JPSS STAR (J-STAR)

JPSS-CPO TIM

JPSS FIRE PRODUCTS SUMMARY FOR NOV. 18TH MEETING

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JPSS Atmospheric Composition Products

- ## Operational VIIRS Active Fire Product (S-NPP/JPSS-1/2)

  - Global M-band baseline product
  - Full fire mask for each VIIRS granule (land/water, cloud, fire) + fire radiative power
  - S-NPP/JPSS-1 Products Maturity
    - » S-NPP Product Requirement(s) and S-NPP Maturity status (in Table Format)
    - » Planned campaigns of opportunities towards in-situ/truth measurements
      - Airborne radiometric measurements (Forest Service)
      - Spaceborne : Landsat-class (30m); DLR-TET1 (185m)
      - MODIS AF product (validated using Terra/ASTER)
    - » Data usage: eIDEA, HRRR, NWS AWIFS, GBBEPx

- ## Research/Experimental Products (S-NPP/JPSS-1/2)

  - Global I/M-band experimental product (in development / experimental production at NASA)
  - Full fire mask for each granule (land/water, cloud, fire) + fire radiative power
  - Validation status, planned campaigns of opportunities: same as above
  - Operational implementation plan: N/A yet

JPSS L1RD Supplement - Active Fires (VIIRS) on Suomi NPP

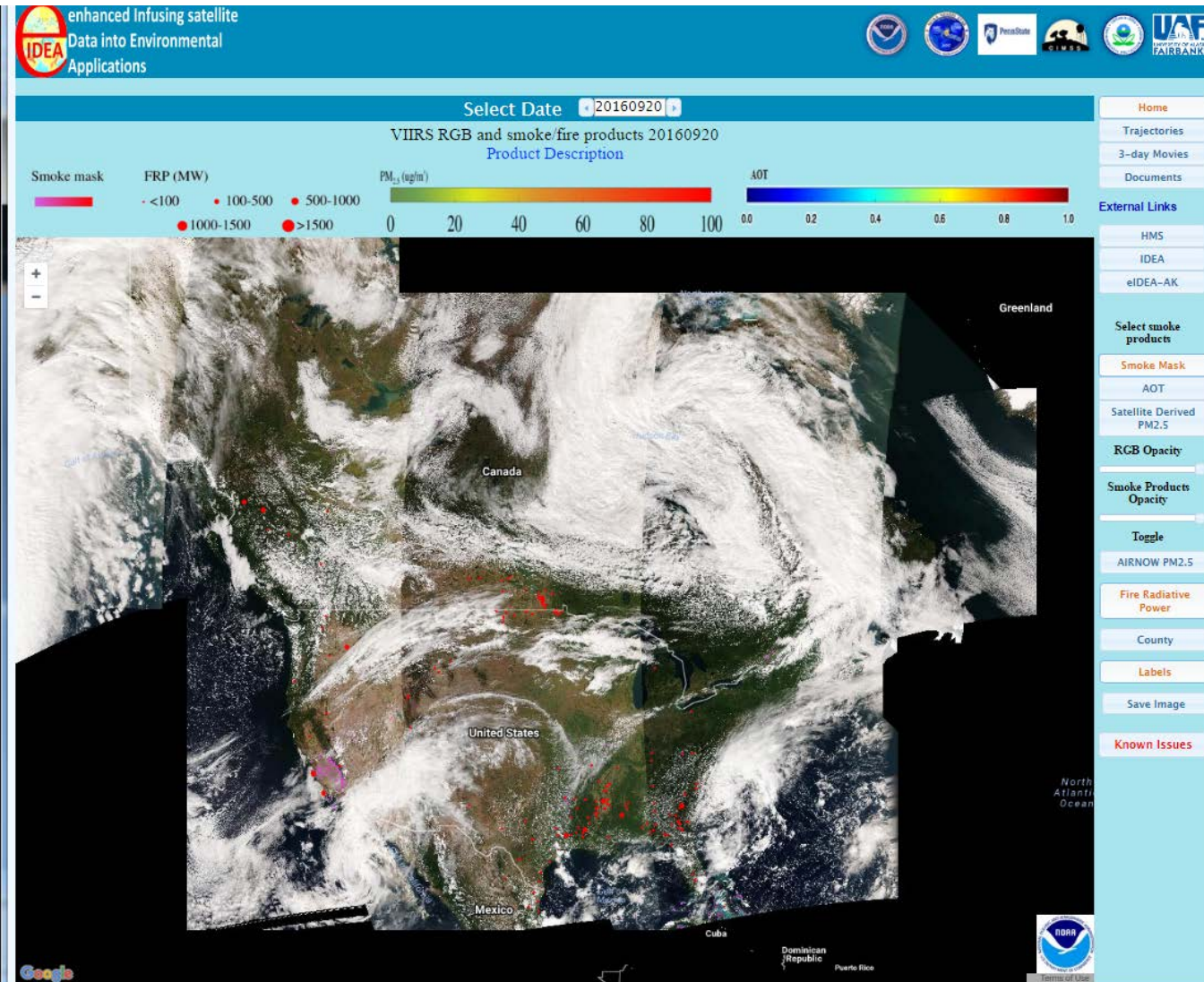| Attribute	Requirement	Observed
AF Applicable Conditions: 1. Delivered in daytime and night-time regimes under clear-sky conditions and within the clear areas between scattered and broken clouds.		
a. Horizontal Cell Size (2)		
1.Nadir	0.80 km	0.75 km
2. Worst Case	1.6 km	1.6 km
b. Horizontal Reporting Interval (2)	HCS (Horizontal Cell Size)	HCS
c. Horizontal Coverage (2)	Global	
d. Mapping Uncertainty, 3 sigma (2)	1.5 km	>1.5 km
e. Measurement Range		
1. Fire Radiative Power (FRP) (3)	1.0 MW to 5.0 $(10)^3$ MW	
f. Measurement Uncertainty		
1. Fire Radiative Power (FRP)	50%	
g. Refresh	At least 90% coverage of the globe every 12 hours (monthly average)	

Notes:
1. NOAA has endorsed the inclusion of an Active Fires EDR based on strong community interest in providing continuity of validated MODIS-based fire products (geolocation of fire detections, FRP, and a full fire mask) consistent with the recommendations of the NOAA-NASA Land Science Team. This change proposes the institution of Active Fires as an EDR with threshold requirements based on the demonstrated capabilities of the VIIRS F1 sensor and S-NPP spacecraft.
2. The requirement of global coverage is based on user community stated intentions to extend Active Fires product capabilities to non-land based targets (e.g., offshore gas flares).
3. The high end of the FRP Measurement Range threshold requirement (5000 MW) is based on current design capabilities (i.e., the present 634 K saturation specification for the M13 Band on VIIRS) and the recommendation of the NOAA-NASA Land Science Team.
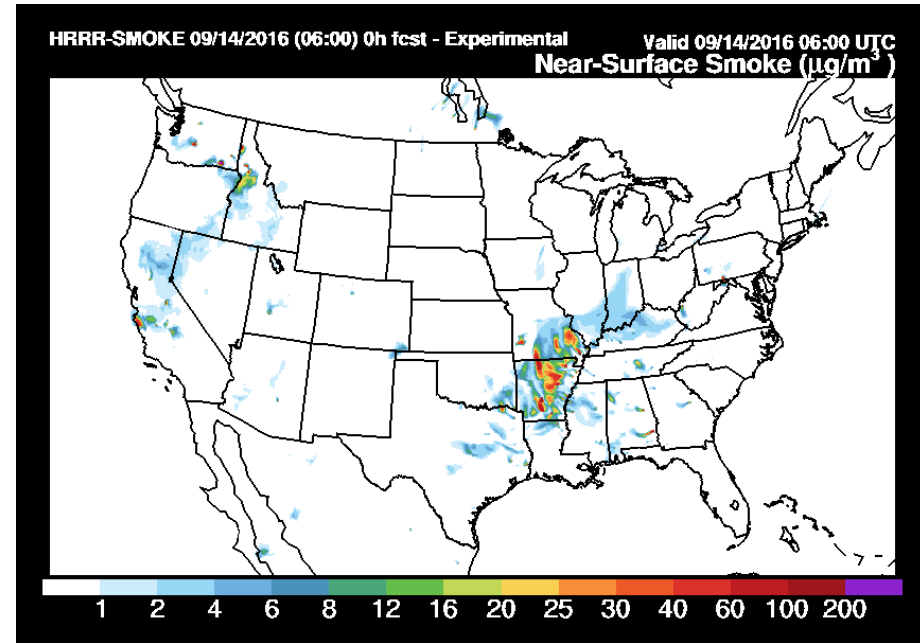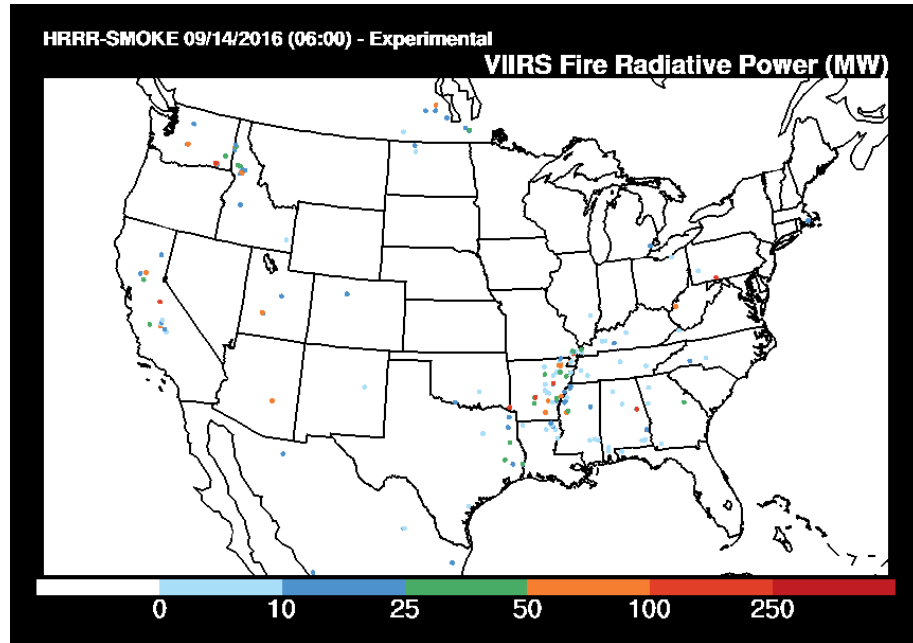
Fire and Smoke information: eIDEA

http://www.star.nesdis.noaa.gov/smcd/spb/aq/eidea/
http://www.star.nesdis.noaa.gov/smcd/spb/aq/eidea-ak/

extended Infusing Satellite Data into Environmental Applications

Product selection
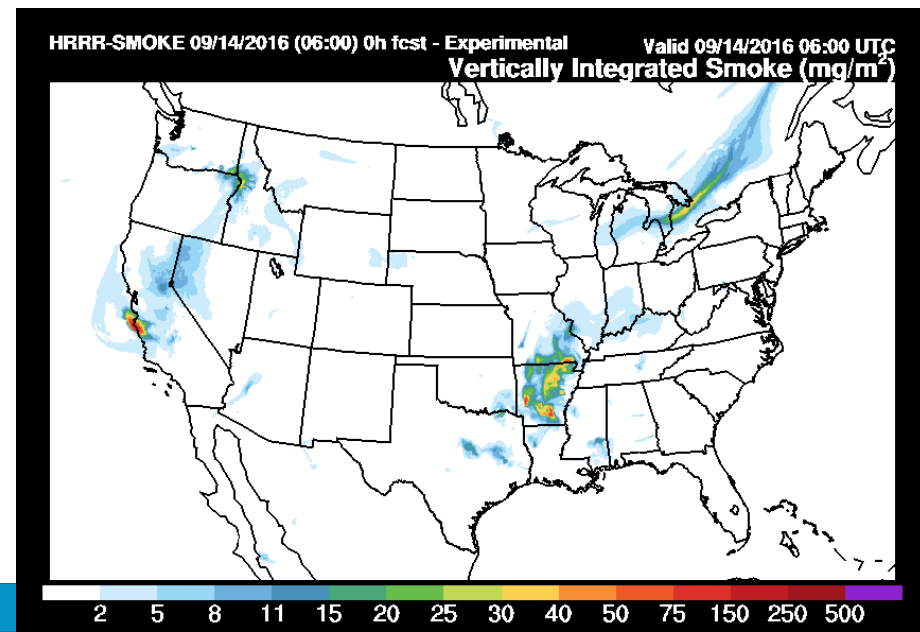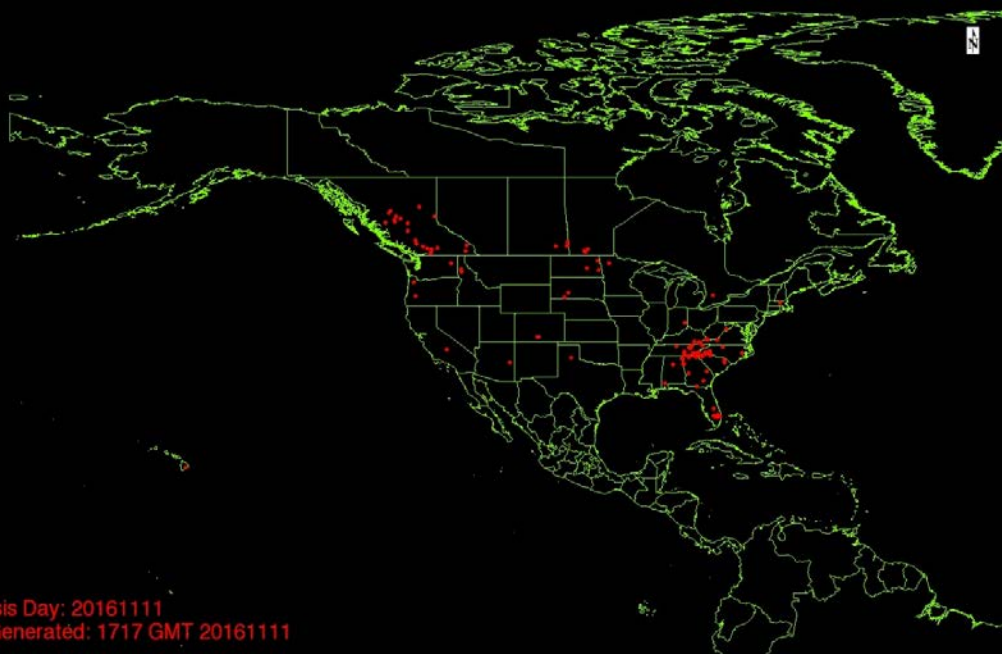
VIIRS data in the HRRR*-Smoke model

- The **experimental HRRR-Smoke** started in June, 2016.
- The system is run 4 times a day at 00, 06, 12 and 18 UTC. It takes ~4 hours to complete entire cycle. Forecast plots are posted as simulations progress.
- The forecast lead time is **36 hours.**

*High Resolution Rapid Refresh

rapidrefresh.noaa.gov/HRRRsmoke

Hazard Mapping System and AWIPS-II status

- VIIRS data are included in operational HMS
- http://www.ospo.noaa.gov/Products/land/hms.html
- Global NDE data are available in text format
  - granule-based (.txt) : real-time
  - daily summary (.dat)
- http://satepsanone.nesdis.noaa.gov/pub/FIRE/VIIRS/
- VIIRS data are included in new AWIPS-II release

Global Biomass Burning Emissions Product (GBBEPx)
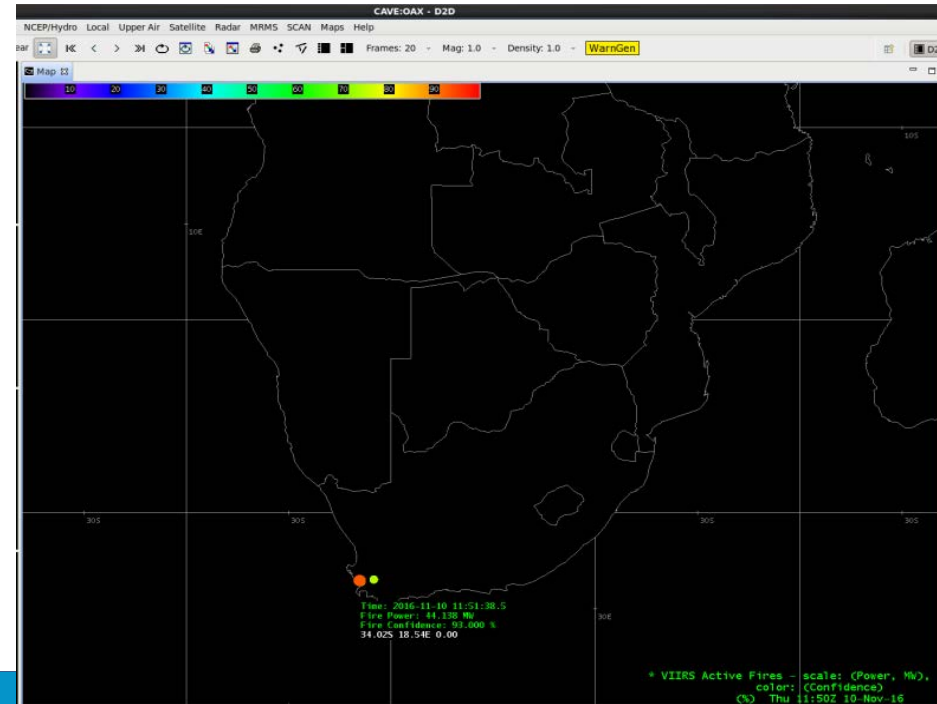
- GBBEPx produced from GOES-E, GOES-W, MeteoSAT-10, Terra and Aqua MODIS
    - Himawari-8 and SNPP VIIRS to be added soon
    - GOES-R and J1 after launch and checkout
- Used by NWS/NCEP NGAC model and others (e.g., academic researchers)
- Has potential for long-term trend analysis related to climate change
    - Land use/cover changes
    - Fire activity – air quality linkages
    - Fire influence on urban/suburban/exo-urban regions

Near-real-time biomass burning emissions from network of geostationary and polar-orbiting satellites

2014-04-01 PM2.5(10e-9 kg/m2/s)

0.01   0.10   1.00   10.00   100.00   1000.00