

JPSS Stored Mission Data and Environmental Satellite Processing Center Products

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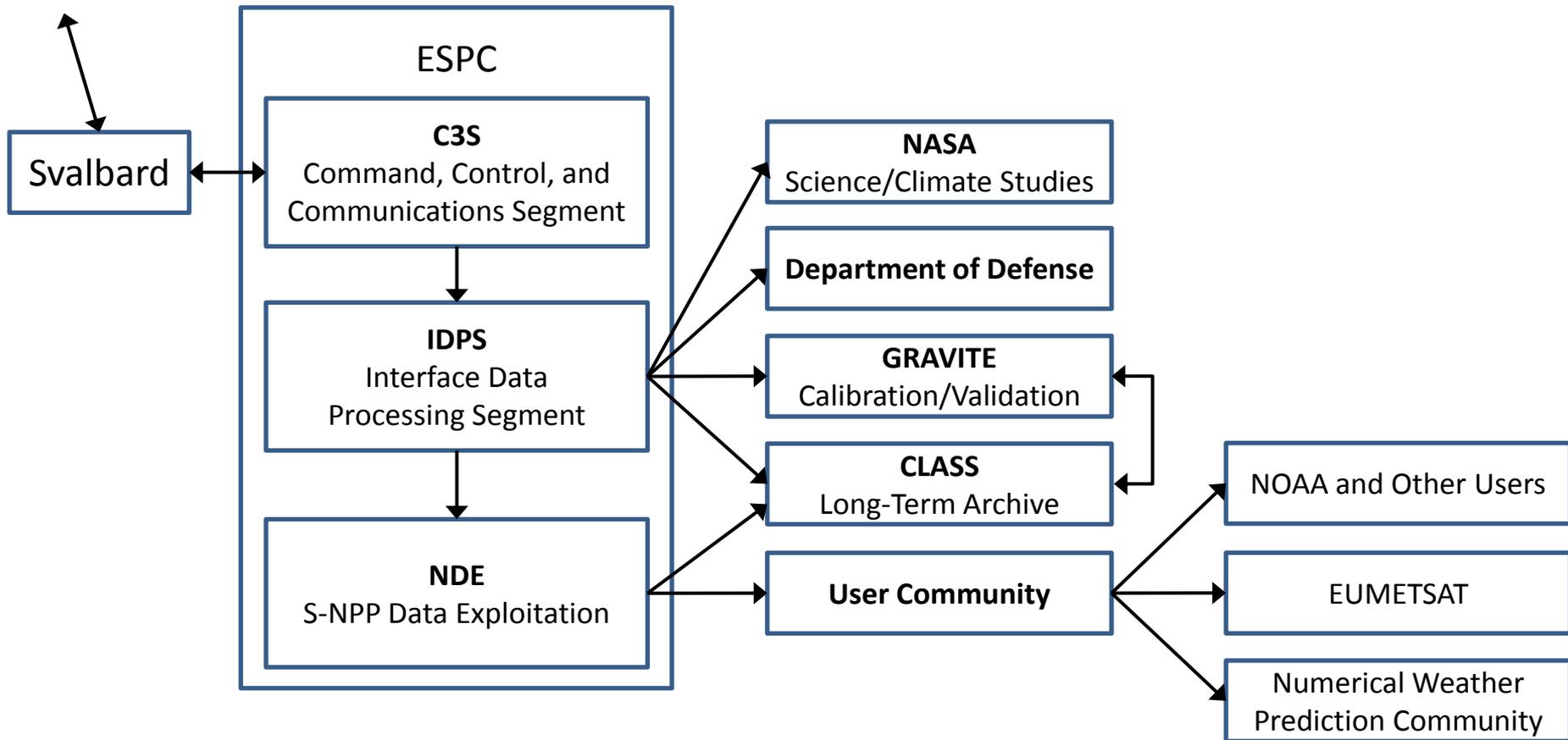
Outline



- **S-NPP Stored Mission Data (SMD) Flow**
- **S-NPP Data Access**
- **S-NPP Environmental Satellite Processing Center (ESPC) Data Products**
- **Data Product Tailoring**



S-NPP Stored Mission Data (SMD) Flow





S-NPP SMD Data Flow



- **ESPC Data Processing**

- S-NPP Application Packets (APs) are downlinked at Svalbard and relayed to the ESPC within the NOAA Satellite Operations Facility (NSOF) in Suitland, MD
- IDPS processes APs into Raw Data Records (RDRs), Sensor Data Records (SDRs), Environmental Data Records (EDRs), and Intermediate Products (IPs) [collectively known as xDRs]
- NDE process the SDRs and EDRs from IDPS and generates additional data records

- **ESPC Data Distribution**

- IDPS distributes xDRs to the Comprehensive Large Array-data Steward System (CLASS) for archive, Government Resource for Algorithm Verification, Independent Test, and Evaluation (GRAVITE) for calibration and validation, Department of Defense (DoD), and NASA Science Data Segment (SDS)
- NDE distributes xDRs to real time users: National Weather Service (NWS), Authorized NOAA and NASA users, DoD, and European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), other international partners



S-NPP Data Access



- **CLASS – Electronic library of NOAA environmental data**
 - xDRs, ancillary data, auxiliary data, and software release packages are archived
 - IPDS data delayed by 6 hours or more and normally made available to users within 24 hours
 - NDE generated data made available for archive when data is generated
 - Access: via Internet (<http://www.class.noaa.gov/>)
- **NOAA’s S-NPP Data Exploitation Project**
 - Serves data to near real-time user community via [ftp-s](#)
 - Access: Submit NPP Data Access Request (DAR) form to NESDIS.Data.Access@noaa.gov
- **Global Telecommunications Service (GTS) via EUMETSAT**
 - GTS is used for operational international exchange of meteorological data between NWP users
- **EUMETCast via EUMETSAT**
 - EUMETCast is a satellite multicast system using Digital Video Broadcasting-Satellite (DVB-S) technology
 - Access: Register for access via EUMETSAT
- **Direct Readout (X-band)**
 - The Community Satellite Processing Package (CSPP) allows for access to S-NPP data in regional areas
 - Access: Register and download software: <https://cimss.ssec.wisc.edu/cspp/download/>
- **Product Distribution and Access (PDA)**
 - PDA is a future capability that will be discussed in Session 3.3, “Product Distribution System” this afternoon



S-NPP ESPC Data Products



Critical

VIIRS

Green Vegetation Fraction
Polar Winds
Sea Surface Temperature (ACSP0)
Ocean Color/Chlorophyll

ATMS

Land Surface Emissivity (MIRS)

AMSR-2

SDR

Blended

SST (with VIIRS)
SST (with AMSR-2)

Supplemental High

CrIS

Outgoing Longwave Radiation (NUCAPS)
Infrared Ozone Profile (NUCAPS)

CrIS/ATMS

Atm Moisture Profile (NUCAPS)
Atm Temperature Profile (NUCAPS)

ATMS

Cloud Liquid Water (MIRS)
Rainfall Rate (MIRS)
Sea Ice Concentration (MIRS)
Snow Cover (MIRS)
Snow Water Equivalent (MIRS)
Total Precipitable Water (MIRS)

Blended

Snow Cover (with VIIRS)
Snow Cover (with AMSR-2)
Rainfall Rate (with ATM-S)
Rainfall Rate (with AMSR-2)
Total Precipitable Water (with ATMS)
Total Precipitable Water (with AMSR-2)
Ozone (with OMPS Nadir Profile)
Ozone (with CrIS Ozone)
Soil Moisture (with AMSR-2)

AMSR-2

Cloud Liquid Water
Imagery
Precipitation (Type/Rate)
Precipitable Water
Sea Ice Characterization
Sea Surface Temperature
Sea Surface Wind Speed
Snow Cover/Depth
Snow Water Equivalent
Soil Moisture

Supplemental Low

ATMS

Land Surface Temperature (MIRS)
Moisture Profile (MIRS)
Temperature Profile (MIRS)

CrIS

Trace Gases (CO, CO2, CH4)
(NUCAPS)

VIIRS

Vegetation Health Product Suite

AMSR-2

Surface Type

Blended

Land Surf Temp (with VIIRS)

Blue text indicates product is operational

ACSP0: Advanced Clear-Sky Processor for Oceans
AMSR-2: Advanced Microwave Scanning Radiometer-2
ATMS: Atmospheric Temperature Moisture Sounder
CrIS: Cross-track Infrared Sounder
MIRS: Microwave Integrated Retrieval System
NUCAPS: NOAA Unique CrIS/ATMS Processing System
OMPS: Ozone Mapping and Profiler Suite
VIIRS: Visible Infrared Imaging Radiometer Suite

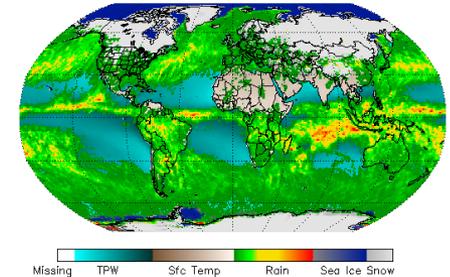


S-NPP ESPC Product Examples



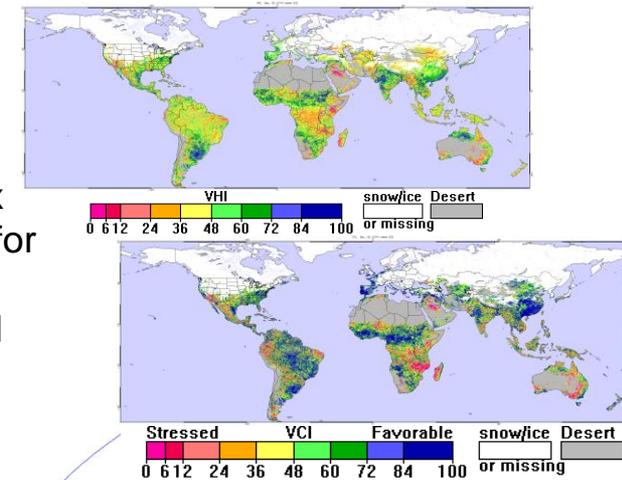
Microwave Integrated Retrieval System (MiRS)

- MiRS provides temperature and moisture profiles, land surface temperature, land surface emissivity, snow water equivalent, snow cover, sea ice concentration, cloud liquid water, total precipitable water, ice water path, instantaneous rain water path, and rain rate products from microwave instruments in all weather and all surface conditions.
- Formats: NetCDF4
- Coverage: Global



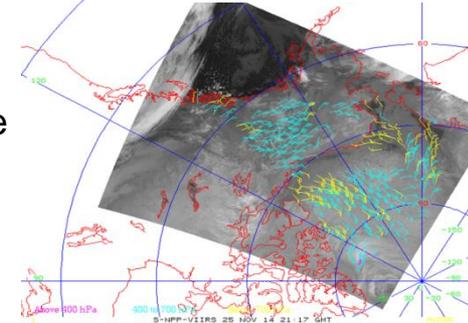
Vegetation Health Suite (VHS)

- VHS provides vegetation health index (VHI), vegetation condition index (VCI), and temperature condition index (TCI) products which are used for drought monitoring, in global climate impact assessments, and to determine global crop production, fire risk, disaster mitigation, and food security.
- Format: NetCDF4
- Coverage: Global



VIIRS Polar Winds (VPW)

- VPW provides wind speed, direction, and height at high latitudes to be assimilated in numerical weather prediction models to improve model forecasts and improve hurricane track forecasts.
- Formats: NetCDF4, BUFR
- Coverage: Poleward of 65 degrees





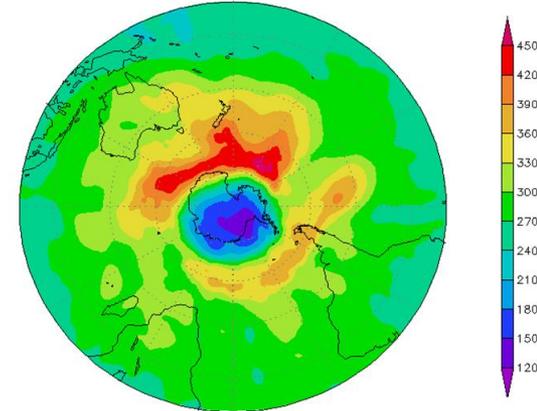
S-NPP ESPC Product Examples



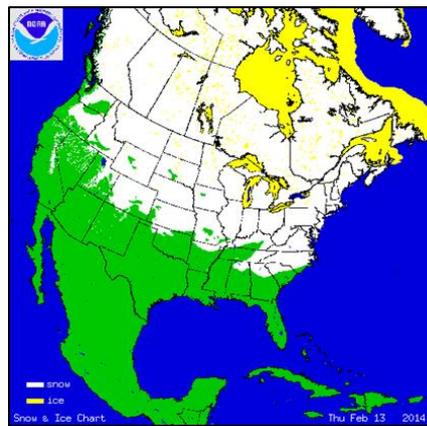
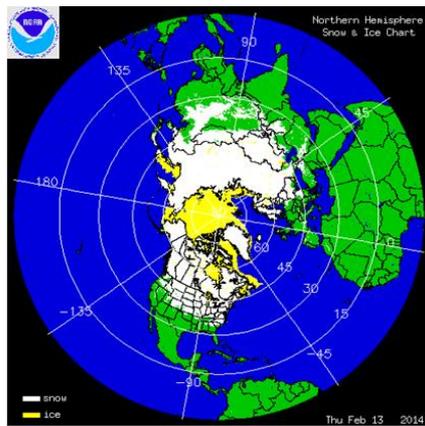
ESPC Blended Products

- Snow Cover (with VIIRS and AMSR-2)
- Rainfall Rate (with ATMS and AMSR-2)
- Total Precipitable Water (with ATMS and AMSR-2)
- Ozone (with OMPS Nadir Profile and CrIS)
- Soil Moisture (with AMSR-2)

Southern Hemisphere TOAST Analysis on 2014296
SBUV/2: N19 TOVS: M1

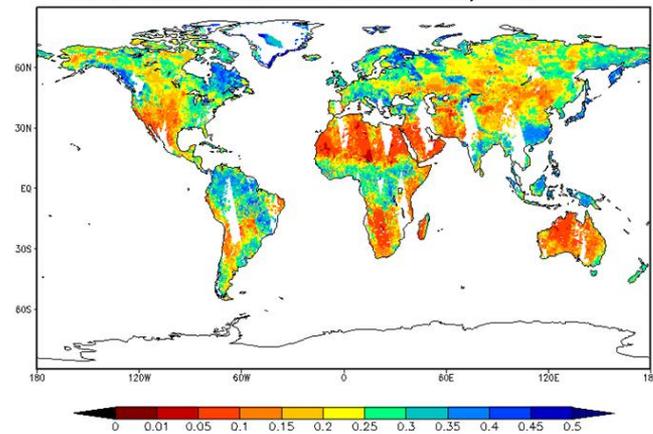


Blended Total Ozone over the Antarctic



Blended Snow and Ice Products

NOAA SMOPS Blended Soil Moisture: Daily - 20141029



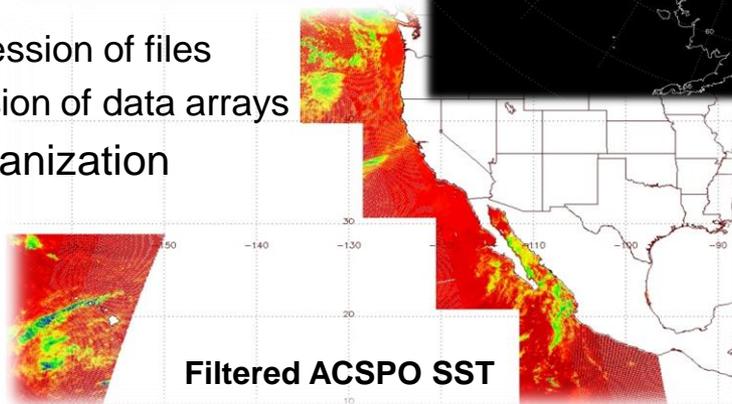
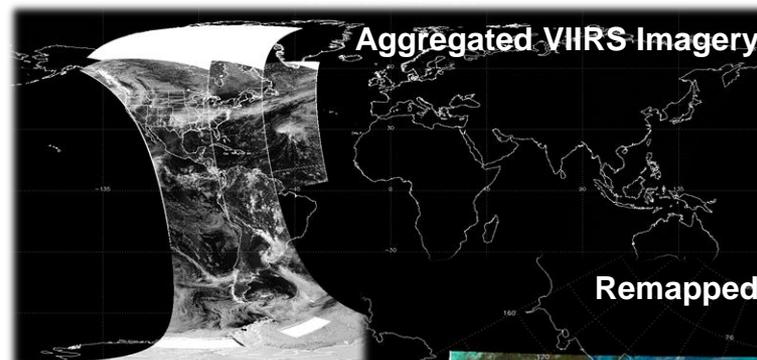
Blended Soil Moisture



Data Product Tailoring



- **S-NPP data products can be tailored by NDE to meet user needs**
- **Tailoring options include the following:**
 - Aggregating
 - Reformatting
 - NetCDF4 , GRIB2, BUFR, GeoTIFF
 - Resampling
 - Subsetting (i.e., thinning data files)
 - Subsampling
 - Remapping
 - Filtering
 - Compressing
 - GZIP, ZIP, ZLIB, and JPEG compression of files
 - Internal HDF5/netCDF-4 compression of data arrays
 - Applying World Meteorological Organization (WMO) Headers





Summary



- **S-NPP SMD flows from Svalbard to the ESPC and is distributed to NOAA's long term archive and to various users/consumers**
- **S-NPP SMD data can be accessed from archive and in near real time**
- **S-NPP ESPC satellite data products include atmospheric, oceanic, land, and blended products**
- **S-NPP ESPC satellite data products can be tailored to suit user-applications/needs**