

Active fires from Suomi- NPP VIIRS

Ivan Csiszar (STAR/NESDIS)

Evan Ellicott , Krishna Vadrevu, Wilfrid Schroeder, Louis Giglio, Chris Justice (University of Maryland)

Brad Quayle (USDA Forest Service)

Peter Roohr (NWS/NOAA)

VIIRS and heritage imagers: where is the fire signal?

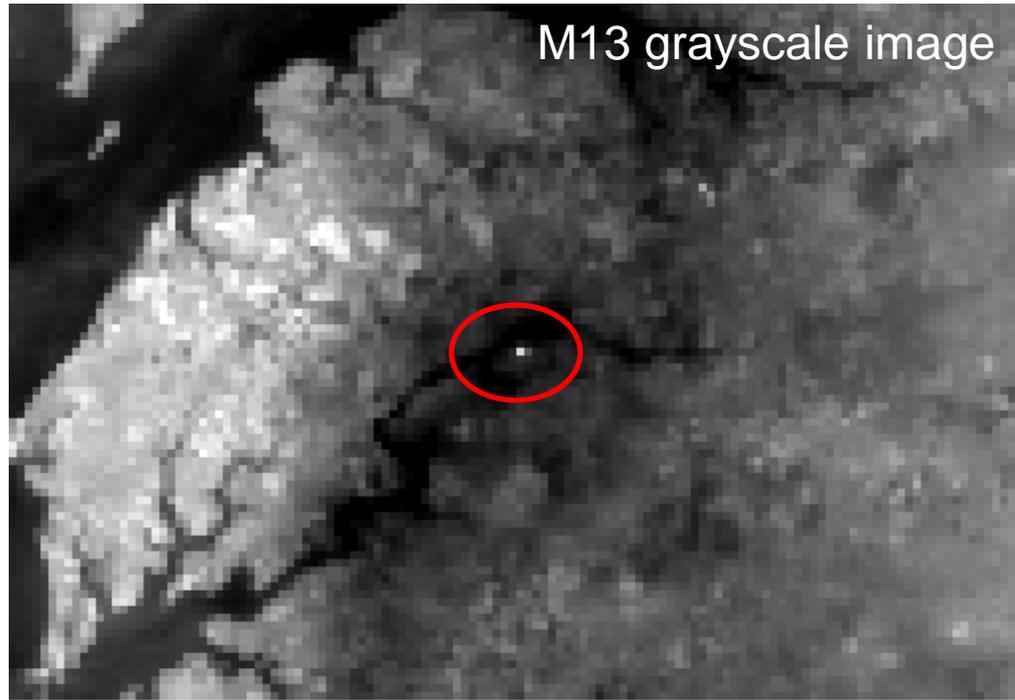
VIIRS			MODIS Equivalent			AVHRR-3 Equivalent			OLS Equivalent		
Band	Range (um)	HSR (m)	Band	Range	HSR	Band	Range	HSR	Band	Range	HSR
DNB	0.500 - 0.900	750	NONE			Low light capabilities			HRD	0.580 - 0.910	550 2700
M1	0.402 - 0.422	750	8	0.405 - 0.420	1000	NONE			Ocean Color, Aerosol		
M2	0.436 - 0.454	750	9	0.438 - 0.448	1000						
M3	0.478 - 0.498	750	3	0.459 - 0.479	500						
			10	0.483 - 0.493	1000						
M4	0.545 - 0.565	750	4	0.545 - 0.565	500						
			12	0.546 - 0.556	1000						
I1	0.600 - 0.680	375	1	0.620 - 0.670	250	1	0.572 - 0.703	1100	Imagery		
M5	0.662 - 0.682	750	13	0.662 - 0.672	1000	1	0.572 - 0.703	1100	Ocean Color, Aerosol		
			14	0.673 - 0.683	1000						
M6	0.739 - 0.754	750	15	0.743 - 0.753	1000	NONE			Atm Correction		
I2	0.846 - 0.885	375	2	0.841 - 0.876	250	2	0.720 - 1.000	1100	NDVI		
M7	0.846 - 0.885	750	16	0.862 - 0.877	1000	2	0.720 - 1.000	1100	Ocean Color, Aerosol		
M8	1.230 - 1.250	750	5	SAME	500	NONE			Cloud Particle Size		
			M9	1.371 - 1.386	750				26	1.360 - 1.390	1000
I3	1.580 - 1.640	375	6	1.628 - 1.652	500				Snow Map		
M10	1.580 - 1.640	750	6	1.628 - 1.652	500	3a	SAME	1100	Snow Fraction		
M11	2.225 - 2.275	750	7	2.105 - 2.155	500	NONE			Cloud		
I4	3.550 - 3.930	375	20	3.660 - 3.840	1000	3b	SAME	1100	Imagery, Clouds		
M12	3.660 - 3.840	750	20	SAME	1000	3b	3.550 - 3.930	1100	SST, Fire		
M13	3.973 - 4.128	750	21	3.929 - 3.989	1000	NONE			SST, Fire		
			22	3.929 - 3.989	1000						
			23	4.020 - 4.080	1000						
M14	8.400 - 8.700	750	29	SAME	1000	NONE			Cloud Top Properties		
M15	10.263 - 11.263	750	31	10.780 - 11.280	1000	4	10.300 - 11.300	1100	SST, Fire		
I5	10.500 - 12.400	375	31	10.780 - 11.280	1000	4	10.300 - 11.300	1100	HRD	10.300 - 12.900	550
			32	11.770 - 12.270	1000	5	11.500 - 12.500	1100		Cloud Imagery	
M16	11.538 - 12.488	750	32	11.770 - 12.270	1000	5	11.500 - 12.500	1100	SST		

THE RADIOMETRIC SIGNAL

M13 (4 μm) IS THE PRIMARY BAND USED FROM VIIRS FIRE DETECTION IN THE IDPS PRODUCT



2.2 ha grassland fire in Chestertown, MD

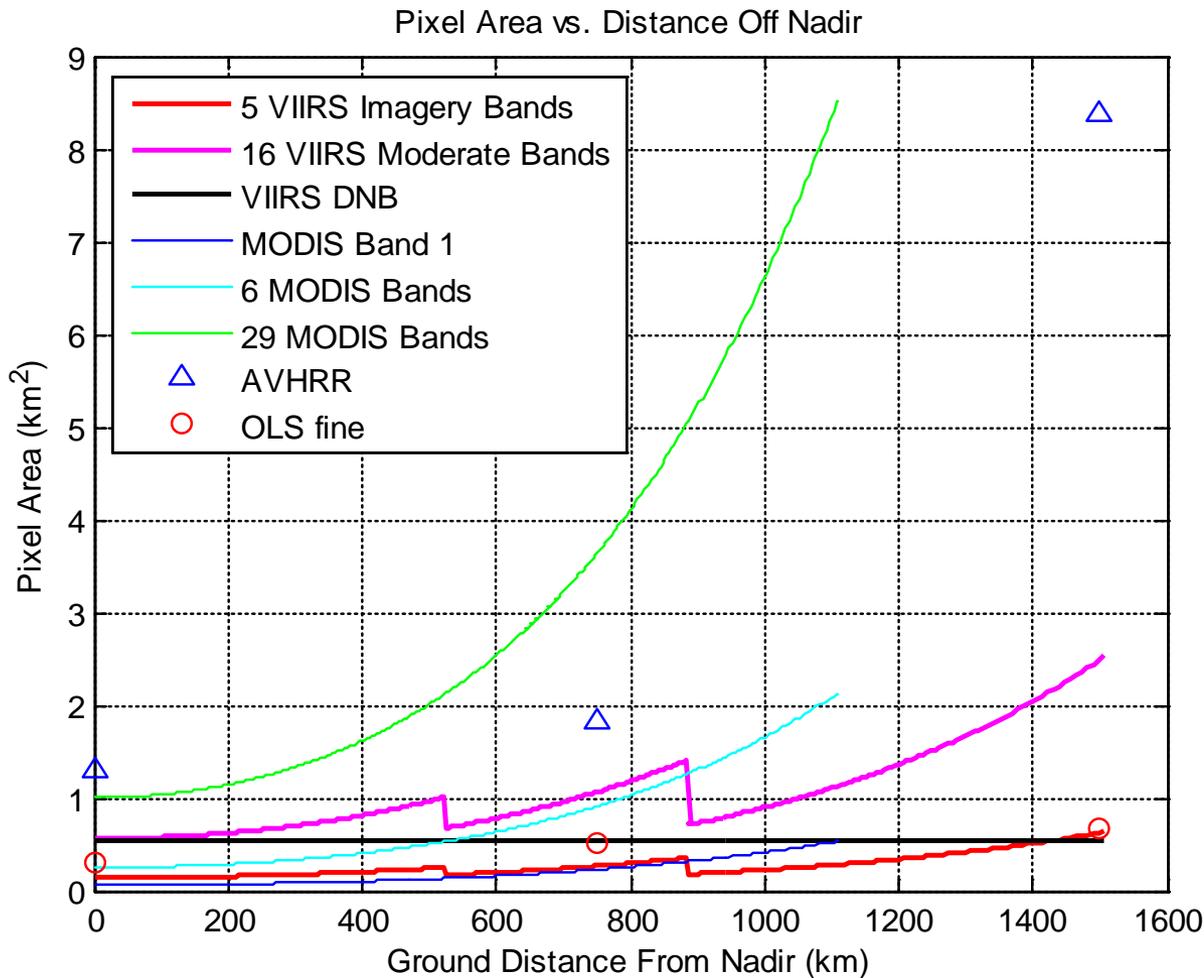


23 March 2012



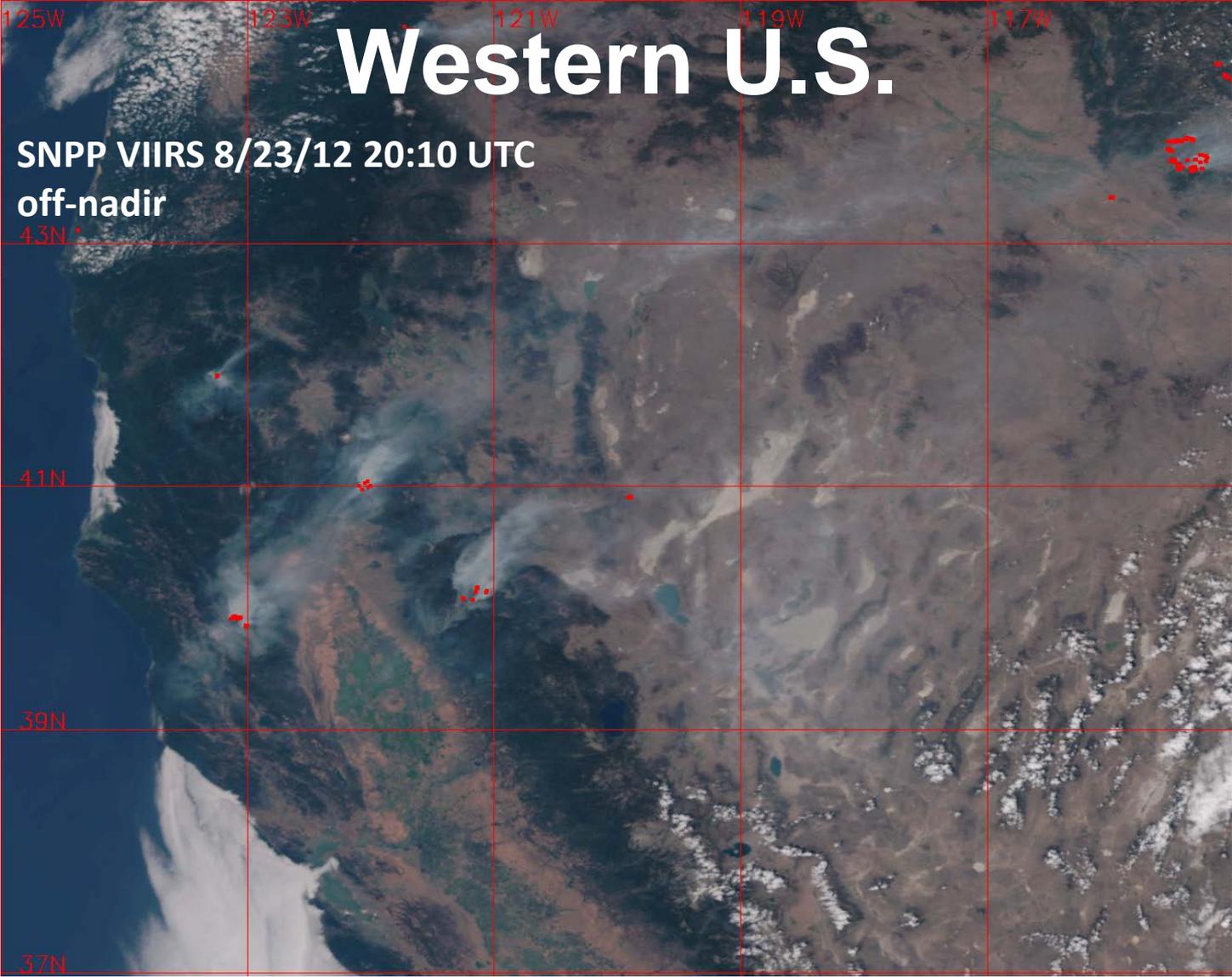


Near-constant pixel size



Spatial Resolution Comparisons for VIIRS, AVHRR, MODIS and OLS at Nadir and Across Swath

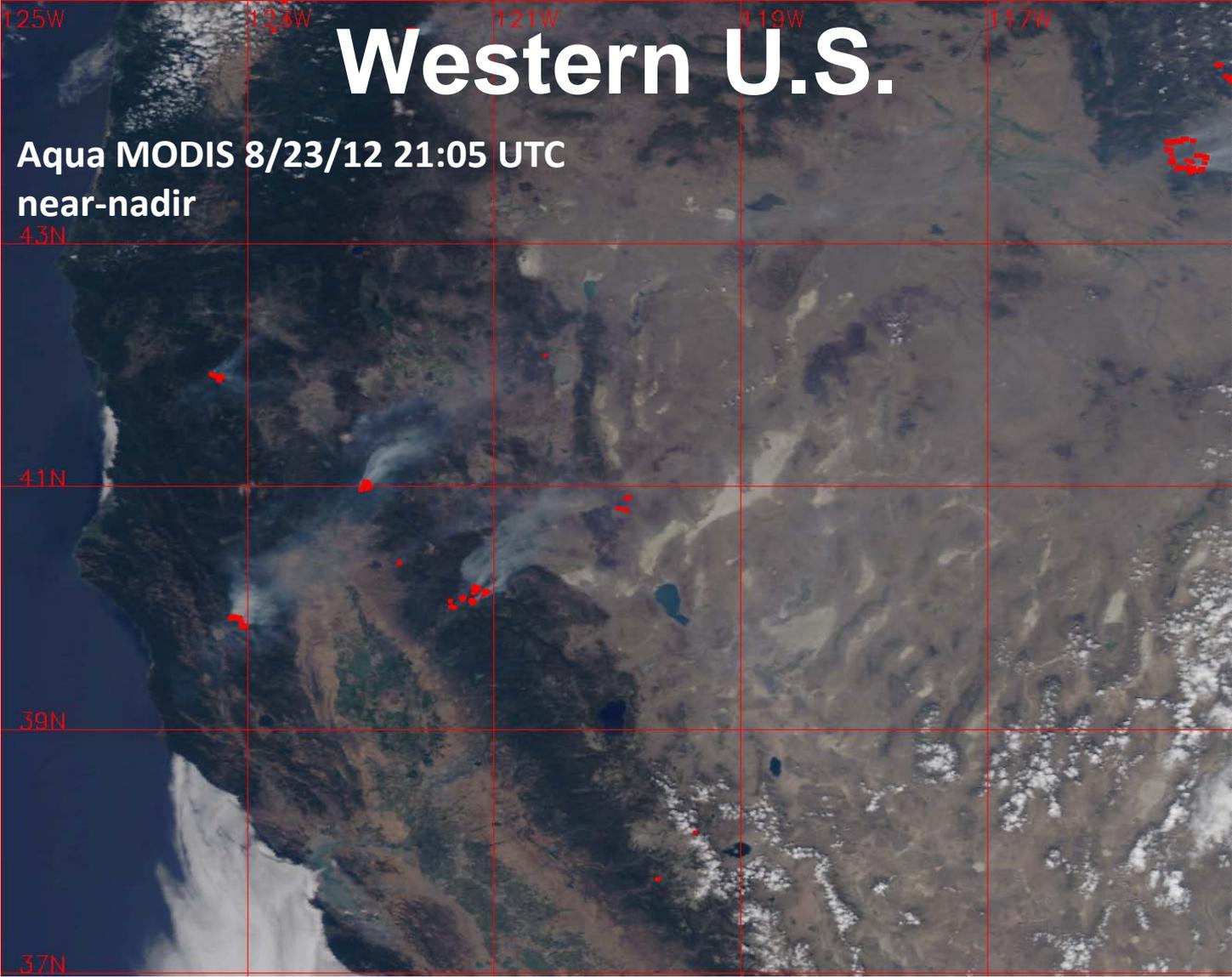
Because of aggregation VIIRS has much better resolution away from nadir, pixel area 8 times smaller than AVHRR or MODIS – a critical feature for fire detection



The larger fires in **California** observed in the images include the **Fort Complex, Bagley, North Pass, Chips, and Rush**. In **Oregon**, the **Waterfalls 2** fire can be seen near the top-left portion of the image. And to the east, in **Idaho**, the **Trinity Ridge** and **Halstead** fires can easily be seen.

6/25/2013

PG. OCGNUS



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VIIRS active fire product development

NOAA: real-time NOAA operational applications

- Operational product generated by IDPS (Interface Data Processing Segment)
- Part of integrated processing chain
- Low latency
- Detections only
- Locations only (no fire mask)

NASA: science, long-term continuity + added value NRT

- Experimental MODIS continuity product a at the Land PEATE (Product Evaluation and Test Element)
- Detections, Fire Mask and Fire Radiative Power, CMG
- Spatially explicit fire mask
- Spatial and temporal aggregates – heritage deliver systems (RR, FIRMS)

VIIRS Fire Team

Algorithm updates

Upstream processing updates

algorithm synchronization, end user feedback

DIRECT READOUT

- **Can run IDPS, NASA or locally developed code**
- **Stand-alone**

Global VIIRS fire data access

- Options:
 - NOAA CLASS Web
 - www.class.noaa.gov
 - NASA LAADSWeb
 - ladsweb.nascom.nasa.gov/data/search.html
 - NOAA CLASS ftp (anonymous)
 - <ftp-npp.class.ngcd.noaa.gov>
 - NASA LAADS ftp (anonymous)
 - ladsweb.nascom.nasa.gov
- Detailed instructions:
viirsfire.geog.umd.edu/Documents/VIIRS_data_tutorial.pdf

Proving Ground & Risk Reduction

- The goals of VIIRS AF data proving ground project is the development of a near-real-time enhanced VIIRS AF product delivery system to NOAA end users.
- Core activities:
 - Web-based near real-time data visualization, evaluation and distribution
 - Background information and VIIRS-MODIS comparisons are also included to help product evaluation
 - VIIRS active fire algorithm improvement and evaluation
 - The system is also a testbed for evaluating enhanced and experimental algorithms
 - Partnership with end users for enhanced data services and user outreach
 - USDA Forest Service, NWS IMETS
 - International outreach through GOF-C-GOLD Regional Networks
 - GOF-C-GOLD: Global Observation of Forest and Landcover Dynamics; a panel of the Global Terrestrial Observing System

VIIRS Active Fire Product Website and Evaluation Portal

The screenshot shows a web browser window with the URL viirsfire.geog.umd.edu. The page features a header with the VIIRS Active Fire logo and navigation links: Home, About, FAQ, Data, VIIRS vs MODIS, and Contact Us. A banner on the right side includes logos for JPSS, NASA, and NOAA, along with the text "NPP - Land Product Evaluation and Testing Element" and "VIIRS Land Product Quality Assessment".

Active Fire Team

- Ivan Csiszar
- Wilfrid Schroeder
- Louis Giglio
- Evan Ellicott
- Chris Justice
- Krishna Vadrevu

VIIRS fire detections

The Visible Infrared Imager Radiometer Suite (VIIRS) sensor was launched aboard the Suomi National Polar-orbiting Partnership (NPP) satellite on October 28th, 2011 and on January 18th, 2012 cooler doors for the thermal sensor were opened. Within hours data were being retrieved and fire detections produced. The 5 minute swath quicklooks presented here highlight recent fire detections superimposed on RGB images (bands 5-4-3). The VIIRS active fires data was released to the public on October 22nd, 2012 with data available back to April 2nd, 2012, however it should be noted the data and products are still preliminary (i.e. Beta) and continue to undergo evaluation and calibration.

Southwest fires, United States: June 10th, 2013

Fires continue to burn in the Southwest states of New Mexico, Arizona, and California. The VIIRS image above (from 2057 UTC) captured numerous hotspots including several relatively new fires such as the Fourmile fire in Southeast Arizona, the Hathaway fire in Southern California, and the Silver fire in New Mexico (near Santa Fe).

Links

- JPSS
- VIIRS
- University of Maryland
- NOAA
- NOAA-STAR
- USFS RSAC
- GOFC Fire

Logos for the Forest Service, US Department of Agriculture, JPSS, University of Maryland, and NOAA NESDIS STAR are also visible on the page.

VIIRS Active Fires

Date	Detections Over Pass	
06/17/2013	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
06/16/2013	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

- Overlay Options**
- Alaska Direct Broadcast data
 - Temperature
 - Cloud Cover
 - US Active Fire Perimeters
 - InciWeb Wildfire Information

Map Controls

[Zoom to Alaska](#)

Reset Center Clear

[Return Home](#)



NPP_VIIRS_20130617_202422_203002

Latitude: 41.0889 [View](#)

Longitude: -113.131 [\(GeoTIFF\) Download](#)

Date: 06/17/2013 [\(ASCII\) Download](#)

[\(KMZ\) Download](#)

VIIRS Active Fires

Date	Detections Over Pass	
06/17/2013	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
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Overlay Options

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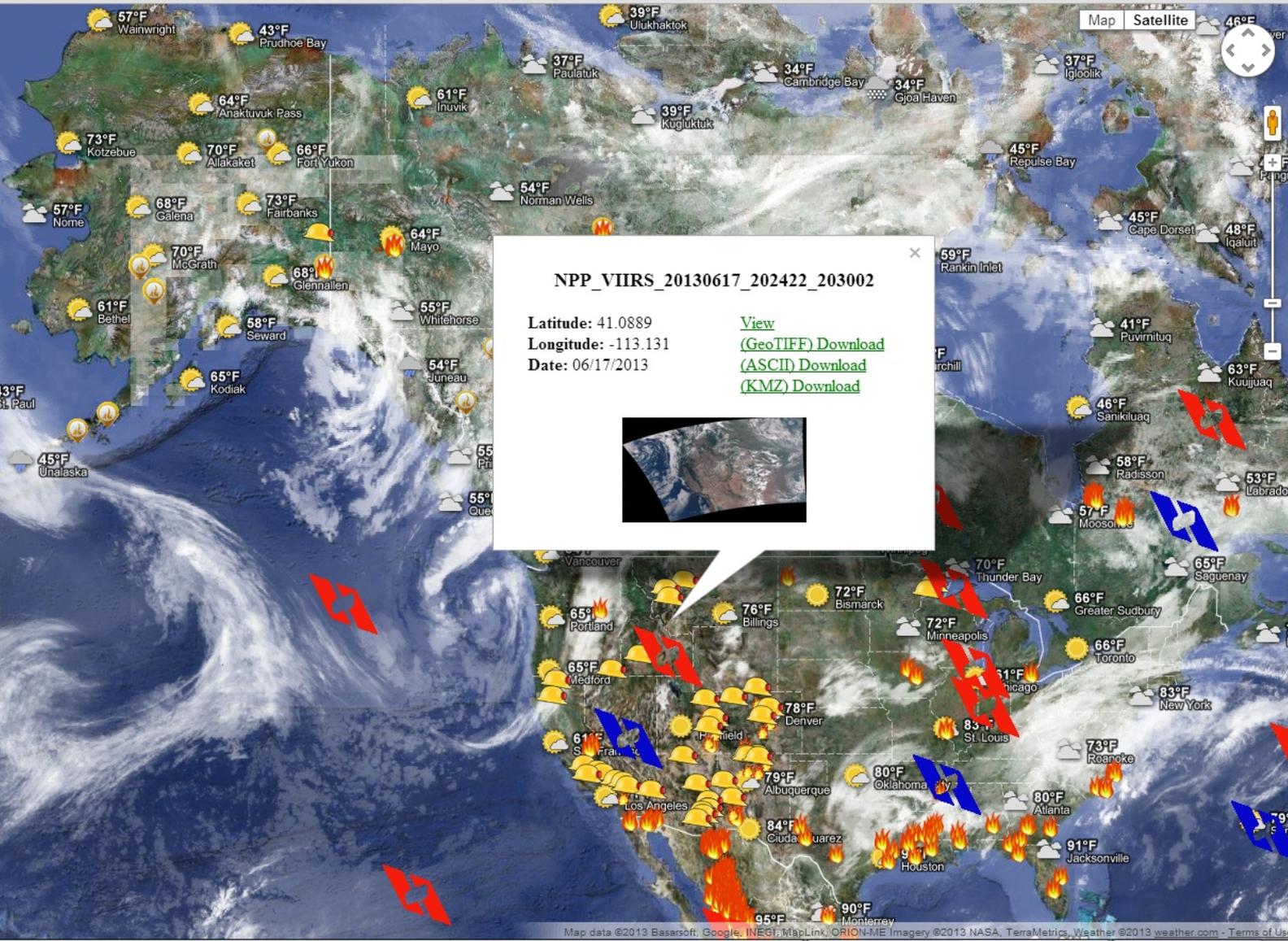
Map Controls

[Zoom to Alaska](#)



Reset Center Clear

[Return Home](#)



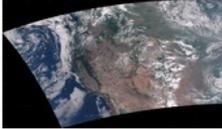
NPP_VIIRS_20130617_202422_203002

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VIIRS Active Fires

Date Detections Over Pass

06/17/2013	<input checked="" type="checkbox"/> 🔥	<input checked="" type="checkbox"/> 🚒
06/16/2013	<input checked="" type="checkbox"/> 🔥	<input checked="" type="checkbox"/> 🚒

Chukchi Sea

Overlay Options

- Alaska Direct Broadcast data
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Map Controls

[Zoom to Alaska](#)



Reset Center Clear

[Return Home](#)

North Fork Chandalar fire

Moore Creek fire

Chisana River fire

Lime Hills fire

6/25/2013

PG OCONUS

13

Thanks go to Scott Macfarlane for providing access to the UF-Alaska DB data

VIIRS Active Fires

Date Detections Over Pass

06/17/2013	<input checked="" type="checkbox"/> 🔥	<input checked="" type="checkbox"/> 🚒
06/16/2013	<input checked="" type="checkbox"/> 🔥	<input checked="" type="checkbox"/> 🚒

Overlay Options

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Map Controls

[Zoom to Alaska](#)



[Return Home](#)

Note the redundancy with IDPS AVAFO product



Lime Hills fire

20130616 

20130616	
FID	86
date	20130616
start_time	223250
end_time	223414
longitude	-155.5634
latitude	61.46419

Directions: [To here](#) - [From here](#)

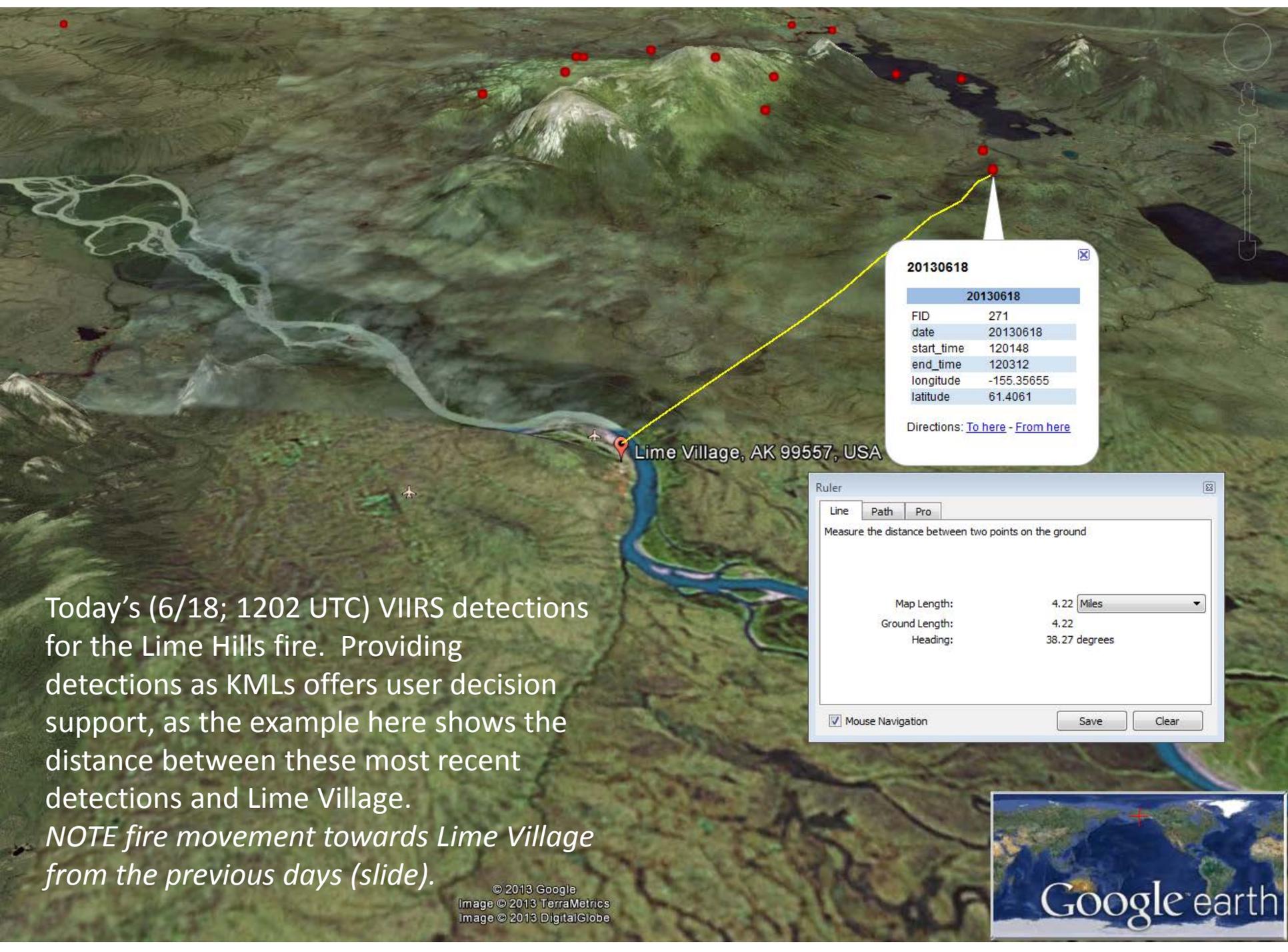


From AK Dept. of Forestry:
The Lime Hills Fire continues to grow due to the hot and dry weather. The fire is approximately 12,260 acres, an increase of 7,887 acres in the last 48 hours. Extreme fire behavior was observed yesterday as the fire grew north making a four mile run

Lime Village

Image © 2013 DigitalGlobe
Image © 2013 TerraMetrics





20130618

20130618	
FID	271
date	20130618
start_time	120148
end_time	120312
longitude	-155.35655
latitude	61.4061

Directions: [To here](#) - [From here](#)

Ruler

Line Path Pro

Measure the distance between two points on the ground

Map Length: 4.22 Miles

Ground Length: 4.22

Heading: 38.27 degrees

Mouse Navigation

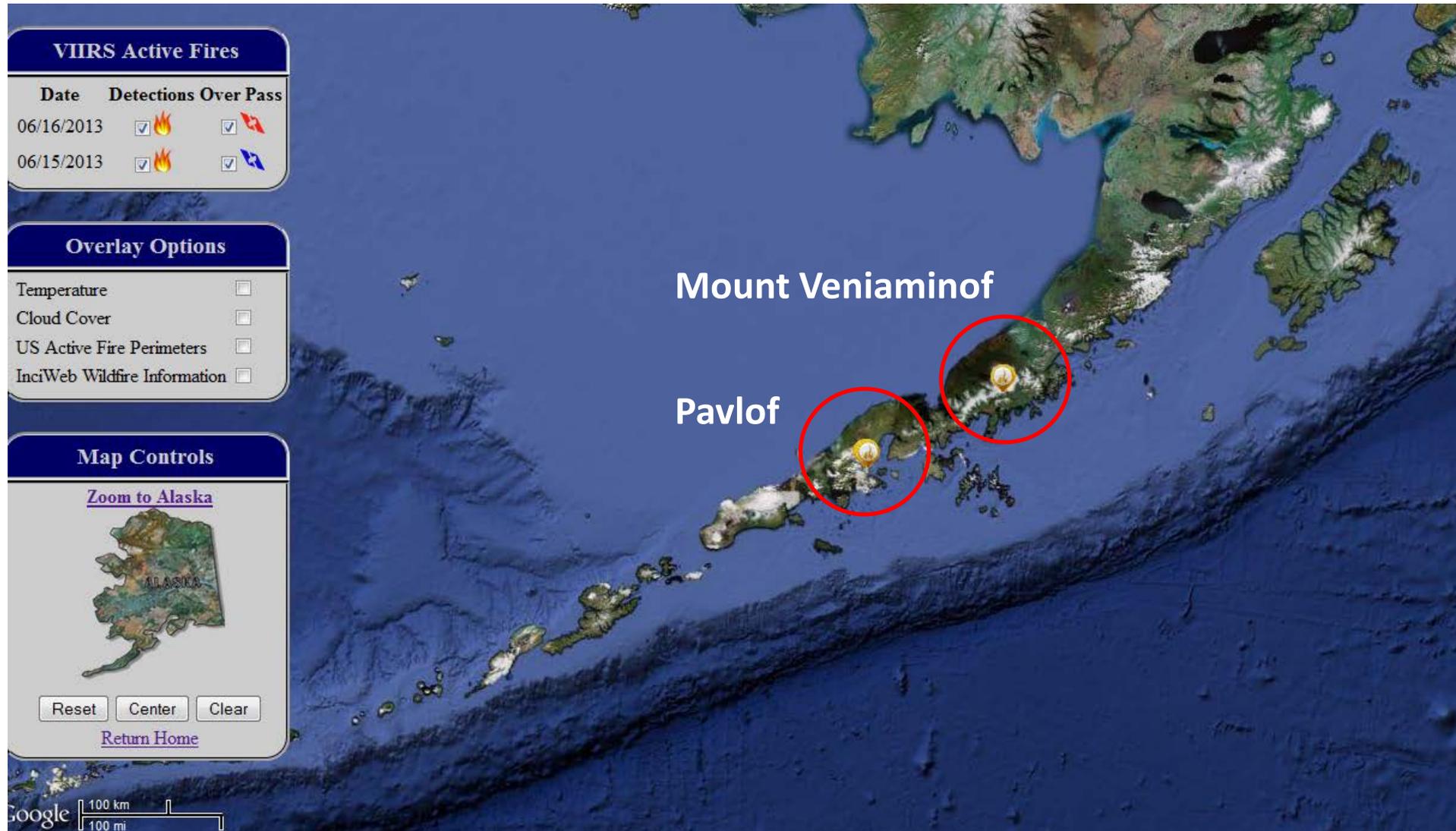
Save Clear

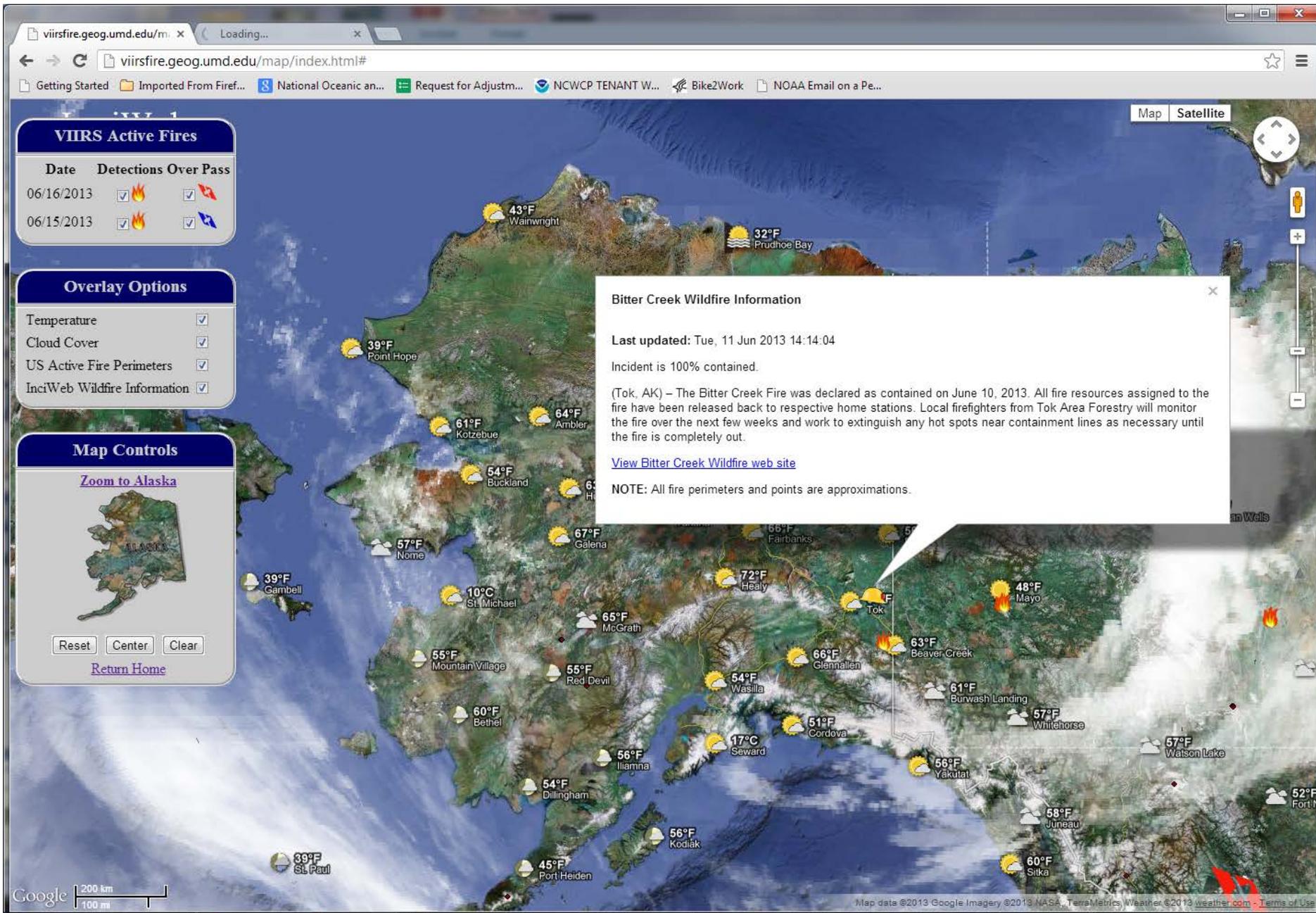
Today's (6/18; 1202 UTC) VIIRS detections for the Lime Hills fire. Providing detections as KMLs offers user decision support, as the example here shows the distance between these most recent detections and Lime Village.

NOTE fire movement towards Lime Village from the previous days (slide).



Persistent hot spots > volcanic activity





VIIRS Active Fire

viirsfire.geog.umd.edu/download_data.php

Getting Started Imported From Fire... National Oceanic an... Request for Adjustm... NCWCP TENANT W... Bike2Work NOAA Email on a Pe...

VIIRS Active Fire

JPSS
Joint Polar Satellite System
NPP- Land Product Evaluation and Testing Element
VIIRS Land Product Quality Assessment

Home About FAQ Data VIIRS vs MODIS Contact Us

VIIRS fire detections

Timestamp	Date	Ascii	TIFF	KMZ
NPP_VIIRS_20130616_204734_205314	2013-06-16	Download	Download	Download
NPP_VIIRS_20130616_204152_204732	2013-06-16	Download	Download	Download
NPP_VIIRS_20130616_203610_204151	2013-06-16	Download	Download	Download
NPP_VIIRS_20130616_185926_190507	2013-06-16	Download	Download	Download
NPP_VIIRS_20130616_190508_191048	2013-06-16	Download	Download	Download
NPP_VIIRS_20130616_172242_172823	2013-06-16	Download	Download	Download
NPP_VIIRS_20130616_171701_172241	2013-06-16	Download	Download	Download
NPP_VIIRS_20130615_155747_160328	2013-06-15	Download	Download	Download
NPP_VIIRS_20130615_173431_174011	2013-06-15	Download	Download	Download
NPP_VIIRS_20130615_174554_175135	2013-06-15	Download	Download	Download
NPP_VIIRS_20130615_205922_210503	2013-06-15	Download	Download	Download
NPP_VIIRS_20130615_210504_211044	2013-06-15	Download	Download	Download
NPP_VIIRS_20130615_192238_192819	2013-06-15	Download	Download	Download
NPP_VIIRS_20130615_191657_192237	2013-06-15	Download	Download	Download
NPP_VIIRS_20130615_174013_174553	2013-06-15	Download	Download	Download
NPP_VIIRS_20130615_160329_160909	2013-06-15	Download	Download	Download
NPP_VIIRS_20130614_212234_212813	2013-06-14	Download	Download	Download
NPP_VIIRS_20130614_211653_212233	2013-06-14	Download	Download	Download

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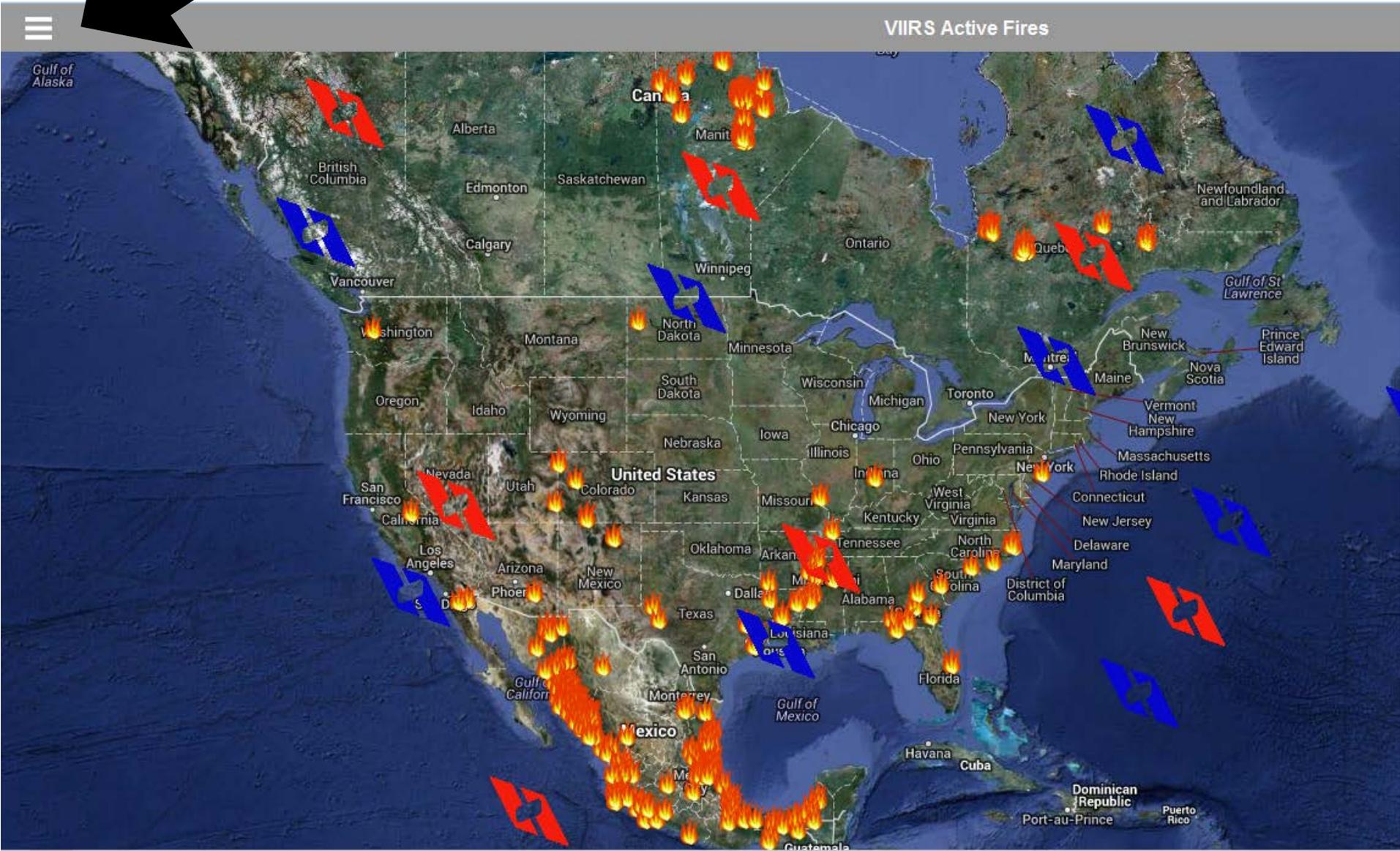



Links

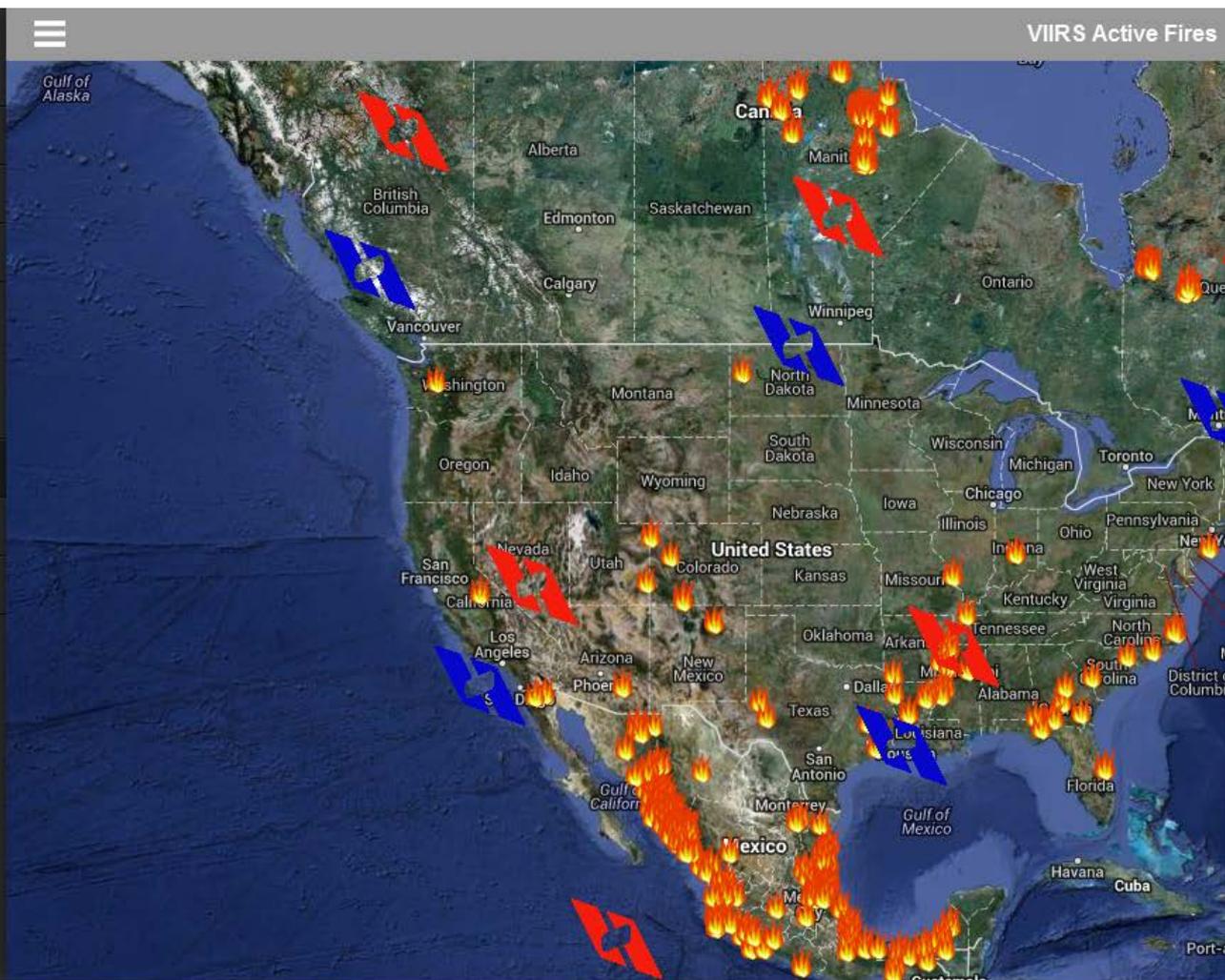
- JPSS
- VIIRS
- University of Maryland
- NOAA
- NOAA-STAR
- USFS RSAC
- GOCF Fire




Mobile "friendly". Click here to see map options



- 24 & 48 hour Fire Detections
- 06/16/2013 
 - 06/15/2013 
 - Swath Over Pass 24 
 - Swath Over Pass 48 
- Overlay Options
- Temperature
 - Cloud Cover
 - US Active Fire Perimeters
 - InciWeb Wildfire Information



VIIRS Active Fire Product x

viirsfires.tumblr.com

Getting Started Imported From Firef... National Oceanic an... Request for Adjustm... NCWCP TENANT W... Bike2Work NOAA Email on a Pe...

Photoset June 14, 2013

Southwest, U.S. fires: June 11th and 12, 2013

Utah Colorado Nebraska Kansas Oklahoma Arizona New Mexico

Big Meadow fire
Black Forest fire
Royal Gorge fire
Thompson Ridge fire
Silver fire
Poudre Springs fire
Fountain fire

Detection date & color

- NPP_VIIRS_20130612_AF
- NPP_VIIRS_20130611_AF

0 62.5 125 250 Miles

ABOUT



VIIRS Active Fire

The Visible Infrared Imager Radiometer Suite (VIIRS) on the Suomi National Polar-orbiting Partnership (NPP) satellite launched from Vandenberg Air Force Base at 0548 EDT on Oct. 28, 2011 and first-light shortwave data began to be transmitted on November 21st, 2011. After some delay, due to degradation of observed radiances in the visible and NIR bands, the thermal cooler doors were opened January 18th, 2012 and by the following day Suomi-NPP was acquiring its first fire detections.

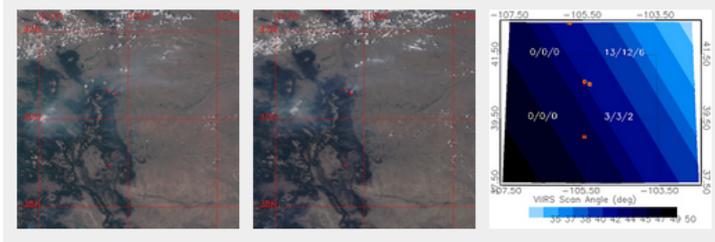
VIIRS represents a continuation of high quality AF monitoring capabilities started with the Moderate Resolution Imaging Spectroradiometer (MODIS) on the NASA EOS Terra and Aqua satellites, and also a significant improvement of the current capabilities of the Advanced Very High Resolution Radiometer (AVHRR) on the current NOAA operational polar satellites. Initial evaluation, following the activation of the thermal bands on January 18, 2012, has provided empirical evidence of the good quality of the VIIRS fire observations.

VIIRS Active Fire Product x

viirsfires.tumblr.com

Getting Started Imported From Firef... National Oceanic an... Request for Adjustm... NCWCP TENANT W... Bike2Work NOAA Email on a Pe...

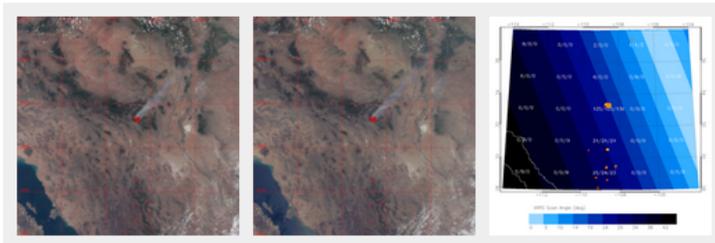
Photoset June 27, 2012



The High Park fire in Colorado, just west of Fort Collins, fire started in early June due to a lightning strike (<http://www.inciweb.org/state/6>) and took off June 9th because of high winds and low humidity. VIIRS got it's first good observation on June 11th and by June 22nd the NIFC incident report stated the burnt area was up to 68,200 acres.

The following images show a comparison of VIIRS and Aqua active fire detections on June 18th within a 5x5 degree window centered near the High Park.

Photoset June 01, 2012



A MODIS - VIIRS comparison of the Whitewater-Baldy Fire complex in New Mexico from May 25th, 2012. NPP VIIRS was overhead at approximately 1955 UTC while Aqua observed the same fire about 20 minutes later. The grid plot shows the strong agreement in the number of detections made by both sensors.

The role of IMETs

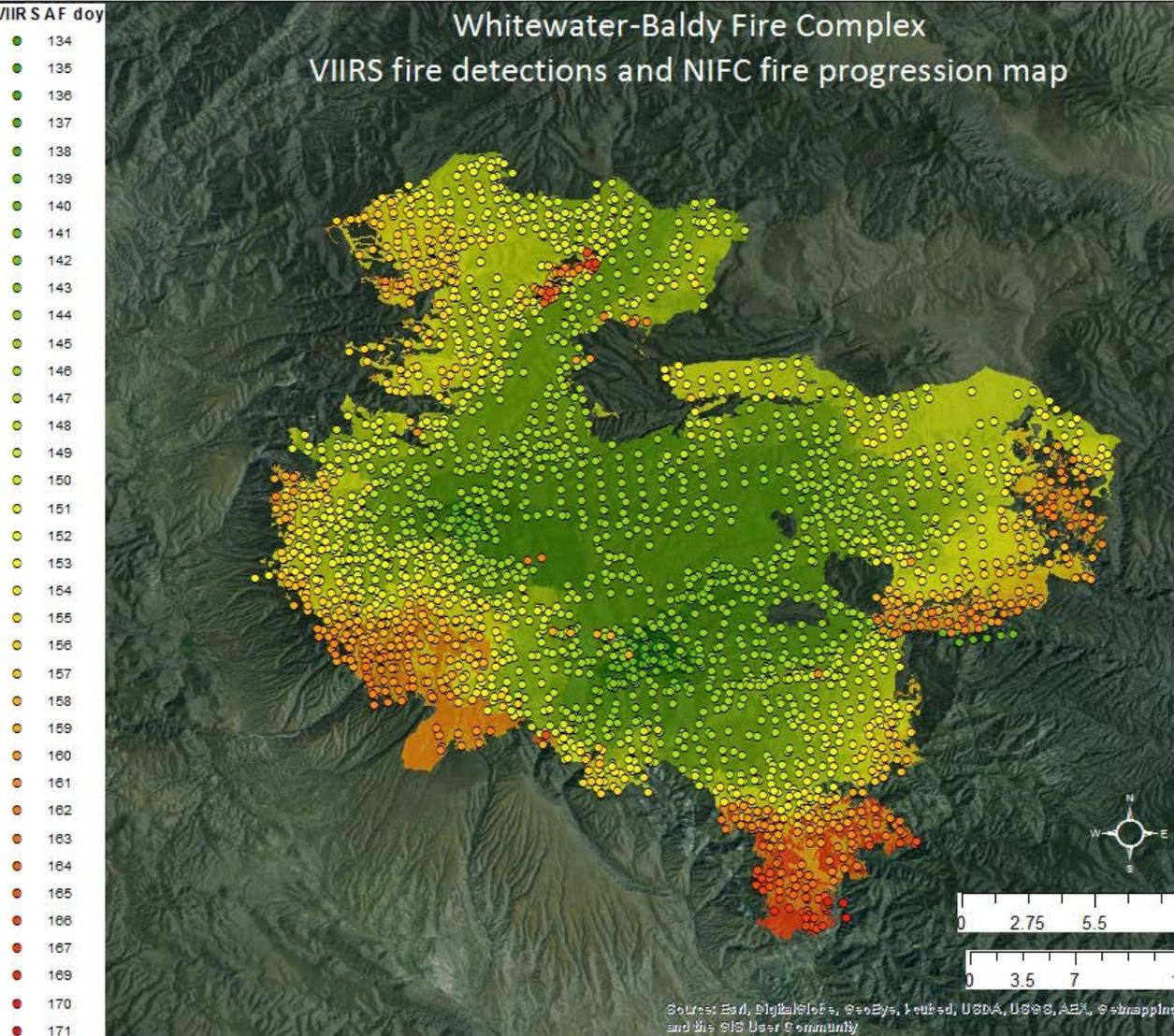
What we offer:

- We provide insight and expert knowledge of the VIIRS and MODIS products
- Data availability in easy to use formats
- Continue to develop tools and data based on IMET input and feedback

In return we hope that IMETs will...

- Aid us in evaluating the VIIRS fire product
 - Absolute and Relative (to MODIS) accuracy
 - Insight into fire behavior and how/when the VIIRS product is helpful and what value-added characteristics would be useful (e.g. FRP)
- Peter Roohr – NOAA: peter.roohr@noaa.gov
- Evan Ellicott – UMD: ellicott@umd.edu

Whitewater-Baldy fire complex: June 20th



INCIDENT - WEATHER UNIT OPERATIONS REPORT

I. INCIDENT IDENTIFICATION DATA			
NAME OF INCIDENT: Whitewater		BEGINNING DATE: 05/16/2012	
REQUESTING AGENCY: USFS Gila NF		CONTROL DATE:	
OTHER AGENCIES RECEIVING MU FORECASTS: NM State Forestry, Catron County (Emergency Management)		MU RQSTD: 5/19/2012	TIME: 0833 MST
FORECASTER(S): Rob Balfour			
LOCATION AND TOPOGRAPHY (in detail): Southwest New Mexico, Gila NF, northwest corner of Gila Wilderness, Mogollon Mountains. Elevations affected range between 7200 feet and 10783 ft MSL. The main drainages are more or less aligned east to west. Minor creeks and canyons are aligned north northeast to south southwest.		LAT: 33.3447	LON: -108.71
ICP	DATE	TIME	RELEASED BY:
ARRIVAL OF MU:	5/19/2012	2054 MDT	Bob Cordts, PLSC
RELEASE:	5/25/2012	0730 MDT	
LOCATION OF INCIDENT COMMAND POST: Dog Flat, off Gila NF Road 28, @3 miles south of Negrito Work Center (junction of Gila NF Road 28 and Gila NF Road 141(aka NM Hwy 435), and about a mile south of the junction with N Bar Park/ranch road/sign. Approx. 15 miles southeast (as the crow flies) of the town of Reserve, NM and 15 miles east (as the crow flies) of the town of Glenwood, NM			
INCIDENT COMMANDER: John Pierson		PLANS CHIEF: PLSC Bob Cordts; Deputy PLSC Jim Silva; PLSC (T) Wayne Robbie	
FIRE BEHAVIOR ANALYST(S): Galen Roesler			

NIFC fire progression map with SNPP VIIRS AF detections overlaid. Color coding, from dark-green to red, represents fire growth over time (May 9th – June 20th).

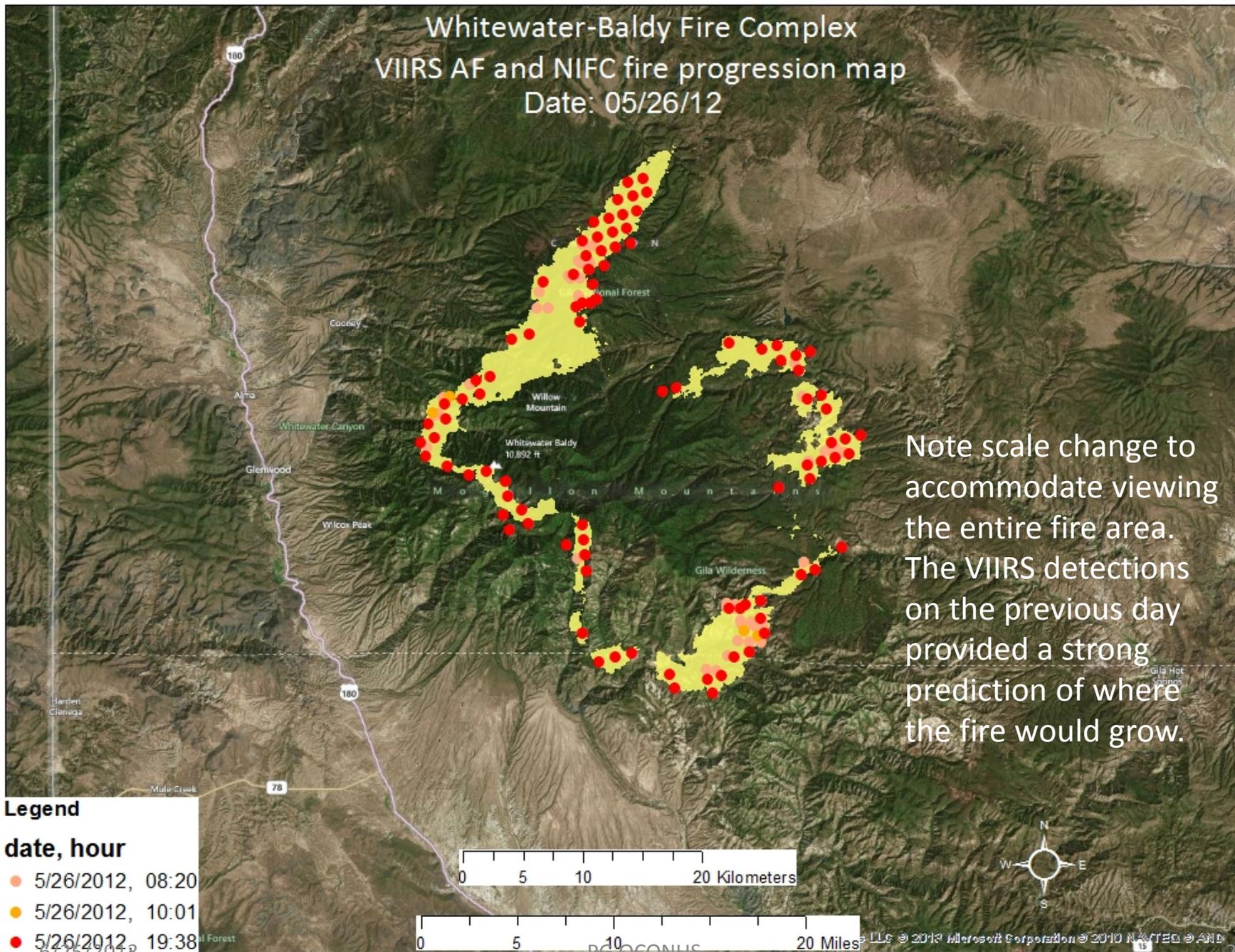
6/25/2013

PG OCONUS

Whitewater-Baldy Fire Complex

VIIRS AF and NIFC fire progression map

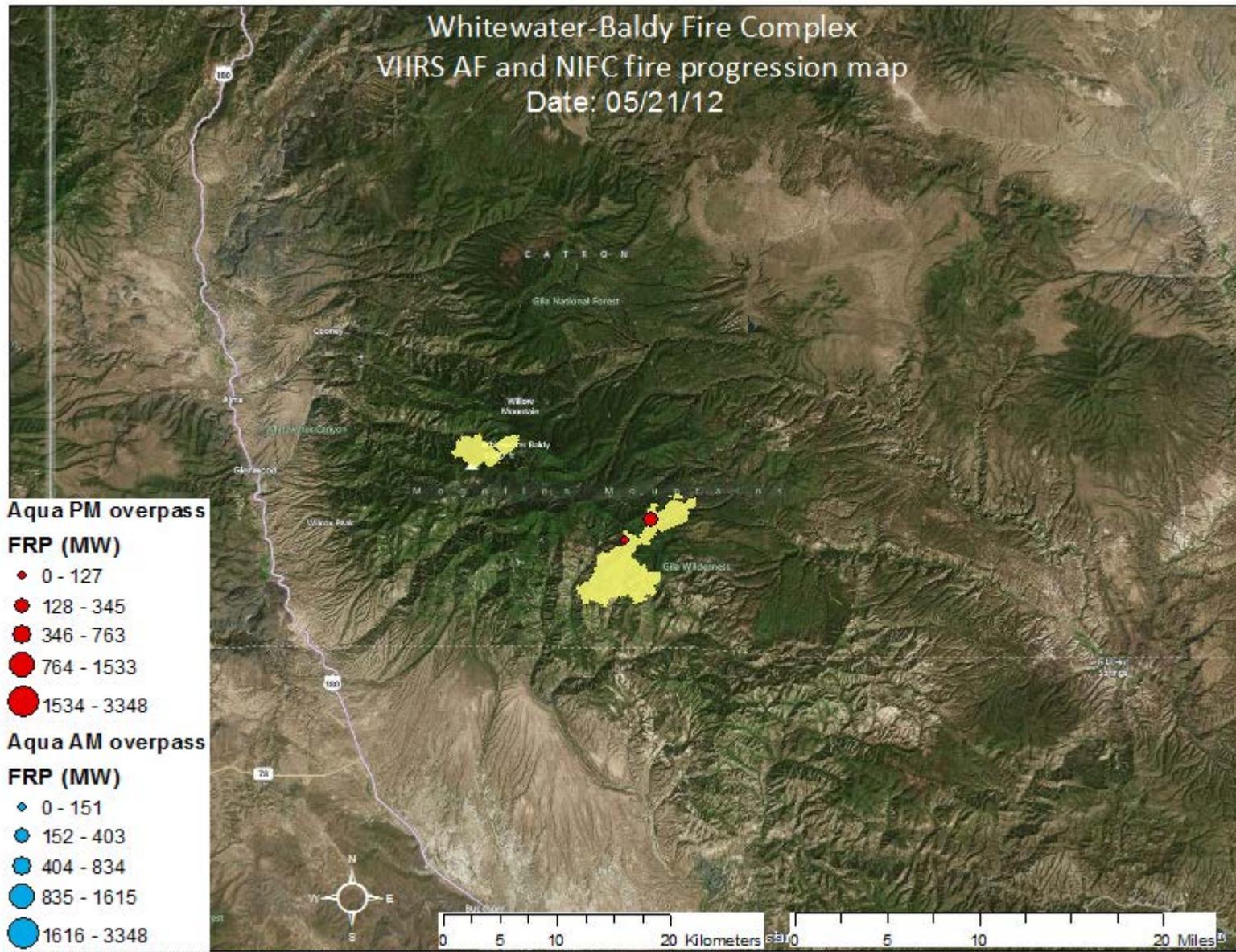
Date: 05/26/12



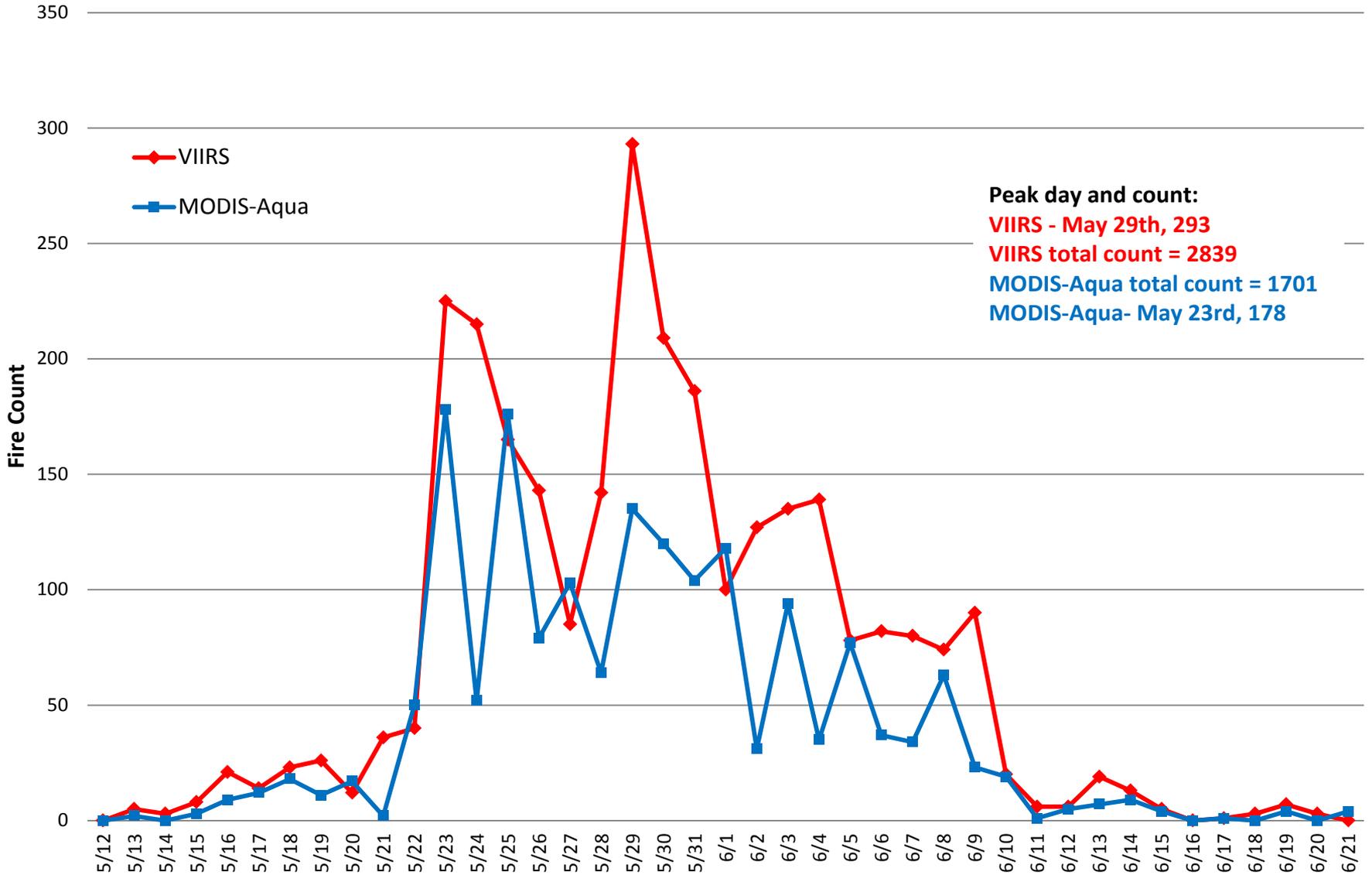
Note scale change to accommodate viewing the entire fire area. The VIIRS detections on the previous day provided a strong prediction of where the fire would grow.

- Legend**
- date, hour**
- 5/26/2012, 08:20
 - 5/26/2012, 10:01
 - 5/26/2012, 19:38

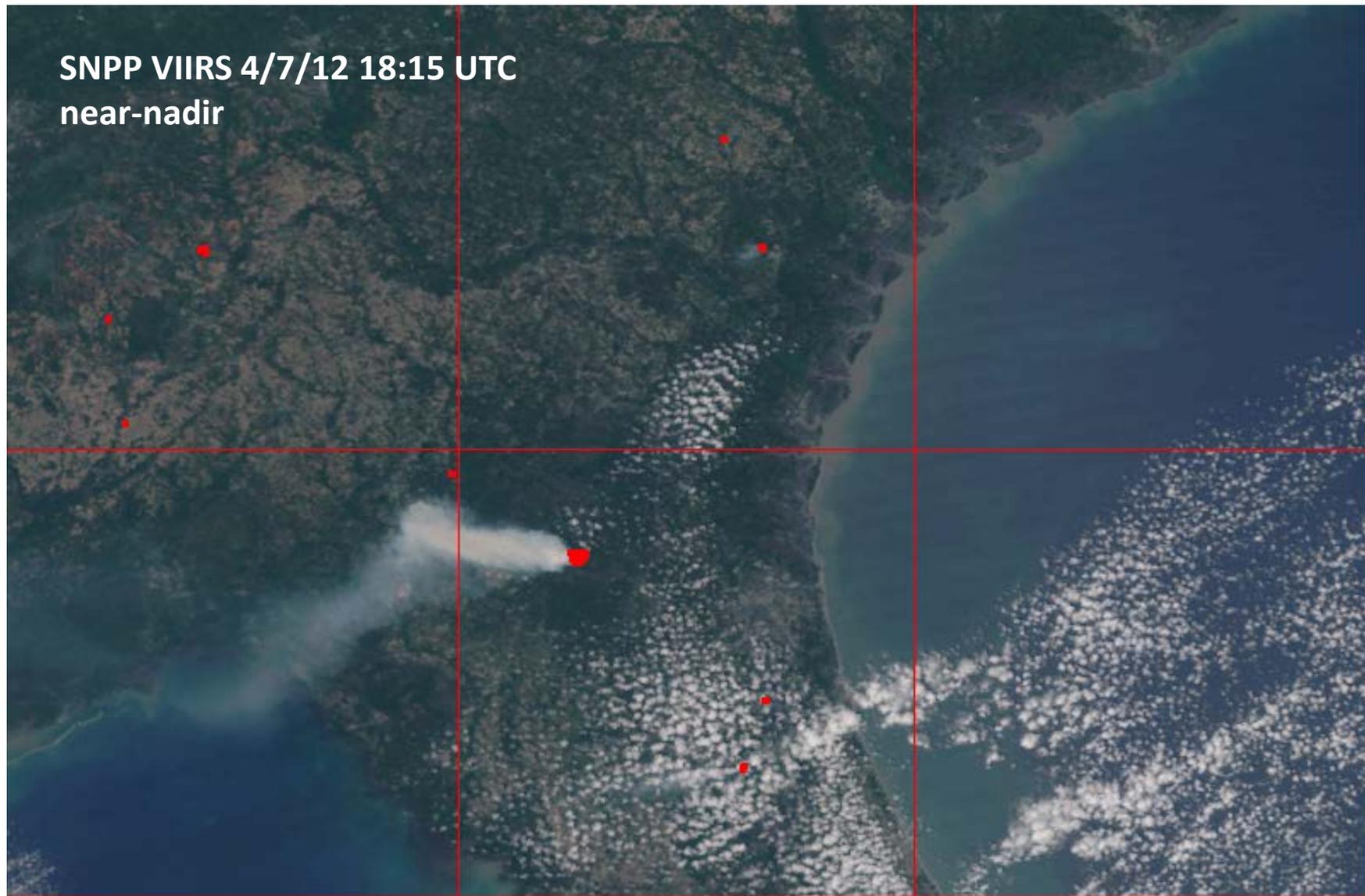
Whitewater-Baldy Fire Complex
VIIRS AF and NIFC fire progression map
Date: 05/21/12



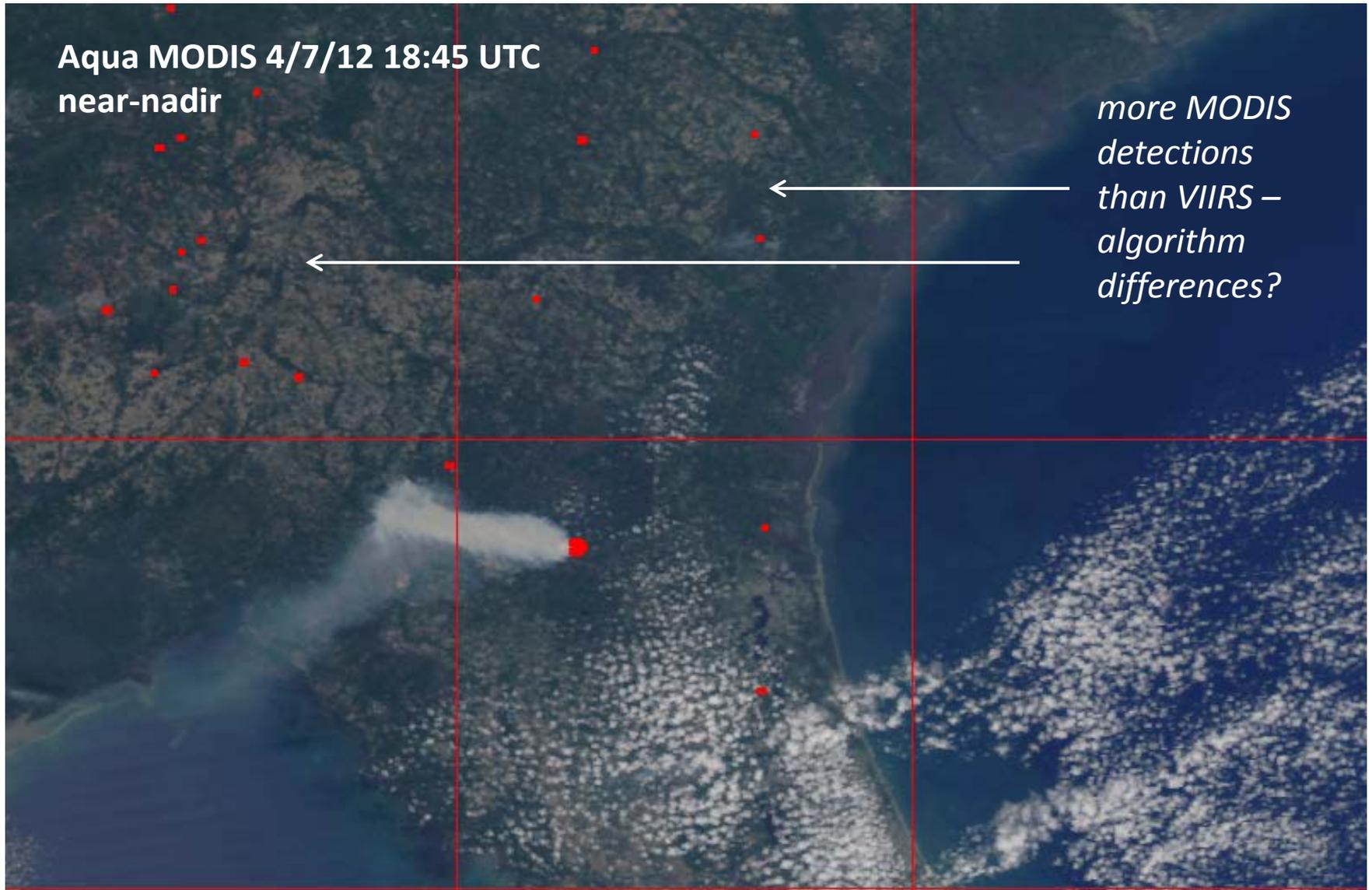
Whitewater-Baldy, New Mexico



County Line



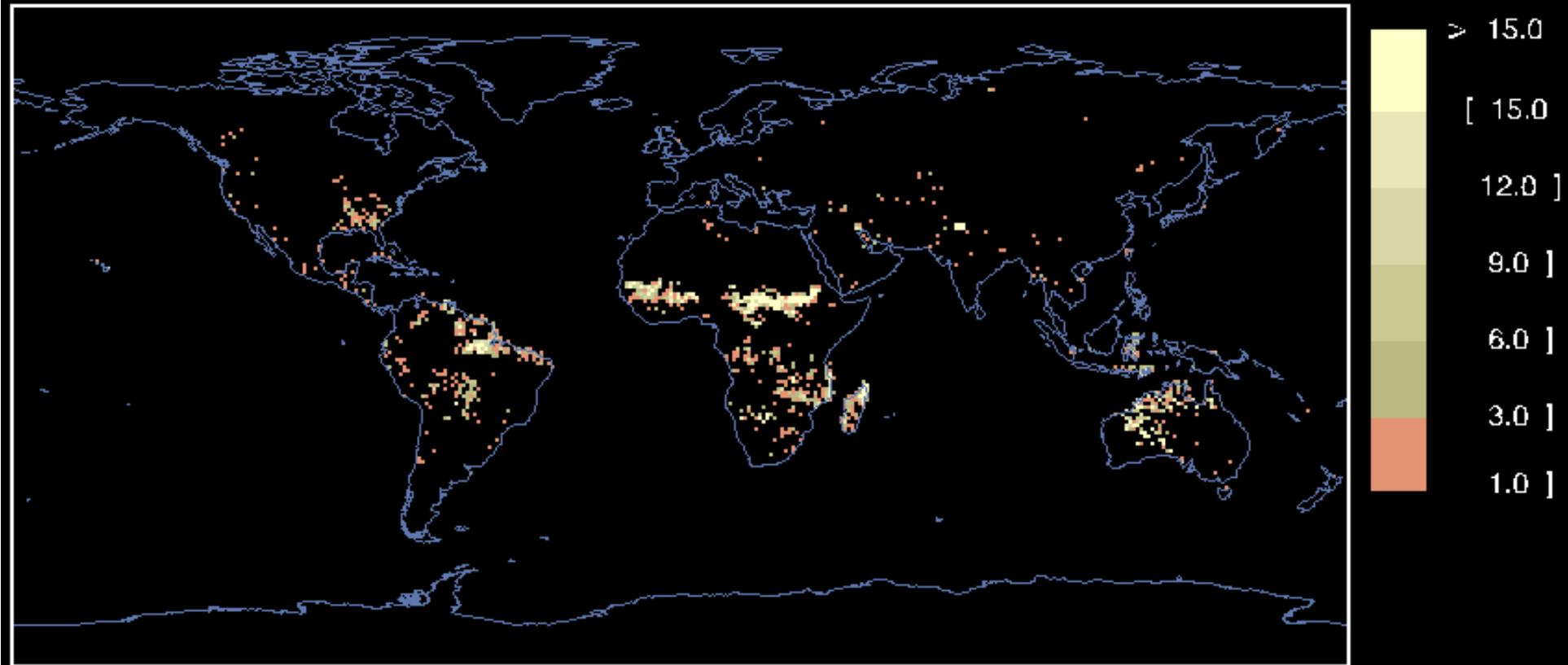
County Line



IDPS algorithm (MODIS C4)

MODIS Version 4 algorithm running on VIIRS data

2012 day 315 (Nov. 10) C4V IDPS VIIRS Active Fires

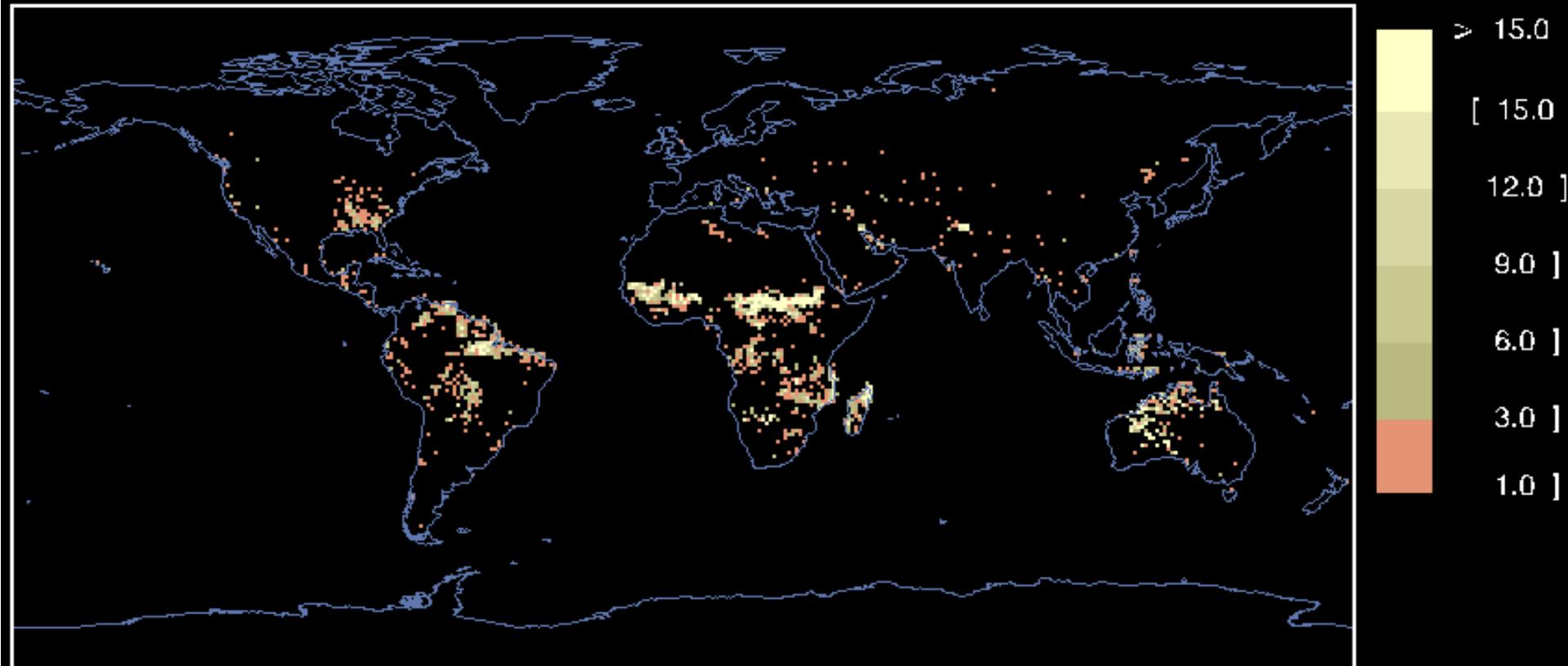


- *Sparse array of fire pixels – no spatially explicit fire mask*
- *No FRP*
- *Land-only processing*

Replacement algorithm (MODIS C6)

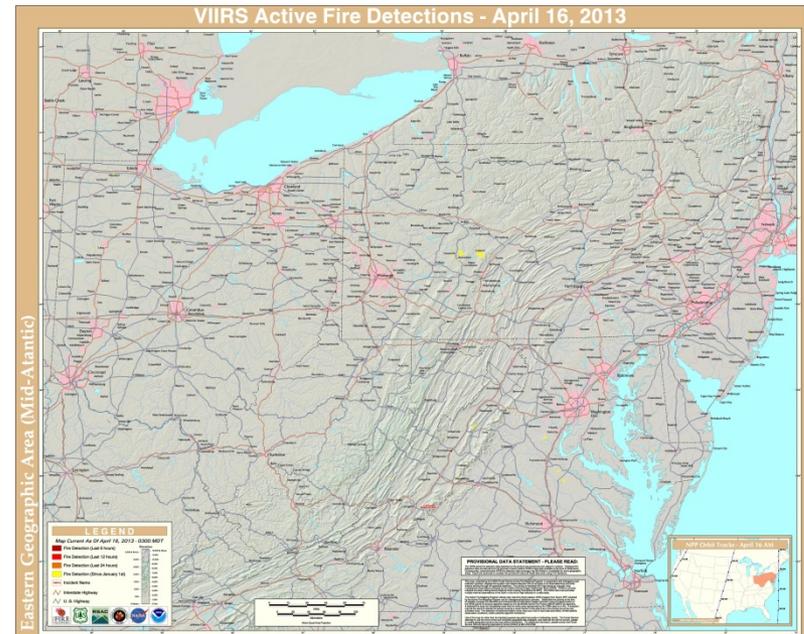
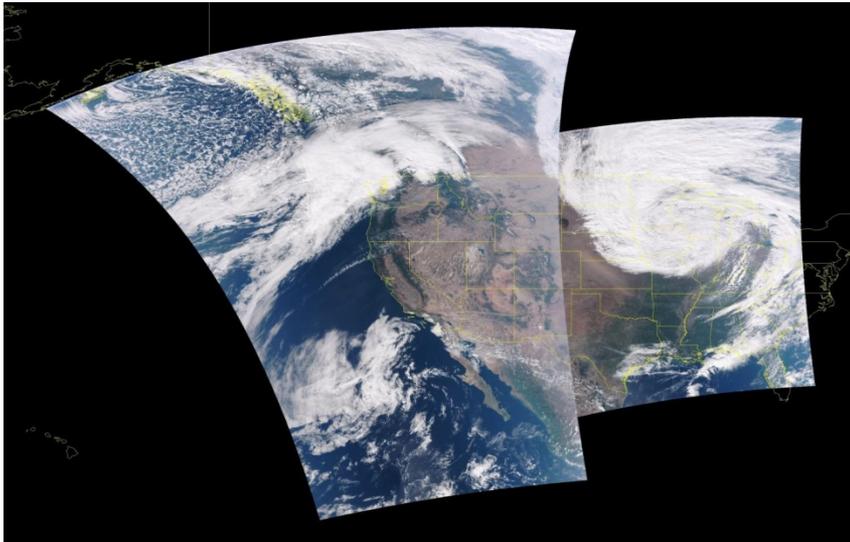
MODIS V6 code running on VIIRS data at LCF and in LandPEATE

2012 day 315 (Nov. 10) C6V Repl. VIIRS Active Fires



- *Spatially explicit fire mask and FRP - > new JPSS L1 Requirements Supplement*
- *Additional data layers for CMG*
- *Ocean processing for gas flares, a new false-alarm rejection test over tropical regions, and dynamic potential fire thresholds*

Partnership with the Direct Broadcast community



Processing codes are now available in the Community Satellite Processing Package (CSPP; University of Wisconsin) and International Polar Orbiter Processing Package (IPOPP; NASA Direct Broadcast Laboratory). The Active Fires product team works with the providers of CSPP and IPOPP to ensure that the latest algorithms are included.

VIIRS Active Fire Detections for CONUS (2013) – 1/1/2013 through 04/16/2013 0100 MDT (Provisional)

Metadata also available as

Metadata:

- [Identification Information](#)
- [Data Quality Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
- [Entity and Attribute Information](#)
- [Distribution Information](#)
- [Metadata Reference Information](#)

Identification Information:

Citation:

Citation Information:

Originator: USDA Forest Service, Remote Sensing Applications Center

Publication Date: 20130416

Title:

VIIRS Active Fire Detections for the CONUS (2013) – 1/1/2013 through 04/16/2013

Geospatial Data Presentation Form: vector digital data

Publication Information:

Publication Place: Salt Lake City

Online Linkage:

http://activefiremaps.fs.fed.us/data/viirs/fireptdata/viirs_fire_2013_106_conus.e

http://activefiremaps.fs.fed.us/data/viirs/fireptdata/viirs_fire_2013_106_conus.s

Description:

Abstract:

This coverage represents available year 2013 VIIRS fire detections since January between the USDA Forest Service Remote Sensing Applications Center and NASA.

Purpose:

These fire detection data are collected for the USDA Forest Service Active Fire Mapping Program and therefore are only intended for geographic display and analysis at the national level.

Time Period of Content:

Time Period Information:

Range of Dates/Times:

Beginning Date: 20130505

Ending Date: 20130416

Currentness Reference: publication date

USDA FOREST SERVICE REMOTE SENSING APPLICATIONS CENTER

Fire Detection GIS Data



Current Large Fires (Home)
Fire Detection Maps
Interactive Fire Detection Viewer
Satellite Imagery
Fire Detection GIS Data
Fire Data in Google Earth
Fire Data Web Services
Latest Detected Fire Activity
Burn Scar Data
Other MODIS Products
Frequently Asked Questions
About Active Fire Maps

Continental United States (MODIS)

Select a time period: [MODIS fire detections for the last 7 days](#)
[Cumulative MODIS fire detections for 2013](#)
[Cumulative MODIS fire detections for 2012](#)
[Cumulative MODIS fire detections for 2011](#)
[Cumulative MODIS fire detections for 2010](#)
[Cumulative MODIS fire detections for 2009](#)
[Cumulative MODIS fire detections for 2008](#)
[Cumulative MODIS fire detections for 2007](#)
[Cumulative MODIS fire detections for 2006](#)
[Cumulative MODIS fire detections for 2005](#)
[Cumulative MODIS fire detections for 2004](#)
[Cumulative MODIS fire detections for 2003](#)
[Cumulative MODIS fire detections for 2002](#)
[Cumulative MODIS fire detections for 2001](#)

Continental United States (VIIRS)

Select a time period: [VIIRS fire detections for the last 7 days](#)
[Cumulative VIIRS fire detections for 2013](#)
[Cumulative VIIRS fire detections for 2012](#)

MODIS Fire Detection GIS Data:
MODIS fire detection data for the current year (2012) are compiled Terra and Aqua MODIS fire and thermal anomalies data generated from MODIS near real-time direct readout data acquired by the USDA Forest Service Remote Sensing Applications Center, University of Wisconsin Space Science and Engineering Center, University of Alaska-Fairbanks Geographic Information Network of Alaska, the NASA Goddard Space Flight Center Direct Readout Laboratory, and NASA Goddard Space Flight Center MODIS Rapid Response System. These data are provided as the centroids of the 1km fire detections and are a composite dataset compiled from the listed sources. Please note that direct readout products are subject to temporary system anomalies that may affect the acquisition of satellite data by one or all of the listed sources and, consequently, the completeness of this data product. GIS data provided in ESRI shapefile and coverage formats and are updated hourly.

MODIS fire detection data for years 2000 to 2009 are Terra and Aqua MODIS fire and thermal anomalies data from the official NASA MCD14ML product, Collection 5, Version 1. These data are provided as the centroids of the 1km fire detections. GIS data provided in ESRI shapefile, coverage and geodatabase formats.

VIIRS Fire Detection GIS Data:
VIIRS fire detection data for the current year (2012) are compiled Suomi NPP VIIRS fire and thermal anomalies data generated from VIIRS near real-time direct readout data acquired by the USDA Forest Service Remote Sensing Applications Center and the NASA Goddard Space Flight Center Direct Readout Laboratory. These data are provided as the centroids of the 750 meter fire detections and are a composite dataset compiled from the listed sources. Please note that direct readout products are subject to temporary system anomalies that may affect the acquisition of satellite data by one or all of the listed sources and, consequently, the completeness of this data product. GIS data are provided in ESRI shapefile and coverage formats and are updated hourly.

AVHRR and GOES Fire Detection GIS Data:
AVHRR and GOES fire detection data are not provided for download by the Active Fire Mapping Program. 1km AVHRR and 4km GOES fire detection data for the current year (2012) are accessible from NOAA/NESDIS [SSD Fire-Web GIS website](#)



VIIRS Active Fire Detections - April 16, 2013

Southwestern Geographic Area

RSAC

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Logged in as: Evan (LOGOUT)

Direct Readout Laboratory

SUOMI National Polar-Orbiting Partnership (NPP)

Suomi NPP Direct Readout Mission Objectives

The DRL serves the global Direct Readout community here on behalf of the Suomi NPP mission objectives. As the "Portal" for Suomi NPP Direct Readout mission information, technologies and algorithms, the DRL enables the global Direct Readout community to view Suomi NPP Earth monitoring data for real-time applications.

The DRL receives the Suomi NPP High Rate Data (HRD) transmission (activation date February 23, 2012) and generates NPP VIIRS prototype products for each pass observed. The products are then published to the Recent Data Products gallery on the DRL Web Portal. The algorithms used to generate these products were provided by the mission and ported by the DRL, and other mission development teams. The DRL implemented these algorithms for use in a Direct Readout environment. These Suomi NPP algorithms, in Science Processing Algorithm (SPA) form, will be available for free download via the DRL Web Portal. Being consistent with the existing EOS SPA paradigm, users will have access to these official algorithms. In addition, a data processing framework will be available for free download via the DRL Web Portal.

Initial SPA efforts focused on the algorithms for the Visible Infrared Imaging Radiometer Suite (VIIRS). VIIRS is one of five instruments aboard the Suomi NPP spacecraft. In addition to VIIRS, the DRL will implement Direct Readout algorithms for the Cross-track Infrared Sounder (CRIS) and the Advanced Technology Microwave Sounder (ATMS).

The DRL completed Phase 1 of its NPP algorithm implementation by porting available Suomi NPP processing algorithms for use in a Direct Readout environment. With Phase 2, the DRL addressed science implementation issues and support of the mission-specified data format. Now in Phase 3 the DRL is addressing a maintenance model, with the focus on creating an efficient approach for versioning the baseline algorithms within a Direct Readout environment. Phase 3 implementation progress is captured in the diagram "Phase 3 Direct Readout Implementation of the VIIRS IDPS Chained-processing Approach." The diagram is available as either a PDF or a PowerPoint file.

MyDRL LOGIN
Welcome back Evan!

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LATEST VIIRS OR MODIS IMAGE

GET YOUR DRL ANSWERS
Can't find the answer to your Direct Readout related question? Use the box below and let us find the answer for you!

RECENT DATA PRODUCTS

Select Sites...

DRL: TRUE COLOR & ACTIVE FIRE
ACTIVEFIRE-TRUECOLOR Instrument: VIIRS Satellite: SUOMI NPP

.....Suomi NPP products shown are prototypes.....

Click here for more information on NPP prototype products
To view the KML files you need to download and install Google Earth

Apr 15 2013 18:19 Tiff Kml	Apr 14 2013 18:38 Tiff Kml	Apr 13 2013 18:57 Tiff Kml	Apr 13 2013 17:16 Tiff Kml
Apr 12 2013 19:18 Tiff Kml	Apr 12 2013 17:35 Tiff Kml	Apr 11 2013 19:38 Tiff Kml	Apr 11 2013 17:53 Tiff Kml
Apr 10 2013 18:12 Tiff Kml	Apr 9 2013 18:32 Tiff Kml	Apr 9 2013 16:52 Tiff Kml	Apr 8 2013 18:51 Tiff Kml
Apr 8 2013 17:10 Tiff Kml	Apr 7 2013 19:10 Tiff Kml	Apr 7 2013 17:29 Tiff Kml	Apr 6 2013 19:31 Tiff Kml

RECENT DATA PRODUCTS

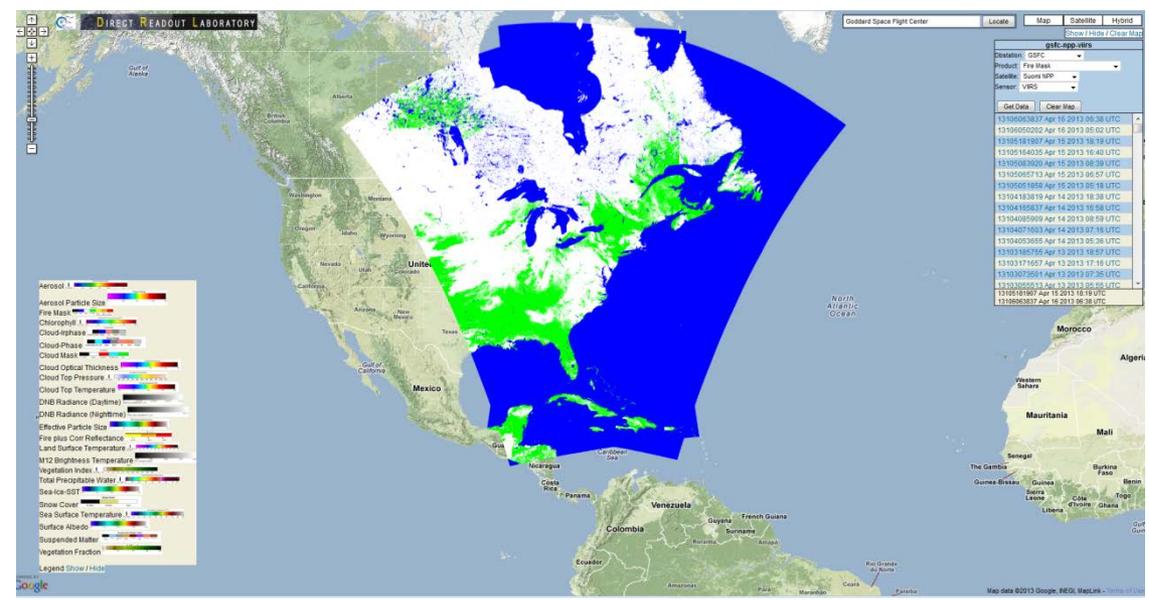
Select Sites...

DRL: FIRE MASK
FIREMASK Instrument: VIIRS Satellite: SUOMI NPP

PP products shown are prototypes..... Suomi N.

Click here for more information on NPP prototype products
To view the KML files you need to download and install Google Earth

Apr 16 2013 06:38 Tiff Kml	Apr 16 2013 05:02 Tiff Kml	Apr 15 2013 18:19 Tiff Kml	Apr 15 2013 16:40 Tiff Kml
Apr 15 2013 08:39 Tiff Kml	Apr 15 2013 06:57 Tiff Kml	Apr 15 2013 05:18 Tiff Kml	Apr 14 2013 18:38 Tiff Kml
Apr 14 2013 16:58 Tiff Kml	Apr 14 2013 08:59 Tiff Kml	Apr 14 2013 07:16 Tiff Kml	Apr 14 2013 05:36 Tiff Kml
Apr 13 2013 18:57 Tiff Kml	Apr 13 2013 17:16 Tiff Kml	Apr 13 2013 07:35 Tiff Kml	Apr 13 2013 05:55 Tiff Kml



Alexandr, Russia

Joined: 02/07/13
Posts: 1

ACTIVEFIRES_*.SPA_* or VIIRS-AF_*.SPA_* ?
03/18/13 2:05 PM

Good day!

We use ACTIVEFIRES_1.5.05.00_SPA_1.1 and VIIRS-AF_1.0.7_SPA_1.1 in the IPOPP for obtaining active fires according to NPP-VIIRS.

Questions:

What are the characteristics and differences between ACTIVEFIRES_1.5.05.00_SPA_1.1 and VIIRS-AF_1.0.7_SPA_1.1? Both of these algorithms are mask fires. To whom can we trust?

Thanks,
Alexandr Kashnizky,
Space Research Institute (IKI),
mail: ak@902.iki.rssi.ru, ph.: +7(495)333-5313, http://smis.iki.rssi.ru
* Last updated by: Alexandr, Russia on 3/28/2013 @ 9:39 AM *

Top | Bottom

DRL Staff

Joined: 06/08/12
Posts: 113

RE: ACTIVEFIRES_1.5.05.00_SPA_1.1 or VIIRS-AF_1.0.7_SPA_1.1 ?
03/20/13 2:47 PM

We have summarized the differences between the ACTIVEFIRES SPA and the VIIRS-AF SPA to assist you in evaluating which SPA best suits your needs. We recommend that you download the latest version of IPOPP (v2.1), now available on our Web Portal.

Algorithm Heritage:
The ACTIVEFIRES SPA is based on the MODIS Collection 4 fire detection algorithm provided by the Interface Data Processing Segment (IDPS). The VIIRS-AF SPA is based on the MODIS Collection 5 fire detection and Fire Radiative Power (FRP) retrieval algorithms provided by the Rapid Response Team. You may wish to consult the International Land Direct Readout Coordinating Committee (ILDORCC) at <http://landdirectreadout.org> for more information.

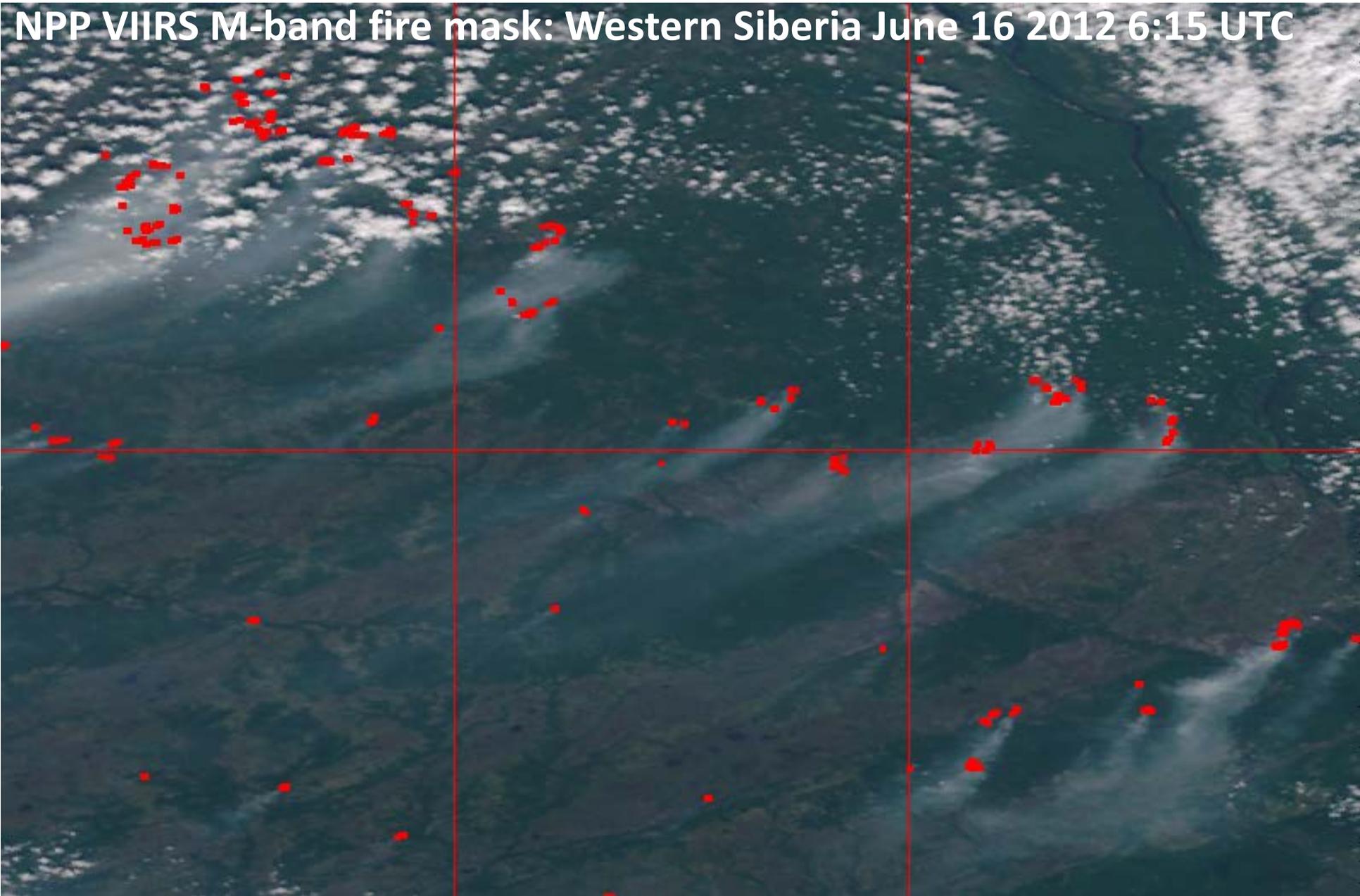
Ocean Pixel Processing:
The ACTIVEFIRES SPA does not process ocean pixels. The VIIRS-AF SPA processes ocean pixels for detection of gas flares and other types of anthropogenic activities.

Output:
The ACTIVEFIRES SPA outputs a simple list of fire pixel locations in HDF5 format. The IDPS Active Fire algorithm produces the fireMask internally, but does not include it in the official output product. Outputs from the Direct Readout version of IDPS Active Fire includes this additional fireMask dataset. The IDPS fireMask includes cloud detection for daytime granules only.

The VIIRS-AF SPA produces the same output as the MODIS Collection 6 fire algorithm (MOD14), including fire mask, QA layers, fire location, detection confidence, FRP, etc., in HDF4 format. The fireMask produced by the Rapid Response VIIRS-AF algorithm includes cloud detection for both daytime and nighttime overpasses.

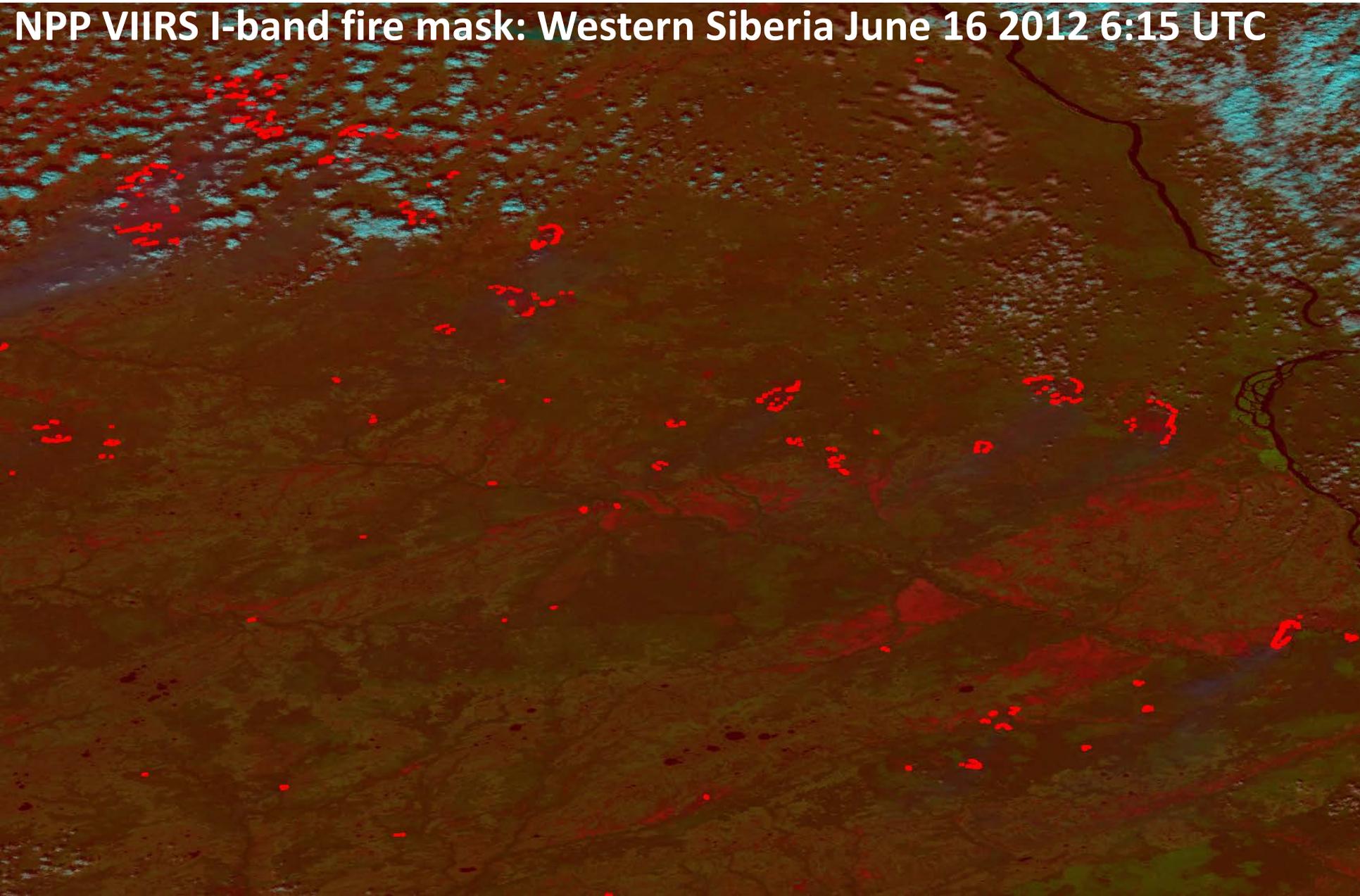
One step further: use of VIIRS “I” bands

NPP VIIRS M-band fire mask: Western Siberia June 16 2012 6:15 UTC



One step further: use of VIIRS "I" bands

NPP VIIRS I-band fire mask: Western Siberia June 16 2012 6:15 UTC



Summary and Conclusions

- The SNPP VIIRS fire product is performing well
- Active Fires product has been declared Beta maturity and is publicly available
 - Ready for user evaluation; provisional maturity status is upcoming
- User Readiness and Proving Ground activities are reaching out various domestic and international end users - goal is the continuity and enhancement of the MODIS product suite – LANCE, RR, FIRMS
- Implementation of DB processing systems is underway domestically and internationally
 - Continuing coordination regarding product evaluation and algorithm versioning is critical
- Work is underway to implement new MODIS algorithm components (C6) and sensor-specific tuning in the VIIRS product, product content and product suite
 - Use of I band - DNB data (detection, validation, fused products)
- Validation of global product remains crucial and will be challenging

Online articles

- **First Fire Images from VIIRS (January 26, 2012)**

<http://earthobservatory.nasa.gov/IOTD/view.php?id=77025>

- **NASA/NOAA Satellite Sees Western U.S. High Mountain Blazes (July 13, 2012)**

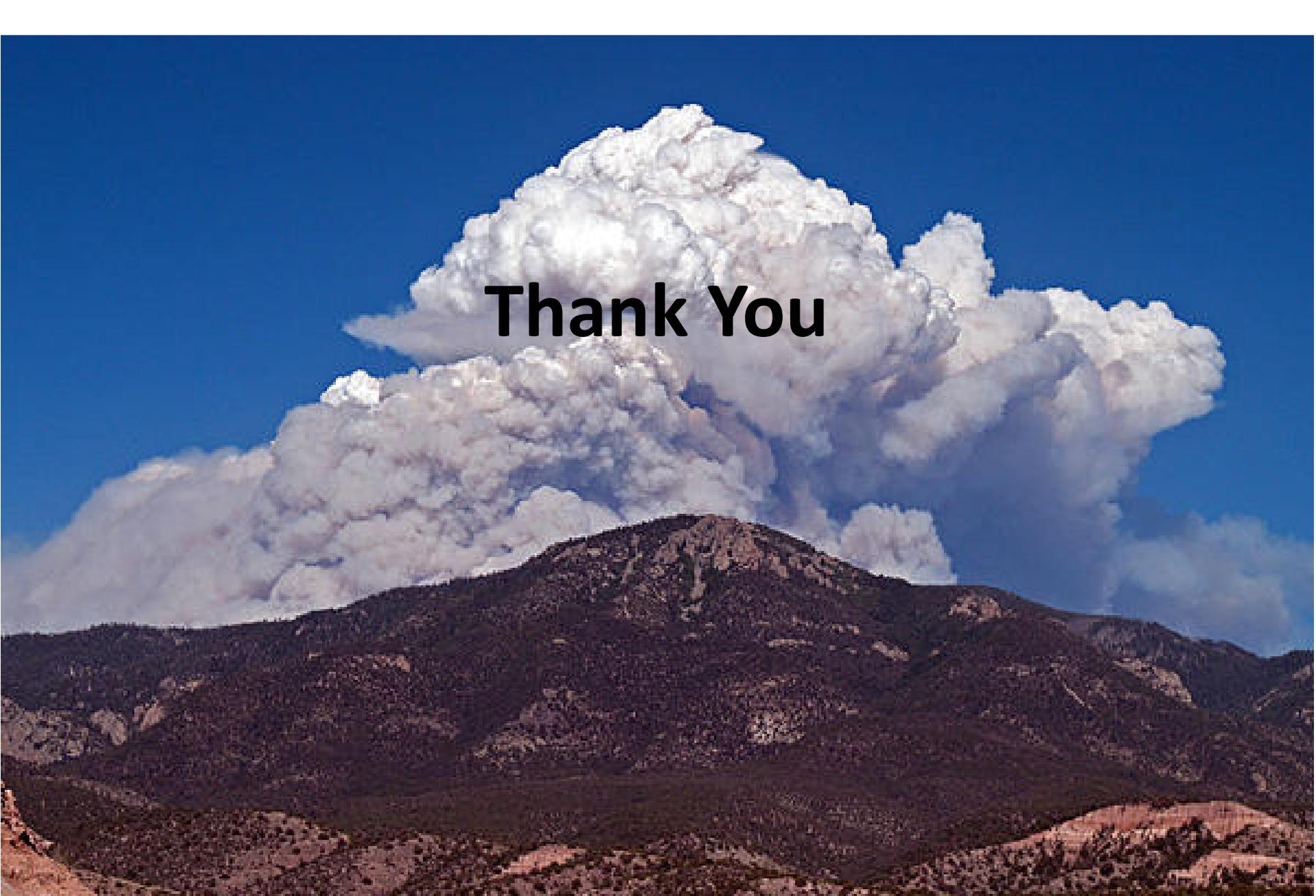
http://www.nasa.gov/mission_pages/NPP/news/west-blazes.html

- **NASA Finalizes Contracts for NOAA's JPSS-1 Mission (August 10, 2012)**

<http://www.nasa.gov/centers/goddard/news/releases/2012/12-066.html>

- **Complex Interactions between Wildfires and Lightning during Summer 2012 (December 12, 2012 by Scott Rudloski)**

<http://essic.umd.edu/joom2/index.php/outreach-main/its-severe-blog/1229-complex-interactions-between-wildfires-and-lightning-during-summer-2012>



Thank You