Tuesday Afternoon GSICS Users Workshop

*By Tim Hewison*

**Introduction by Wenjian Zhang (WMO)**

**A1 Jerome Lafeuille**

Satellite operators are also users of GSICS deliverables

Evolving scope of GSICS - spectral domains, a posteriori

•Started with IR calibration corrections (GEO, LEO)

•Continued with VIS/NIR domain

•Now addressing also the UV and MW domains

Started with Near Real-Time correction functions

•Added «a posteriori» corrections for  re-processing)

•Considering now a wider variety of deliverables depending on user requirements

**Focus on user requirements - including pre-launch, maintenance of standards**

New Challenges

•Formalize GSICS user requirements  for products/deliverables

•User requirements for pre-launch characterization data ?

•Review the products and services to be delivered by GSICS

***Proposed Action: GCC-GDWG, One way of reviewing could be to take feedback from members on the  proposed Beta version ( which aims to present the products in simplified way to users) of the product catalog( service). Feedback on the plotting tool and other services such as the wiki could be taken too.***

•Maintain requirements for calibration references: in-orbit, ground targets, Moon observatories

Proposed Action: GRWG-GCC: GRWG can initiate this action and everyone can pitch in their part.

•Recognize GSICS as an element of the WMO Integrated

Global Observing System (WIGOS)

•Highlight GSICS’ contribution to the

Architecture for climate  monitoring

•Complete Reference Documentation

**A2 Tim Hewison**

GEO-GEO ring

Q: Should we provide two versions of products with different update frequencies? Difficult to do, given different users’ different +requirements

Q: timing issues?

Q: added benefit of GEO-GEO comparison? characterise diurnal variations

**A3 Dave Doelling**

Importance of understanding instrument acquisition - oversampling factor

Importance of orbital stability

**A4 Manik Bali**

Manik introduced the GSICS Product Catalog, soliciting feedback:

a new beta version <http://www.star.nesdis.noaa.gov/smcd/GCC/GCCBeta/index.php>

compared to current <http://www.star.nesdis.noaa.gov/smcd/GCC/ProductCatalog.php>

Asked for feedback on difference on NRT and RAC.

Metadata aims to answer the 6 W’s about the data

Do you need level of detail in metadata? Yes!

How easy is it to apply GSICS Products?

***Proposed Action: GCC-GDWG to provide users with a beta version of the GSICS data distribution model to help users navigate through the GSICS products and download the required variables with ease.***

**B - Question and Answers**

UKMO are aware of GSICS Correction and already using it for Meteosat

**C1 Roger Saunders**

Central frequency shift for several Microwave sounders were diagnosed with NWP bias monitoring - state dependent bias patterns

SD of first guess used to identify true central frequency - rather than minimising bias?

Also non-linearity

 Demonstrated that NWP model statistics can be a powerful tool for understanding instrument characteristics and used to generate inter-calibration products - spectral or radiometric

 Q: Max change freq: 1/yr - need new rttoV coeffs

Potential for hybrid approach with infrequent spectral correction with frequent radiometric updates

 Q: Danger of applying corrections from one NWP model to other models

 Very interesting work and During my offline discussion with Roger requested him to write on this in the GSICS Newsletter.

 **C2 Lei Yang - Benefits of GSICS algorithms for FY-⅔ Calibration**

Quick overview of GSICS-related activities at CMA

Processing a lot more data for GSICS monitoring with CrIS than IASI now.

FY-3/IRAS - substantial biases submit to GPPA?

including non-linear correction of MERSI

CMA team acquired project funding from MOST for lunar calibration, including lunar irradiance model development, including 2 field campaigns this year

Including geolocation work

**C3 Chang-Suk Lee - Current status of GSICS-based FCDR from COMS**

Showed impact of GSICS correction on SST

Q: What feedback could you offer on how easy is the GSICS Correction to use?

A: Surprised by improvement found

 **C4 Regis Borde - Feedback on GSICS Correction for Meteosat-7**

Nightmare to implement - lack of supporting infrastructure

Number of cloudy pixels ~20% smaller after GSICS Correction (empirical threshold)

this impacted all other products - which is better? Fewer winds

Last of MFG - big biases - easier to detect impact!

Q: Would it be easier to analyse impact if GSICS Correction was available in header as alternative calibration coefficients?

Highlights need to work together with L2 users to understand impact of their products

Q: Would it be easier to work with well calibrated data to tune algorithms first?

Yes!

 Regis concerns are really legitimate and something that we need to look at with priority. Offline discussions have highlighted the point that there are additional  nightmares at the other end of the GSICS product supply chain too eg.  producing the  GSICS products getting them onto the GPPA.

While the correction coefficients are really needed by agencies and often generated but saving them in  a file and distributing them is a nightmare. So...

 Proposed Action : GCC to propose a model to help reduce the complexity involved in creating   distributing and Using GSICS products.

 **C5 Karsten Fennig - Requirements for FCDR generation**

FCDRs should provide a of metadata in file

User requirements define FCDRs - multiple sensors / pseudo channels / view angles…

ECMWF feedback: prefer to have uncorrected FCDRs (before any bias correction)

 Highlighted importance of full traceability to original data records, with clear differentiation between corrections and inter-calibration offset to a reference target

 Importance of ATBD and User Manual (including quality flags) and Validation reports, User Support!

 Q: Feedback on Manik’s question on metadata in GSICS Corrections?

A: V. important - but prioritise

 Q: Need to split sensor-related corrections from inter-calibration corrections? Yes

 Q: Value of DOI for datasets?

A: Yes - also add-on to DOIs allows continuous updates => Check out!

 **C6 Sante Laviola - Requirements for microwave inter-calibration products**

Potential user interested in short-term climatology and regional scale hydrometeorological products from 183 GHz observations

Need to know inter-calibration uncertainties - main contributions:

1.    scan asymmetry

2.    geolocation

3.    spatial resolution of inter-calibrated microwave products

4.    Homogenization of native resolution radiometers with different scanning

5.    obs-mod double difference

 Did GSCS already identify a specific reference instrument for microwave?

can vicarious cold calibration be applied to cross-track

 Q: Can GSICS Define a procedure to select a reference instrument? We’re working on it!

 **Skip - Randhir**

We have his feedback by email that he sent to Tim.

**D1 - Intermediate Data and GEO ring?**

Yes - some interest

But what format? netCDF would be best, but anything would be OK?

Need for careful version control & traceability - adds complexity

 **GEO-GEO intercomparison application?**

requirements - uncertainty, horizontal, temporal resolution

results suggest hourly results may be needed for application areas

No interest from the participants in the room

**SBAF requirements?**

Moon, DCC and some deserts already covered by tool for VIS/NIR

regional averages already available for DCCs

Should we provide SBAFs to users? If we don’t they’ll do it themselves - and wrongly!

 **Reference Sensors?**

VIIRS high priority for new GEO images with channels other than VIS0.6

**Reference solar spectra?**

CEOS recommended Thullier, but doesn’t cover full spectrum -**should coordinate with CEOS!**

UV instruments need uncertainties <1%, merging reference spectra into composite, but only important at <400nm.

Should reference solar spectrum be static or dynamic?

Should aim for highest resolution possible, which can be interpolated to any sensor

**Interaction with Space Weather to dynamically update?!**

**Microwave Survey**

1.    Real-time or Climate use? L1 correction for operational/research instruments
(less interested in mapping heritage sensor types

2.    Frequency/latency of updates? less frequently, but more precise!

3.    Target uncertainty ranges? ~0.4K

4.    Application areas? Global trend monitoring and retrievals, less for NWP

**UV Products**

Questions to scoping activities, rather than direct user requirements

Heavy focus on pre-launch characterisation - coordination with CEOS

Announcement on joint meeting with CEOS WGCV AC Sub-Group at College Park on 8-9 October - also available via Webex

Will this meeting address reference solar spectrum? Yes - already in questionnaire.

Tim encouraged the meeting to also address separating roles and responsibilities between WGCV and GSICS sub-groups - Rose is keen to first bring it together

Already on the agenda for CEOS-IVOS!

**Expectations from a Reference Instruments**

Stability? 0.1K/dec (Wenjian insisted that 0.1K/decade is not sufficient for many applications)

Geographic Coverage? Diverse!

Spectral Coverage? majority favour full SRF of monitored instrument - but maybe only in the channels of interest

Tim pointed out that the question we should ask is how important is spectral consistency inter-channel important to users? will add this suggestion in survey

Scan Angle dependence of reference instrument?

Manik submitted paper on how good is IASI as a reference - to AMT Discussion - please review!! (click [here](http://www.atmos-meas-tech-discuss.net/8/9785/2015/amtd-8-9785-2015.html) to access the discussion paper)

Shows how good IASI reference is.

Spectral Stability? missing a time scale!

Reference instrument should be monitored in publicly accessible website ? Yes - overwhelming support!

**Other Products?**

SWIR - how? Moon? SBAF using Hyperion

No other suggestions from the floor

 **Keep questionaire open online until New Year 2016.**

**Will use as input to guide priorities in next annual GRWG/GDWG meeting.**

 How to compile User Requirements?

**GCC to start by drafting a strawman User Requirements document, and send it out for review**

Including Ocean Colour requirements

 Date/Place of 2016 GSICS Users Workshop: No NOAA Satellite Conference in 2016?

Maybe better to send GSICS representative to specifically targetted meetings of groups identified as potential users. For example, Rob Roebeling at the forthcoming cloud workshop.

Andy Heidinger has offered to promote GSICS there and circulate the User Questionaire.

Yes I would send the Survey to Andy and some others.