

ITSC XX NWP Working Group Report

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1. Standing Actions and Recommendations

Standing Actions and Recommendations

Action DA/NWP-1 on ITSC Co-chairs: To bring relevant recommendations to the attention of CGMS.

Polar orbiting constellation

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.

Cal/val of future instruments

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.

Furthermore, NWP data has proven to be a critical resource in the Cal/Val process for new instruments.

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. Investment to fully realise potential of new satellites in operational use.

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.

Radio Frequency Interference

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 for forwarding to Jean Pla (jean.pla@cnes.fr) or Richard Kelley (richard.kelley@noaa.gov).

Updated channel characteristics

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 Paul van Delst (paul.vandelst@noaa.gov).

2. Working Group support to NWP community

NWP Working Group Web Page

Action DA/NWP-4 on WG co-chairs: Enhance NWP instrument usage survey to include template where centres can add information on channel blacklisting.

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.

Communication of Instrument Anomalies

Action DA/NWP-6 on WG co-chairs: Set up new mailing list for communicating potential instrument anomalies.

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.

Inter-comparison of Monitoring Websites

Action DA/NWP-7 on WG co-chairs: Add link to NWP-SAF website on NWP instrument monitoring to the WG webpages

Action DA/NWP-8 on WG members: Ensure their centre's monitoring sites are on the NWP-SAF website. If not, contact the NWP-SAF helpdesk (<https://nwpsaf.eu/feedback.html>) to ask for it to be added.

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

Recommendation DA/NWP-7 to NWP WG members: Update monitoring websites as soon as possible to include the plots requested in the monitoring proposal.

3. Provision of BUFR data

Provision of NEdT in BUFR for Microwave Sounders

Recommendation DA/NWP-8 to Data Providers: Agree on a standardized procedure for inclusion of NEdT estimates within BUFR for microwave data.

Action DA/NWP-10 on Joerg Ackermann (EUMETSAT): Collate information regarding different algorithms used by data providers for calculating NEDT.

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.

Content of BUFR files

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.

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.

4. Microwave Sounding Data

Striping on ATMS

Recommendation DA/NWP-11 on NWP Centres: Perform experiments to investigate the de-striped data when a parallel data stream is available.

5. Hyperspectral Infrared Sounders

Efficient Dissemination of Hyperspectral Radiances (1/2)

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.

Action DA/NWP-13 on EUMETSAT: Circulate proposal on update strategy for IASI PC basis vectors to the working group, considering the length of notice period and circulate to the working group.

Action DA/NWP-14 on NWP WG Members: Provide feedback on the above proposal.

Efficient Dissemination of Hyperspectral Radiances (2/2)

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.

Optimization of CrIS Assimilation

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 full noise covariance matrix.

Action DA/NWP-15 on Reima Eresmaa (ECMWF): Organise through NWP working group a ~6 monthly telecon to update on progress and any new findings regarding assimilation of CrIS.

Provision of collocated imager data from within the footprint of hyperspectral sounders.

Recommendation DA/NWP-17 to Data providers: Use the AVHRR cluster algorithm available in AAPP for all hyperspectral sounders.

Action DA/NWP-16 on Andrew Collard (NCEP): Request that the AVHRR/IASI clustering algorithm is implemented at NOAA/NESDIS/STAR for CrIS and AIRS data.

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.

Reduced Field of View Size for Hyperspectral Sounders

Recommendation DA/NWP-19 Recommendation to funding bodies to 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.

Action DA/NWP-17 on Bill Bell (Met Office) to collate the available studies that have been performed on the increased yield and try to find out why the answers differ and also 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.

Action DA/NWP-18 on Likun Wang (U. Maryland) : Circulate information on the study he performed on the VIIRS cloud mask. **DONE**

6. Bias Correction

Bias Correction Issues

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.

Action DA/NWP-19 on Wei Han (CMA): Detail what information is required on radiometric and forward model uncertainty to constrain bias corrections, and to circulate to the working group along with a proposal for how they would be used.

7. Use of correlated errors for data assimilation

Use of physically-derived correlated errors for data assimilation

Recommendation DA/NWP-21 to NWP Centres: Consider studies into the use of physical methods as well as diagnostic methods into correlated errors to facilitate assimilation of instruments.

8. Other items from the CGMS HLPP

Microwave sounder field-of-view size

CGMS Recommendation 3.8.2: Conduct studies to investigate the technical feasibility to reduce FOV size for microwave sounders to keep in line with the spatial resolution expected for future global NWP models.

Recommendation DA/NWP-22 to ITSC co-chairs: Request changes to CGMS HLPP to include a recommendation on investigating methods for reducing microwave sounder instrument noise without increasing the footprint size.

The End