



National Oceanic and Atmospheric Administration

**WELCOME!**

# **Fairbanks Command and Data Acquisition Station**

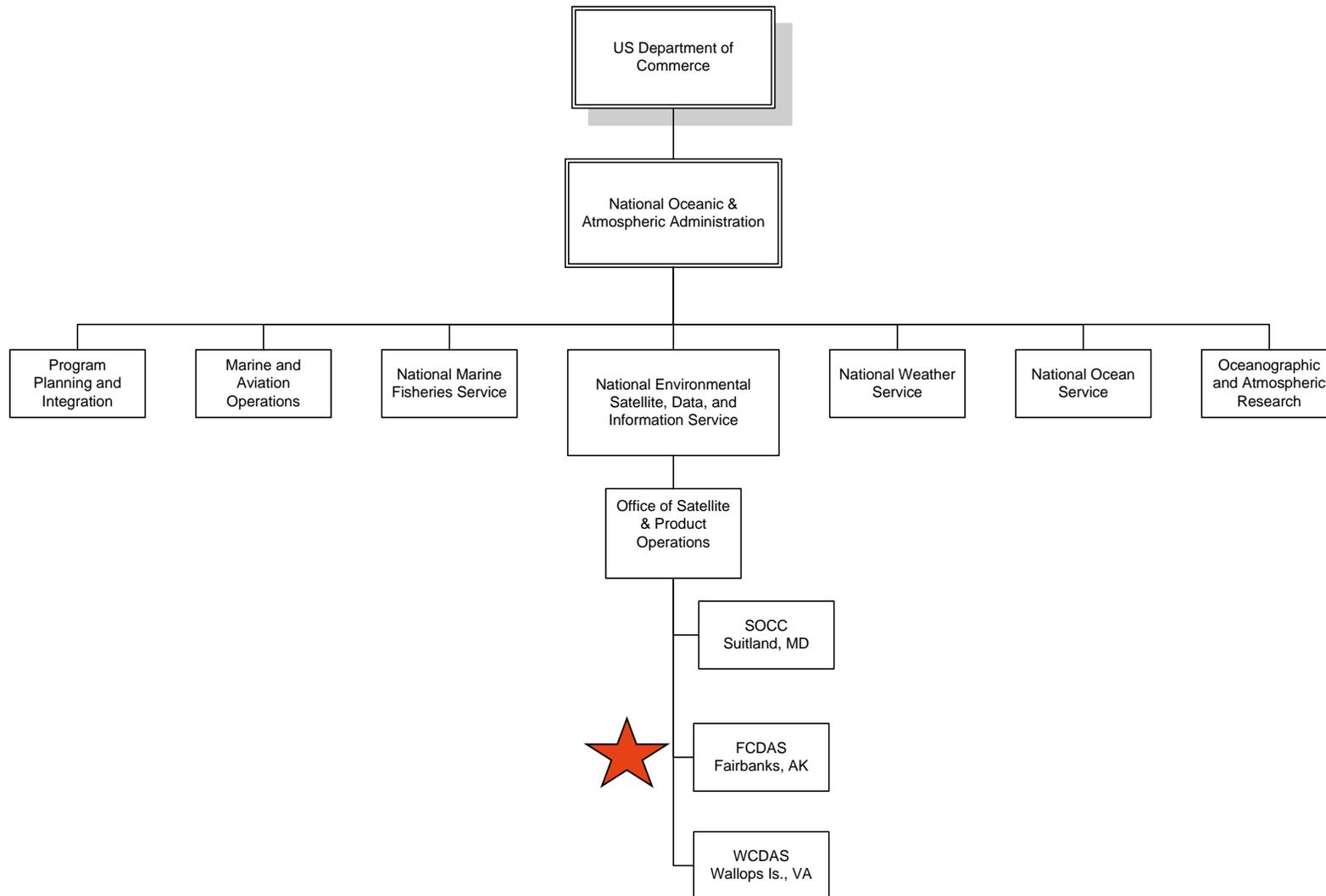


**NOAA Satellites and Information**

*National Environmental Satellite, Data, and Information Service*

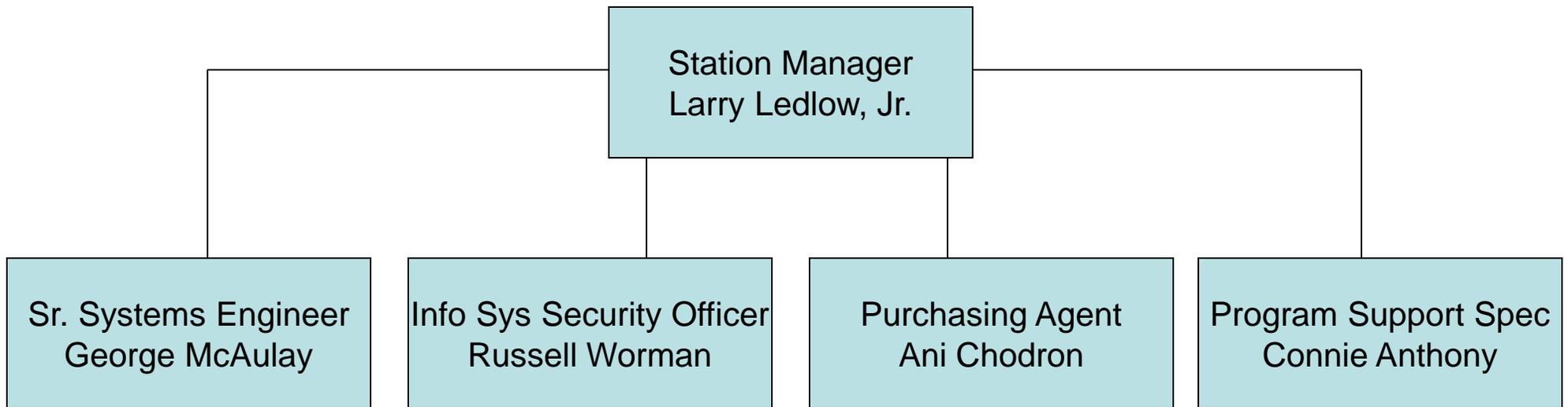
Fairbanks Command & Data Acquisition Station

# Who We Are



NOAA presence since 1973  
8500 acres in Gilmore Valley  
GOCO facility – 5 NOAA staff and 42  
contractors  
Fixed-price O&M contract – ASRC  
Aerospace  
Includes Barrow remote site  
54,000+ satellite supports per year  
Partnerships with NASA, USGS, & UAF





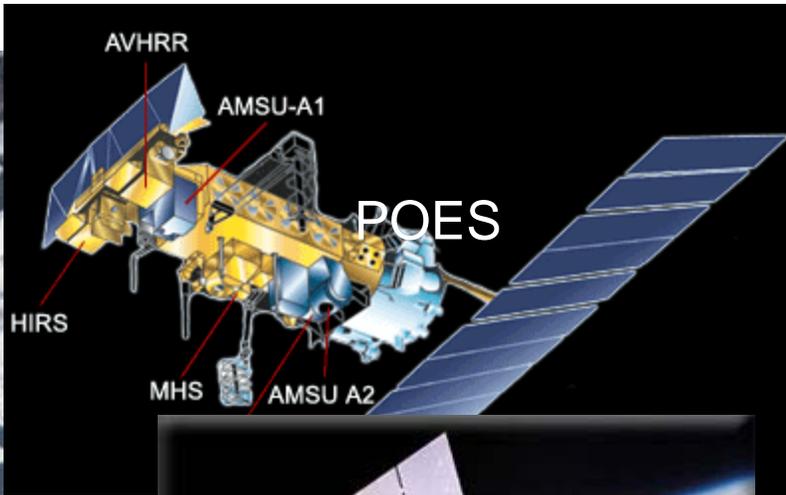
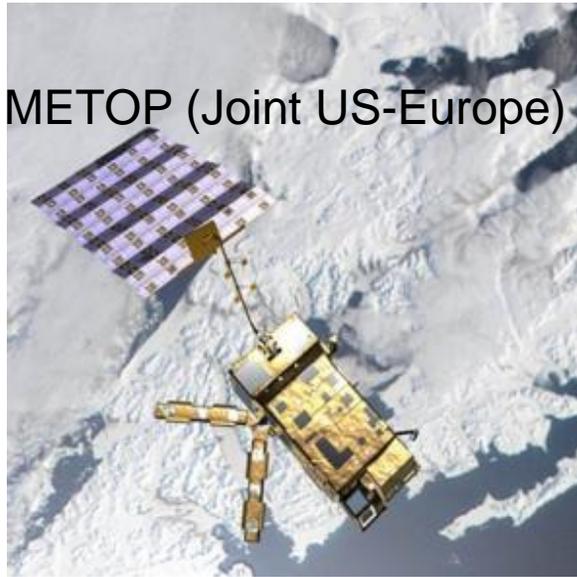
Senior Technical Rep  
Deputy Stn Mgr  
A-COR  
COMSEC  
Property Custodian

Senior IT Security Rep  
Network Engineer  
A-COR  
COMSEC  
Property Custodian

Purchasing  
Administration

Budget  
Administration  
Purchasing Support

METOP (Joint US-Europe)



POES

DMSP (US Air Force)



JASON-2

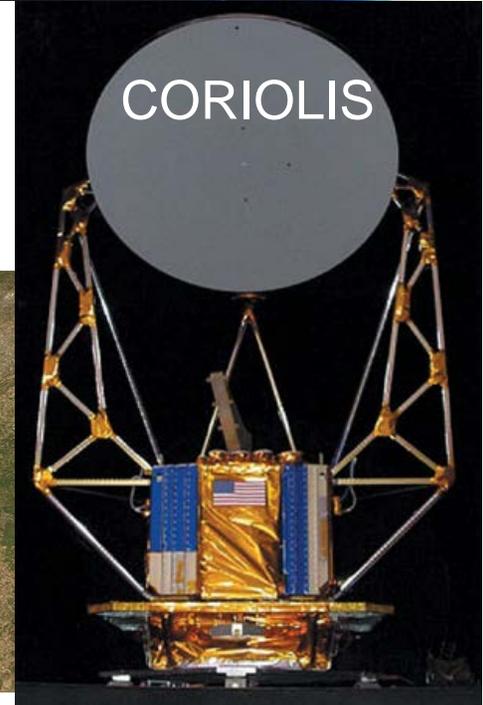


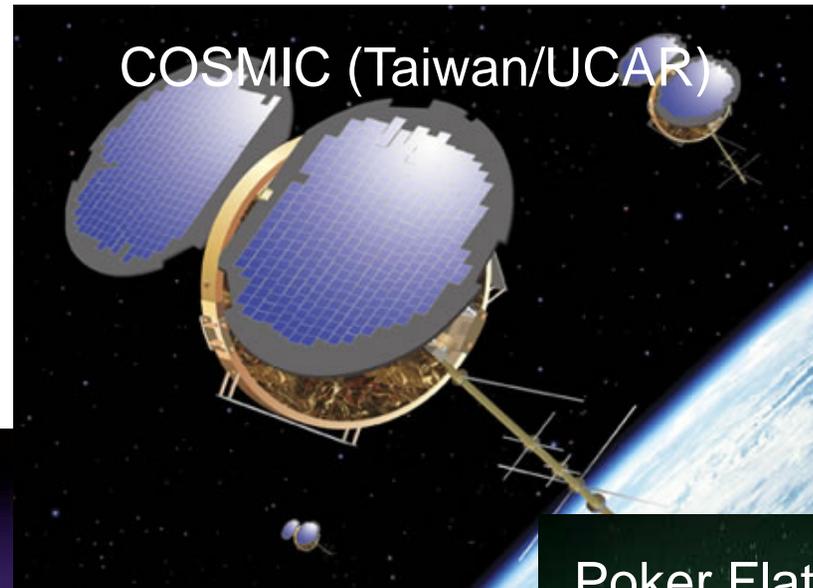
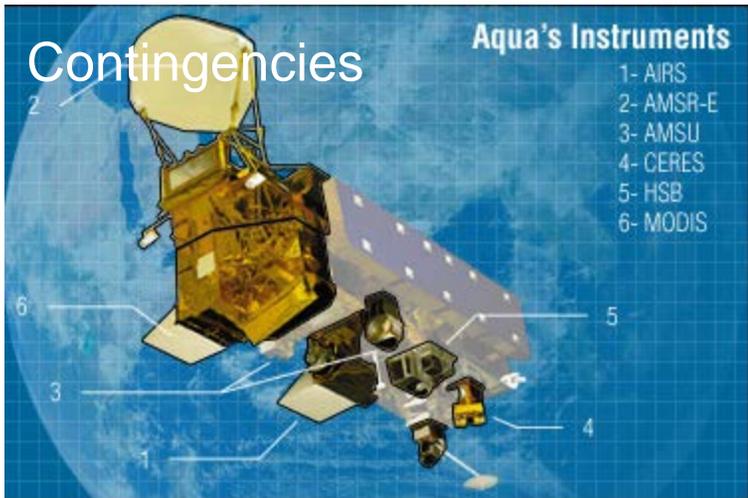
SUOMI NPP

LANDSAT-8

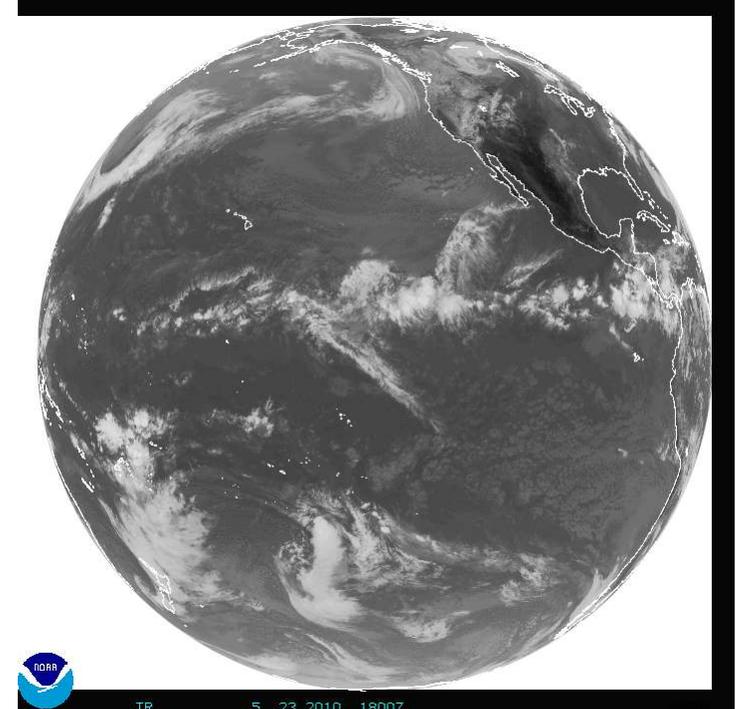


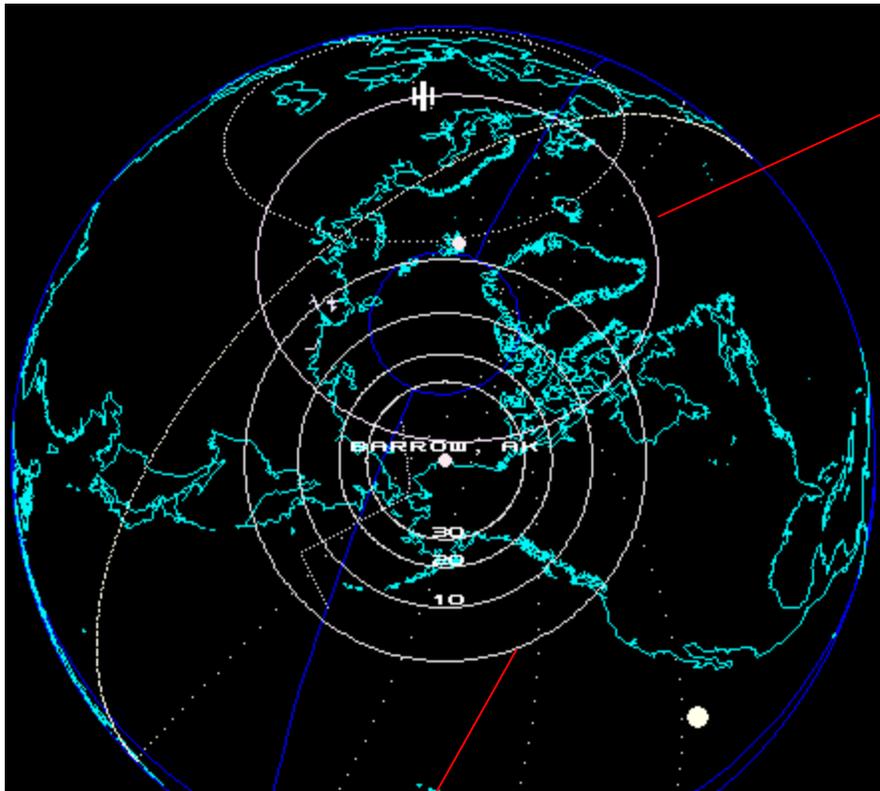
CORIOLIS





- Installed GOES capability to support Japan Meteorological Agency with GOES-9 until 2005.
- Position not manned 24x7 now.
- Proficiency and contingency supports only.





Svalbard  
station circle

Datron 5m installed April 2010.

Barrow station  
circle



# FCDAS 26m Antenna

Built in 1964

Prime focus 85-foot reflector on X-Y mount

Receive 136-138 MHz (VHF)

1670-1710 MHz (L band)

2200-2300 MHz (S-band)

Gain 27.4 48.7 51.8 dBi

Upgraded from hydraulic to electric drives in 2003

Additional hardware/software upgrades planned for 2011



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Installed 1964 – Receive only

# 13-meter Datron Antennas

Three systems installed 1998

Prime focus parabolic dish on Az/EI/Tilt mount

Workhorse for POES and other low-earth-orbit satellites

60-80 passes per day supported

Receive 1670-1710 MHz  
2200-2400 MHz  
7250-8500 MHz (X-band)

Gain 43.1 44.0 58.0 dBi

Receiving equipment upgraded to 470 Mbps



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## Main workhorses of FCDAS

# 21-meter Vertex/RSI Antenna

- Pipe Radial Hoop Members with Two Bolt Connections
- A325 Mech Galvanized Bolts

Subreflector Support Structure

Subreflector

Panels

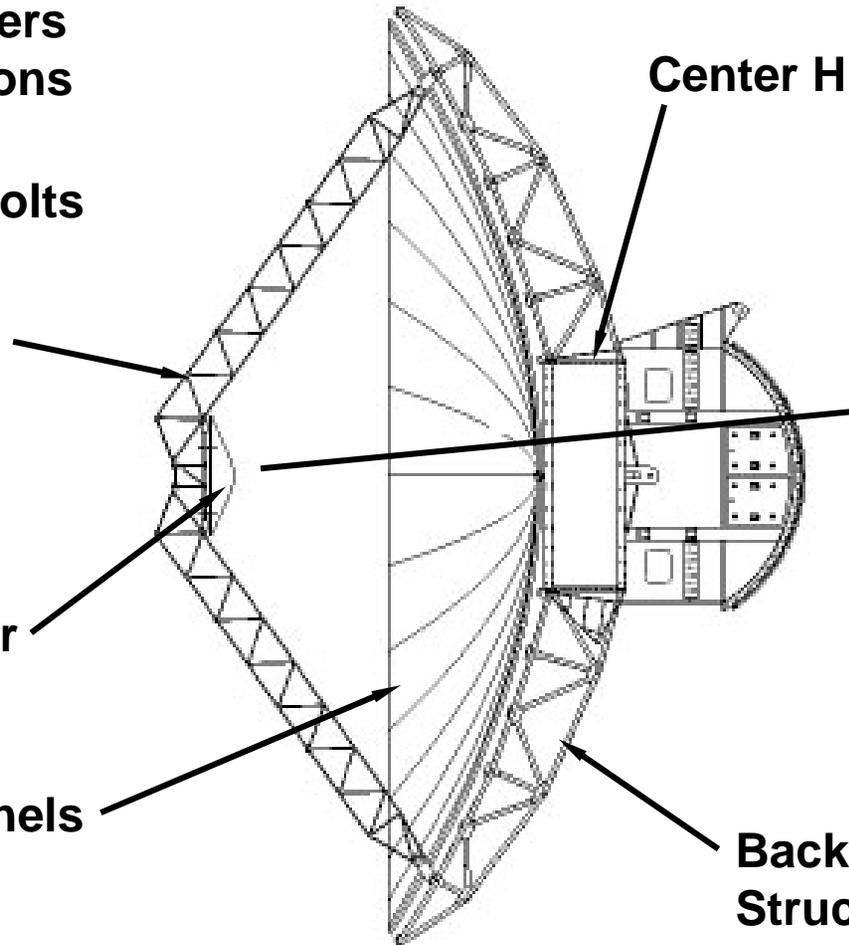
Center Hub

Cassegrain feed

Backup Structure

Transmit and Receive

- 1670-1710 MHz
- 2200-2300 MHz



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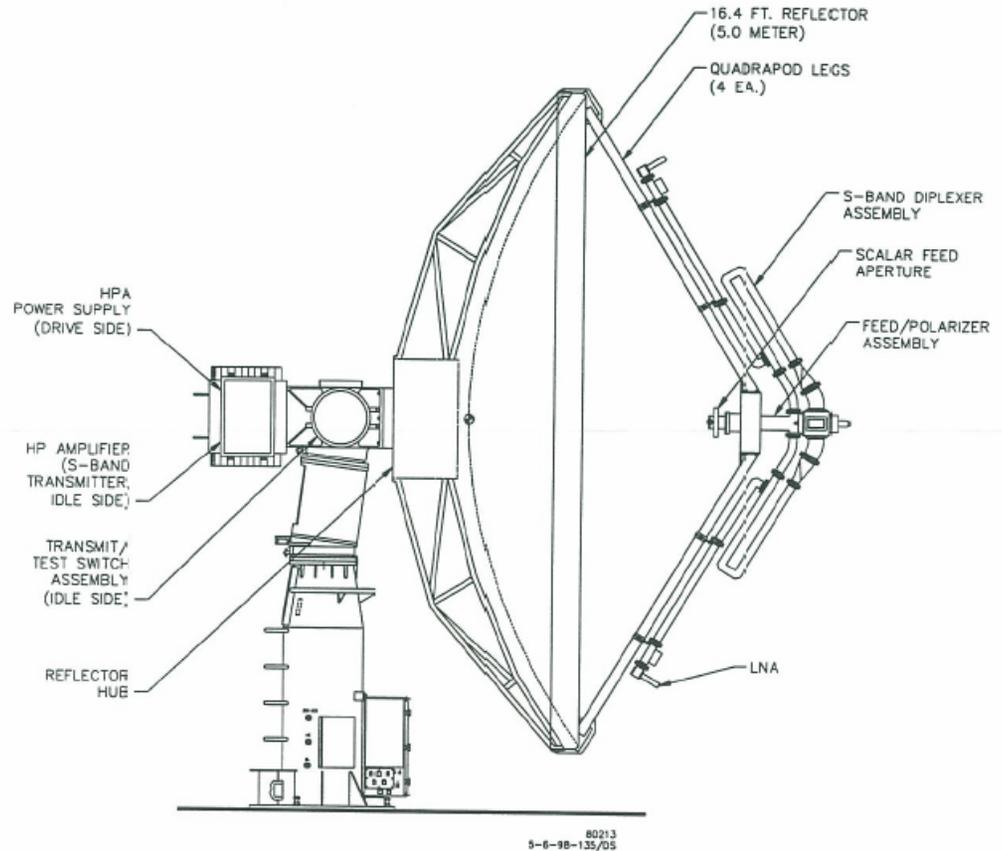
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Used for GOES operations

# Datron 5-meter

Table 1-3. Antenna Assembly – Technical Characteristics	
Characteristics	Description
<b>ANTENNA</b>	
Polarization Transmit Receive	Selectable RHCP or LHCP Simultaneous RHCP and LHCP
Frequency Range Transmit Receive	2025 to 2120 MHz 2200 to 2300 MHz
Beamwidth (3 dB)	1.76° @ 2300 MHz Nominal
Reflector	16.4 ft. Parabolic, solid surface
Antenna Gain	+38.2 dBic minimum ref. at LNA input @ 2200 MHz +37.5 dBic @ 2025 MHz at feed switch
Power Handling (Transmit Subsystem)	Power output 270 watts maximum
Feed Type	Scalar ring horn with OMT. Diplexers and waveguide for transmit polarization.
Environment Control (Feed Assembly)	Dry air pressurized
Sidelobe Level	-15 dBp maximum
Transmit to Receive Isolation	>120 dB
Axial Ratio	1.5 dB maximum
G/T	+17.25 dB/K minimum w/radome
EIRP	+59 dBw minimum



S-band transmit and receive.

# Malibu 5-meter



- S-band transmit/receive
- X-band receive
- Provides backup to COMSIC and will offload low-rate X-band supports from 13-meter antennas



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Installed August 2008.

# Barrow

- 3-meter SeaSpace antenna for downlink
- Commissioned with 4m transmit antenna in 2004 to cover POES blind orbits (2/day)
- 5-meter Datron upgrade underway (rx/tx)
- Now also adds significantly to NWS observations and forecasting.
- Plan to use for JASON-3



JAN FEB MAR APR

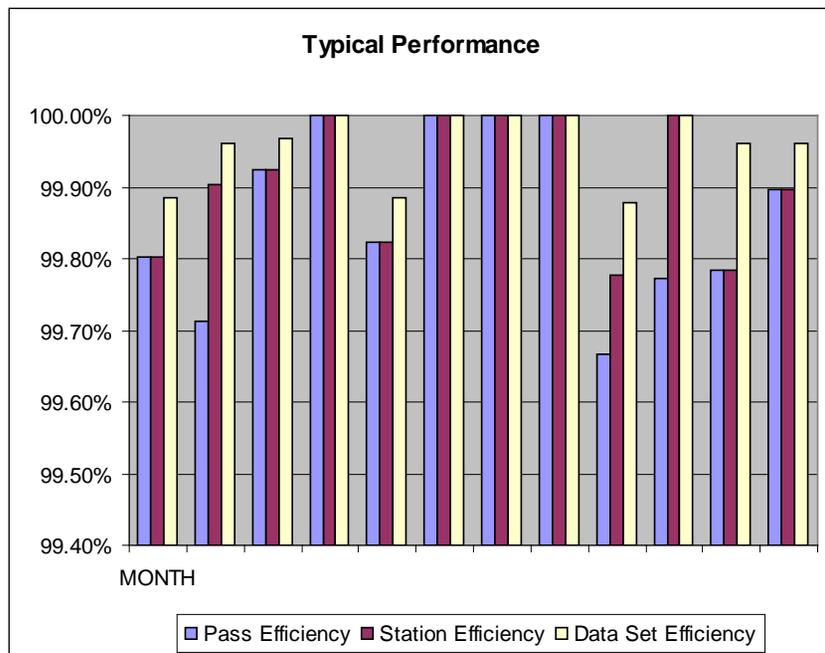
NOAA-15	133	123	134	137
NOAA-16	132	119	127	123
NOAA-17	135	124	135	146
NOAA-18	159	118	136	129
NOAA-19	245	223	243	229
METOP-2	4	4	5	4
JASON-2	84	79	87	82

OPS-47	79	75	92	66
OPS-48	107	138	155	105
OPS-49	64	68	94	105
OPS-51	13	21	7	10
OPS-53	48	36	12	15
OPS-54	6	21	25	90

CORIOLIS	192	197	183	173
COSMIC	1065	912	1000	964
OTHER (AQUA/AURA/L5)	113	238	277	258

Mission	L/S-Band	X-band	Antenna
NOAA	TT&C; Playback		13M; Barrow
DMSP	TT&C; Playback		13M
CORIOLIS		Playback	13M
METOP	TT&C; Playback	Playback	13M
JASON2	TT&C; Playback		13M
COSMIC	TT&C; Playback		5M-A; 5M-B; 26M (rx only)
AQUA/AURA	TT&C; Playback	Playback	13M
LANDSAT8	TT&C; Playback	Playback	13M

# Operational Efficiencies



# April 2013 Performance

FCDAS attained a station efficiency metric of 99.88%:

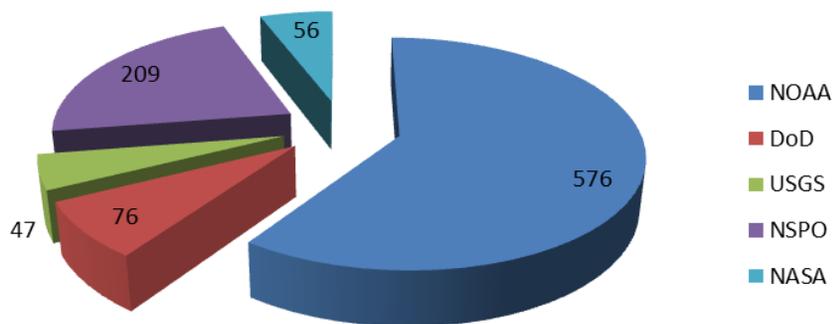
- 670 POES
- 303 DMSP
- 177 Coriolis
- 173 METOP 1
- 5 METOP 2
- 98 JASON-2 supports
- 230 LANDSAT-8

**1656 primary missions** supported.

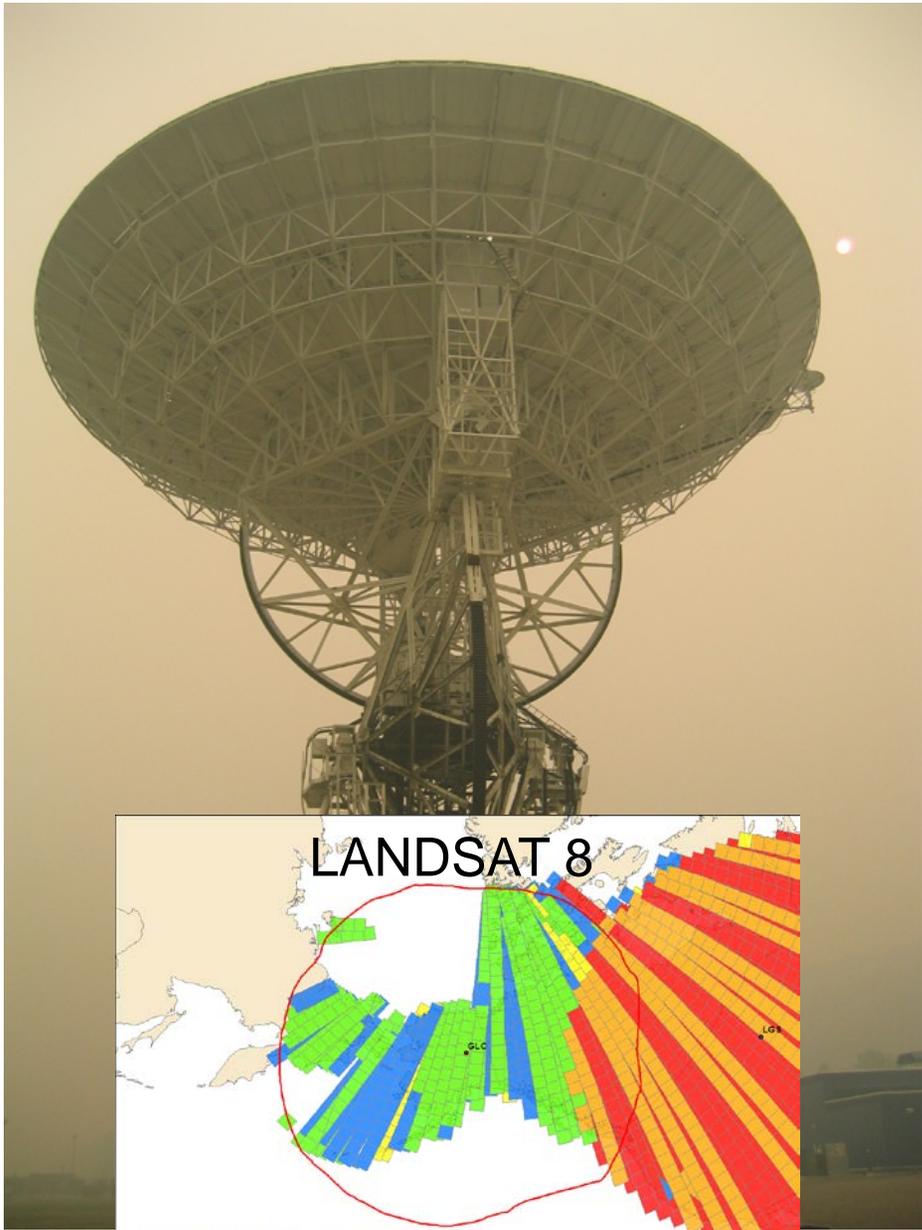
- 869 COSMIC data transfers to UCAR and NSPO
- 866 POES Barrow data transfers to NWS
- 510 real time DMSP data transfers to NWS and AFWA
- 10 AQUA and AURA missions for NASA and GINA
- 125 SNPP Supports for NOAA and NASA
- 13 GCOM-W1 for NOAA and NASA

**2407 “collaborative missions”** supported.

## Users of FCDAS Supports



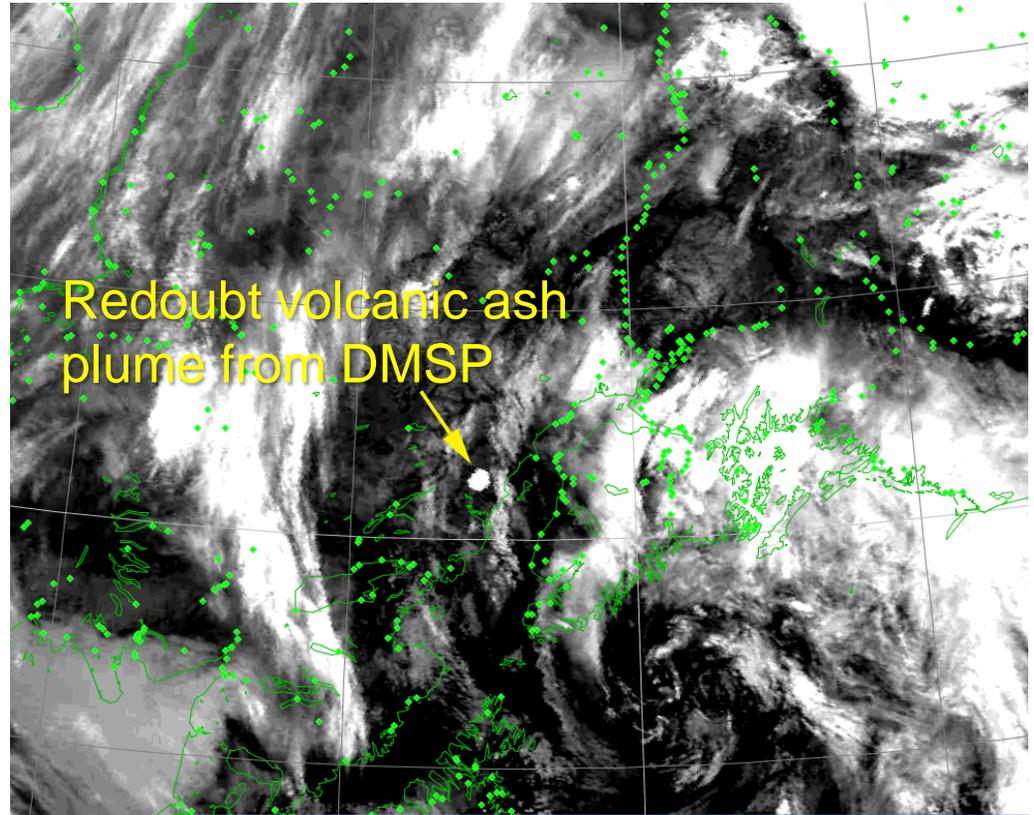
By user - weekly



LANDSAT 8

Scenes acquired 01-May-2005 through 31-August-2005

1 2-3 4-6 6-7 8



Redoubt volcanic ash plume from DMSP

Selected:  
F13.09085.172533  
Sensor: DMSP OLS  
2009-03-26 / 17:30:58 GMT  
Browse: 20km - 1km  
Background:  
Alaska Place Names  
Coastlines  
Basemap:  
Hillshade:



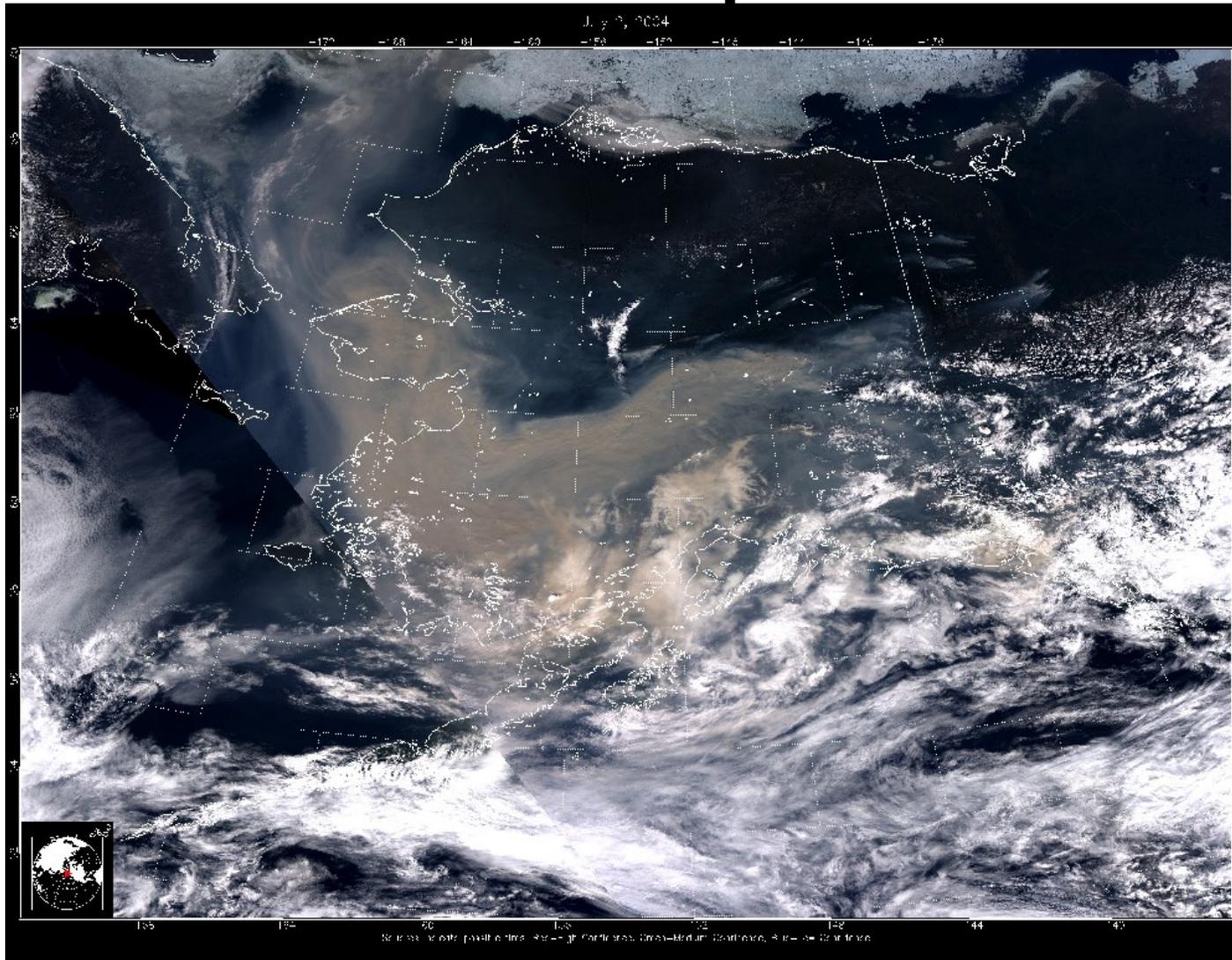
# Boundary Fire 2004



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Seed for UAF collaboration

# MODIS from Aqua Satellite

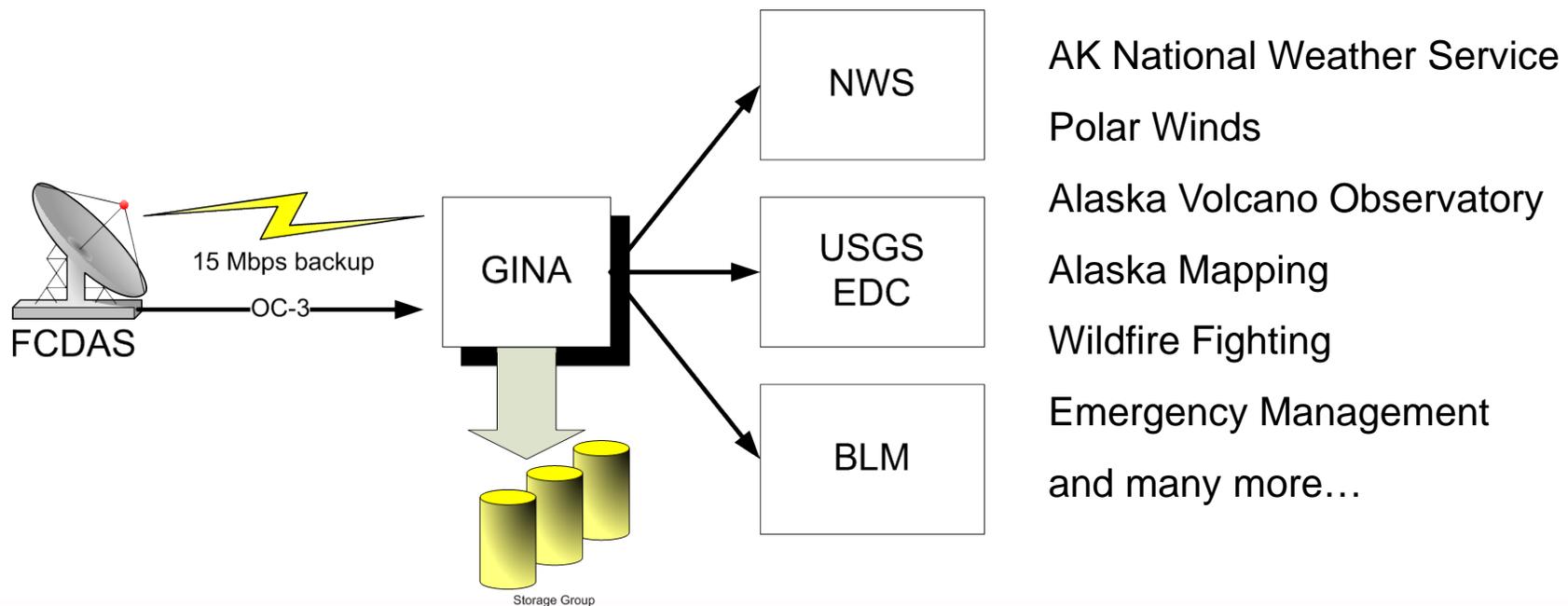


# “Camp Gilmore”



# Geographic Information Network of Alaska

- A distributed data system for geospatial information.
- Enterprise-level geographic information system (GIS) with online archiving, internet mapping, and metadata services.
- Training and assistance in satellite image processing and GIS and visualization.
- Custom processing, server-side analysis, and visualization tools.



# On the Horizon

- GPS radio occultation: KOMPSAT-5; COSMIC-2
- JPSS-1 direct broadcast – 4m antenna installation summer 2013
- JASON-3: Radar altimeter, radiometers (2013-14). Dual operations with JASON-2 will include Barrow.
- DSCOVR – Space weather from L1, 1.5 million km orbit – 2014
- NWS-AK support for GOES-R and JPSS product development



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