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

Presented to CGMS-53 Working Group 1 Satellite Systems and Operations, Data Collection Systems, Agenda Item (DCS) session, agenda item 5.5

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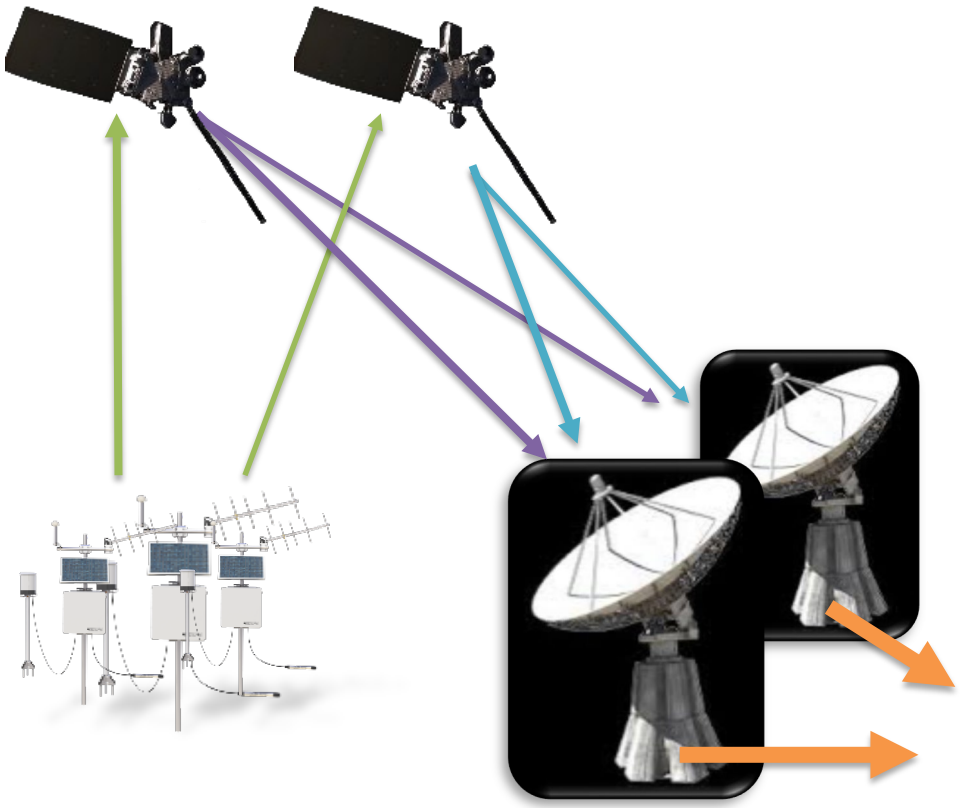
Executive summary of the WP

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 – 75.5°W GOES West – 137°W GOES 17 – 104.7°W (storage*)
Data Collection Platforms:	>33,000+ active 43,000+ registered
DCS DCP Uplink:	401-402 MHz
DCS DCP Downlink:	468 MHz
GOES Downlink:	1679.7 - 1680.1 MHz
Agency Agreements:	728
Countries Participating:	50

***GOES-17 Auxiliary Comms for DCS is operational for testing as an RFI mitigation, but will be replaced by GOES-16 in 2025.**

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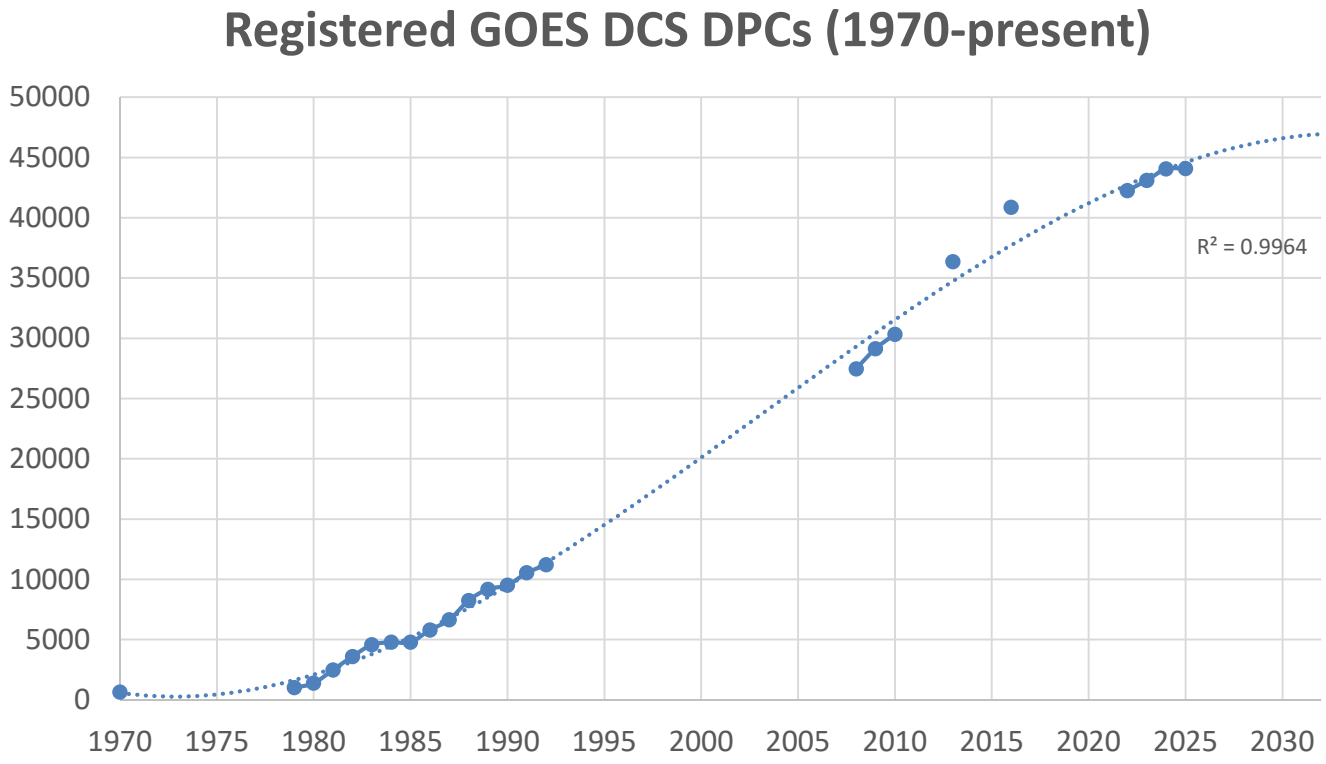
GOES DCS Operational Status

- System Growth remains ~2% year
- Data Collection Platforms have transitioned to Communication Standard (CS) 2, 84% of messages are now CS2.



GOES DCS Operational Status (continued)

- Weather
- Fire Prediction and Firefighting
- Seismic Alerting and Tsunami Warning
- Avalanche Warning
- Water Level Monitoring and Flood Alerting
- Navigable Waterway Management (River, Canals and Locks)
- Water Retention & Allocation
- Climate Research
- System Technology and Testing

Organizational Use- Examples

U.S. Forest Service & multiple int'l agencies

Chilean Navy, Caribbean Tsunami Warning Center

Alaska Avalanche Info Ctr, Idaho Transportation Dept

NOAA National Weather Service
U.S. Geologic Survey

U.S. Army Corps of Engineers

U.S. Bureau of Reclamation, Int'l Boundary & Water Commission

Brazil Climate and Water, Nat' Met Service of Belize

DCP Manufacturers, Researchers

MICROCOM ENVIRONMENTAL

SUTRON an OTT HydroMet brand

FTS AN aem BRAND

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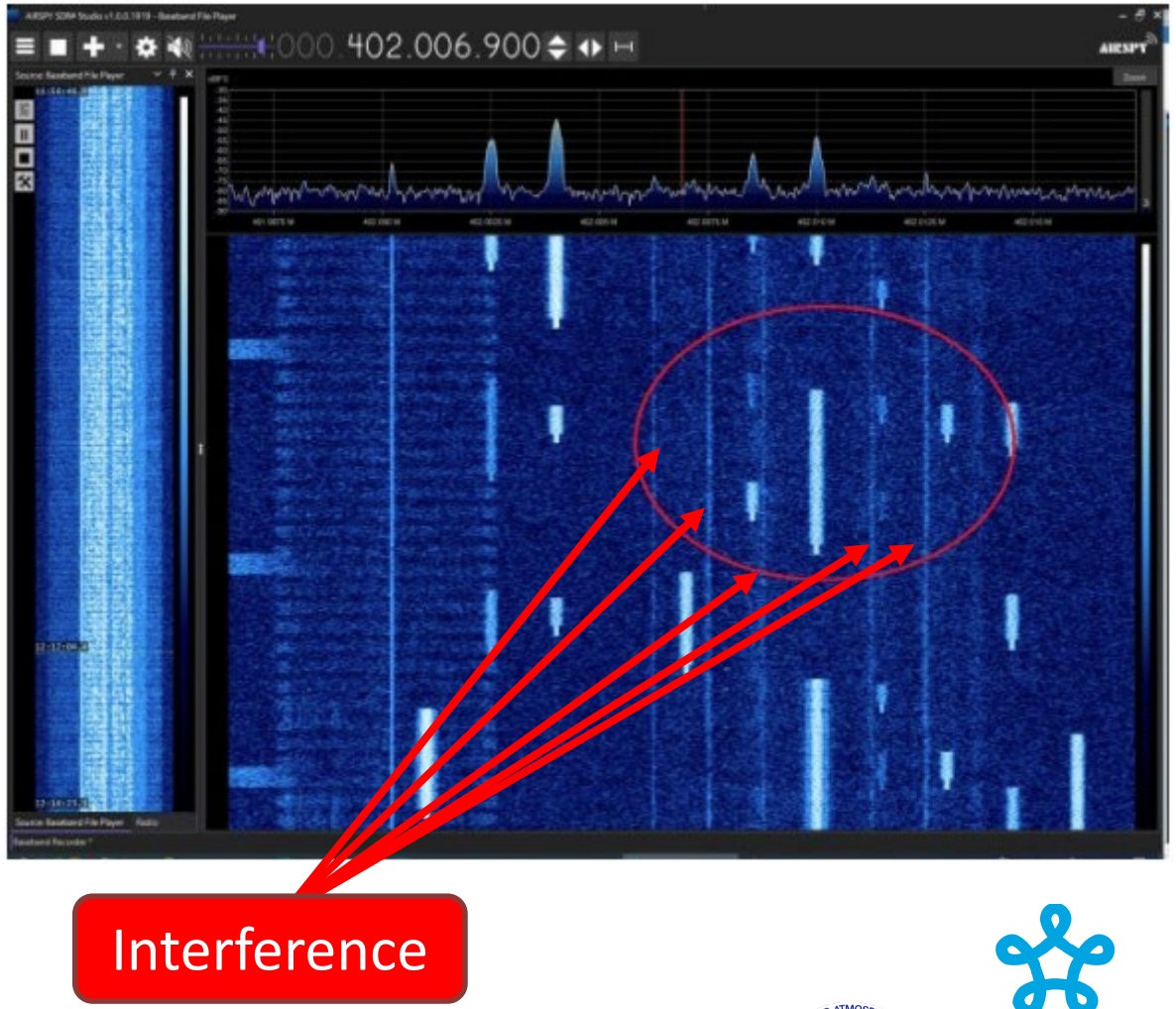
GOES DCS Operational Status (continued)

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



GOES DCS Operational Status (continued)

- 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 2025**.
  - The GOES DCS IT System is being modernized. Initial communication ingest (demodulation direct to cloud services) and prototype user/platform management interfaces have been developed in the NOAA Common Cloud Framework (NCCF). **System delivery September 2026**
  - Data Collection Platform Commanding (DCP) - Remote platform configuration changes. IT system changes are in place on the legacy system, a prototype command modulator was tested in March 2025. **DCP receiver and other reference designs will be deliver in April 2025.**

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.
- BP.08 – NOAA uses web notices and all-user e-mails to communicate outages, which are rare. Replacement DADDS may have improved issue tracking and user communication.

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CGMS DCS Best Practices and GOES DCS Practices –DCP Transmitter (TX) Certification Process

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. Improved awareness through use of an Interference Register is recommended.