

WORLD METEOROLOGICAL ORGANIZATION

IPET-SUP-4/Doc. 6.4  
(12.II.2018)

COMMISSION FOR BASIC SYSTEMS  
OPEN PROGRAMME AREA GROUP ON INTEGRATED OBSERVING SYSTEMS

INTER-PROGRAMME EXPERT TEAM ON SATELLITE UTILIZATION AND  
PRODUCTS

ITEM: 6.4

FOURTH SESSION

Original: ENGLISH

GENEVA, SWITZERLAND, 26 FEBRUARY – 1 MARCH 2018

## **Direct Broadcast Network (DBNet) – Status and Plans**

*(Submitted by Pascal Brunel, MétéoFrance and Chair DBNet Coordination Group)*

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### **Summary and Purpose of Document**

The document provides status and plans for the DBNet.

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### **ACTION PROPOSED**

The fourth session is invited to note the information provided.

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**Appendix:** A. Status of DBNet Actions (15 November 2017)

## DISCUSSION

### Introduction

1. The aim of DBNet is to provide near real-time access to near-global data from Low Earth Orbit (LEO) satellites, in order to meet in a cost-efficient manner the timeliness requirements of regional and global Numerical Weather Prediction (NWP) and other applications. DBNet, through the DBNet Coordination Group which reports to IPET-SUP, coordinates data acquisition through a globally distributed network of local Direct Broadcast receiving stations, their processing in accordance with agreed standards, and their rapid delivery to the global user community through appropriate telecommunication systems.
2. To guide the DBNet activities, a DBNet coordination Group has been established in 2015. Members of the group are regional DBNet coordinators, agencies providing software for Direct Broadcast processing, the NWP SAF. The Space Programme team is providing support to the Group which is chaired by Pascal Brunel from Météo-France.
3. The DBNet Guide provides guidance and specific requirements on all components of the DBNet systems and services. At CBS-XVI, the [Guide to the Direct Broadcast Network \(DBNet\)](#) was endorsed as part of the WIS documentation (see IPET-SUP-3/INF.7.3).

### DBNet Coordination Group

1. Since the last IPET-SUP-3 meeting the DBNet coordination group had a teleconference on 15 November 2017 and lot of members participated to the “DBNet and direct broadcast packages technical sub-group” of the International TOVS Study Conference 21 in Darmstadt (30 Nov 2017).
2. The Group discusses and establishes DB Best Practices which are submitted to CGMS. Four papers were presented to CGMS-45 in Korea: Role of CGMS DB Best Practices (WP-31); Update of CGMS DB Best Practices (WP-32); CGMS DB Best Practices – Implementation Status (WP-45); CGMS DB Best Practices – Change Record (WP-46)

### Status of DBNet Services

1. It is recalled that a priority should be that DBRTN data are available over the GTS globally.
2. Each DBNet regional network contributes to one or more “Services”. A DBNet Service consists of Direct Broadcast acquisition, processing and relay of a category of satellite data.

Categories of Services	Services (Instruments)	Operational (Jan 2018)
IR/MW sounding	ATOVS (AMSU-A, MHS, HIRS), ATMS, VASS (MWTS/2, MWHS/2, IRAS)	ATOVS (global), ATMS (EUM + NOAA), VASS (EUM)
IR/VIS imaging	VIIRS, AVHRR, MERSI	VIIRS and AVHRR (EUM)
Hyperspectral IR sounding	CrIS, IASI, HIRAS, AIRS	CrIS (EUM + NOAA) and IASI (EUM + NOAA)
Scatterometry	ASCAT, Wind RAD	ASCAT (EUM)
MW imagery	MWRI, MTVZA-GY, AMSR-2	

#### 4. Network status updates

The major network updates since last IPET-SUP-3 are:

- NOAA DBRTN, no major update. DB station in Mayaguez, Puerto Rico were not damaged by the hurricanes which battered the island in 2017.
- India, three acquisition systems are about to be upgraded. Chennai station data is being sent to RARS (DBNet) network operationally.
- Argentina. Some updates in the processing systems and hardware.
- Brazil. New antennas in Cuiaba and Cachoeira Paulista. The three SIPAM stations (NOAA and METOP) will participate in the DBNet
- Chile Pasqua (Easter) Island. The station is managed by CLS-ARGOS. Network connection with continent is very slow, it does not permit ATOVS broadcast.

#### 5. DBNet service for MWHS-2 on FY-3D

FY-3D was launched on 15 Nov 2017. The Group noted a memo from ECMWF addressing the importance of DBNet for the assimilation of FY-3 MWHS-2 in the ECMWF operational forecast system. Main conclusion:

*“The DBNet initiative for MWHS-2 data enables a very significant increase in the number of observations that can be used for the early-delivery analysis for this instrument (70% for the Northern Hemisphere), with some improvements noticeable for the delayed cut-off analysis as well. The data is consistent with the global data processed by CMA, and it will be used operationally at ECMWF from cycle 45r1 onwards.*

*There is considerable scope for extending the DBNet service for MWHS-2. For AMSU-A and MHS from NOAA and Metop satellites, there is presently data available from up to around 40 stations covering large parts of the globe (e.g., see [http://www.wmo.int/pages/prog/sat/dbnet\\_en.php](http://www.wmo.int/pages/prog/sat/dbnet_en.php)). Given the relatively poor timeliness of the global data, an extension of the DBNet MWHS-2 service appears of particular benefit. Improvements in the timeliness of the global data would of course also be of benefit.”*

DBNet stations are encouraged to provide sounder data from FY-3D, a recommendation from ITSC-21 has been raised accordingly.

#### **Network plans (as agreed by DBNet Coordination Group in September 2016)**

- Consolidate the existing network for IR/MW sounding services, solving specific local problems
- Complete the infrastructure for Metop and S-NPP/JPSS
- Implement consistent monitoring of DBNet part of overall latency and address specific timeliness problems
- Extend the geographical coverage of DBNet, capitalizing on existing capabilities (e.g. Tierra del Fuego, Isla de Pasqua, NW South America, Santa Maria Madre del Dios, Guam)
- Improve the user-friendliness of release process for processing software
- Advance the implementation of Hi-res IR services (IASI, CrIS)
- Contribute to the implementation of the new WIS metadata standard for DBNet products
- Strengthen the dialogue with global and regional WMO groups responsible for WIS capacity planning
- Advance the implementation of FY-3

#### **Next DBNet Coordination Group meeting**

DBNet-CG-3 to be held 20-22 March 2018 in Lannion (France).

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**Appendix: Status of DBNet Actions (15 November 2017)**

<i>Actions</i>	<i>Status</i>
<i>DBNet – Overall network operations</i>	
All Operators to provide information on major station events to DBNet Operations mailing list	(Standing Action)  Updates received from Liam, Ashim, Sergio, Gloria
<i>DBNet - South America</i>	
To coordinate with CLS-Argos, CONAE, SMN (Argentina) and DMC (Chile) to investigate the possibility to install AAPP in Isla de Pascua with remote administration by CONAE, or to extract and transmit the level 0 ATOVS data for remote processing. (Gloria Pujol, WMO)	Patrick Broussin (CLS) provided connectivity data, proving that line is slow; new comms line would cost 100K€; discussion between MF and CLS resuming in 2018  Liam activated Scott Rogerson (NOAA) on the same issue
<i>DBNet - Asia Pacific</i>	
Provide data volume simulations for Papeete station (for ATMS and ATMS+CrIS+IASI, to support decision for upgrade to TLS-line.	CLOSED; Provided by Mikael to MF using DBNet load tool; Papeete operations planned for coming months
CMA to consider providing on the GTS, in a format consistent with global data in BUFR, the FY-3 sounding data from Beijing, Guangzhou, Urumqi which are concentrated in Beijing.	CMA have previously indicated that Metop and NOAA data are received in DB, but FY-3 A,B,C data are integrated with the data dump at these stations, therefore it is not easy to extract local FY-3 data to support DBNet. This may be reconsidered with FY3D.  Keep FY-3E in mind for consideration in DBNet.
<i>Cross-cutting matters</i>	
BoM to analyse timeliness monitoring issue and propose way forward	Work in progress, with JMA; investigate possibility of new format of reporting

All DBNet operators to implement new filename convention	EUMETSAT has completed the implementation of the file name convention on 30 May 2017. The filenames of EARS Sounder BUFR Products were updated to be DBNet-compliant affecting the EARS-ATOVS, EARS-IASI, EARS-ATMS, EARS-CrIS and EARS-VASS Services.  KMA to implement this soon; no major issues foreseen
<i>Transition to new DBNet services</i>	
<i>Processing Software issues</i>	
DBNET Coordination Group to investigate ways to make it possible for DBNET operators to contribute sounder data to the network without needing to run local processing: (i) Provide a mechanism where station operators can notify a regional coordinating node that Level 0 data is available; (ii) Provide a mechanism to allow push or pull of the Level 0 data (perhaps in compressed format) to the regional node; (iii) Regional node can process the data to Level 1 and BUFR and distribute it normally via GTS/WIS/Rebroadcast/Internet; (iv) Provide the regional or global data back to the station operator (if needed).	Will be included in agenda for DBNet CG-3  Group noted that increasingly hindering factors are data volumes of level0 data, and increasing concerns about IT security connected to data exchange  Noted that priority should be on having all DBNet global data on the GTS before engaging new stations
ITSC-PSWG (via Nigel) to provide S/W benchmark figures associated with a typical configuration	CLOSED; Information received on benchmarks and software; testing underway; intent to include the FY-3 processing software
NWPSAF to revise AAPP minimum configuration	CLOSED; NWPSAF website updated
NWPSAF to investigate methods for providing pre-processor software version in BUFR product	CLOSED with AAPP 7.15; DWD issue regarding additional BUFR descriptor; question raised how to officially notify users of BUFR regarding (i) changes in filenames, (ii) changes in content;  Check with users in GODEX-NWP
CIMSS to provide instructions on how to build a Docker Image for AAPP and OPS-LRS	CLOSED; CIMSS provided details on a package explaining how to build AAPP and OPS-LRS in a docker image, include examples, how to run, how to deploy (8 Mar

	2016)
CIMSS to provide examples on installation and running of FY3 processing packages	CLOSED; DONE by email to DBNet Coordination Group (26 Sep 2016). Not yet tested.
<i>DBNet and WIS</i>	
WMO to provide communication to DBNet operators about new WIS metadata standard after CBS decision	CLOSED <a href="http://www.wmo.int/pages/prog/sat/documents/SAT-GEN_ST-17-CGMS-TFMI-WMOCoreProfile-Satellite-Documentation-Aug2016.pdf">http://www.wmo.int/pages/prog/sat/documents/SAT-GEN_ST-17-CGMS-TFMI-WMOCoreProfile-Satellite-Documentation-Aug2016.pdf</a>
DBNet regional coordinators to initiate dialogues with Regional Association WGs responsible for WIS infrastructure	WMO to inform DBNet regional coordinators about the RA-specific WIS groups and contact points
<i>Other Actions</i>	
WMO to publish article about DBNet in WMO bulletin	WMO to find out deadline for Bulletin, and propose a structure; have draft article ready by March 2018 (DBNet-CG-3); Volunteer authors: Pascal, Mikael, Denis, Liam; to include examples for timeliness and impact on NWP applications needed Use ITSC-21 material; Discuss way forward with Mikael, Pascal during ITSC-21
Present proposal for DBNet metrics to IPET-SUP-3, as per Actions in EGOS-IP	CLOSED; Should be part of DBNet report to IPET-SUP-3; Nigel to provide examples for measuring timeliness and volume of hyperspectral data; ATOVS statistics readily available
WMO to update DBNet-ops and DBNet-coord email lists	CLOSED