

Summary of Action Items from ITSC-XX

Fiona Hilton & Andrew Collard

Ongoing Actions

- **Action DA/NWP-2 on NWP WG members:** Send any evidence of RFI to working group chairs for inclusion on the NWP WG RFI web page and forwarding to Jean Pla (jean.pla@cnes.fr) or Richard Kelley (richard.kelley@noaa.gov).
 - No contributions
- **Action DA/NWP-3 on NWP WG members:** If you have estimates of revised channel characteristics resulting from post-launch diagnostics, please email these to RTSP WG co-chairs.
 - No contributions

NWP Usage Survey

- **Action DA/NWP-4 on WG co-chairs:** Enhance NWP instrument usage survey to include template where centres can add information on channel blacklisting.
 - An extra column was added to the NWP survey to allow users to upload information such as this in their own (text) format.
- **Action DA/NWP-5 on NWP centres:** Continue to provide information on instrument channels assimilated and their observation errors for inclusion on the NWP Working Group pages in advance of each conference.
 - 10 centres have updated their entries this year

https://groups.ssec.wisc.edu/groups/itwg/nwp/nwp_systems

Mailing List

- **Action DA/NWP-6 on WG co-chairs:** Set up new mailing list for communicating potential instrument anomalies.
 - Status: CLOSED. Everyone signed up, so this is moot!

Monitoring

- **Action DA/NWP-7 on WG co-chairs:** Add link to NWP-SAF website on NWP instrument monitoring to the WG webpages.
 - Status: DONE.
- **Action DA/NWP-8 on WG members:** Ensure their centre's monitoring sites are on the NWP-SAF website. Email NWP-SAF helpdesk if not to ask for it to be added.
 - Status: ONGOING.
- **Action DA/NWP-9 on WG co-chairs:** Coordinate a group to define a set of monitoring plots that each centre should endeavour to provide with public access. Circulate the proposal to the NWP working group.
 - Status: ONGOING. No progress

NeDT

- **Action DA/NWP-10 on Jörg Ackermann:** Collate information regarding different algorithms used by data providers for calculating NeDT.
 - Status: CLOSED. Jörg provided a document that was distributed to the working group.
- **Action DA/NWP-11 on WG members who belong to member states of EUMETSAT:** Request provision of NeDT in BUFR products for microwave sounders via EUMETSAT science working group.
 - Status: CLOSED. Fiona Smith made this request to EUMETSAT and was told this will be done. (Was partially implemented in ATOVS BUFR on 22/11/2017 with the rest on 7/12/2017).

CrIS & IASI

- **Action DA/NWP-12 on NWP Centres:** Contact Tom King (thomas.s.king@noaa.gov) to acquire CrIS FSR data, and confirm with him that it is acceptable.
 - Status: CLOSED. A lot of centres have done this.
- **Action DA/NWP-13 on EUMETSAT:** Circulate a proposal on update strategy for IASI PC basis vectors, including consideration of the length of the notice period, to the working group.
 - Status: CLOSED. An initial discussion was circulated to the group, but there will be more discussion in the working group.
- **Action DA/NWP-14 on NWP WG Members:** Provide feedback on the above proposal.
 - This will be done via the working group discussion.

CrIS

- **Action DA/NWP-15 on Reima Eresmaa:** Organise through the NWP working group a six-monthly telecon to update on progress and any new findings regarding assimilation of CrIS.
 - Status: CLOSED. One meeting was held and was useful.
- **Action DA/NWP-16 on Andrew Collard:** Request that the AVHRR/IASI clustering algorithm is implemented at NOAA/NESDIS/STAR for CrIS and AIRS data.
 - Status: CLOSED. The request has been made, but there have been issues getting the algorithm implemented (NESDIS STAR needs code and ATBD).

JPSS-3 CrIS FOV Size

- **Action DA/NWP-17 on Bill Bell (Met Office):** To collate the available studies that have been performed on the increased yield and coordinate investigations into the impact of reduced field-of-view size combined with increased noise on model performance with an aim to inform decisions for the JPSS-3 CrIS.
 - Status: CLOSED. Meetings were held and a report produced recommending a reduced FOV size
- **Action DA/NWP-18 on Working Group Members:** Please e-mail Bill Bell (william.bell@metoffice.gov.uk) if you have something to contribute to the FOV studies.
 - Status: CLOSED.
- **Action DA/NWP-19 on Likun Wang (U. Maryland):** To circulate information on the study he performed on the VIIRS cloud mask.
 - Status: CLOSED. This was done during the meeting.

Bias Correction

- **Action DA/NWP-20 on Wei Han:** Detail what information is required on radiometric and forward model uncertainty to constrain bias corrections, and circulate to the working group along with a proposal for how they would be used.
 - Status: CLOSED. A discussion document has been circulated to the group and will be considered during the working group.

Hyperspectral Channel Selection

- **Action DA/NWP-21 on WG co-chairs:** Define a superset of channels for hyperspectral IR instruments that are required for monitoring and assimilation at NWP centres to define minimum channel distribution through DBNet and send to ITSC chairs.
 - Status: CLOSED. A global channel selection (431 channels) has been defined for CrIS FSR data. Other instruments' channels are also defined.

Recommendations (1/2)

- **Recommendation DA/NWP-1 to all relevant space agencies:** The constellation of at least three orbits (early morning, morning, and afternoon), each with full sounding capabilities (IR and MW), should be maintained. The overpass times of operational satellites with sounding capability (IR and MW) should be coordinated between agencies to maximize coverage and include a satellite in early morning orbit.
- **Recommendation DA/NWP-2 to the Defense Meteorological Satellite Program:** In support of maintaining a robust global satellite observing system, SSMI/S on F20 should be flown, preferably in an early morning orbit.
- **Recommendation DA/NWP-3 to Space Agencies:** New operational data dissemination infrastructure should be tested at an early stage (well before launch) with simulated data.
- **Recommendation DA/NWP-4 to Space Agencies:** There should be open access to new satellite data for all NWP centres to help with calibration and validation.
- **Recommendation DA/NWP-5 to funding bodies of NWP centres and space agencies:** Consider, as part of the cost of satellite programs, providing computational and personnel resources targeted at operational NWP centres to optimise the public's return on investment from these expensive measurement systems.
- **Recommendation DA/NWP-6 to NWP WG members:** Use the new instrument anomaly mailing list to alert other centres to potential data problems or changes in channel usage as soon as they arise.
- **Recommendation DA/NWP-7 to NWP WG members:** Update monitoring websites as soon as possible to include the plots requested in the monitoring proposal.
- **Recommendation DA/NWP-8 to Data Providers:** Agree standardized procedure for inclusion of NEdT estimates within BUFR for microwave data.
- **Recommendation DA/NWP-9 to Data providers:** Include azimuthal viewing and solar angles as appropriate in BUFR for present and future instruments.
- **Recommendation DA/NWP-10 to Space Agencies and data providers:** When designing new or modified BUFR formats, please circulate drafts to the NWP community via the NWP Working Group for feedback, prior to submission to WMO.

Recommendations (2/2)

- **Recommendation DA/NWP-11 on NWP Centres:** Evaluate the de-striped ATMS radiances made available by Fuzhong Weng and report back to NOAA and the NWP Working Group, both on initial investigations with the sample dataset and on OSEs when a parallel data stream becomes available.
- **Recommendation DA/NWP-12 to data providers:** If PC compression is used to disseminate hyperspectral IR observations, a conservative approach should be taken in order to mitigate information loss (e.g., by retaining as many principal components as possible).
- **Recommendation DA/NWP-13 to data providers and NWP users:** A mutually acceptable update strategy should be devised and documented for the dissemination of PC products.
- **Recommendation DA/NWP-14 to NWP Centres:** Monitor Reconstructed Radiances in parallel to operations so that the PC update strategy can be properly tested.
- **Recommendation DA/NWP-15 on Data Providers:** When using PC compression, noise normalisation should be performed using the full noise covariance matrix.
- **Recommendation DA/NWP-16 on NWP Centres:** Consider carrying out studies to evaluate the use of unapodised CrIS radiances, and/or to use the full spectral resolution apodised data combined with a full noise error covariance matrix.
- **Recommendation DA/NWP-17 to Data providers:** Use the AVHRR cluster algorithm available in AAPP for all hyperspectral sounders.
- **Recommendation DA/NWP-18 to data providers:** Consider including a map of the sub-pixel information derived from imager pixels within hyperspectral sounder FOVs, should bandwidth allow.
- **Recommendation DA/NWP-19 to funding bodies:** Provide finances for specific projects to look at the impact of data assimilation/forecast systems on the trade-off between field-of-view size, spectral resolution and instrument noise.
- **Recommendation DA/NWP-20 on Working Group members:** To submit abstracts to the next ITSC on the topic of bias correction in regional models and bias correction of all-sky radiances.
- **Recommendation DA/NWP-21 to NWP Centres:** Consider studies into the use of physical methods as well as diagnostic methods to characterise observational uncertainties, including their correlations, to improve the assimilation of satellite radiances.

Topics for NWP discussion

- To what extent should working group cover geostationary satellites?
- Investigate instrument calibration through double-difference method via NWP.
- Informing users of major calibration changes (ATMS, IASI)
- Optimal overlap of overlap where one instrument is replacing another (GOES-R).
- Revisit NeDT with the aim of centres using a consolidated algorithm.
- FSR vs NSR for S-NPP CrIS on DBNet