



Implementation of CGMS Best Practices for LEO Direct Broadcast Data at NOAA

Presented to CGMS-51 Working Group 1 session, agenda item 5.4

Executive summary of the WP

This paper describes the implementation status of the Coordination Group for Meteorological Satellites (CGMS) agency best practices in support to local and regional processing of Low Earth Orbiting (LEO) Direct Broadcast (DB) data at the National Oceanic and Atmospheric Administration (NOAA).

This paper focuses on the Polar Operational Environmental Satellites (POES) legacy missions (NOAA-18, NOAA-19); Suomi National Polar-orbiting Partnership (S-NPP) mission, NOAA-20 mission and NOAA-21 mission

List of Best Practices

1. BP.01 Global Specification for Direct Broadcast
2. BP.02 Timely Provision of Space-to-Ground Interface Control Documents
3. BP.03 Provision of Current Orbit Information
4. BP.04 Provision and Maintenance of Product Processing Software
5. BP.05 Packages Provision of Auxiliary Data for Instrument Product Processing
6. BP.06 Recommendations of Channel Selection for Hyperspectral Instruments
7. BP.07 Spacecraft and Instrument Operational Status
8. BP.08 Operational Announcements
9. BP.09 Satellite Direct Broadcast and Reception Station Performance Requirements
10. BP.10 Monitoring of the Direct Broadcast Downlink

Status of Operation Broadcast Systems

POES		
Instruments	NOAA-18	NOAA-19
AMSU-A1	Green	Green
AMSU-A2	Green	Green
AVHRR	Yellow	Green
HIRS	Red	N/A
MHS	Red	Yellow
SUBV	Red	Green

JPSS			
Instruments	SNPP	NOAA-20	NOAA-21
ATMS	Green	Green	Green
CERES	Green	Green	Green
CrIS	Green	Green	Green
OMPS	Green	Green	Green
VIIRS	Green	Green	Green

Background Slides

BP.01 Global Specification for Direct Broadcast

NOAA-18, NOAA-19 (POES)

- Compliant with earlier version

SNPP, NOAA-20, NOAA-21 (JPSS)

- Compliant. Status previously briefed during CGMS-46. Link to the Joint Polar Satellite System (JPSS) Common Data Format Control Book with the downlink data formats provided at CGMS- 48

https://directreadout.sci.gsfc.nasa.gov/links/rsd_eosdb/PDF/474-00001-07-01_JPSS-CDFCB-X-Vol-VII-Part-1_0122-20120126.pdf

Key issues of relevance to CGMS:

- ☐ NOAA is an active participant in the WG-I Best Practice intersessional meetings
- ☐ NOAA participated in the peer review process
- ☐ NOAA participated in the “SWOT Analysis on Low Latency Data Access from LEO Satellites” [CGMS-50-CGMS-WP-08]
- ☐ HLPP 2.3.3 Advance the implementation of the CGMS Agency Best Practices in support to Local and Regional Processing of LEO Direct Broadcast data for operational satellites with DB capability

BP.02 Timely Provision of Space-to-Ground Interface Control Documents (ICD)

NOAA-18, NOAA-19 (POES)

- Compliant, Status previously briefed during CGMS-46 (web links provided via WP)

SNPP, NOAA-20, NOAA-21 (JPSS)

- Compliant. S-NPP/NOAA-20 statuses were briefed during CGMS-46.
- NOAA-21 High Rate Data (HRD) changes were briefed during CGMS.

A NOAA-21 ICD revision is now available at the following URL:
https://www.jpss.noaa.gov/assets/pdfs/technical_documents/472-00340_J2_HRD_to_DBS_RF_ICD_Rev_C.pdf

BP.03 Provision of Current Orbit Information

NOAA-18, NOAA-19 (POES)

- Compliant, Status previously briefed during CGMS-46

SNPP, NOAA-20, NOAA-21 (JPSS)

- Compliant with S-NPP, NOAA-20 and NOAA-21. The JPSS Field Terminal Support (FTS) provides Mission Support Data (ancillary data, auxiliary data and Mission Notices) and the necessary hardware and software specifications needed for processing the broadcasts. FTS distributes S-NPP, NOAA-20 and NOAA-21 TLEs, predicted post- maneuver TLEs, and definitive ephemeris files. FTS webpage: <https://fieldterminal.nesdis.noaa.gov>
- Users can also find S-NPP, NOAA-20 and NOAA-21 TLEs from the following OSPO run webpage: <http://www.celertrak.com/NORAD/elements/noaa.txt>

BP.04 Provision and Maintenance of Product Processing Software

NOAA-18, NOAA-19 (POES)

- Compliant, The Community Satellite Processing Package (CSPP) supports the Direct Broadcast (DB) meteorological and environmental satellite community through the packaging and distribution of open source science software.

SNPP, NOAA-20, NOAA-21 (JPSS)

- Compliant, The Community Satellite Processing Package (CSPP) supports the Direct Broadcast (DB) meteorological and environmental satellite community through the packaging and distribution of open source science software.
- Instructions for downloading CSPP software are on the CSPP Home Page located at: <http://cimss.ssec.wisc.edu/cspp/>

BP.05 Packages Provision of Auxiliary Data for Instrument Product Processing

NOAA-18, NOAA-19 (POES)

- Compliant, Status previously briefed at CGMS-47

SNPP, NOAA-20, NOAA-21 (JPSS)

- Compliant with S-NPP, NOAA-20 and NOAA-21 auxiliary data are available on FTS.
- The FTS user portal web page is located at: <https://fieldterminal.nesdis.noaa.gov/>

BP.06 Recommendations of Channel Selection for Hyperspectral Instruments

NOAA-18, NOAA-19 (POES)

- Not Applicable

SNPP, NOAA-20, NOAA-21 (JPSS)

- Compliant. Users are notified of any changes through Environmental Satellite Processing Center (ESPC) Notifications.
 - Contact the ESPC Help Desk to be added to the distribution list:
ESPCOperations@noaa.gov
 - Notifications are archived at:
<https://www.ospo.noaa.gov/Operations/messages.html>

BP.07 Spacecraft and Instrument Operational Status

NOAA-18, NOAA-19 (POES)

- Compliant, POES status available at the following URL:
<https://www.ospo.noaa.gov/Operations/POES/status.html>

SNPP, NOAA-20, NOAA-21 (JPSS)

- Compliant, JPSS Status is available at:
<https://www.ospo.noaa.gov/Operations/JPSS/status.html>
- Product maturity level is available at:
<https://www.star.nesdis.noaa.gov/jpss/AlgorithmOperational.php>

BP.08 Operational Announcements

NOAA-18, NOAA-19 (POES)

- Compliant. ESPC Notifications are issued for both planned and unplanned events. The Notifications are also at: <http://www.ospo.noaa.gov/Operations/messages.html>

SNPP, NOAA-20, NOAA-21 (JPSS)

- Compliant. ESPC Notifications are issued for both planned and unplanned events. The Notifications are also at: <http://www.ospo.noaa.gov/Operations/messages.html>

BP.09 Satellite Direct Broadcast and Reception Station Performance Requirements

NOAA-18, NOAA-19 (POES)

- Not Applicable

SNPP, NOAA-20, NOAA-21 (JPSS)

- Compliant, status briefed during CGMS-46 and unchanged.
 - The link budget is provided in the working paper. (Appendix A.2)

BP.10 Monitoring of the Direct Broadcast Downlink

NOAA-18, NOAA-19 (POES)

- Compliant. NOAA routinely monitors NOAA-15, 18, and 19 HRPT at Wallops CDAS and Fairbanks CDAS

SNPP, NOAA-20, NOAA-21 (JPSS)

- Compliant. Briefed at CGMS-49 with no update.
- OSPO is currently responsible for monitoring the S-NPP, NOAA-20 and NOAA-21 HRD broadcasts.