

NOAA Wallops CDA Station GOES Data Collection System



NOAA Satellite and Information Service

National Environmental Satellite, Data, and Information Service (NESDIS)



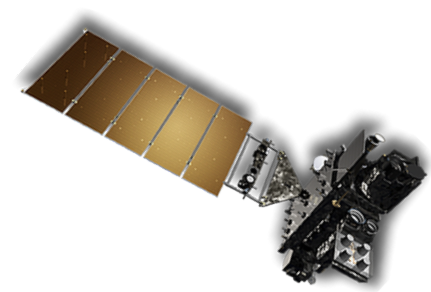
GOES Spacecraft Constellation

- GOES-16: Prime East S/C @ 75.2° W Longitude
 - Replaced G13 18 Dec, 2017
- GOES-17: Prime West S/C @ 137.2° W Longitude
 - Replaced G15 15 Nov, 2018
- GOES-14: Storage @ 105° W Longitude
- GOES-13: Storage @ 60° W Longitude
- GOES-15: Storage @ 128° W Longitude





GOES 17



- NOAA's newest geostationary satellite series replaced GOES 15 at 137.2° West, 15 Nov, 2018.
- **Reminder:** The GOES R satellite series frequency plan is different from the plan used by the GOES 13, 14 and 15 satellites. GOES DRGSs used to support the older GOES series satellites used DCS downlink in the frequency range of 1694.30 to 1694.70 MHz. The GOES R series satellites use 1679.70 to 1680.10 MHz to support the DCS downlink.
- Note that the GOES 16 or 17 frequency plan changes do NOT affect the Data Collection Platform (DCP) UHF-Band uplink transmissions, only the L-Band downlink to NOAA and the DRGSs. There will also be NO frequency changes in the DCS DOMSAT Ku-Band service.
- <http://www.goes-r.gov>

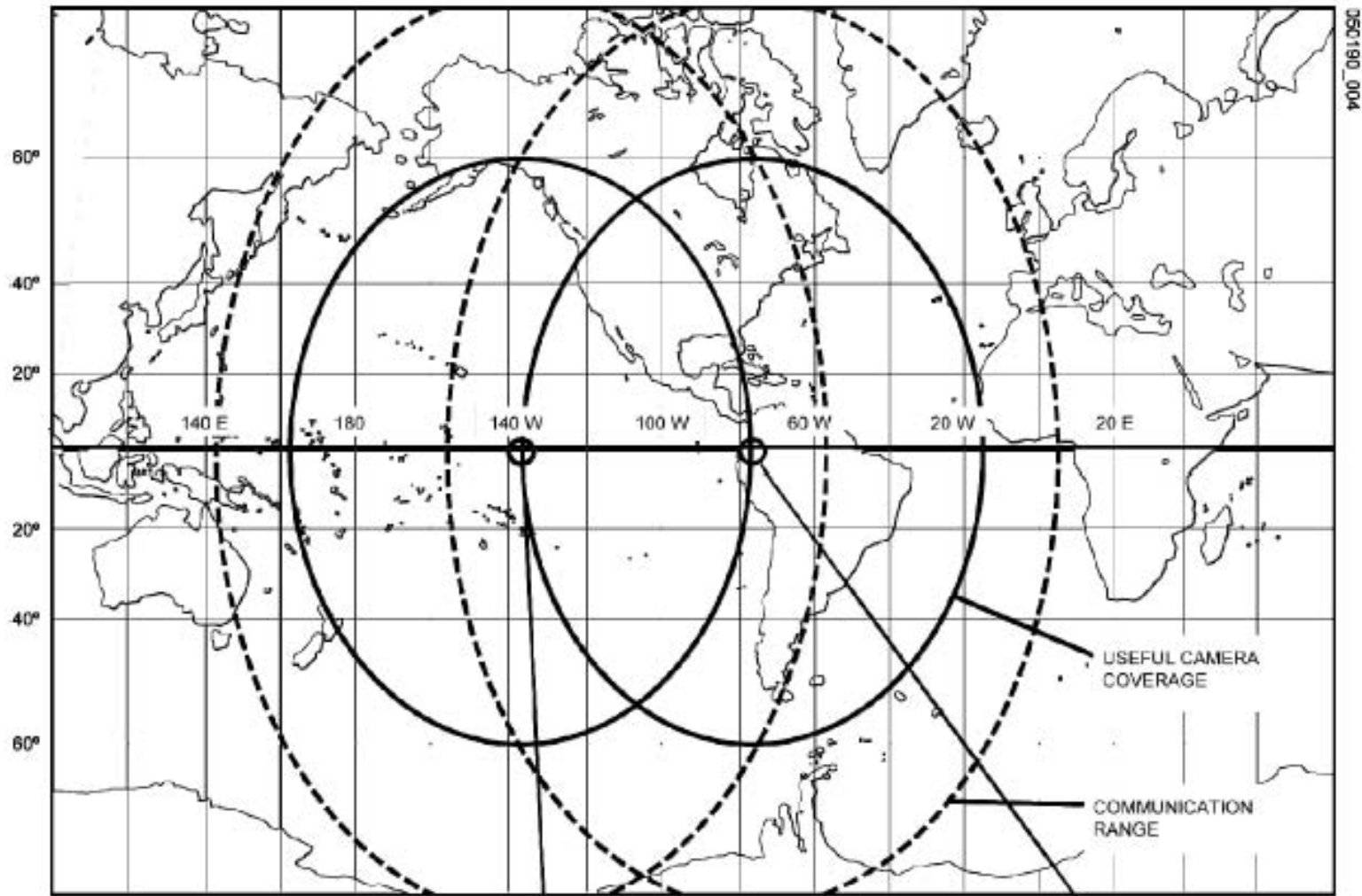


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GOES Footprints



050190_004

GOES-WEST
(135° WEST)

GOES-EAST
(75° WEST)



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DCPR Changes for GOES-R

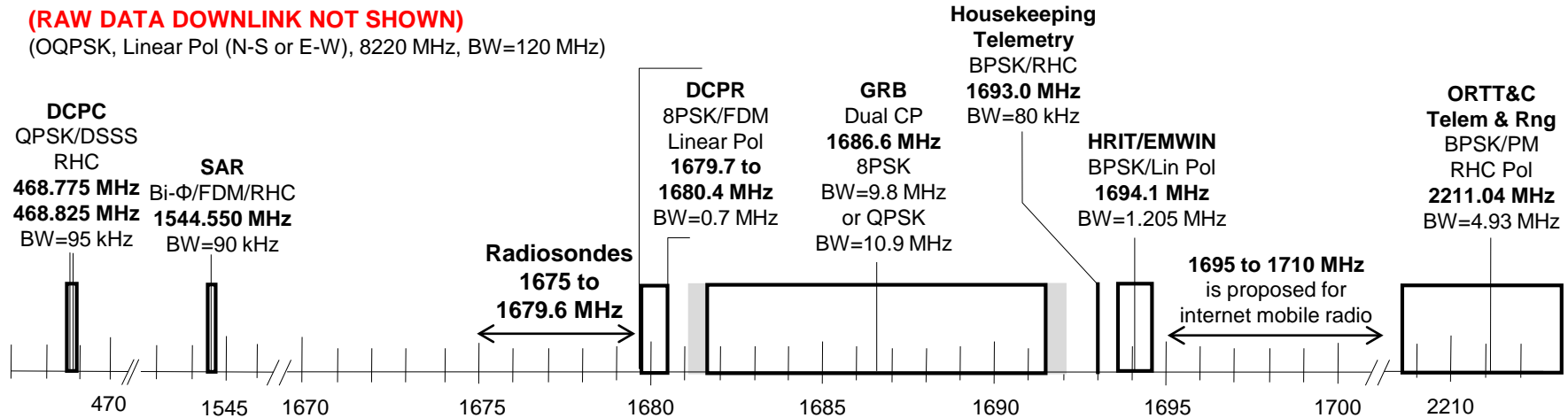
- On the GOES-N/O/P satellites the DCPR downlink band is 1694.3 – 1694.7 MHz
 - The uplink Pilot at 401.85 MHz is translated to 1694.45 MHz in the existing downlink
- For the GOES-R series satellites the DCPR downlink band is 1679.7 – 1680.1 MHz
 - The uplink Pilot at 401.85 MHz will be translated to 1679.85 MHz in the new downlink
- No DCP uplink frequencies will change from the GOES-N to GOES-R satellites – only the downlinks

GOES R Frequency Plan

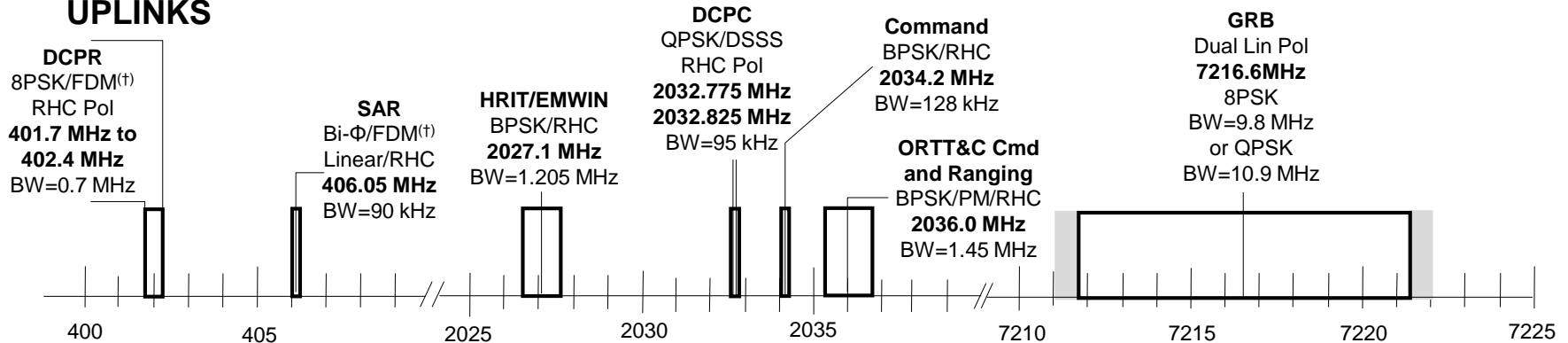
DOWNLINKS

(RAW DATA DOWNLINK NOT SHOWN)

(OQPSK, Linear Pol (N-S or E-W), 8220 MHz, BW=120 MHz)



UPLINKS



NOTES †: DCPR (8PSK) and SAR (Bi-Φ) are individual uplinks FDM'ed in the spacecraft transponder.

■: Indicates possible extra GRB bandwidth for QPSK modulation

Wallops CDAS Backups

- CBU, Fairmont, WV
 - GOES 13-17 series backup for GOES East and West
 - Secondary DCS Pilot 401.7MHz transmits 24/7
- Fairbanks CDAS
 - GOES 13-15 series backup for GOES West
- Backup DADDS at NSOF Suitland, MD
- WBU, Goddard, MD is out of service and is transitioning to the GOES IO program.



NOAA CDA Station, Wallops VA



NOAA SOCC, Suitland Md



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NOAA CBU, Fairmont WV



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NOAA GOES DCS Data Services

The OSPO provides GOES DCS ground system support at three facilities; the prime system is at the Wallops CDAS while the backup is at the NSOF. Wallops Operations monitors and controls both systems. The DCS supports the following dissemination services:

- **DOMSAT**
 - CONUS rebroadcast from Wallops or NSOF
- **NWSTG**
 - WMO Header service from Wallops or NSOF DADDS
- **LRGS**
 - File sharing service from/with Wallops, EDDN & NSOF DAMS-NT
- **HRIT**
 - GOES R Series link, DCS data from Wallops or NSOF DADDS



NOAA GOES DCS Data Services

- LRIT service termination
 - Wallops LRIT transmitter combiners were disabled on 12 Feb, 2019
 - High Rate Information Transmission (HRIT) is now the official replacement service for the GOES R series satellites



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NOAA DCS DOMSAT

- DOMSAT service is scheduled to be discontinued on 14 May 2019.
- If DOMSAT is your primary source for data, please choose and implement a new data feed A.S.A.P



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DCS National Weather Service Telecommunication Gateway (NWSTG)

- Approximately 86% of the DCS messages processed are embedded with a WMO header and then sent to the NWSTG for distribution
- Wallops and NSOF systems are both providing DCS data to the Gateway. This, in theory, enables the Gateway to select which stream to disseminate, with the default being Wallops is Prime.
- Recent changes to the Gateway have introduced delays in Wallops requests to have them select the desired data stream. NOAA is revisiting the original configuration that enabled Wallops to direct the desired site stream to the Gateway as opposed to requesting that they make configuration changes.
- Data customers using the NWSTG are largely unknown.



NOAA LRGS Configuration

- NOAA Wallops CDAS hosts 3 LRGS,
 - CDADATA:
 - LRGS Address ; cdadata.wcda.noaa.gov
 - DRGS input from Wallops East & West DAMS NT demodulator applications, Primary & Backup
 - DDS Primary is CDABACKUP, DDS Backup is EDDN1 then NLRGS1
 - CDABACKUP:
 - LRGS Address ; cdabackup.wcda.noaa.gov
 - DRGS input from Wallops East & West DAMS NT demodulator applications, Primary & Backup
 - DDS Primary is EDDN2, DDS Backup is EDDN 1 then NSOF LRGS 2
 - DROT: (DROT will be discontinued when DOMSAT service is terminated)
 - LRGS Address ; cdadrot.wcda.noaa.gov
 - DOMSAT receive input from the 1.8m antenna system, useful for DOMSAT troubleshooting
 - No Backup ingests so that DOMSAT data outages can be monitored
- NOAA Suitland NSOF hosts 2 LRGS,
 - NLRGS1:
 - LRGS Address ; nlrgs1.noaa.gov
 - DRGS input from NSOF East & West DAMS NT demodulator applications, Primary & Backup
 - DDS Receive Primary is EDDN1, DDS Receive Backup is CDADATA
 - NLRGS2:
 - LRGS Address ; nlrgs2.noaa.gov
 - DRGS input from NSOF East & West DAMS NT demodulator applications, Primary & Backup
 - DDS Receive Primary is CDABACKUP, DDS Receive Backup is EDDN2



NOAA LRGS Support

- The Wallops CDAS monitors and maintains NOAA LRGS Network
- The LRGSs can be monitored through “**LRGS Summary Status**” web page, available through the DADDs web servers 1-4:
 - <https://dcsX.noaa.gov> ▶ “LRGS Status” ▶ <https://dcsX.noaa.gov/lrgs/LrgsSummaryStatus.html>
- The Emergency Data Distribution Network’s (EDDN) 3 LRGSs can also be monitored through the **LRGS Summary Status**:
 - <https://eddn.usgs.gov/lrgs/LrgsSummaryStatus.html>



Tempest
DAS
Receiver

LRGS Summary Status



LRGS Summary Status

UTC: April 12, 2019 11:34:39 (Day 102)

<i>Host Name</i>	<i>Status Time</i>	<i>LRGS Status</i>	<i>Primary Downlink Status</i>	<i>Primary Quality Last Hour</i>	<i>Aggregate Quality Last Hour</i>	<i>Msgs This Hour</i>	<i>Num DDS Clients</i>	<i>Cove LRGS Version</i>
cdadata.wcda.noaa.gov	04/12 11:34:24	OK	DRGS:Active	99.58%	99.58%	19766	107	9.1
cdabackup.wcda.noaa.gov	04/12 11:34:23	OK	DRGS:Active	99.58%	99.58%	19909	49	9.1
cdadrot.wcda.noaa.gov	04/12 11:34:19	OK	DOMSAT:Active	99.67%	99.67%	19827	2	9.1
nlrgs1.noaa.gov	N/A	No Response	null:(none)	0%	0%	0	0	?
nlrgs2.noaa.gov	N/A	No Response	null:(none)	0%	0%	0	0	?
lrgseddn1.cr.usgs.gov	04/12 11:34:39	OK	DDS:Active	99.59%	99.59%	20065	78	9.1
lrgseddn2.cr.usgs.gov	04/12 11:34:11	OK	DDS:Active	99.6%	99.6%	20776	70	9.2
lrgseddn3.cr.usgs.gov	04/12 11:34:39	OK	DDS:Active	99.59%	99.59%	20072	27	9.1



LRGS Monitor Page

LRGS: cdadata.wcda.noaa.gov

UTC: April 12, 2019 11:37:22 (Day 102)

(Time reported by LRGS)

System Status: Running

LRGS Version: 9.1.OpenDCS-6.3w RC12 (May 22, 2017)

Archive Statistics

Messages In Storage: **36709412**

Oldest Msg Time: **01/01 00:00:00**

Next Idx #: **385157**

Hourly Data Collection Statistics

Hour:	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12
GOES DRGS (Good/ParErr):	67740 / 216	67739 / 232	67932 / 192	67746 / 216	67704 / 220	67814 / 212	67716 / 232	42983 / 157
DDS Recv (Good/ParErr):	32893 / 119	32889 / 127	32949 / 103	32936 / 132	32841 / 119	32938 / 116	32884 / 124	21586 / 94
Archived (Good/ParErr):	32892 / 115	32886 / 123	32988 / 103	32899 / 126	32867 / 119	32942 / 114	32882 / 122	21587 / 91

Downlink Statistics

Downlink Name	Last Msg Rcv Time	Last Seq Num	Link Status	Link Params
DRGS:Microcom-DRGS-BE	04/12 11:37:22	4514	Connected	
DDS:EDDN1	04/12 11:37:21	-1	Real-Time	Primary
DDS:EDDN2	03/04 07:17:40	-1	Ready	Primary
DRGS:Microcom-DRGS-PE	04/12 11:37:22	83748	Connected	
DRGS:Microcom-DRGS-BW	04/12 11:37:22	52875	Connected	
DRGS:Microcom-DRGS-PW	04/12 11:37:22	35510	Connected	

Client Statistics

Slot	Host Name	User	Msg Count	Last Activity Time	Last Msg Time	Status
0	-	lrgsmon	0	04/12 11:37:22	03/20 17:35:07	running
1	-	lrgsmon	0	04/12 11:37:22	03/20 17:08:13	running
2	-	(unknown)	1	04/12 11:37:22	04/12 11:05:23	running
3	-	onthyd	0	04/12 11:37:22	04/12 10:34:13	running



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High Rate Information Transmission (HRIT)

- GOES East & West DCS data is provided by the DADDS for inclusion in the GOES East and West HRIT broadcasts.
- GOES HRIT coverage extends well beyond the CONUS coverage offered by DOMSAT.
- GOES HRIT services can be supported by a 1m to 1.2m receive antenna system.



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NOAA GOES DCS

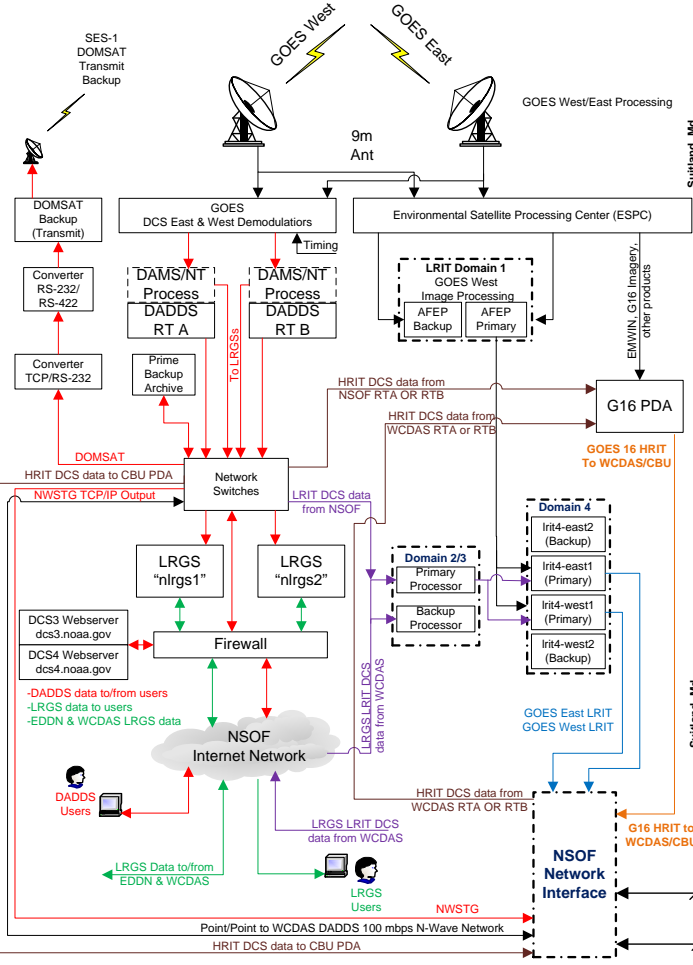


GOES West

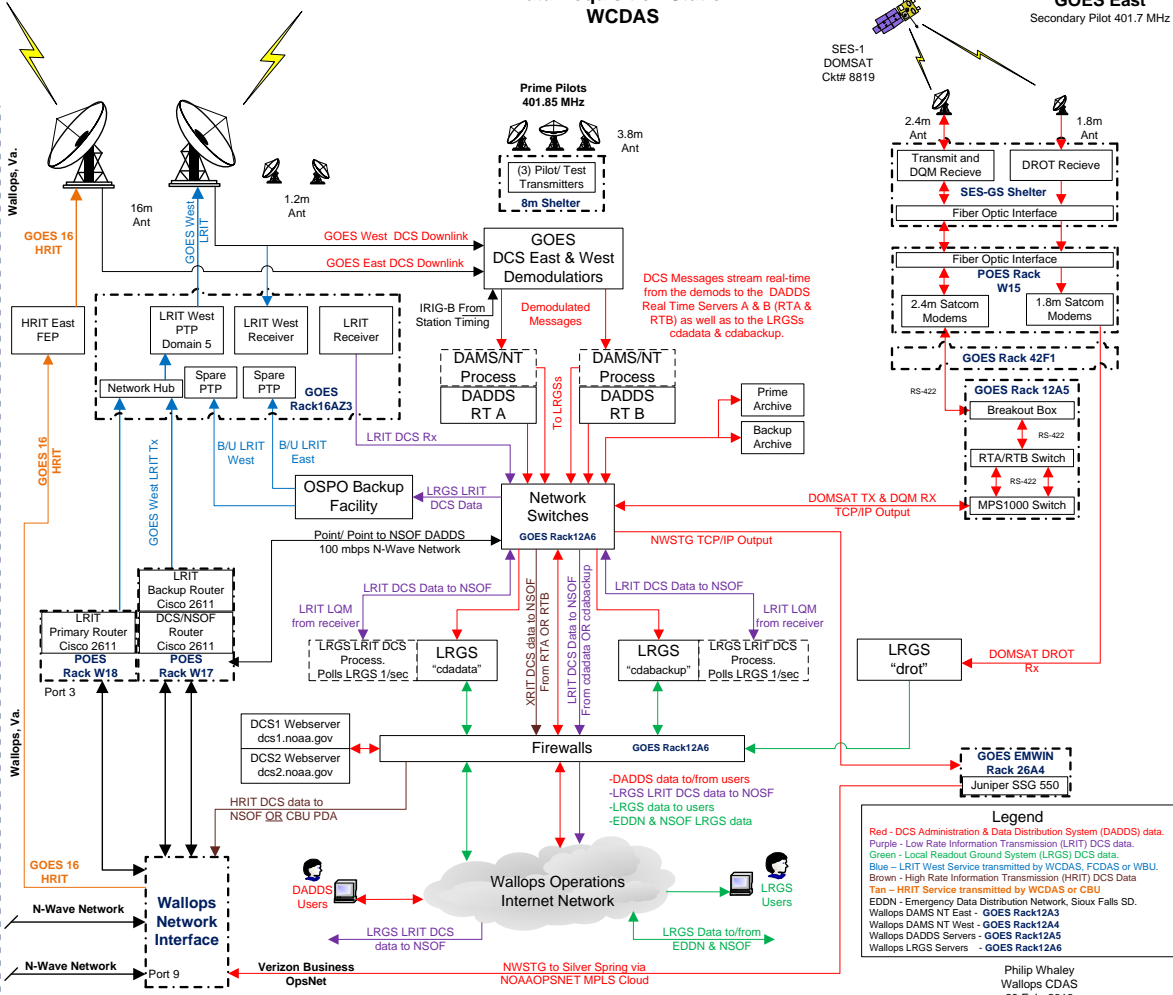


Wallops Backup (WBU)GSFC
GOES East
Secondary Pilot 401.7 MHz

NOAA Satellite Operations Facility NSOF



NOAA Wallops Command & Data Acquisition Station WCDAS



- Legend**
- Red - DCS Administration & Data Distribution System (DADDs) data.
 - Purple - Low Rate Information Transmission (LRIT) DCS data.
 - Green - Local Readout Ground System (LRGS) DCS data.
 - Blue - LRIT West Service transmitted by WCDAS, FC2AS or WBU.
 - Brown - High Rate Information Transmission (HRIT) DCS Data
 - Tan - HRIT Service transmitted by WCDAS or CBU
 - EDDN - Emergency Data Distribution Network, Sioux Falls SD.
 - Wallops DAMS NT East - GOES Rack12A3
 - Wallops DAMS NT West - GOES Rack12A4
 - Wallops DADDs Servers - GOES Rack12A5
 - Wallops LRGs Servers - GOES Rack12A6

Philip Whaley
Wallops CDAS
23 Feb, 2018



GPS Roll Over

- GPS Week Rollover event occurred Saturday, April 6th at 0000 UTC
- The DCS program office sent multiple email alerts and posted bulletins to our web sites to the DCS user community to make folks aware of the event.
- Vendors worked with customers to mitigate service interruption.
- It appears that some users were affected initially, but the messages statistics are slowly coming back in range to what is normally expected.



GPS Roll Over

[SHOW HOURLY DETAILS](#)

PROCESS	TYPE	HOST	LAST UPDATE	UP SINCE	STATUS	INGEST	STORE	PENDING	SEQUENCE
NRTA MSG PROCESSOR	MSGPRC	NRTA2	19/102 16:48:42	19/101 14:24:15	ACTIVE	897412	897388	N/A	N/A
REPORT	GOOD	INFORMATIONAL	MISSING	PARITY ERROR	TIME ERROR	CHANNEL ERROR			
J 2019 - 102	554273	16013	9700	1698	4650	546			
J 2019 - 101	765602	24146	15292	2460	6515	785			
J 2019 - 100	729169	23175	14669	2467	6282	731			
J 2019 - 099	772459	68773	59886	2535	6573	819			
J 2019 - 098	762365	99619	90980	2144	6451	811			
J 2019 - 097	815554	56292	39557	2191	14486	886			
J 2019 - 096	842961	23526	14395	2261	6849	931			
J 2019 - 095	837352	29965	21059	2404	6631	850			
J 2019 - 094	751285	20633	12431	2381	6040	806			
J 2019 - 093	842615	22680	13447	2486	6817	858			
J 2019 - 092	842106	22560	12973	2563	6901	890			
J 2019 - 091	842312	21545	12020	2611	6876	870			



- >> Help Desk
- 24/7 Operations
- >> System Information
- >> Program Information
- >> DADD5 File Downloads
 - 04/12/2019 11:00 UTC
 - pdfs_compressed.txt
 - chans_by_baud.txt
- >> Wallops Webservers
 - dc51.noaa.gov
 - dc52.noaa.gov
- >> NSOF Webservers
 - dc53.noaa.gov
 - dc54.noaa.gov
- >> LRG5 Status
- >> LRG5 Deadlines
 - Password Implementation:
 - August 9, 2016
 - SHA-256 Implementation:
 - August 17, 2016
- Related Links
 - >> Satellite Conference 2017
 - >> DCS Newsletter - Dec. 2013
 - >> Satellite Operations

DADD5 DCS1

User Login

Email

Password

SIGN IN

- Need a Login? Click [here](#).
- Forgotten Password? Click [here](#).
- DCS Field Test? Click [here](#).
- Need Help? Click [here](#).
- 24/7 Technical Support: (757) 824-7450
- [DCS Operational Notices RSS Feed](#)

GPS Week Number Rollover Notification

GOES HRIT File Format Modification Testing

DOMSAT is scheduled to be discontinued on 14 May 2019

Submit an Application for a GOES DCS SUA

⚠ Notice to Users

** WARNING ** WARNING ** WARNING **

This is a United States NOAA computer system, which may be accessed and used only for official Government business by authorized personnel. Unauthorized access or use of this computer system may subject violators to criminal, civil, and/or administrative action.

All information on this computer system may be intercepted, recorded, read, copied, and disclosed by and to authorized personnel for official purposes, including criminal investigations. Access or use of this computer system by any person whether authorized or unauthorized, constitutes consent to these terms.

** WARNING ** WARNING ** WARNING **

Register for Direct Readout and Services Notifications

Help us keep you up to date with changes and anomalies!



DADDS Webservers System Information

NOAA HOME WEATHER OCEANS FISHERIES CHARTING SATELLITES CLIMATE RESEARCH COASTS CAREERS



NOAA GOES DATA COLLECTION SYSTEM

OFFICE OF SATELLITE AND PRODUCT OPERATIONS



» Operational Notices

06/12/2017 15:58 UTC

» Help Desk

24/7 Operations

» System Information

» Program Information

» DADDS File Downloads

08/30/2017 11:30 UTC

pdts_compressed.txt

chans_by_baud.txt

» Wallops Webservers

des1.noaa.gov

des2.noaa.gov

» NSOF Webservers

des3.noaa.gov

des4.noaa.gov

» LRGs Status

» LRGs Deadlines

Password Implementation:

August 9, 2016

SHA-256 Implementation:

August 17, 2016

Related Links

» Satellite Conference 2015

» DCS Newsletter - Dec. 2013

» Satellite Operations

DCS Administration and Data Distribution System (DADDS)

NOAA's System for Managing and Providing Access to Data from GOES DCS

DADDS System Information

- [Frequently Asked Question \(PDF\)](#) - 2012
- [Web Interface User's Guide \(PDF\)](#) - 2011
- [DAPS Parameters & SHEF Codes \(PDF\)](#) - 2005
- [NOAA DCS System \(PDF\)](#) - Aug 2013

Certification Information

- [GOES DCS Certified Manufacturers List \(PDF\)](#) - Feb 2014
- [GOES DCS Certification Standards, Version 2.0/CS2 \(PDF\)](#) - Jun 2009
- [GOES DCS Certification Standards, Version 1.0B/CS1 \(PDF\)](#) - Mar 2000
- [International User Guide & Certification Standards \(PDF\)](#) - Oct 2009
- [GOES DCS Certification Standards, 100BPS-RETIRED- \(PDF\)](#) - Feb 2000
- [NOAA Policy on Use of Certified Transmitters \(PDF\)](#) - May 2011

System Diagrams

- [NOAA DCS System \(PDF\)](#) - Nov 2015
- [GOES DCS Pilot System \(PDF\)](#) - Jan 2016

General Information

- [GOES 13/14 Frequency Offset Analysis \(PDF\)](#) - Aug 2009
- [Final DCS Filter Study Report, Rev. C \(PDF\)](#) - Jan 2006
- [GOES High Data Rate Transition Plan](#) - Mar 2004
- [GOES-13 DCPI and DCPR Technical Updates](#) - 2006
- [GOES DCS System Characterization Report \(PDF\)](#) - Jun 1998
- [GOES DCS Operations Plan \(FCM-P28-1997\) \(PDF\)](#) - Aug 1997
- [DAPS User's Telnet/Dail-in Manual](#) - Sept 1990
- [DROT User Manual](#) - Apr 1991
- [Old DROT Maintenance Manual](#) - Apr 1991
- [HDR Flyer-GOES DCS High Data Rate Transition Ended](#) - May 2013

GOES DCS Channels

- [GOES CS1 Channel Frequencies \(PDF\)](#) - Mar 2000
- [GOES CS2 Channel Frequencies \(PDF\)](#) - Jun 2009
- [International DCS Channel Definition \(PDF\)](#) - Oct 2009
- [GOES DCS Pilot System \(PDF\)](#) - Jun 2013

Program Information

- [DCS Program Information](#) - N/A
- [DCS Policies and Procedures \(PDF\)](#) - May 1998
- [GOES DCS System Use Agreement \(PDF\)](#) - N/A
- [NOAA Technical Memo NESDIS 40 \(PDF\)](#) - Mar 1994
- [DCS TWG Meeting Minutes](#) - N/A

LRGS Information

- [LRGS Client User's Guide \(PDF\)](#) - Feb 2016
- [LRGS Client Software Download](#) - Feb 2016
- [DCP Data Service \(DDS\) Protocol Specification](#)



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NOAA Wallops CDAS Support Phone Numbers

- Wallops Help Desk: 757-824-7450 or 757-824-7451
 - 24/7 Technical Support for DCS, LRGS, LRIT, HRIT
- Albert McMath: 757-824-7316 (Retiring 30 May, 2019)
 - Wallops CDAS Operations Branch Chief
- Travis Thornton: : 757-824-7304
 - Operations Shift Supervisor and DCS Operations Team Lead
 - Acting Wallops CDAS Operations Branch Chief 01 June, 2019
- Philip Whaley: Retired 29 March, 2019
 - Systems Engineering Branch support for GOES Systems
 - NOAA DCPRS Certification Official



NOAA Wallops CDAS Support Phone Numbers

- Matt Sullivan: 757-824-7360
 - Calibration Laboratory, Systems Engineering Branch
 - Acting for Phillip Whaley



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Acronyms

- **NOAA:** National Oceanic and Atmospheric Administration
 - Office/Agency of the Department of Commerce.
- **NESDIS:** National Environmental Satellite, Data, and Information Service
 - Line office of NOAA
- **OSPO:** Office of Satellite and Product Operations
 - Suitland MD, Wallops VA, Fairbanks AK, College Park MD
- **NSOF:** NOAA Satellite Operations Facility, Suitland, MD
- **WCDAS:** Wallops Command and Data Acquisition Station, VA
- **FCDAS:** Fairbanks Command and Data Acquisition Station, AK
- **WBU:** Wallops Backup, Goddard Space Flight Center, MD
- **CBU:** Consolidated Backup Facility, Fairmont, WV
- **DADDS:** Data Collection System (DCS) Administration & Data Distribution System
- **DRGS:** Direct Readout Ground System
- **LRGS:** Local Readout Ground System
- **LRIT:** Low Rate Information Transmission, GOES 13, 14 & 15 broadcast
- **HRIT:** High Rate Information Transmission, GOES R Series (G16)
- **NWSTG:** National Weather Service Telecommunications Gateway



DCP Test Channels

- GOES East
 - 300bps
 - 195E for CS1 & CS2 (401.99200 MHz)
 - 1200bps
 - A99 for CS1, 497 for CS2 (401.99575 MHz)
 - Incompatible with CS2-needs to move
- GOES West
 - 300bps
 - 196W for CS1 & CS2 (401.99350 MHz)
 - 1200bps
 - A100 for CS1, 499 for CS2 (401.99875 MHz)



Abnormal Response Messages (ARM) Or Information Messages (IM)

- 'G' : Good Message - also transmitted with all messages except '?' and 'M'.
- '?' : Parity Error(s).
- 'A' : Correctable address
- 'N' : PDT Incomplete
- 'T' : Overlapping time error. A message was outside of, but overlapping its window.
- 'U' : Non-overlapping time error. Message completely out of its defined window.
- 'W' : Wrong channel
- 'M' : A self-timed message was not received at all, received on wrong channel, not completely inside a window or an overlapping window.
- 'B' : Non-correctable : Available on the DADDS Website message data. Messages with bad addresses are not disseminated.
- 'I' : Invalid address. Available on the DADDS Website message data. Messages with invalid addresses are not disseminated.



DCS Message Statistics

11083215414G48+2NN167EFF

- **YYDDDDHHMMSS Time: YYDDDDHHMMSS (Frame Sync)**
- **T Type: G = Good ? = Parity Errors (ARM)**
- **SS Signal Strength: dBm EIRP (assumes 47 dBmi Pilot)**
 - 25 to 56 dBm nominal demod reception thresholds
- **±X Frequency: Sign & Digit (±F times 50 Hz)**
- **M Modulation Index (Phase): Normal, High, Low**
- **D Data Quality (Phase): Normal, Fair, Poor**



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