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| **Subject** | **Operational DCS Status Report incl. EDCP Implementation Plans + Status of Implementation of Best Practices** |
| **In response to CGMS action/recommendation** | N/A |
| **HLPP reference** | N/A |
| **Executive Summary** | The Geostationary Operational Environmental Satellite (GOES) Data Collection System (DCS) is a vital environmental data relay system that supports the collection of over one million messages daily from more than 33,000 active Data Collection Platforms (DCPs) across the Western Hemisphere. The GOES DCS Program manages 623 user agency agreements representing 42 countries.<br><br>However, the growth of the DCS and increasing radio frequency interference present management challenges. NOAA is actively working to restore the ability for Data Collection Platform (DCP) Commanding, which will allow for remote configuration changes to devices—a capability that holds significant potential for NOAA and GOES DCS users. The GOES DCS Program has reported instances of unlocated interference that negatively impacts the system to the CGMS Workgroup I (DCS) Interference Register to draw attention to the issue. Additionally, NOAA is currently replacing the core IT management and distribution system by implementing the NOAA Common Cloud Framework (NCCF).<br><br>In collaboration with CGMS WG I (DCS), the GOES DCS Program has initiated independent development of the CGMS Enhanced Data Collection Platform (EDCP) Standard. Testing for this new standard is planned for this year, and NOAA will continue to collaborate and share information as the project progresses. |
| **Action/Recommendation proposed** | Continue to support collective effort for the Enhanced DCP Standard.<br>Continue to support the expanded awareness of the impact and current status of radiofrequency interference on international DCSs. |

# 1 INTRODUCTION

The GOES DCS has made significant progress on several projects in the past year that pertain to the current DCS and the DCS that will operate in the future GeoXO constellation.

NOAA is addressing issues caused by aging technology by redeveloping the GOES DCS Administration and Data Distribution System (DADDS) using cloud-based resources in the NOAA Common Cloud Framework (NCCF). Incremental developments on communication protocols have expanded to include the Enhanced Data Collection Platform Standard (EDCP) recommended by CGMS Workgroup I (DCS). Interagency and international cooperation has resulted in the identification and removal of two sources of interference in the past year and the pursuit of other interference sources. Lastly, the GeoXO program has re-baselined and approved the full DCS capability as part of the future GeoXO system.

# 2 OPERATIONAL DCS STATUS REPORT

The GOES DCS is an environmental data relay system that supports the collection of over one million messages per day from over 33,000 active Data Collection Platforms (DCPs) through the Western Hemisphere. The GOES DCS Program has 623 user agency agreements representing 42 countries. DCPs collect environmental data, transmit this information to a GOES East or West satellite. The data is then rebroadcast from the satellite(s) to terrestrial receive facilities. Environmental data is then distributed using the DCS Administrative and Data Distribution System (DADDS), forwarded to other distribution points such as the Global Telecommunication System (GTS), or added to other satellite rebroadcast services. The DADDS is the central IT management tool for GOES DCS users, DCPs, and spectrum assignments.

While the original purpose of GOES DCS was to provide data to NOAA, the use of the DCS has grown into a complex network of data gathering for a multitude of environmental purposes throughout the western hemisphere. In some cases, the system has become an important component for redundancy, complementing other capabilities like commercial satellite services, and for critical operational decisions.

The following include a few examples:

- fire prediction and firefighting,
- seismic alerting and tsunami warning,
- avalanche warning,
- water level monitoring and flood alerting,
- navigable waterway management,
- climate research, and;
- system and technology testing.

In the past year the GOES DCS program developed an ionospheric scintillation metric that is intended to provide additional evidence for space weather effects on each

method. The metric $S_{DCS}$ has been implemented on the GOES DCS development system and is in testing. Initial results indicate the metric can be correlated to spectrograms.

Active DCP growth was flat from 2024 to 2025 and was reduced by 0.5% in 2026. Figure 1 depicts the number of registered DCPs since 1970.

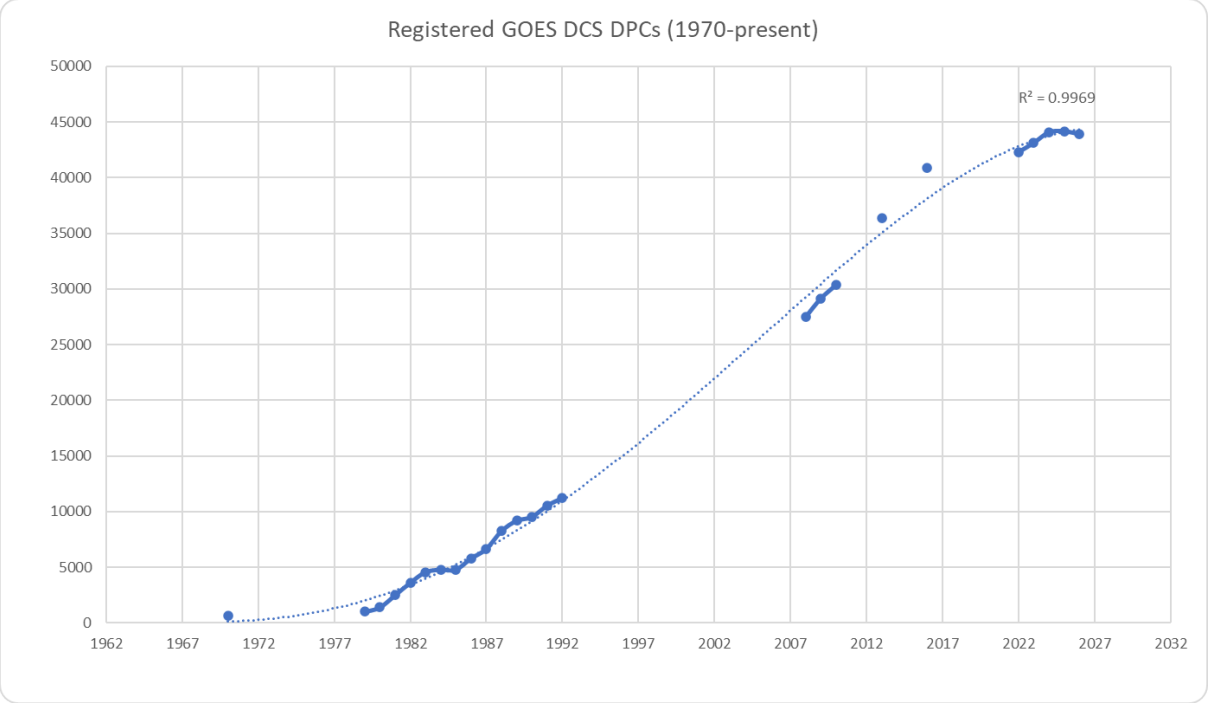


***Figure 1 – GOES DCP Growth since 1970***

The GOES DCS is in the midst of a three-year IT modernization contract to replace the current DADDS. Development and testing for this new system are being entirely conducted within the NOAA Common Cloud Framework (NCCF). The system will be delivered in the fall of 2026 and should modernize the key management tool for GOES DCS by improving usability, adding modern data distribution technology, and increasing system security. The system has been deployed to the NCCF Production environment and is publicly available for testing and familiarization.

GOES DCS has made progress identifying and cataloguing radiofrequency interference, obtaining geolocation support, and engaging with international partners to address these issues. In January 2026 the DCS Program was able to coordinate the shutdown of the third transmitter in two years. This transmitter was both blocking a DCS pilot signal channel and interfering with a channel used for alert systems. The GOES DCS program continues to pursue other sources of interference and has drafted the Best Practices document for CGMS WG I (RFI).

## 3 ENHANCED DATA COLLECTION PLATFORM (EDCP) PLANS

Currently GOES DCS communication infrastructure only provides for ASCII and Pseudobinary protocols. However, there are techniques and technologies that can decrease message transmission times, increase data, or make the radio communication more robust. NOAA has been exploring three protocols for several years. Two protocols compact the existing ASCII and Pseudobinary protocols and the third implements a pure binary protocol. Preliminary testing has shown message lengths may be reduced from 25%-50%, depending on the selected protocol. NOAA has further expanded this development to include the CGMS Enhanced DCP Standard. This has resulted in development of 400bps/800bps protocols with testing from the NOAA Pilot-Test Transmitter, through GOES, and back through a lab demodulation system. Development is in progress and NOAA, EUMETSAT, and JMA have included industry representatives in several productive work sessions. A notional specification is well-developed and in testing at this time.

## 4 STATUS OF IMPLEMENTATION OF BEST PRACTICS

NOAA GOES DCS has many current practices that mirror CGMS DCS best practices although there are some differences. Those differences are in CGMS DCS best practices for Data Access 6, and 8; and, in CGMS best practices for DCP Transmitter (TX) Certification Process numbers 1, 2, and 6.

### 1.1 DCS Best Practice for Data Access (BP.06) – Online Data Archive

The GOES DCS system stores all message data on DADDS for 30 days allowing users the opportunity for download. Additionally, the NOAA Wallops Command and Data Acquisition Site (WCDAS) provides a data distribution service where DCS data is available for 90 days. NOAA does not actively adjust message storage based on user need or long-term access. NOAA only provides a temporary storage location for users. The new DCS DADDS, with cloud storage, may feasibly provide much longer term storage, subject to storage costs.

### 1.2 DCS Best Practice for Data Access (BP.08) – User Notifications

The NOAA GOES DCS program issues all user notification through an e-mail system that references the user provided points of contact. The DCS program has recently issued notices for manufacturer's maintenance updates, program outreach activities, and radio frequency interference. Additionally, notices are sent for planned maintenance with instructions on what sources are available during those time periods.

### 1.3 DCS Best Practice for DCP Transmitter Certification (BP.01) – Minimizing Manufacturer Cost

Certification of a manufacturer of DCP is a rare event and the government certifier travels to the manufacturer's location. In one way that minimizes the manufacturer's costs because it simplifies travel to a single individual. However, certification costs are not an issue that has been brought to the attention of the GOES DCS Program.

### 1.4 DCS Best Practice for DCP Transmitter Certification (BP.02) – Online Registration for Manufacturer Certification

Certification of a manufacturer of DCP is a rare event. The process to begin certification is as simple as contacting the NOAA radio frequency engineer that will conduct the certification. This information is published on DADDS. GOES DCS also publicly publishes the current list of all approved manufacturers.

### 1.5 DCS Best Practice for DCP Transmitter Certification (BP.06) – Contingency Time in the Testing Schedule

Certification of a manufacturer of DCP is a rare event and there are not prescribed timelines for the certification process.

Table 1 shows a detailed list of all CGMS DCS best practices compared to NOAA GOES DCS practices.

| CGMS Agency Best Practices in support to DCP Data Access | | |
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| BP # | Best Practice | NOAA Practice |
| BP.01 | Satellite Operators offering DCS should make all the DCS data available via the Internet on a DCS Web Service. | NOAA provides DCS data via the internet using the DCS Administration and Data Distribution System (DADDS) web interface. Additionally, NOAA supports Data Distribution System (DDS) servers that users' may access using their own software. |
| BP.02 | Satellite Operators offering DCS should make all the DCS data globally available on the WMO GTS. | NOAA GOES DCS data is provided to the WMO GTS via the U.S. National Weather Service (NWS) Telecommunication Gateway. |
| BP.03 | Satellite Operators offering DCS should ensure their DCS Web Service makes all DCS data within their system available to a valid registered user | Registered Users for GOES DCS can access any message data on the system, subject to the thirty (30) day storage limit of the DCS Administration and Data Distribution Systems (DADDS). |
| BP.04 | The Satellite Operators offering DCS should ensure high DCS data availability and put in place mechanisms to be able to detect and recover problems with the service with minimum delays. | NOAA GOES DCS is highly reliable through the use of two geographically separated antenna locations as well as dual redundancy within each component of the system infrastructure. Additionally, NOAA has a twenty-four-hour watch that monitors the GOES DCS system. |

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| BP.05 | The Satellite Operators offering DCS should ensure DCS data are made available on the DCS Web Service as soon as possible. | DCS data is typically available within 2 seconds of receipt at a NOAA antenna downlink location. |
| BP.06 | The Satellite Operators offering DCS should provide an on-line DCS data archive, which is sized according to user's applications requirements and expandable to cope with evolving user needs. | NOAA GOES DCS stores user message data for thirty days in order to provide sufficient time for access. The responsibility of data storage is left to the user of data. NOAA does not archive, nor has plans to archive, any user message data. |
| BP.07 | The Satellite Operators offering DCS should ensure their DCS Web Services offer the possibility for tailoring DCS data retrieval. | The DCS Administration and Data Distribution Systems (DADDS) provides the ability for users to develop custom lists of Data Collection Platform data for export. NOAA also hosts Local Readout Ground Stations (LRGSs) as an alternative data distribution point to support an open source community software suite. |
| BP.08 | The Satellite Operators offering DCS should put in place mechanisms to notify the DCS Data Users of any service changes and issues, which impact the access to DCS data (e.g. delays, outages). The information provided in the notification should be as detailed as possible, including the extent of the impact, expected duration of the impact, etc. Updates to the notifications should be issued regularly and a final notification should be sent to confirm return to nominal service. | The NOAA GOES DCS program issues all user notification through an e-mail system that references the user provided points of contact. The DCS program has recently issued notices for manufacturer's maintenance updates, program outreach activities, and radio frequency interference. |
| BP.09 | The Satellite Operators offering DCS should ensure their DCS Web Services allows easy maintenance of up-to-date | The DCS Administration and Data Distribution Systems (DADDS) provides users an internet-based web interface to update account information. |

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| | records of the DCP Operator's contact information by the users. | |
| BP.10 | The Satellite Operators offering DCS should provide the DCS Users with a full set of DCS Data Access documentation, accessible through the DCS Web Service. | NOAA GOES DCS documentation is posted on a publicly available web page. |
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| CGMS Agency Best Practices in support to DCP Transmitter (TX) Certification Process | | |
| BP# | Best Practice | NOAA Practice |
| BP.01 | The certification process should be implemented in such a way to minimize the costs to the manufacturer. | As per the GOES Data Collection System Radio Set (DCPRS) Certification Standards Version 2.0 Memorandum:<br><br>"All responsibility for obtaining NESDIS certification rests with the manufacturer and/or builder of the equipment. Certification testing is performed by the manufacturer with a NESDIS witness present. All test results are then compiled in a report and forwarded to NESDIS. Testing is to be conducted at the manufacturer's facility. The set-up and demonstration of the manufacturer's equipment is the responsibility of the manufacturer. The salary, travel, per diem and any other expenses/costs for the NESDIS representative to verify and certify this testing and the subsequent test results are to be paid by the certification requester (manufacturer/builder)." |
| BP.02 | The manufacturer should be able to register for the certification process online. This process should be as automated as possible. | There are very few manufacturer certification activities for GOES DCS. There are insufficient requests to justify the expense of an automated, online system. The process to certify a DCP is posted on the GOES DCS webpage |

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| | | along with a point of contact to support the process. |
| BP.03 | Manufacturers should submit their DCP test plan for approval to the relevant satellite agency and following approval conduct factory testing and provide results back to the agency. | NOAA has a defined process per Certification Standard 2 as follows: The manufacturer submits a DCP certification test plan for review by the DCS Certification Officer and other relevant DCS program office personnel. Following approval of the test plan, a NESDIS witness (currently the DCS Certification Officer) travels to the manufacturer's facility to witness the certification testing and ensure that the DCP under consideration meets all requirements as defined in the DCPRS Certification Standards Version 2.0. A final test report including all data captured during the NESDIS witnessed testing is created by the manufacturer and submitted for review by the DCS Certification Officer and other relevant DCS program office personnel. Upon acceptance of the final test report, a certification number is issued and a certificate signed by the OSGS Director is provided to the manufacturer. All certification test data is entered into the OSGS and WCDAS technical library DADDS Radio database is updated to reflect the newly certified DCP. |
| BP.04 | Where feasible, preliminary over-the-air testing from the manufacturer's premises should be performed following successful factory testing. | Over-the-air testing is performed during the NESDIS-witnessed factory testing. This is done using a DCS Certification test set maintained by NESDIS and loaned to the manufacturer for the duration of the testing period. |
| BP.05 | Manufacturers and agencies should ensure that the message encoding is correct during the different test steps, this may include a blind test. | Message encoding is verified during factory testing. |

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| BP.06 | Ensure adequate contingency time is built into the testing schedule. | There are no documented time limits for acceptance testing. |

***Table 2 – CGMS Best Practices and NOAA Practices***

## 5 ACTIONS AND/OR RECOMMENDATIONS FOR CONSIDERATION BY CGMS PLENARY SESSION

CGMS collaboration for the Enhanced DCP Standard and RFI both provide the opportunity to share information to improve DCSs and communicate the external factors that pose risk to these systems. It is recommended that CGMS continue to support CGMS Workgroup I (DCS) efforts in these areas.