

NWP Working Group Report

ITSC-18

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We would like to thank Godelieve Deblonde for her hard work as former co-chair of this working group.

Polar orbiting constellation

Recommendation to all relevant space agencies: The WG recommends that the constellation of at least three orbits (early morning, morning, and afternoon), each with full sounding capabilities (IR and MW), is maintained. The WG recommends coordination between agencies of the overpass times of operational satellites with sounding capability (IR and MW) to maximize coverage (including, e.g., China, India).

Availability of GCOM-W data

Recommendation to JAXA and partner agencies:
GCOM-W data should be made available to the international NWP user community in real time and in BUFR.

Action on ITSC Co-chairs: To bring these recommendations to the attention of CGMS.

Data timeliness

The NWP community appreciates the MetOp downlink station in Antarctica which greatly aids timeliness.

Recommendation: NOAA/NESDIS should consider providing a similar capability.

Recommendation to WMO: The NWP WG continues to support fast delivery initiatives (RARS) with extensions wherever possible, however the WG believes that the system should continue to be low cost. Further extension of the RARS network towards global coverage is encouraged until the point is reached where further improvements are no longer cost effective.

NPP

The Met Office and ECMWF are disappointed that NPP data were not available to them in the expected near-real-time BUFR streams at an early stage for calibration and validation studies.

Recommendation to Space Agencies: New operational data dissemination infrastructure should be tested at an early stage (well before launch) with simulated data.

Recommendation to Space Agencies: There should be open access to new satellite data for NWP centres to help with calibration and validation.

NPP/ATMS

For AMSU-A, channels 1 & 2 are widely used for cloud detection. On ATMS these channels have a significantly larger footprint than the other sounding channels. In addition other AMSUA-like sounding channels require averaging to reduce noise for NWP.

Recommendation for NWP centres: Critically review options for remapping ATMS data (e.g., 3x3 averaging, FFT methods, Backus-Gilbert methods) with particular reference to quality control issues.

Action on NWP Centres: Share these results with the NWP community via the NWP WG email list.

Hyperspectral infrared sounder channel selection

Recommendation to the NWP community: Studies for future channel selections for dissemination purposes should include aspects of cloud parameters, surface emissivities and skin temperature, and other identified deficiencies in the current selection (e.g., lower-level humidity).

Unapodised/apodised radiances

Recommendation to NWP centres: To investigate the implications of using apodised vs unapodised radiances with particular reference to CrIS and MTG-IRS. This should consider the effect on the development of channel selection and radiative transfer models, balanced against the effect on information content.

Data compression

For future hyperspectral sounders it will be challenging to losslessly disseminate all data (e.g., MTG-IRS).

Recommendation to space agencies: To consider using temporal and spatial characteristics to achieve a lossless compression for such hyperspectral sounders.

Recommendation to space agencies: If lossless compression does not achieve the required compression ratios, take a conservative approach in order to mitigate information loss (e.g., by retaining as many principal components as possible).

Implications from PC compression for data dissemination

Recommendation to NWP centres and space agencies:
To consider the implications from a possible use of PC
compression for future data dissemination, in particular
in terms of

- Required frequency of updates to the PC-set that might result from long-term trends of the evolution of the atmospheric state and the instrument.
- Differences in the observation errors and Jacobians of reconstructed radiances.

Implications from PC compression for data dissemination

Action on Tom King: To consider the investigation of time series of AIRS reconstruction scores to determine effects from long-term trends.

Action on Andrew Collard: To collect pertinent information relevant to the use of PC compression on a web-page under the NWP WG web-site.

Harmonisation of noise estimates in BUFR between EUM/NESDIS

Recommendation to Space Agencies: When designing new or modified BUFR formats, please circulate drafts to the NWP community via the NWP WG for feedback, prior to submission to WMO.

EUMETSAT has plans to include instrument NedT estimates in the BUFR level 1c products for MetOp AMSU-A/MHS.

Recommendation to NOAA and EUMETSAT: Consider harmonising the format and content of AMSU-A/MHS/AMSU-B files with respect to these noise estimates and also between RARS and global products.

SSMI/S

Investigations at various centres have highlighted problems with SSMI/S data resulting from a range of instrument issues. A means of sharing this experience, in particular in terms of bias correction and quality control between centres would be beneficial.

Action on NWP WG co-chairs to set up an SSMI/S web-page with information on quality control and bias correction experiences, and to NWP WG members to contribute to this page.

Recommendation for NRL: To review the quality flags provided in the BUFR data for SSMI/S to flag any known erroneous data.

RFI Documentation

We need to be able to document instances of RFI so that evidence can be presented to the relevant national authorities who may be able to remove offending transmissions.

Action on NWP WG members: If you have evidence of RFI, please send these to Niels Bormann for inclusion on the NWP WG RFI web page.

WG organisation

Action on NWP centres: Send additions to the content on the NWP WG regional data assimilation page to Roger Randriamampianina (roger@met.hu) .

Action on NWP centres: Continue to provide information on instrument channels assimilated and their observation error for inclusion on the NWP Working Group Pages.

Recommendation to NWP WG members to use the NWP WG mailing list for questions or to alert other centres to data problems.

NWP SAF monitoring pages

Action on Robert Tubbs to e-mail the NWP WG with the NWP SAF monitoring web-site and to request further information on its use from NWP WG members.

Action on Robert Tubbs to check that the links on the NWP WG monitoring web-site are consistent with those on the NWP SAF monitoring page, before the NWP WG monitoring web-site gets replaced with a link to the NWP SAF monitoring page.

Updated channel characteristics

NWP systems or SNO-methods have been used to revise channel characteristics such as central pass-band frequencies for microwave instruments. It would be useful to collect this information at a central location. The channel characteristics web-page of the RT WG seems a logical place for this and Paul van Delst agreed to include such information.

Action on NWP WG members: To email Paul van Delst revised channel characteristics resulting from post-launch diagnostics.

Bias Correction Intercomparison

Action: Roger Randriamampianina to e-mail the NWP Working Group with a proposal for a bias correction intercomparison exercise. This will cover both regional and global data assimilation models.

Action on NWP centres: To consider Roger's proposals and to provide feedback and data as appropriate.

Invest resources in operational data assimilation to fully realise potential of new satellites

For the equivalent of a small percentage of the total cost of new satellite programs the impact of these projects on operational forecasting could be improved significantly resulting in a greatly improved cost benefit/ratio for the tax payers of the world.

Recommendation 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.