyond
 - 9.3 Special Issue of journal
 - 9.4 GSICS fact sheet (Related to Action EP 9.5)
- 10. GSICS Operations Plan for 2011/2012** (Related to EP Action 6.15)
- 11. GSICS in the future CGMS and GOS baseline** (Related to outcome of ET-SAT-6)
- 12. Internal matters**
 - 12.1 Format of future joint working group meetings
 - 12.2 GSICS Documentation Plan (Related to Action EP 8.10)
 - 12.3 GSICS Members representation in GRWG and GDWG (Re. Action EP 8.14)
 - 12.4 Evolution of GSICS Membership
 - 12.5 Status of GSICS teleconferences (Related to Action EP 8.15)
- 13. Any other business**
 - Potential GSICS Contribution to the CIMO Guide
 - Use of "Accuracy" and "Uncertainty" concepts in the GCOS Implementation Plan
- 14. Summary of decisions and actions**
- 15. Date and place of next meetings**

LIST OF ACTIONS (as of 8 June 2011)**1. Outstanding Actions from Previous Meetings**

Action	New due date	Status as of June 2011
Action EP-3.6: GCC (F. Weng) will prepare a presentation on absolute calibration for MW channels at GRWG.	Next GRWG	Open.
Action EP-7.8: 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.	End of 2011 (New date)	Open. The action is ongoing. GSICS data have been provided to ISCCP for evaluation. ISCCP still needs to clarify its user requirements (e.g. monthly values ?)
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.	June 2011 (New date)	Open.
Action EP-8.12: NIST (R. Datla) to develop a draft vocabulary, as part of a future guide on uncertainty for GSICS.	June 2011 (New date)	Open. The Panel confirmed the interest for such a guide.
Action EP-8.15: The Chairman (M. Goldberg) and Secretariat (J. Lafeuille) to set-up a bi-monthly Executive Panel teleconference.	January 2011 (New date)	Open. Could use either the CENTRA system, offered by EUMETSAT, or the WEBEX system, offered by WMO. Recommended time slot is 11:00 UTC (Summer) or 11:30 UTC (Winter)
Action EP-9.1: ISRO and the GCC to coordinate for the implementation of GEO-to-LEO algorithms by ISRO.	June 2011	Open. Following an ISRO visit to NOAA at the end of 2010, there was no feedback from ISRO. Points of contacts are Fred Wu and Fangfang Yu on NOAA side, need to be designated on ISRO side.
Action EP-9.2: M. Goldberg will correspond with A. Hou (NASA) and propose a way forward for developing joint procedures among GSICS and GPM X-Cal when relevant.	June 2011	Open.
Action EP-9.6: GCC to investigate the consistency of sensor SRF information among the GCC and the WGCV websites and inform WGCV with a view to establish web links if appropriate.	June 2011	Open.

2. New actions from GSICS EP-10

<p>Action EP-10.01: IMD (A.K. Sharma) with the assistance of GCC (R. Iacovazzi) to get hold of the technical information on the GSICS Correction ATBD for GEO-LEO Infrared channels, and implement it for Kalpana.</p>	End of 2011
<p>Action EP-10.02: M. Goldberg, as CSICS EP Chairman, to communicate to the GEOS WGCV Chairman the recommendation from the GSICS Executive Panel that the Jaisalmer test site of IMD be considered by CEOS WGCV as a candidate cal/val site.</p>	July 2011
<p>Action EP-10.03: IMD to take the necessary steps to submit the Jaisalmer test site to the CEOS WGCV as a cal/val site.</p>	September 2011
<p>Action EP-10.04: GRWG to investigate methods to filter out erroneous data in order to mitigate diurnal effects such as midnight stray light, and recommend an update of the GSICS correction ATBD if relevant.</p>	September 2011
<p>Action EP-10.05: WMO to communicate to NASA its support to the CLARREO project and express in particular the views of GSICS that a mission such as CLARREO would bring a unique benefit in providing absolute traceability and improved instrument inter-calibration, and therefore increase the value, of a number of other, either research or operational, environmental missions; WMO to express furthermore the expectation that the CLARREO mission be reconsidered for implementation in the coming years.</p>	August 2011
<p>Action EP-10.06: WMO to emphasize to EUMETSAT and CNES the great benefit gained from IASI as a reference instrument in addition to its direct use for atmospheric sounding, and to encourage further developments that could reinforce this role of reference instrument and further improve traceability of measurements for IASI follow-on instrument.</p>	August 2011
<p>Action EP-10.07: NASA and the GRWG to investigate possible root causes for the SRF shift observed on the 13.9 μm Channel of MODIS.</p>	March 2012
<p>Action EP-10.08: JMA to analyze the midnight stray light behaviour of MTSAT-2 using as an example the analysis performed by NOAA on GOES-11 (See NOAA /GPRC Report to GSICS EP-10) and communicate its results to GRWG.</p>	December 2011
<p>Action EP-10.09: GCC (R. Iacovazzi) to formulate the proposal for a centralized event monitoring log in the form of a CGMS working paper for submission to CGMS-39 in October 2011 by Mitch Goldberg, on behalf of GSICS. It is recommended to circulate the paper to CGMS members well in advance of the plenary meeting (early September) and invite members to provide feedback at the meeting.</p>	Early September 2011

<p>Action EP-10.10: Executive Panel Members to review the NOAA instrument performance monitoring provided on the STAR Integrated Calibration Validation System (ICVS): http://www.star.nesdis.noaa.gov/smcd/spb/icvs/satMonitoring_n19_amax.php, (also described in CGMS-38 NOAA-WP-21), to provide comments, and to indicate whether they would be ready to publish equivalent information for the instruments they are operating.</p>	September 2011
<p>Action EP-10.11: GRWG Chair to propose to give a presentation on GSICS traceability approach to WGCV/IVOS with a view to seek feedback from WGCV/IVOS on this matter.</p>	March 2012
<p>Action EP-10.12: GPRCs to undertake drafting an evaluation of uncertainty of the GEO-LEO Infrared product, taking advantage of the work done by EUMETSAT for its product.</p>	September 2011
<p>Action EP-10.13: NASA to designate an expert from the NASA/JPL AIRS team to participate in GRWG activities on traceability.</p>	August 2011
<p>Action EP-10.14: WMO (Nils Hettich), GDWG Chair (Aleksandar Jelenak), and EUMETSAT (Peter Miu) to evaluate the proposal to develop centrally an interactive page for instrument bias monitoring (technical complexity, effort needed, security constraints, sustainability) and report to the Executive Panel with recommendations for a way forward.</p>	EP-11 (2 October 2011)
<p>Action EP-10.15: GDWG Chair to ensure that the workshop is invited to provide feedback on the proposed bias monitoring interfaces.</p>	6 September 2011
<p>Action EP-10.16: GPRCs to report to GDWG Chair (through their GDWG representative) on details of collocated datasets generated on a regular basis (what instrument pairs, file size, format, etc) with a view to evaluate the feasibility of archiving this data and making it available in an harmonized fashion.</p>	July 2011
<p>Action: EP-10.17: GRWG Chair to ensure that the GRWG is kept abreast of the progress made by WGCV/IVOS on navigation issues.</p>	March 2012
<p>Action: EP-10.18: NOAA (Mitch Goldberg) and EUMETSAT (Tim Hewison) to liaise with the SCOPE-CM Pilot Projects (1), (3) and (5) respectively, in order to better understand their needs and facilitate the finalization of the Statement of Needs.</p>	August 2011
<p>Action EP-10.19: GDWG Chair to send the proposed texts of the registration form and emails for review.</p>	15 June 2011 (for feedback by 15 July 2011)
<p>Action EP-10.20: GCC to implement the user registration system as proposed, as far as possible in advance of the 3rd User Workshop.</p>	August 2011
<p>Action EP-10.21: Executive Panel members to review the existing “disclaimers” displayed on the GCC web site and provide guidance to the GCC (R. Iacovazzi) regarding the “Disclaimers” and “Terms of Use” needed for GSICS products.</p>	15 July 2011

Action EP-10.22: GDWG Chair to propose updated “Disclaimers” and “Terms of Use” to be displayed on all GSICS web sites, including the GPRC web sites, the GCC, and the data servers, in the pages used to access technical information.	July 2011
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Action EP-10.24: GSICS Executive Panel members willing to contribute to the preparation of the GSICS User Workshop to nominate a representative to the Workshop Organization Committee and inform Tim Hewison accordingly.	September 2011
Action EP-10.25: Tim Hewison, Gyanesh Chander and Xiangqian (Fred) Wu to proceed with the preparation of a special issue of the journal as proposed to the Executive Panel.	June 2011
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Action EP-10.27: WMO (J. Lafeuille) to circulate the proposed GSICS fact sheet to Executive Panel members for comments.	October 2011
Action EP-10.28: All EP members to review the Operations Plan (once updated with the actions from the EP-10) and provide feedback at the next teleconference.	September 2011
Action EP-10.29: WMO (J. Lafeuille) to communicate to CGMS the proposed statement on inter-calibration to be included in the new CGMS baseline for the space-based GOS.	September 2011
Action EP-10.30: ISRO to nominate points of contacts for the GSICS working groups (GRWG and GDWG).	August 2011
Action EP-10.31: In the light of the material readily available from the ASIC3 report, WMO to send a more precise request to NOAA to contribute to the section on Calibration and Validation issues in the CIMO Guide update.	August 2011
Action EP-10.32: GSICS members willing to host future Executive Panel meetings to submit a firm proposal to WMO in advance of, or at the latest by the time of, the CGMS plenary meeting.	2 October 2011