JACIE

Exploring New Paths

Stephen Volz, Ph.D., Assistant Administrator for Satellites and Information Services, National Oceanic and Atmospheric Administration
NOAA has two new generation satellites providing large areal extent imagery from polar and geo orbits.

Ice - Nares Strait between Greenland and Ellesmere Island, Canada. August 21, 2018
SNPP and NOAA-20 (750 meter resolution)
• Agriculture
• Defense and Intelligence
• Civil Government
• Education and Research
• Emergency Management
• Insurance
• Forestry and Redd
• Energy and Infrastructure
• Finance and Business Intelligence
• Mapping and GIS
NESDIS Data Lifecycle
UNDERSTANDING OUR DYNAMIC PLANET AS A TRUSTED SOURCE OF ENVIRONMENTAL DATA

- **Provide useful data in near real-time**: NESDIS operates satellites 24/7, processes data using developed algorithms, and transmits data to users in near real-time.
- **Provide archived data**: NESDIS houses data in an archive and makes it available to outside researchers.
- **Use data and conduct research**: NESDIS uses its own data to create operational products and conduct internal research.
- **Access Data**: Obtain the necessary data by building, blending, or buying it.
  - **Build**: Managing NOAA's current and future satellite programs
  - **Blend**: Working with U.S. and international partners to develop and build satellite systems
  - **Buy**: Purchasing data provided by commercial satellite systems
- **Make the Data Useful**: Develop algorithms to create products as well as calibrate and validate data to ensure quality and accuracy.
Use-Inspired Science

- Use **data science** to enhance mission value of environmental data
- Develop, support or adapt **algorithms** to provide state-of-the-art science products
- Provide **integrated reference data sets** that describe the state of the environment.
- Transition to new science and **retire outdated products** and services.
- Integrate **continuous evaluation** process to evolve and update our data products inventory, ensuring quality and eliminating unprofitable (lower value added) products.
GOES-16/ABI and Suomi-NPP/VIIRS Merged Flood Map in West Gulf Region, USA
Merged Flood Extent from ABI and VIIRS on Sep.01, 2017

Map Information
0 6 12 24
Miles
Projection: UTM, Zone 15 N
Coordinate System: GCS WGS1984
Unit: Mile

Legend
- cities
- river/lake
- state border
- Snow
- Shadow
- No data
- Cloud
- Normal open water
- Ice
- Supra-snow/ice water
- Land
- Floodwater fraction (%)

Data Source
Satellite Imagery
Satellite/sensor: SNPP/VIIRS
GIS data
Administrative boundary and cities: GDAM

Description
This flood map is merged from Suomi-NPP/VIIRS data around 20:03 (UTC) and GOES-16/ABI data around 15:30 (UTC) on Sep.01, 2017, which shows the flood extent under clear-sky coverage in West Gulf region of the USA due to Hurricane Harvey. Water fraction means open water percentage in a 375-m pixel.
Sentinel-1 flood map on Aug. 31, 2017 in West Gulf region, USA

- **Advantage:** Can see through clouds
- **Disadvantage:** Limited coverage

VIIRS 375-m flood map in the similar region with Sentinel-1 Aug. 31, 2017

- **Advantage:** Areal coverage
- **Disadvantage:** Can not see through clouds, limited resolution
Environmental Intelligence – Wild Fires
Expanding Pawnee Wild Fire in Northern California

July 1, 2018

(Ture Color) NOAA-20

(SVI 4,2,1 RBG) NOAA-20 & SNPP
Fire and Smoke Detection
GOES-16
Critical Environmental Intelligence
Surface Smoke

Models Used:
HRRRX
Rapid Refresh (RAP)
Polar-Orbiting (VIIRS & MODIS)

Spatial Resolution:
3-km horizontal grid spacing
50 vertical levels

Temporal Resolution:
Updates every 6 hours
36 HR Lead time
Initialized at 00, 06, 12 and 18Z

Primary Application:
Fire Intensity and
Fire Smoke Forecast

Limitations:
Fire detection missed due to cloud coverage or infrequent overpass times by SNPP/JPSS
Hurricane Irma – Power Outage
Florida
9/12/17

Courtesy of Devin A. White
PhD Geographic Information Science and Technology Group Oak Ridge National Laboratory

300 AM Power Outage
Power outages shown in red
SNPP - Day Night Band
Supporting Aeronautical Survey Program (ASP) & Coastal Mapping Program (CMP) during emergency response

Hurricane Irma
Access Current Observing Capabilities and System Performance

Canvas the Commercial Sector for Potential Solutions
Mission:
“Optimize Societal Benefit and Inform Decision Making for Securing a Prosperous and Sustainable Future for Humankind”

Goals:
Close important observational gaps
Achieve better integration across full range of Earth observations
Promote Data Democracy by improving access and use of CEOS Agency data

32 members
Established September 1984
THANK YOU

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Sept 18, 2018