

# ITSC-21 NWP Working Group Report

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# Recurring Recommendations and Actions

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

**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 Satellite Agencies:** In support of maintaining a robust global satellite observing system, instrumentation to allow continued sounding of the temperature of the upper stratosphere and mesosphere (as for the SSMIS UAS channels) should be explored.

**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.

# Recurring Recommendations and Actions

**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.

**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](mailto:jean.pla@cnes.fr)) or Richard Kelley ([richard.kelley@noaa.gov](mailto:richard.kelley@noaa.gov)).

**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 the radiative transfer working group chairs ([Benjamin.T.Johnson@noaa.gov](mailto:Benjamin.T.Johnson@noaa.gov) & [Marco.Matricardi@ecmwf.int](mailto:Marco.Matricardi@ecmwf.int))

# WG support to NWP community

**Action DA/NWP-4 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.

**Action DA/NWP-5 on WG Chairs:** Add information on the notification services from operational data agencies to the working group webpage.

## Provision of BUFR data

**Action DA/NWP-6 on WG members:** Review the summary document on different methods of calculation of NEDT compiled by Jörg Ackermann and feed back to the Working Group Chairs by 1<sup>st</sup> March 2018.

**Recommendation DA/NWP-6 to Data Providers:** Agree standardized procedure for calculation of NEdT estimates for inclusion within BUFR for microwave data.

**Recommendation DA/NWP-7 to Data providers:** Include azimuthal viewing and solar angles as appropriate in BUFR for present and future instruments. (*recurring recommendation*)

**Recommendation DA/NWP-8 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. (*recurring recommendation*)

# CrIS switch to Full Spectral Resolution Data

*CrIS data from NOAA-20 will only be distributed as Full Spectral Resolution (FSR) data, but the decision on when to transition the data dissemination for S-NPP from Nominal (NSR) to FSR needs to be made. Every centre will have a different strategy for making this transition, but it was agreed that the optimal strategy will for the transition for FSR for S-NPP to occur when centres are ready to start assimilation CrIS from NOAA-20 (and for some centres it may be necessary to switch both to FSR at the same time) . Six months from the start of data dissemination was considered a reasonable timeframe for this.*

**Recommendation DA/NWP-9 to Data providers:** The transition from NSR to FSR for CrIS data from S-NPP should occur no earlier than six months after CrIS NOAA-20 data becomes available.

# PC Compression of Hyperspectral Data

**Recommendation DA/NWP-10 to Data Providers:** When using PC compression, noise normalisation should be performed using the full noise covariance matrix. (*recurring recommendation*)

**Recommendation DA/NWP-11 to EUMETSAT:** Proceed with work on the use of Hybrid PC compression and investigate practical application of this method, including the incorporation of granule-based vectors in BUFR.

# NWP User input to changes in the Observing System

**Recommendation DA/NWP-12 to Data Providers:** If a change to data processing results in a change in brightness temperature of 0.1K or 20% of NEdT (whichever is smaller), this should be made clear in notifications to users. These notifications should be made no later than 8 weeks before the change and test data should be provided if possible.

**Recommendation DA/NWP-13 to Data Providers:** The overlap period where one satellite resource is replacing another should be chosen after consultation with the user community and should follow WMO guidelines.



# Pre-processing Software

**Action DA/NWP-7 on WG chairs:** Forward Nigel Atkinson's email requesting input on design and features of IRSPP and MWIPP to working group members

**Action DA/NWP-8 on WG members:** Review requirements for IRSPP and MWIPP and feed back to Nigel Atkinson and NWP WG co-chairs by 1st March 2018.

# Bias Correction

**Action DA/NWP-9 on Wei Han:** Distribute a detailed request for data required for his constrained bias-correction study

**Action DA/NWP-10 on WG members:** Respond to Wei Han's request.

**Action DA/NWP-11 on Working Group chairs:** Circulate request for updated information on regional bias correction methods

**Action DA/NWP-12 on WG members:** Respond to this request.

**Action DA/NWP-13 on DA/NWP WG Co-chairs:** Organise a meeting of a bias correction sub-group to meet at the next ITSC conference.

**Recommendation DA/NWP-14 to NWP Centres:** VarBC is now in wide use and proven to be effective in handling large changes to instrument calibration. Centres should aim to use VarBC, preferably combined with VarQC, wherever possible.

# Evaluation of current missions

**Recommendation DA/NWP-15 to the research community:** The data quality of developmental instruments may be evaluated by the research community, through the use of existing freely available NWP fields and radiance simulators. This is most appropriate where NWP centres are unable to fulfill this rôle and should be done in close collaboration with the NWP community.

**Recommendation DA/NWP-16 to NWP centres:** Review whether archived NWP output is sufficient for this purpose.

**Action DA/NWP-14 on Chris Burrows and Qifeng Lu:** Seek expressions of interest on coordinating evaluation of GIIRS and HIRAS data once available to the NWP community.

**Action DA/NWP-15 On WG Members:** Share impact assessment results for FY-3E with the group and CMA as soon as possible after data becomes available.

# Support for future research missions

**Recommendation DA/NWP-17 to proposers of research missions:** Promote studies from the research community, in particular non-operational centres that run NWP models, to investigate the utility of non-traditional measurement platforms (e.g. small satellites or observations from ISS). Collaboration with operational NWP centers is encouraged.

**Recommendation DA/NWP-18 to proposers of research missions:** Near-real time dissemination of data is extremely valuable to engage the community in mission evaluation, but does not need to be provided at high reliability levels.

# Monitoring

**Recommendation DA/NWP-19 to WG members:** Consider producing timeliness plots similar to those on the NWPSAF website and where possible request they are linked to for comparison.

**Action DA/NWP-16 on NWPSAF:** Add links to monitoring of DBNet stations' data timeliness.

# Stratospheric Water Vapour

**Recommendation DA/NWP-20 on NWP Centres:** Determine whether existing climatological constraints on stratospheric water amounts are sufficient or whether additional observations (such as the aging Aura-MLS) provide significant information.