RARS/DBNet and Direct Broadcast Packages Technical SubGroup

Report of the meeting held during ITSC-20

Thursday 29 October 2015

Chairs: Liam Gumley and Jérôme Lafeuille

29 Participants

- Allen Huang
- Anna Booton
- Antonia Gambacorta
- Bill Smith
- Bozena Lapeta
- Dave Hoese
- Dieter Klaes
- Dorothée Coppens
- Geoff Cureton
- Graeme Martin
- Jérôme Lafeuille
- Jessica Braun
- Jörg Ackermann
- Katerina Melnik
- Kathy Strabala
- Katja Hungershöfer
- Kelvin Brentzel
- Liam Gumley
- Mitch Goldberg
- Mohamed Dahoui
- Nick Bearson
- Nigel Atkinson
- Pascale Roquet
- Peng Zhang
- Ray Garcia
- Scott Mindock
- Serguey Uspenskiy
- Steve English
- Thomas August

Points discussed by the Technical Sub-Group

1. Review of actions from ITSC-19
2. High-level DBNet Service Specification
3. Hyperspectral product definition: PC and channel selection
4. **BUFR formats for CrIS, ATMS,IASI products (NOAA ≠ AAPP)**
5. **Direct Broadcast software package issues**
6. RARS-DBNet coverage over the Pacific ocean
7. FY-3 X-Band DB polarisation

4. NOAA/NCEP and AAPP BUFR formats

The BUFR formats used by NOAA/NCEP were compared with the AAPP-generated BUFR formats for CrIS, ATMS and IASI.

For CrIS and ATMS, the minor differences shall be solved by an AAPP update.

For IASI, the NCEP BUFR sequence is non-standard, and the granularity and channel selection are different from EUMETSAT files.

Action 8: Liam Gumley will provide further samples of ATMS BUFR files and SDR files to Nigel Atkinson for detailed analysis (Nov 2015).

Action 9: Nigel Atkinson to update the AAPP converter to ensure that ATMS, CrIS BUFR files from AAPP will comply with NCEP BUFR files.

Action 10: NOAA/NESDIS and NOAA/NCEP to consider updating their ingest system to be compatible with, and take advantage of, the IASI BUFR files available from DBNet.

5. Direct Broadcast Software package issues:

Sergey Uspensky said that in early 2016 we could expect a Linux-based software package for Meteor-M N2 for MTVZA-GY data.

Action 11: Roshydromet to provide documentation on downlink characteristics and work with beta testers in the DB community.

Kate Melnik asked about conversion of EARS AMSU/MHS/HIRS/IASI BUFR data to L1C for use in retrieval packages (e.g., MIRS).

Action 12: CSPP team to test and document AAPP conversion of EARS BUFR files into input formats for CSPP MIRS, IAPP etc..

Liam Gumley suggested that a recommendation go to CMA and Roshydromet to provide source code for their L1B processing software.

Action 13: CMA, ROSHYDROMET, to consider providing the source code for the L1B processing software of Meteor-M2 /MTVZA and FY-3/MHTS-MWTS respectively.

5. Direct Broadcast Software package issues:

Mitch Goldberg asked whether the IASI L2 processor could be released as a DB software package. Thomas August said the request should be sent again to EUMETSAT management, as they have committed to deploy the software to EARS stations.

Action 14: EUMETSAT to consider the possibility to release a IASI L2 processor for Direct Broadcast users.

Liam Gumley presented a proposal for a polar winds processor in CSPP. Liam will talk to Jeff Key about what is feasible to implement such a processor in a public release package.

Action 15: Liam Gumley to investigate the possibillity of an polar winds processor for LEO Direct Broadcast users. Initial from Jeff Key winds team is positive.

1. Report on ITSC-19 actions & new actions (1/3)

Action 1: NOAA to review what is needed in BUFR format for CrIS, ATMS and IASI and determine if they could use AAPP BUFR (i.e. RARS format) instead of NCEP BUFR . COMPLETED

Action 2: NOAA to send samples of NCEP BUFR data to Nigel Atkinson, COMPLETED

Action 3: WMO will inform the group on the data rates supported by the various GTS links. COMPLETED

The data exchange requirements for NWP are kept under review by GODEX-NWP , merging of former Asia Pacific Data Exchange and Utilization Group (APSDEU) and North America – Europe Data Exchange (NAEDEX)

Includes requirements for DBNet, to be submitted to WMO for WIS planning.

Action 1: DBNet users who are not part of GODEX-NWP are invited to communicate their requirements to WMO (Mikael@Rattenborg.de)

1. Report on ITSC-19 actions & new actions (2/3)

Action 4: SSEC, NOAA, EUMETSAT, WMO should coordinate on data formats, software versions, and latency requirements and come up with a plan to provide the DBRTN products for inclusion in RARS
COMPLETED

NOAA and EUMETSAT have agreed on a plan to provide NOAA DBNet data to DBNet via EUMETSAT/EARS**.** EUMETSAT will disseminate the NOAA/DBNet products via EUMETCast.

Action 2: NOAA to ensure the global availability of DBNet/NOAA products over the WIS/GTS.

Action 5: The draft Guide to RARS which defines the RARS procedures, software, formats, data exchange convention, service requirements, etc. should be finalized, published, and shared with potential data providers .
COMPLETED

Action 3: ITWG members to provide feedback to WMO on this draft Guide before 30 November (email to: Mikael@Rattenborg.de and jlafeuille@wmo.int)

1. Report on ITSC-19 actions & new actions (3/3)

Action 6: There is a need for reactivating the RARS Implementation Group within WMO with a broader scope to include NOAA DBRTN

COMPLETED.

The "DBNet Coordination Group" convened in March 2015.

A Google Group «DBNet-ops» was created to communicate operational information within the DBNet user/provider community such as : warning on anomalies detected by the DBNet monitoring, AAPP or CSPP upgrades, change of acquisition priorities, etc.

Action 4: Interested DBNet users to communicate an email address to WMO (jlafeuille@wmo.int or mikael@rattenborg.de) for inclusion into the DBNet-ops Google Group

2. High-Level DBNet Service Specifications

- A 20 min (goal) to 30 min (threshold) timeliness is confirmed.
- A 95% availability rate is found reasonable.
- The Guide should clarify how this availability is monitored.
- The «coverage» index reflects the merged acquisition areas of all DBNet stations available for a service, as a fraction of the area of the globe.
- For hyperpectral sounding, a 60 % coverage is a first step, but the goal should be 80-90 %, if possible with the telecom capability.

2. High-Level DBNet Service Specifications (rev)

Category of Service	Driving Application	Products	Data latency goal/threshold	Availa-bility	Coverage goal
IR/MW sounding	Global and High-Res NWP	Level 1 brightness temperatures	**20 min/ 30 min**	**95%**	**90%**
Hyperspectral IR sounding	Global and High-Res NWP	Level 1 radiances and PC scores	**20 min/ 30 min**	**95%**	**90% (60% initially)**
IR/VIS imaging	Nowcasting	Level 1 radiance /reflectivity	10 min/ 20 min	95%	30%
Scatterometry	NWP, Nowcasting and Ocean applications	backscatter cross-sections	20 min/ 30 min	95%	50% (of oceanic areas)
MW imagery	NWP, Nowcasting,	Level 1 brightness temperatures	20 min/ 30 min	95%	30%

3. Hyperspectral product definition

- DBNet products from different regions must be interoperable and consistent with the products derived from global data.
- Several centres use a channel selection differing from the initial NOAA selection of 399 CrIS channels and EUMETSAT selection of 500 IASI channels.
- Furthermore, further changes are anticipated when CrIS will move to a Full Spectral Resolution mode.
- For telecom planning purpose, we assume that future selections will not imply more than 399 (for CrIS) or 500 channels (for IASI).
- There is no requirement for Principal Component scores.

3. Hyperspectral product definition (contd)

To preserve flexibility in the channel selection with minor impact on the routing and processing of DBNet products, it is suggested that AAPP generate pseudo «all channel» products in which only the selected channels will be filled with actual data while the other channels will be set to zero. After compression the neutralized channels would not affect data volume.

Action 5: Nigel Atkinson to prepare an update of AAPP to generate pseudo all-channel products where the unselected channels would be set to 0.

Action 6: ECMWF (Steve English, Mohamed Dahoui) to test the pseudo all-channel products.

Action 7: WMO (Stephan Bojinsjki, Mikael Rattenborg) and the DBNet Coord Group to update the draft Guide to DBNet along the recommended high-level service specifications and product definitions.

6. RARS-DBNet coverage over the Pacific ocean

The main gap in RARS/DBNet is over the Pacific, a critical area

Progress in 3 regional networks:

- DBNet/NOAA: will include Hawai and Guam
- DBNet/Asia Pacific: includes Tahiti/Papeete now processing ATOVS
- DBNet South America: a new station in Easter island (Isla de Pascua, Chile) could feed DBNet, subject to telecom limitations.

Action 16: MétéoFrance to consider upgrading the Papeete processing to deliver ATMS, CrIS and IASI products through DBNet, given the high impact of these data and the current coverage gap of the Pacific.

Action 17: WMO to work with DBNet/South America, Chile, and CLS ARGOS with a view to share the data from Easter Island through DBNet.

7. FY-3 X-Band polarization issue

High risk of interference in X-Band where a single DB frequency range is used

To mitigate the risk of interference among FY-3 satellites in the case of simultaneous overpass in polar areas, CMA uses different polarizations:

RHCP (as usual) on FY-3 D (pm)

LHCP on FY-3C (am), and -3E (e-am)

Polarization still TBD for FY-3F,-3G.

Note that as of FY-3D there will be no L-Band : X-Band only

FY-3 Direct Broadcast users shall ensure that they are able to configure the polarization (RHCP or LHCP) on their X-Band receiving system at each overpass.

Action 18: CMA (Peng Zhang) to provide details on the Direct Broadcast services planned for the future FY-3 satellites including the polarization, so that users can prepare their systems.

THANK YOU !