Operational DCS Status Report incl. EDCP Implementation Plans + Status of Implementation of Best Practices

Presented to CGMS-54 Working Group I session, agenda item 7.5

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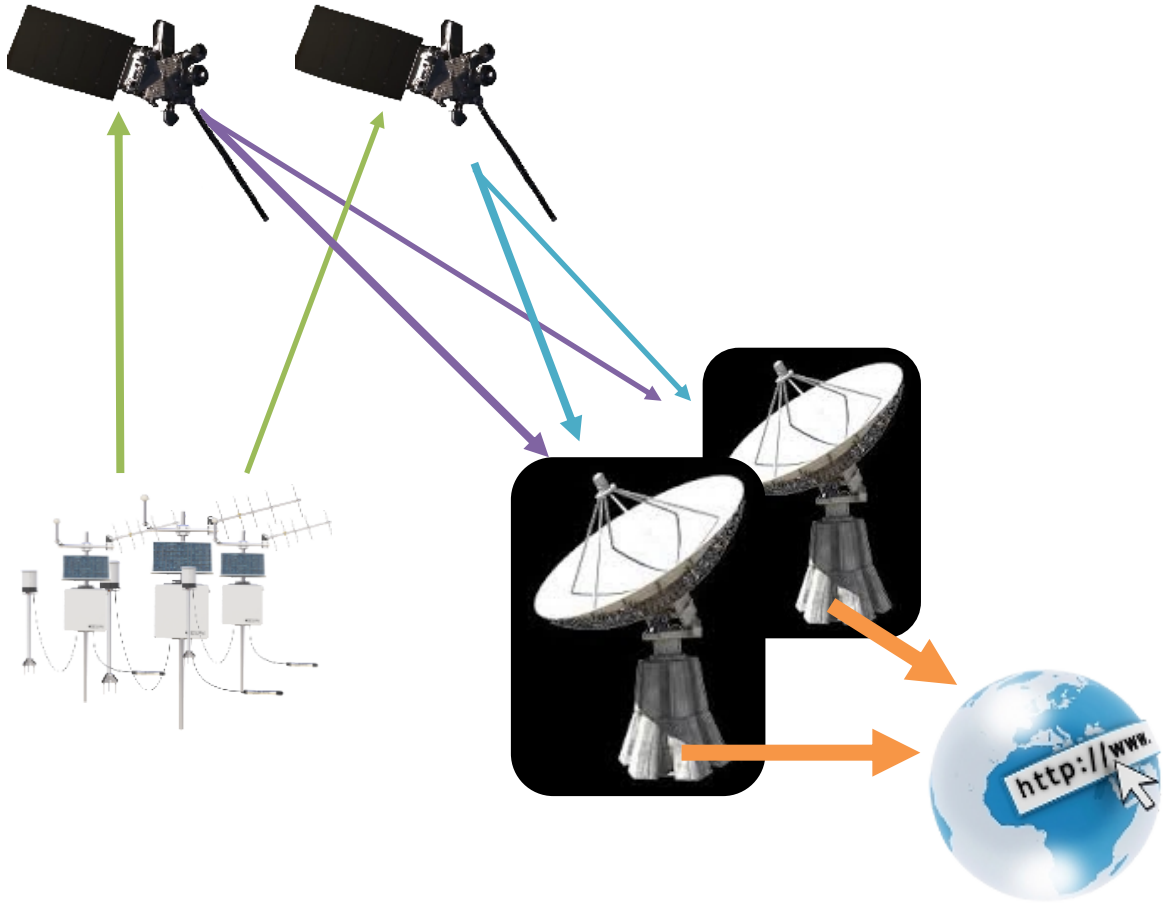
Executive summary of the WP

The GOES DCS is an environmental data relay system supports the collection of over one million message per day from over 33,000 active Data Collection Platforms (DCPs) throughout the Western Hemisphere. The GOES DCS Program has 721 user agency agreements representing 50 countries. Use of GOES DCS continues to expand.

Collaborations with CGMS has resulted in progress exploring more robust communication protocols and an Enhanced Data Collection Platform (EDCP) Standard that may benefit all DCS operators. The EDCP Standard and other initiatives in progress at NOAA offer potential to improve system performance and mitigate external factors impacting GOES DCS such as radio frequency interference (RFI).

The GOES DCS has implemented all applicable Best Practices that can be employed on the current system. Any minor differences in Best Practices are related to the existing concept of operations for GOES DCS and NOAA's data delivery model.

GOES DCS Overview



Satellites:	GOES East – 75.5ºW GOES West – 137ºW
Data Collection Platforms:	32,700+ active 43,000+ registered
DCS DCP Uplink:	401-402 MHz
DCS DCP Downlink:	468 MHz
GOES Downlink:	1679.7 - 1680.1 MHz
Agency Agreements:	638
Countries Participating:	42

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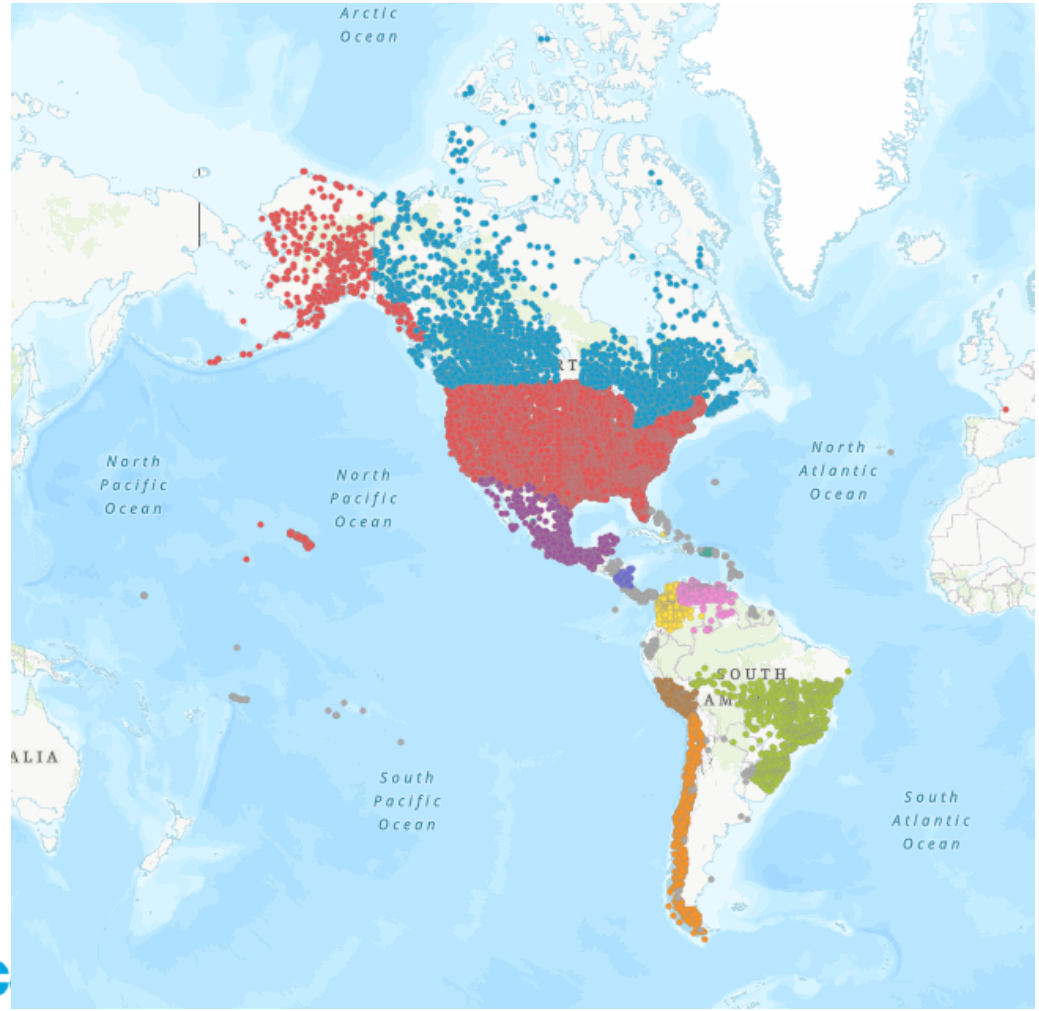
GOES DCS Overview (continued)

Data Collection Platform Distribution



Meteorological Satellites

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GOES DCS Operational Status - Operational Use


Hydro

- Streams & River
- Ocean Tides & Currents
- Navigable Waterways
- Locks & Dams
- Snow Levels
- Land Reclamation

Fire

- Fire Prediction
- Fire Response

Alerts

- Earthquakes
- Tsunamis
- Avalanches
- Flooding & High Water

Resources

- Wildlife
- Environmental Monitoring for Industrial Applications

Research

- Climate Study
- Rainforests
- Polar
- DCP Manufacturers






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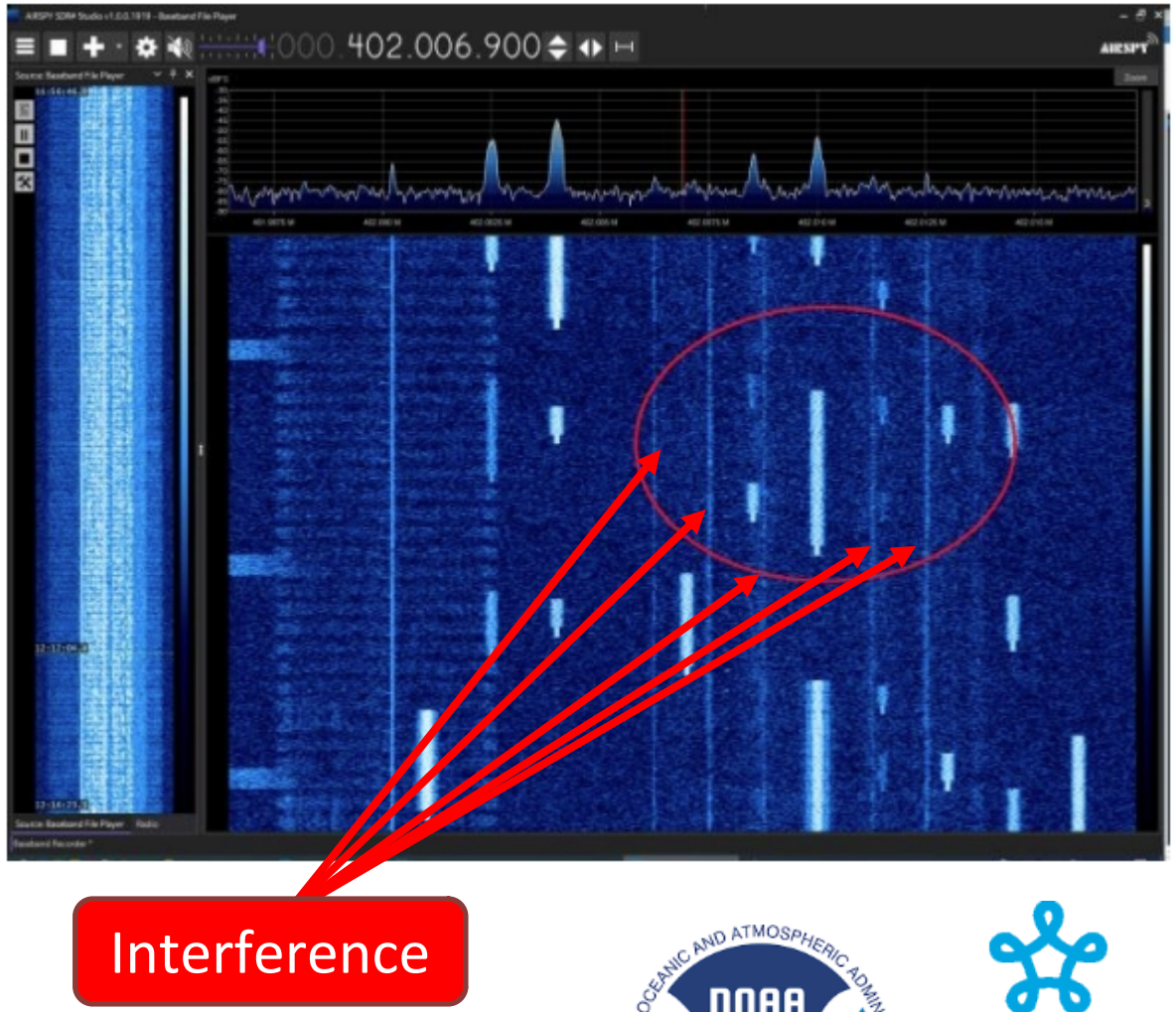
GOES DCS Operational Status - Radio Frequency Interference

- Human-caused Radio Frequency Interference (RFI) remains a persistent problem
- Solar Maximum and Space Weather (Ionospheric Scintillation) have impacted system performance for some users



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GOES DCS Operational Status

NOAA Initiatives to Improve System Performance

- Communication Protocol Improvements including the Enhanced DCP Standard. Reed-Solomon Encoding at 400bps and 800bps have been developed and are in testing. The project will continue in 2026.
- The GOES DCS IT System is being modernized.
  - DCS Administration and Data Distribution System (DADDS) 4.0 is deployed to the Production environment and publicly available for testing during the next six months.
  - Cloud developed and cloud hosted in the NOAA Common Cloud Framework (NCCF)
  - Improved public access for public data will hopefully limit the need for user accounts for internal access
  - Data available via subscriptions (Webhooks) or REST API
- Ionospheric Scintillation Statistic
- An "S_{DCS}" metric has been developed.
  - The metric has been deployed with the DCS development system
  - This statistics may help inform users and researchers on space weather impacts to the DCS and beyond.

CGMS DCS Best Practices and GOES DCS Practices – DCS Data Access

BP.01	CGMS
BP.02	NOAA
BP.03	CGMS
BP.04	CGMS
BP.05	CGMS
BP.06	NOAA
BP.07	CGMS
BP.08	NOAA
BP.09	CGMS
BP.10	CGMS

Practices Generally Aligned

Differing NOAA Practices

- BP.06 – NOAA stores user data for 30 days. Scaling storage and long-term storage is up to the user. New DCS IT system will support far more storage (subject to cost).
- BP.08 – NOAA uses web notices and all-user emails to communicate outages, which are rare. New DCS IT system has improved analytics and support will involve more Trouble Ticket and Issue tracking.

CGMS DCS Best Practices and GOES DCS Practices – DCS Data Access

BP.01	
BP.02	
BP.03	
BP.04	
BP.05	
BP.06	
BP.07	

Practices Generally Aligned

NOAA Practices

- BP.01 – DCP certifications are very rare. Government rep conducts personal visit to the manufacturer.
- BP.02 – DCP certifications are very rare. Manufacturers contact the NOAA Radio Frequency Engineer directly. All procedures, standards, and approved manufacturers are published on a public webpage.
- BP.06 – DCP certifications are very rare, there is currently not a timeline requirement for the certification process.

Key issues of relevance to CGMS:

- The Enhanced Data Collection Platform Standard (EDCP) offers great potential to improve DCP communication to provide a more robust capability. NOAA will continue to share results of testing with the CGMS Workgroup I (DCS)
- Radio Frequency Interference (RFI) remains an issue impacting GOES DCS. Locating interference sources can be problematic and prevent official reporting to regulatory agencies. Continued engagement between CGMS WG I (DCS) and WGI (RFI) are recommended.