

NOAA Wallops CDA Station GOES Data Collection System



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



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NOAA GOES DCS Data Services

The OSPO provides GOES DCS ground system support at two 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
- **LRIT**
 - GOES 13-15 link, DCS data from NSOF DADDS or Wallops LRGS
- **HRIT**
 - GOES R Series link, DCS data from Wallops or NSOF DADDS



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NOAA DCS DOMSAT

- Wallops CDAS, VA is Prime and NSOF Suitland, MD is Backup
- Conus Coverage
- Annual cost for Wallops and NSOF backup site $\approx$ \$15k
 - Funded by the OSPO
- Current Period of Performance: May 16, 2017 to May 15, 2018
- Current Satellite, SES-1
 - Circuit# 8819
 - Located at 101° W
 - Ku Transponder 16K
 - 12033.80 MHz (effective 11 April, 2017)
 - Horizontal Linear Polarization



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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:
 - 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



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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>
- CDADATA and CDABACKUP LRGSs provide GOES LRIT backup source.



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DADDs Webserver 1 - 4

>> 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
dc51.noaa.gov
dc52.noaa.gov
>> NSOF Webservers
dc53.noaa.gov
dc54.noaa.gov
>> LRGs Status
>> LRGs Deadlines
Password Implementation:
August 9, 2016
SHA-256 Implementation:
August 17, 2016

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

dc51.noaa.gov

dc52.noaa.gov

>> NSOF Webservers

dc53.noaa.gov

dc54.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 DCS1

User Login

Email

Philip.I.Wholes@noaa.gov

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

Submit an Application for GOES DCS SUA

 Notice to Users

WARNINGWARNING**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.

WARNINGWARNING**WARNING**

Register for Direct Readout and Services Notifications

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





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DADDS Webserver System Information

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GOES DATA COLLECTION SYSTEM

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>> Operational Notices
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>> DADDS File Downloads
08/30/2017 11:30 UTC
pdts_compressed.txt
chans_by_baud.txt

>> Wallops Webserver
des1.noaa.gov
des2.noaa.gov

>> NSOF Webserver
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

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

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

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

System Diagrams

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

LRGS Information

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

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

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LRGS Summary Status



LRGS Summary Status

UTC: August 30, 2017 12:31:41 (Day 242)

<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>ILEX LRGS Version</i>
cdadata.wvda.noaa.gov	08/30 12:31:25	OK	DRGS:Active	99.39%	99.39%	18933	76	9.1
cdabackup.wvda.noaa.gov	08/30 12:31:12	OK	DRGS:Active	99.4%	99.4%	18798	40	9.1
cdadrot.wvda.noaa.gov	08/30 12:31:15	OK	DOMSAT:Active	99.53%	99.53%	18725	12	9.1
nlrps1.noaa.gov	08/30 12:28:39	OK	DRGS:Active	99.33%	99.33%	17404	5	9.1
nlrps2.noaa.gov	08/30 12:29:53	OK	DRGS:Active	99.33%	99.33%	18177	5	9.1
lraseddn1.cr.usgs.gov	08/30 12:31:19	OK	DDS:Active	99.4%	99.4%	18866	97	9.1
lraseddn2.cr.usgs.gov	08/30 12:31:20	OK	DDS:Active	99.4%	99.4%	18922	31	9.1
lraseddn3.cr.usgs.gov	08/30 12:31:15	OK	DDS:Active	99.41%	99.41%	18810	72	9.1



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LRGS Monitor Page

LRGS: cdadata.wcda.noaa.gov

UTC: August 30, 2017 12:33:27 (Day 242)

(Time reported by LRGS)

System Status: Running

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

Archive Statistics

Messages In Storage: **25223923**

Oldest Msg Time: **07/30 23:59:56**

Next Idx #: **435464**

Hourly Data Collection Statistics

Hour:	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13
GOES DRGS (Good/ParErr):	74039 / 396	73749 / 374	73254 / 368	73429 / 440	73624 / 362	73011 / 372	72778 / 400	43020 / 214
DDS Recv (Good/ParErr):	34596 / 227	34437 / 205	34272 / 203	34308 / 244	34426 / 193	34089 / 191	33921 / 230	20254 / 131
Archived (Good/ParErr):	34587 / 217	34473 / 197	34237 / 195	34314 / 239	34417 / 183	34126 / 181	34008 / 220	20203 / 121

Downlink Statistics

Downlink Name	Last Msg Rcv Time	Last Seq Num	Link Status	Link Params
DRGS:Microcom-DRGS-BE	08/30 12:33:27	27796	Connected	
DRGS:Microcom-DRGS-PE	08/30 12:33:27	27586	Connected	
DRGS:Microcom-DRGS-BW	08/30 12:33:27	20293	Connected	
DRGS:Microcom-DRGS-PW	08/30 12:33:27	20218	Connected	
DDS:EDDN	08/30 12:33:26	-1	Real-Time	Primary
DDS:CDA-BACKUP	08/29 06:06:33	-1	Ready	Primary
DDS:NLGRS1	(none)	-1	Disconnected	Primary

Client Statistics

Slot	Host Name	User	Msg Count	Last Activity Time	Last Msg Time	Status
0	-	onthyd	3	08/30 12:33:27	08/30 12:27:31	running
1	-	mtwatr	1	08/30 12:33:14	08/30 12:27:49	running
2	-	cened1	0	08/30 12:33:04	08/30 12:29:22	running
3	-	ftsinc1	60	08/30 12:33:26	08/30 12:33:25	running
4	-	onthyd	13747	08/30 12:33:27	08/30 12:33:22	running
5	-	yukoaa	49	08/30 12:33:27	08/30 07:19:11	running



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Wallops CDAS Backups

- WBU, Goddard Space Flight Center, MD
 - GOES 13-15 series backup for GOES East
 - Secondary DCS Pilot 401.7MHz transmits 24/7
- Fairbanks CDAS
 - GOES 13-15 series backup for GOES West
- Backup DADDS at NSOF Suitland, MD
- CBU, Fairmont, WV
 - GOES R series backup for GOES East & West



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GOES Spacecraft Constellation

- GOES-13: Prime East S/C @ 75° W Longitude
- GOES-15: Prime West S/C @ 135° W Longitude
- GOES-14: Storage @ 105° W Longitude
- GOES-16: Scheduled to replace G13 Nov 2017
- GOES-S: Scheduled for launch Spring 2018



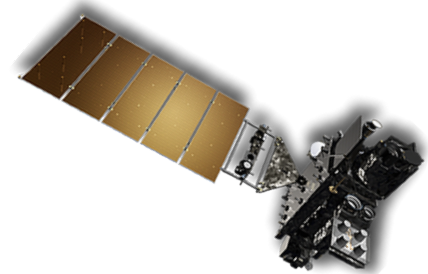
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GOES 16



- NOAA's newest geostationary satellite will be positioned as GOES-East this fall, November 2017, as announced in a NOAA press release, dated 25 May, 2017 (<http://www.noaa.gov/media-release/noaa-s-newest-geostationary-satellite-will-be-positioned-as-goes-east-fall>).
- **Reminder:** The GOES R satellite series frequency plan is different from the plan currently in use by the GOES 13, 14 and 15 satellites. GOES DRGSs currently support the GOES East (GOES 13) DCS downlink in the frequency range of 1694.30 to 1694.70 MHz. The GOES R series satellites will use 1679.70 to 1680.10 MHz to support the DCS downlink. GOES DCS users will need to modify their DRGSs to accommodate this change in downlink frequency, to be able to support GOES 16 this November.
- Note that the GOES 16 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>



DCPR Changes for GOES-R

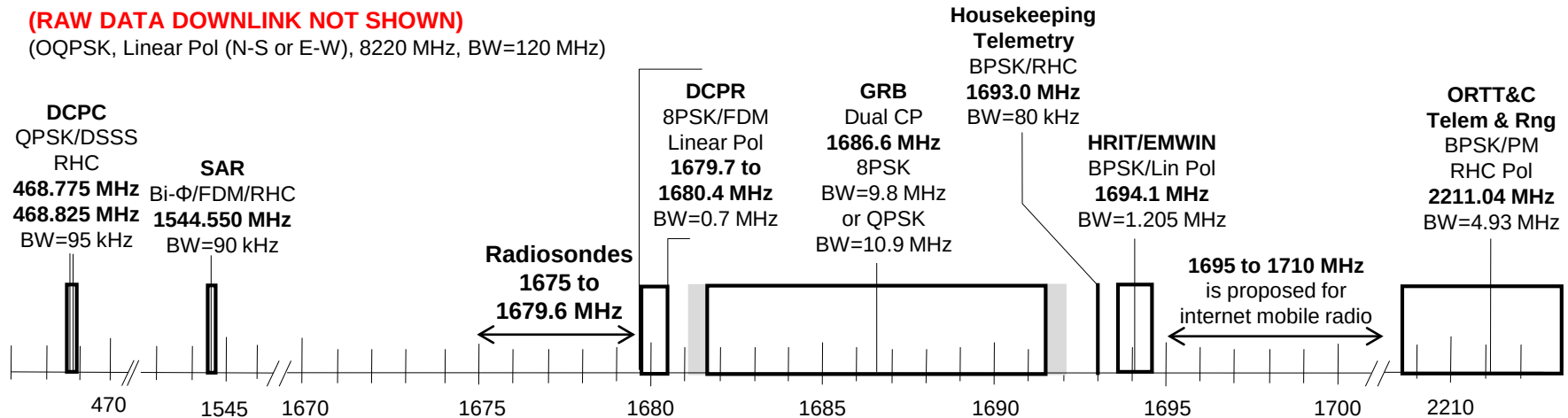
- On the GOES-N/O/P satellites the DCPR downlink band is 1694.3 – 1694.7 MHz
 - The uplink Pilot at 401.85 MHz is translated to 1694.45 MHz in the existing downlink
- For the GOES-R series satellites the DCPR downlink band will be 1679.7 – 1680.1 MHz
 - The uplink Pilot at 401.85 MHz will be translated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

GOES R Frequency Plan

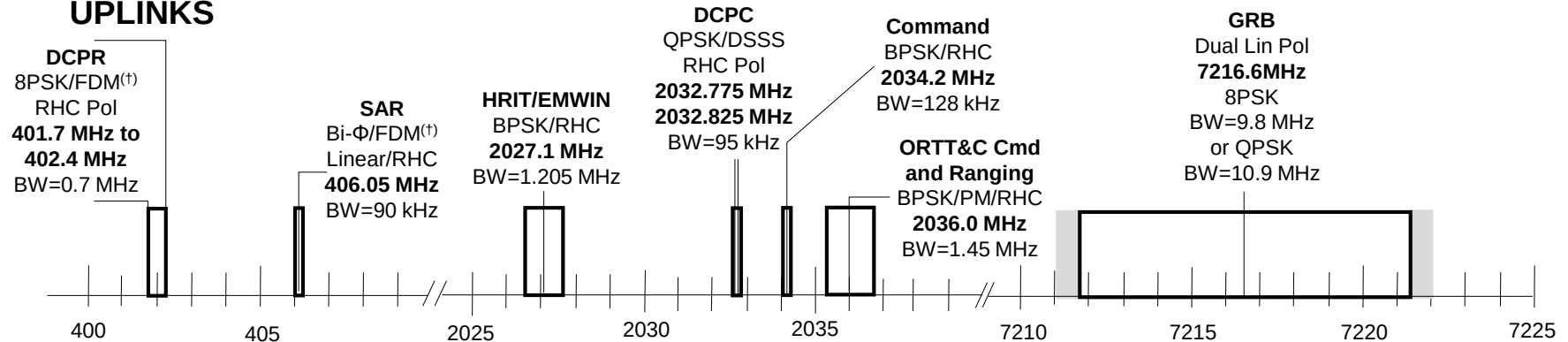
DOWNLINKS

(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

Discussion Topics

- Retire DCS DOMSAT Service?
- Move secondary Pilot frequency?
 - History of RFI at 401.7 MHz
 - Frequency agile secondary Pilot?



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NOAA DCS Phone Numbers

- DCS Help Desk at 757-824-7450 or 7451
 - 24/7 Technical Support
- Letecia Reeves (Customer Service) 301 817-4563
- Travis Thornton (Team Lead) 757 824-7450
- Philip Whaley (RF/Engineering) 757 824-7331
- Al McMath (Operations Manager) 757 824-7316



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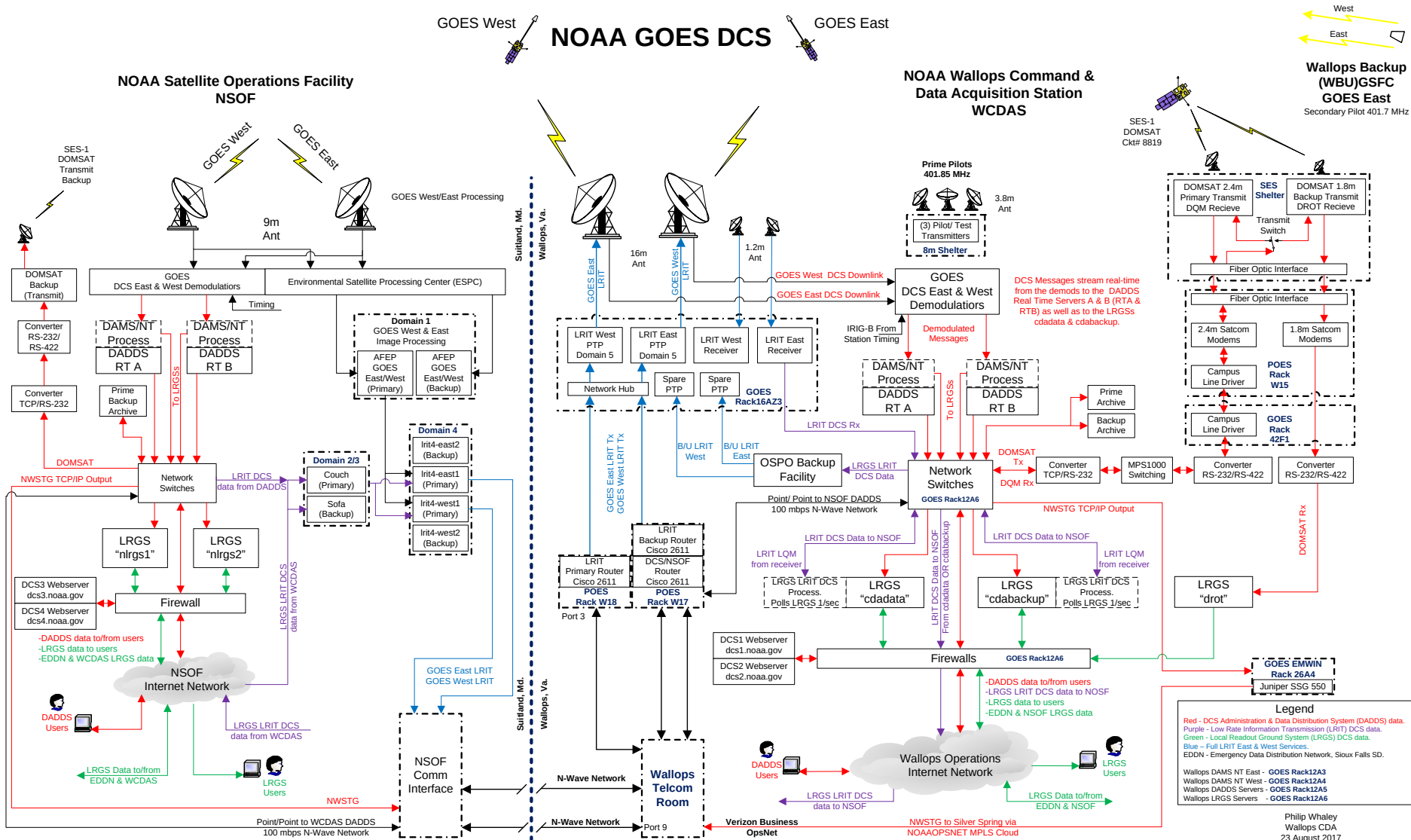
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GOES West

NOAA GOES DCS

GOES East

NOAA Satellite Operations Facility
NSOFNOAA Wallops Command &
Data Acquisition Station
WCDASWallops Backup
(WBU)GSFC
GOES East
Secondary Pilot 401.7 MHz

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Philip Whaley
Wallops CDA
23 August 2017

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)



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