# Products and Software Working Group (PSWG) report

**Nathalie Selbach, Nigel Atkinson, and Liam Gumley co-chairs**
20 attendees

# Topics assigned by ITWG co-chairs
## New data (Meteor-M, FY3C, Metop-B, S-NPP, Meghatropiques, commercial launches e.g. GIFTS/STORM, Iridium)

1.1 Group noted that CMA released FY-3C DB Level 1 software on March 27, 2014.

Action to PSWG:

- Test the FY-3C software (Nigel Atkinson and Liam Gumley).

1.2 Group noted that Meteor-M N2 launch is scheduled for June 2014.

Recommendations to Roshydromet:

- Provide real-time DB data and DB processing software.

- Provide global data via a web portal.

1.3 Group noted that some satellite agencies still use binary data formats.

Recommendations to Satellite Agencies:

- Data format documentation and/or software APIs be made available early for new datasets.

- Portable self-describing data formats be used where possible.

- CF-compliant formatting and metadata be used where possible.

# New data (2)

1.4 Group noted that NASA is preparing to design new algorithms, software, and data formats for Level 0 to Level 1B processing of VIIRS, CrIS, and ATMS. This has the potential to introduce confusion in the user community.

Recommendation to NASA and JPSS:

- Provide information to the community on algorithm, software, LUT, and format changes, and comparisons between IDPS and NASA radiance products.

# **Real time data dissemination**:
## RARS, software packages for direct broadcast.
### *International, NWP, Products*

1.5 Group noted that GCOM-W1 has a direct broadcast capability. It would be helpful for the DB community to (a) have continuous access to GCOM-W1 AMSR2 data via DB to provide continuation of AMSR-E capability, and (b) have access to software for processing the AMSR2 DB data.

Recommendation to JAXA:

- Provide routine DB data and processing software for GCOM-W1 AMSR2.

1.6 Group noted that satellite operating agencies need to be reminded of the value of providing unrestricted DB access and software.

Recommendation to Satellite Agencies:

- Continue to provide routine global unencrypted DB capability and accompanying processing software for both existing and new systems and sensors.

1.7 Group noted and supported the recent formation of the SSEC CSPP GEO project.

Recommendation to SSEC:

Create product generation software for GEO sensors including ABI, AHI, AMI via common algorithms.

# Real time data dissemination (2)

1.8 Group noted a desire to create a climate data record of sounding products dating back to TOVS (prior to ATOVS). This was also raised in the Climate WG.

1.9 Group noted the development of the NOAA DB real-time network (DBRTN) by SSEC.

Recommendation to NOAA and EUMETSAT:

- Work together to make the DBRTN data available to the global community (e.g., via EARS and/or GTS).

# User notification: Best-practices for advanced information of changes, detection and reaction to data problems.
## *International, NWP, Products*

1.10 Group expressed a desire for better dissemination of sensor and data processing status.

Recommendation to Satellite Agencies:

- Create online satellite, sensor, and processing status sites using the POES status page as a model, providing searchable archives of status information, with key events (e.g., satellite/sensor failures, noise level out of specification, etc.) clearly separated from routine events, and contact information provided.

# Future dissemination of hyperspectral IR data: Lossy data compression and implications, two-level dissemination concepts, timeliness & reliability requirements.
## *NWP, Climate, Products, International*

1.11 Regarding dissemination of PCs and residuals: Group noted that it may be better to distribute the remaining PCs. While not directly relevant to the PSWG, this topic could be investigated by another WG and/or a technical subgroup. The topic of frequency of updates for training data was also raised in the same context.

1.12 Group noted that JPSS is considering increasing the DB data rate from 15 to 30 Mbps for satellites after JPSS-2.

1.13 Group noted that SNPP CrIS will switch to full spectral resolution in Q4 2014. CSPP is already set to handle the FSR data (by transforming to reduced spectral resolution). NOAA has almost finished the new version of CrIS FSR calibration software and it is expected to be available in CSPP within a reasonable time after the FSR switchover.

# Efficient use of hyperspectral IR data: assimilation of PCs/reconstructed radiances, PCs and CDRs, PC RT models, level 2 products.
## *RT, NWP, Climate, Products*

1.14 Group noted there are several SW packages available that utilize IASI/CrIS/AIRS for creating level 2 products.

1.15 Group noted that the EUMETSAT Level 2 product utilizes reconstructed radiances.


# Use of sounding data in cloudy regions: accuracy of cloudy RT in MW and IR, assimilation/retrieval strategies.
## *RT, NWP, Products*

1.16 Group noted that EUMETSAT, NUCAPS, MIRS, and HSRTV products all include cloudy and clear retrievals.

1.17 Group noted that a cloud cleared retrieval scheme is not available in IAPP.

# Efficient use of hyperspectral IR data: assimilation of Validation: sharing and joint analysis of results during cal/val phase, validation datasets, field campaigns, NWP monitoring and assimilation, absolute calibration, intercalibration.
## *NWP, Climate, Products*

1.18 Group noted that users of DB software and products need information on the quality of the products.

Recommendation to software and product providers (Met Office, SSEC):

- Provide information on the quality and evaluation of their respective products to users.

# Visualization packages for sounder data
## *RT, Products*

1.19 Group created a list of visualization packages as a result of an action from ITSC-18. The group has a requirement to keep the list up to date.

Action to PSWG:

- Review the visualization package list periodically (Nigel Atkinson, Nathalie Selbach).

# Infrared FOV size: trade-off versus other characteristics.
## *NWP, Climate, Products, Advanced*

1.20 Group recommended that the Advanced Sounder working group be responsible for all work on this topic.

# Case studies to further improve algorithms for retrievals and data assimilation (cloud clearing, surface emissivity, water vapour, other trace gases).
## *NWP, Products*

1.21 Group noted that surface emissivity validation should be explored further.

Action to PSWG:

- Assemble a list of available surface emissivity validation datasets (Thomas August).

# Other Topics

2.1 Group noted that KMA is willing to provide algorithms for the CSPP GEO processing software package.

Action to PSWG:

- Contact KMA and explore the mechanism for transferring algorithms to CSPP GEO (Graeme Martin).

2.2 Group noted that the KMA AMI may have a DB transmission and therefore a community of DB users who may need processing software and products.

Recommendation to KMA:

- Provide DB data and processing software for AMI.

2.3 Group noted that NOAA STAR is collecting validation data from a number of sources relevant to temperature and moisture soundings. The data are all available from the NPROVS+ website. The group recommends that product users consult this website and use the data for product validation. The NPROVS+ team invites product developers to submit cases for validation.

# Other Topics (2)

2.4 Group noted the continued funding support of DB packages is needed and agencies should be made aware that the need for such support hasn't gone away.

Recommendation to NASA, NOAA, and EUMETSAT:

- Continue support for funding of DB software packages.

2.5 Group noted that there is still a desire to have IAPP supported and available.

Action to SSEC:

- Come up with a plan for continued IAPP support, perhaps under the umbrella of CSPP (Liam Gumley).

2.6 Group noted the following items related to EPS-SG:

Data format will be netCDF.

EUMETSAT desire for information on lessons learned from ATMS striping, including impact on higher level products. Any information should be sent to Jörg Ackermann.

IASI-NG and microwave sounder will not be synchronized. Remapping will be required for some applications. PSWG recommends that anyone who is concerned about this should contact Jörg Ackermann at EUMETSAT.

# Other Topics (3)

2.7 Group recommends that DB software providers ensure that any ancillary data required to operate the software is available in a convenient, accessible, and no cost form.

2.8 Group noted the importance of reprocessing whenever there is a major update to a product retrieval algorithm, e.g., EUMETSAT IASI L2 product. Data providers are encouraged to create consistent climate data records for the community.

# CGMS HIGH LEVEL PRIORITY PLAN

The group agreed to circulate the CGMS HLPP and provide comments and feedback in time for the final version of the PSWG report from ITSC-19.

# TOPICS AND ACTIONS FROM ITSC-18
## Open items

**Website**

**Action 1.1**: Decide on a solution for working group user driven content and set up logins. This is needed because the group needs to add and edit content online without needing a web admin.

Status: Open

Bill Bellon and Leanne Avila are considering a redesign of the whole ITWG web site, using a Content Management System. Other possibilities discussed were:

File sharing service (e.g., Dropbox)

User-driven forum (e.g., phpBB)

User-driven groups (e.g., Plone)

- The PSWG will wait until a new CMS and website is selected, and then redesign the PSWG area of the site.

**Product validation review (action 5.1) and NOAA contact for validation (action 5.2)**

- Dependent on web site re-design

# ITSC-18 Open items (2)

**Level 1 format issues**

Action 6.2: In order to maintain a record of product provenance, create a set of guidelines for metadata to be associated with satellite products

Nathalie Selbach and Geoff Cureton assigned to this action.

**Development of software packages**

Recommendation 8.1: Collect lessons learned from working with NPP/JPSS and GOES-R algorithms and provide to NOAA/JPSS.

Action 8.3: Write an "ADL Lessons Learned" document and submit to JPSS Program

- Graeme Martin to write up lessons learned and recommendations in a short document and distribute it to the group.

Action 8.4: Write a guide to "Compiling Portable Binary Code" and make available to ITWG online

- To be written up during conference by Graeme Martin and distributed to the group.

Action 8.5: Advertise that users can contribute their own algorithms or software for product generation

- Kathy will add information on CSPP and IMAPP websites, and the new ITWG website.