



Fire monitoring from the Suomi NPP Visible Infrared Imager Radiometer Suite

Ivan Csiszar

NOAA/NESDIS Center for Satellite Applications and Research

**Evan Ellicott, Wilfrid Schroeder, Louis Giglio, Chris
Justice, Brad Wind, Krishna Vadrevu**
University of Maryland

Peter Roohr

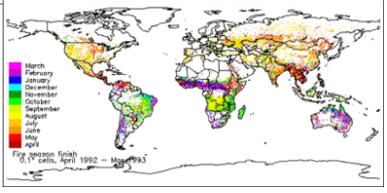
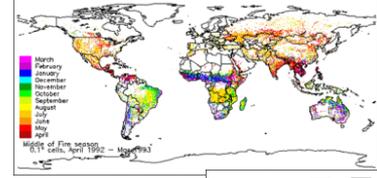
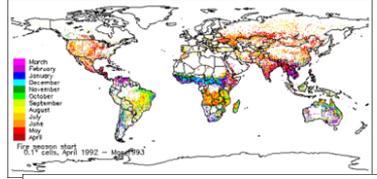
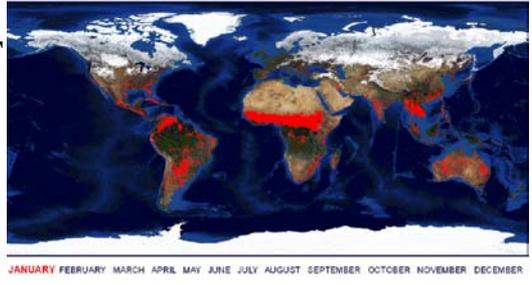
National Weather Service, Office of Science and Technology

Brad Quayle

USDA Forest Service Remote Sensing Applications Center



THE GLOBAL FIRE PRODUCT (1992-93)



bioval.jrc.ec.europa.eu/

AVHRR global analyses
AVHRR production

1980s
GOES production

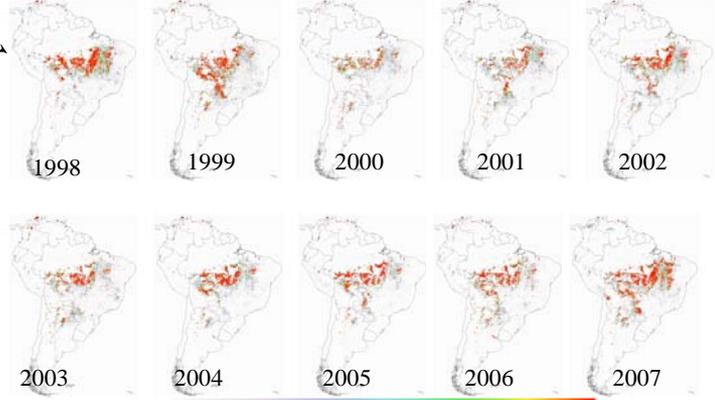
MODIS production
MODIS validation

MODIS CMG
2000s

GOFC-GOLD Fire
GCOS Fire ECV

SNPP VIIRS
2010s
JPSS VIIRS
GOES-R ABI
GOES reprocessing
PRESENT

Fraction of GOES clear-sky observations with fire





VIIRS and heritage imagers: where is the fire signal?

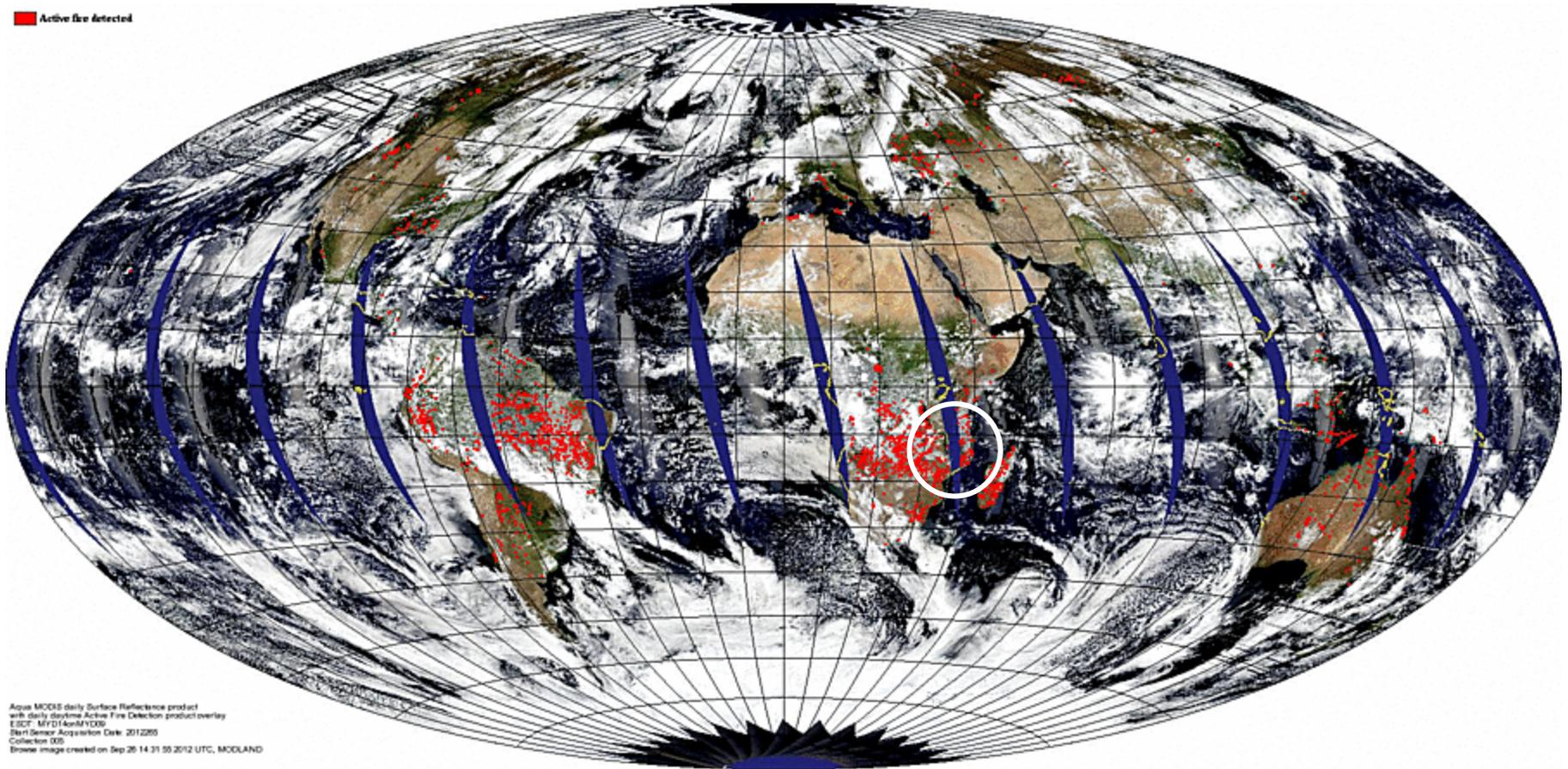


VIIRS			MODIS Equivalent			AVHRR-3 Equivalent			OLS Equivalent		
Band	Range (um)	HSR (m)	Band	Range	HSR	Band	Range	HSR	Band	Range	HSR
DNB	0.500 - 0.900	750	NONE			Low light capabilities			HRD	0.580 - 0.910	550 2700
M1	0.402 - 0.422	750	8	0.405 - 0.420	1000	NONE			PMT	0.510 - 0.860	
M2	0.436 - 0.454	750	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	Imagery			Ocean Color, Aerosol		
			12	0.546 - 0.556	1000						
I1	0.600 - 0.680	375	1	0.620 - 0.670	250	1	0.572 - 0.703	1100	Ocean Color, Aerosol		
M5	0.662 - 0.682	750	13	0.662 - 0.672	1000	NONE			Atm Correction		
			14	0.673 - 0.683	1000						
M6	0.739 - 0.754	750	15	0.743 - 0.753	1000	2	0.720 - 1.000	1100	NDVI		
I2	0.846 - 0.885	375	2	0.841 - 0.876	250	2	0.720 - 1.000	1100	Ocean Color, Aerosol		
M7	0.846 - 0.885	750	16	0.862 - 0.877	1000	NONE			Cloud Particle Size		
M8	1.230 - 1.250	750	5	SAME	500				Thin Cirrus		
M9	1.371 - 1.386	750	26	1.360 - 1.390	1000				Snow Map		
I3	1.580 - 1.640	375	6	1.628 - 1.652	500				Snow Fraction		
M10	1.580 - 1.640	750	6	1.628 - 1.652	500	3a	SAME	1100	Cloud		
M11	2.225 - 2.275	750	7	2.105 - 2.155	500	NONE			Imagery, Clouds		
I4	3.550 - 3.930	375	20	3.660 - 3.840	1000				3b	SAME	1100
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					
			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
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			
M16	11.538 - 12.488	750	32	11.770 - 12.270	1000	5	11.500 - 12.500	1100	SST		

Suomi NPP VIIRS Global Browse

landweb.nascom.nasa.gov

Active fire detected



Aqua MODIS daily Surface Reflectance product
with daily daytime Active Fire Detection product overlay
EOS-1: MYD14 and MYD09
Data Source Acquisition Date: 201209
Collection 005
Browse image created on Sep 26 14:31:55 2012 UTC, MODLAND

Daily Daytime Active Fire Detection over Daily Land Surface Reflectance (MYD14 over MYD09)

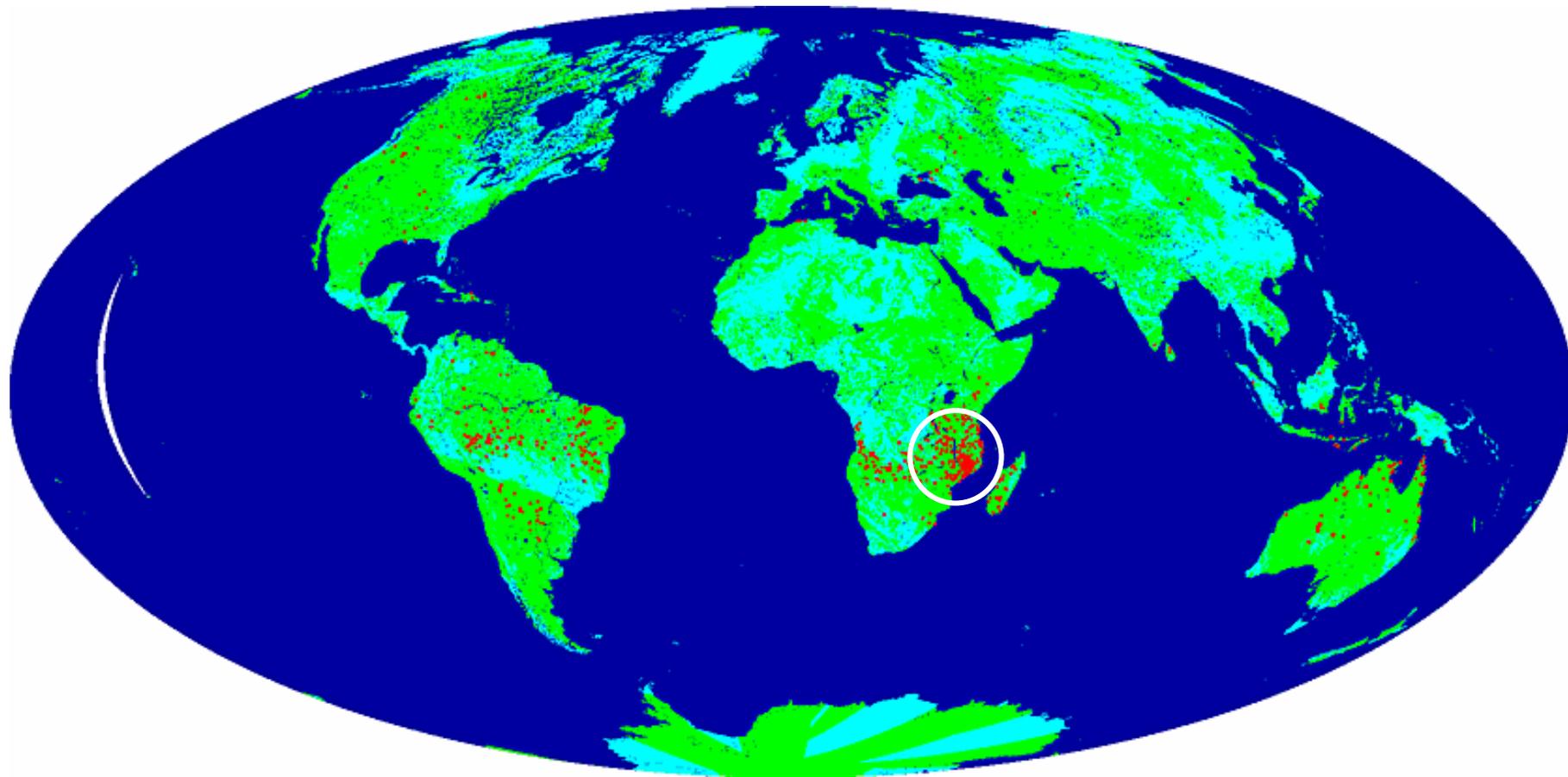
September 21, 2012



Suomi NPP VIIRS Global Browse



landweb.nascom.nasa.gov



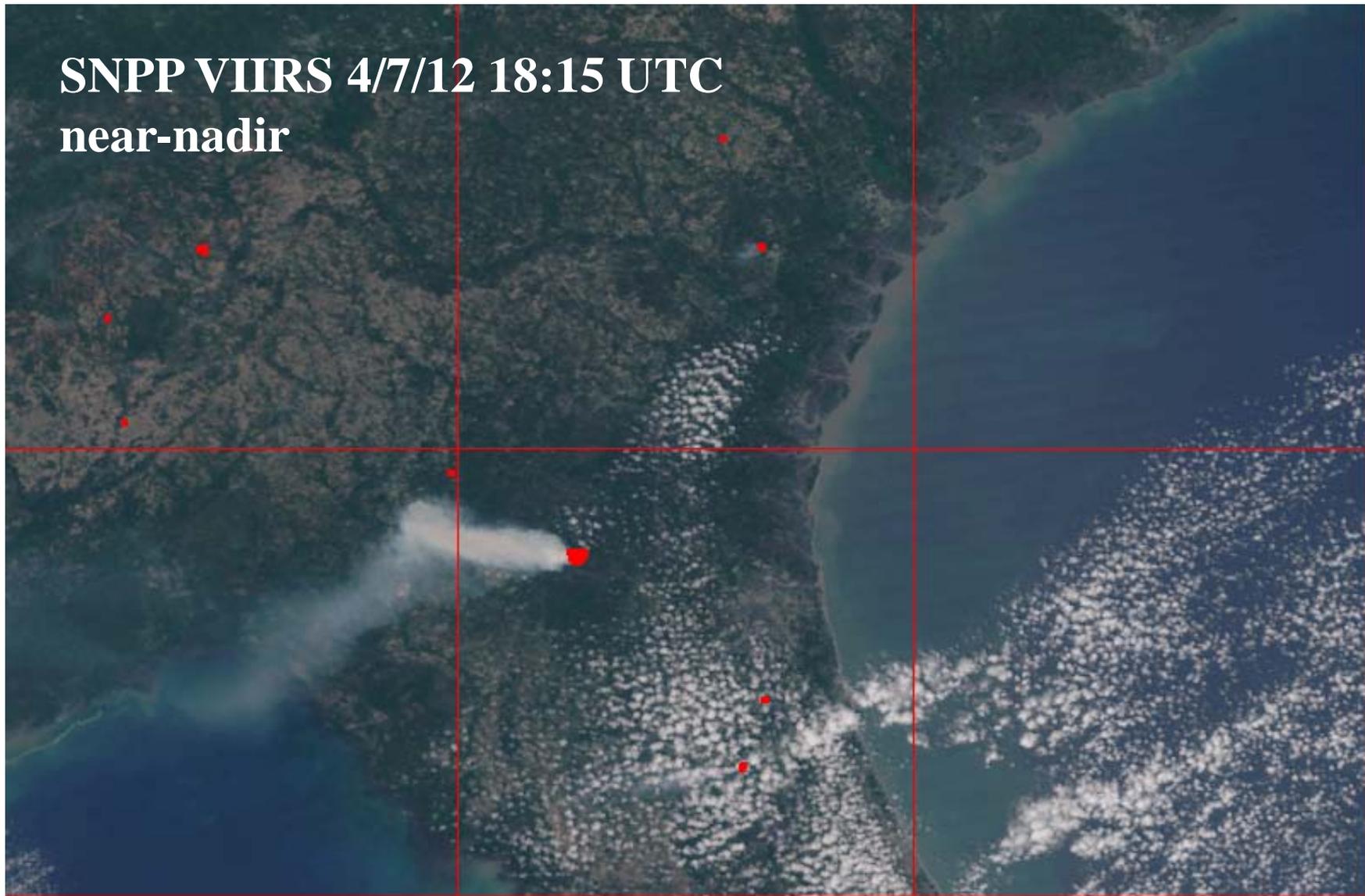
NPP_VAFIP_L2 Active Fire IP

*VIIRS provides full
global daily coverage*

September 21, 2012

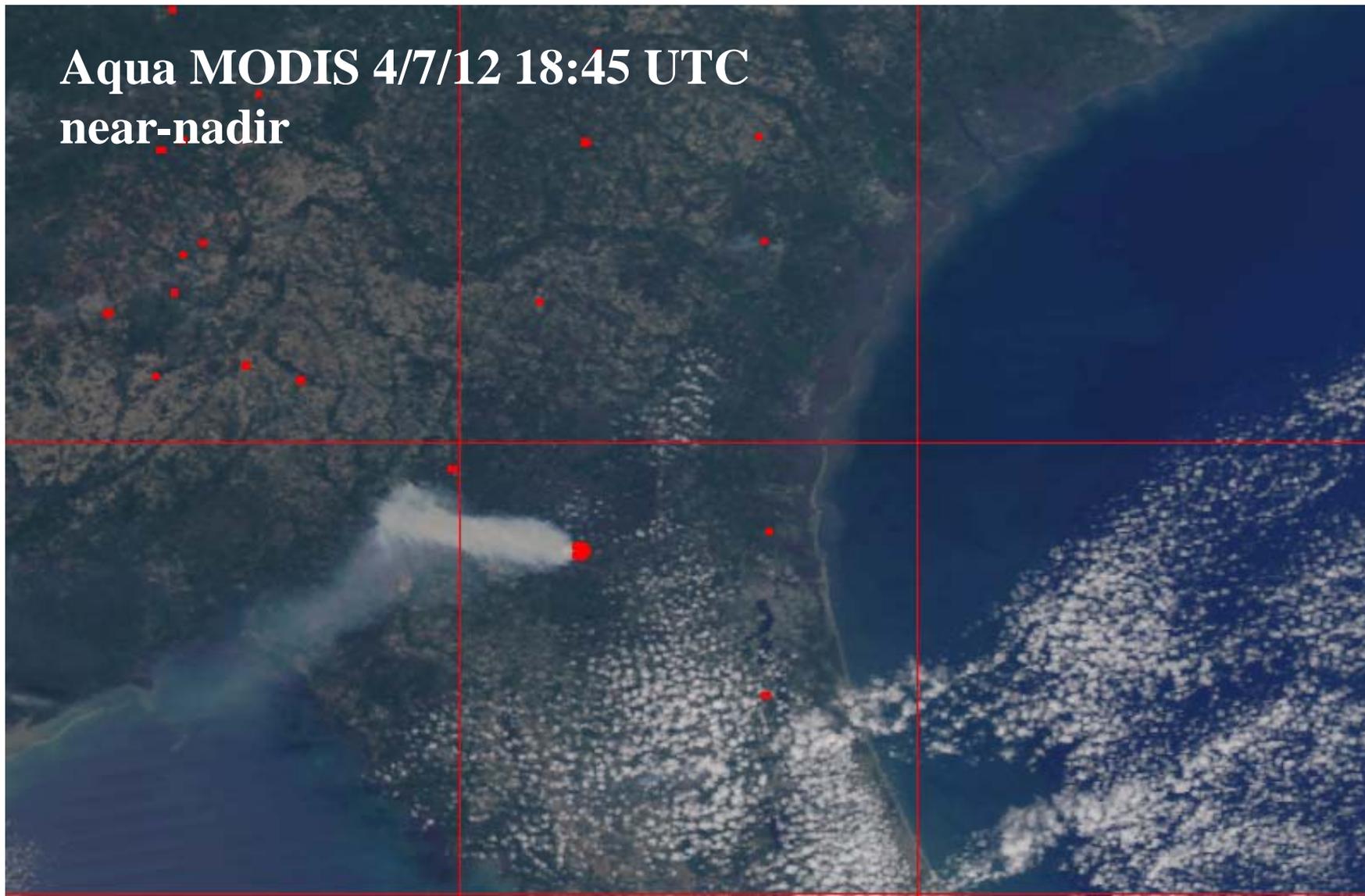
County Line

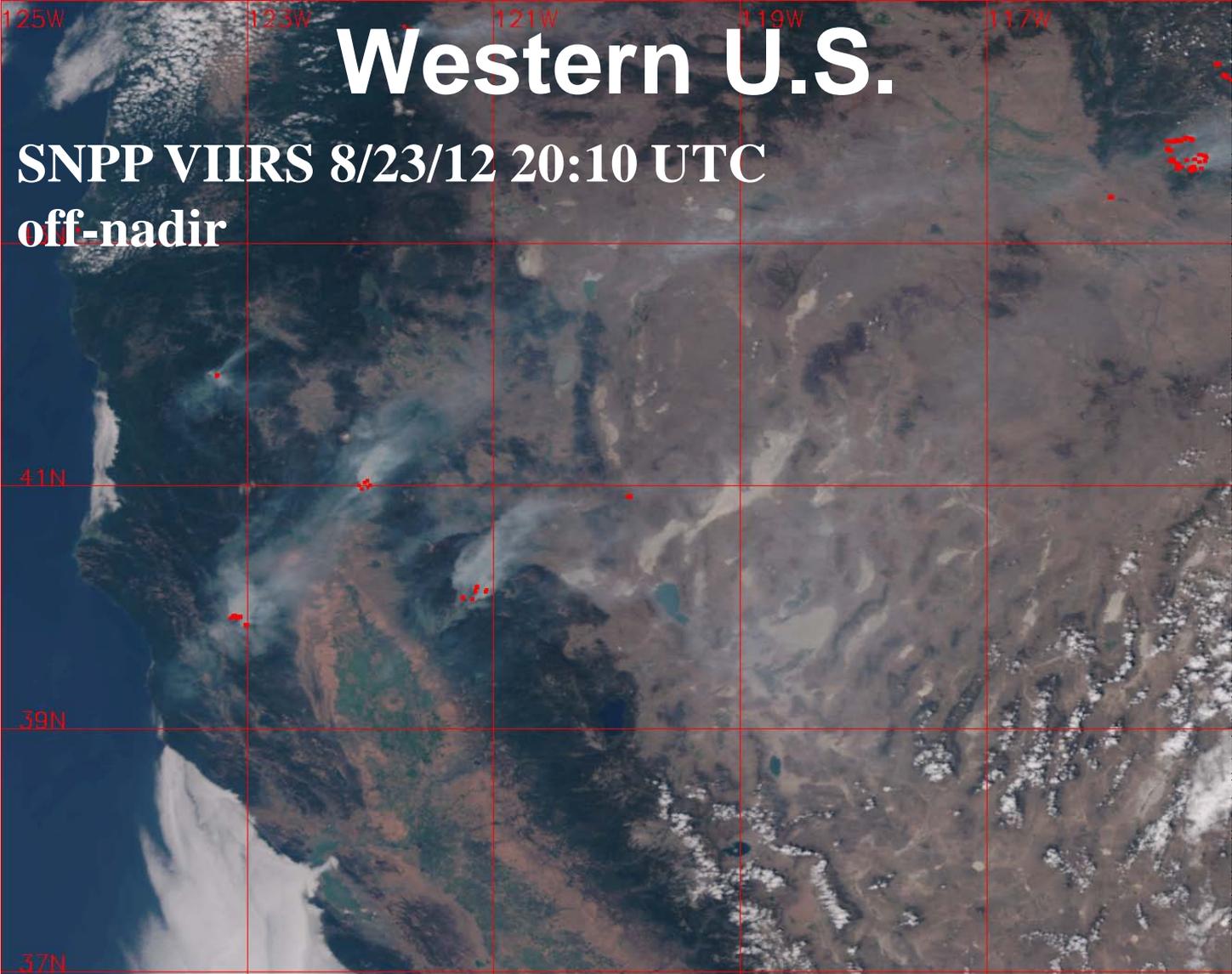
SNPP VIIRS 4/7/12 18:15 UTC
near-nadir



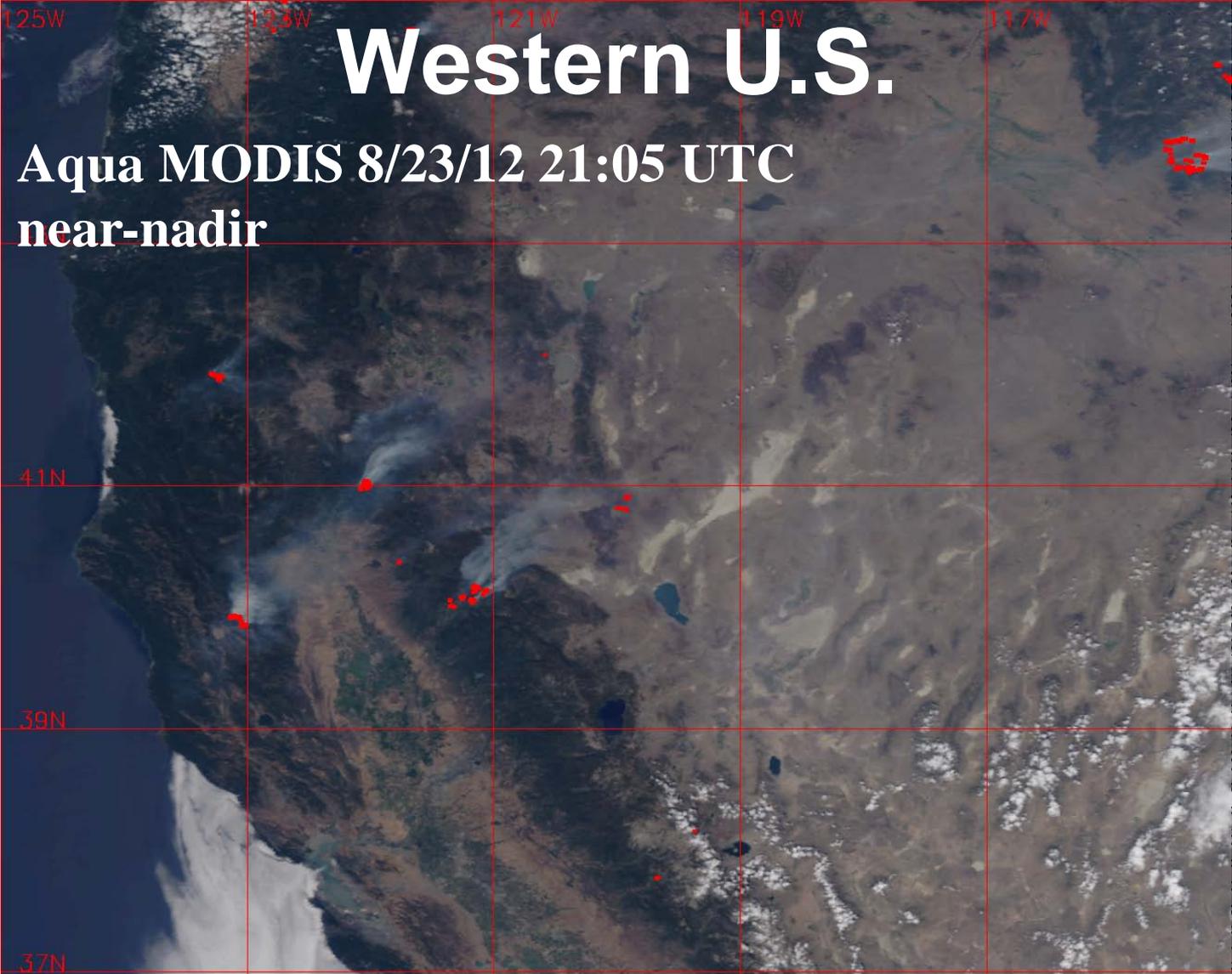
County Line

Aqua MODIS 4/7/12 18:45 UTC
near-nadir

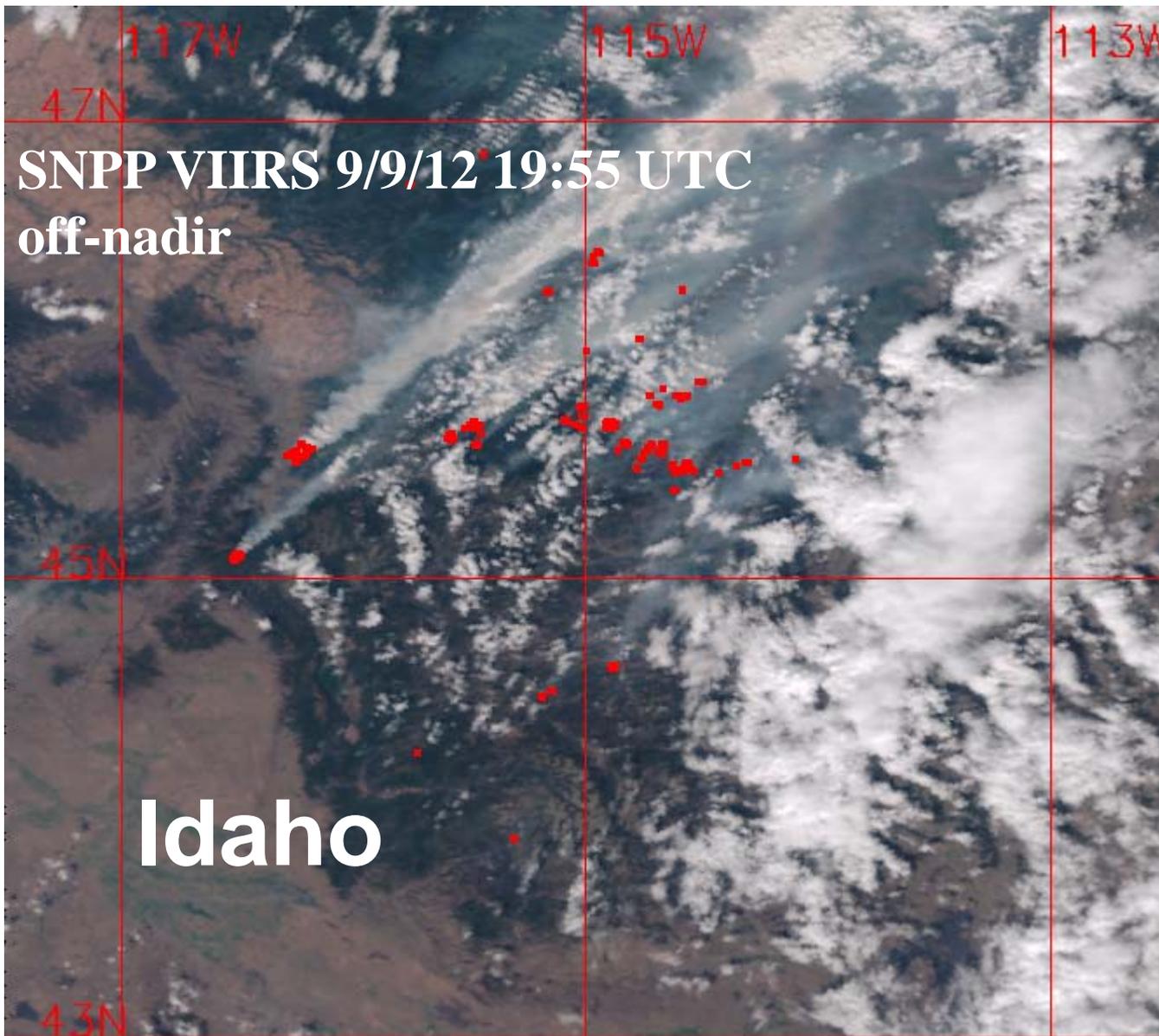




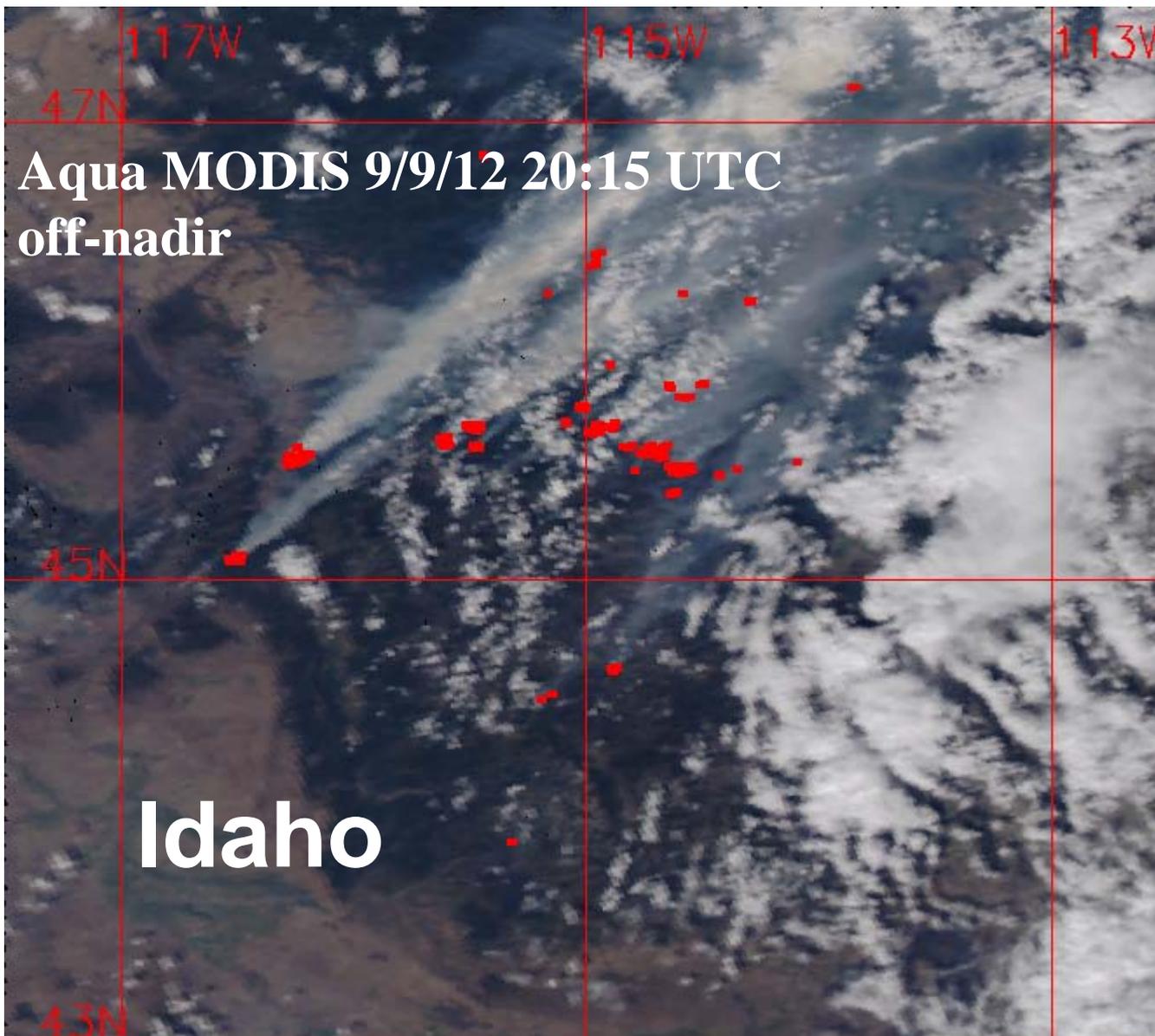
The larger fires in **California** observed in the images include the **Fort Complex, Bagley, North Pass, Chips, and Rush**. In **Oregon**, the **Waterfalls 2** fire can be seen near the top-left portion of the image. And to the east, in **Idaho**, the **Trinity Ridge** and **Halstead** fires can easily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



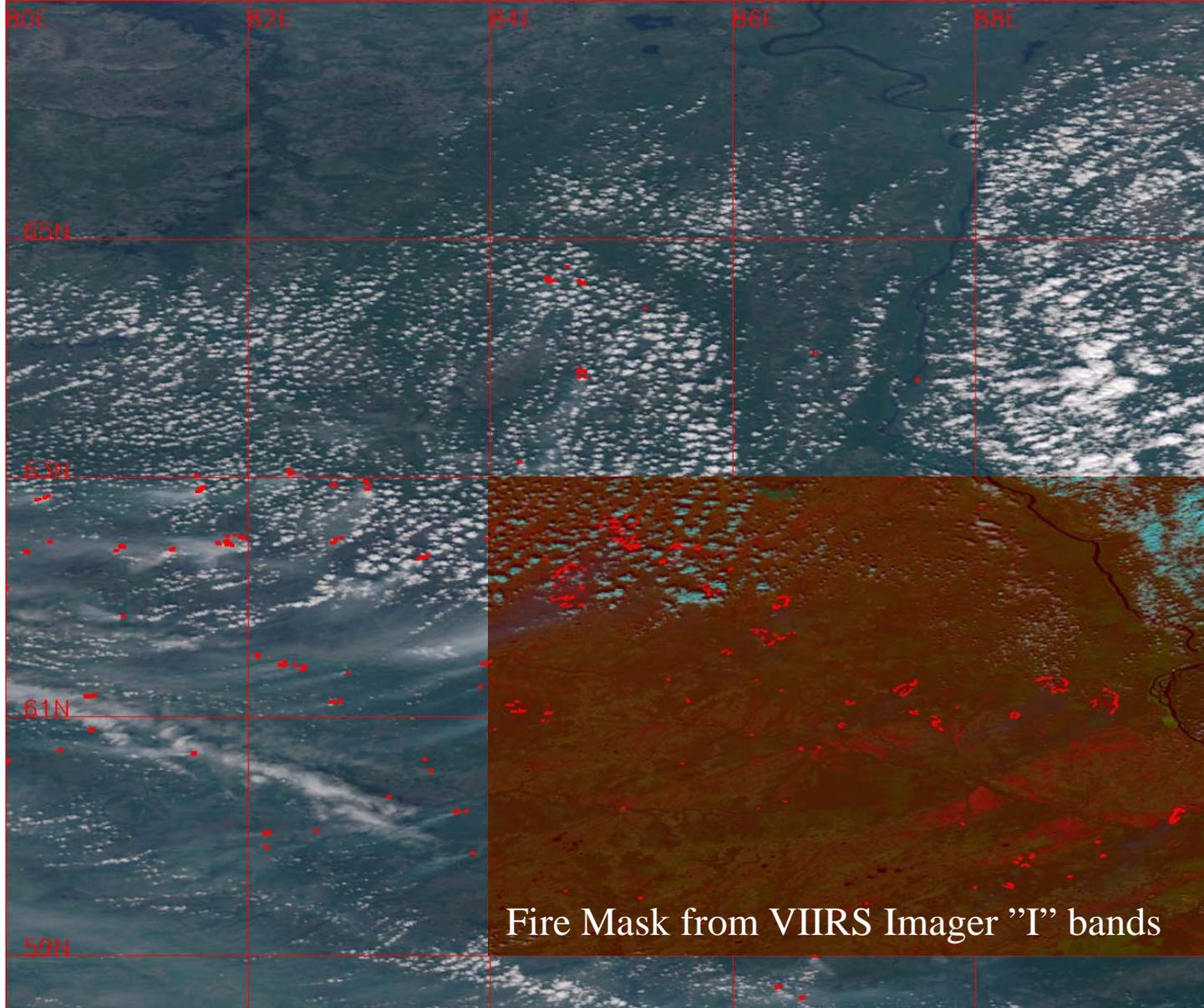
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Wesley, Sheep, McGuire, Porcupine, Mustang,
Halstead and Trinity Ridge.



Wesley, Sheep, McGuire, Porcupine, Mustang,
Halstead and Trinity Ridge.



SNPP VIIRS Western Siberia June 16 2012 6:15 UTC

M5-M4-M3 RGB, IDPS AF ARP

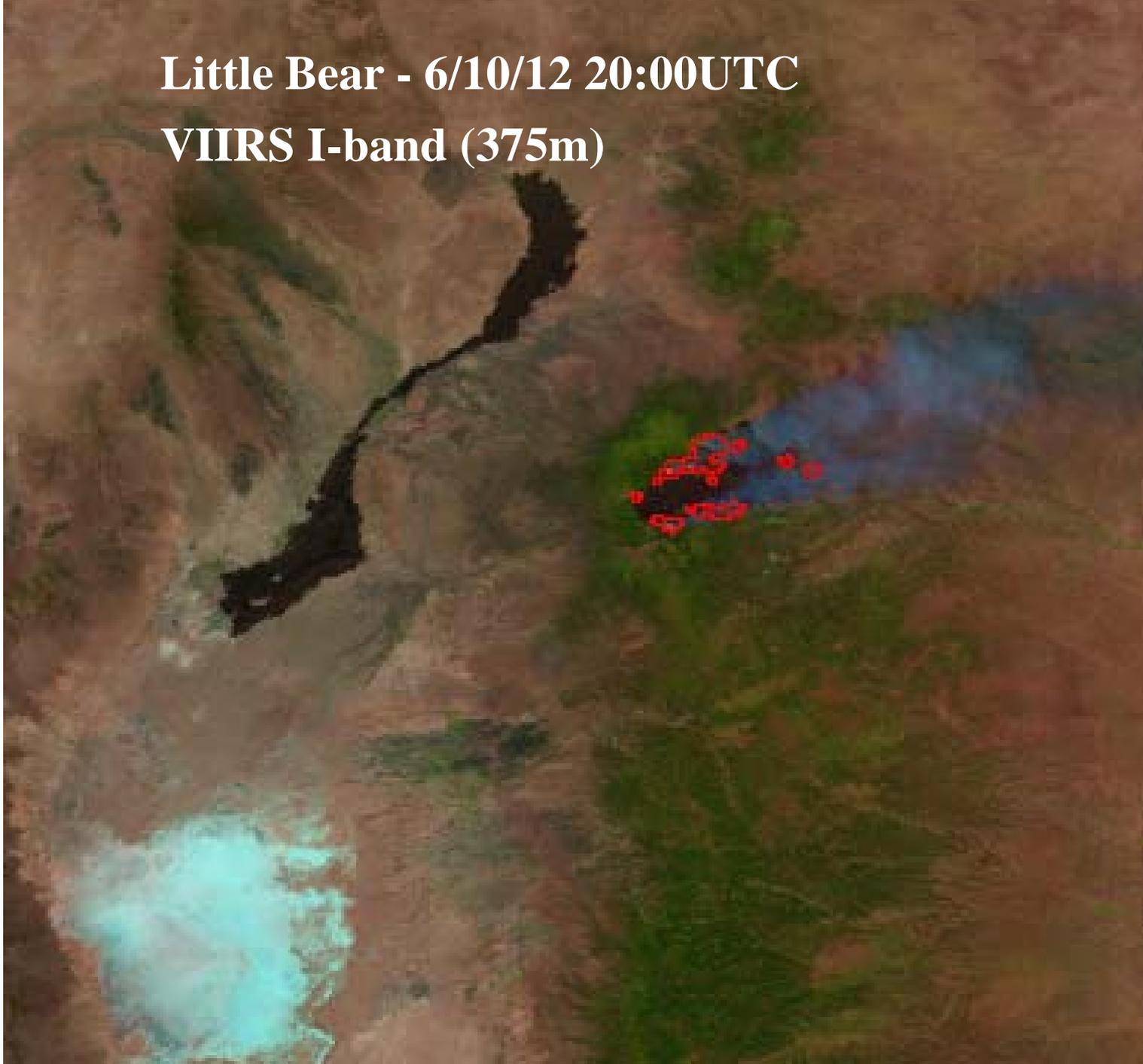
Little Bear - 6/9/12 20:15UTC

VIIRS I-band (375m)
experimental product

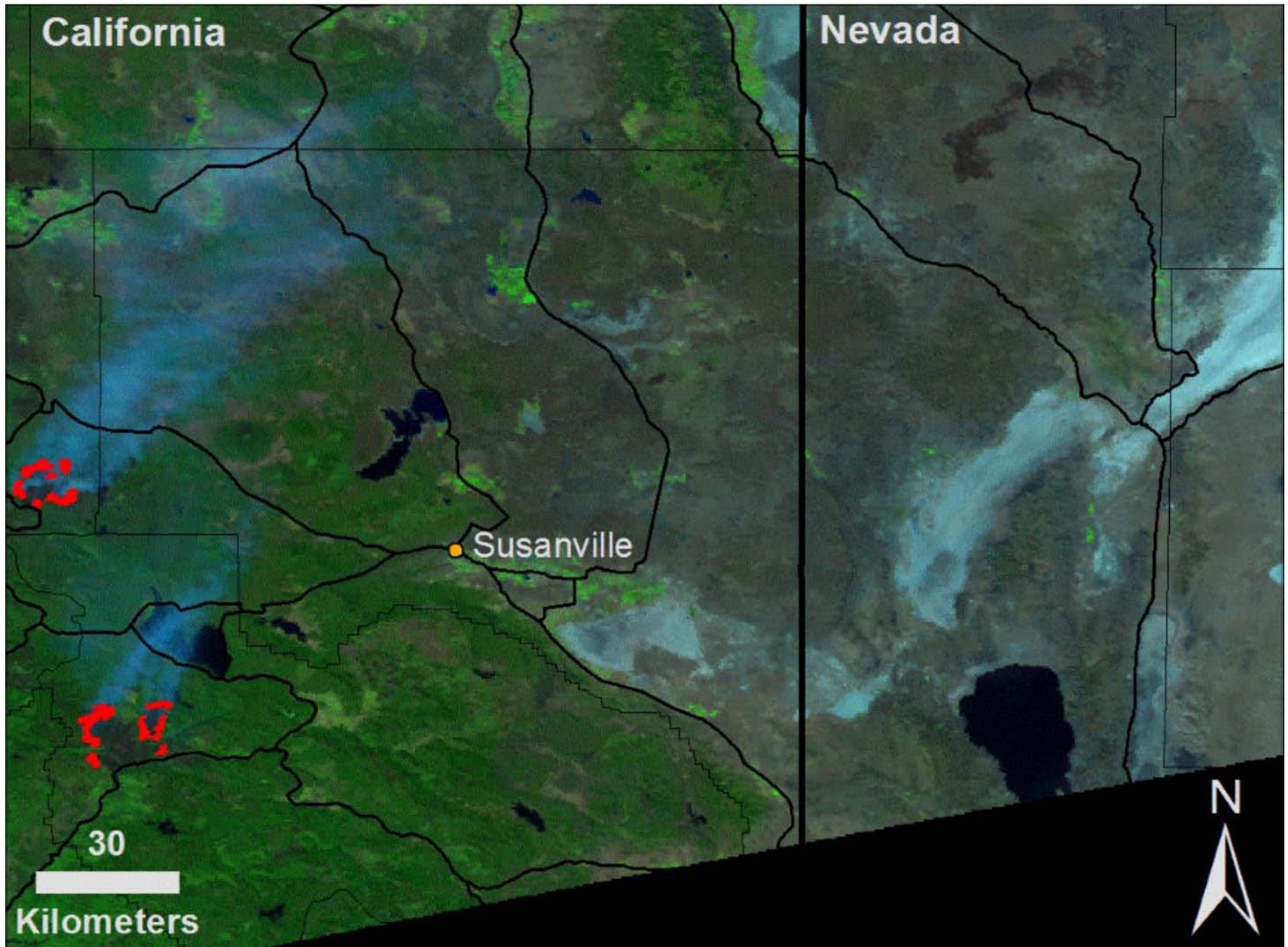


Little Bear - 6/10/12 20:00UTC

VIIRS I-band (375m)



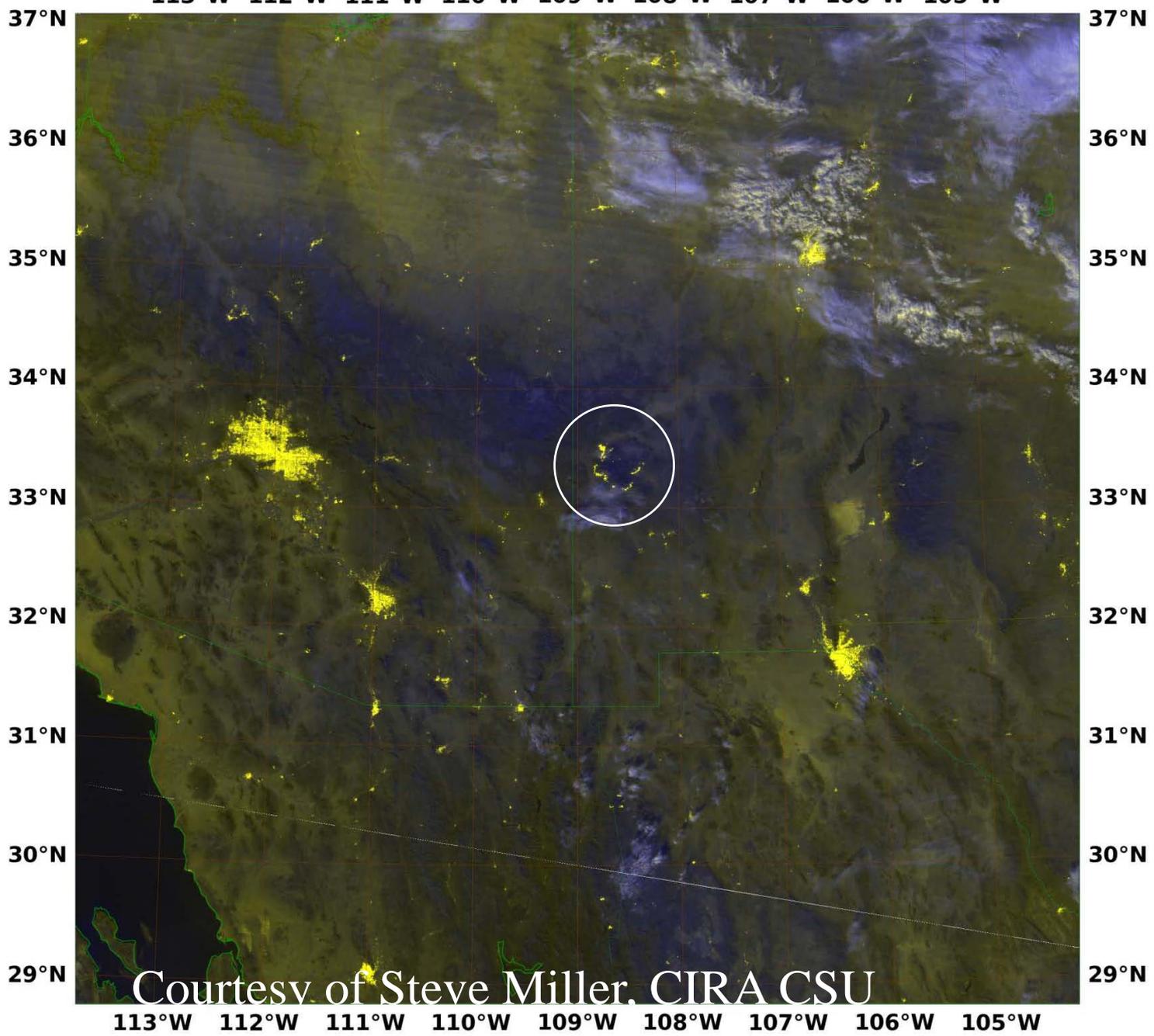
Rush Fire, CA





NPP VIIRS Night-Vis-IR 2012/06/04 08:50:35Z NRL-Monterey

113°W 112°W 111°W 110°W 109°W 108°W 107°W 106°W 105°W



Courtesy of Steve Miller, CIRA CSU



Active Fire product goes Beta

NOAA's Comprehensive Large Array-data Stewardship System - Windows Internet Explorer

http://www.class.ngdc.n... NOAA CLASS

NOAA HOME WEATHER OCEANS FISHERIES CHARTING SATELLITES CLIMATE RESEARCH COASTS CAREERS

NOAA COMPREHENSIVE LARGE ARRAY-DATA STEWARDSHIP SYSTEM (CLASS)

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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Please select a product to search



Hurricane Katrina GOES 08/28/05

NEWS

One minute GOES data covering Sandy event now available:
GOES-14 satellite data provided by the Space Science and Engineering Center is now available from CLASS. The minute scans took place from October 25, 2012 @ 17:45 UTC to October 31, 2012 @ 22:45 UTC. Over 6300 scans were taken. The data can be searched and ordered under the dataset collection name: GOES Satellite Data - Imager.

Suomi NPP data access status:
Below is a list of S-NPP products released to the public and now available through CLASS. The complete list of products along with the begin dates of product availability are located on the [Suomi NPP FAQ](#) page. The remaining NPP products will be released to the user community over a time frame of several months. Please note that all newly released products are at Beta maturity level as defined in the [Product Maturity Level](#) page. Details of high priority issues related to the data quality are contained in the Readme files provided by the NPP Project Scientist. Please read these before ordering and using the data!

- ATMS**
Readme for released S-NPP ATMS SDR data
- CrIS**
Readme for released S-NPP CrIS SDR data
- CrMSS**
Readme Readme for released S-NPP CrMSS EDR data
- OMPS**
Readme for released S-NPP OMPS Nadir Ozone Profile data
Readme for released S-NPP OMPS SDR data
- VIIRS**
Readme for released S-NPP VIIRS Active Fires ARP data
Readme for released S-NPP VIIRS Aerosol Optical Thickness (AOT) EDR data
Readme for released S-NPP VIIRS Cloud Mask IP data
Readme for released S-NPP VIIRS Non-NOC Imagery EDR data
Readme for released S-NPP VIIRS SDR data

Attention Suomi NPP Users:
The most recent global NPP operational products are now available in daily tar files for quick and easy downloads at: <ftp://ftp-npp.olass.ngdo.noaa.gov/>. Please see the NPP help page for instructions. Up to the most recent 90 days of data will be available for direct online access.

Tutorial for ordering Suomi NPP data in CLASS:
A tutorial for ordering data through CLASS can be found at [Data Access](#). The tutorial references Suomi NPP data but is applicable to all data types. If you have any questions please email [CLASS Help Desk](#).

SEARCH FOR DATA

- Environmental Data from Polar-orbiting Satellites
- Environmental Data from Geostationary Satellites
- Defense Meteorological Satellite Program (DMSP)
- Suomi National Polar-orbiting Partnership (NPP)
- Sea Surface Temperature data (SST)
- MARSAI
- Altimetry / Sea Surface Height Data (Jason-2)
- Global Navigation Satellite Systems (GNSS)
- Other - Miscellaneous products in CLASS

SEARCH COLLECTION METADATA

Home Search for Data Upload Search Search Results Shopping Cart Order Status Help User Profile User Preferences Download Keys CLASS Help Desk Suggestions Privacy Policy Disclaimer





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

Proving Ground & Risk Reduction



Home About FAQ Download Contact Us

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 84 second swath quicklooks presented here highlight recent fire detections superimposed on corrected reflectance RGB images (bands 5-4-3). VIIRS data are still preliminary and will continue to undergo testing and calibration over the coming weeks before being released for public use.

Links

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

VIIRS vs MODIS



VIIRS Active Fire

Home About FAQ Data VIIRS vs MODIS Contact Us

VIIRS Fire Detections Map

Active Fire Team

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

Active Fire Map

View **24** and **48** hour **VIIRS active fire detections**. The map also provides an icon to represent the center of each **VIIRS granule**, weather information (temperature and cloud cover), and RSS feeds for **US active fire perimeters** and **Incident Information weather**. RSS feeds provided by **GEOMAC** and **InciWeb**, respectively.

Download Data

VIIRS active fire data available as **ASCII**, **GeoTIFF**, **KMZ**, and **PNG** for download. View our archiving system to **download** the data you need

Timestamp**	Date**	ASCII	TIFF	KMZ
NPP_VIIRS_20120917_185655_190235	2012-09-17	Download	Download	Download
NPP_VIIRS_20120917_171420_172010	2012-09-17	Download	Download	Download
NPP_VIIRS_20120917_204602_205042	2012-09-17	Download	Download	Download
NPP_VIIRS_20120917_190236_190817	2012-09-17	Download	Download	Download
NPP_VIIRS_20120917_170913_172561	2012-09-17	Download	Download	Download
NPP_VIIRS_20120917_205920_206960	2012-09-17	Download	Download	Download
NPP_VIIRS_20120916_162546_164139	2012-09-16	Download	Download	Download
NPP_VIIRS_20120916_137943_134322	2012-09-16	Download	Download	Download
NPP_VIIRS_20120916_210252_210811	2012-09-16	Download	Download	Download
NPP_VIIRS_20120916_160002_160247	2012-09-16	Download	Download	Download

<http://viirsfire.geog.umd.edu>



Proving Ground & Risk Reduction



Mozilla Firefox

File Edit View History Bookmarks Tools Help

VIIRS Active Fire Product

http://viirsfire.g...edu/map/index.html

NOAA's Comprehensive Large Array-... x

VIIRS_Active Fire ARP_Release_Readm... x

viirsfire.geog.umd.edu/map/index.html

Google

UMD mail Yahoo! Hotmail Milford Weather Google Calendar Gmail Voice Google Maps Google Scholar WorldTimeZone Unit Converter Dictionary GEOG UMEG UMD Libraries UM Testudo Blackboard Academic ... Space News

Map Satellite

VIIRS Active Fires

Date	Detections Over Pass
11/06/2012	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
11/05/2012	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>

Zoom to Location

Latitude: Longitude:

Enter a location

Overlay Options

Temperature

Cloud Cover

US Active Fire Perimeters

InciWeb Wildfire Information

[Return Home](#)

500 km 500 mi

7:55 PM 11/7/2012



Timestamp ▲▼	Date ▲▼	Ascii	TIFF	KMZ
NPP_VIIRS_20121107_212542_213122	2012-11-07	Download	Download	Download
NPP_VIIRS_20121107_162406_162947	2012-11-07	Download	Download	Download
NPP_VIIRS_20121107_180050_180631	2012-11-07	Download	Download	Download
NPP_VIIRS_20121107_194316_194856	2012-11-07	Download	Download	Download
NPP_VIIRS_20121107_194858_195438	2012-11-07	Download	Download	Download
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NPP_VIIRS_20121106_182402_182943	2012-11-06	Download	Download	Download
NPP_VIIRS_20121106_214312_214852	2012-11-06	Download	Download	Download
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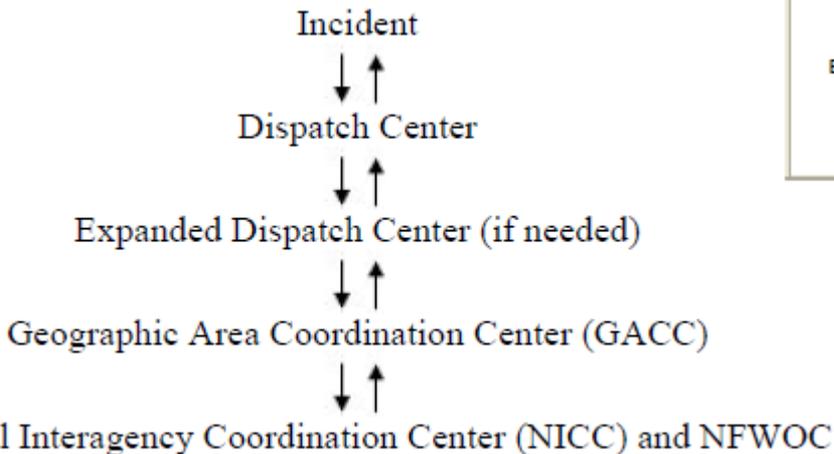
Incident Meteorologist (IMET)



“An IMET is a National Weather Service (NWS) forecaster who participates in a voluntary program to provide detailed decision support services to fire and other incident management teams.”

“Request and dispatch of IMETs and equipment should be accomplished through the National Resource Coordination System.”

(NATIONAL WEATHER SERVICE INSTRUCTION 10-402)



Minimum Capabilities Associated with IMET Types
(Table adapted from the FEM NIMS Document, chapter IV Appendix B)

Minimum Capabilities (Metric)	Type I	Type II	Type III
Location of Emergency Managers and types of Incident Management Teams (IMT)	Can support any Wildland Fire or non-Wildland Fire incident at any location including Incident Command Posts. Can support wildland fire IMTs.	Can support any wildland fire or non-wildland fire incident only at an Emergency Operations Center (EOC), Area Command or Joint Field Office.	Can support any non-wildland fire incident only at an Emergency Operations Center (EOC), Area Command or Joint Field Office. Can support any non-wildland fire type incident management team.
Training	Required DHS courses (IS-100, IS-200, IS-300, IS-700 and IS-800), S-290 and S-390 Fire agency courses, NWS/COMET Advanced Fire Weather Forecasters Course and Type I IMET workshop.	Required DHS courses (IS-100, IS-200, IS-300, IS-700 and IS-800), S-290 and S-390 Fire agency courses, NWS/COMET Advanced Fire Weather Forecasters Course	Required DHS courses (IS-100, IS-200, IS-300, IS-700 and IS-800) and any NWS or other agency courses deemed necessary by regional or national policy for specialization within the field they will be forecasting for.
Areas of Specialization	Fire Weather, Severe Weather, Flooding.	Fire Weather, Severe Weather, Flooding	Severe Weather, Flooding
Sustained Operations	16-hour operations. Self-sufficient for first 72 hours.	16-hour operations. Self-sufficient for first 24 hours.	16-hour operations. Self-sufficient for first 24 hours.
Equipment	Equipped with All Hazards Meteorological Response System (AMRS). Full onsite operations including communications. Also equipped with Personnel Protective Equipment (PPE) and camping gear for extended missions.	Equipped with laptop, printer and wireless internet card. Does not have PPE or camping gear.	Equipped with laptop, printer and wireless internet card. Does not have PPE or camping gear.



Whitewater-Baldy Incident Report



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):	LAT: 33.3447	LON: -108.71
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.		

ICP	DATE	TIME	RELEASED BY:
ARRIVAL OF MU:	5/19/2012	2054 MDT	Bob Cordts, PLSC
RELEASE:	5/25/2012	0730 MDT	

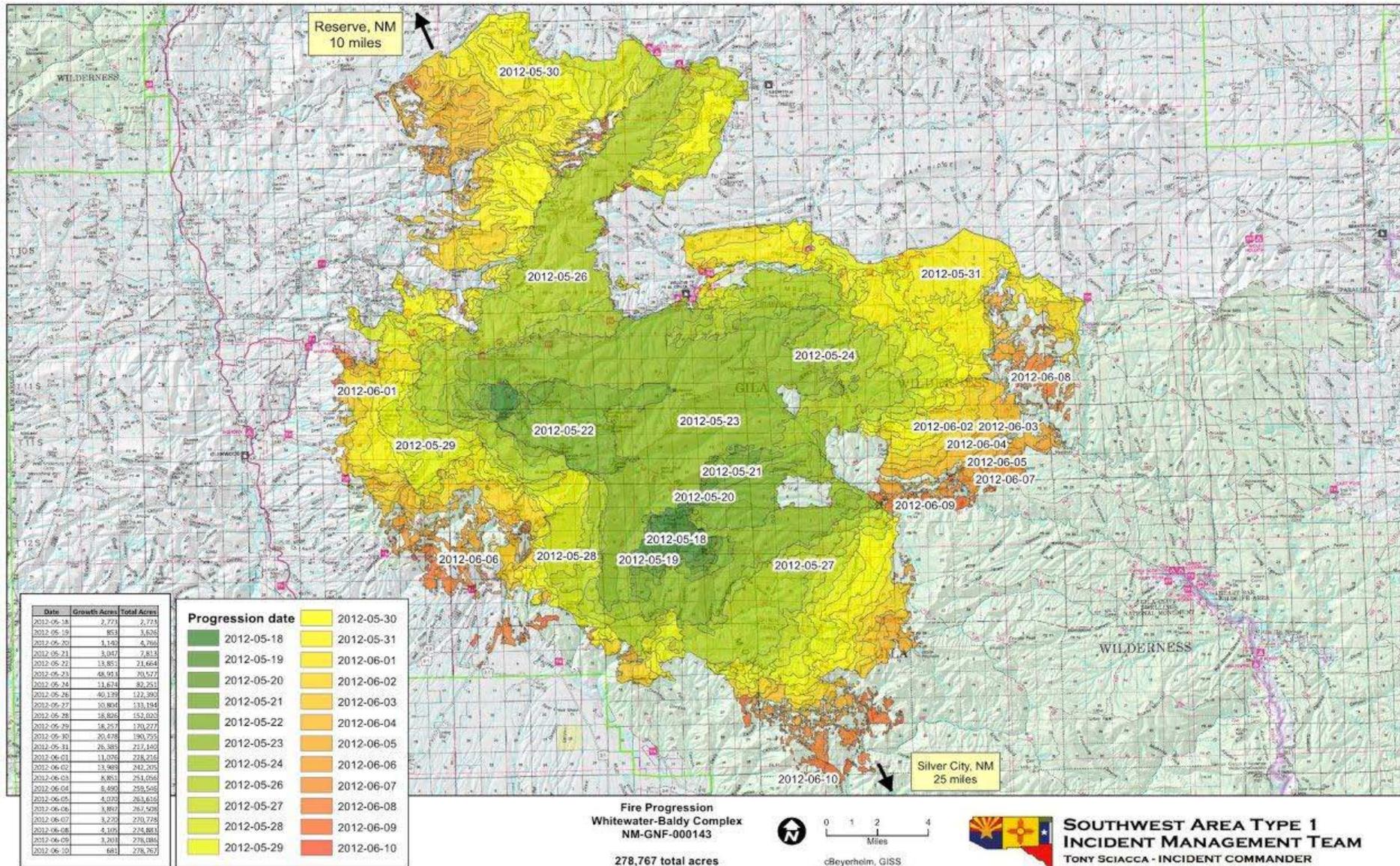
LOCATION OF INCIDENT COMMAND POST:
Dog Flat, off Gila NF Road 28, @3 miles south of Negrito Work Center (junction of Gila NF Road 28 and Gila NF Road 141(aka NM Hwy 435), and about a mile south of the junction with N Bar Park/ranch road/sign. Approx. 15 miles southeast (as the crow flies) of the town of Reserve, NM and 15 miles east (as the crow flies) of the town of Glenwood, NM

INCIDENT COMMANDER:	PLANS CHIEF:
John Pierson	PLSC Bob Cordts; Deputy PLSC Jim Silva; PLSC (T) Wayne Robbie

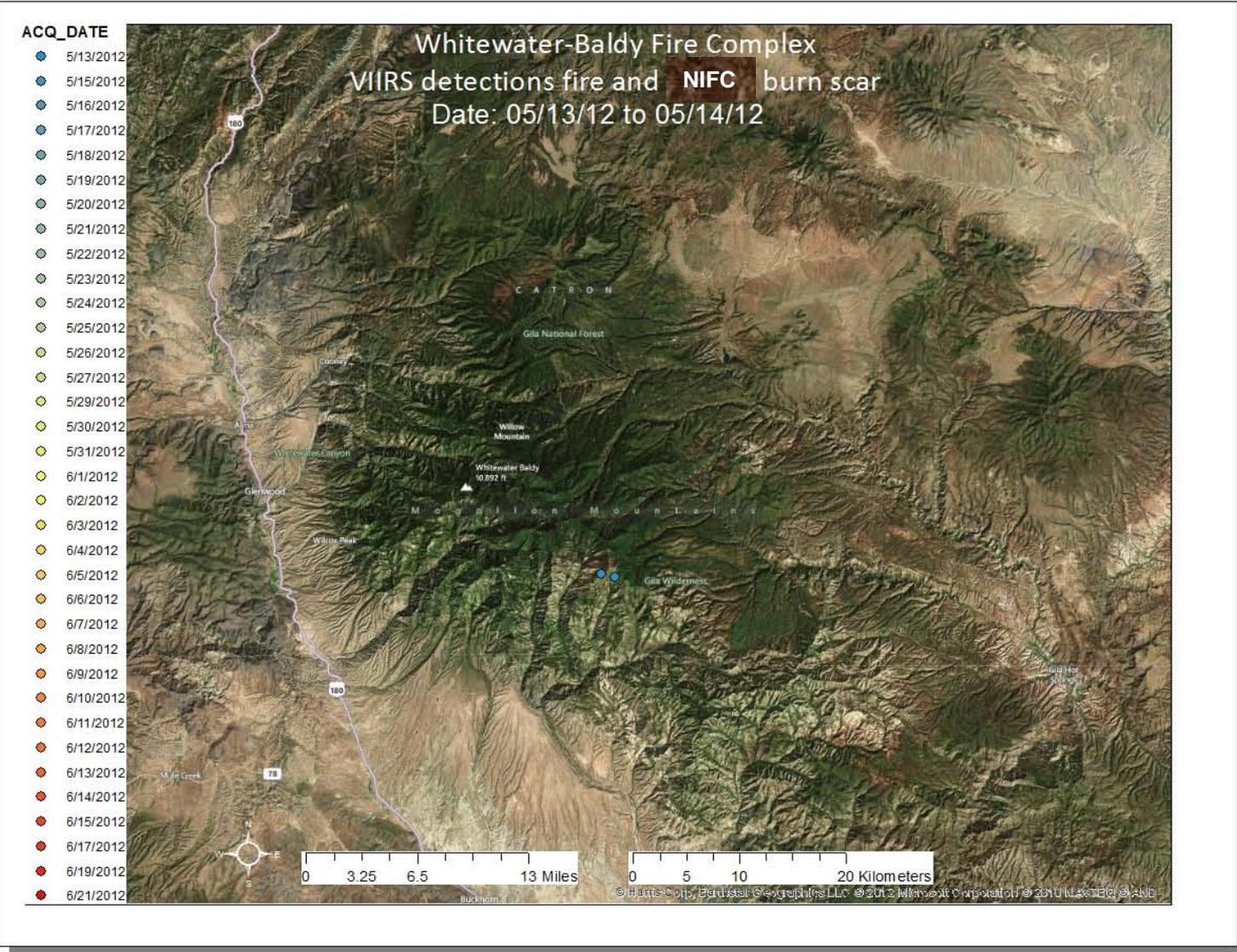
FIRE BEHAVIOR ANALYST(S):
Galen Roesler

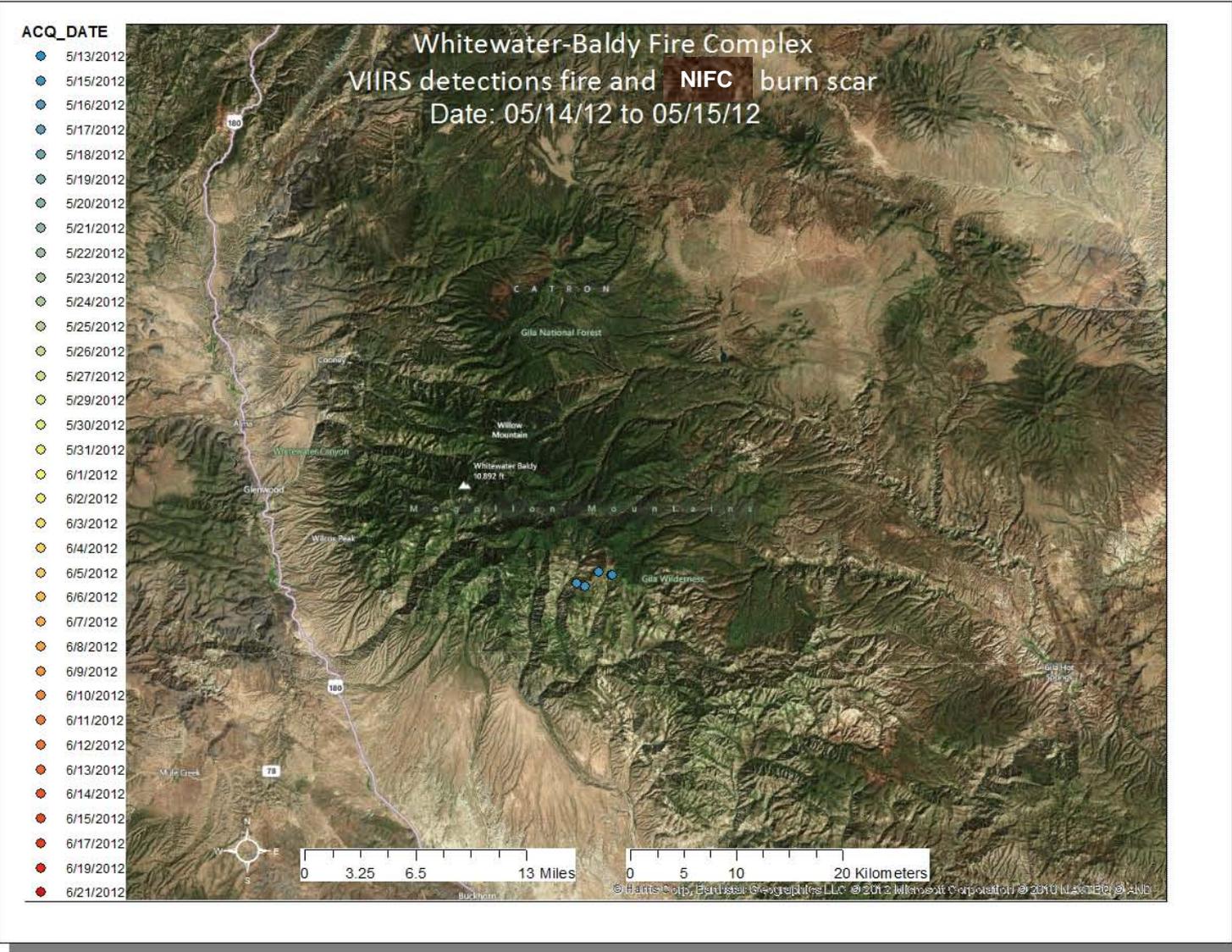
courtesy Rob Balfour

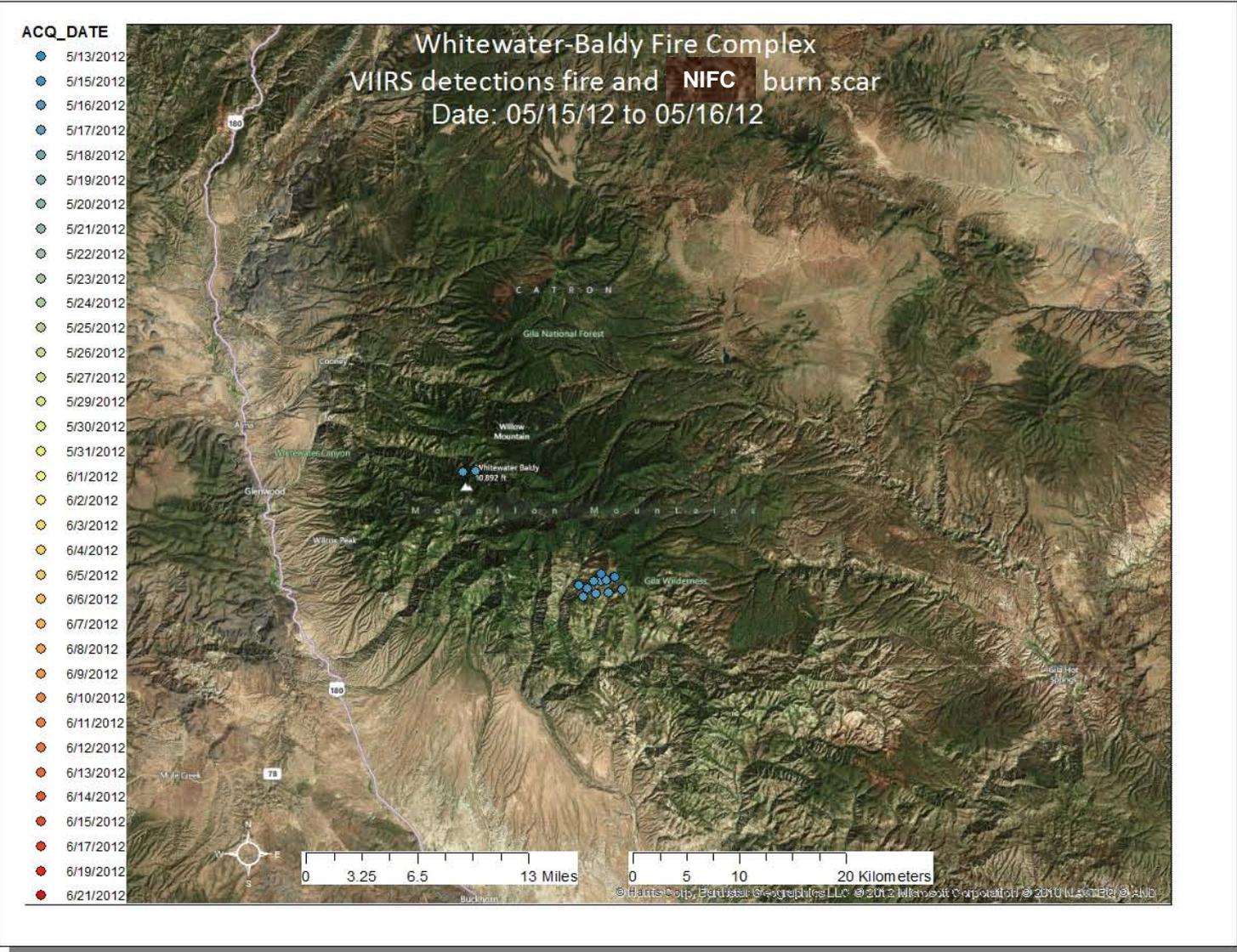
Whitewater-Baldy Fire Progression Map

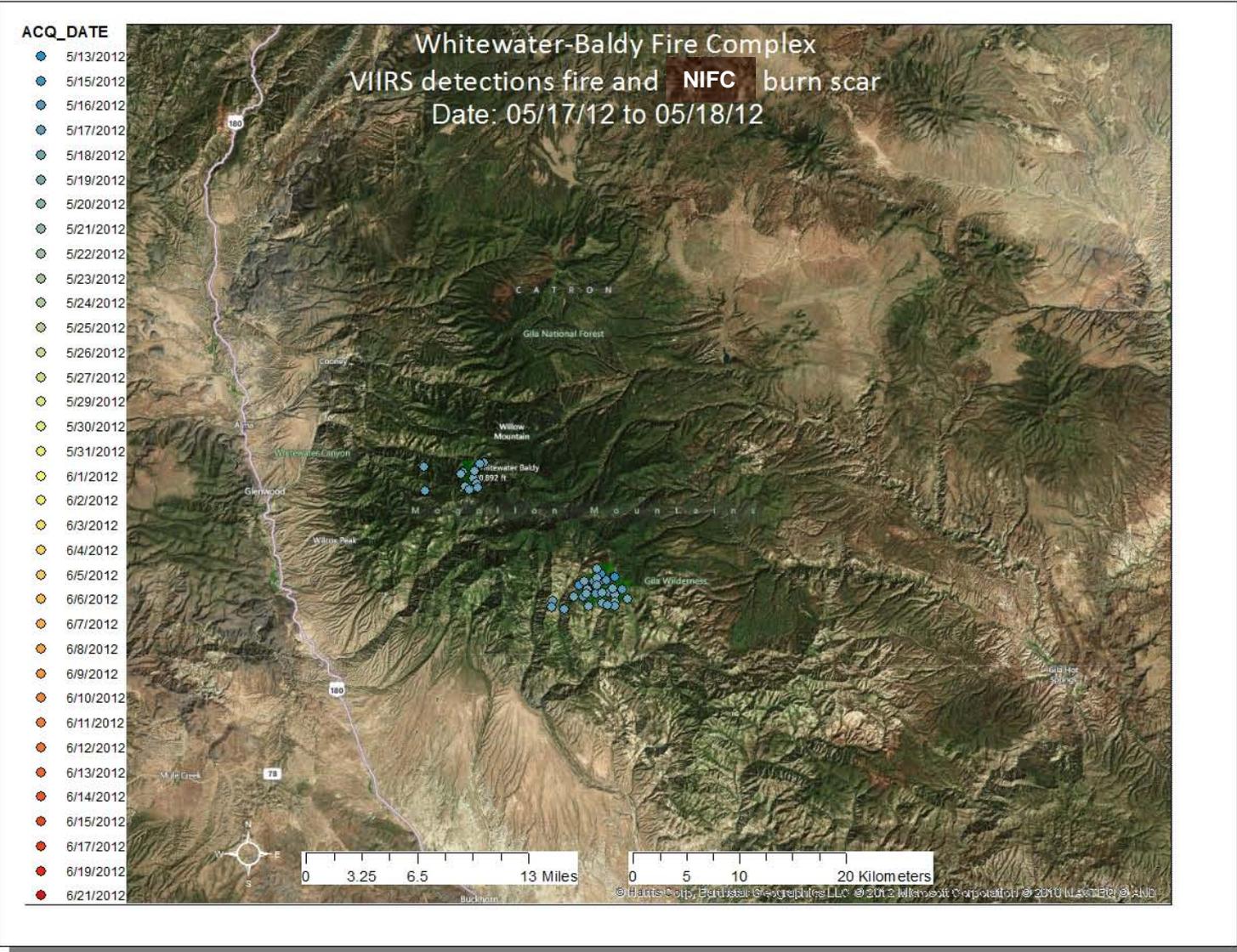


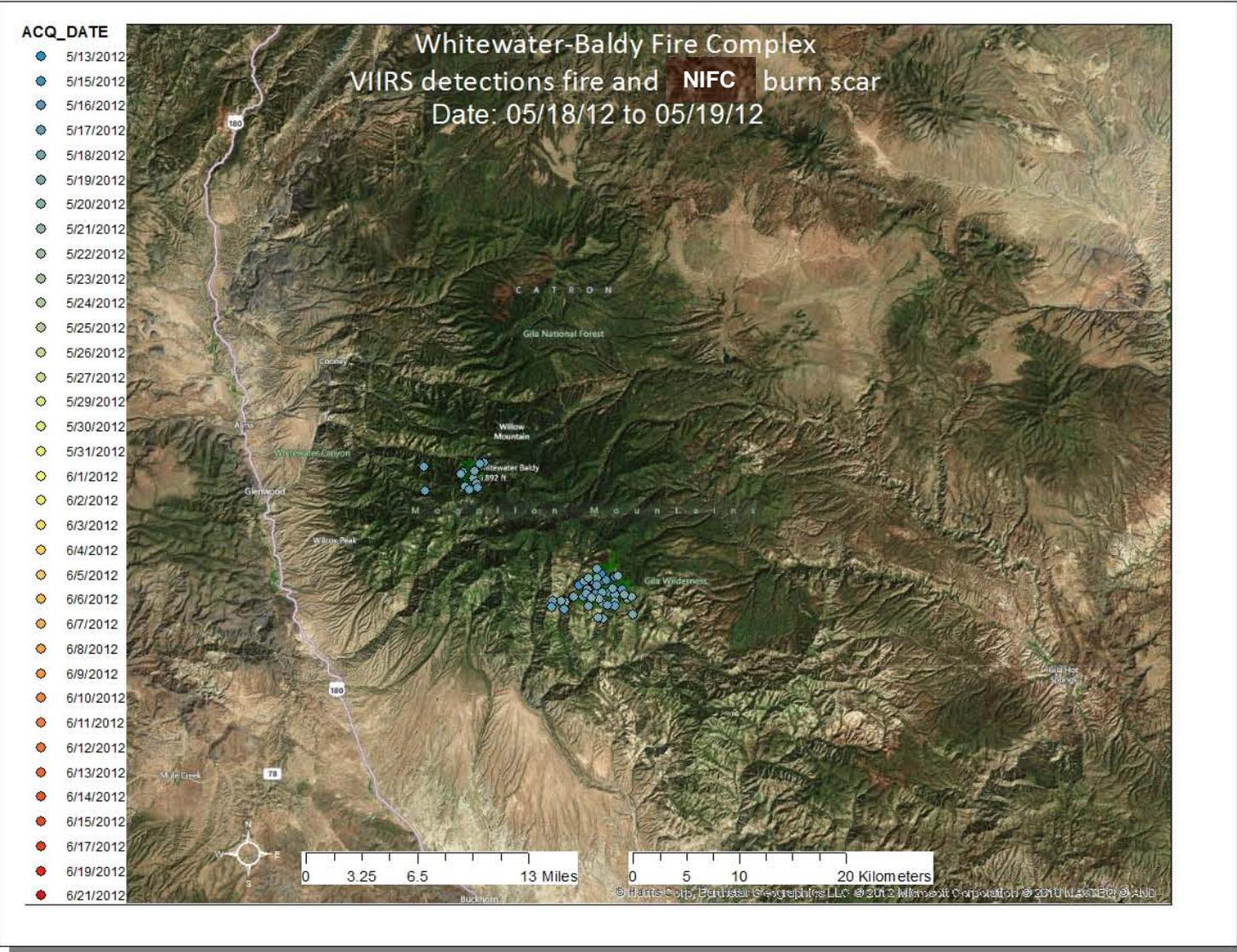
courtesy Rob Balfour

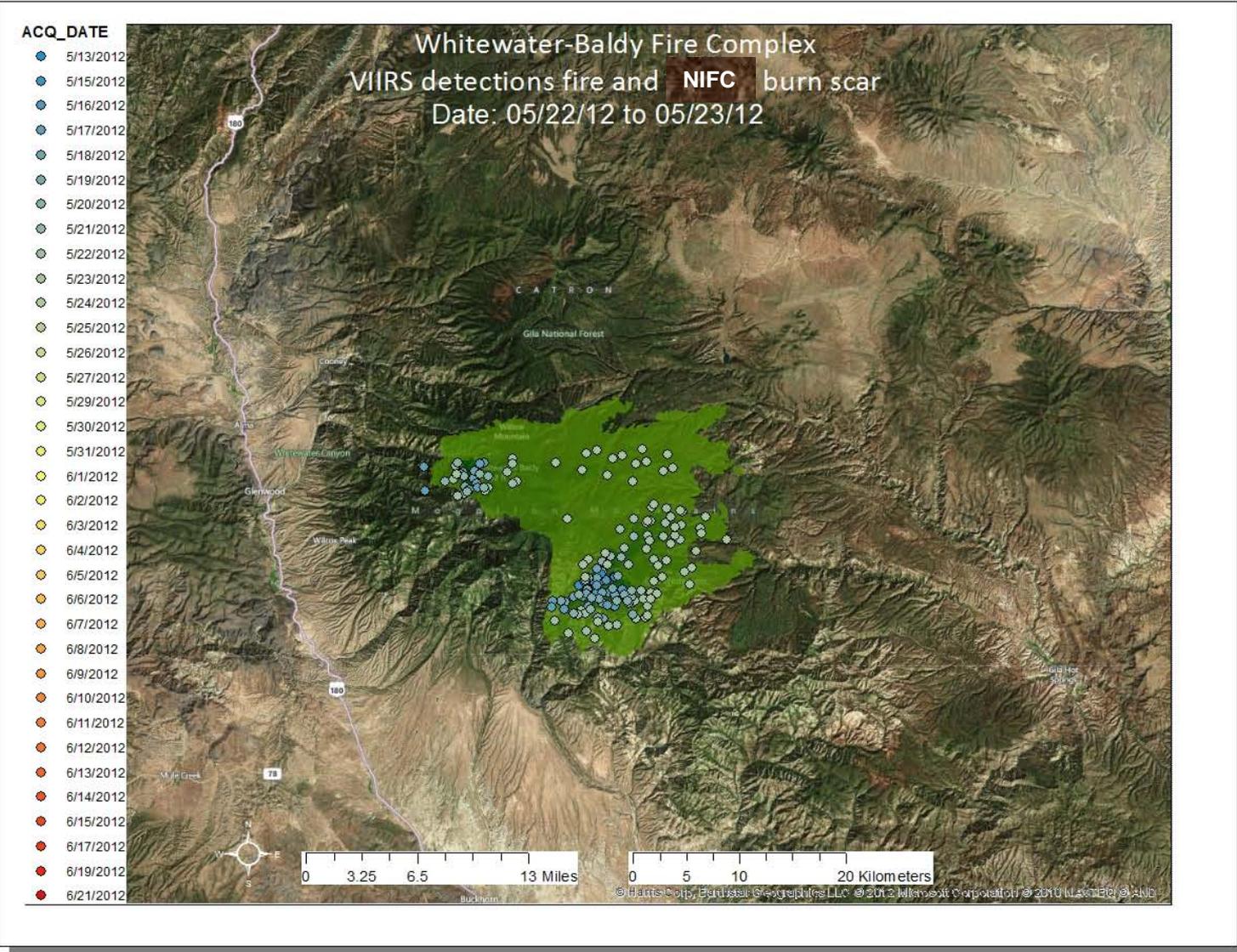


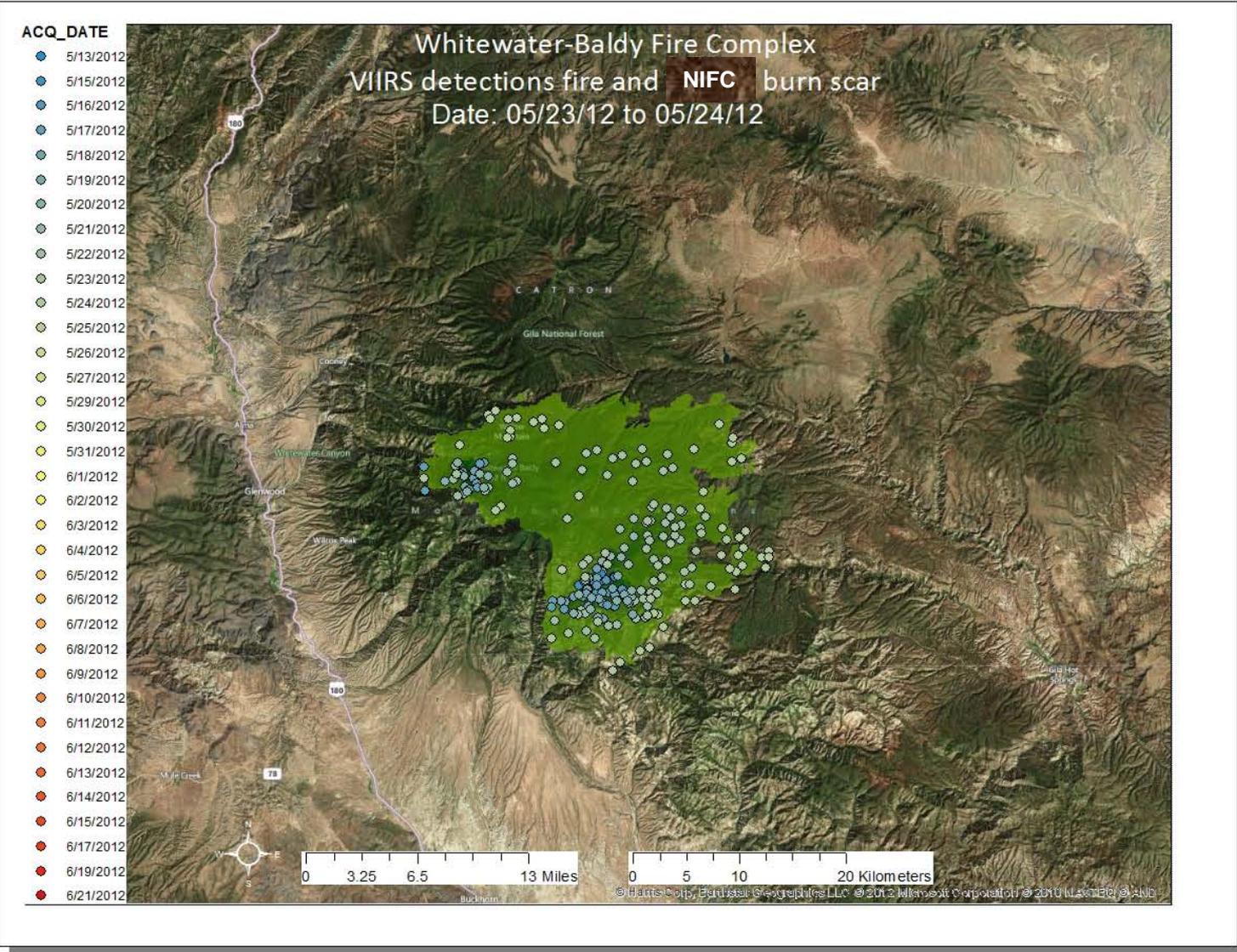


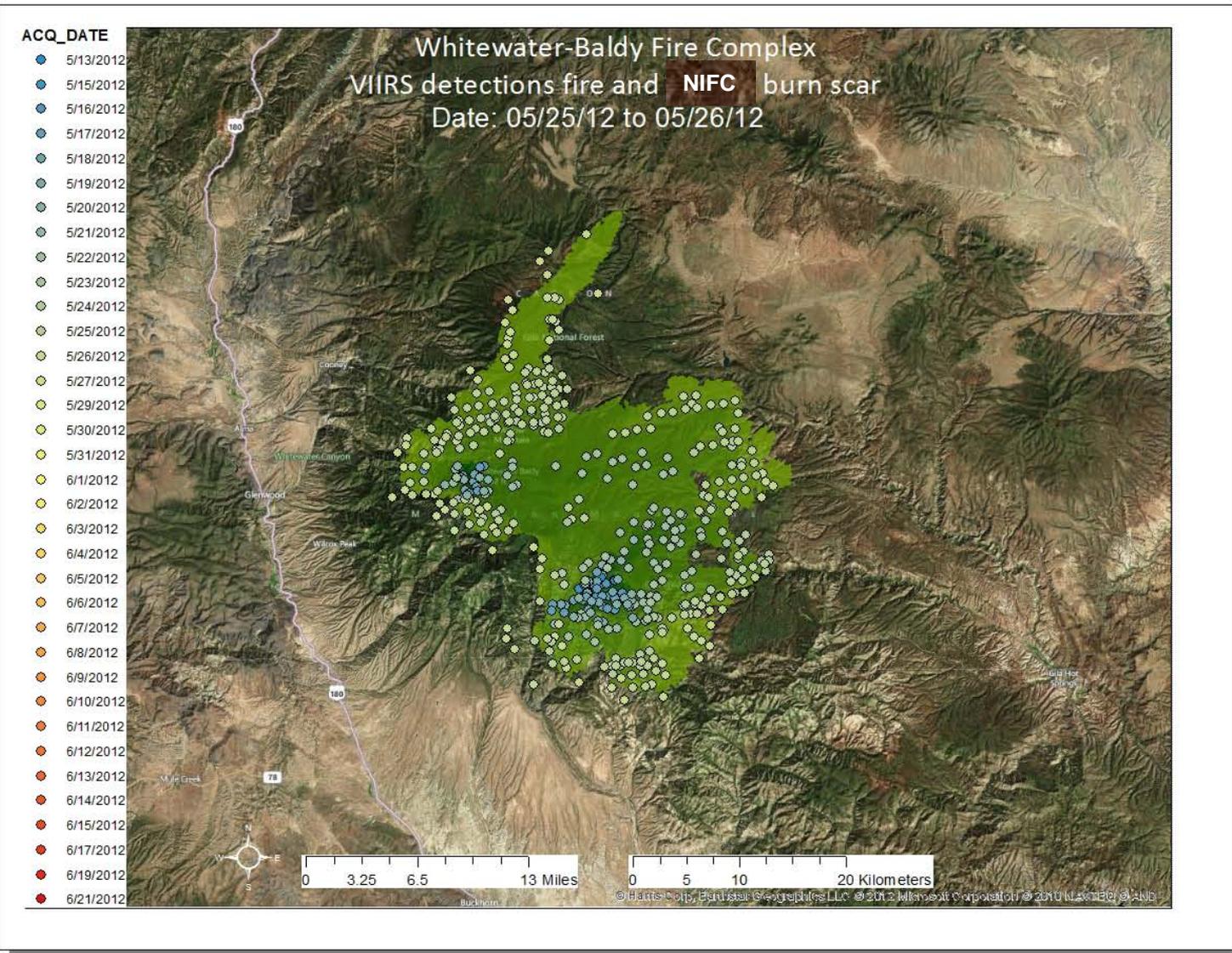


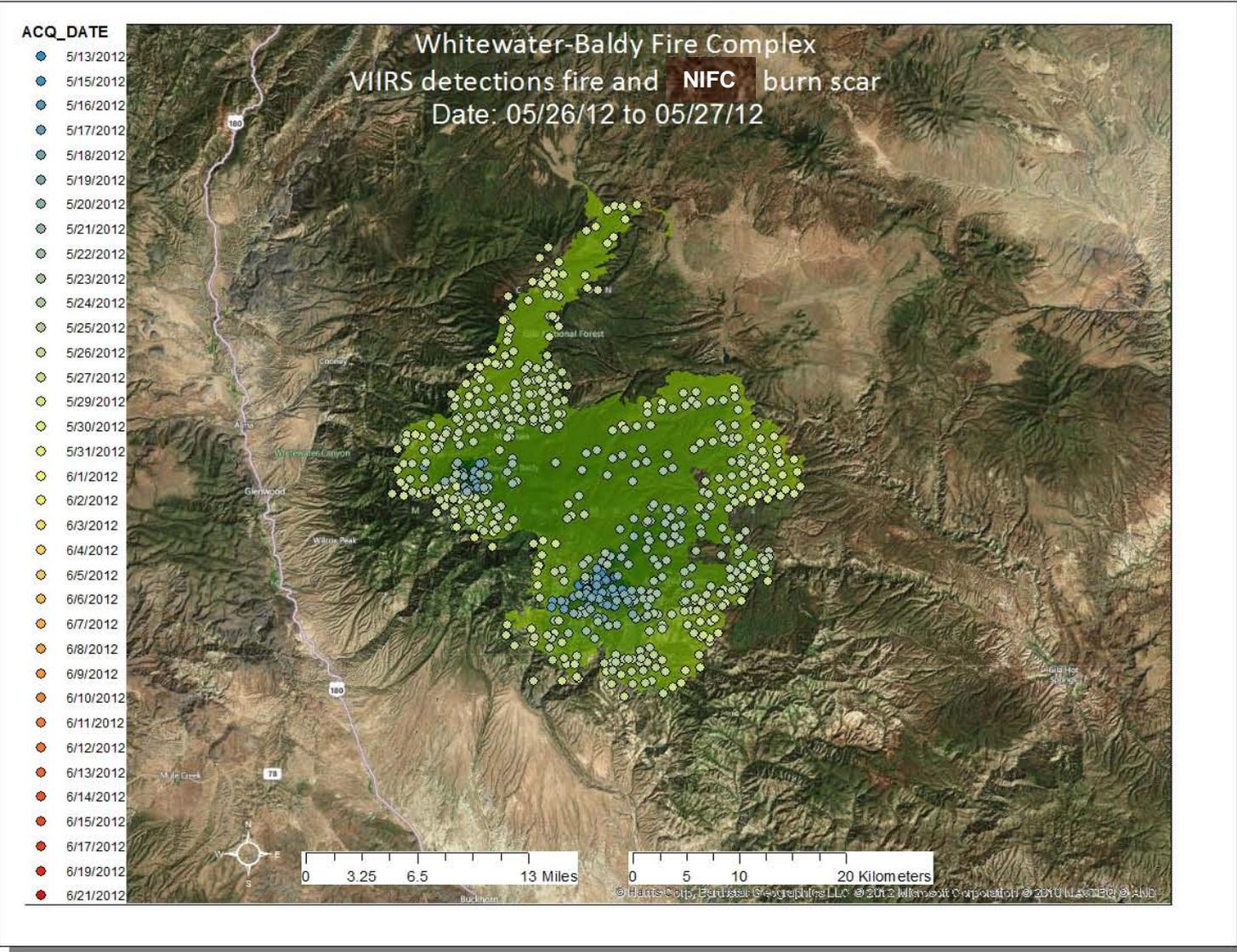


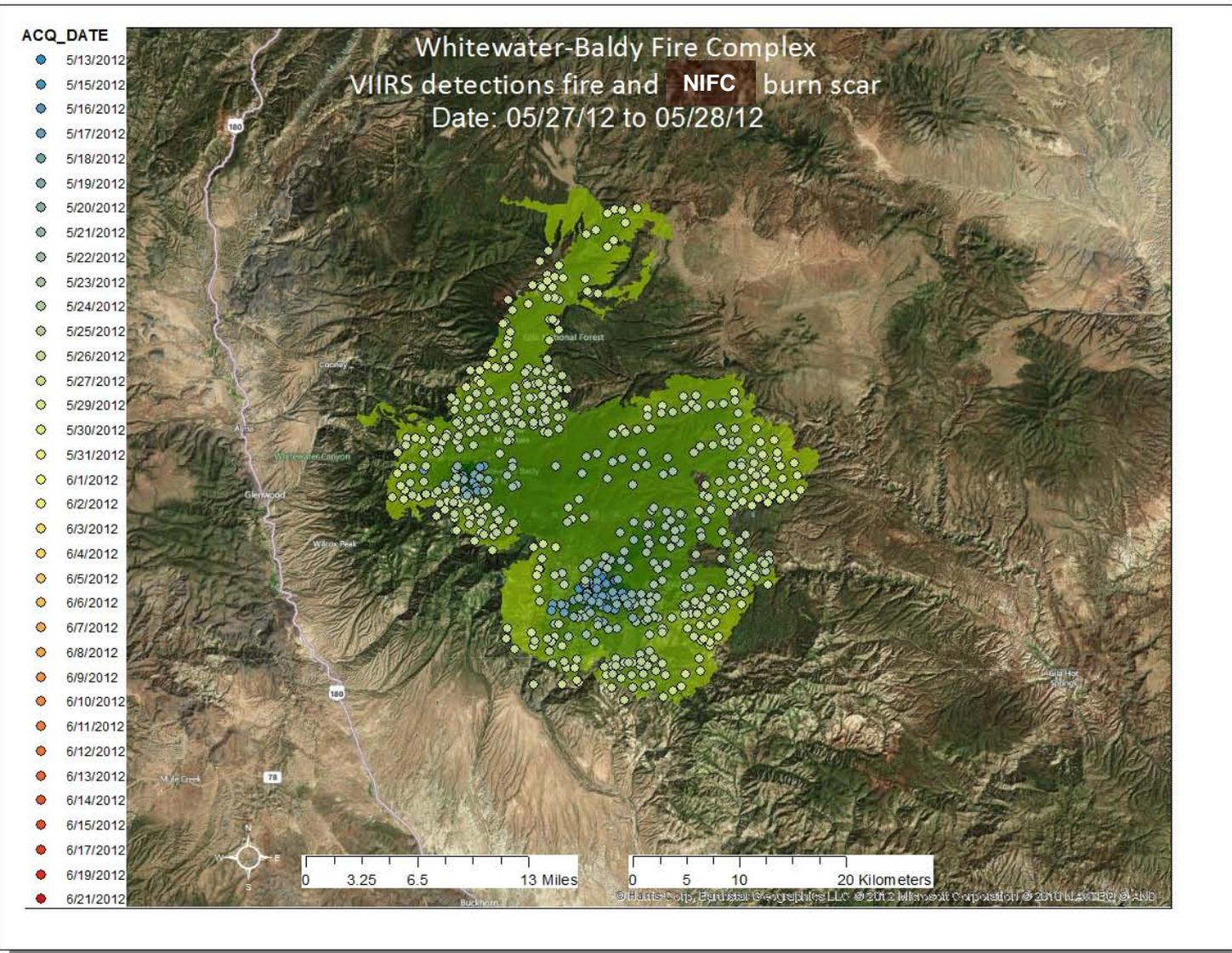


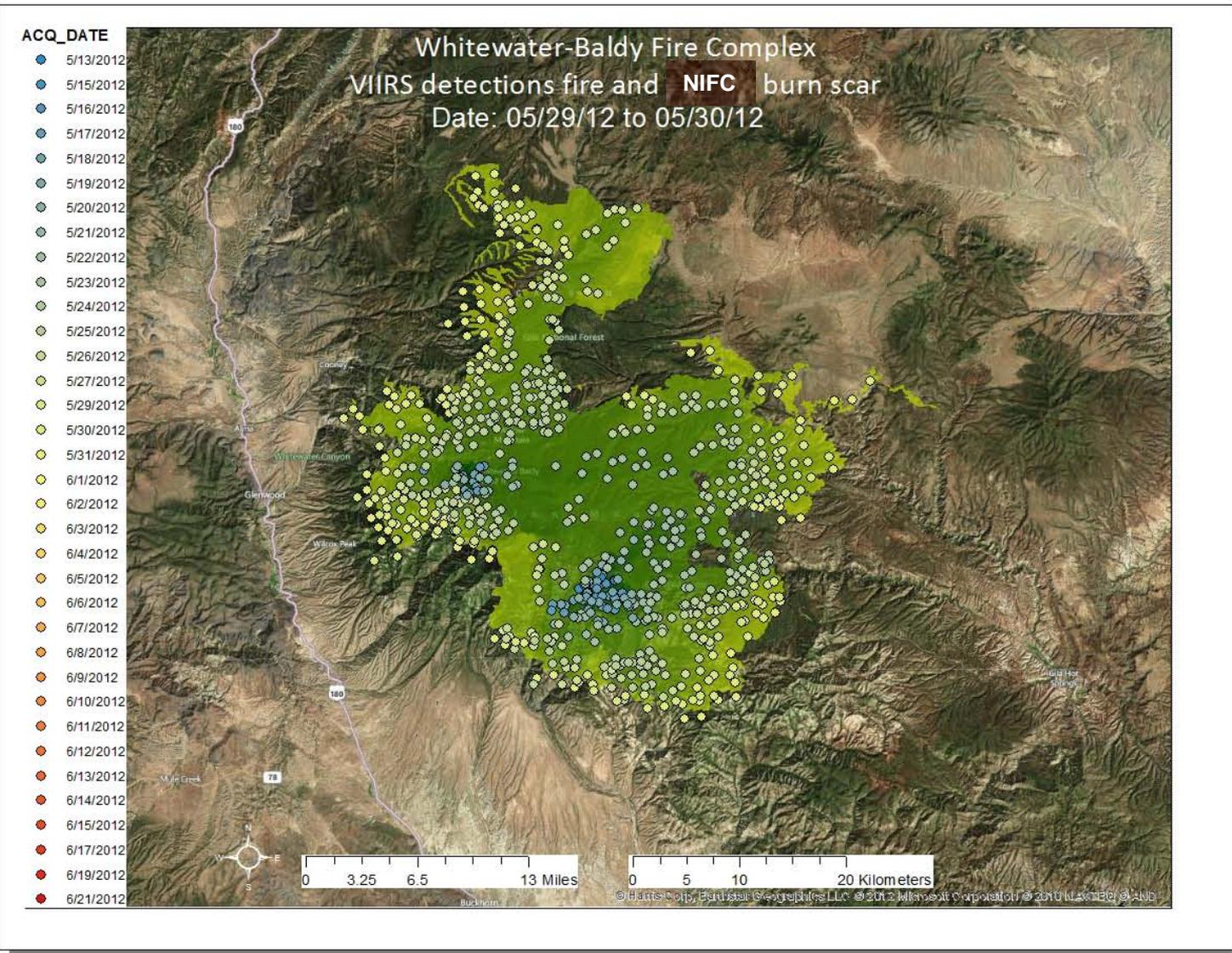


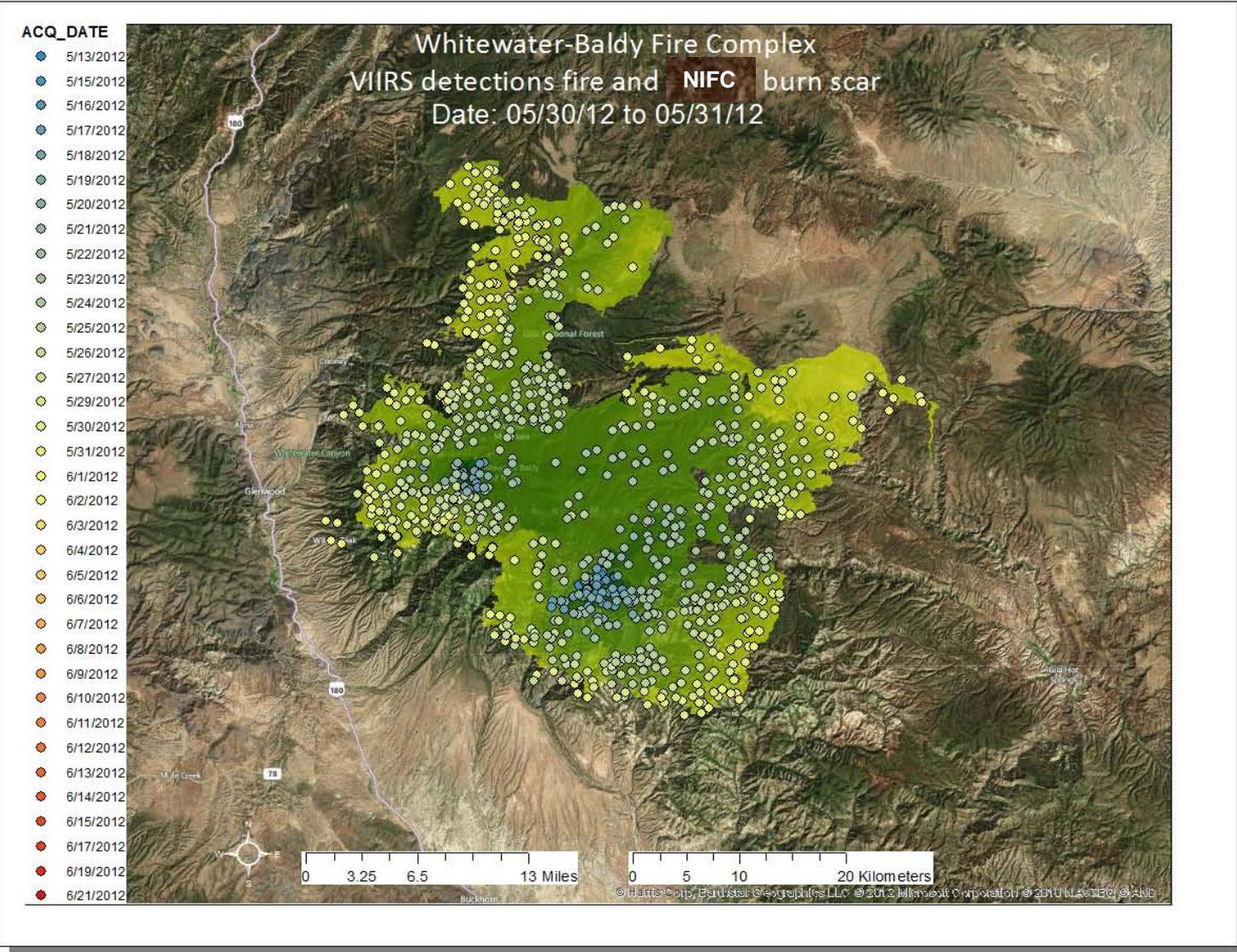


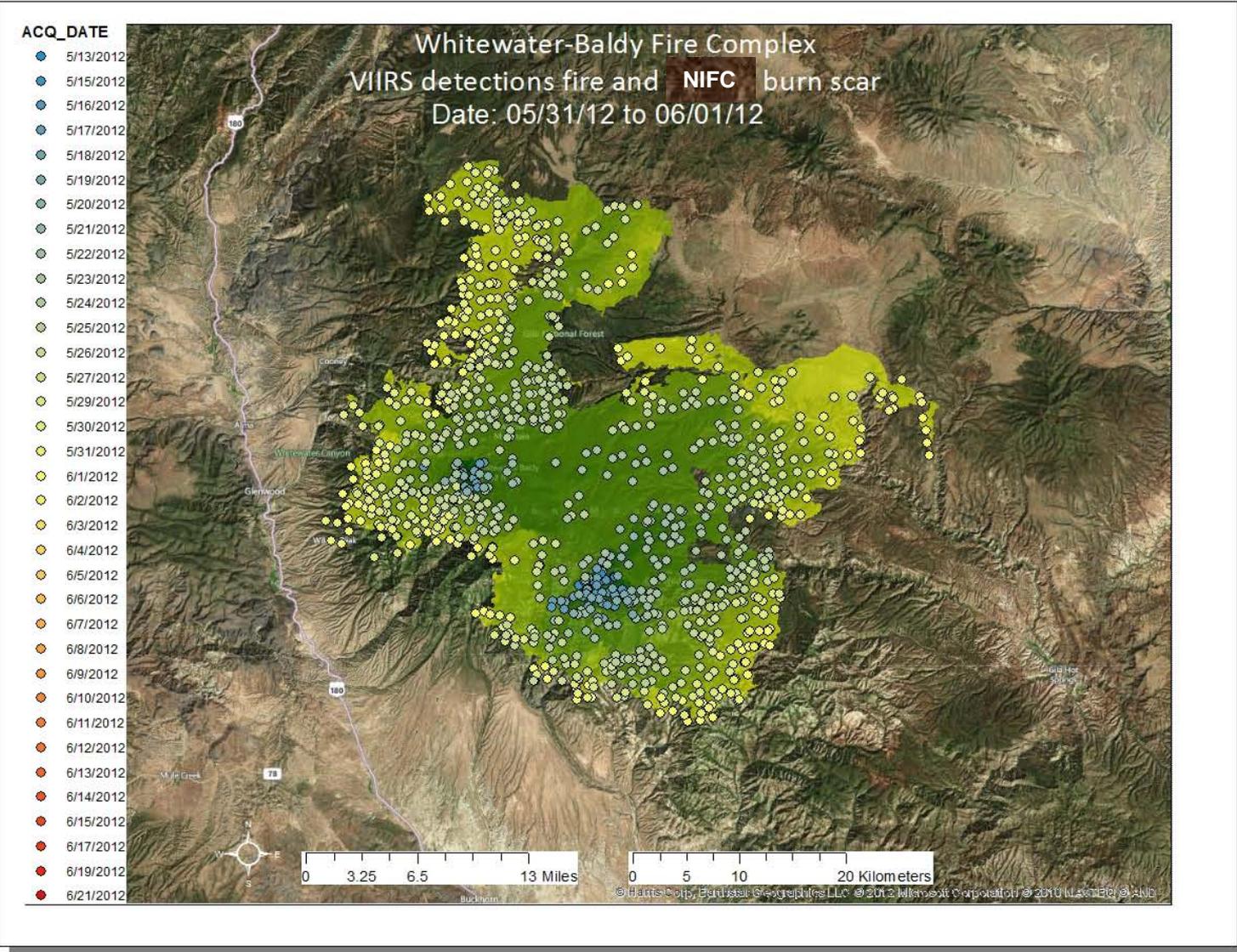


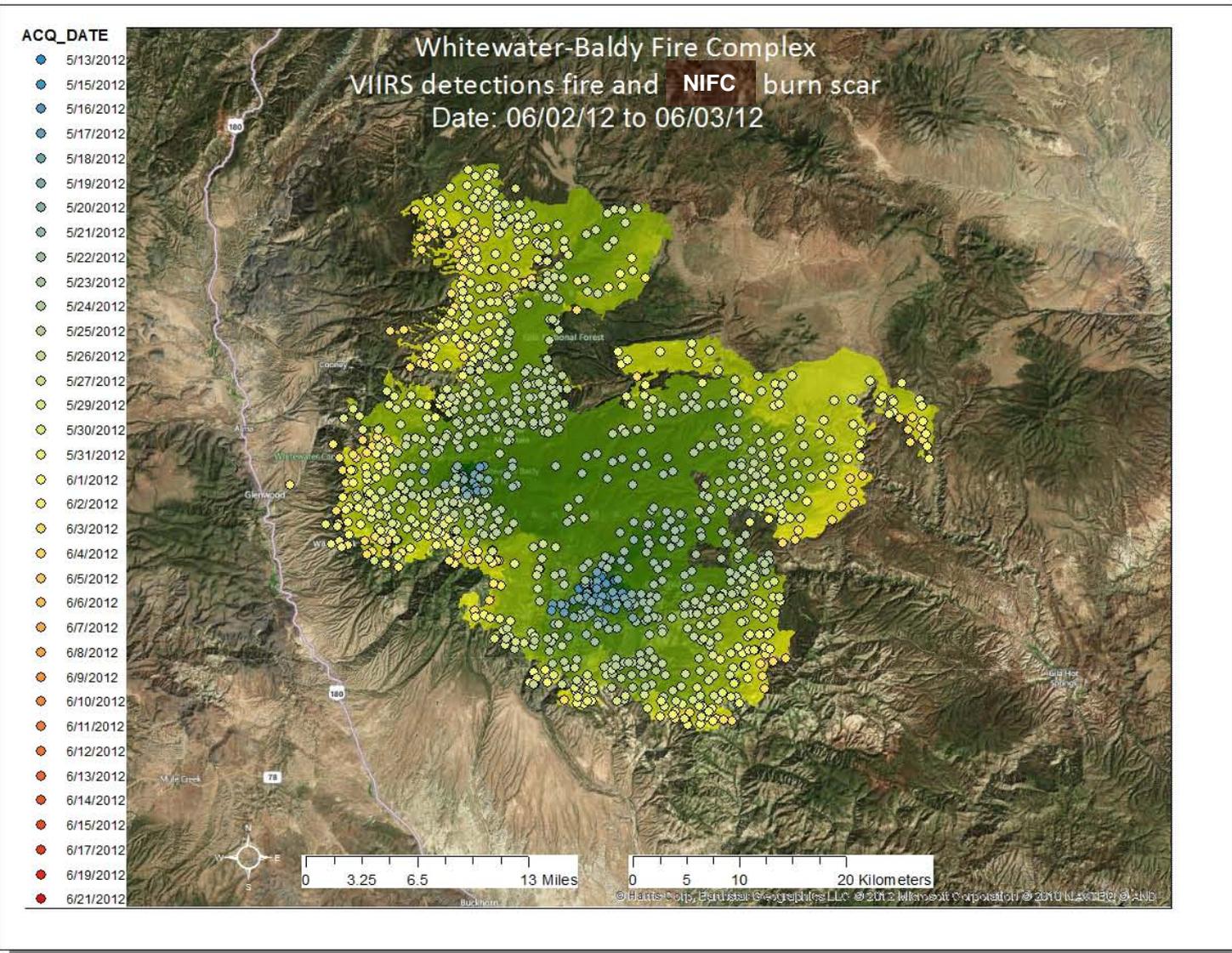


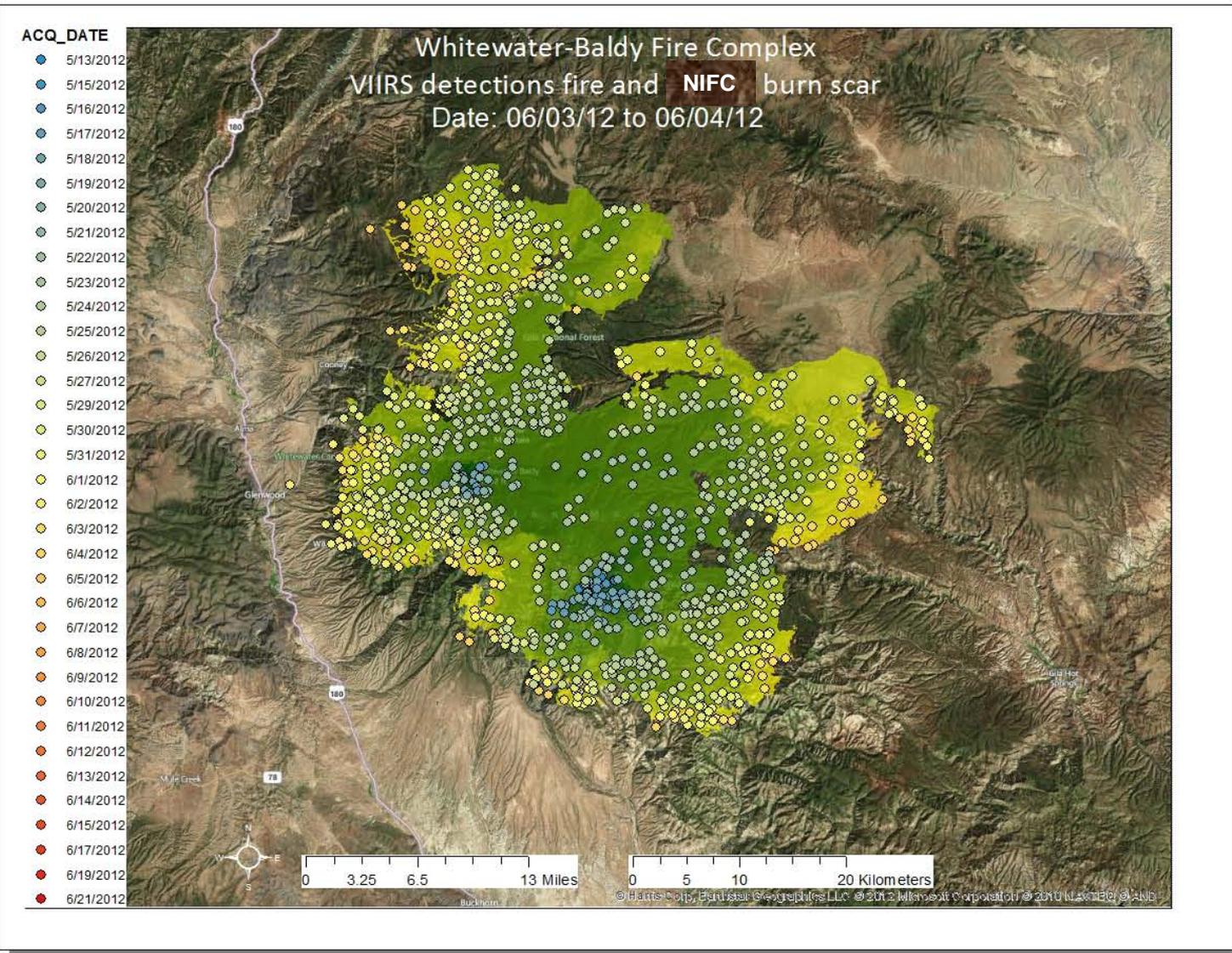


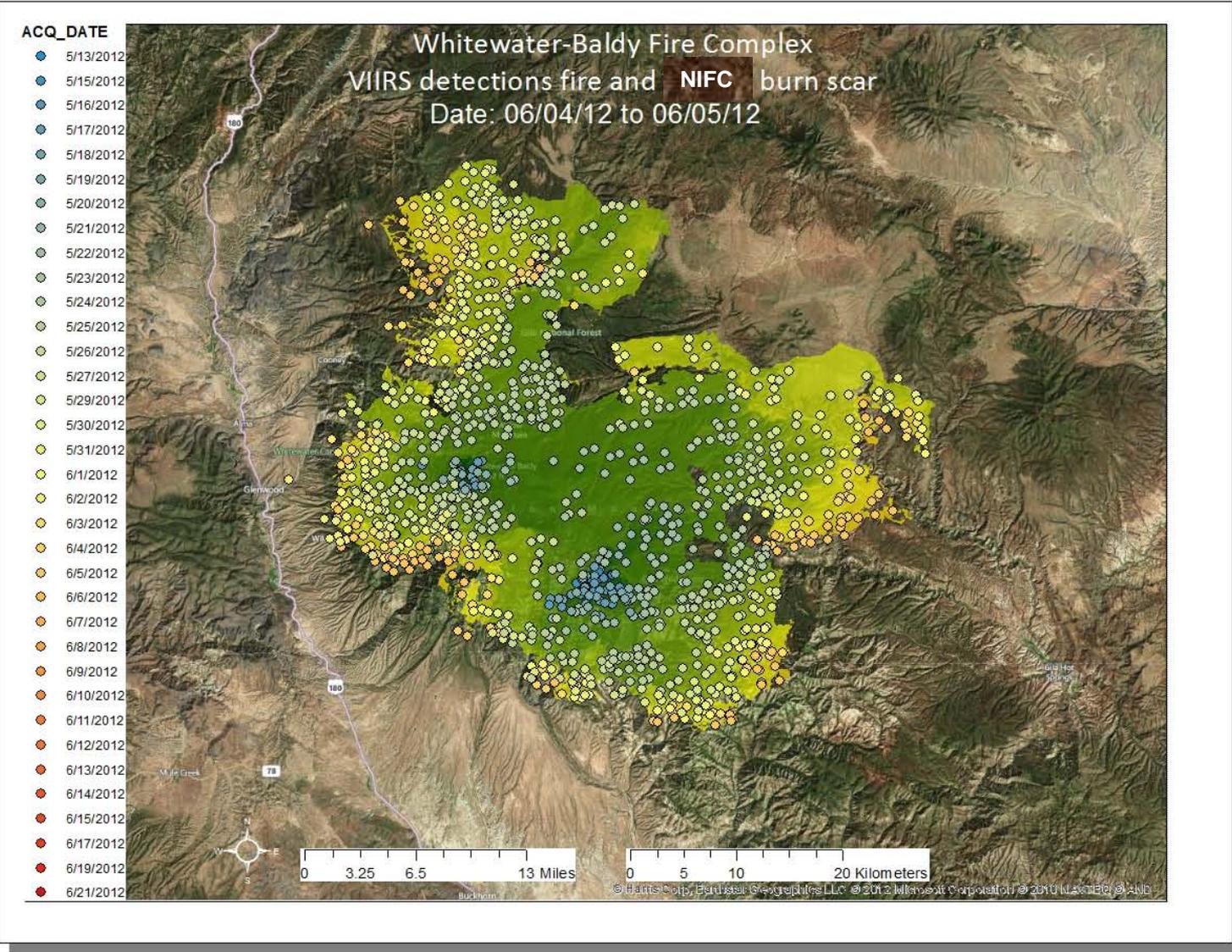


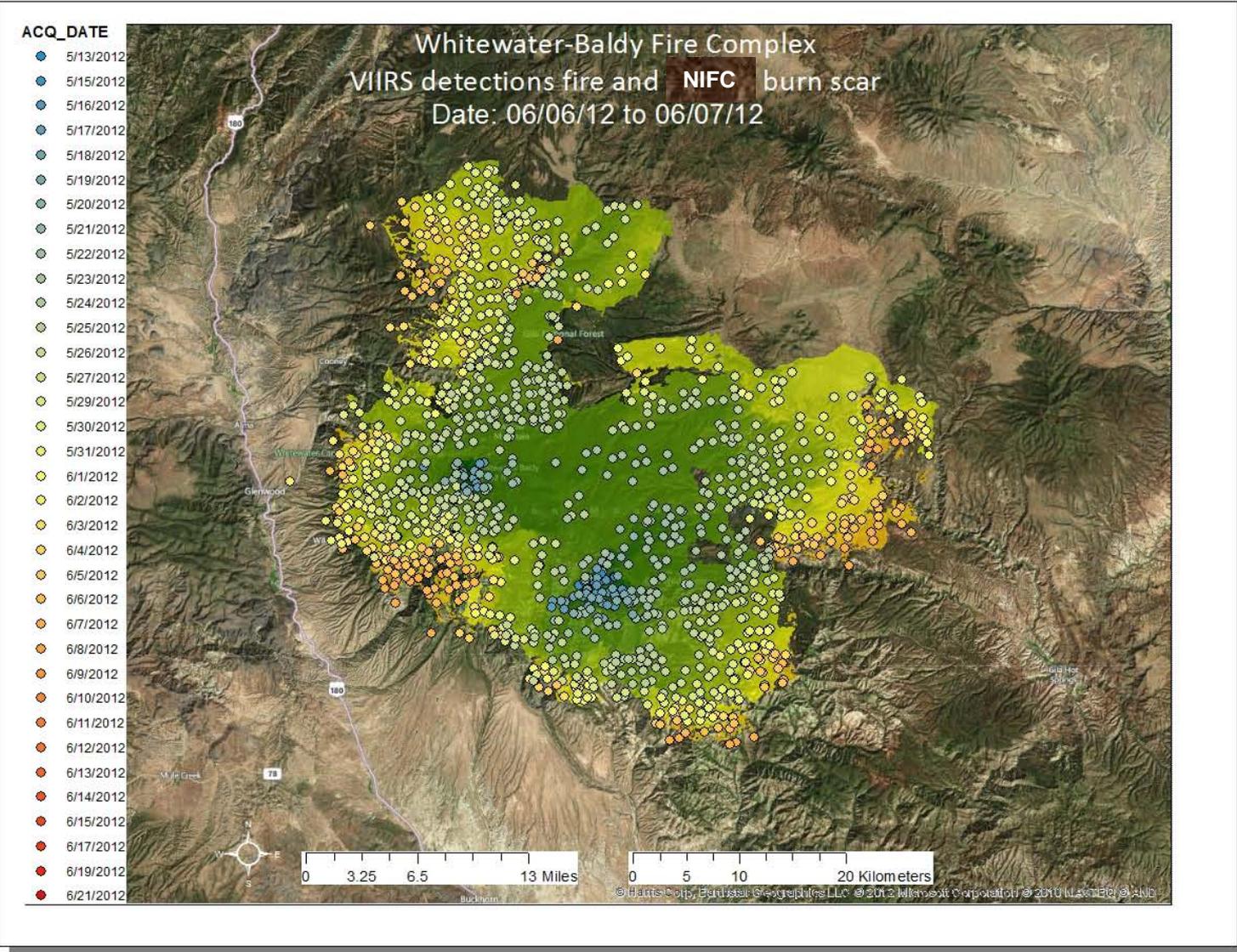


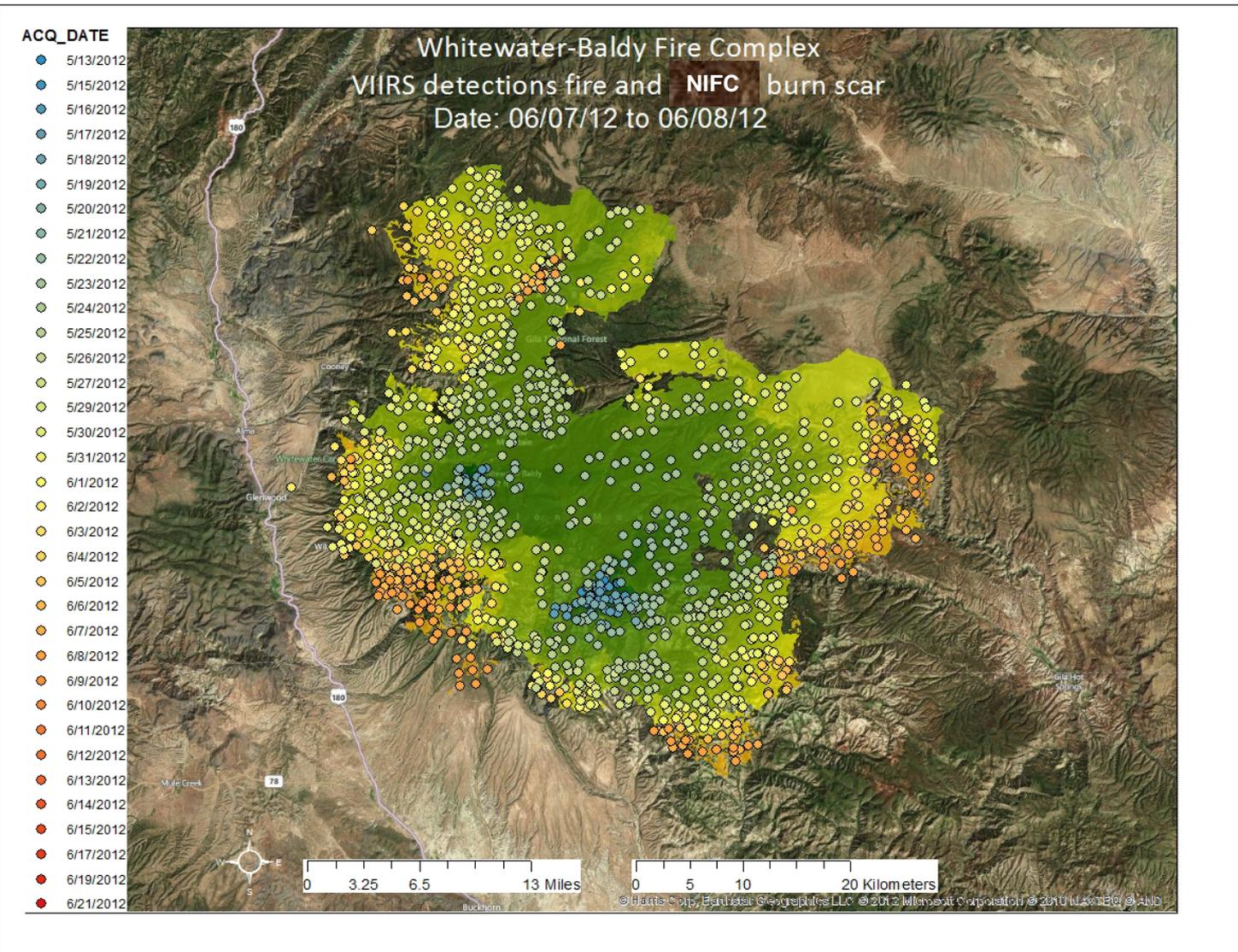


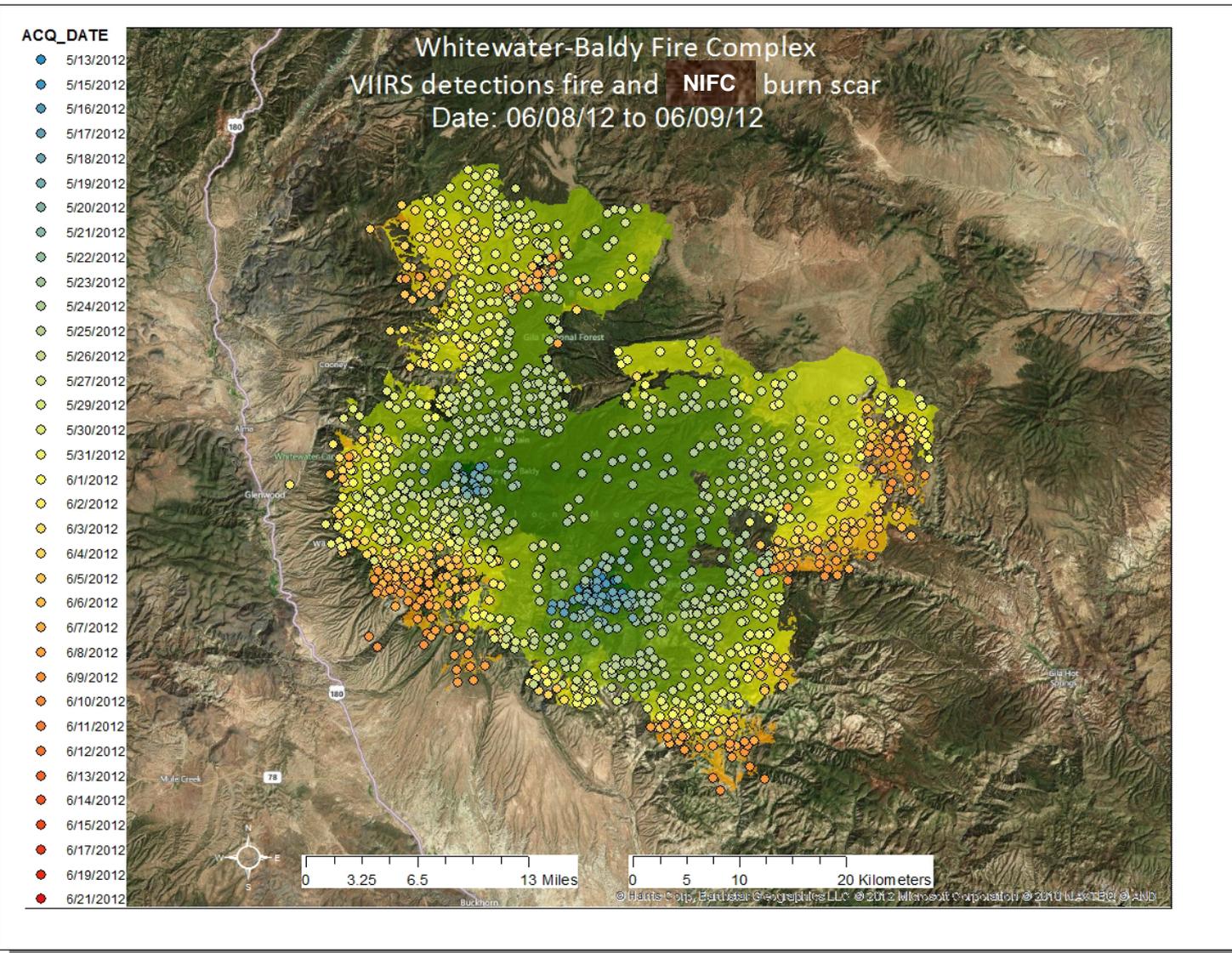


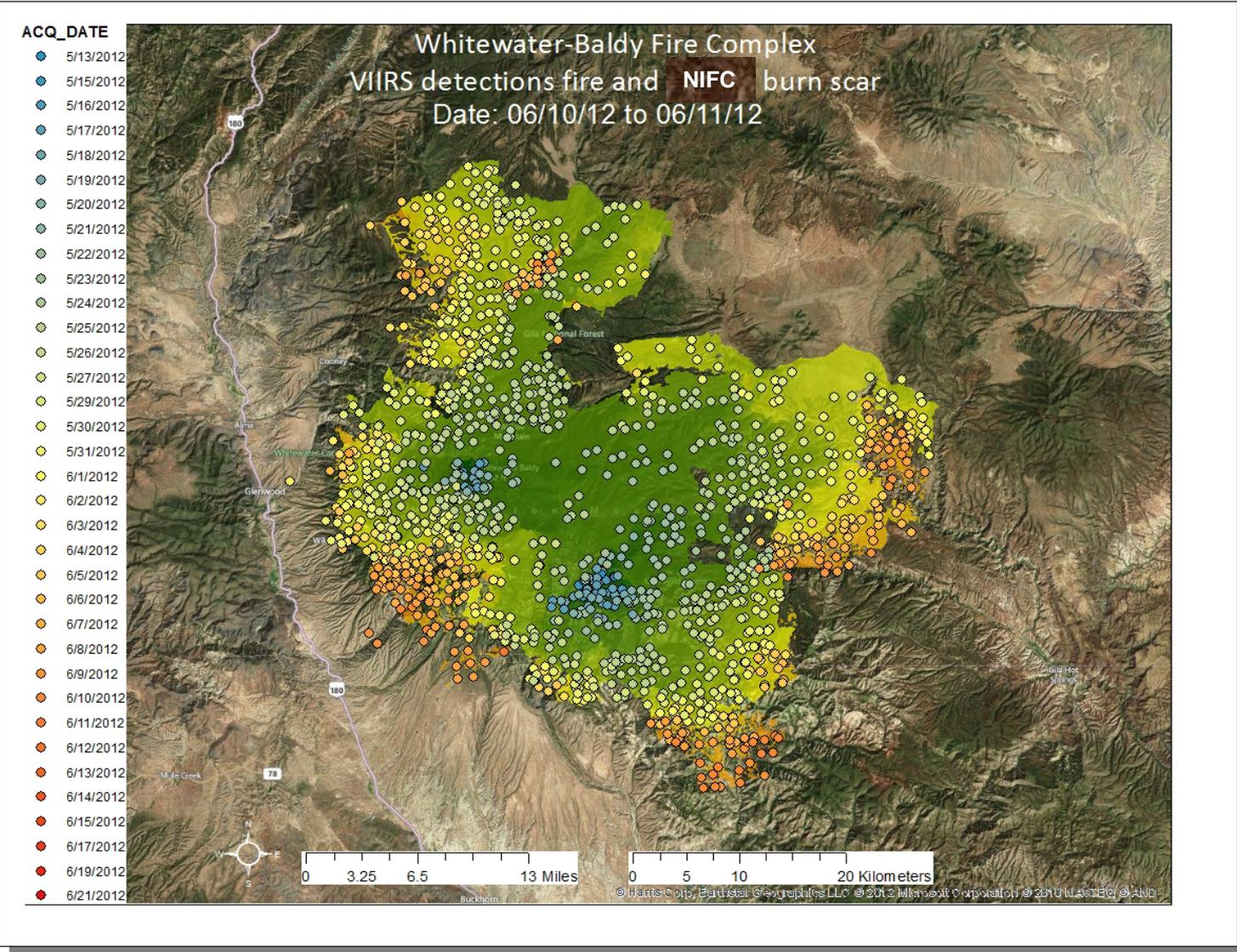


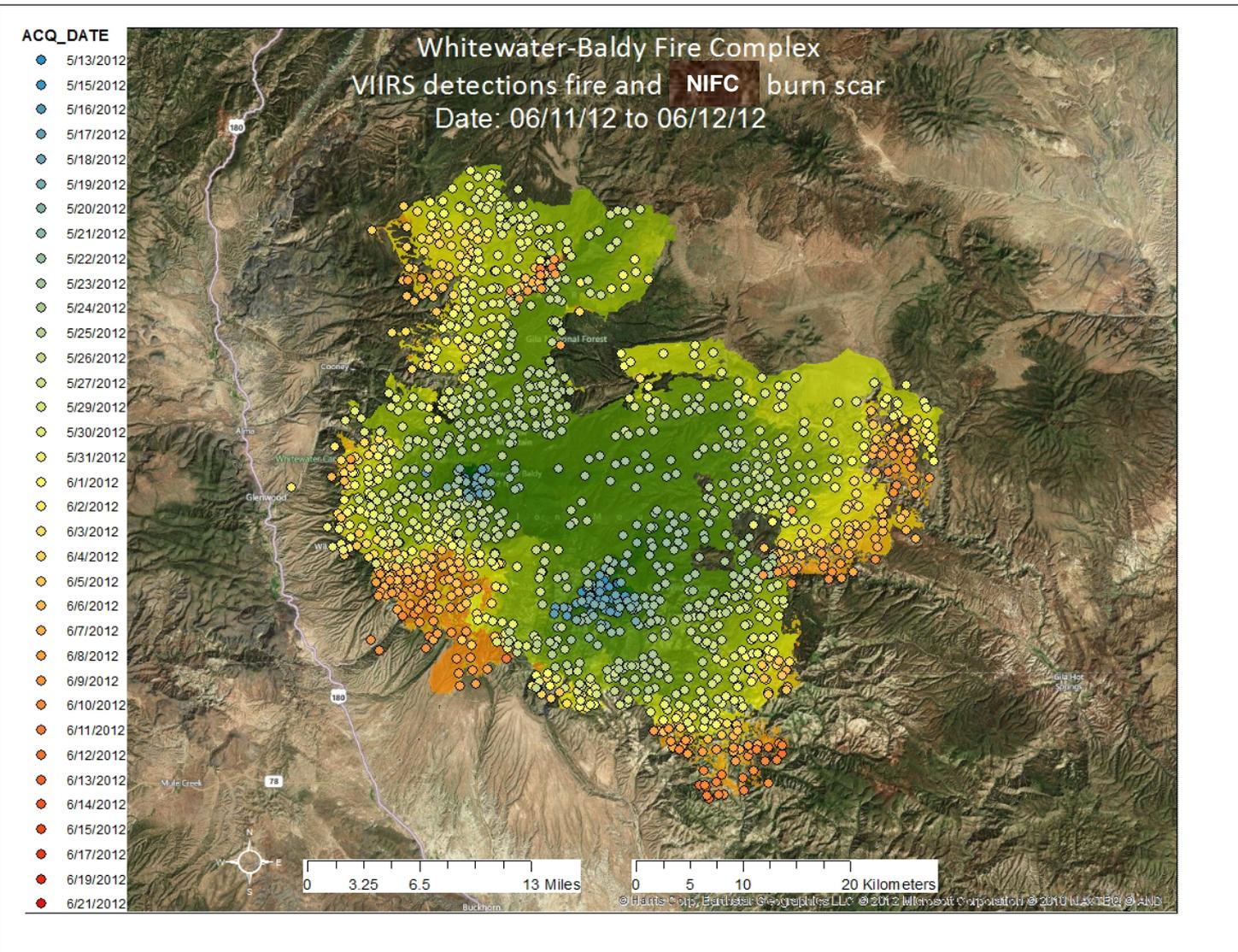


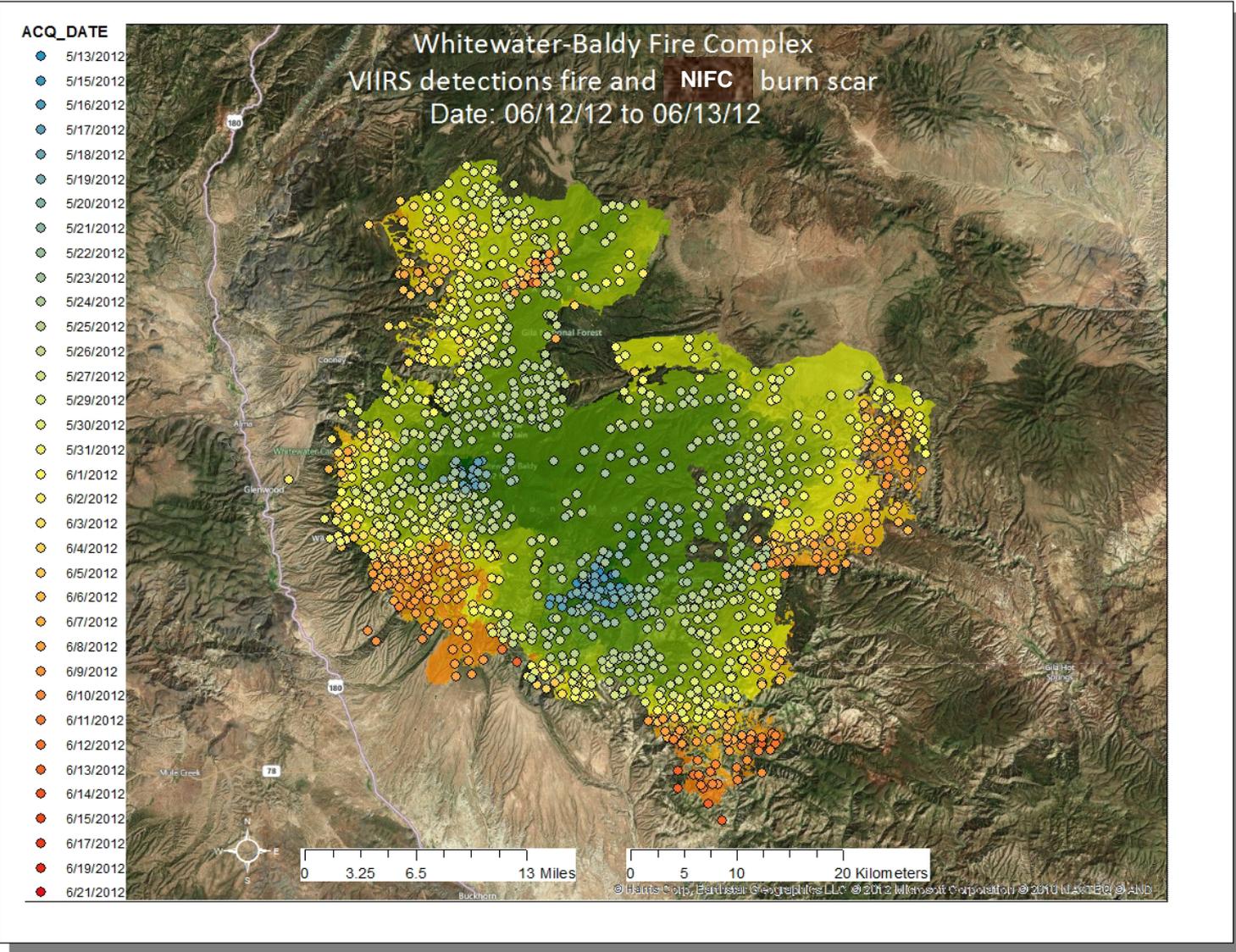


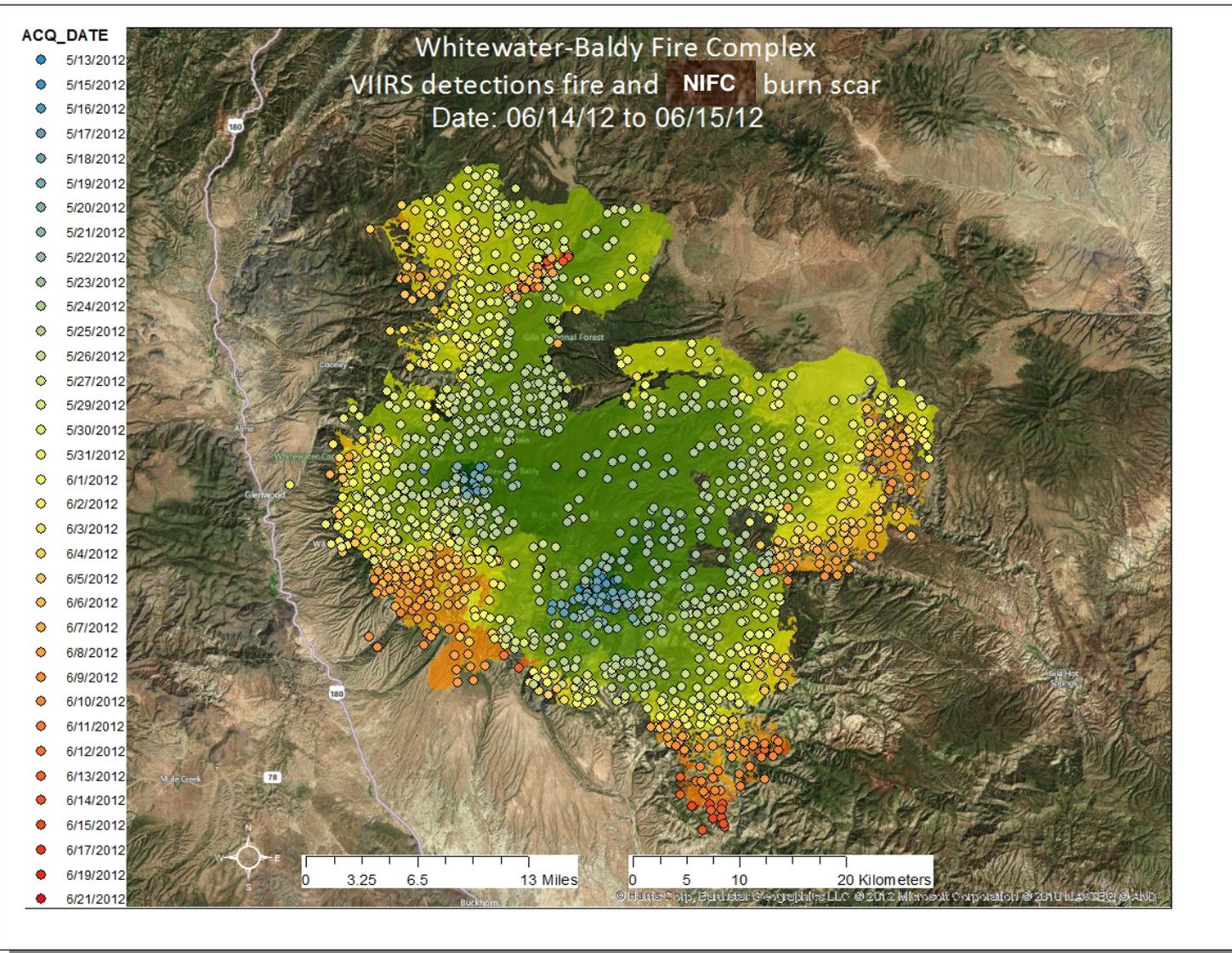


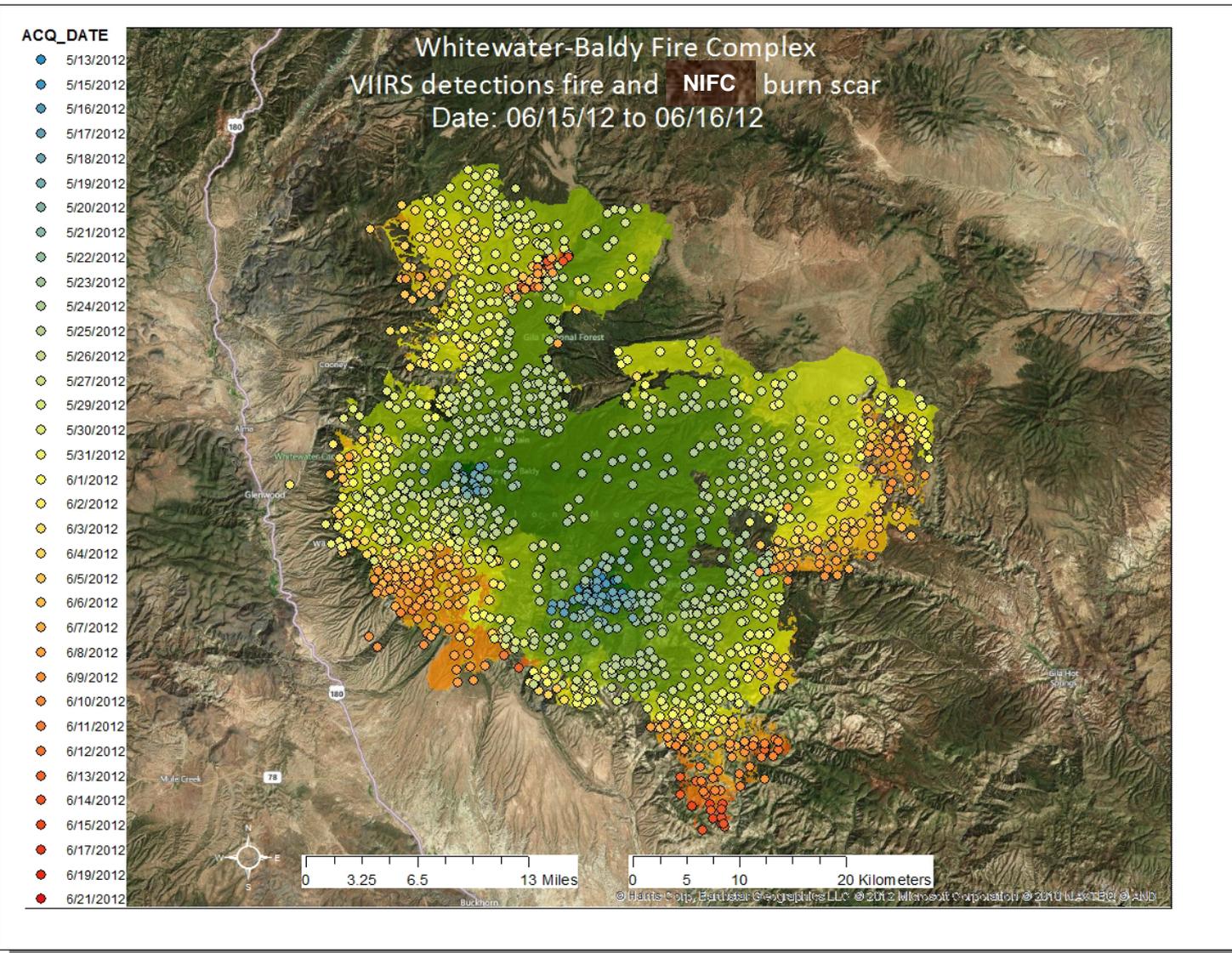


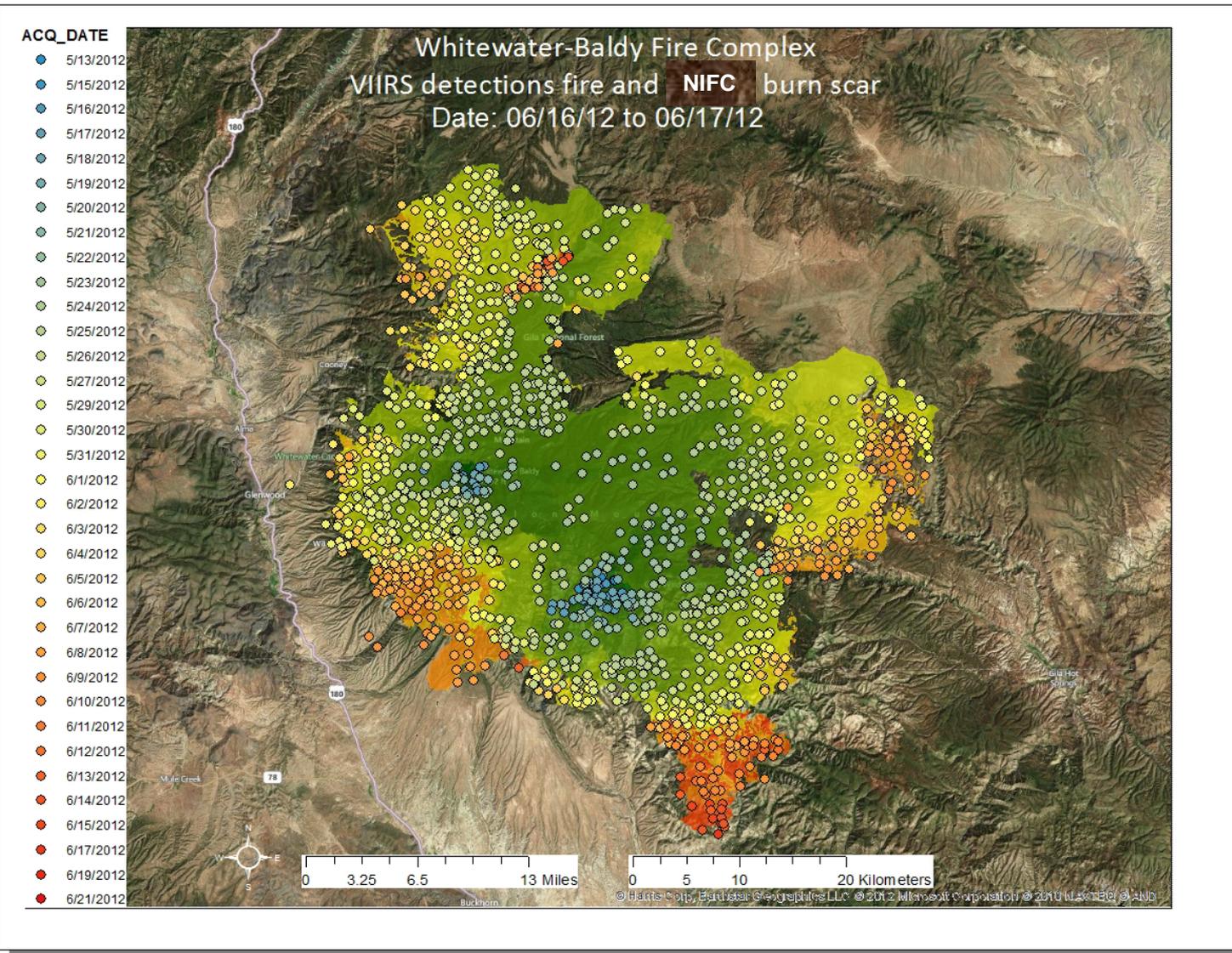


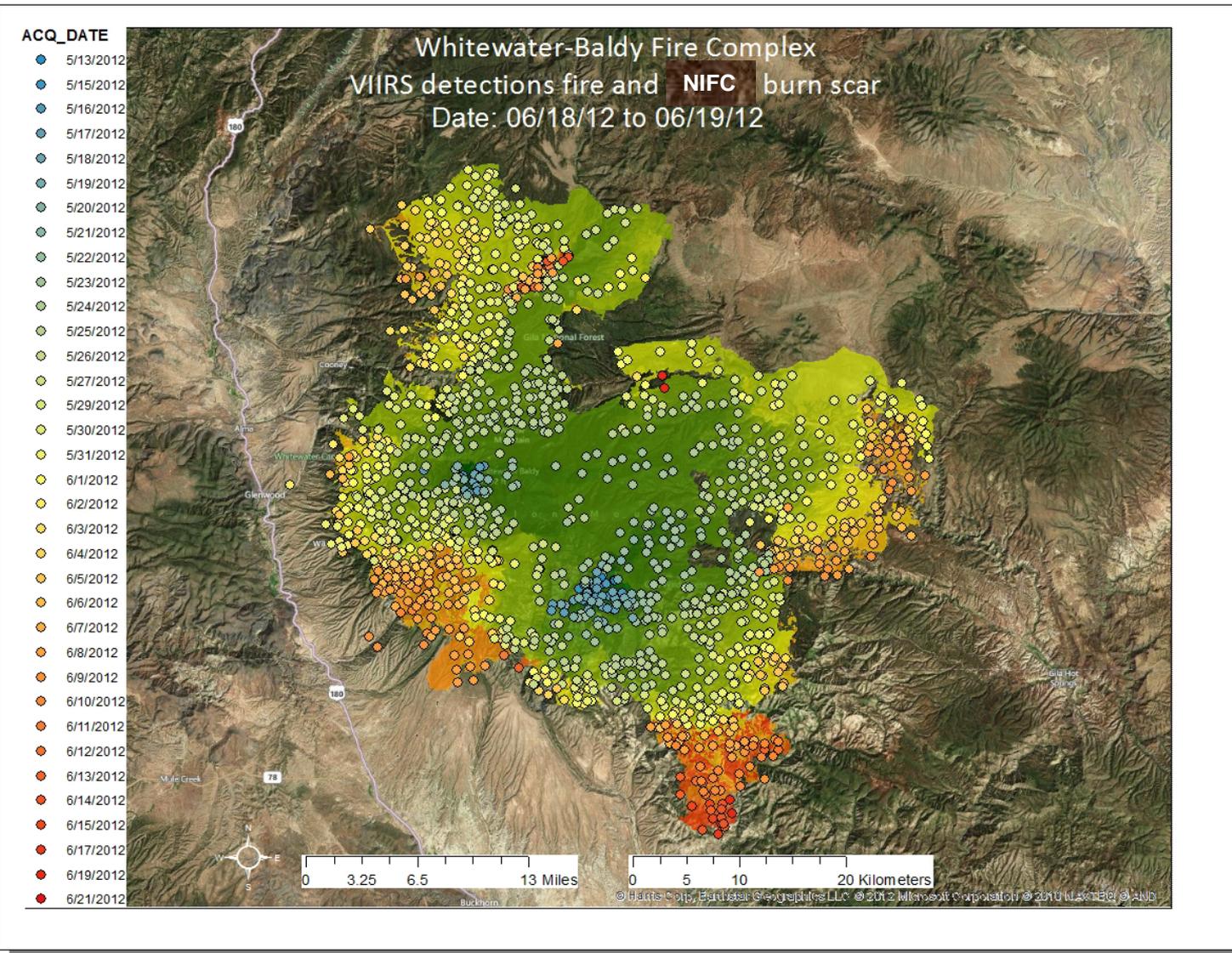


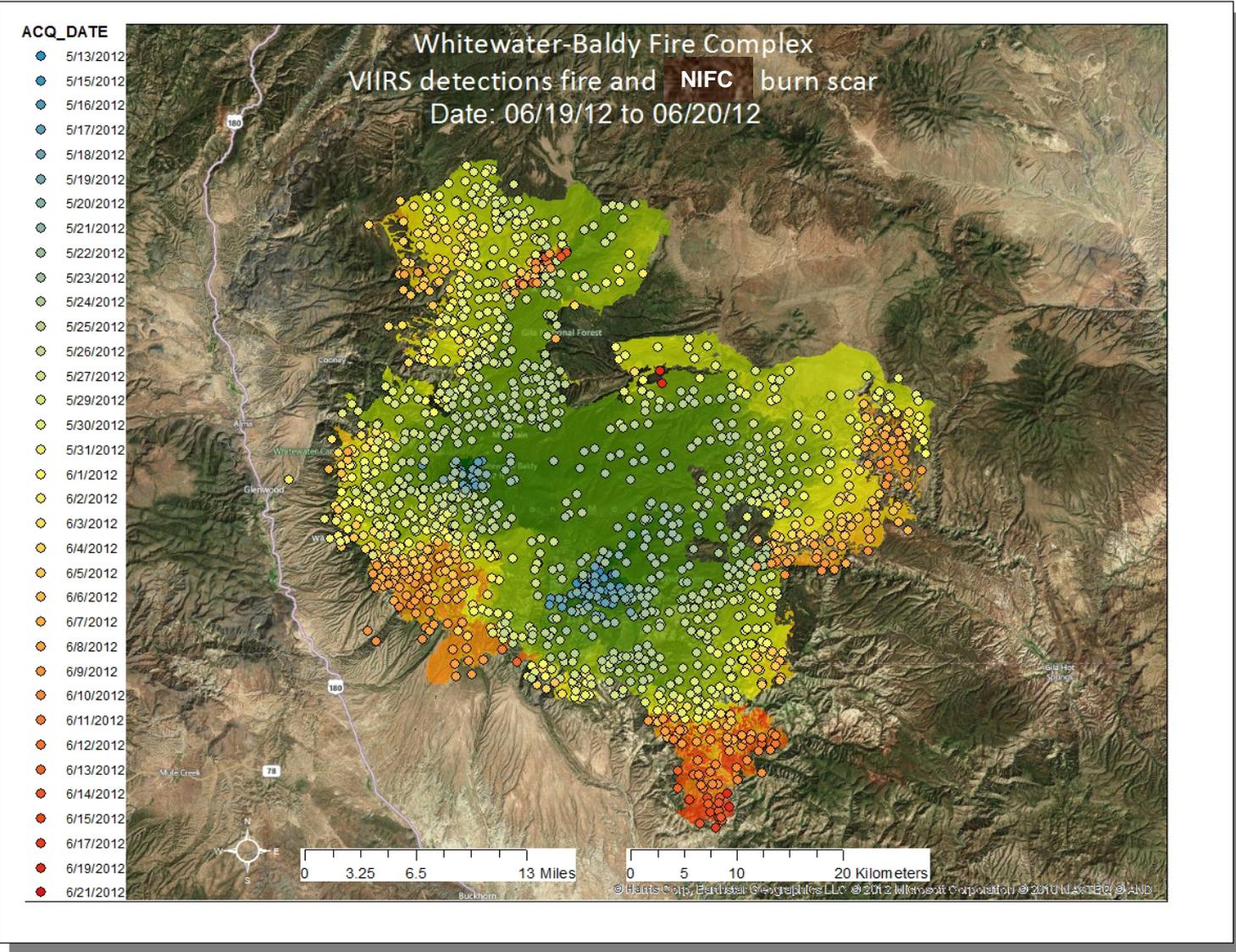


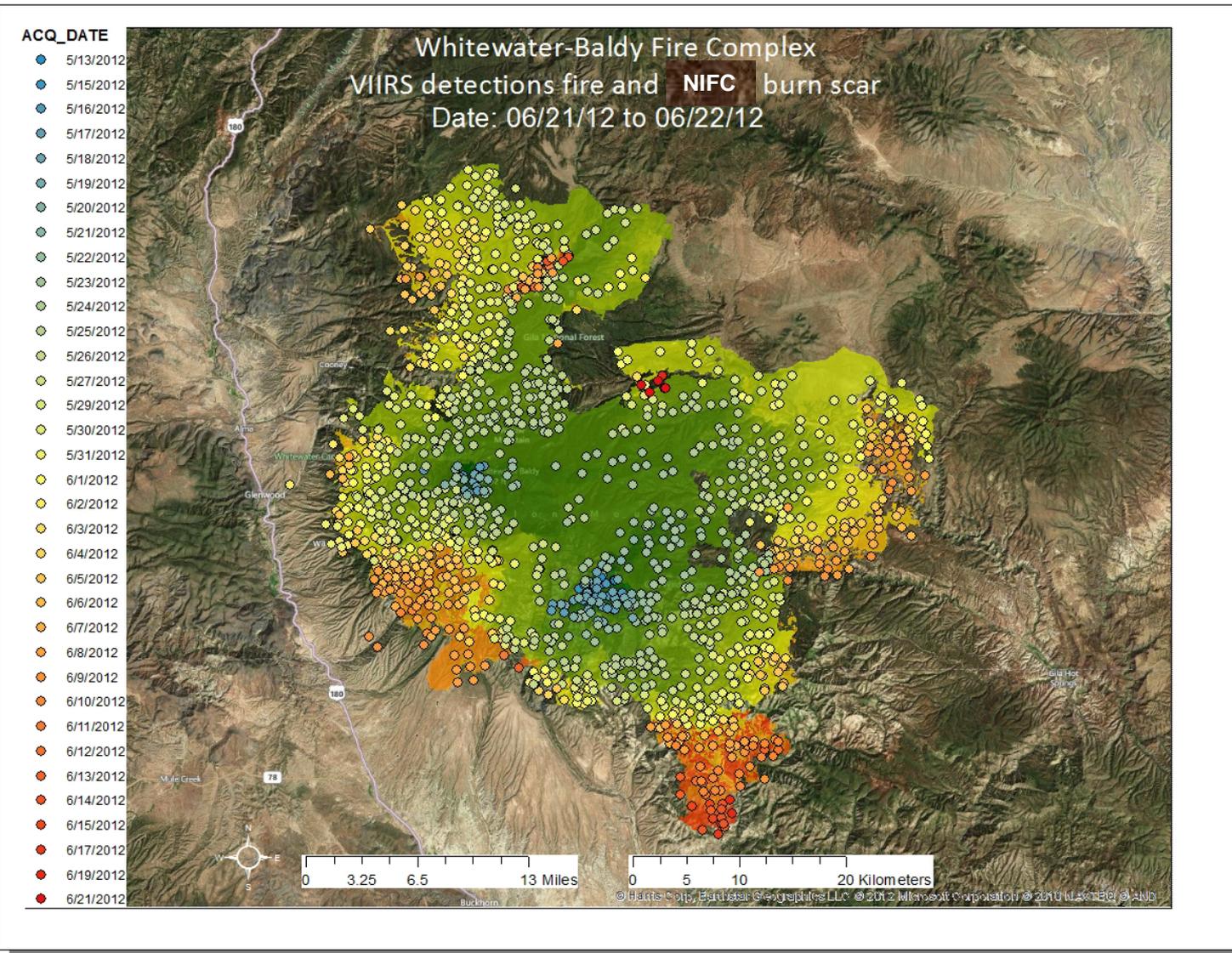








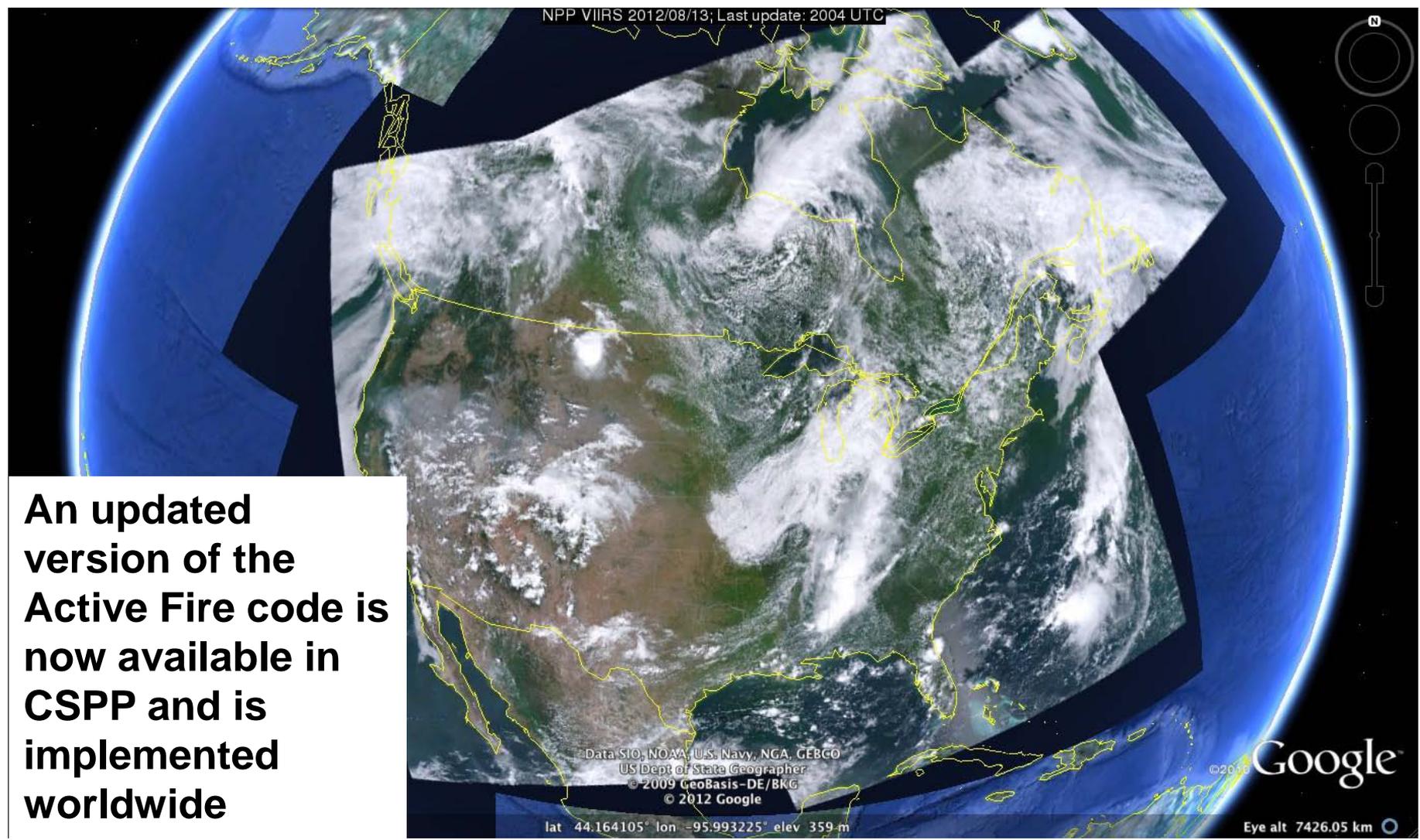






SSEC (UW) Direct Broadcast Coverage

Via Community Satellite Processing Package (CSPP)

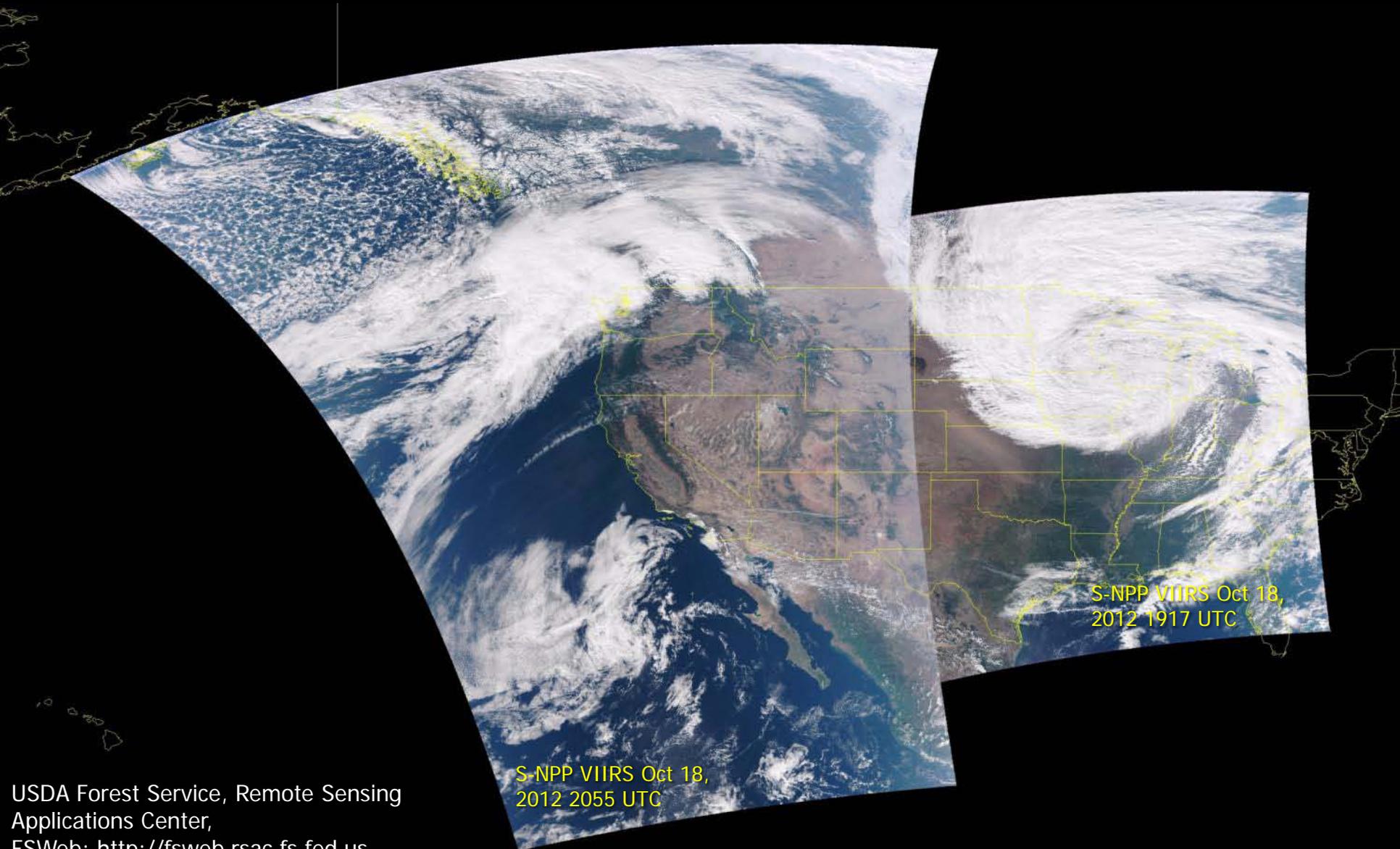


An updated version of the Active Fire code is now available in CSPP and is implemented worldwide

An increasing number of data products are available for the DB community

Example of VIIRS DR Imagery

USDA Forest Service Remote Sensing Applications Center



S-NPP VIIRS Oct 18,
2012 2055 UTC

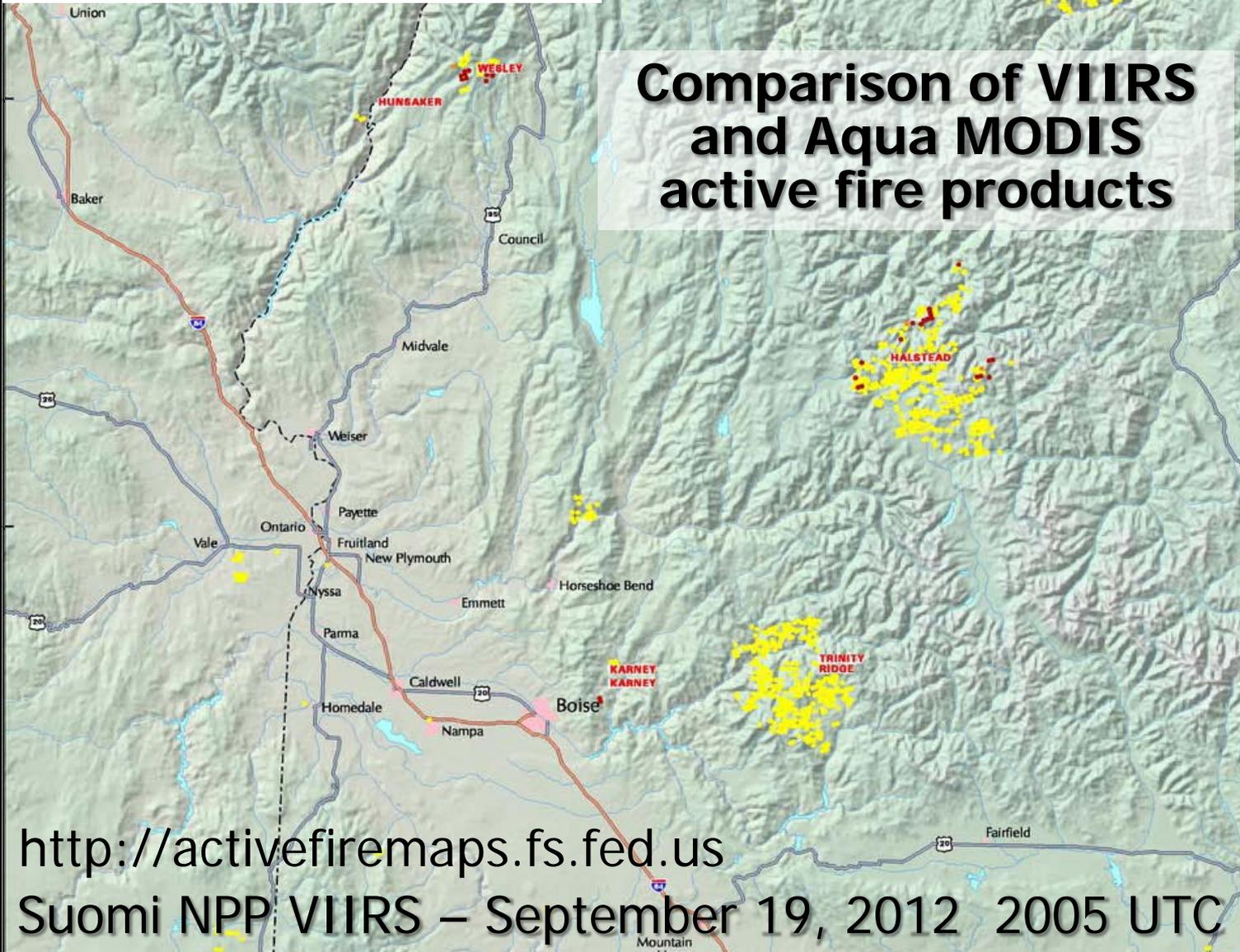
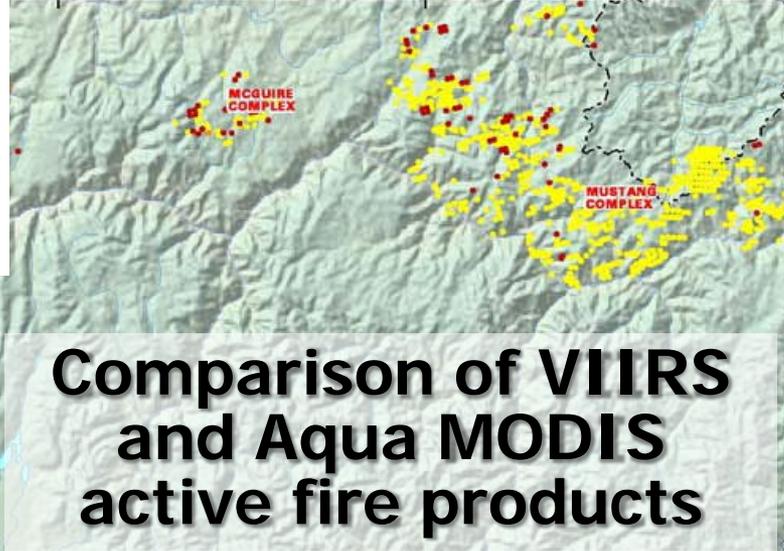
S-NPP VIIRS Oct 18,
2012 1917 UTC

USDA Forest Service, Remote Sensing
Applications Center,

FSWeb: <http://fsweb.rsac.fs.fed.us>

WWW: <http://www.fs.fed.us/eng/rsac>

A replacement VIIRS fire code is being implemented in NASA DRL IPOPP and is also being tested by RSAC





Summary and conclusions



- **Early assessment of the SNPP VIIRS fire product is encouraging**
 - Suomi NPP fire product is currently in the Intensive Calibration and Validation phase
- **Active Fires product has been declared Beta maturity and is publicly available**
 - Ready for end user evaluation and applications
- **User Readiness and Proving Ground activities are reaching out to various domestic and international end users**
- **Implementation of DB processing systems is underway domestically and internationally**
 - Continuing coordination regarding product evaluation and algorithm versioning is critical
- **More work is needed to implementation of new MODIS algorithm components (implemented in Version 6) and sensor-specific tuning in the VIIRS product**
 - Use of I band and DNB data (detection, validation, fused products)
- **Explicit validation remains crucial**



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)**

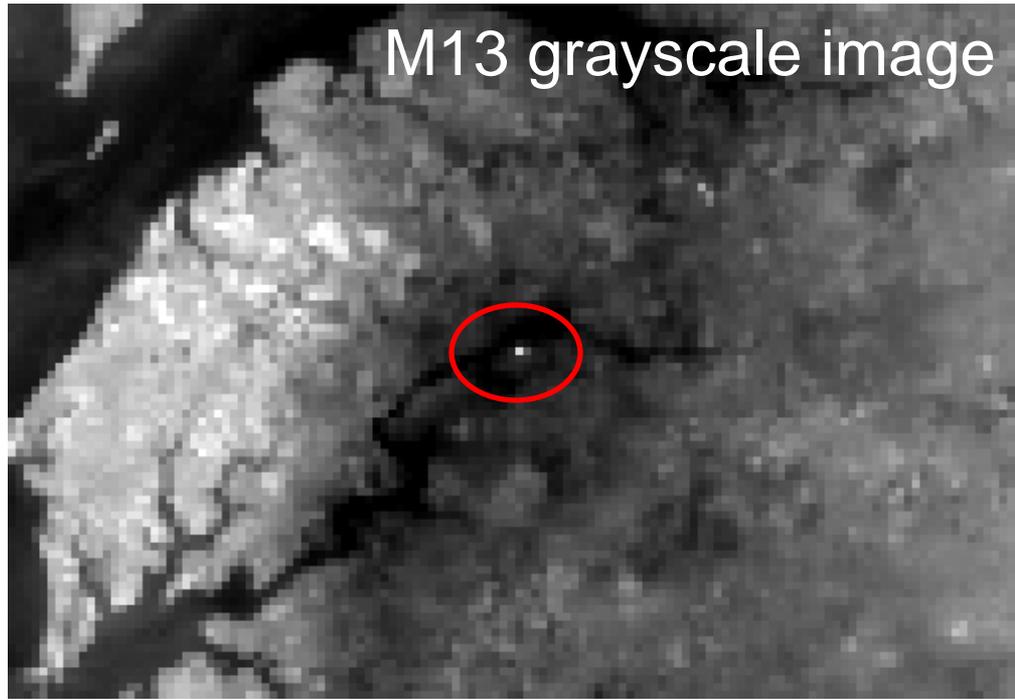
<http://www.nasa.gov/centers/goddard/news/releases/2012/12-066.html>

- **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>

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

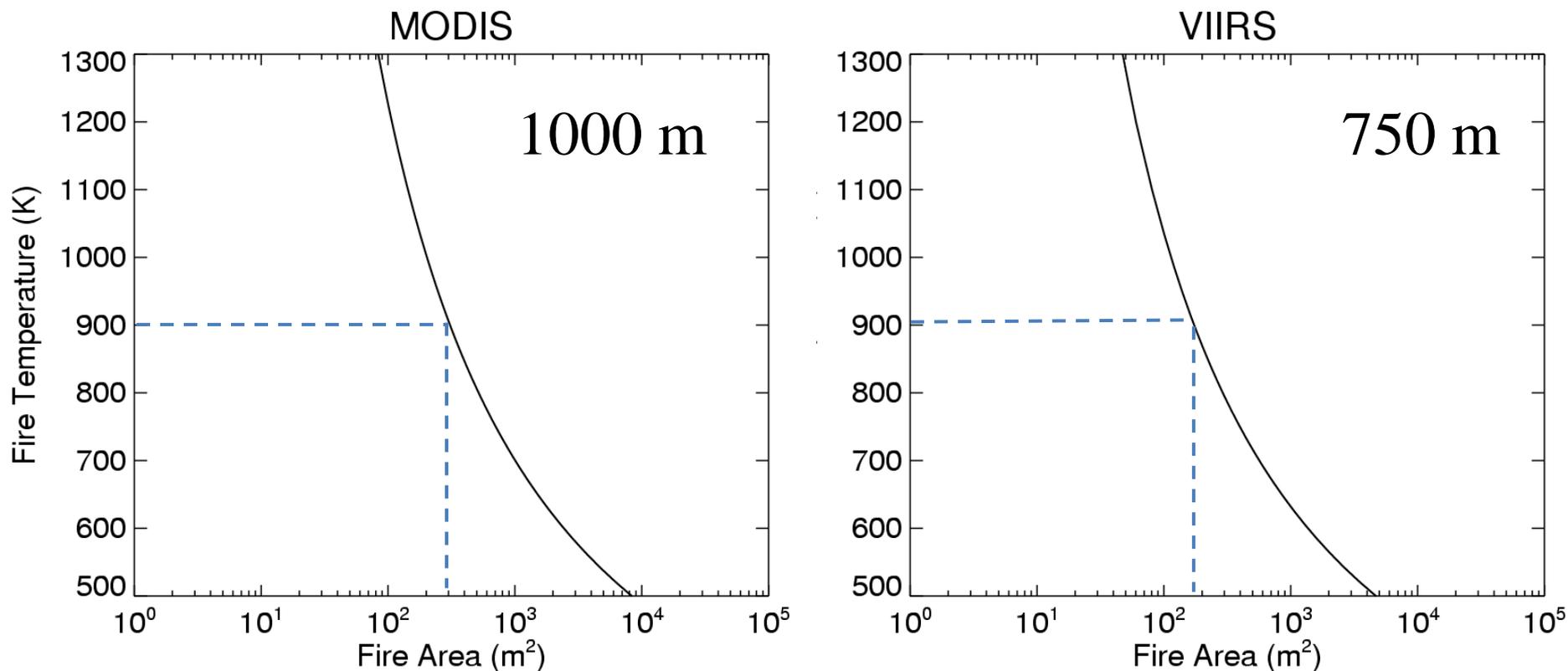




MODIS and VIIRS fire detections at nadir: modeling

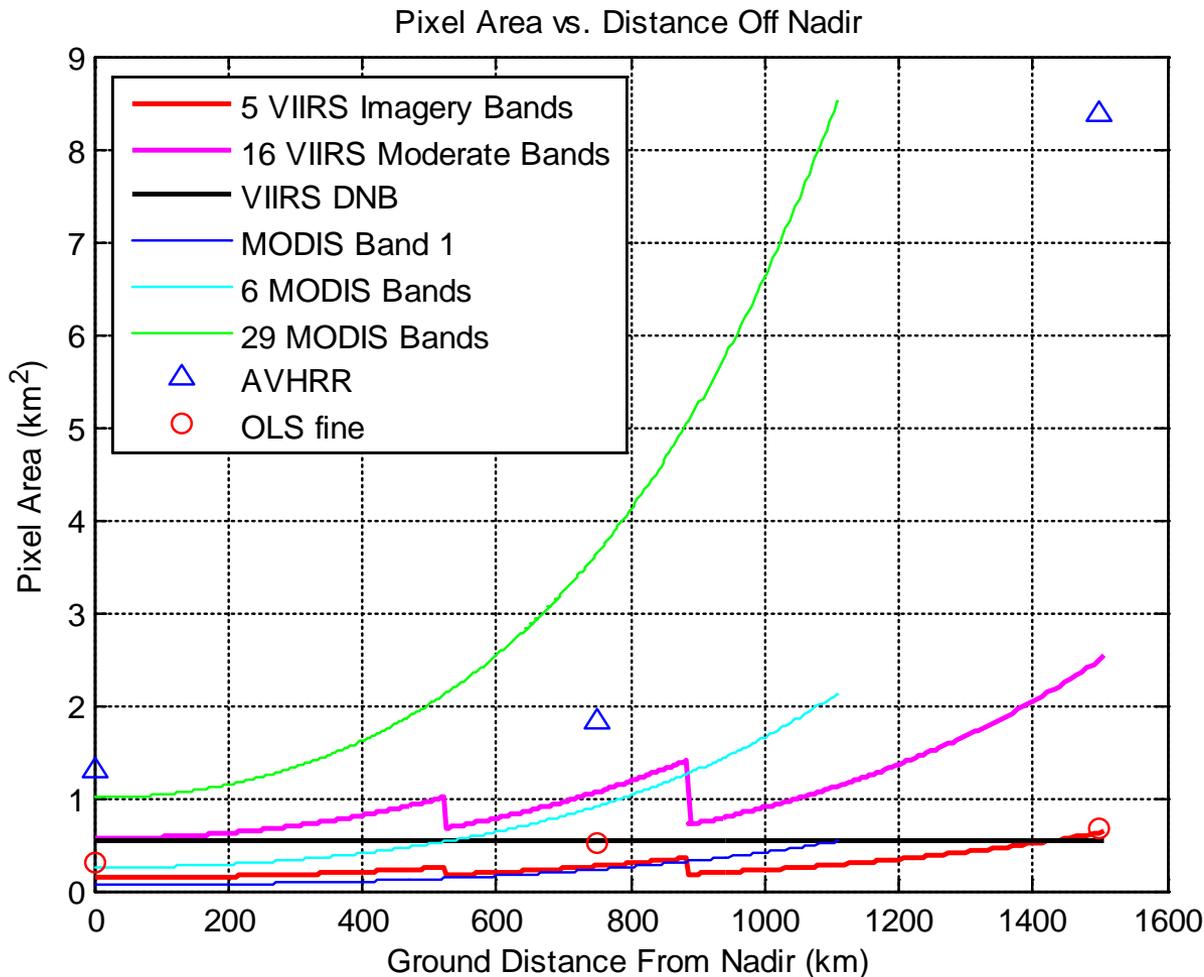


VIIRS spatial resolution is higher than that of MODIS; in general, VIIRS is expected to detect smaller fires at nadir



90% probability of detection; boreal forest; nadir view

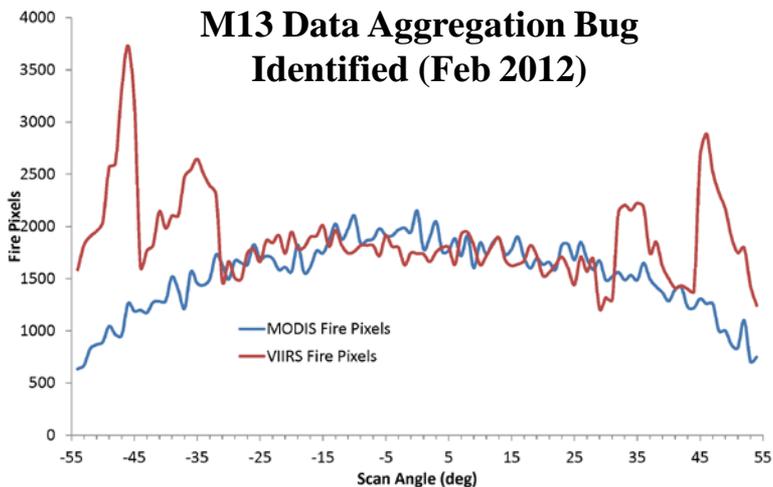
Near-constant pixel size



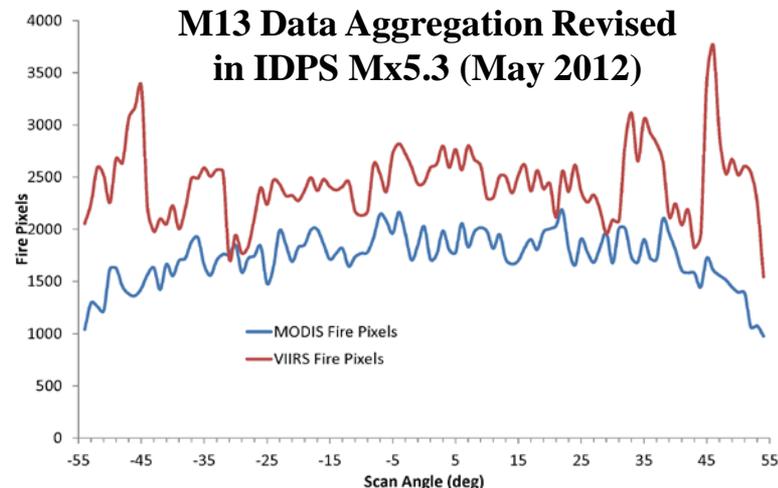
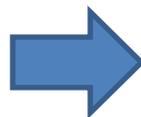
Spatial Resolution Comparisons for VIIRS, AVHRR, MODIS and OLS at Nadir and Across Swath

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

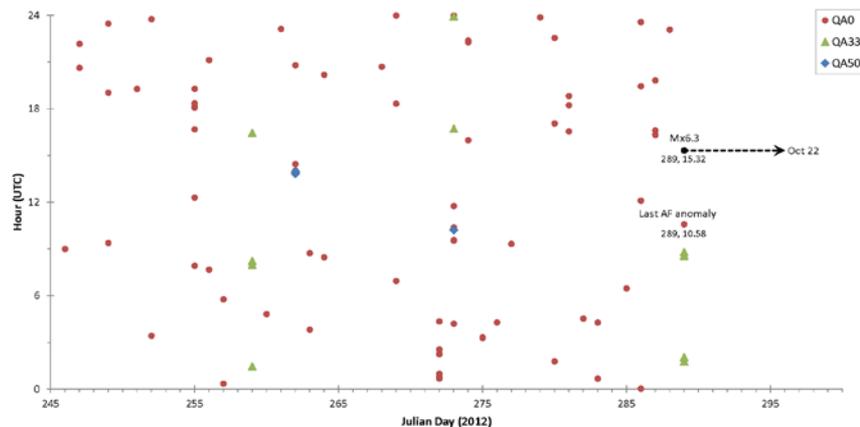
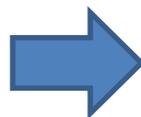
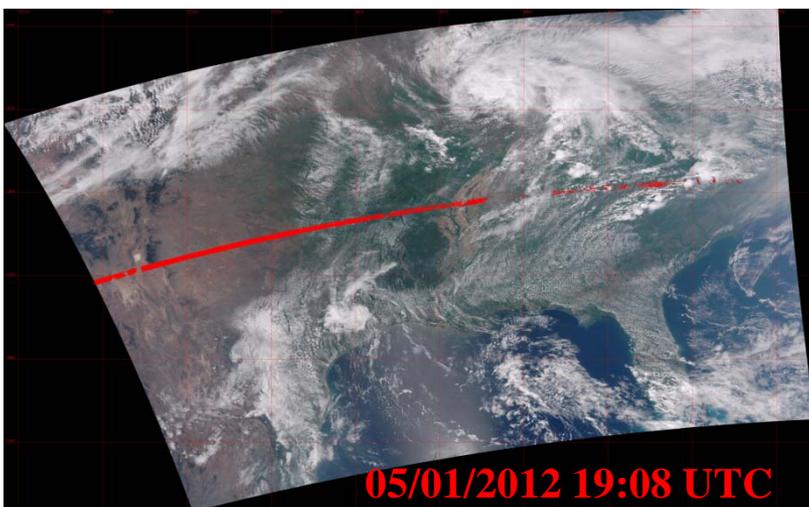
First post-launch task: evaluating and fixing the product



VIIRSxMYD14 Fire Detection Frequency (19 Jan <> 13 Feb)

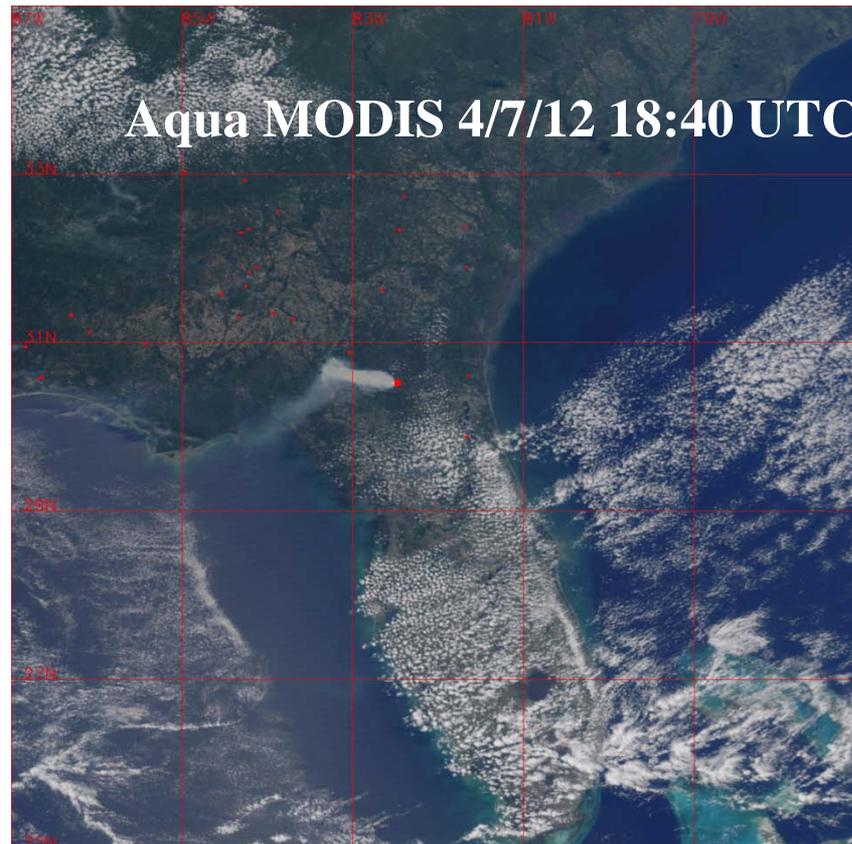
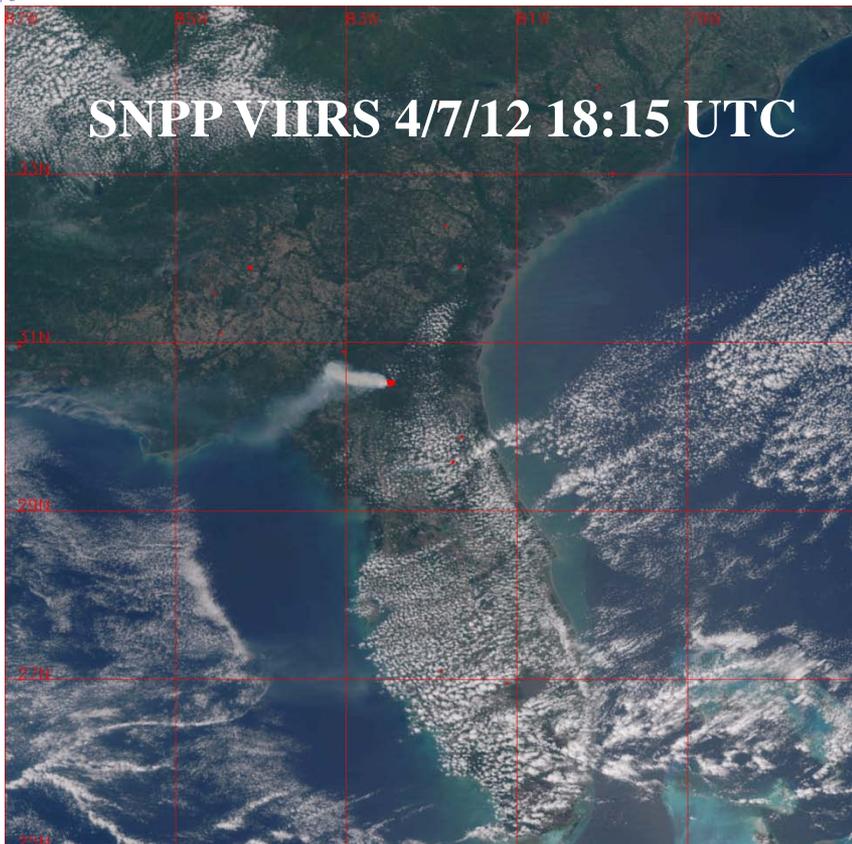


VIIRSxMYD14 Fire Detection Frequency (11 May <> 10 Jun)

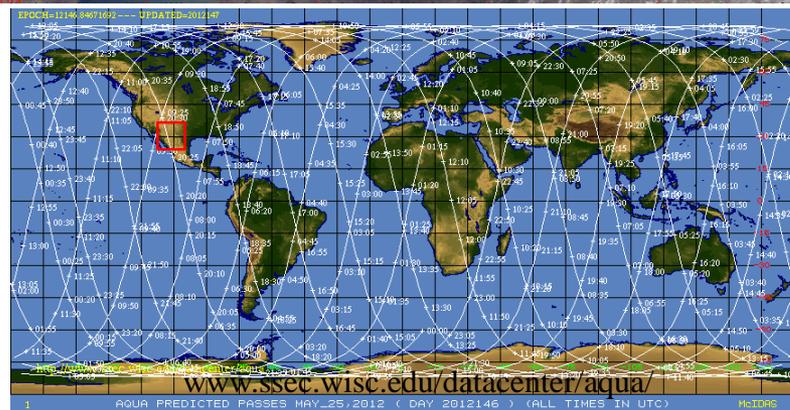
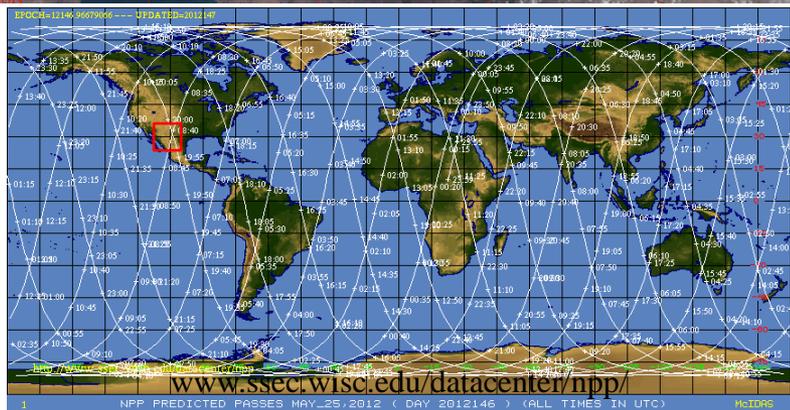
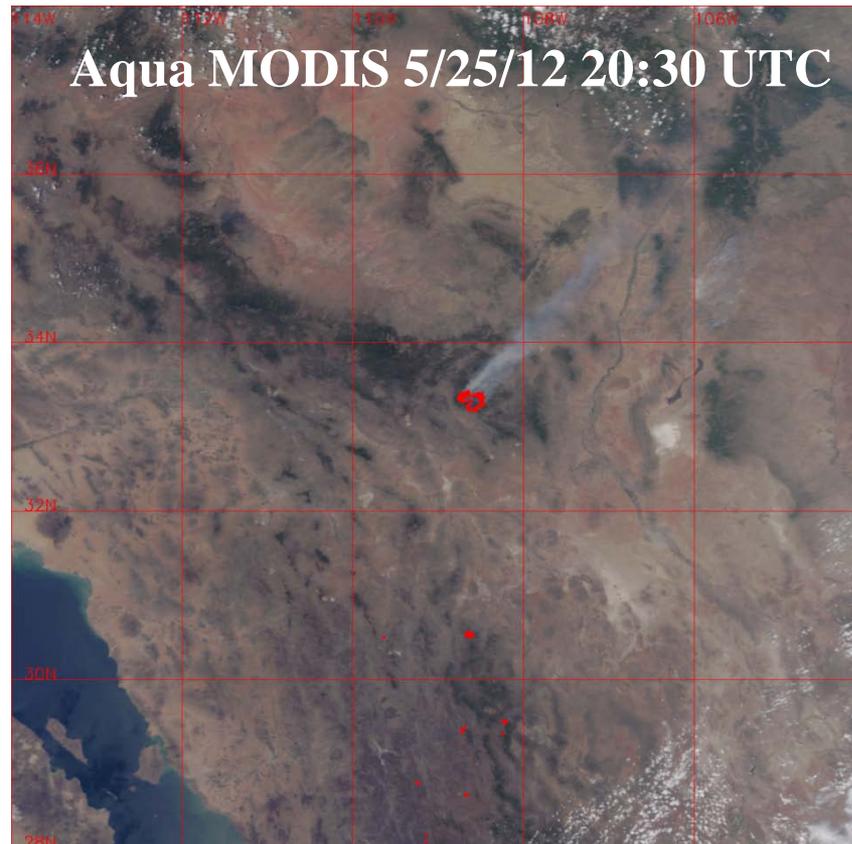
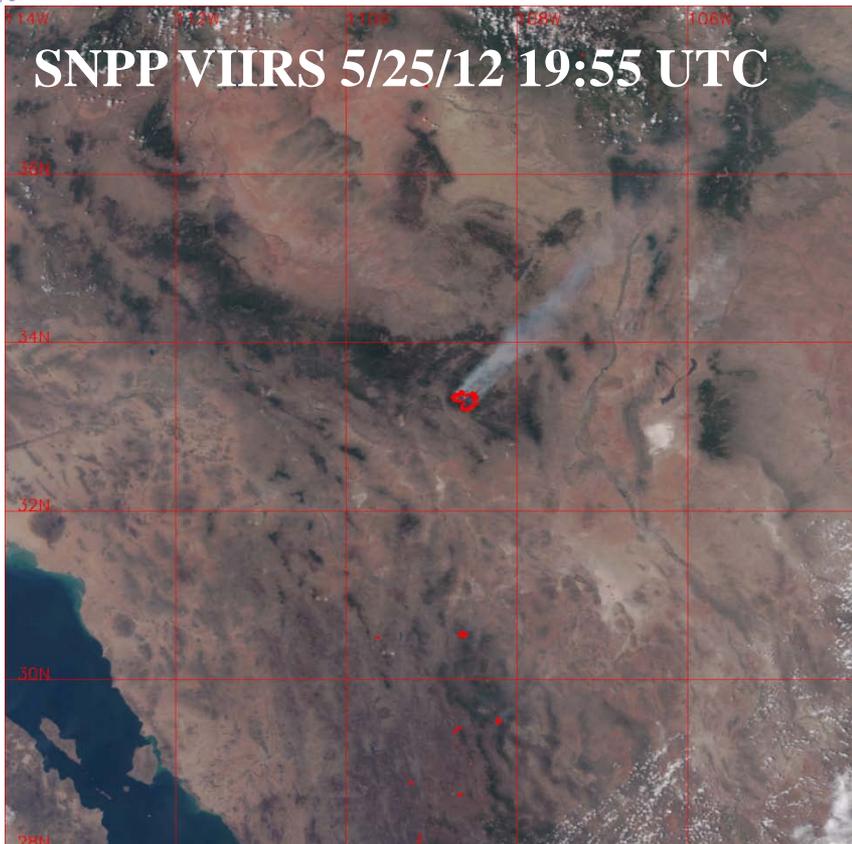


M13 dual-gain data anomaly fixed in IDPS Mx6.3 (October 2012)

County Line

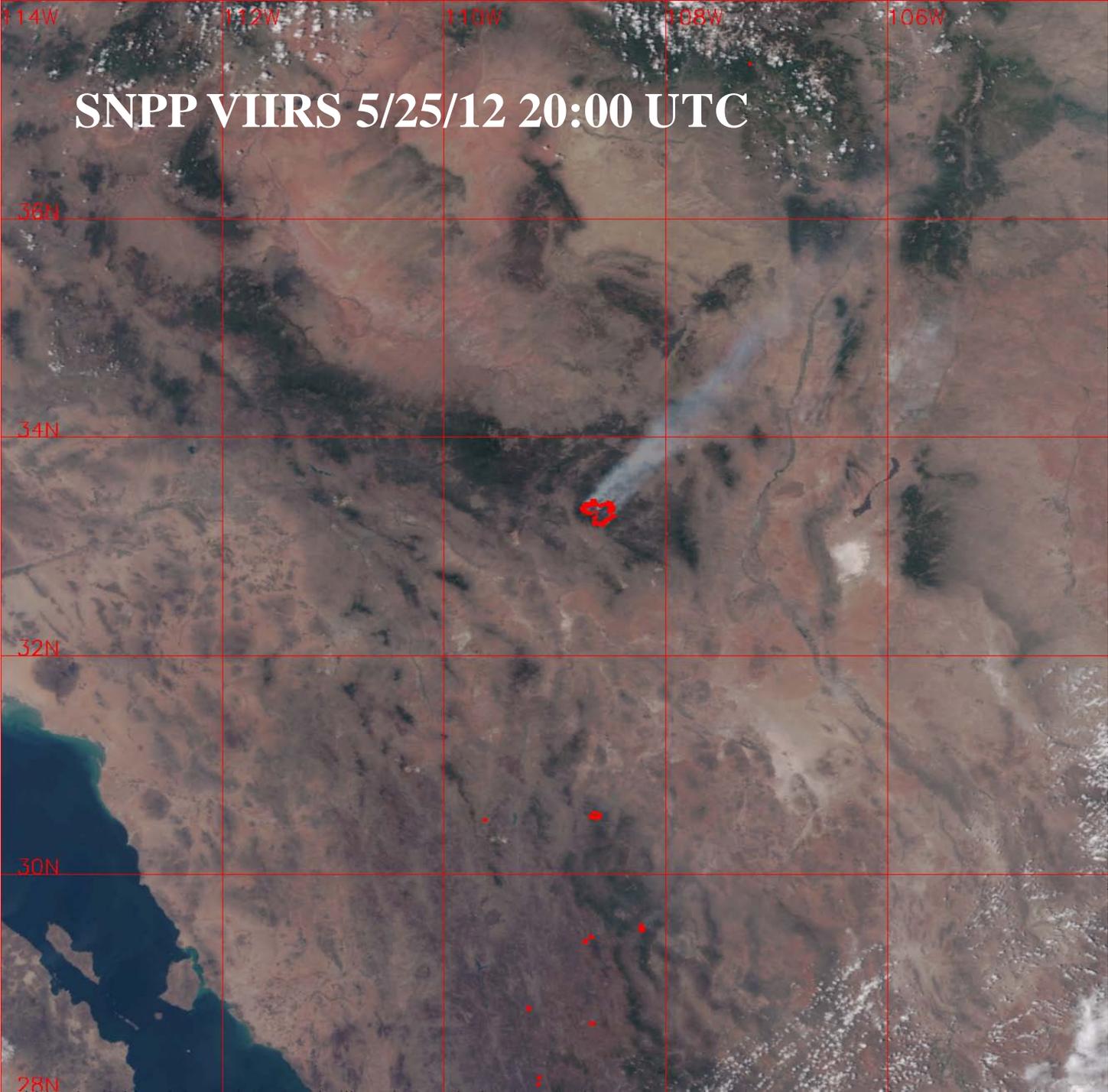


Whitewater-Baldy



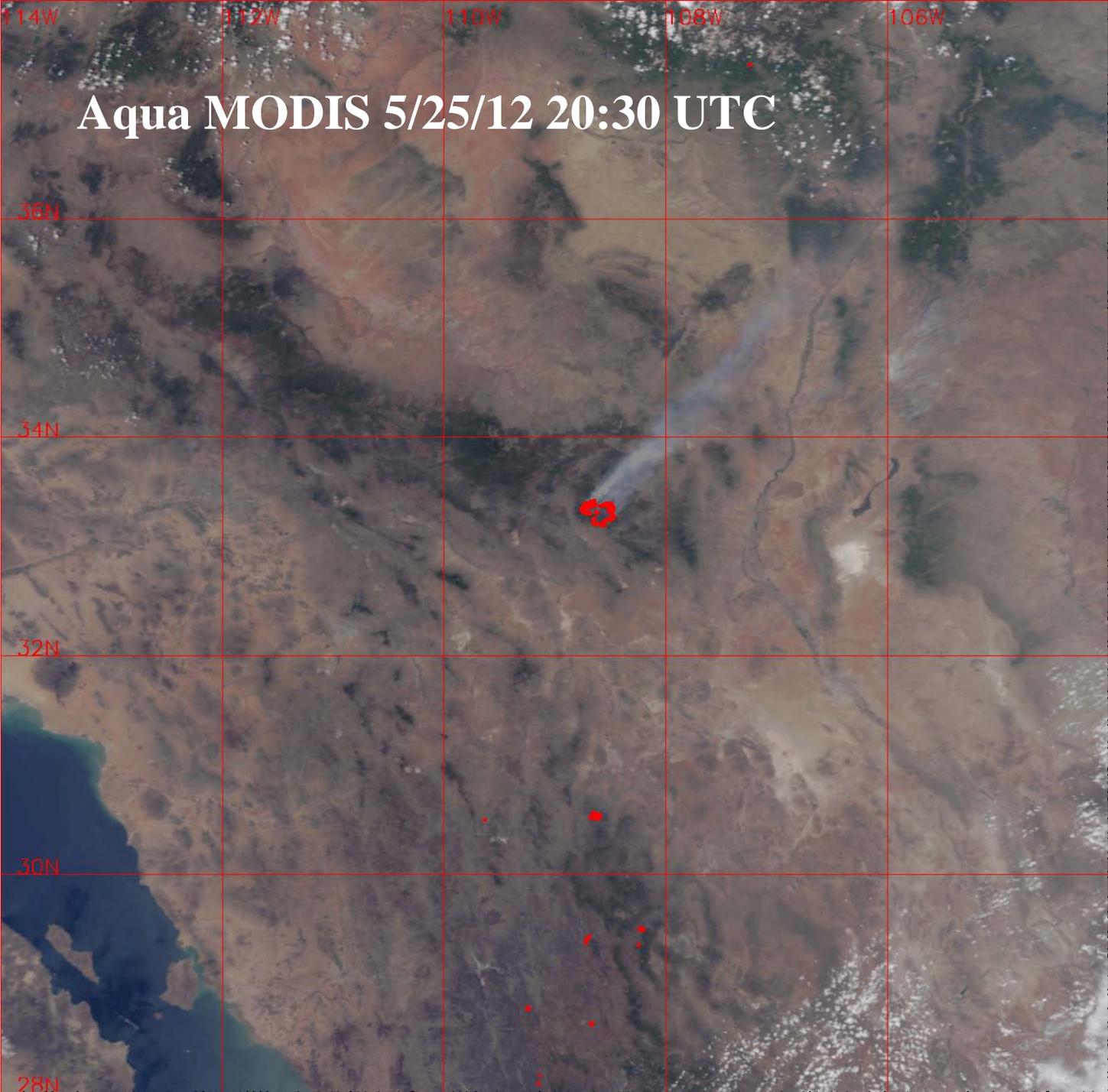


SNPP VIIRS 5/25/12 20:00 UTC

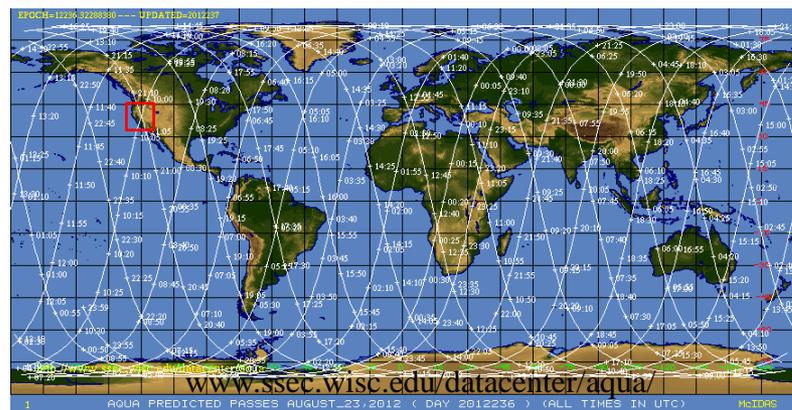
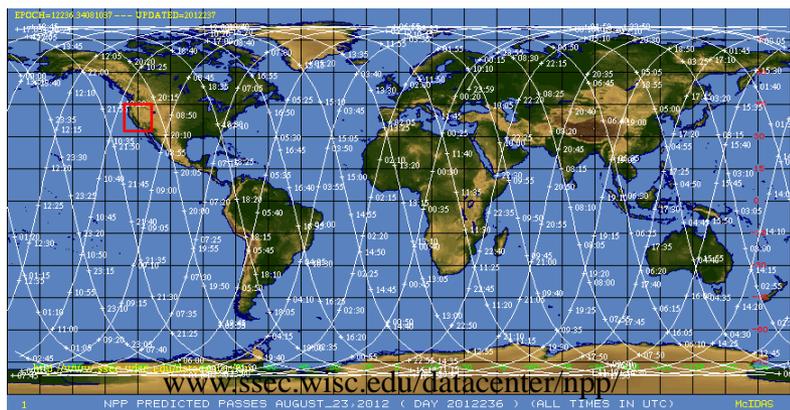
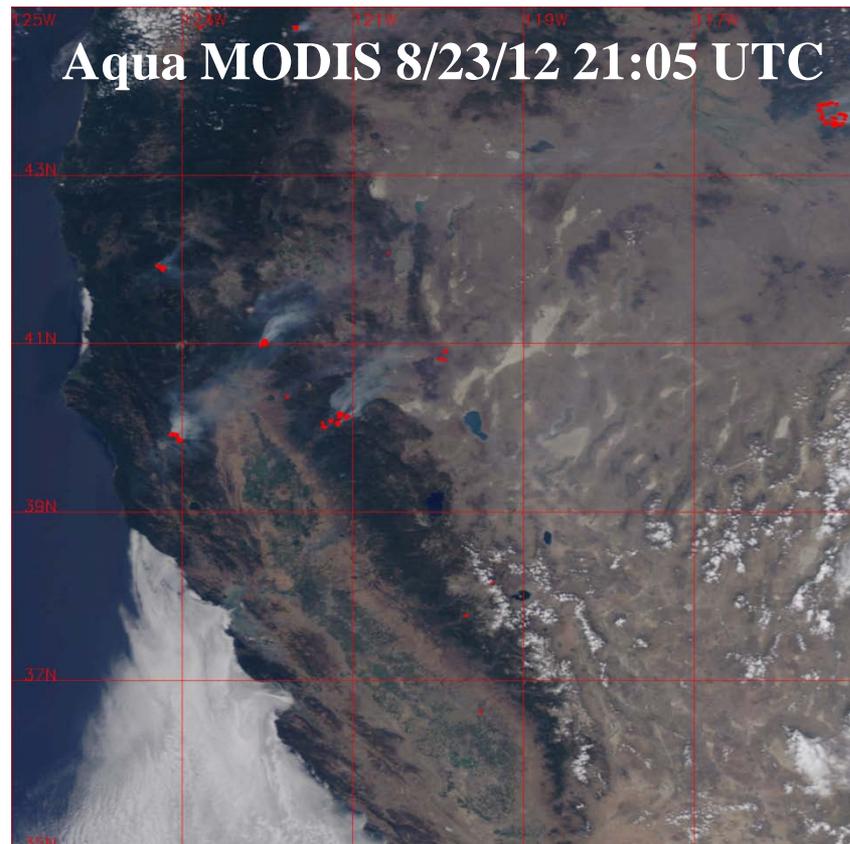
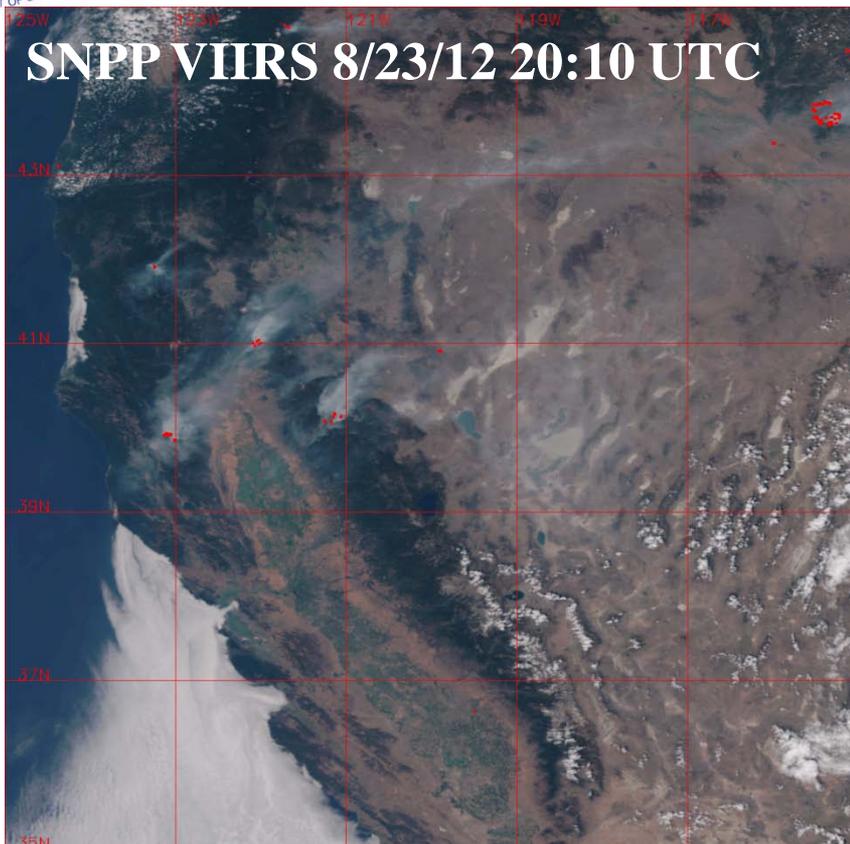




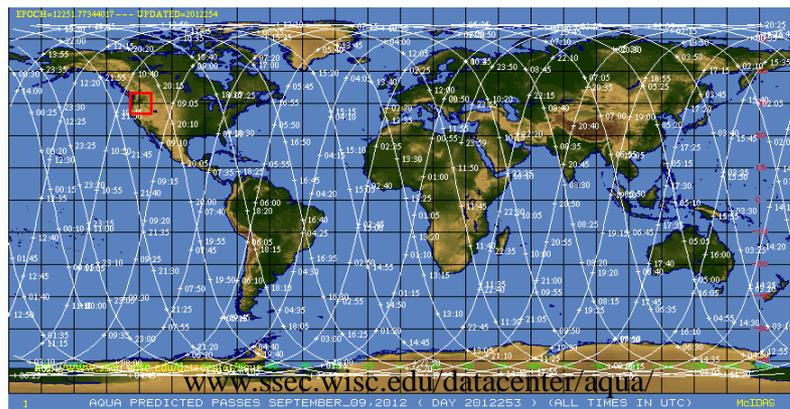
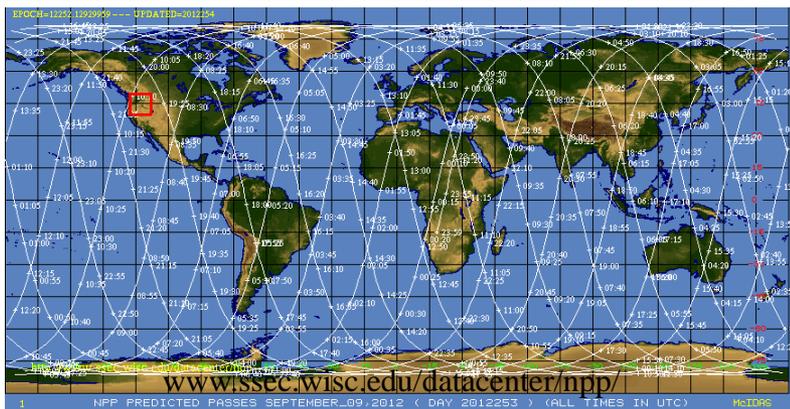
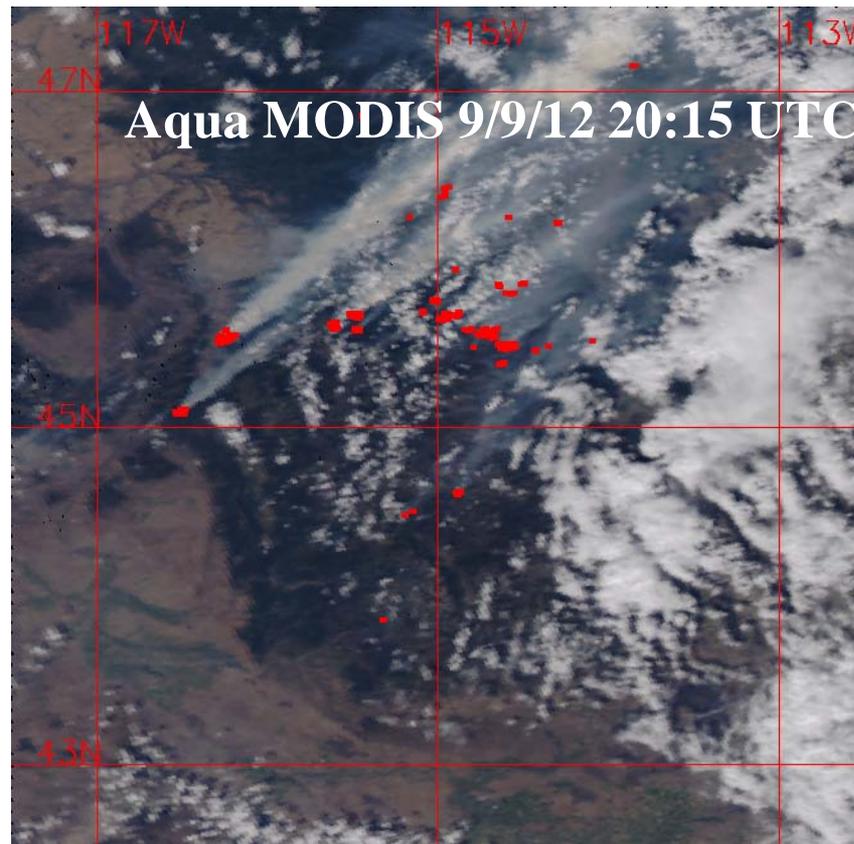
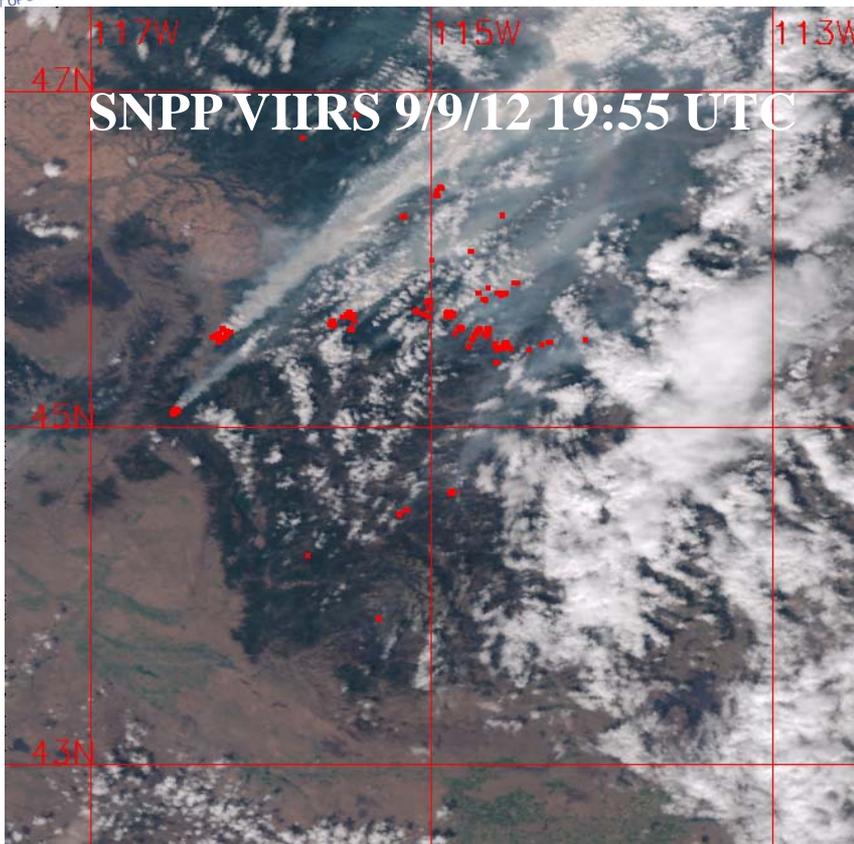
Aqua MODIS 5/25/12 20:30 UTC



Western U.S.

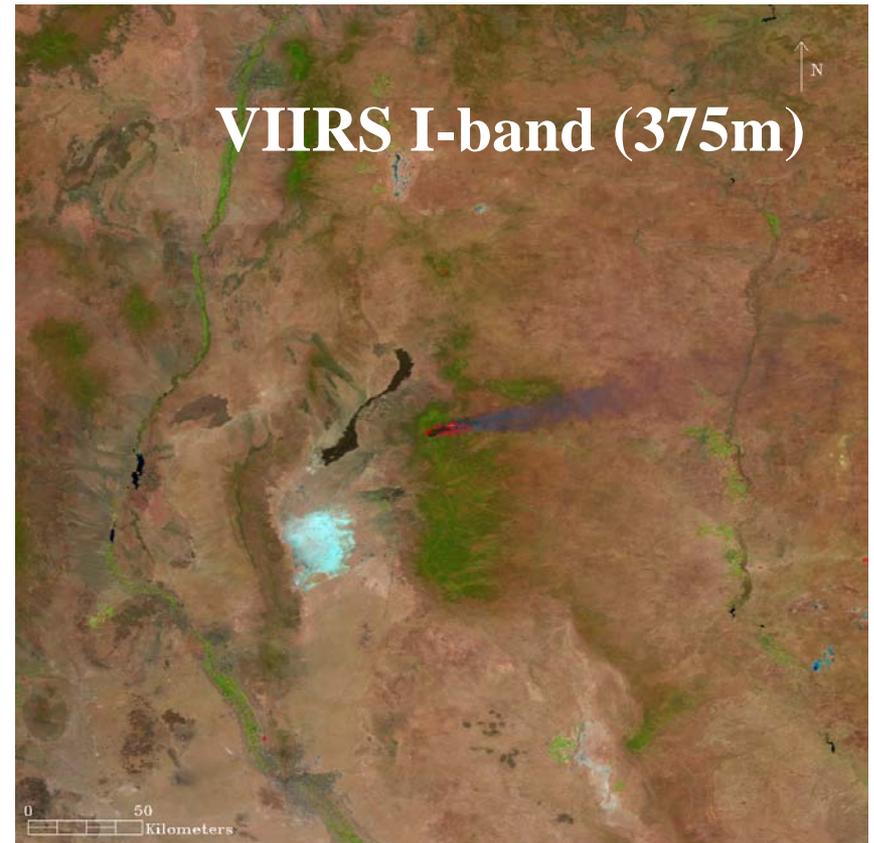
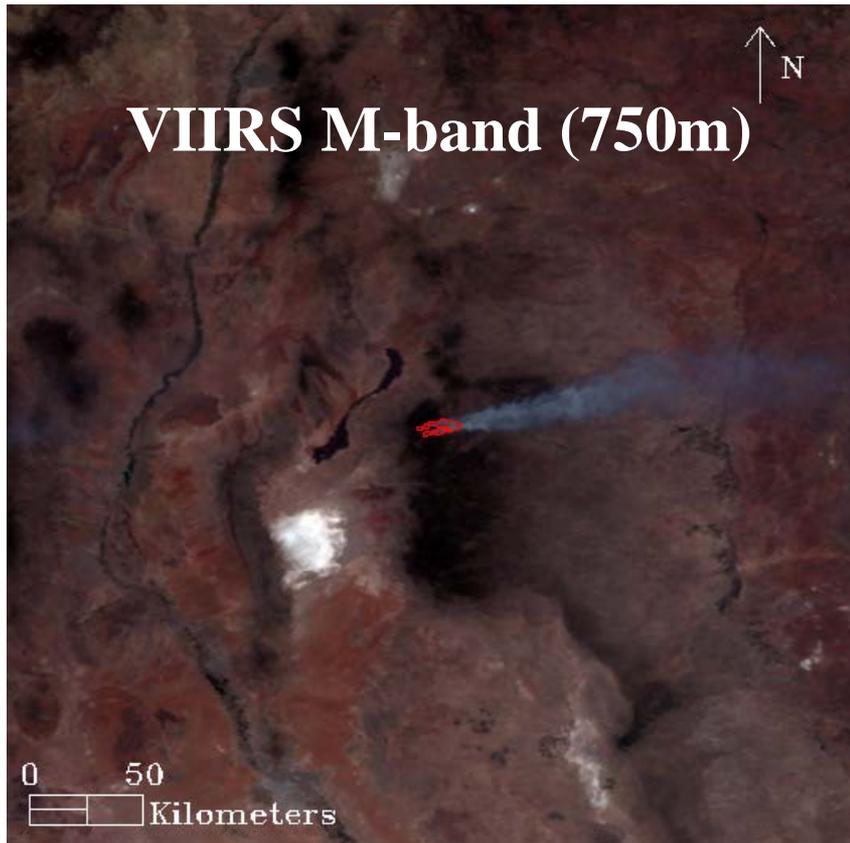


Idaho



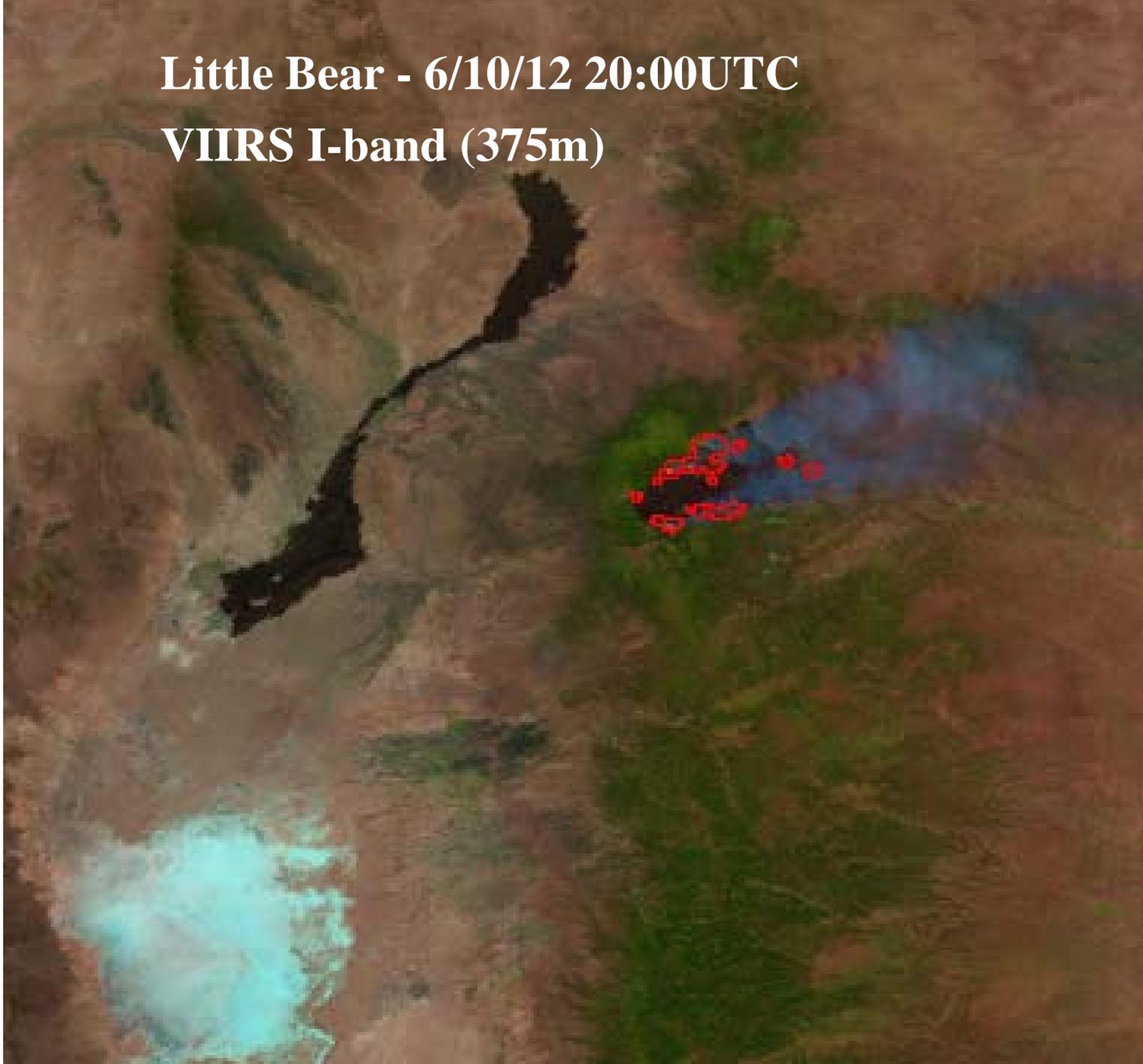
I-band

Little Bear - 6/9/12 20:15UTC



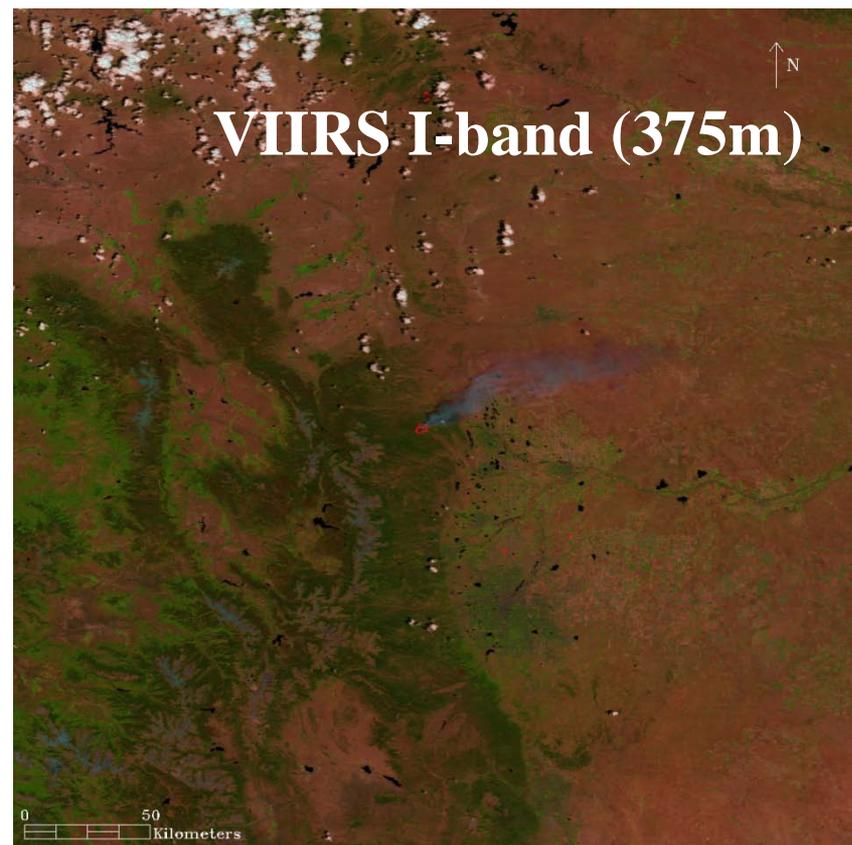
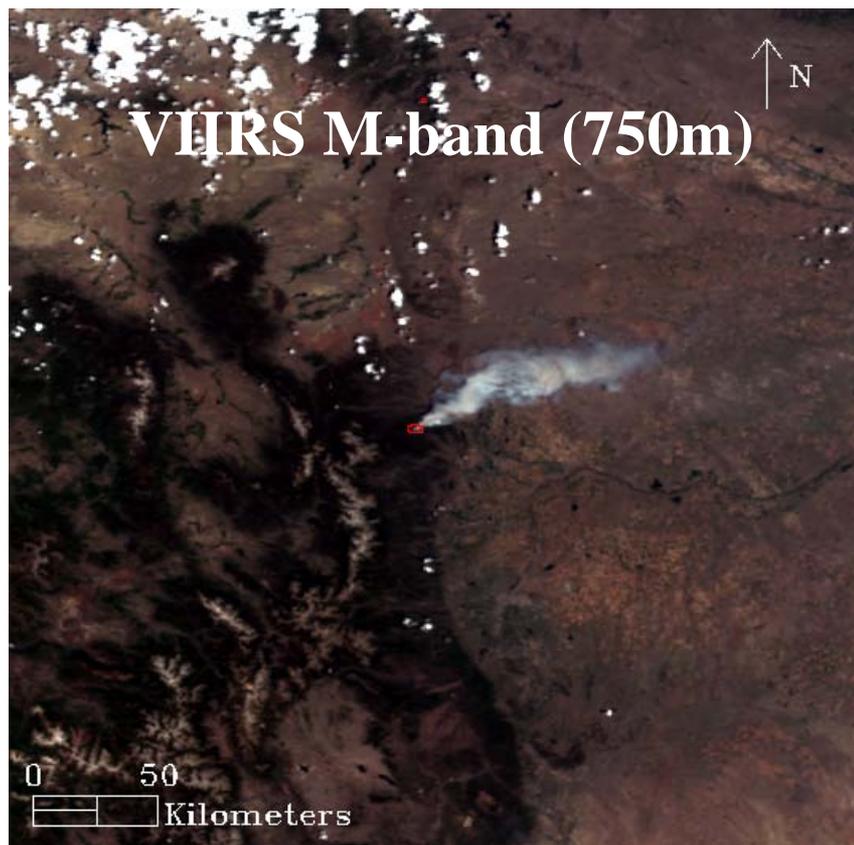
Little Bear - 6/10/12 20:00UTC

VIIRS I-band (375m)

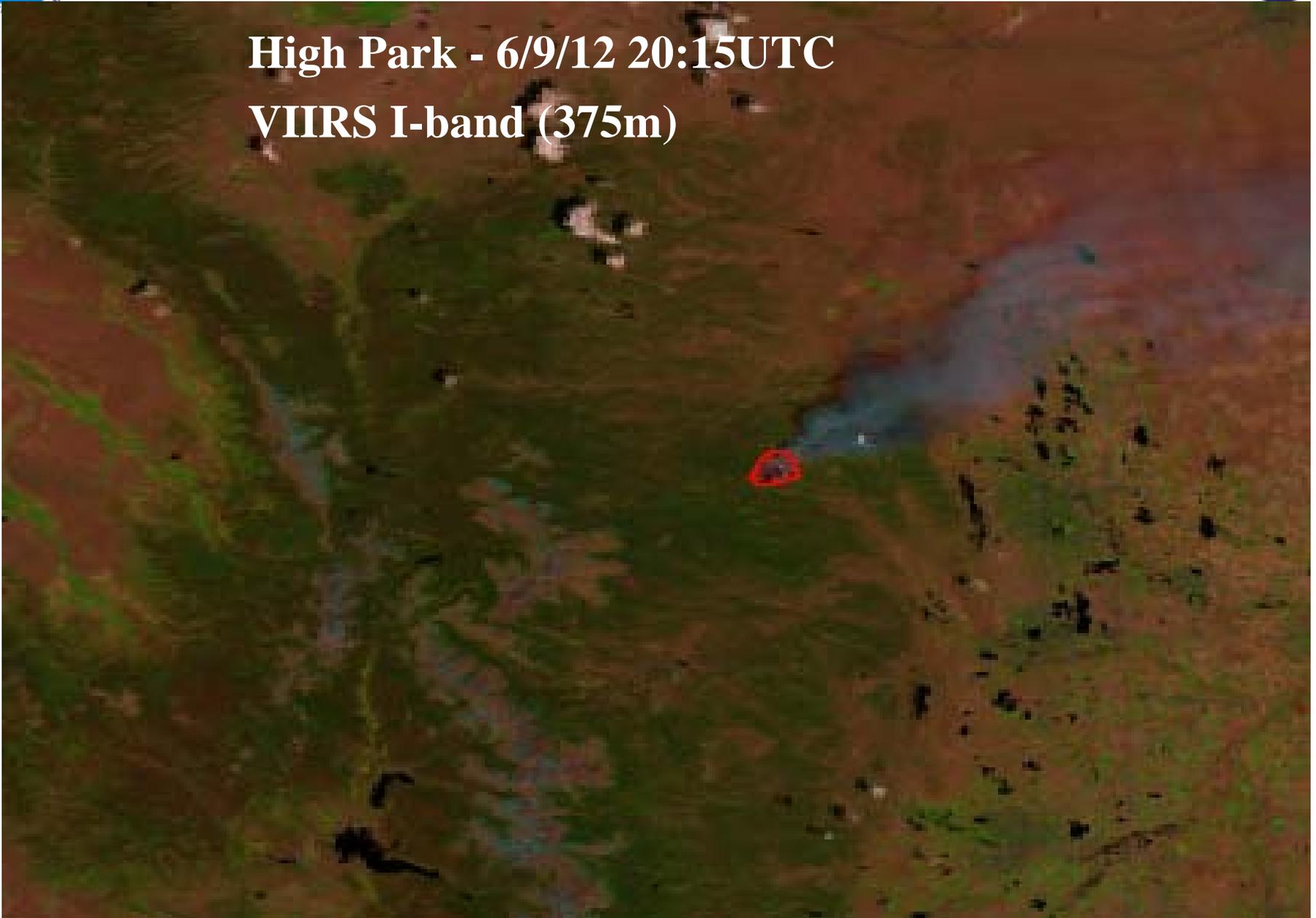


I-band

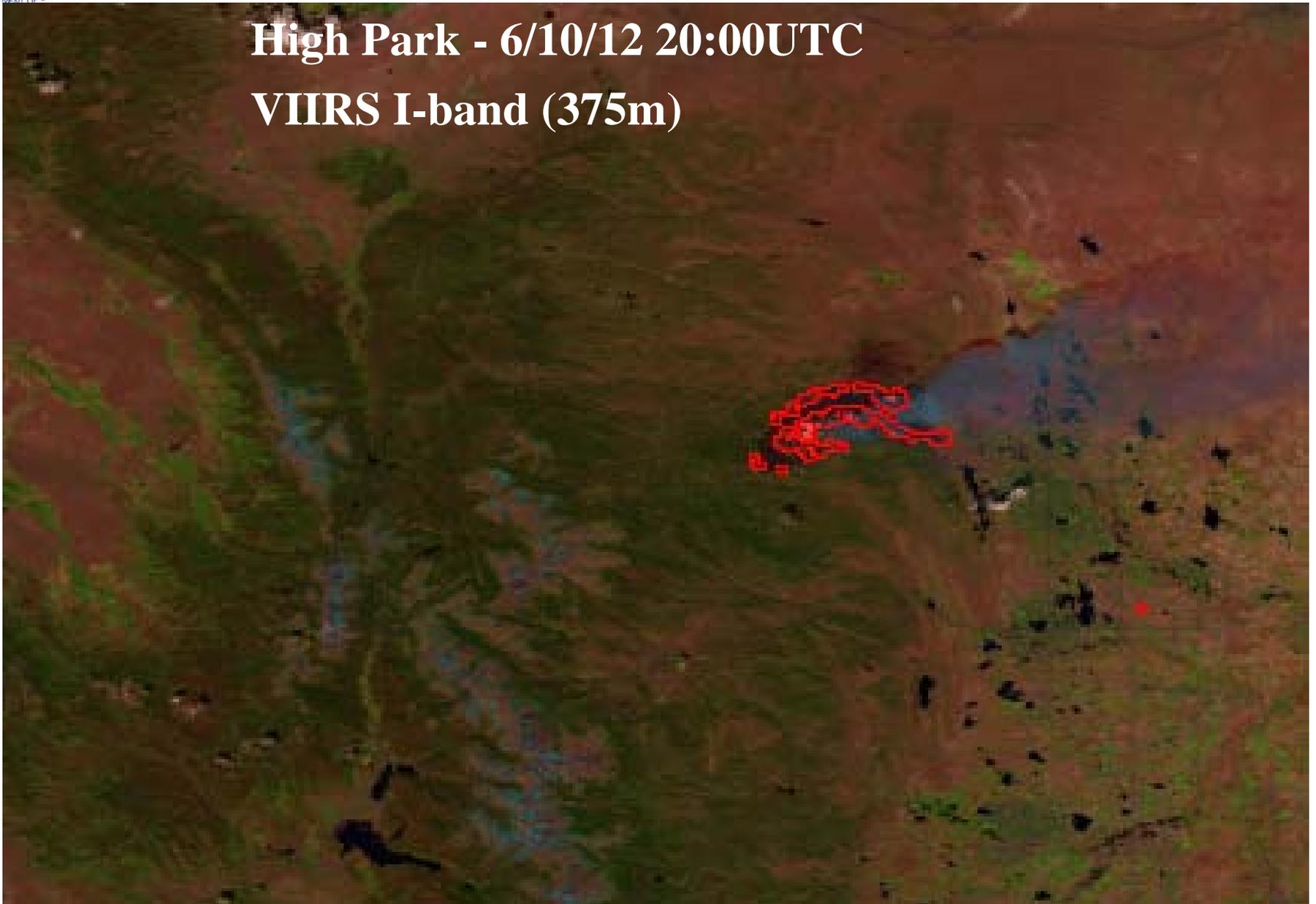
High Park - 6/9/12 20:15UTC



High Park - 6/9/12 20:15UTC
VIIRS I-band (375m)



High Park - 6/10/12 20:00UTC
VIIRS I-band (375m)





Major Users of Active Fire Products



- **U. S. Users:**

- US Forest Service
- NOAA/NESDIS – Hazard Mapping System
- STAR – Center for Satellite Applications and Research
- NOAA National Weather Service / Proving Ground
- NASA Ames
- NRL

- **International Users:**

- CONABIO, Mexico
- INPE/CPTEC, Brazil
- INTA, Argentina
- University of Alcalá, Spain
- Space Research Institute, Moscow, Russia
- National University of Mongolia
- King's College, London, UK



Proving Ground & Risk Reduction

- **Significance: The VIIRS Active Fire product is critical for disaster and resource management.**
- **Product is expected to be used by real-time resource and disaster management; air quality monitoring; ecosystem monitoring; climate studies etc.**
- **The JPSS PGRR program's primary objective is to maximize the benefits and performance of SNPP data, algorithms, and products for downstream operational and research users (gateways to the public)**



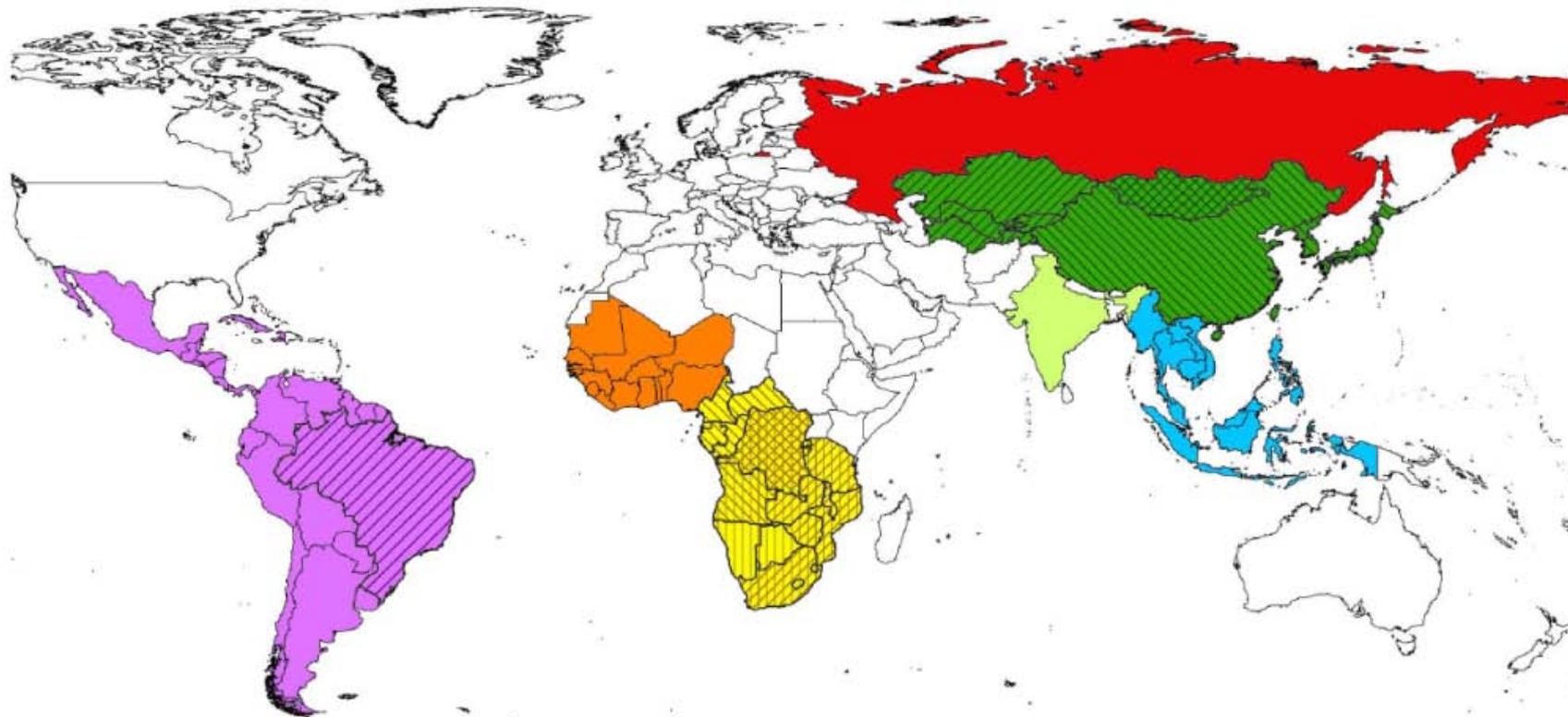
Proving ground: recent activities



- **Communication and coordination with iMET end users through Proving Ground partnership**
- **Telecons held for initial information exchange and end user feedback**
 - Introduction of VIIRS data and active fires website / evaluation portal
 - Data access and relative merits of various satellite-based fire products
 - Preferences for data format
- **Planning for retrospective analysis of major fire events**
 - Identify three or four fire events
 - Collect available imagery
 - Develop evaluation program / protocol for assessment
- **Presentation at the Tactical Fire Remote Sensing Advisory Committee meeting**
 - Boise, Idaho, November 8th, 2012.
- **Preparation for operational applications in the 2013 fire season**
 - Data access, latency, algorithm, data format

INTERNATIONAL COORDINATION

Map of GOFC-GOLD Regional Networks



Networks

Redlatif	AMAZON	WARN	OSFAC	SAFNet	Miombo
NERIN	CARIN	EARN	SEARRIN	India	



Comparison of VIIRS and Aqua MODIS detections by country in Latin America



cntry_name	VIIRS	AQUA	dif %
Argentina	8.167	6.104	-33.8
Bolivia	12.145	8.397	-44.6
Brazil	98.405	62.099	-58.5
Colombia	1.139	707	-61.1
Cuba	15	21	28.6
Mexico	267	169	-58.0
Paraguay	5.746	4.241	-35.5
Peru	6.109	4.603	-32.7
Uruguay	25	31	19.4
Venezuela	1.188	629	-88.9
Total geral	133.206	87.001	-53.1



INPE, BRAZIL



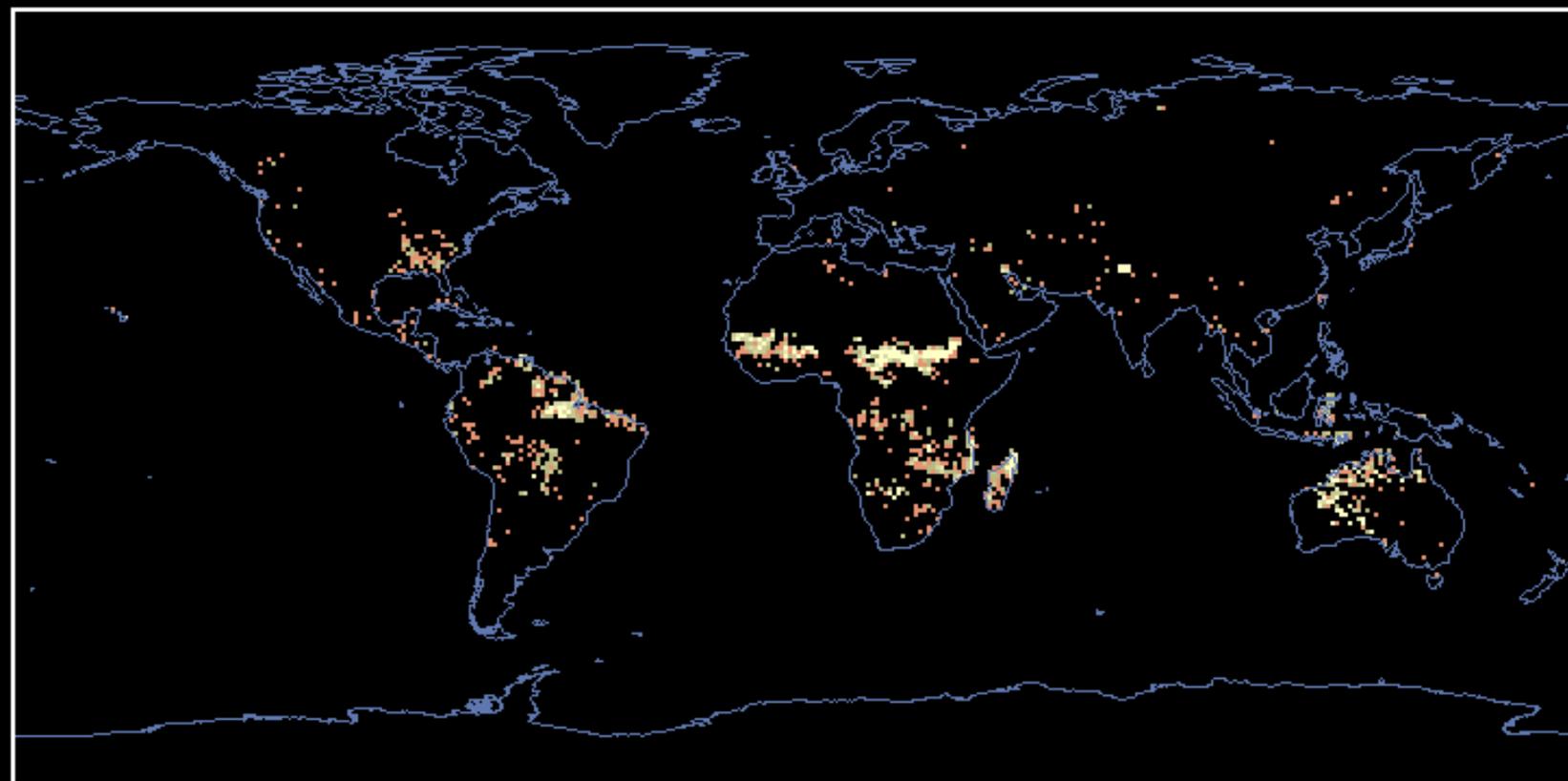
Fire characterization from S-NPP VIIRS



- **M13 saturation temperature: 634K**
 - very small percentage of fires to trigger saturation
 - Fire Radiative Power retrieval is possible
- **M15 saturation temperature: 363K**
 - small, but non-negligible percentage of fires triggers saturation of native resolution pixels
 - more complex characterization (i.e. smoldering ratio) be compromised
- **FIRE RADIATIVE POWER PRODUCT TO BE INCLUDED IN VIIRS ACTIVE FIRE PRODUCT SUITE**

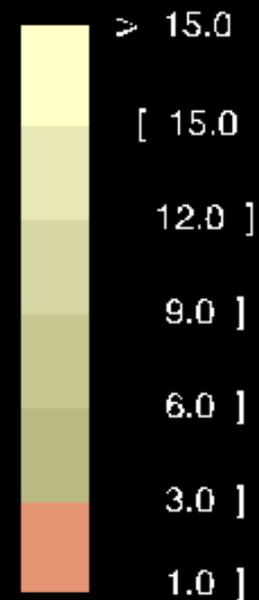
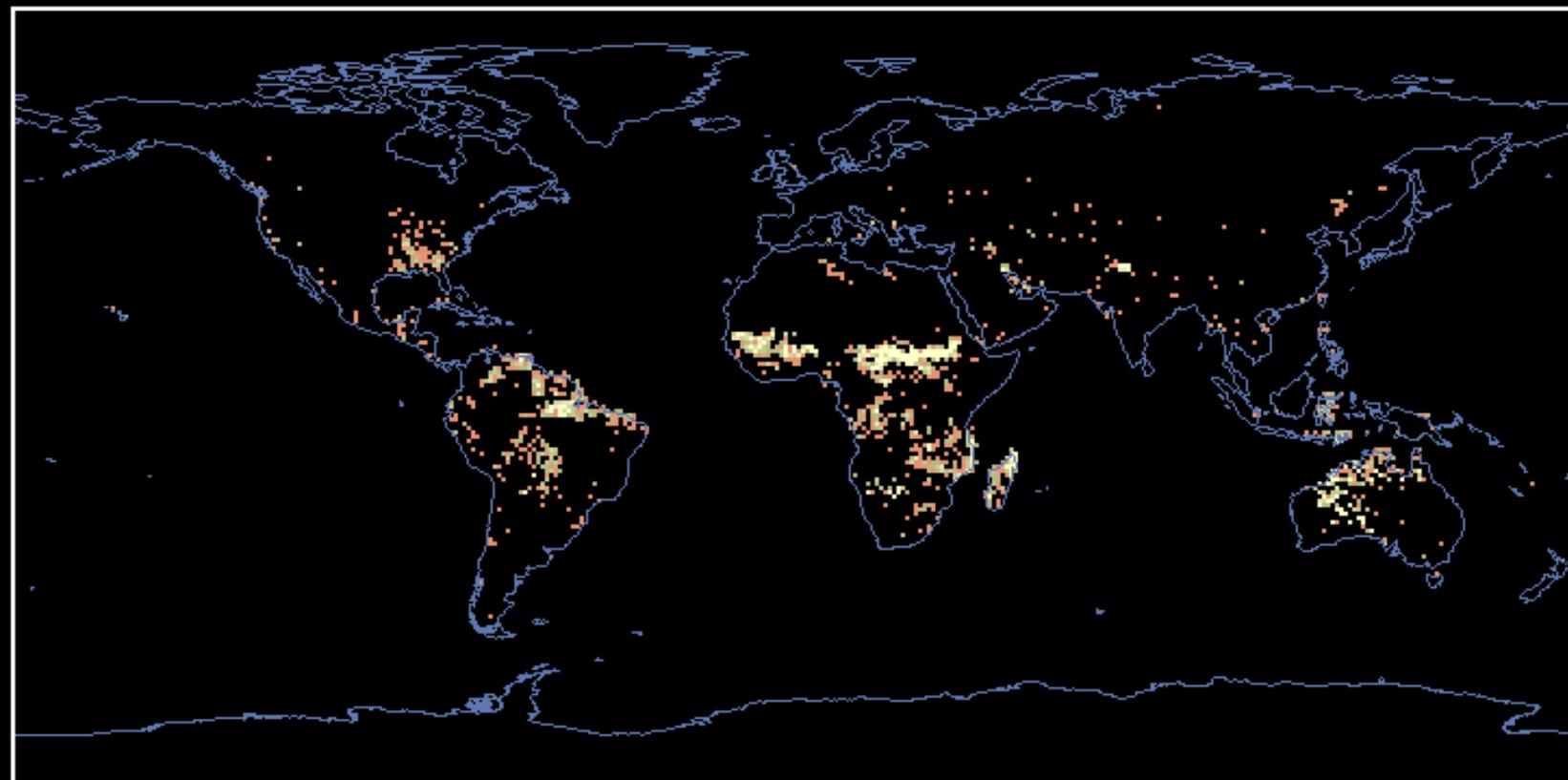
IDPS algorithm (MODIS C4)

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



Replacement algorithm (MODIS C6)

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



Whitewater-Baldy SNPP VIIRS Fire Detections

