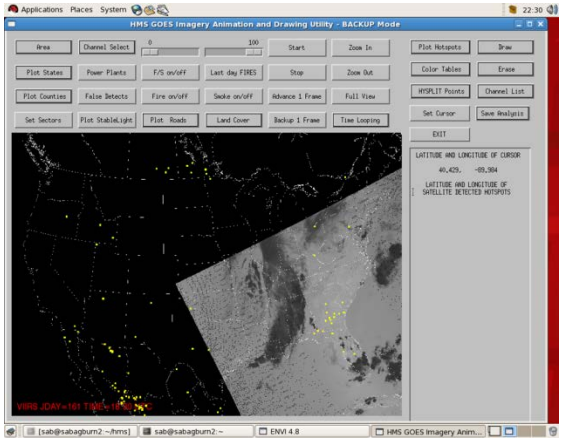
An Overview of OSPO & Support for S-NPP Operations

Jason Taylor – User Services Coordinator
NESDIS/OSPO/ Satellite Products and Services Division

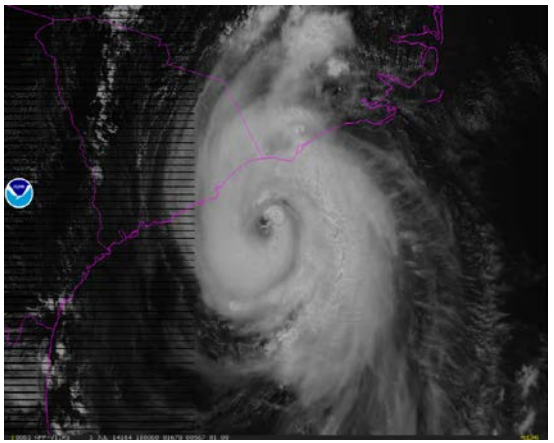
STAR JPSS Annual Science Team Meeting

Operational User Engagement: Session 4



Satellite Analysis Branch's
Hazard Mapping System

NCWCP
College Park, MD
August 25, 2015



Hurricane Arthur
S-NPP VIIRS July 3, 2014

Coordination for Presentation

NESDIS / OSPO / SPSD @ NCWCP

- Shuang Qiu, Suomi NPP PAL
- Tom Renkevens, SPSD Division Chief
- Natalia Donoho, User Services Coordinator

NESDIS / OSPO / SPSD / SAB @ NCWCP

- Mark Ruminski, Fire Team Lead & All Desks

NESDIS / OSPO / MOD @ NSOF

- Chris Sisko, JPSS Data Operations Manager
- Donna McNamara, Data Access Manager
- Brian Walling, S-NPP Engineering Team Lead



National Center for Weather & Climate Prediction (NCWCP)



NOAA Satellite Operations Facility (NSOF)

Presentation Overview

- Overview of the Office of Satellite and Product Operations (OSPO)
- Current status of S-NPP satellite support for operational products and users
- S-NPP VIIRS data for Satellite Analysis Branch (SAB) operational use
- Q&A



NESDIS Office of Satellite and Product Operations (OSPO)

- Operates the Nation's 16 environmental satellites:
  - 3 Geostationary (GOES) by NOAA
  - 4 Polar-Orbiting (POES) by NOAA
  - 6 Defense Meteorological Satellite program (DMSP) operated by NOAA
  - 1 OSTM Jason-2 (Ocean Surface Topography Mission) - Joint NOAA, NASA, CNES, EUMETSAT effort
  - 1 DSCOVR (Deep Space Climate Observatory) by NOAA
  - 1 Suomi National Polar-orbiting Partnership (NPP) by NOAA & NASA



NESDIS Office of Satellite and Product Operations (OSPO)

- OSPO has locations at four major facilities housing around 700 people.
- NOAA Satellite Operations Facility (NSOF) in Suitland, Maryland
  - Mission Operations Division (MOD)
  - U.S. National Ice Center (NIC)
- NOAA Center for Weather & Climate Prediction (NCWCP) in College Park, Maryland.
  - Satellite Products and Services Division (SPSD)
- Command and Data Acquisition Stations in Alaska and Virginia.

NSOF





Fairbanks CDAS



NCWCP

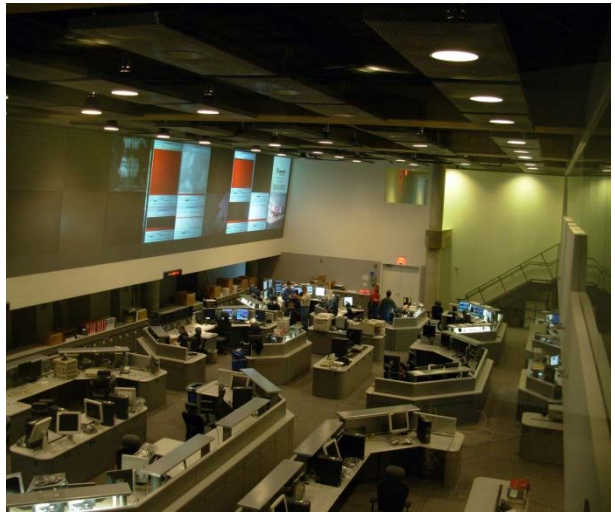


Wallops CDAS

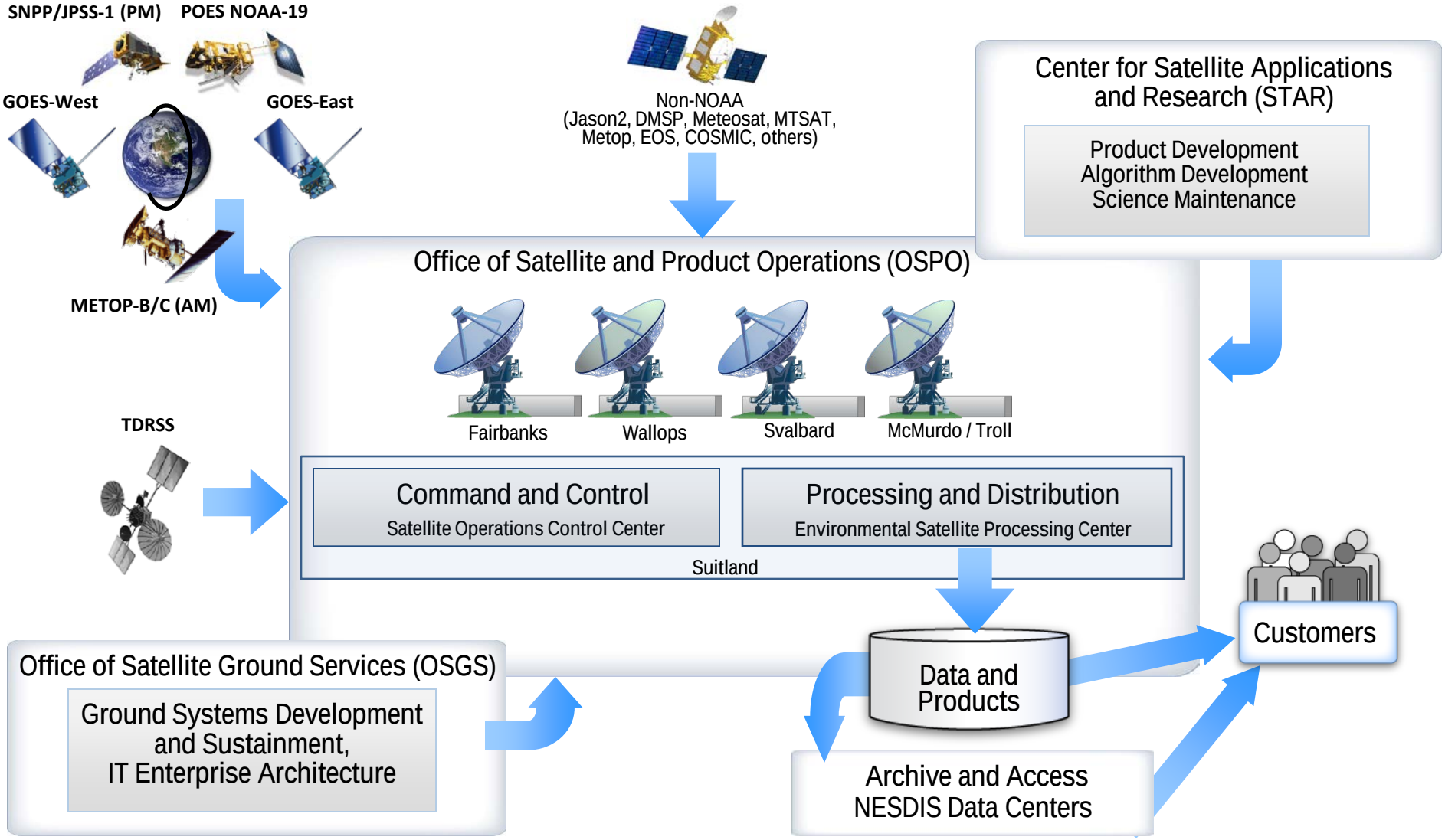
OSPO's Key Roles

- Ground System Command & Control, Ingest, Generation, and Distribution
- Pre-Launch and Post-Launch Testing
- Operational Testing, Validation, and Verification
- User Readiness for Broadcast Services and Product Delivery
- Long-Term Continuity of Products and Services





Satellite Operations, Processing and Distribution



Satellite Direct Service Operations

Emergency Managers Weather Information Network (EMWIN):



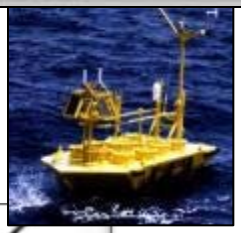
- NOAA satellites relay critical information to users across the country.
  http://www.weather.gov/emwin/index.htm

Low Resolution Image Transmission (LRIT):



- NOAA satellites are used to relay satellite and weather products to users in remote locations, that do not have landlines or internet connections.
  http://www.noaasis.noaa.gov/LRIT/

Data Collection:



- NOAA satellites are used to collect and relay scientific data from around the globe.
  http://www.noaasis.noaa.gov/DCS/ http://www.noaasis.noaa.gov/ARGOS/

Search and Rescue Satellite Aid Tracking (SARSAT):



- NOAA satellites are used to relay distress alerts from aviators, mariners and land-based users (135 rescued through July 31, 2015).
  http://www.sarsat.noaa.gov/

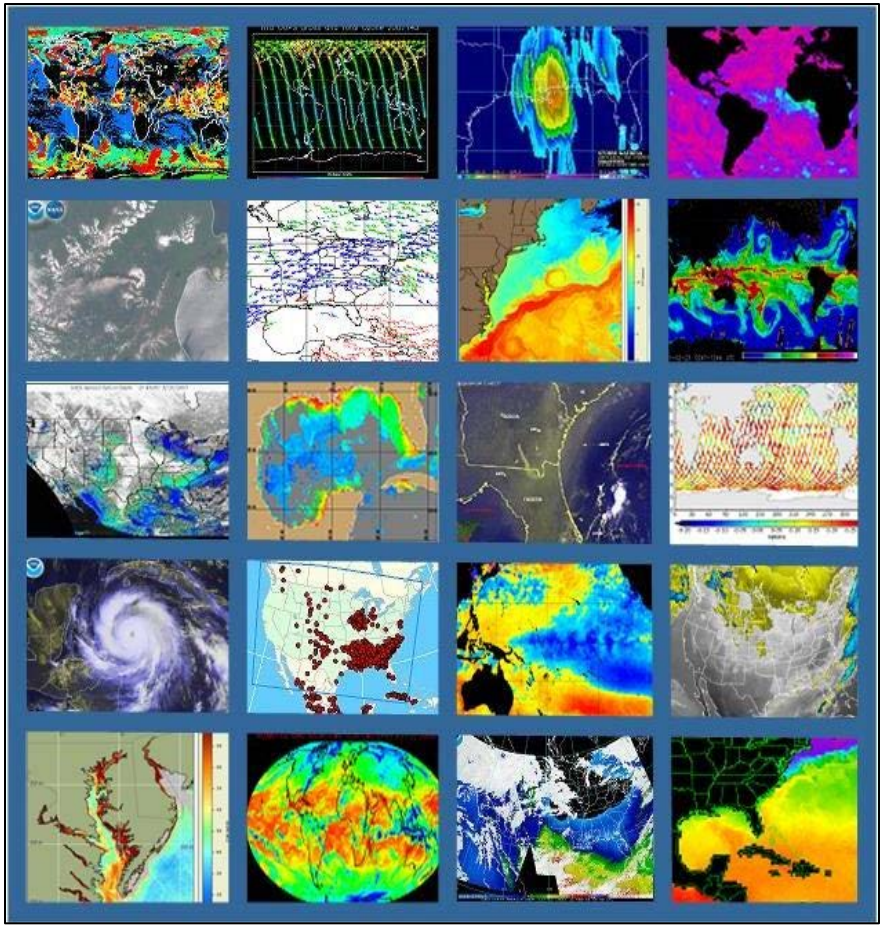
Geonetcast Americas:



- Data from NOAA for diverse societal benefits - agriculture, energy, health, climate, weather, disaster mitigation, biodiversity, water resources, and ecosystems.
  http://www.geonetcastamericas.noaa.gov/index.html

OSPO's Satellite Products and Services Division

- Provides 24x7 interpretive analyses of satellite data
  - Atmospheric temp/moisture
  - Hurricane intensity & position
  - Significant Precipitation
  - Volcanic Ash
  - Fire and Smoke
  - Oil Spills
- Manages automated environmental products
- Collaborates with partners to support transition of research products into operations



Mission Systems Status

S-NPP Space System is GREEN

Spacecraft	S-NPP
Launch Date	Oct 28, 2011
Mission Lifetime	5 years
Mission Category	LTAN 1330 (PM)

- Operational (or capable of)
- Operational with limitations (or standby)
- Operational with degraded performance
- Not functional

Spacecraft Subsystem	Status
TLM, Command & Control	G
ADCS	G
EPS	G
Thermal Control	G
Communications	G
CDP	G
SCC	G
GPS	G
1553	G
1394	G

Payload Instruments	Status
ATMS	G
CERES	G
CrIS	G
OMPS – Nadir	G
OMPS – Limb	G
VIIRS	G

Note:
S-NPP declared prime afternoon satellite on May 1, 2014

http://www.ospo.noaa.gov/Operations/SNPP/status.html

Suomi-NPP Calendar of Events – Summary

Upcoming SNPP spacecraft maneuvers and other known events that may impact data distribution are:

- Drag Make-Up maneuver (DMU) for maintaining optimum geo-location:
  - None scheduled/planned
- VIIRS Lunar Roll (~9 per year) for VIIRS calibration activities:
  - 23 Oct 2015 (~18:56 UTC)
  - 22 Nov 2015 (~04:13 UTC)
  - 21 Dec 2015 (~11:45 UTC)
  - 19 Jan 2016 (~21:02 UTC)
  - 18 Feb 2016 (~08:05 UTC)
  - 18 Mar 2016 (~20:54 UTC)
- Inclination Maneuver (IAM) to ensure optimum LTAN maintenance:
  - 23 Sep 2015 (TBD) – IAM #5

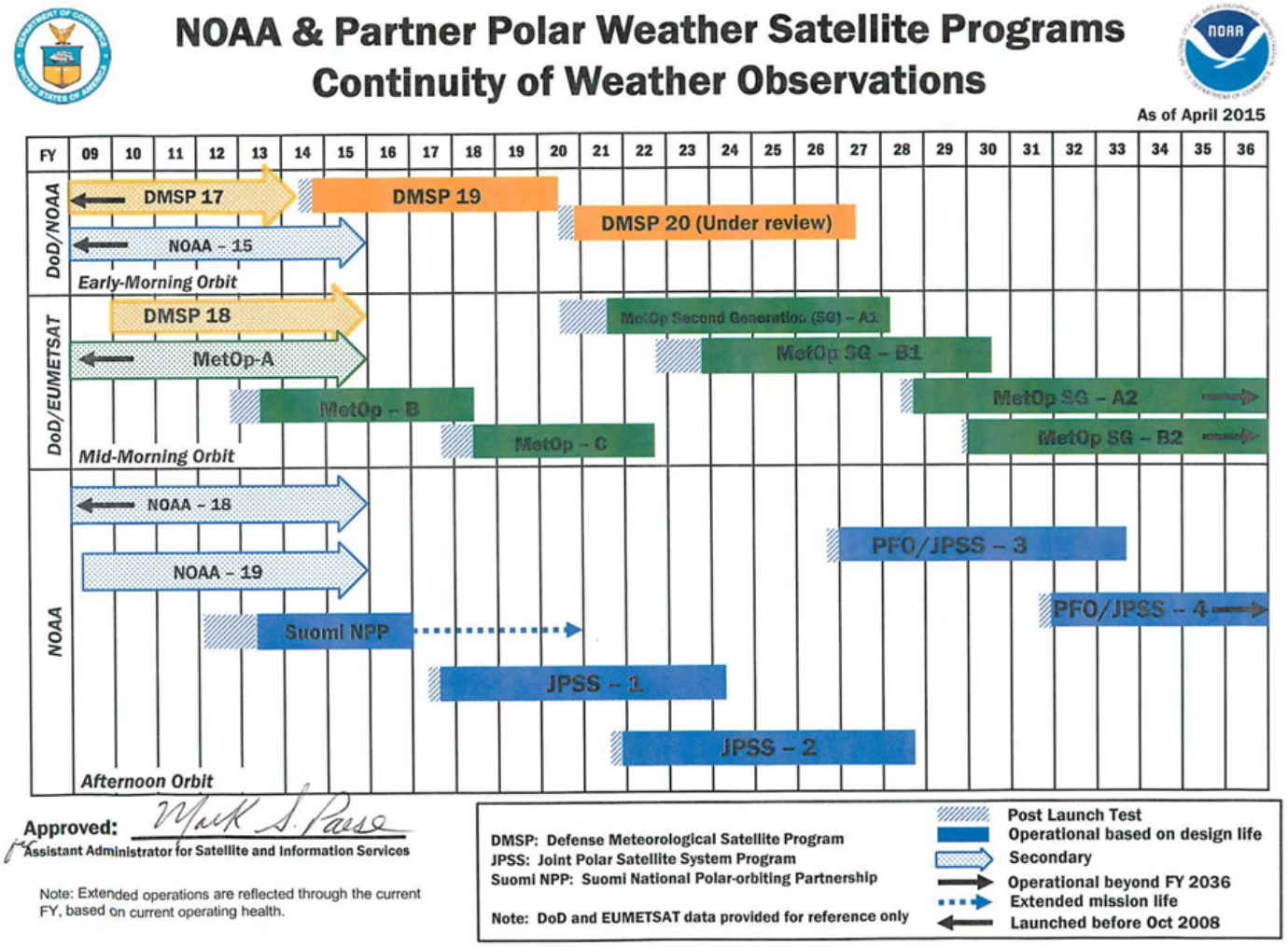
Note – IAM and DMU maneuvers are subject to change. More details for these events will be provided closer to the occurrence via official ESPC administrative notifications and JPSS mission notices.

Spacecraft specific information obtained from the latest SNPP Planning and Scheduling Spacecraft Calendar and from other sources

Maneuvers Affecting Data Quality

	Drag Make-Up (DMU)	Inclination Adjust (INC)	VIIRS Lunar Calibration
Type	Propulsive	Propulsive	Non-Propulsive (Slew only)
Purpose	maintain Ground Track box with a Ground Track Error of 0 ± 20Km	Maintain Mean Local Time at Ascending Node (MLTAN) of 13:30 ± 00:10.	Monthly (Except during summer) VIIRS calibration.
Mnvr Location	In-track, orbit boost, in Eclipse	Cross-Track at Desc. Node, in Eclipse	Day side of orbit. Location provided by VIIRS Science Team.
Mnvr Freq.	3-5 times per year	Annual 2 month multi-maneuver campaign: 2014 onwards	8-9 times per year (Oct – May)
Out of MPM	13.5 min	Up to 33 min per maneuver	12 min
OMPS outage	Approx. 50 min (SVL contact dependent). Enter DECON mode 5 min before last Svalbard Contact prior to maneuver. Start Ops 4 mins after MPM.	Approx. 50 min (SVL contact dependent). Enter DECON mode 5 min before last Svalbard Contact prior to maneuver. Start Ops 4 mins after MPM.	N/A
CERES outage	Approx. 2 hours. Enter Contam Safe 20 min prior to mnvr. Ops Mode 101 mins after MPM	Approx. 2.5 hours. Enter Contam Safe 20 min prior to mnvr. Ops Mode 101 mins after MPM	Approx. 2 hours. Enter Contam Safe 20 min prior to mnvr. Ops Mode 101 mins after MPM
HRD outage (direct readout)	23.5 min. Turn off 5 mins. Before mnvr. Turn on 5 mins after maneuver	Approx 43 min. Turn off 5 mins. Before mnvr. Turn on 5 mins after maneuver	22 min. Turn off 5 mins. Before mnvr. Turn on 5 mins after maneuver

POES Flyout Schedule - April 2015



http://www.nesdis.noaa.gov/flyout_schedules.html http://www.jpss.noaa.gov

OSPO's Support of S-NPP Mission

➢ Objectives to ensure:

– S-NPP data continuity is maintained; that S-NPP provides research quality data products which can be used to analyze and determine actual geophysical trends in climate parameters;

– S-NPP flight and ground systems performance leads to validation and/or improvements in JPSS designs and procedures for future missions;
  - Block 2 Improvements will allow improved latency, cyber-security, and robustness
  - JPSS-1 Improvements
    - CrIS default set at "Full Spectrum for all channels
    - Replace Firewire with SpaceWire
    - VIIRS hardware Watchdog time

– S-NPP data are available to support the NOAA weather forecasting and ocean missions.

NDE Operational Products

Application Short Name	Application Name	Product Name	Format	Satellite
ACSPO SST	Advanced Clear Sky Processor for Oceans (NDE) - SST	SST, Clear Sky Mask	netCDF	SNPP
AOT	Aerosol Optical Thickness	VIIRS Aerosol Optical Thickness (NDE)	BUFR	SNPP
ATMS-SDR	ATMS SDR radiances	ATMS SDR radiances 22 channels (NDE)	BUFR	SNPP
CRIS-SDR-399	CrIS SDR radiances 399	CrIS IR sounder SDR radiances 399 channels for NWP data assimilation (NDE)	BUFR	SNPP
CRIS-SDR-1305	CrIS SDR radiances 1305	CrIS IR sounder SDR radiances 1305 channels for NWP data assimilation (NDE)	BUFR	SNPP
GVF	GVF	Green Vegetation Fraction – 7 day product	Grib2	SNPP
NUCAPS Level 2	NOAA Unique CrIS ATMS product System Level 2	CrIS/ATMS Atmospheric Temp Profile CrIS/ATMS Atmospheric Moisture Profile	netCDF	SNPP
NTCP	Tropical Cyclone Products	ATMS Microwave Tropical Cyclone Product	ATCF Ascii	SNPP
MIRS ATMS	Microwave Integrated Retrieval System (NDE) - ATMS	MIRS ATMS IMG products MIRS ATMS SND products	netCDF	SNPP
OMPS-NP	OMPS nadir profile	Ozone nadir profile (NDE)	BUFR	SNPP
OMPS-TC	OMPS total column	Ozone total column (NDE)	BUFR	SNPP
VIIRS-EDR	VIIRS EDR	VIIRS EDR (NDE)	netCDF	SNPP
VIIRS-SDR	VIIRS SDR	VIIRS SDR (NDE)	netCDF	SNPP
VIIRS Binary Snow Cover	VIIRS Binary Snow Cover	VIIRS Binary Snow Map	netCDF	SNPP
VPW	VIIRS Polar Winds	VIIRS Polar Winds	BUFR netCDF	SNPP

Upcoming Operational Products)

- Vegetation Health (Aug)
- GCOM → NDE 1.0 (Sep)

Internal and External Users

Internal Users	Product Type
VIIRSDIST	• NUPS – VIIRS
MiRS	• NUP – ATMS • xDR – ATMs (pass-thru)
SFS NIC-IMS	• xDR – VIIRS (pass-thru) • NUP – ATMS
NIC	• xDR – VIIRS (pass-thru) • NUP – ATMS
GCOM-GPDS	• xDR – GCOM RDR (pass-thru)
Coast Watch	• NUP – VIIRS
NUCAPS	• NUP – ATMS/CrIS
TOAST	• NUP – ATMS/ CrIS/OMPS
Okeanos	• xDR – VIIRS (pass-thru)
Blended SST	• NUP - VIIRS
DAPE	• NUP – ATMS/CrIS/VIIRS
Prod Mon	• NUP – ATMS/CrIS/VIIRS
DDS-Legacy	• Ancillary
Blended Hydro	• NUP – ATMS

External Users	Product Types
NWS-AWIPS	• NUP – VIIRS
~~NWSTG~~	• ~~NUP – ATMS /CrIS~~ (moved to NCO)
NCEP-NCO	• NUP – ATMS/CrIS/OMPS
NCEP-EMC	• NUP – VIIRS
EUMETSAT	• NUP – ATMS/CrIS/VIIRS
CMC	• NUP – ATMS/CrIS/OMPS/VIIRS
JMA	• NUP – ATMS/CrIS/OMPS
NASA-GPM	• xDR – ATMS (pass-thru)
NASA-JPL	• NUP - VIIRS
India-NCMWRF	• NUP – ATMS/CrIS
NEP-IDP	• NUP – VIIRS/ATMS-MiRS
STAR-CIRA	• xDR – VIIRS (pass-thru)
STAR	• NUP – ATMS/CrIS/VIIRS
NOAA-AOML	• NUP – VIIRS
CLASS	• NUP – VIIRS/ATMS/CrIS
***JTWC**	• ATMS (derived)
***NCEI**	• ACSPO – SST

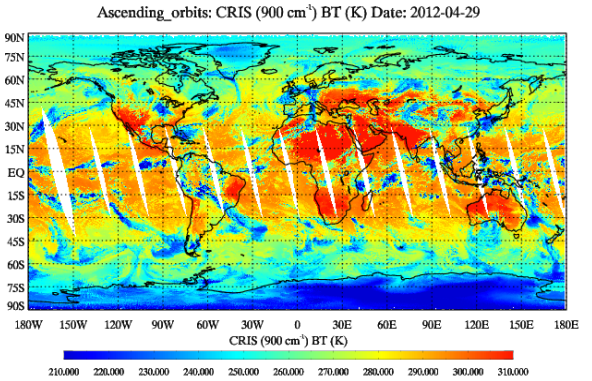
* New Users Note – NWSTG serviced moved to NWS/NCEP NCO

Operational User Examples

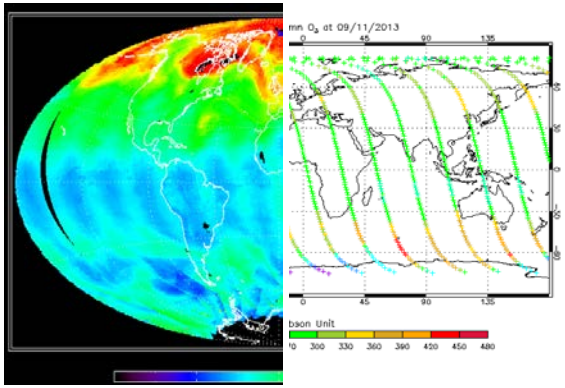
➢ Supporting NOAA's weather forecasting & oceans missions:

- May 1, 2012, VIIRS imagery used to support local warning and forecast operations throughout the NWS Alaska Region.
- May 22, 2012, the Advanced Technology Microwave Sounder (ATMS) radiances were operationally assimilated in the National Centers for Environmental Prediction's (NCEP)/ NWS Global Forecast System (GFS).
- September 25, 2012, ATMS data was assimilated operationally into the European Centre for Medium-Range Weather Forecasts (ECMWF) weather forecast models.
- April 2013, the United Kingdom Meteorology Office began assimilating operational data from the Cross-track Imaging Radiometer Suite (CrIS) and ATMS into its weather forecast models.
- August 20, 2013, NCEP began incorporating S-NPP CrIS satellite data operationally into the GFS.
- October 31, 2013, NCEP/CPC started to use OMPS Ozone operationally
- November, 2013, NRL started to use ATMS operationally in their global forecast model.

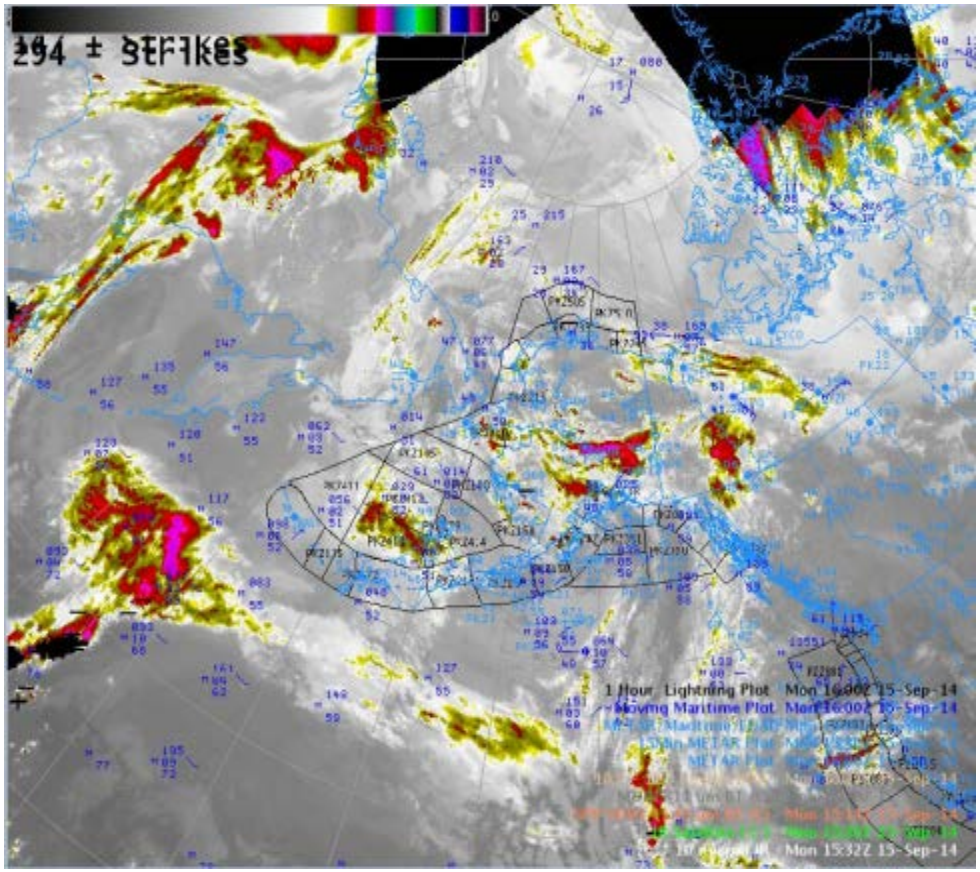
Cross-track Infrared Sounder



Ozone Mapping Profiler Suite



SNPP VIIRS Example
Fairbanks National Weather Service Office



SNPP, GOES-West and MTSAT Composite imagery in AWIPS Forecast Display Systems from NWS-Fairbanks

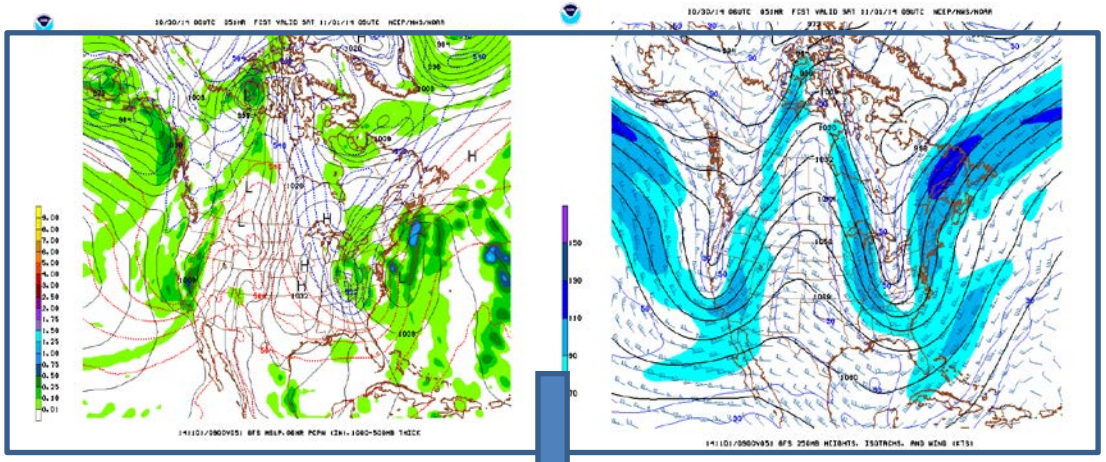
Example from NWS-Fairbanks depicting use of composite imagery (LEO & GEO) from several platforms that is used continuously to meet their critical mission needs.

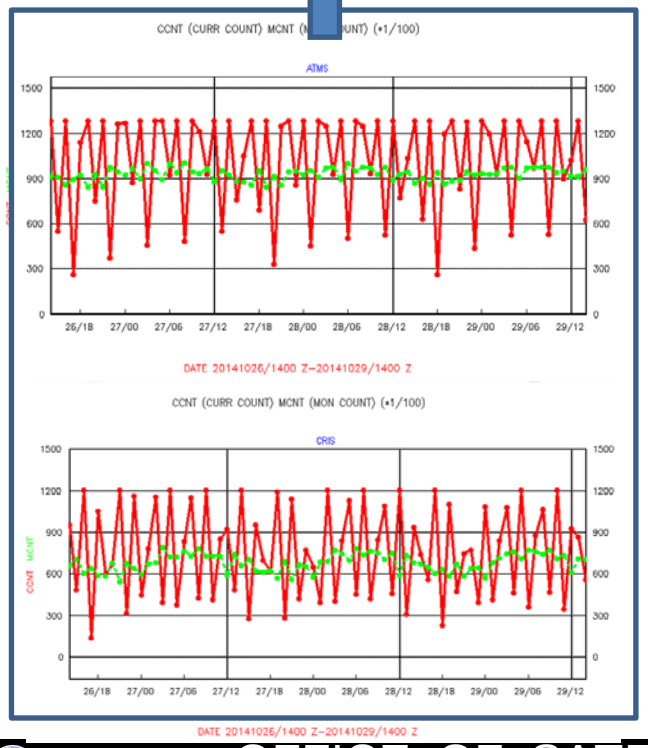
Critical Applications:

- aviation safety
- Maritime safety
- public nowcasts/forecasts
- coastal/offshore forecasts
- fire weather
- ice flow monitoring
- emergency response support.

Numerical Weather Prediction – Data Assimilation (ATMS/CrIS BUFR)

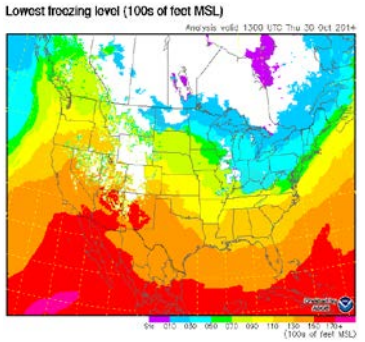


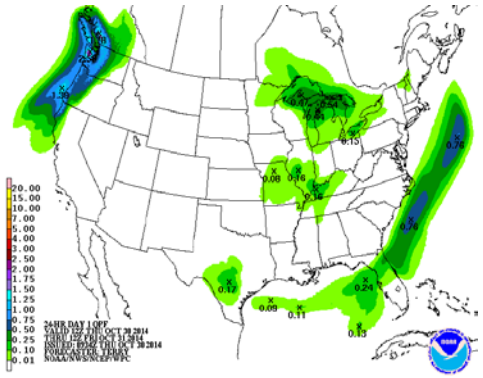


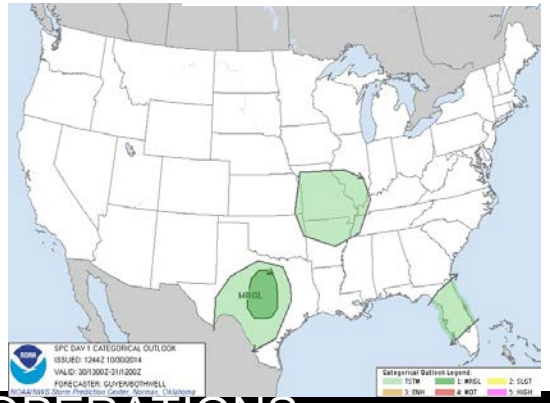


Unique Products and Services

- Public forecasts
- Outlooks
- Watches, Warnings and Advisories
- Private/Government Sectors
- Aviation
- Energy
- Environmental
- Maritime

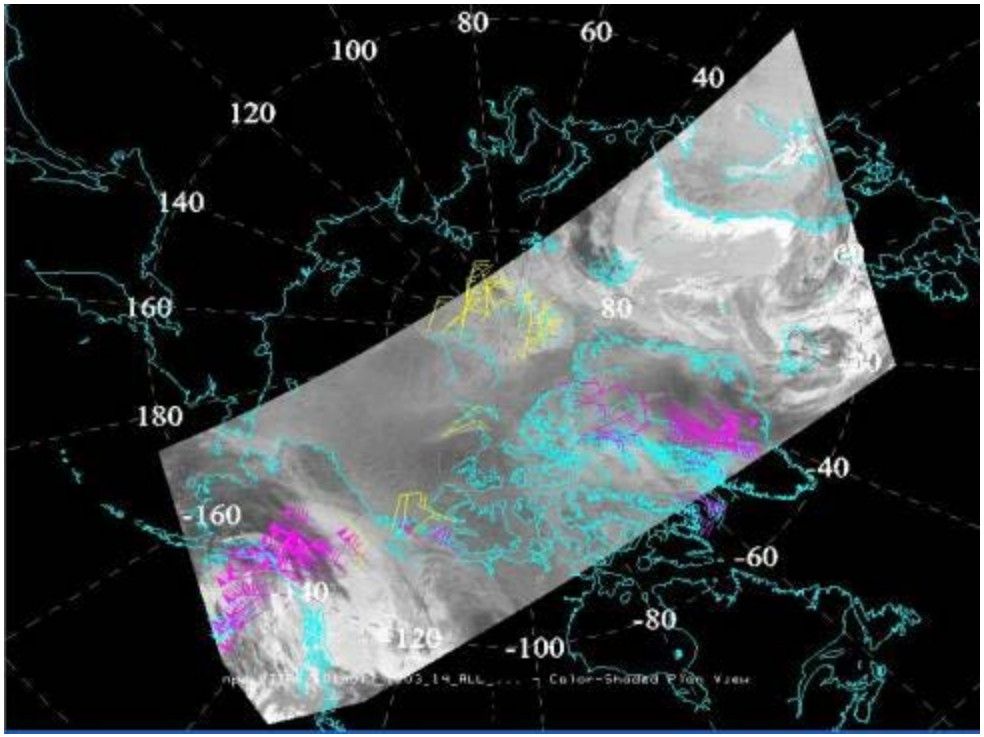




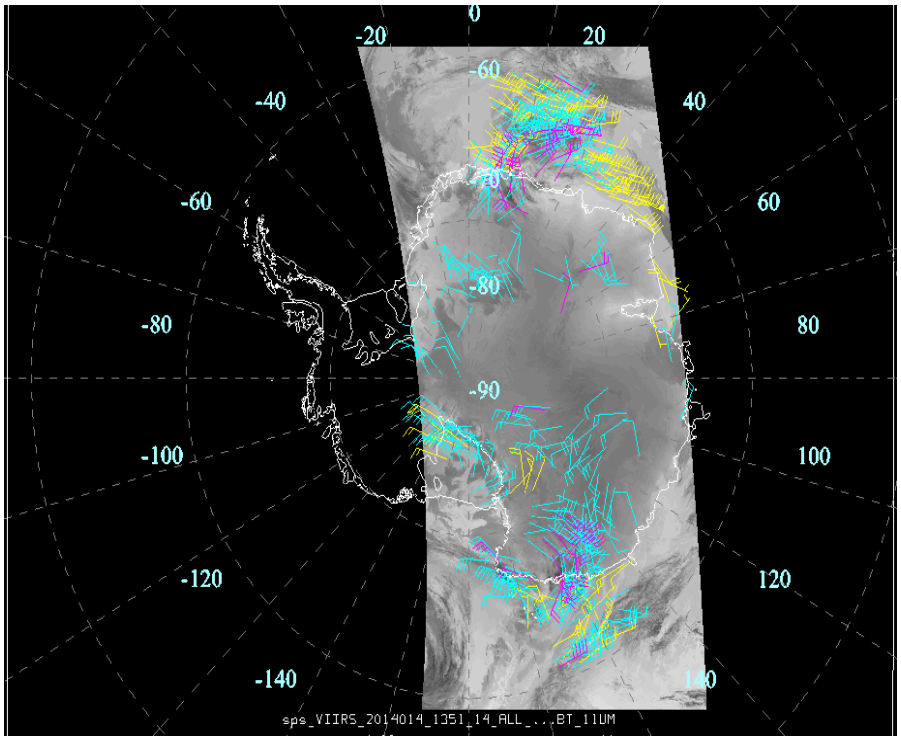


VIIRS Polar Winds (VPW) - Example

Arctic Region



Antarctic Region



VPW Real-time Users:

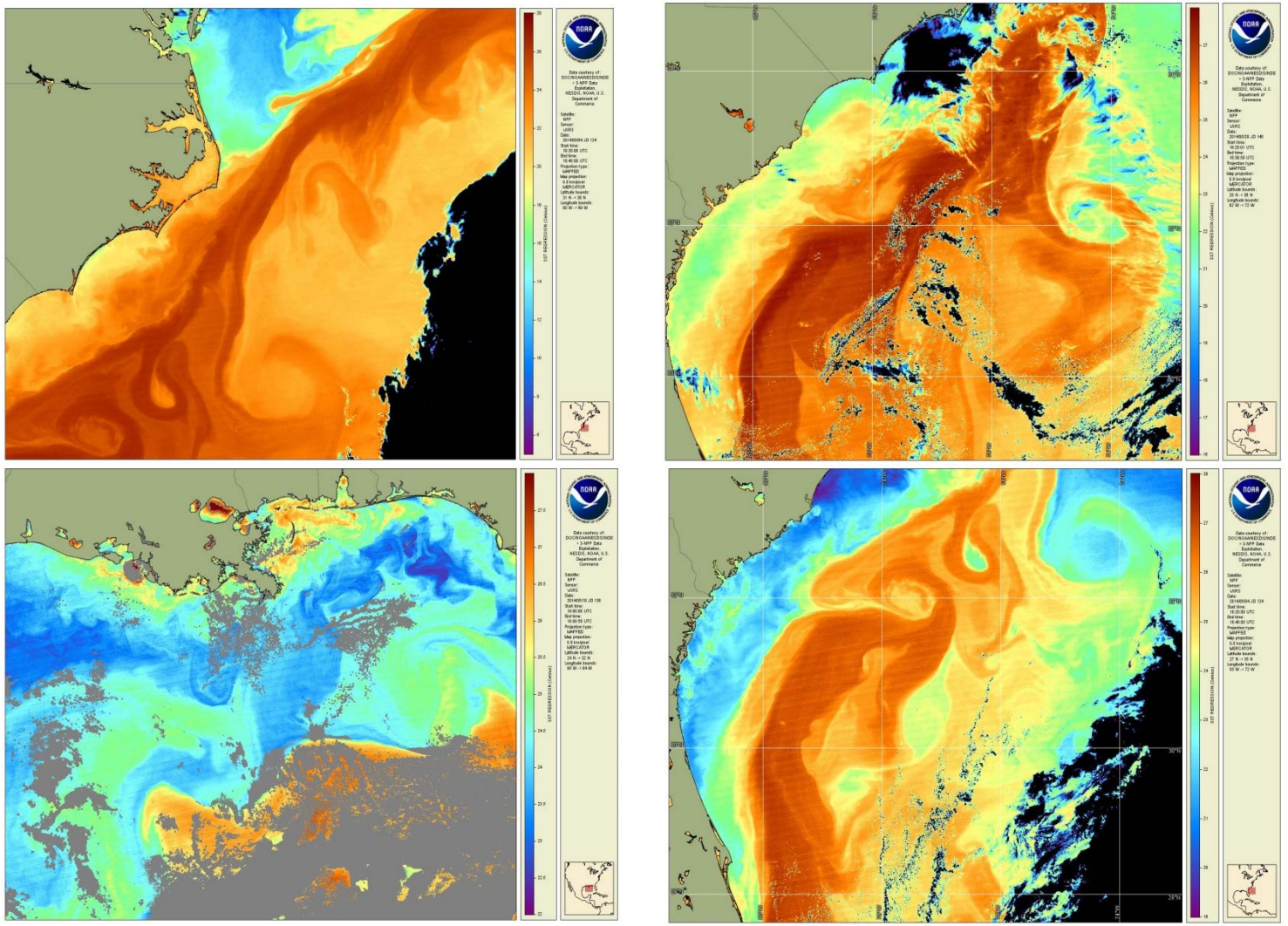
- NWS/NCEP, STAR, OSPO*(product monitoring),* EUMETSAT, CMC and JMA

Other Real-time Users (3rd party relay services via EUMETcast):

- UKMET Office and Norwegian Meteorological Institute

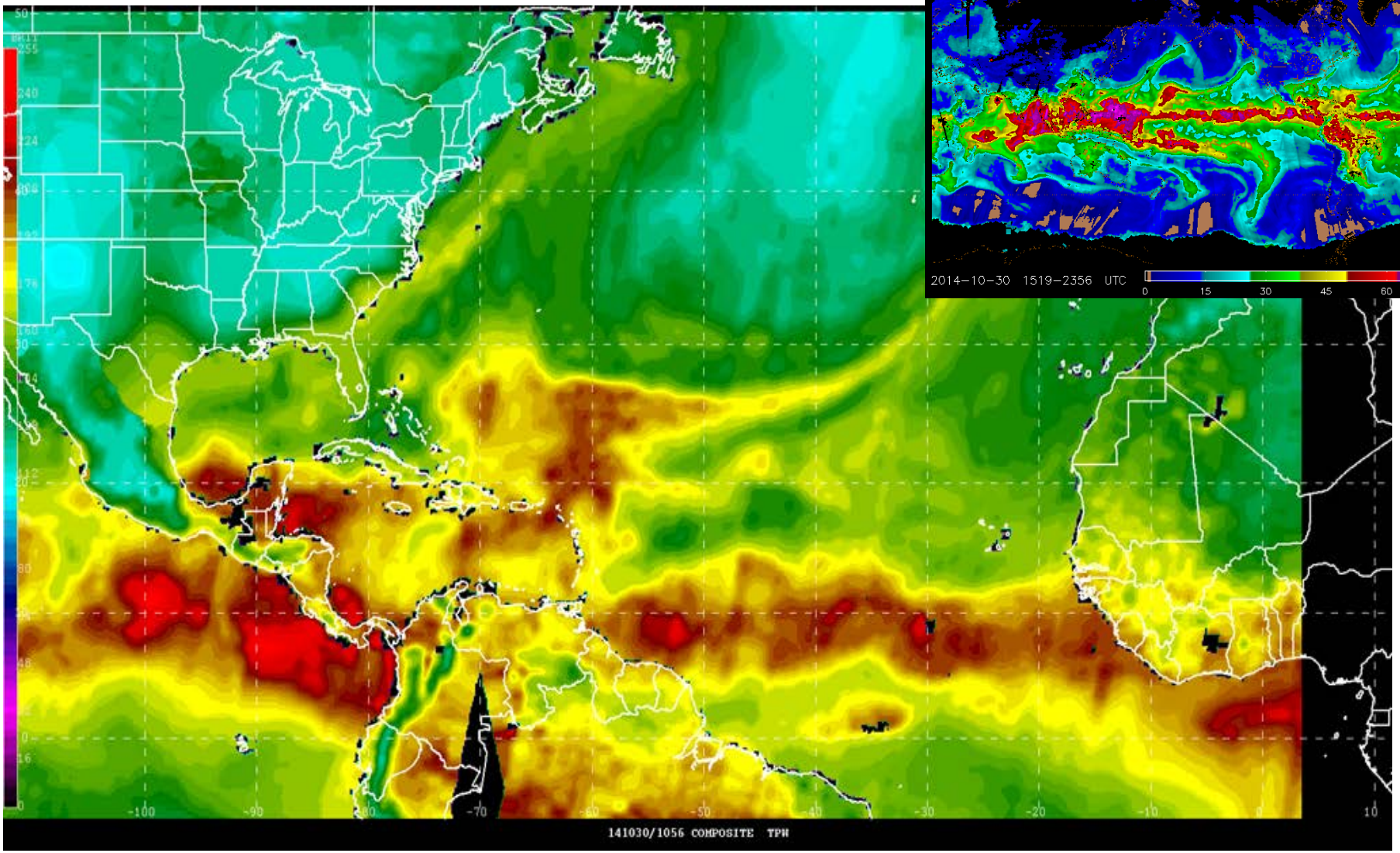
Source: NESDIS/OSPO/SPSD (Hongming Qi)

Advanced Clear-Sky Processor for Oceans (ACSPO) Sea Surface Temperature



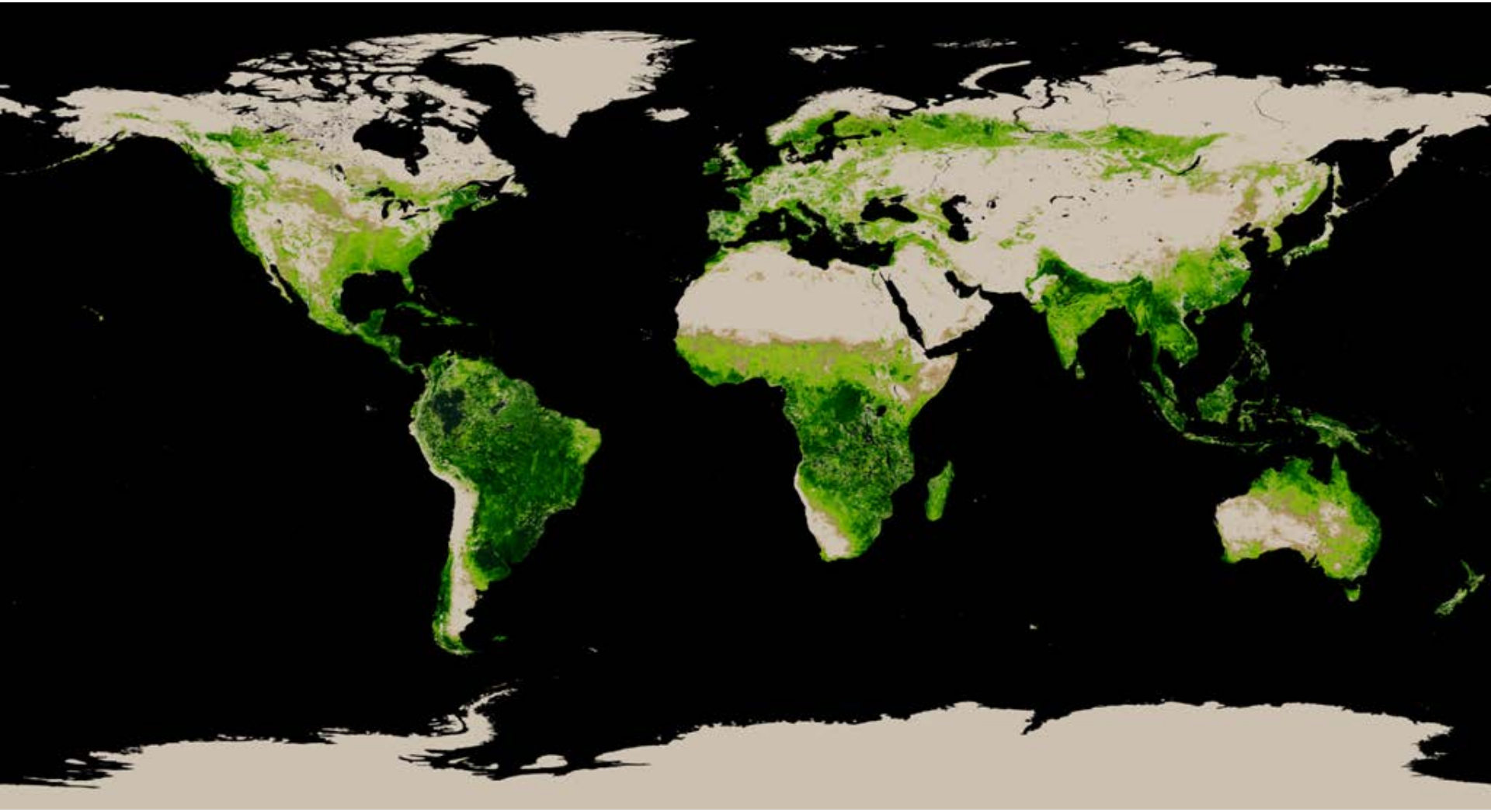
*Source: NESDIS/OSPO/SPSD (John Sapper)

Blended Products – Total Precipitable Water (TPW)



*Source: NWS National Hurricane Center (Dr. Brennan)

Green Vegetation Fraction (GVF) 7-day Product

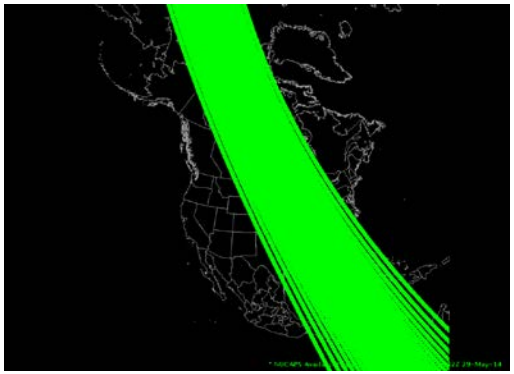


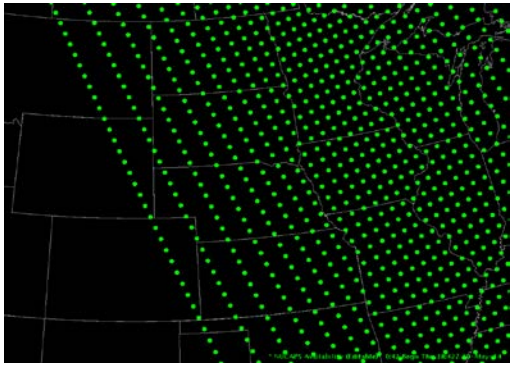
Computed once daily using the past seven days of information.

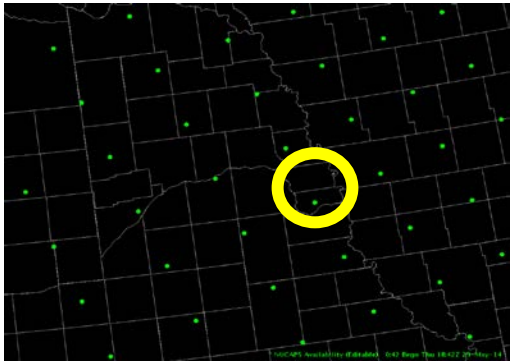
*Source: NESDIS/OSPO (Hanjun Ding)

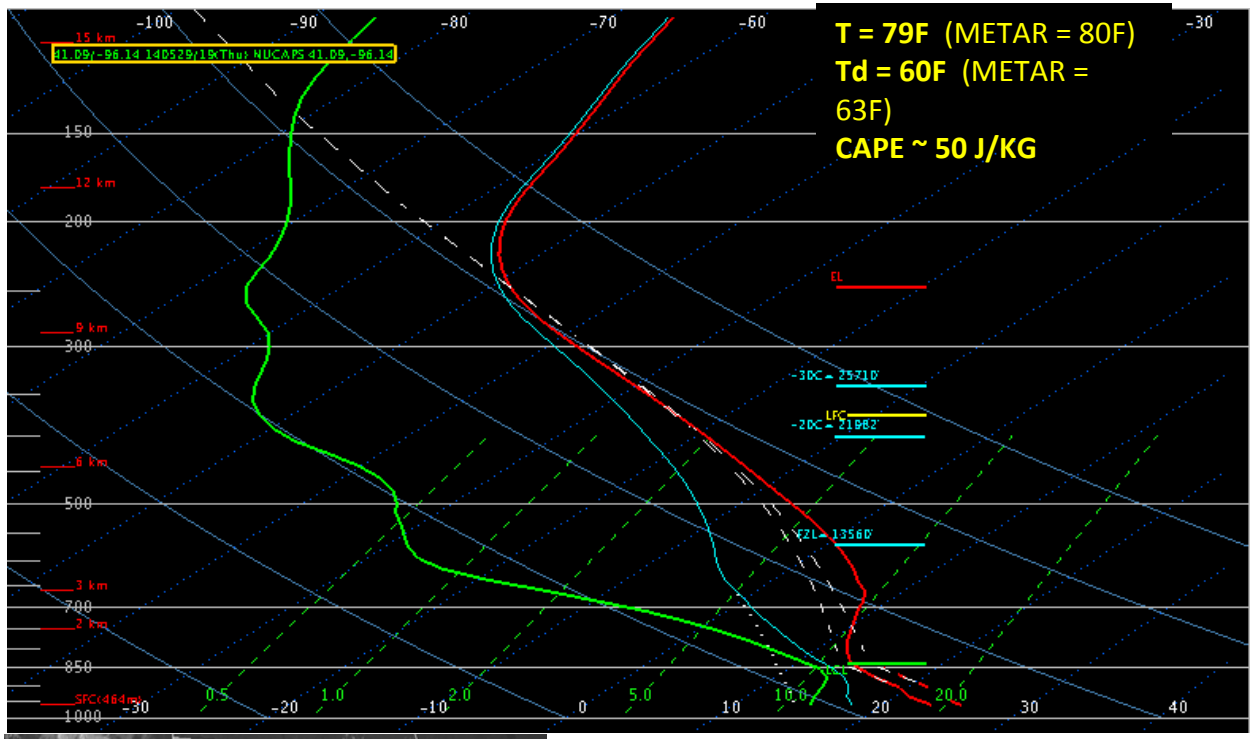
SNPP NUCAPS Soundings (T/q profiles) – NWS AWIPS2

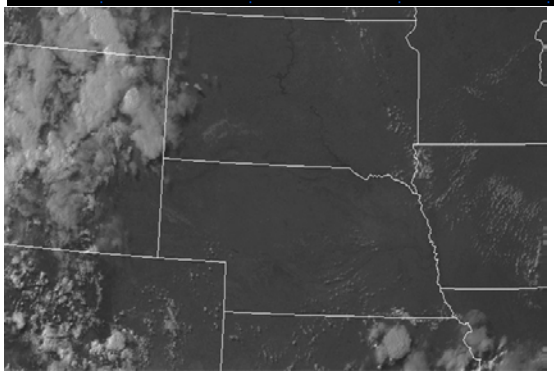
1842 UTC S-NPP Pass (May 29, 2014)











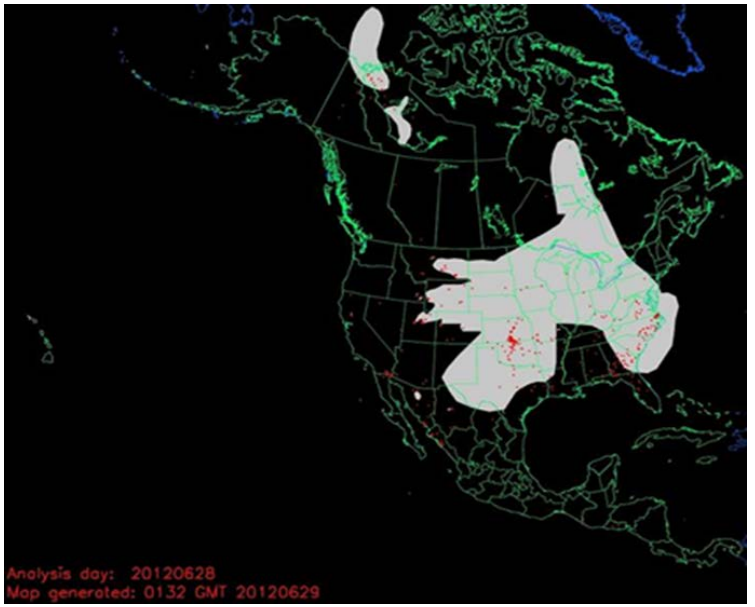
T/q retrievals

- Determine thermodynamics of atmosphere
- Cloud heights – base/tops
- Convective potential
- Help diagnose precipitation types

*Source: NWS Central Region

VIIRS for Satellite Analysis Branch (SAB) Operations (Current & Future Considerations)

- Fire and smoke analysis - Hazard Mapping System (HMS)
- Tropical cyclone analysis support
- Volcanic ash detection – Pavolonis technique VIIRS
- Aerosol detection - OMPS

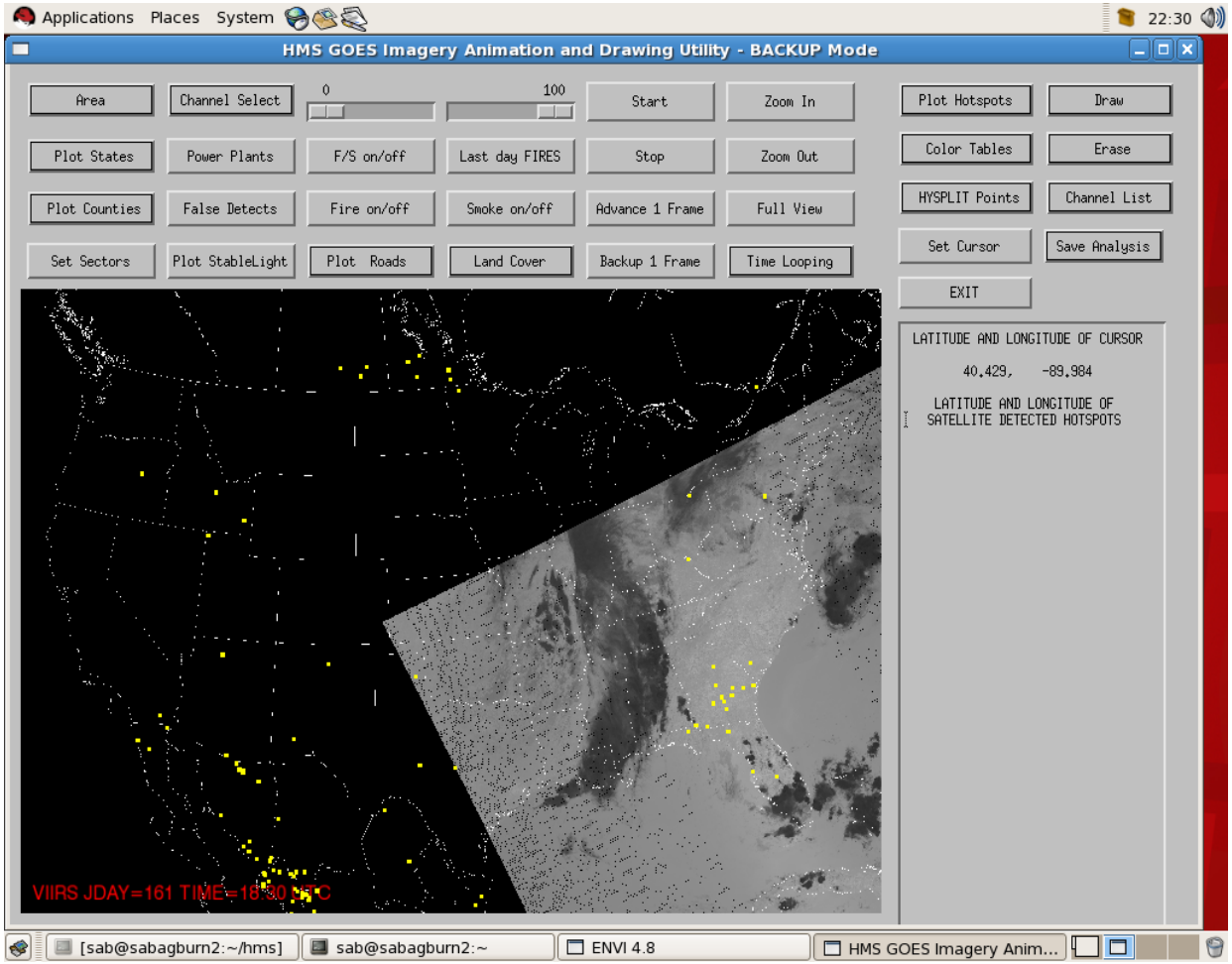


VIIRS for Satellite Analysis Branch (SAB) Operations (Future Considerations)

- Data Access
  - All 16 SAB McIDAS workstations have been setup to access and can connect to the VIIRSDIST server
  - HMS machines (gp55/54) have access to the VIIRSDIST server

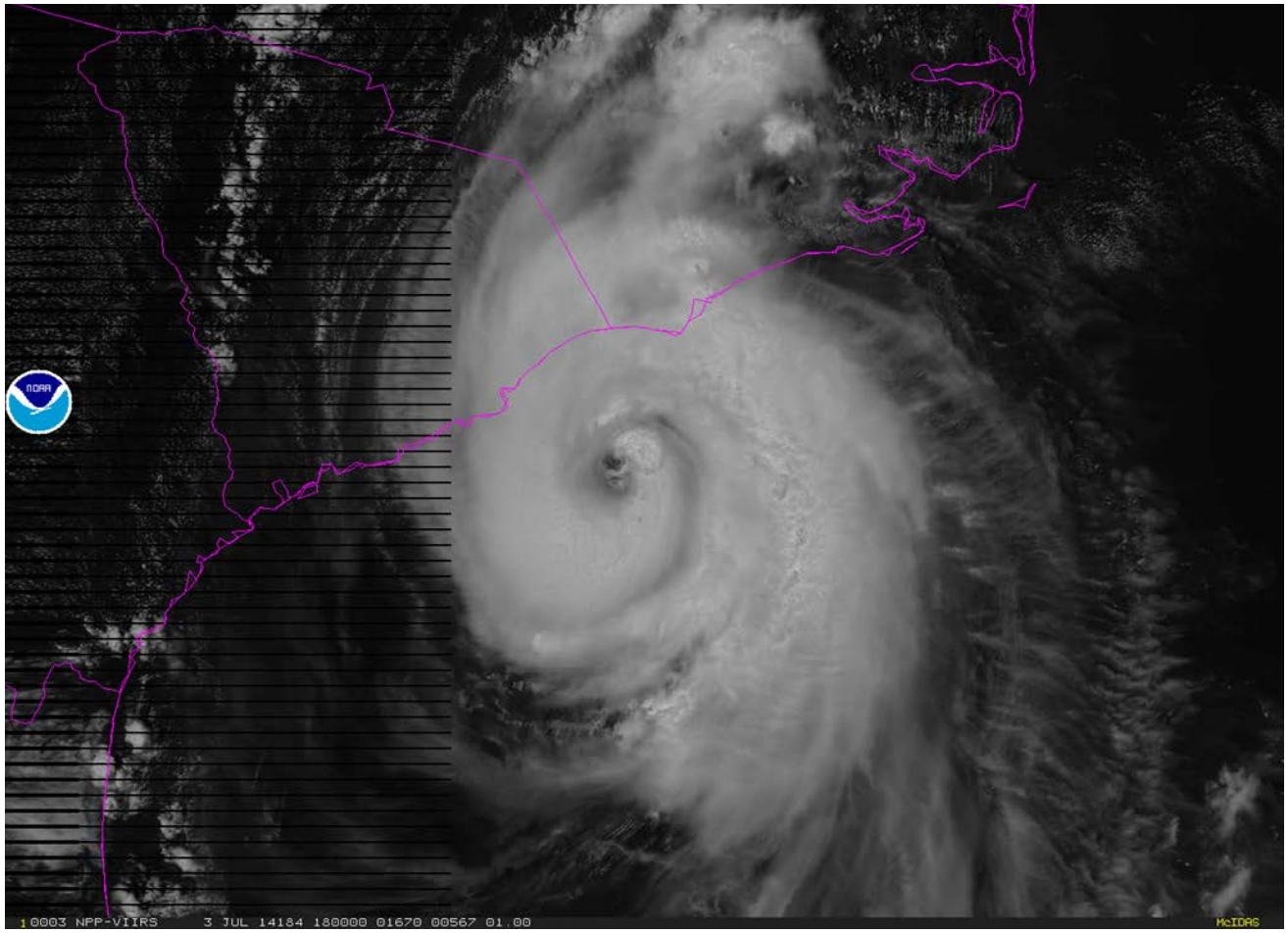
- Acceptance of Product
  - SAB has verified its capability to access the VIIRS data in McIDAS format.
  - SAB has access to M5 and M13 SDRs and Active Fire Points through HMS
  - Partial successful test of display HMS Analysis (VIIRS included) on GIS and KML page
  - User comparison of VIIRS Sensor Data Records (SDR) and Environmental Data Records (EDR) is needed
  - Development of enhancement tables for displaying VIIRS data is needed
  - There is still work left to be done to fully integrate into operations

SAB's Hazard Mapping System (HMS)



VIIRS Active Fire Points (yellow dots) overlaying on M13SDR image in HMS (Mark Ruminski)

Tropical Cyclone Analysis Support



Hurricane Arthur's banding-type eye is seen in this VIIRS image from July 3, 2014 at 1805 GMT. SAB can determine the temperature of a typhoon's eye from a VIIRS infrared image. (Michael.Turk)

Questions?

Additional Slides

ESPC Notifications, Status, and Contacts

24/7 Help Desk	ESPCOperations@noaa.gov
ESPC Messages	http://www.ssd.noaa.gov/PS/SATS/messages.html
WMO GTS Bulletins	Urgent: http://www.weather.gov/view/validProds.php?prod=ADM&node=KNES Routine: http://www.weather.gov/view/validProds.php?prod=ADA&node=KNES
User Services	SPSD.UserServices@noaa.gov
Data Access	NESDIS.Data.Access@noaa.gov
Webmaster	SSDWebmaster@noaa.gov
Facebook	www.facebook.com/NOAANESDIS
Twitter	www.twitter.com/noaasatellites
Satellite Ops Status	http://www.oso.noaa.gov/daily-news/index.asp
Press releases	http://www.nesdis.noaa.gov/news_archives/
Web	www.ospo.noaa.gov

Users	Associated Products
AWIPS_OPS	• VIIRS_I1_IMG_EDR_TIPB01_KNES • VIIRS_I4_IMG_EDR_TIPB04_KNES • VIIRS_I5_IMG_EDR_TIPB05_KNES
ESPC_VIIRSDIST	• VIIRS-AF-EDR • VIIRS_M13_SDR_10M • VIIRS_M15_SDR_10M • VIIRS_MOD_GEO_10M • VIIRS_MOD_GEO_TC_10M • VIIRS_SusMat_EDR_10M • VIIRS_I4_SDR_10M • VIIRS_IMG_GEO_10M • VIIRS_M5_SDR_10M • VIIRS_DNB_SDR_10M • VIIRS_DNB_GEO_10M • VIIRS_I4_IMG_EDR • VIIRS_IMG_GTM_EDR_GEO • VIIRS_I1_IMG_EDR
NASA_GPM	• ATMS-SDR • ATMS-SDR-GEO • ATMS-TDR
ESPC_MIRS	• MIRS_ATMS_IMG • MIRS_ATMS_SND • NPR-MIRS-IMG_33min_v9 • NPR-MIRS-SND_33min_v9 • ATMS-SDR • ATMS-SDR-GEO • ATMS-TDR

Users	Associated Products
ESPC_IMS	• MIRS_ATMS_IMG • MIRS_ATMS_IMG • MIRS_ATMS_IMG • MIRS_ATMS_IMG • MIRS_ATMS_IMG • VIIRS_I1_IMG_EDR_IMSAsia • VIIRS_I1_IMG_EDR_IMSNAm • VIIRS_I1_IMG_EDR_IMSPolarN • VIIRS_I2_IMG_EDR_IMSAsia • VIIRS_I2_IMG_EDR_IMSNAm • VIIRS_I2_IMG_EDR_IMSPolarN • VIIRS_I3_IMG_EDR_IMSAsia • VIIRS_I3_IMG_EDR_IMSNAm • VIIRS_I3_IMG_EDR_IMSPolarN • VIIRS_I5_IMG_EDR_IMSAsia • VIIRS_I5_IMG_EDR_IMSNAm • VIIRS_I5_IMG_EDR_IMSPolarN • VIIRS_IMG_GTM_EDR_GEO_IMSAsia • VIIRS_IMG_GTM_EDR_GEO_IMSNAm • VIIRS_IMG_GTM_EDR_GEO_IMSPolarN • VIIRS_NCC_EDR_IMSAsia • VIIRS_NCC_EDR_IMSNAm • VIIRS_NCC_EDR_IMSPolarN • VIIRS_NCC_EDR_GEO_IMSAsia • VIIRS_NCC_EDR_GEO_IMSNAm • VIIRS_NCC_EDR_GEO_IMSPolarN • VIIRS_SCD_BINARY_SNOW_FRAC_EDR_IMSAsia • VIIRS_SCD_BINARY_SNOW_FRAC_EDR_IMSNAm • VIIRS_SCD_BINARY_SNOW_FRAC_EDR_IMSPolarN • VIIRS_SIC_EDR_IMSAsia • VIIRS_SIC_EDR_IMSNAm • VIIRS_SIC_EDR_IMSPolarN • VIIRS_MOD_GEO_TC_IMSAsia • VIIRS_MOD_GEO_TC_IMSNAm • VIIRS_MOD_GEO_TC_IMSPolarN

Users	Associated Products
STAR_NCWCP	• NUCAPS_EDR_MONITORING • NUCAPS_FG_GRIDS_ASC • NUCAPS_FG_GRIDS_DSC • NUCAPS_FG_PCS1B_GRIDS_ASC • NUCAPS_FG_PCS1B_GRIDS_DSC • NUCAPS_GG_CCR_GRIDS_ASC • NUCAPS_GG_CCR_GRIDS_DSC • NUCAPS_GG_EDR_GRIDS_ASC • NUCAPS_GG_EDR_GRIDS_DSC • NUCAPS_GG_GFS_GRIDS_ASC • NUCAPS_GG_GFS_GRIDS_DSC • NUCAPS_GG_GRIDS_ASC • NUCAPS_GG_GRIDS_DSC • NUCAPS_GG_PCS3B_GRIDS_ASC • NUCAPS_GG_PCS3B_GRIDS_DSC • NUCAPS_PCS_MONITORING • NUCAPS_SDR_GLOBAL_MATCHUPS • NUCAPS_EDR • NUCAPS_CCR_AR • NUCAPS_GG_PCS1B_GRIDS_ASC • NUCAPS_GG_PCS1B_GRIDS_DSC • NUCAPS_EDR_GLOBAL_MATCHUPS • NUCAPS_1SCAN_BINARY • ACSPO_SST • VIIRS_WINDS_NH • VIIRS_WINDS_SH

Users	Associated Products
ESPC_GCOM	• AMSR2-SCIENCE-RDR
India_NC	• ATMS_BUFR • CrIS_C0399_BUFR
NCEP_NPDS	• VIIRS_I1_IMG_EDR_TIPG01_KNES • VIIRS_I2_IMG_EDR_TIPG02_KNES • VIIRS_I3_IMG_EDR_TIPG03_KNES • VIIRS_I4_IMG_EDR_TIPG04_KNES • VIIRS_I5_IMG_EDR_TIPG05_KNES • VIIRS_NCC_EDR_TIPG10_KNES • NPR-MIRS-IMG_33min_v9 • VIIRS_M9_EDR_TIPG19_KNES • VIIRS_M15_EDR_TIPG25_KNES • VIIRS_M16_EDR_TIPG26_KNES • NUCAPS_EDR_IUTN01_KNES • NUCAPS_EDR_IUTN02_KNES • NUCAPS_EDR_IUTN03_KNES • NUCAPS_EDR_IUTN04_KNES • NUCAPS_EDR_IUTN05_KNES • NUCAPS_EDR_IUTN06_KNES • NUCAPS_EDR_IUTN07_KNES • NUCAPS_EDR_IUTN08_KNES • NUCAPS_EDR_IUTN09_KNES

Not associated products with ESPC_Okeanos

Users	Associated Products
STAR_CIRA	• NPR-MIRS-IMG_33min_v9 • NPR-MIRS-SND_33min_v9 • MIRS_ATMS_SND • MIRS_ATMS_IMG • VIIRS-I1-SDR • VIIRS-I5-SDR • VIIRS-DNB-SDR • VIIRS-IMG-GEO-TC • VIIRS-DNB-GEO
NCEP_EMC	• VIIRS_WINDS_BUFR • ACSPO_SST_BUFR
ESPC_CW	• ACSPO_SST_aa • ACSPO_SST_ax • ACSPO_SST_ay • ACSPO_SST_az • ACSPO_SST_ce • ACSPO_SST_cw • ACSPO_SST_er • ACSPO_SST_gb • ACSPO_SST_gr • ACSPO_SST_hr • ACSPO_SST_mr • ACSPO_SST_sb • ACSPO_SST_sl • ACSPO_SST_sr • ACSPO_SST_wa • ACSPO_SST_wj • ACSPO_SST_wn • ACSPO_SST_ws

Users	Associated Products
ESPC_NUCAPS	• NUCAPS_EDR_MONITORING • NUCAPS_PCS_MONITORING • NUCAPS_ALL • NUCAPS_1SCAN_BINARY • NUCAPS_FG_GRIDS_ASC • NUCAPS_FG_GRIDS_DSC • NUCAPS_GG_GRIDS_ASC • NUCAPS_GG_GRIDS_DSC • NUCAPS_FG_PCS1B_GRIDS_ASC • NUCAPS_FG_PCS1B_GRIDS_DSC • NUCAPS_GG_PCS3B_GRIDS_ASC • NUCAPS_GG_PCS3B_GRIDS_DSC • NUCAPS_GG_GFS_GRIDS_ASC • NUCAPS_GG_GFS_GRIDS_DSC • NUCAPS_GG_EDR_GRIDS_ASC • NUCAPS_GG_EDR_GRIDS_DSC • NUCAPS_GG_CCR_GRIDS_ASC • NUCAPS_GG_CCR_GRIDS_DSC • NUCAPS_SDR_GLOBAL_MATCHUPS • NUCAPS_SDR_GLOBAL_MATCHUPS_txt • NUCAPS_EDR_GLOBAL_MATCHUPS • NUCAPS_EDR • NUCAPS_CCR_AR

Users	Associated Products
NWSTG_OPS	• NUCAPS_EDR_IUTN01_KNES • NUCAPS_EDR_IUTN02_KNES • NUCAPS_EDR_IUTN03_KNES • NUCAPS_EDR_IUTN04_KNES • NUCAPS_EDR_IUTN05_KNES • NUCAPS_EDR_IUTN06_KNES • NUCAPS_EDR_IUTN07_KNES • NUCAPS_EDR_IUTN08_KNES • NUCAPS_EDR_IUTN09_KNES
ESPC_TOAST	• NUCAPS_EDR • OMPS-NP-IP • OMPS-NP-GEO
ESPC_BSST	• ACSPO_VIIRS_v2-30_sst_sub1
ESPC_DAPE	• ATMS_BUFR • CrIS_C0399_BUFR • NPR-MIRS-IMG_33min_v9 • ATMS-SDR • ATMS-TDR • ATMS-SDR-GEO • VIIRS_WINDS_BUFR

Users	Associated Products
NOAA_AOML	• ACSPO_VIIRS_v2-30_sst_sub1
CLASS_OPS	• NUCAPS_CCR_AR • NUCAPS_EDR • MIRS_ATMS_IMG • MIRS_ATMS_SND • NDE.CLASS.RECON.FILE • VIIRS_WINDS_NH • VIIRS_WINDS_SH
EUMETSAT_OPS	• ATMS_BUFR • CrIS_C1305_BUFR • VIIRS_CTH_CCL_GEO_EDR • OMPS_NP_BUFR • VIIRS_AOT_BUFR • ACSPO_SST_GHRSST • VIIRS_WINDS_BUFR
NCO_OPS	• ATMS_BUFR • CrIS_C0399_BUFR • OMPS_NP_BUFR • OMPS_TC_BUFR

No products for
Navy_JWTC or DDS_OPS

Users	Associated Products
ESPC_PRODMON	• ACSPO_SST • NPR-MIRS-IMG_33min_v9 • NPR-MIRS-SND_33min_v9 • NUCAPS_PCS_MONITORING • NUCAPS_EDR_MONITORIN G • VIIRS_WINDS_NH • VIIRS_WINDS_SH
Canada_MC	• ATMS_BUFR • VIIRS_WINDS_BUFR • OMPS_NP_BUFR • OMPS_TC_BUFR • CrIS_C1305_BUFR
Japan_MA	• ATMS_BUFR • CrIS_C0399_BUFR • CrIS_C1305_BUFR • VIIRS_WINDS_BUFR • OMPS_NP_BUFR • OMPS_TC_BUFR
NASA_JPL	• ACSPO_SST_GHRSST

Users	Associated Products
ESPC_NIC	• MIRS_ATMS_IMG • VIIRS-I1-SDR • VIIRS-I2-SDR • VIIRS-I3-SDR • VIIRS-I4-SDR • VIIRS-I5-SDR • VIIRS-DNB-SDR • VIIRS-SIC-EDR • VIIRS-IMG-GEO-TC • VIIRS-DNB-GEO • VIIRS-MOD-GEO-TC • MIRS_ATMS_IMG • MIRS_ATMS_IMG • VIIRS-I1-SDR • VIIRS-I1-SDR • VIIRS-I2-SDR • VIIRS-I2-SDR • VIIRS-I3-SDR • VIIRS-I3-SDR • VIIRS-I4-SDR • VIIRS-I4-SDR • VIIRS-I5-SDR • VIIRS-I5-SDR • VIIRS-DNB-SDR • VIIRS-DNB-SDR • VIIRS-SIC-EDR • VIIRS-SIC-EDR • VIIRS-IMG-GEO-TC • VIIRS-IMG-GEO-TC • VIIRS-DNB-GEO • VIIRS-DNB-GEO • VIIRS-MOD-GEO-TC • VIIRS-MOD-GEO-TC

Users	Associated Products
ESPC_PRODMON	• ACSPO_SST • NPR-MIRS-IMG_33min_v9 • NPR-MIRS-SND_33min_v9 • NUCAPS_PCS_MONITORING • NUCAPS_EDR_MONITORIN G • VIIRS_WINDS_NH • VIIRS_WINDS_SH
Canada_MC	• ATMS_BUFR • VIIRS_WINDS_BUFR • OMPS_NP_BUFR • OMPS_TC_BUFR • CrIS_C1305_BUFR
Japan_MA	• ATMS_BUFR • CrIS_C0399_BUFR • CrIS_C1305_BUFR • VIIRS_WINDS_BUFR • OMPS_NP_BUFR • OMPS_TC_BUFR
NASA_JPL	• ACSPO_SST_GHRSST

Users	Associated Products
ESPC_NIC	• MIRS_ATMS_IMG • VIIRS-I1-SDR • VIIRS-I2-SDR • VIIRS-I3-SDR • VIIRS-I4-SDR • VIIRS-I5-SDR • VIIRS-DNB-SDR • VIIRS-SIC-EDR • VIIRS-IMG-GEO-TC • VIIRS-DNB-GEO • VIIRS-MOD-GEO-TC • MIRS_ATMS_IMG • MIRS_ATMS_IMG • VIIRS-I1-SDR • VIIRS-I1-SDR • VIIRS-I2-SDR • VIIRS-I2-SDR • VIIRS-I3-SDR • VIIRS-I3-SDR • VIIRS-I4-SDR • VIIRS-I4-SDR • VIIRS-I5-SDR • VIIRS-I5-SDR • VIIRS-DNB-SDR • VIIRS-DNB-SDR • VIIRS-SIC-EDR • VIIRS-SIC-EDR • VIIRS-IMG-GEO-TC • VIIRS-IMG-GEO-TC • VIIRS-DNB-GEO • VIIRS-DNB-GEO • VIIRS-MOD-GEO-TC • VIIRS-MOD-GEO-TC