



# *GCC Director Report*

Drs. Fuzhong Weng and *Robert Iacovazzi, Jr.*

Joint GRWG-V and GDWG-IV Meeting

Toulouse, France

*February 9, 2010*

# Agenda



## ◆GCC 2009

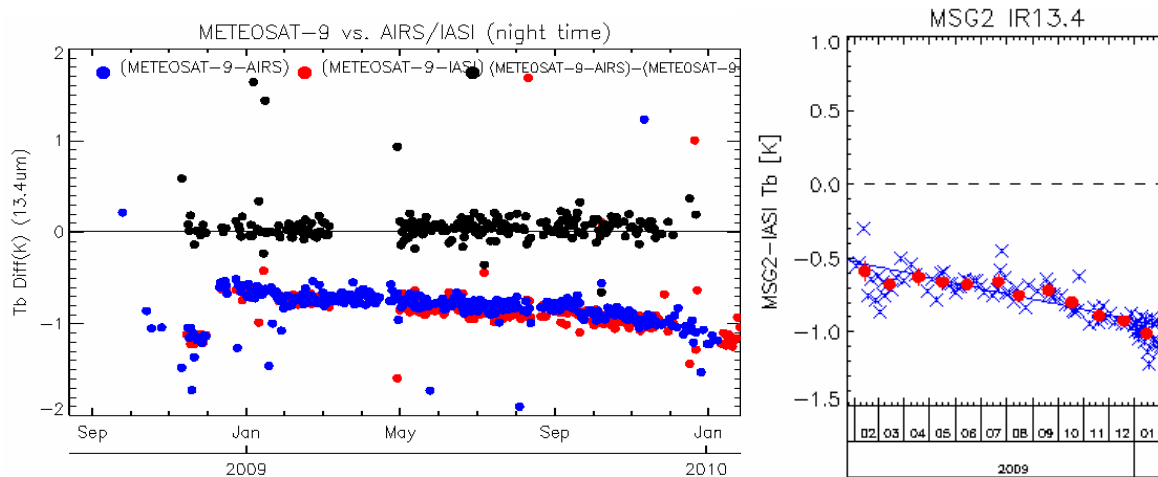
- *GEO-LEO Baseline Algorithm Developments*
- *Instrument Performance and Anomaly Reporting*
- *GSICS Information and Services Product Roster*
- *Product Quality Assurance Activities*
  - Quality Assurance for Earth Observations Collaboration
  - GSICS Procedure for Product Acceptance Implementation
- *GSICS Virtual Library Developments*
  - WMO GSICS Web Site
  - Posting of Instrument SRFs on GCC Web Site
  - GSICS Google Groups
  - Support Development of GSICS Wiki ATBD
  - GSICS Password-protected Work Space
  - WebEx at NOAA
- *GSICS Quarterly*
- *GCC Meeting Support: EP-6 Meeting, 1<sup>st</sup> GSICS Users' Workshop, GRWG and GDWG Web Meetings*

## ◆GCC Goals for 2010

# GEO-LEO Baseline Algorithm Developments



## *GEO-LEO Baseline Algorithm Implementation:* GOES-11/-12, FY-2C, MET-7/-9, and MTSAT-1R with IASI and AIRS



- ◆ The Baseline Tb bias results computed at the GCC and EUMETSAT for Meteosat-9 are comparable
- ◆ Baseline and JMA algorithms show MTS-1R vs. AIRS has much more scattered than that of MTS-1R vs. IASI
- ◆ JMA's results are classified by Tb range, thus making direct detailed comparison more difficult
- ◆ Lesson learned: convention or similar present format is needed for comparison between Baseline and GPRC results



# Instrument Performance and Anomaly Reporting

*Coordinated development of instrument performance monitoring on GOES and POES, and NOAA instruments on Metop-A*

[http://www.star.nesdis.noaa.gov/smcd/spb/fwu/solar\\_cal/goes11/instrument\\_monitor.html](http://www.star.nesdis.noaa.gov/smcd/spb/fwu/solar_cal/goes11/instrument_monitor.html)

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 STAR sites  All NOAA sites

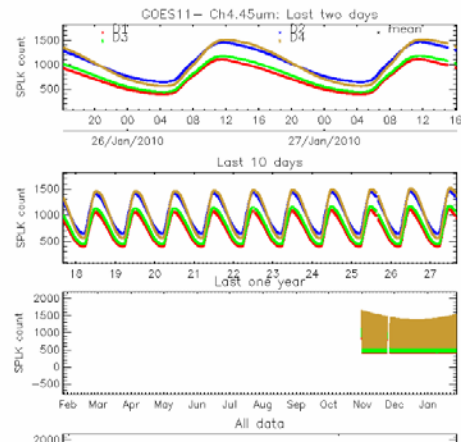
- Home
- AVHRR
- GOES Imager
- GOES Sounder
  - Pre-launch Cal. Coeff.
  - Vis. Post-launch Cal.
  - Instrument Performance Monitoring
    - GOES 11 >>
    - GOES 12
    - GOES 14
  - Spectral Response Functions
  - References
- GOES-R ABI
- GSICS
- Solar Spectral Irradiance
- References

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## GOES11 Sounder Instrument Performance Monitoring (IPM) System

Please select the instrument performance index & press 'Display' Button

<b>Telemetry</b> Electronics Temperature <input type="button" value="Display"/>	<b>SpaceLook</b> Ch 15(4.45µm) SpaceLook <input type="button" value="Display"/>	<b>SpaceLook Variance (1-sigma)</b> Ch 1(14.71µm) SpaceLook <input type="button" value="Display"/>
<b>Blackbody Scan</b> Channel 5(13.37µm) BB Count <input type="button" value="Display"/>	<b>Blackbody Scan</b> Channel 1(14.71µm) BB Count <input type="button" value="Display"/>	<b>Blackbody Variance</b> Channel 1(14.71µm) <input type="button" value="Display"/>
<b>IR Calibration Coeff./Bias</b> Channel 2(14.37µm) <input type="button" value="Display"/>	<b>IR Cal Coeff./First-Order Gain</b> Channel 4(13.64µm) <input type="button" value="Display"/>	<b>Emissivity Coeff./Intercept</b> Channel 3(14.06µm) <input type="button" value="Display"/>
<b>Emissivity Coeff./First and Second Order</b> First-order for Ch 3(14.06µm) <input type="button" value="Display"/>		



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Integrated Cal/Val System

Instrument Performance Monitoring >>

- NOAA-19 AMSU-A >>
- NOAA-19 HIRS
- NOAA-19 AVHRR
- NOAA-19 HRIS
- Metop-A AMSU-A
- Metop-A HIRS
- Metop-A AVHRR
- Metop-A HRIS
- NOAA-18 AMSU-A
- NOAA-18 HIRS
- NOAA-18 HRIS
- DMSF F16 SSMIS
- DMSF F17 SSMIS
- DMSF F18 SSMIS
- GOES

Products Demonstration

Meetings

Publications

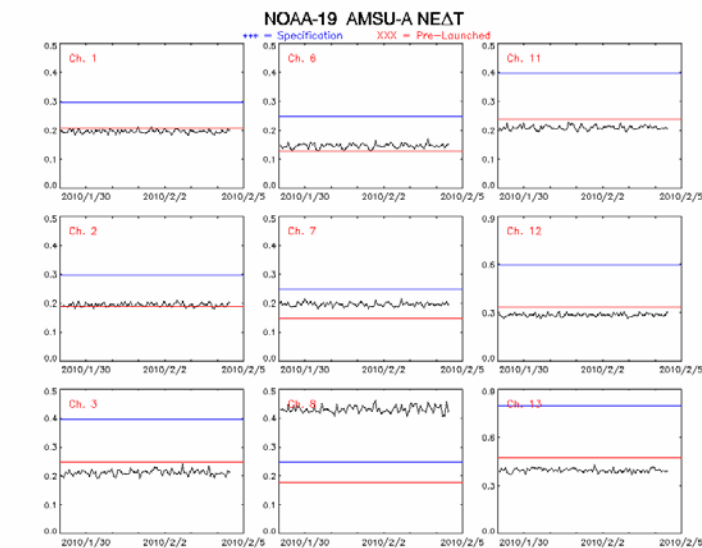
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## Satellite Integrated Calibration / Validation System (ICVS)

### NOAA-19 AMSU-A Instrument Performance Monitoring

Please select the instrument performance index & press 'Display' Button

<b>AMSU-A NEΔT/Gain</b> Last Week NEΔT Snapshot <input type="button" value="Display"/>	<b>AMSU-A Instrument Temperature</b> A1-1 Warm Load <input type="button" value="Display"/>	<b>AMSU-A Mixer/IF Amplifier Temperature</b> Last Week Snapshot <input type="button" value="Display"/>
<b>AMSU-A Warm Calibration Count</b> Last Week Snapshot <input type="button" value="Display"/>	<b>AMSU-A Status</b> Last Week Orbit Status <input type="button" value="Display"/>	



[http://www.star.nesdis.noaa.gov/smcd/spb/icvs/satMonitoring\\_n19\\_amax.php](http://www.star.nesdis.noaa.gov/smcd/spb/icvs/satMonitoring_n19_amax.php)



## *Feedback About Instrument Monitoring and Anomaly Reporting at Joint GRWG-IV/GDWG-III Workshop*

### **ACTION GDWG03\_06**

***All GSICS partners shall propose contents of the performance monitoring pages which they intend to display on their own web sites.***

- ◆ Attempts have been made during the course of 2009 to solicit instrument monitoring or anomaly information web sites from members
- ◆ There has been a lack of response
- ◆ The GCC would like a way forward for Action GDWG03\_06.

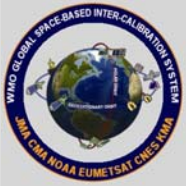


## *GISPR feedback from the GSICS Users' Workshop in Bath, UK*

GSICS Users expressed desire for products that improve quality of the data they use the most.

- ◆ **GSICS Data Users Want Inter-calibration Products for**
  - *GEO imager IR channels*
  - *LEO microwave imager/sounders, e.g. establish observed-model and microwave baseline cross-calibration for operational sensors (AMSU-A/MHS, SSMIS)*
  - *GEO solar reflective channels– particularly Meteosat*
  - *(A)ATSR and AVHRR*

# QA4EO Workshop



*GSICS members participated in the QA4EO Workshop held in Antalya, Turkey in October 2009*

- ◆ Workshop highlights and actions will be covered in a talk by Jérôme Lafeuille
- ◆ The GSICS Procedure for Product Acceptance (GPPA), which outlines product quality assurance within GSICS, was presented during the second day of the workshop
- ◆ The concept of the GPPA was well received and encouraged
- ◆ Questions and discussions about GPPA focused on the mission of GSICS, and the roles and responsibilities of each organization to establish a robust self-compliance process that fulfills the essential qualities of QA4EO

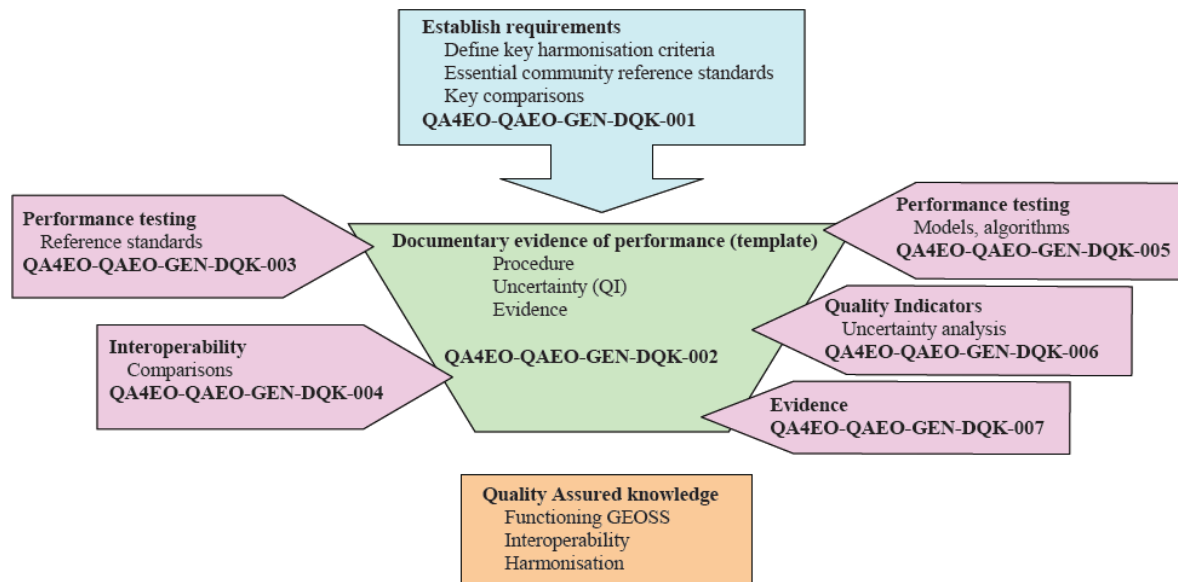
# Link Between QA4EO and GPPA



*QA4EO is represented by the following documents:*

- ◆ Guidelines framework
- ◆ seven data quality key (DQK) guidelines
- ◆ two data policy key (DPK) guidelines
- ◆ one communication and education key (CEK) guideline

## *QA4EO DQK Guidelines*



## *QA4EO DPK and CEK Guidelines*

- QA4EO-QAEO-GEN-CEK-001 A guide to facilitate Procedure and Documents Management
- QA4EO-QAEO-GEN-DPK-001 A guide on Cal/Val data sharing principles and data exchange
- QA4EO-QAEO-GEN-DPK-002 A guide for providing Cal/Val data: content and metadata



# Link Between QA4EO and GPPA



## Matrix mapping GPPA to QA4EO Key Guidelines

GPPA Component ↓	QA4EO →	O G	DQK -001	DQK -002	DQK -003	DQK -004	DQK -005	DQK -006	DQK -007	DPK -001	DPK -002	CEK -001
Overview Document		X	X	X						X		
Algorithm Theoretical Basis Docs			X	X				X				
Implementation Best Practice Docs Software			X	X				X				
Implementation Best Practice Docs Models			X	X				X				
Implementation Best Practice Docs Measurements			X	X	X	X						
Implementation Best Practice Docs Version Control Plan			X	X								X
Product Operations/Distribution Docs Operations/Distribution			X	X						X	X	
Product Operations/Distribution Docs Data Quality			X	X	X	X		X				
Product Operations/Distribution Docs User Guide			X	X						X	X	

# GSICS Procedure for Product Acceptance



- EUMETSAT, JMA, and NOAA have begun the process of submitting their GEO-LEO IR products through the acceptance procedure.
- NOAA also has requested approval for an MSU/AMSUA temperature time series product.
- The first step is to fill out the GSICS Product Acceptance Form (created this year).
- Some confusion has arisen while filling out the form (discussed in a later talk).



## GSICS Product Acceptance Form

Version 1.0

GSICS Coordination Center

November 2009

# GSICS Virtual Library



**GSICS**  
Global Space-based Inter-Calibration System  
An international collaboration to examine and harmonize data from operational weather satellites to improve climate monitoring and weather forecasting

[Skip Top Navigation](#)

WMO • CMA • CNES  
EUMETSAT • KMA • JMA  
NOAA • NASA • NIST

## *Coordination with WMO to Establish gsics.wmo.int Content*

- ◆ The new [gsics.wmo.int](http://gsics.wmo.int) web site is now up-and-running. This web site is now considered the GSICS Central Web Site.
- ◆ In the new web site, versions of the GSICS introduction and organizational structure information have been updated from the GCC web site and placed on this new central web site
- ◆ Responsibility of GSICS Contacts list shifted to WMO, since Jerome Lafeuille is responsible for tracking changes to the GSICS Members Point-of-Contact list

# GSICS Virtual Library



## *Instrument Spectral Response Functions*

- ◆ SRFs are available for many instruments
- ◆ Please go to GCC web site to make sure there are links to your SRFs

**Global Space-based Inter-Calibration System**  
An international collaboration to examine and harmonize data from operational weather satellites to improve climate monitoring and weather forecasting

EUMETSAT • KLM  
NOAA • NASA

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- Documentation
  - › GEO-LEO Inter-calibration
  - › LEO-LEO Inter-calibration
  - › Vicarious Calibration
  - › Spectral Calibration
  - › Spatial Calibration
  - › RIM Simulation
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  - › [Instrument Specification >>](#)
  - › Data I/O & Storage
- Publications
- Links

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### Instrument Guides and Web Sites

#### Low-Earth-Orbit Satellite Instruments

- ▶ EUMETSAT Instruments on Metop
  - [MetOP-A Instrument Technical Summaries](#)
- ▶ NASA
  - [NASA Earth Observing System \(EOS\) Aqua Satellite Instrument Information](#)
  - [NASA Tropical Rainfall Measuring Mission \(TRMM\) Satellite Instrument Information](#)
- ▶ NOAA Instruments on POES and Metop Platforms
  - [NOAA Polar Orbital Data User's Guide \(Applicable to NOAA Polar Instruments before NOAA15\)](#)
  - [NOAA KLM User's Guide \(Applicable to all other NOAA polar-orbiting instruments NOAA15 and beyond\)](#)

#### Geostationary-Earth-Orbit Satellite Instruments

- ▶ GOES
  - [GOES GOES-1M Data Book](#)
  - [GOES GVAR Transmission Format](#)

### Spectral Response Functions

#### Low-Earth-Orbit Satellite Instruments

- ▶ EUMETSAT Instruments on Metop Platform
  - [Infrared Atmospheric Sounding Interferometer \(IASI\)](#)
- ▶ NASA
  - [Atmospheric InfraRed Sounder \(AIRS\)](#)
  - [Terra MODerate-resolution Imaging Spectroradiometer \(MODIS\)](#)
  - [Aqua MODIS](#)
- ▶ NOAA Instruments on POES and Metop Platforms
  - [Advanced Very High Resolution Radiometer \(AVHRR\)](#)
  - [High-resolution InfraRed Sounder \(HIRS\)](#)
  - [N17 Solar Backscatter Ultraviolet Instrument-2 \(N17 SBUV2\)](#)
  - [N18 Solar Backscatter Ultraviolet Instrument-2 \(N18 SBUV2\)](#)

#### Geostationary-Earth-Orbit Satellite Instruments

- ▶ GMS
  - [Visible and Infrared Spin Scan Radiometer \(VISR\)](#)
- ▶ GOES
  - [Imager](#)
- ▶ Meteosat
  - [Geostationary Earth Radiation Budget \(GERB\)](#)
  - [Meteosat Visible and Infrared Imager \(MVISR\)](#)
  - [Spinning Enhanced Visible and Infrared Imager \(SEVIRI\)](#)
- ▶ MTSAT
  - [Japanese Advanced Meteorological Imager \(JAMI\)](#)

# GSICS Virtual Library



*GSICS @googlegroups*

*Current GSICS Google Groups*



- ◆ **gsics-users:** GSICS users' forum (All GSICS members and data users invited)
- ◆ **gsics-research:** GSICS research debate and issues forum (All GRWG members invited)
- ◆ **gsics-research-wg:** GRWG administrative discussion only (GRWG points-of-contact invited)
- ◆ **gsics-data-wg:** GDWG administrative discussion only (GDWG points-of-contact invited)



## *GSICS Communication Tools*

- ◆ **Work has been done to create a community space on the GSICS Wiki to prepare important documents, such as ATBDs.**
- ◆ **Special password-protected areas of the GSICS Wiki have been created. To access them requires a user account.**
- ◆ **WebEx has been made available by NOAA for use as a web conference tool**

# GSICS Quarterly



- ◆ *GSICS Quarterly* Volume 3 (4 Issues) is complete
- ◆ Volume 3 Number 2 Special Issue of *GSICS Quarterly* (Ideas for other special issues encouraged)
- ◆ Thank you – Contributing authors, and Correspondents Tim Hewison (Europe) and Yuan Li (Asia)

## GSICS Quarterly

*Global Space-based Inter-Calibration System*

CMA • CNES • EUMETSAT • JMA • KMA • NASA • NIST • NOAA • WMO

<http://gsics.wmo.int>

Vol. 3, No. 2, 2009

Dr. Robert A. Iacovazzi, Jr., Editor

### *SPECIAL ISSUE*

#### *Estimating Uncertainties of GSICS Satellite Inter-comparison Results*

As GSICS international research collaboration matures, some focus has shifted from how to inter-compare satellite instruments to how to distribute inter-comparison results. One decision made at the most recent Joint GSICS Research and Data Working Group meeting, held in January 2009 at JMA Headquarters in Tokyo, is for GSICS researchers to develop correction coefficients for each satellite instrument data set that will adjust those data to a state-of-the-art, on-orbit reference standard. In doing so, it has become the responsibility of GSICS researchers to also estimate the uncertainties associated with those correction coefficients. This Special Issue of *GSICS Quarterly* includes articles focusing on GSICS members' recent progress towards defining these uncertainties.

# Meetings



## *GSICS Meetings*

- ◆ GSICS Executive Panel VII– November 2009, Jeju, Republic of Korea
- ◆ GSICS Executive Panel VI – ESSIC, May 2009, College Park, MD, USA
- ◆ Eight GSICS Web Meetings, hosted by EUMETSAT and NOAA

## *GSICS at Meetings*

- ◆ AMS Annual Meeting – January 2009, Atlanta, GA, USA
- ◆ QA4EO Implementation Workshop – Otium Zeynep Hotel, October 2009, Belek, Turkey
- ◆ Microwave X-Cal Meeting - October 2009, Salt Lake City, UT, USA
- ◆ First GSICS Users' Workshop - September 2009, Bath, UK
- ◆ CALCON – Utah State University, August 2009, Logan, UT



# 2010 Goals



## ◆ Implement Procedure for Product Acceptance

- Revise GSICS Product Application Form
- Establish criteria to be met by GSICS products (transfer and storage protocols; quality assurance indicators; etc)
- Pilot at least one developed product through the GPPA

## ◆ GISPR

- Continue to identify potential customers of GSICS products and services

## ◆ Satellite Instrument Anomaly Reports

- Obtain links to instrument performance and anomaly information from GSICS members

## ◆ GSICS Baseline Algorithm

- Continue to coordinate efforts to establish the GSICS baseline algorithm at NOAA GPRC

## ◆ WG-2/08

- GCC investigate necessary steps to develop the central GSICS web site into a GSICS portal

# Summary



- ◆ *Baseline GEO-LEO algorithm is being implemented at NOAA. A standard results reporting format would be helpful.*
- ◆ *GSICS Coordination Center needs links to instrument performance and anomaly reporting web sites from your agencies.*
- ◆ *Feedback was obtained from the Users' Workshop regarding the GISPR. Users want practical products that can improve the calibration of the raw data that they use. GSICS needs to maintain responsibility for GSICS Information Services for the purpose of improving data quality assurance.*
- ◆ *GSICS Procedure for Product Acceptance was presented to QA4EO Workshop members, it was well received, and is currently being implemented.*
- ◆ *WMO GSICS Central Web Site created. Plans have been made to change GSICS Coordination Center web site, and create a separate NOAA GPRC web site.*
- ◆ *GSICS Wiki tools continue to be developed.*
- ◆ *Spreading the GSICS message is also being done through the GSICS Quarterly, GSICS on-line and face-to-face meetings, and presentations at meetings of the scientific community.*
- ◆ *Several 2010 Goals planned*