Fire and Smoke Initiative

2014 GOES-R/JPSS OCONUS R2O Interchange Meeting (TIM) Agenda

Evan Ellicott – University of Maryland

Outline

- GOFC-GOLD
- Background to the Fire and Smoke Initiative
- Members and recent efforts
- Objectives and Goals
- Current and emerging resources
- Putting Strategy into Action

Meteorological Data for Fire Danger Products

Timothy Brown
Desert Research Institute, Reno, Nevada

GOFC-GOLD IT, 30 July 2014
Greenbelt, MD

DRI
Desert Research Institute

RECOVER

Rehabilitation Capability Convergence for Ecosystem Recovery

An Automated Burned Area Emergency Response Decision Support System
for Post-fire Rehabilitation Management of Savanna Ecosystems in the Western US

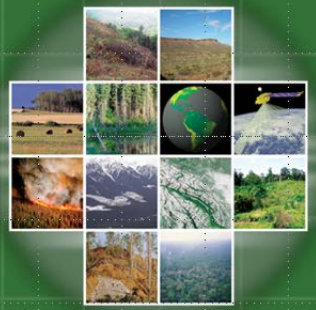
Mark L. Carroll
Sigma Space Corp/Biospheric Sciences Branch
NASA Godard Space Flight Center

L. Schnase[2], and Molly E. Brown[3]
search Center, Idaho State University
and Information Sciences and Technology
heric Sciences Branch
dard Space Flight Center

GOFC-GOLD

Global Observation of Forest and Land Cover Dynamics

Objectives of the Meeting and Overview of Satellite Fire Data



Chris Justice (U. Maryland) Co-Chair

Exec Officer:
Krishna Vadrevu (U. Maryland Fire IT Project Office) - NASA-LCLUC Funded

National Centre for Earth Observation
NATURAL ENVIRONMENT RESEARCH COUNCIL

Monitorin
Re

Geostationary Data & Use Update.....

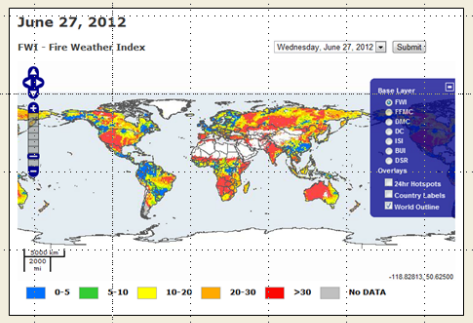
Martin Wooster (Kings College London UK)

Slide contributions from many others @ KCL and GFAS & Copernicus Service Development Team (particularly Patrick Freeborn & Johannes Kaiser)

Environmental Monitoring and Modelling Research Group,
Dept. of Geography, King's College London, UK.

GOFC-GOLD

The Global Fire Early Warning System



WJ (Bill) de Groot

JPSS VIIRS AF Proving Ground & Risk Reduction (PGRR)

- 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.

<u>To be demonstrated:</u>

- **VIIRS active fire algorithm improvement and evaluation**
- **Near real-time data visualization and evaluation**

<u>Multi agency team</u>

- Ivan Csiszar – *NOAA/NESDIS/STAR*
- Evan Ellicott, Louis Giglio, Krishna Vadrevu, Wilfrid Schroeder, Christopher O. Justice – *Geographical Sciences, UMD*
- Brad Quayle – *RSAC*
- Peter Roohr – *NOAA NWS Office of Science and Technology*

Outreach

Presentations

- AMS 2013 & 2014
- IMET workshop 2013
- USFS/NASA Tactical Fire Remote Sensing Advisory Committee (TFRSAC) 2011, 2012, 2013
- NOAA Satellite Conference 2013
- NOAA Science Week Virtual 2013
- NASA Applied Remote SEnsing Training (ARSET) 2013:
  - *Introduction to Remote Sensing for Air Quality Applications*

West Fork Complex

Rim fire

West Fork Complex

Rim fire "Debrief"
Evan Ellicott

Backgroud: The objective of the JPSS VIIRS Active Fire (AF) Proving Ground and F
(PGRR) project is to maximize the benefits and performance of SNPP data, algorithms, anc
downstream operational and research users. The VIIRS Active Fire product is critical for d
resource management and expected to be used by real-time resource and disaster manag
quality monitoring; ecosystem monitoring; climate studies, etc. With this in mind our goa
project are product evaluation and improvement and the development of a near-real-tim
product delivery system to support fire management and NOAA operations.

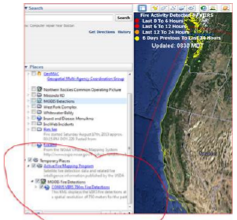
My visit to the West Fork Complex near Pagosa Springs, Colorado, in June 2013 of
hand insight to the operational structure, work and information flow, as well as an opport
demonstrate th

- **Latency** – this is critical component to operational management of an incident. Getting RS data to the Situation Unit Leaders and others in the Planning Section, as well as Command Cadre, as quickly as possible. That said, the current RS data they use – primarily NIROPS, is only once a day and at night. I explained how VIIRS (and MODIS) p around the same time NIROPS flights are imaging the f additional sampling points to confirm heat sources an difference between NIROPS, VIIRS, and MODIS could c using MODIS-Terra (~10am/pm) along with afternoon information, would offer a sense of the fire's diurnal a
- **User-friendly format** – this has been a consistent the the format be easily ingested into a GIS or Google Eart straightforward, both in terms of where to go to get it metadata file with clear, concise descriptions should i
- **Product availability user knowledge** – there is a spec of data is available, the most appropriate application, accuracy with and between datasets. This may be the

Based on feedback from members of the recommendations to Brad Quayle at the many in the wildland firefighting commun blackbox.

The following is insight and comments gathered from specific user-groups:

- **IMETs:** My discussions with the IMETs (Mark Pellerito and Joel Curtis) offered simila what I had heard at the West Fork Complex, mainly that they were not really up to sp VIIRS sensor's characteristics and capabilities, particularly fire detection (and hopefu fire characterization).
  - What they want in any data source is timeliness and user-friendly format. For on Wednesday and Thursday (9/11-12) a cold front moved in to the East of the producing convective cells and lightning activity. There was concern about out stirring up the fire as well as lightning activity generating new fires. The IMETs checking their models and GOES regularly (meaning constantly) during these e



3. *And then reading about the VIIRS footprint is a little confusing for some folks:*
   a. *"This KML displays the VIIRS fire detections at a spatial resolution of 750 meters for the past 6 hours, 6-12 hours, 12-24 hours and the previous 6 day period. Each 750 meter VIIRS fire detection is depicted as a point representing the centroid of the 1km pixel where the fire is detected. The 750 meter footprint of the VIIRS pixel for each detection is*

1. *The KML feeds on the "Fire Data in GoogleEarth" for VIIRS, AVHRR, and GOES are often confused with the maps above them. In other words, I spoke with several individuals who state that they thought the VIIRS data was only for Alaska. Although a little bit of clicking quickly resolves this confusion, I can also see how someone might initially come to this conclusion:*

2. *When you click on the VIIRS detection (current) link and it opens in Google Earth the content*

Critical relevant capability gaps

- "Sharing of information through multiple communication systems represents both a capability accomplishment and a continuing challenge for integration and management of information" (USDA FS)
- "Major uncertainties and data gaps are associated with fire activity data, plume injection height, and observational data/protocols for evaluating predictions from emissions and air quality models" (EPA)
- "Research to Operations (R2O) transformation challenges include fire weather and smoke modeling, research with and access to observation data, operational fire weather capabilities and services" (NWS)
- "Emerging needs of the land management agencies include improved fire weather forecasts (…)" (DOI, USDA FS)

COMMITTEE FOR ENVIRONMENTAL SERVICES, OPERATIONS, AND RESEARCH NEEDS (C
WORKING GROUP FOR WILDLAND FIRE WEATHER (WG/WFW), March 13, 2014 R
http://www.ofcm.gov/wg-wfw/index.htm

- March 13, 2014 – Working Group for Wildland Fire Weather meeting
- April 21, 2014 - JPSS and GOES-R fire science seminar
- 3 Fire & Smoke Initiative telecons thus far (May, June, July)

JPSS AND GOES-R ACTIVITIES SUPPORTING 2013 FIRE OUTBREAKS

Ivan Csiszar[1], Evan Ellicott[2], Chris Schmidt[3]

[1]NOAA/NESDIS Center for Satellite Applications and Research, Camp Springs, MD

[2]University of Maryland, College Park, MD

[3]University of Wisconsin-Madison, Madison, WI

and members of the NOAA, NASA, UMD and UW fire teams

National Weather Service: Information Gaps

- Limited observations and measurements near fires
- Real-time detection of fires
- Improved high-res model forecast guidance
- Fine-scale coupled model (sub 1-km, hourly)
- Improved Red Flag ID, lead time, indexing
- No coupled smoke behavior prediction less than 4 km res
- Intra-seasonal prediction of fires
- IMET capability improvements (training, customer interface)
- Tool for debris flow prediction
- Social science evaluation

Eli Jacks, Supervisory Meteorologist, Fire and Public Weather Services
Peter Roohr, Meteorologist, Science Plans Branch
Heath Hockenberry, Meteorologist, Fire and Public Weather Services

Overall Goals & Issues Emerging S&T

Goal/Target	Outstanding Issues
Improved observations and measurements to initialize numerical models	Deployable surface and aerial platforms. Improved use of remote sensing tools. Real-time assimilation of data.
Development and execution of high-resolution forecasts of humidity, wind, and precipitation for fire prediction	Significant challenges with modeling weather over complex terrain and WUI. Validation to confirm adequacy.
Successful coupling of weather and fire models	Bridging disparity between resolution of fire and weather models. Integration of thermodynamics, physics over complex terrain and vegetation/soil conditions
Improved capability of IMETs to provide rapid response to incident commanders and emergency managers with fire-scale information	On demand assimilation of local data. Merging of weather with current fire information. Establishing mobile WFO; GIS-centric, intelligent agent system.

Overall Goals & Issues Emerging S&T

Goal/Target	Outstanding Issues
Improve forecasting of dry lightning and comprehension of atmospheric processes leading to CG lightning (i.e., initiation of convection)	Development of index based on lightning coverage and precipitation chances. Better understanding of ignition potential and what cloud processes lead to CG lightning for high-based thunderstorms.
On demand 90 day Red Flag WWA decision-support system with high resolution Red Flag warning lead times of 24 hours	Incorporation of NCEP models into fire danger reporting modules. Development of GIS-centric platform and training plans.
Reduced time of detection for new and existing fires	Faster detection of fire location and intensity with remote sensing devices. Examination of satellite and high altitude UAS-based technologies.

Initiative members

- JPSS: Mitch Goldberg, Bill Sjoberg, Julie Price
- NWS: Peter Roohr, Andy Edman, Mark Loeffelbein, Brian Motta
- STAR: Ivan Cisiszar, Shoba Kondragunta, Brad Pierce
- NESDIS: Mark Ruminiski
- UofMD: Evan Ellicott
- CIMSS: Chris Schmidt, William Straka
- WRAP: Matt Mavko,
- NASA/SPoRT: Kevin Fuell
- GINA: Eric Stevens

Fire and Smoke Initiative Objectives

- Organize a forum to allow stakeholder supporting Fire and Smoke detection and forecasting to interact
- Encourage participation of the stakeholder organizations with current responsibilities in Fire and Smoke detection and forecasting.
- Understand the current use of geostationary and polar orbiting satellite capabilities in support of Fire and Smoke detection and forecasting mission
- Identify current SNPP/JPSS and new GOES-R data and capabilities with the potential to improve support to this mission
- Establish methodologies and procedures for the operational demonstrations of these capabilities
- Following these operational demonstrations, identify the satellite capabilities whose operational impacts are sufficient to warrant transition from research to operations
- Determine required actions for an effective transition of these capabilities to operations

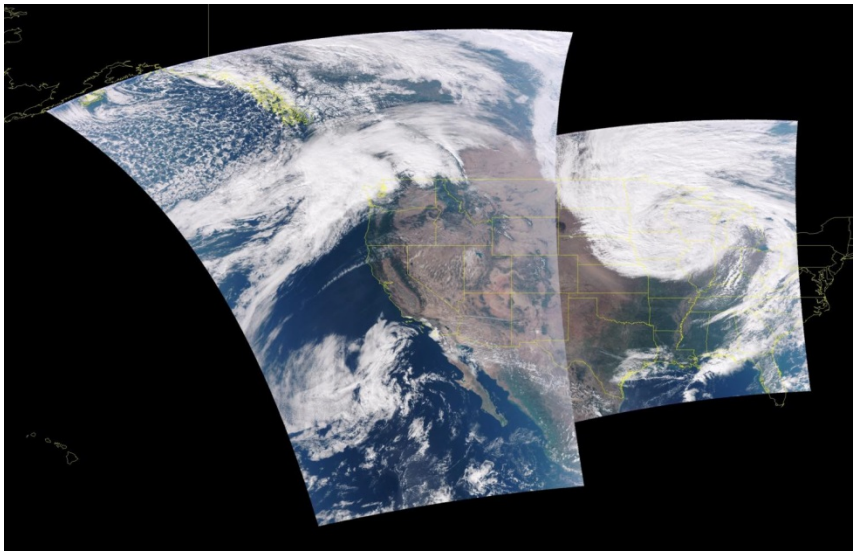
Fire and Smoke Detection Initiative

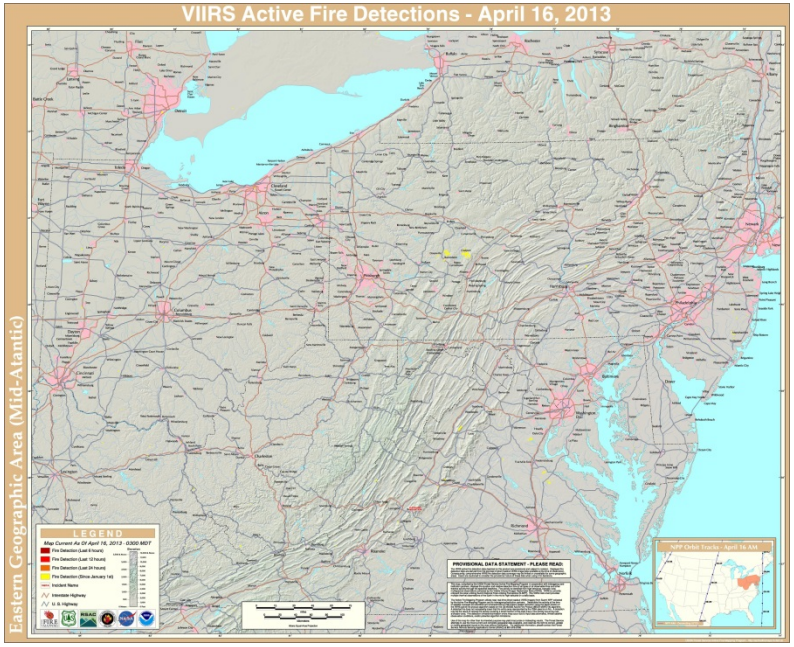
- Goal
  - to deliver VIIRS fire and smoke detection products with a low latency and high accuracy
- NWS test beds
  - western region and Alaska with plans to expand to users in coming years
- Tasks
  - Develop one stop web-based system to distribute fire and smoke data for the two NWS test beds.
  - Two types of products: (1) fire and smoke products generated from DB data with enhanced product accuracy and latency less than 30 minutes; (2) Other value-added products based on IDPS for on-going/post-event analysis.
  - Will use real time access to IDPS/NDE data feed as a backup in case of glitches with DB data
  - Provide webinars on product/tool use
  - Implementation of products into AWIPS II through LDM

Fire and Smoke Detection Initiative (cont.)

- Create a special IDEA web page for Alaska (already done) and western region using retrievals from Direct Broadcast data
  - Smoke AOD from fire hot spots and scaled concentrations (quantitative) Smoke detection (qualitative)
  - 48-hr forward trajectories to indicate where smoke is moving
  - Rolling time series of data and composites for post event analysis
  - RGB imagery
- Include feedback from NWS western region in algorithm improvements

Partnership with the Direct Broadcast community





Processing codes are now available in the Community Satellite Processing Package (CSPP; University of Wisconsin; http://cimss.ssec.wisc.edu/cspp/) and International Polar Orbiter Processing Package (IPOPP; NASA Direct Broadcast Laboratory; http://directreadout.sci.gsfc.nasa.gov/). The Active Fires product team works with the providers of CSPP and IPOPP to ensure that the latest algorithms are included.

Current sample of web-based resources

- USFS Remote Sensing Applications Center (RSAC)
- Geospatial Multi-Agency Coordination (GeoMAC)
- Geographical Area Coordination Centers (GACCs) – e.g. Northwest Interagency Coordination Center (NWCC)
- Geospatial Equipment and Technology Application Group's (GETA) Common Operating Pictures (COP)
- UMD VIIRS AF website (viirs.geog.umd.edu)
- Hazard Mapping System (HMS)
- Infusing satellite Data into Environmental Applications (IDEA)
- Western Regional Air Partnership's (WRAP) Fire Emissions Tracking System (FETS)
- Realtime Air Quality Modeling System (RAQMS)

USFS RSAC

USDA FOREST SERVICE REMOTE SENSING APPLICATIONS CENTER

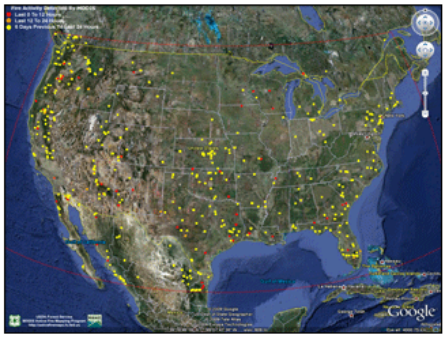
Fire Data in Google Earth

- Current Large Fires (Home)
- Fire Detection Maps
- Interactive Fire Detection Viewer
- MODIS Satellite Imagery
- VIIRS 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

RSAC

MODIS | VIIRS | AVHRR | GOES

Continental United States



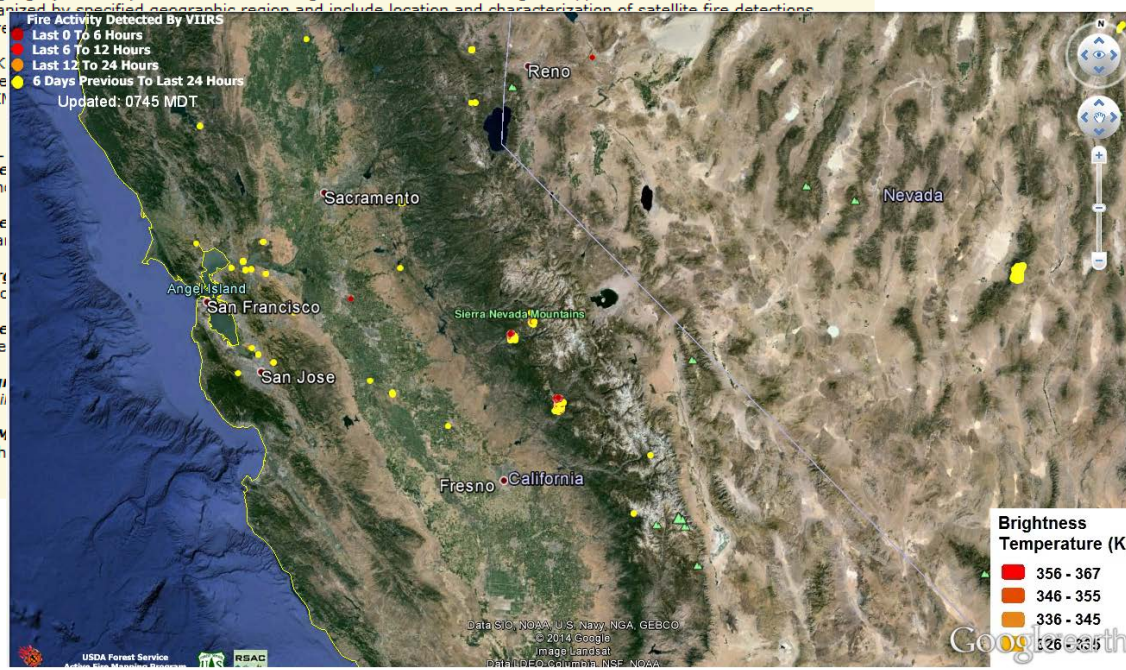
KML

Fire Detections(MODIS): Current | Animation | Historical
Fire Radiative Power: Current | Animation | Historical
Large Incidents: Current | Historical
Fire Weather: Current
Significant Fire Potential: Current | Historical
AFM KML Bundle: Current

KML Access:
The links below provide access to several geospatial datasets relevant to fire management in Keyhole Markup Language (KML/KMZ) format for use in Google Earth and other virtual globe applications. Geospatial data are organized by specified geographic region and include location and characterization of satellite fire detections curre

All K serie to KM

KML
Fire 24 h
Fire 12 a
Lar Natic
Fire zone
Sig *Avai*
AFM each



GeoMAC

GeoMAC
Wildland Fire Support
Geospatial Multi-Agency Coordination
USGS
science for a changing world
GeoMAC Viewer
Launch Viewer
Help
Fire Perimeters
View Active
View KML
Services and Data
RSS Feeds
Download Perimeters
WMS Capabilities
Services
Home page
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FAQ
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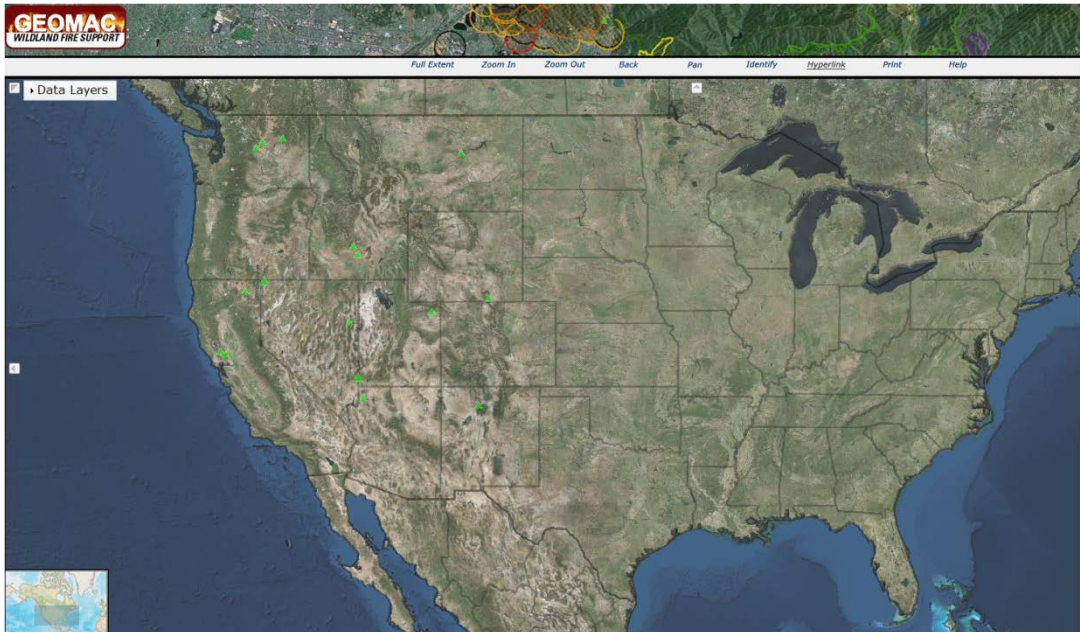
How GeoMAC Works
In order to give fire managers near real-time information, fire perimeter data is updated daily based upon input from incident intelligence sources, GPS data, infrared (IR) imagery from fixed wing and satellite platforms. The GeoMAC web site allows users in remote locations to manipulate map information displays, zoom in and out to display fire information at various scales and detail, and print hard copy maps for use in fire information and media briefings, dispatch offices and coordination centers. The fire maps also have relational databases in which the user can display information on individual fires such as name of the fire, current acreage and other fire status information.
See the Help page for more specific information.
Launch Viewer


GEOMAC
WILDLAND FIRE SUPPORT
Full Extent
Zoom In
Zoom Out
Back
Pan
Identify
Hyperlink
Print
Help
Data Layers

NICC

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National Fire News
All Hazard Incidents

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National Predictive Services Subcommittee
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Coordinati

WEATHER

CURRENT CONDITIONS

OBSERVATIONS
ROMAN
MesoWest
Real Time Weather Data
Surface Observation Maps

SATELITTE / RADAR
UCAR Satellite
RAMSDIS
NOAA Satellite Fire Products Page
NOAA Satellite Fire Monitoring - N.CA, OR, WA

NWS RADAR
Doppler Radar Sites
CONUS
Alaska

CLIMATOLOGY / DROUGHT
Drought Monitor
Keetch/Byrum Drought Index (KBDI)
Palmer Drought Index (PDI)
Vegetative Drought Response Index (VegDRI)

Current Climate Summary Maps

Standardized Precipitation Index (SPI)
Climatology of the Haines Index for North America
Western Region Climate Center (WRCC)
Climate Mapping with PRISM
El Nino / La Nina

SNOW / PRECIPITATION DATA
SNOTEL / Snow Reports By State (NRCS)
Mountain Snowpack Map
NOHRSC Snowpack Map

CEFA)
ture and Precipitation

Center (HPC)
Forecast
n Service

d Modelling of Meteorology and Smoke (FCAMMS)

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National Wildfire Coordinating Group
Participating Agencies

OUTLOOKS

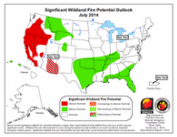
National Significant Wildland Fire Potential Outlook

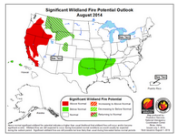
This product provides outlooks for the current month, the month following and a seasonal look at the two months beyond that.

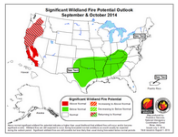
The main objectives of the National Significant Wildland Fire Potential Outlooks are to improve information available to fire management decision makers. These assessments are designed to inform decision makers for proactive wildland fire management, thus better protecting lives and property, reducing firefighting costs and improving firefighting efficiency. The following maps represent the cumulative forecasts of the eleven Geographic Area Predictive Services Units and the National Predictive Services Unit.

The entire text document can be found at the following link, National Wildland Significant Fire Potential Outlook.

This product is updated on the first of each month.







Click on any graphic to access an enlarged version of the image

North American Significant Wildland Fire Potential Outlook.

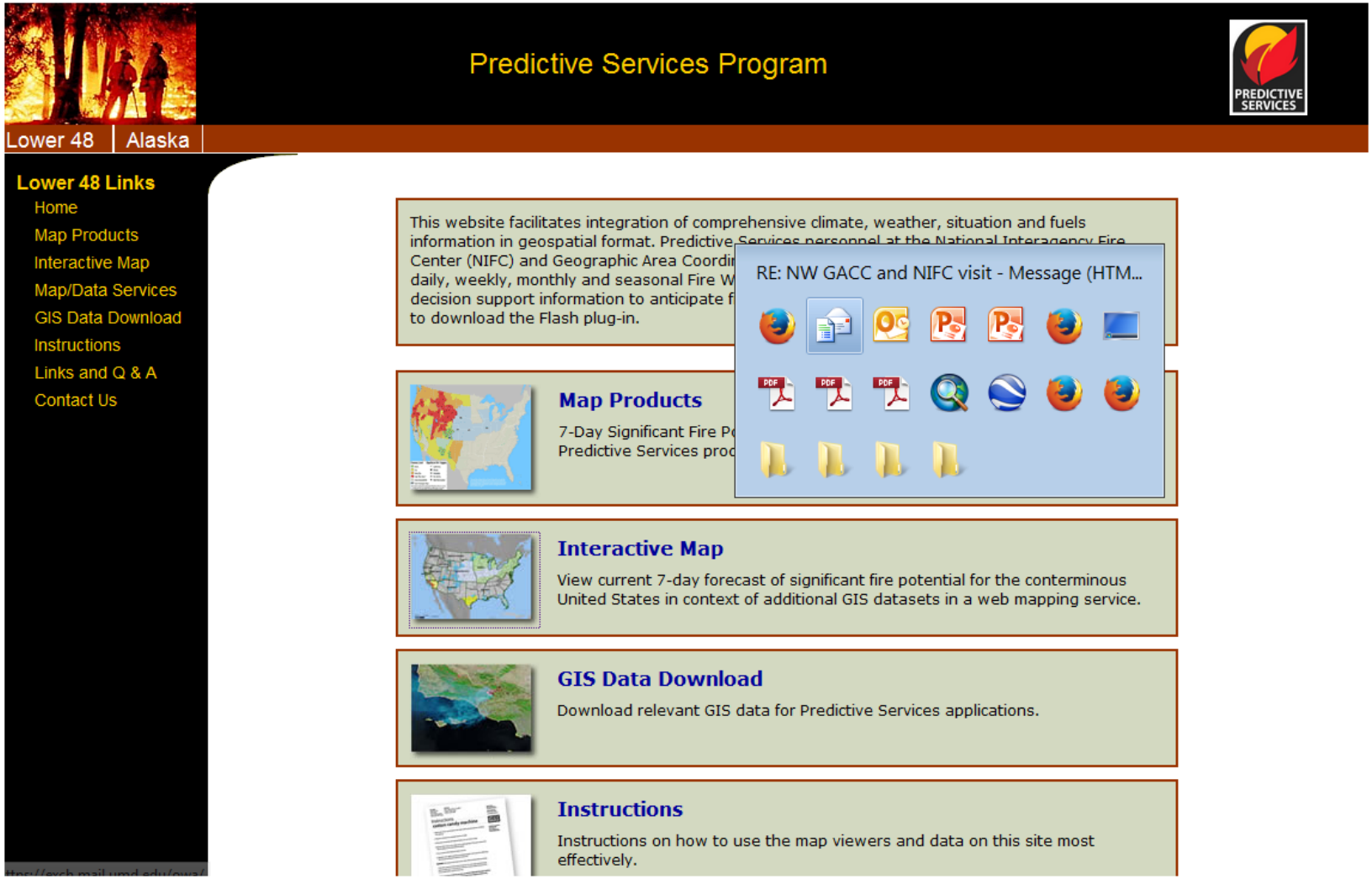
National Significant Wildland Fire Potential Archive

7-DAY SIGNIFICANT FIRE POTENTIAL

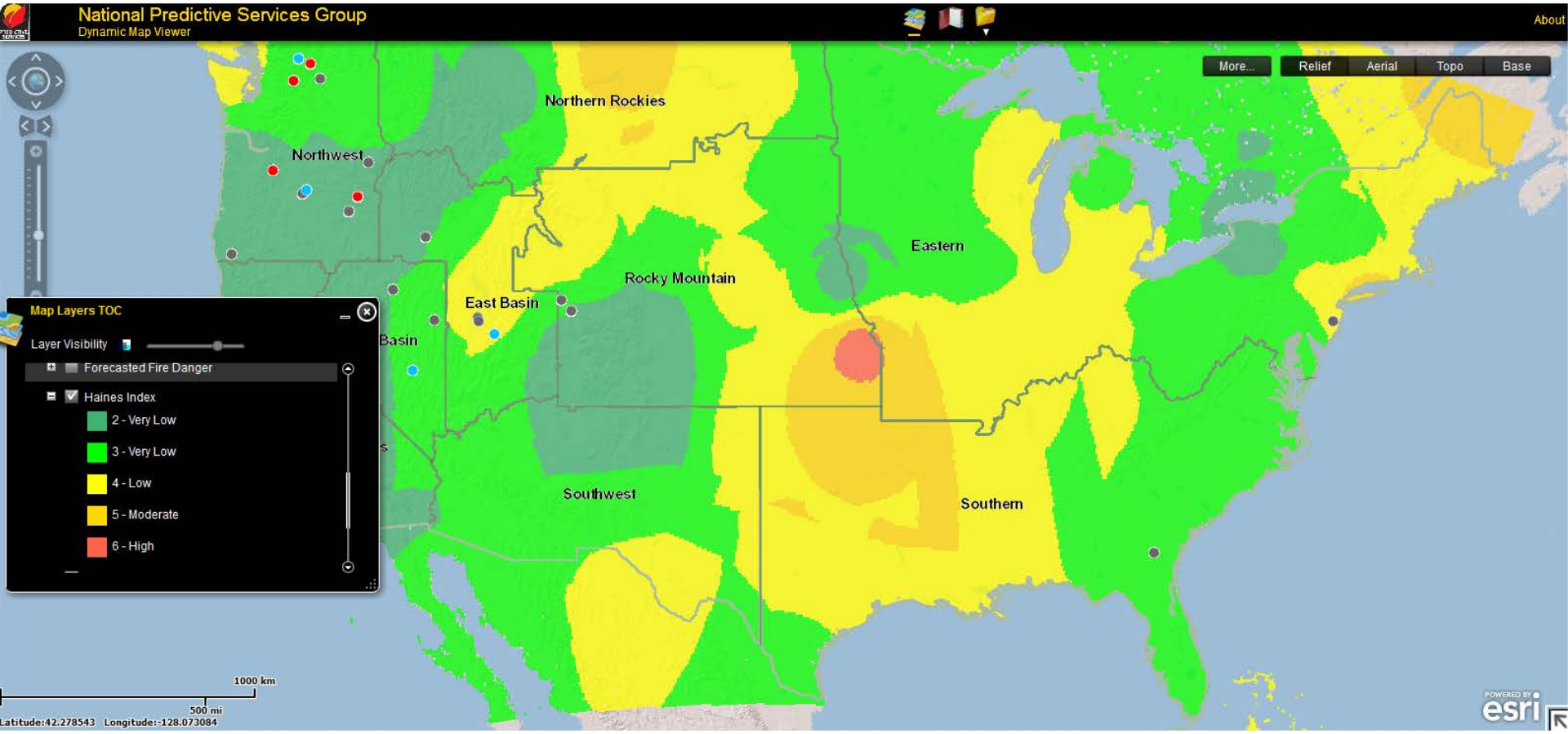
These maps are a compilation of Geographic Area 7-Day Significant Fire Potential Outlooks. This product should be fully updated by 12:00 MDT daily.

Note: These outlooks are only posted when Geographic Areas are in fire season and Predictive Services staff are on duty.

NICC


Predictive Services Program
PREDICTIVE SERVICES
Lower 48
Alaska
Lower 48 Links
Home
Map Products
Interactive Map
Map/Data Services
GIS Data Download
Instructions
Links and Q & A
Contact Us
This website facilitates integration of comprehensive climate, weather, situation and fuels information in geospatial format. Predictive Services personnel at the National Interagency Fire Center (NIFC) and Geographic Area Coordi
daily, weekly, monthly and seasonal Fire W
decision support information to anticipate f
to download the Flash plug-in.
RE: NW GACC and NIFC visit - Message (HTM...
Map Products
7-Day Significant Fire P
Predictive Services proc
Interactive Map
View current 7-day forecast of significant fire potential for the conterminous United States in context of additional GIS datasets in a web mapping service.
GIS Data Download
Download relevant GIS data for Predictive Services applications.
Instructions
Instructions on how to use the map viewers and data on this site most effectively.

Predictive Services Map



Fire Danger – Haines Index

NWCC

NWCC Northwest Interagency Coordination Center

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Incident Information
- Large Fire Information Summary
- Large Fire Map
- All-Risk Incidents

Predictive Services
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- Weather
- Fuels/Fire Danger
- Outlooks
- GIS
- Fire Analysis

Logistics/Dispatch
- Dispatch
- Aviation
- Crews
- Equipment/Supplies
- Overhead
- All-Risk Support

Administration
- Pacific Northwest Wildfire Coordinating Group
- Policy and Reports
- Incident Business Management
- Safety Management
- Software Applications
- Training
- NWCC Publications
- NW MAC
- NW Dispatch Coordination

Related Links
- Area Links
- National Links

USA.gov Government Made Easy

Welcome to the Northwest Coordination Center

The Northwest Interagency Coordination Center (NWCC) is the Geographic Area Coordination Center for the Northwest Region which includes the States of Oregon and Washington. Located in Portland, OR, the NWCC serves as the focal point for interagency resource coordination, logistics support, aviation support and predictive services for all state and federal agencies involved in wildland fire management and suppression in the region. Cooperating agencies include the: Bureau of Land Management, US Forest Service, Oregon Dept of Forestry, US Fish and Wildlife Service, Bureau of Indian Affairs, Washington Dept. of Natural Resources and the National Park Service.

Current Northwest Fire Situation - Daily Updates

- Large Fire Information Summary - Detailed description including resources assigned, current conditions, etc.
- Large Fire Map - Displays active large fire incidents within Oregon and Washington.
- Morning Briefing - Updated each morning with latest fire activity and fire weather alerts.
- Daily Situation Report - Daily statistics of fire activity reported by agency and local dispatch offices in the region.
- 7-Day Significant Fire Potential - Large fire potential and weather synopsis for the next seven days within the Northwest.

Other Fire News

- InciWeb - A new national incident information system that delivers fire news from specific incidents throughout the entire co
- National Fire Report - National Interagency Fire Center's daily news update.
- State of Oregon - Daily Fire Update from the Oregon Department of Forestry.
- State of Washington - Fire news from the Washington State Department of Natural Resources

Twitter Feed

Tweets — Follow

NWCC @NWCCInfo 1h
A Red Flag Warning issued for S. Central & Central WA for Wed. from 1 - 10 PM. pic.twitter.com/u50EFXjmdT

Tweet to @NWCCInfo

Large Fire Intera

Updated daily with current locations as well as histor

Predictive Services
- Intelligence
- Weather
- Fuels/Fire Danger
- Outlooks
- GIS
- Fire Analysis

Logistics/Dispatch
- Dispatch
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- Crews
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- NW MAC
- NW Dispatch Coordination

Related Links
- Area Links
- National Links

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PREDICTIVE SERVICES Weather

Current Conditions

Fire Weather Advisories
- Red Flag Warnings Map

Haines Index
- Daily Morning Haines Index Graphic

RAWS and Other Observations
- Meso West Network
- ROMAN (Realtime Observation Monitoring and Analysis Network)

Satellite
- NWS 4 kilometer Infrared Image
- NWS 4 Kilometer Water Vapor Image
- NWS 1 Kilometer Visible Image (daytime only)
- UW Hemispheric Infrared Loop

Radar
- Northwestern US Radar Loop
- USA Radar Loop

Lightning
- Vaisala Inc
- Accuweather Inc

National Weather Service Fire Weather
- Geographical Fire Weather Forecast NEW
- Western Region Fire Weather Page
- Clickable map of Pacific NW Fire Weather Forecasts and Discussions

FARSITE Weather Data Generators
- NWS FARSITE Data Acquisition (348K)
- FARSITE Weather Data Generator (756K)

Pacific NW Fire Weather Operating Plan

Snow/Precipitation Data
- NOHRSC snowpack
- NWRFC snowpack
- NWRFC 3 day precipitation forecasts
- NRCS

Climatology/Drought
- Western Region Climate Center
- United States Climatologies
- Climate, Ecosystem and Fire Applications (CEFA)
- Climate Mapping with Prism
- Western U.S. Precipitation Percentage of Normal for Year
- Extreme Weather and Climate Events
- RAWS USA Climatology
- Palmer Drought Severity Index (PDSI)
- Keetch-Byrum Drought Index (KBDI)
- Drought Monitor
- Standardized Precipitation Index (SPI)

Smoke Monitoring
- Oregon Department of Forestry
- Washington Department of Natural Resources (WADNR)
- Interagency Real Time sSmoke Monitoring

Weather Maps
- UCAR Current Atmospheric Soundings
- NW Surface Weather Plot
- Morning Haines Index map
- National Gridded Forecast Database

Weather Forecast Models
- MM5 of University of Washington
- Portland NWS Model Page
- NCEP Loops Page

GETA COP

Geospatial Equipment and Technology Application Group

Navigation
- Incident Applications
  - Common Operating Picture
  - Public Information
  - Initial Attack
  - Incident Tools
- Training
  - Third Dimension
  - FLAG Library
  - GEEX Library
  - GESR Library
  - Tutorials
  - Lessons Learned Map
- The Data Dump
- Web Links

About Us:
- Thanks
- Earthspin Newsletter
- Latest Upda

Web Links

A note on KMZ links:

It is pretty easy to add in or remove many different links within any p
a often up to personal preference; it depends if you are a 'lumper' or
page tries to strike a balance between inundation with too many sepa
Google Earth based Common Operating Picture (COP)

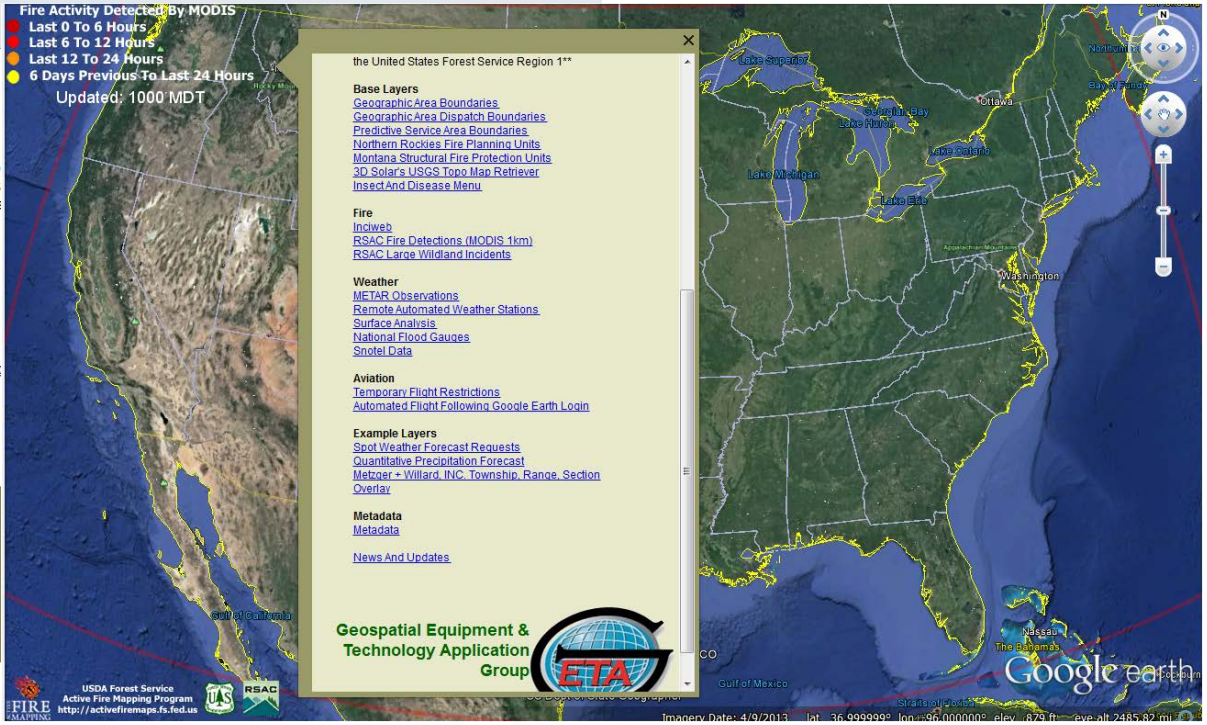
If you have suggestions, we'd love the feedback.

Wildland Fire Related KML

Fire / Fuels Specific
NEW - ICS Map Icons for Google Earth: https://sites.google.com/a/firenet.gov/ic

Wildland Fire Assessment System: http://www.wfas.net/ and http://www.wfas.net/google-earth/wfas_data.kml

Active Fire Maps/MODIS: http://activefiremaps.fs.fed.us/googleearth.php



COP

- Common Operating Picture
  - National Level
  - Northern Rockies

Common Operating Picture

Instructions:
To get started, please click on the Northern Rockies page to the left. Experienced users of Google Earth may want to view the Files page.

About this site:
This site is designed as a functional area for implementation of a regional level Common Operating Picture (COP) beginning with the Northern Rockies, and if successful, incorporating other Geographic Areas in the future. This page will be linked to from the Northern Rockies Coordination Center's website, but is hosted at Firenet, an interagency collaborative pilot project run by the Missoula Technology and Development Center (MTDC), and maintained by the Geospatial Equipment and Technology Application Group (GETA).

On the Northern Rockies page of this site you will find a Google Earth netlink that, when opened in Google Earth, will provide you with strategic level map displays for the Northern Rockies Geographic Area. You may also download the tutorial in .pdf format from that page to assist you in getting started. At the top of the menu, you can also click on the Northern Rockies COP link to get a single access point for any participating agency engaged with this test. These netlinks are driven with data input at the lowest possible level (district or unit level) which feed the larger system with data.

NATIONAL INTERAGENCY FIRE ENTERPRISE GEOSPATIAL PORTAL

FIRE EGP HOME | ABOUT EGP | NIFC HOME | CONTACT US

NATIONAL INTERAGENCY FIRE CENTER
Boise, Idaho

Sign In

Username:

Password:

Log In

Register New User

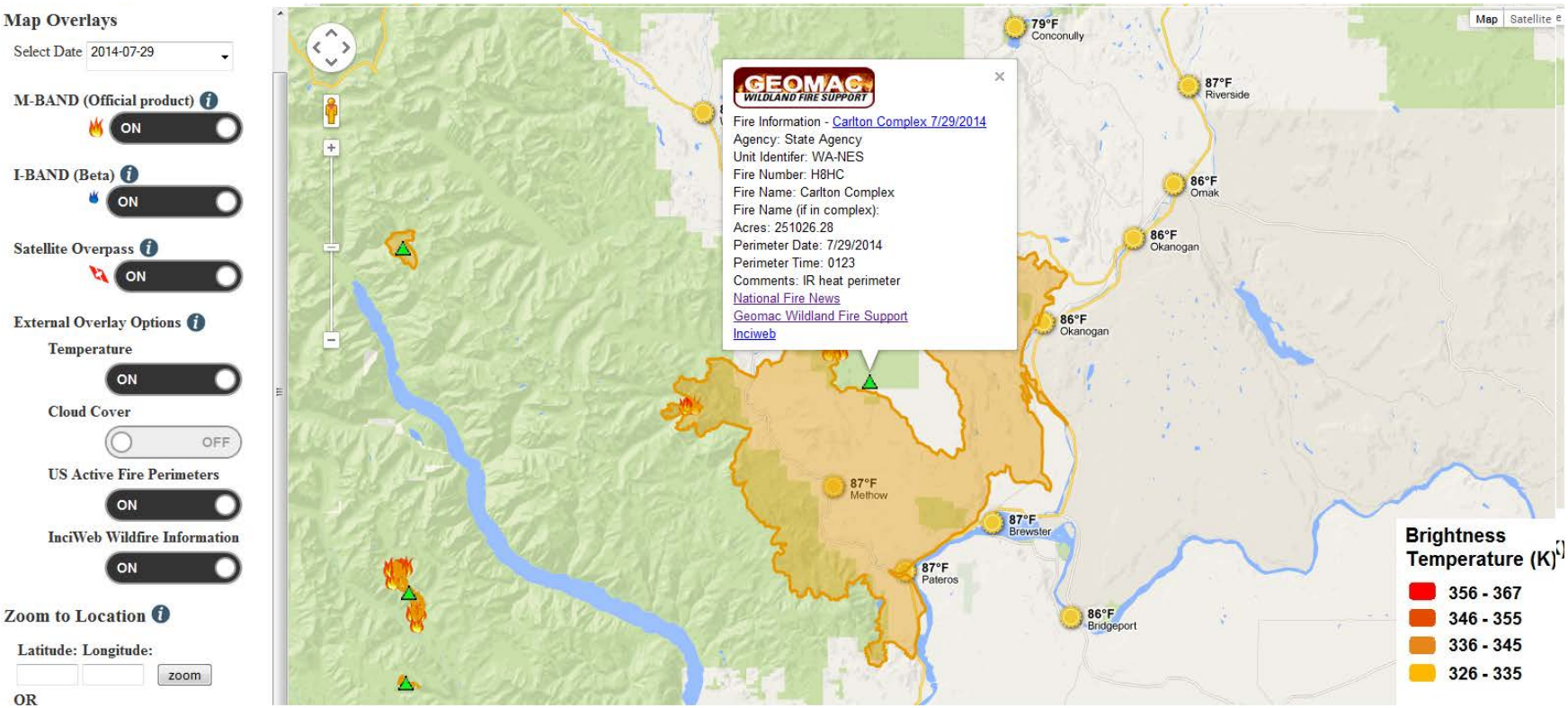
Reset Password

Welcome to Fire EGP!

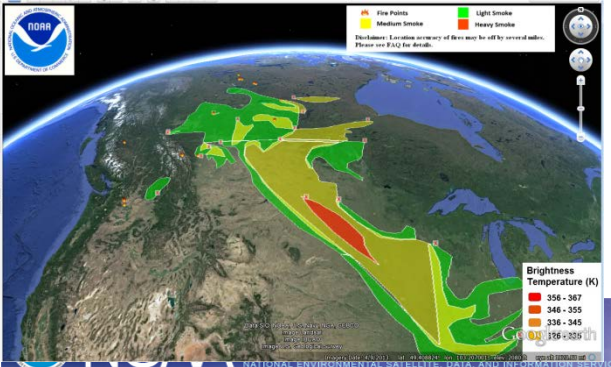
The Fire EGP provides standardized geospatial information for the full range of wildfire activities ranging from response to planning. The Fire EGP leverages a central source of spatial data for mapping, decision support, business intelligence, and situational awareness. Access to this data is provided through multiple 'windows' to support a variety of uses: the Fire Globe (Google Earth), SituationAnalyst, the Incident Risk Console (RisC), and a GIS data repository. We welcome you to register for a log-in to further explore Fire EGP and choose which services/viewers are right for your wildland fire mission needs.

AFF message: The AFF feed supporting the EGP is currently down and is estimated to be available by 31 July. Please check AFF.gov for additional updates and specific instructions for AFF access during this outage.

VIIRS AF (UMD)


Map Overlays
Select Date 2014-07-29
M-BAND (Official product)
ON
I-BAND (Beta)
ON
Satellite Overpass
ON
External Overlay Options
Temperature
ON
Cloud Cover
OFF
US Active Fire Perimeters
ON
InciWeb Wildfire Information
ON
Zoom to Location
Latitude: Longitude:
zoom
OR
Map
Satellite
GEOMAC
WILDLAND FIRE SUPPORT
Fire Information - Carlton Complex 7/29/2014
Agency: State Agency
Unit Identifer: WA-NES
Fire Number: H8HC
Fire Name: Carlton Complex
Fire Name (if in complex):
Acres: 251026.28
Perimeter Date: 7/29/2014
Perimeter Time: 0123
Comments: IR heat perimeter
National Fire News
Geomac Wildland Fire Support
Inciweb
79°F Conconully
87°F Riverside
86°F Omak
86°F Okanogan
86°F Okanogan
87°F Methow
87°F Brewster
87°F Pateros
86°F Bridgeport
Brightness Temperature (K)
356 - 367
346 - 355
336 - 345
326 - 335

HMS



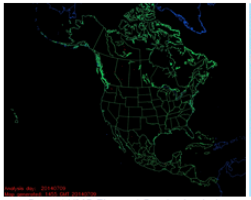
NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE

ORGANIZATION | SERVICES | PRODUCTS | OPERATIONS

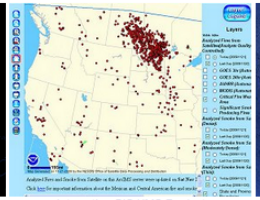
Hazard Mapping System Fire and Smoke Product

Current HMS Analysis

Analysis for day 7/9/2014 last updated at 7/9/2014 14:55:45 GMT



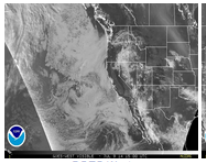
Current HMS Fire and Smoke Analysis



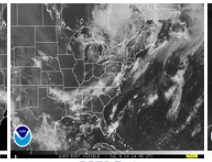
Interactive GIS HMS Product

Google KML files: Fire | Smoke

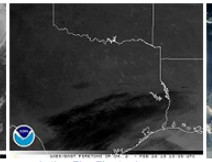
Real-Time Satellite Imagery Loops



GOES West



GOES East



Active Fire Floater Imagery

NASA MODIS Rapid Response

NESDIS Products

Archived Fire Products (6 months)
Smoke Text Product | Archive
GOES Aerosol Smoke Products (GASP) East | West
IDEA (Air Quality)
Automated Smoke Detection and Tracking Algorithm (ASDTA) GOES-East | GOES-West
Additional Operational Automated Fire Smoke Products

Fire and Smoke Related Weblinks:

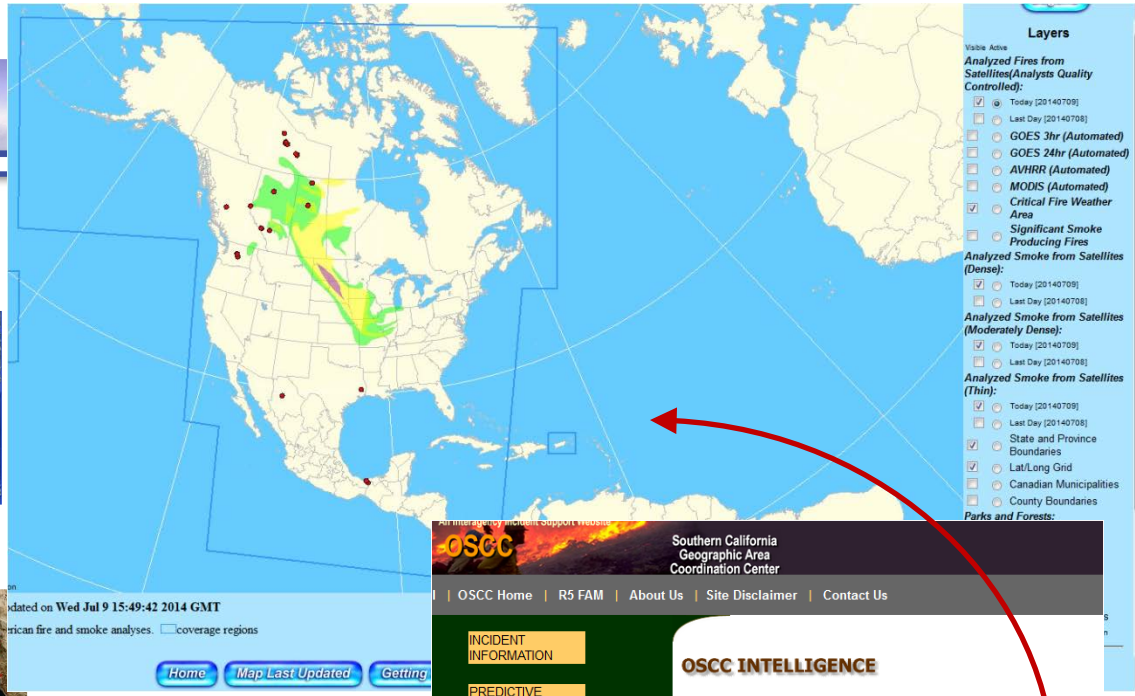
Fire

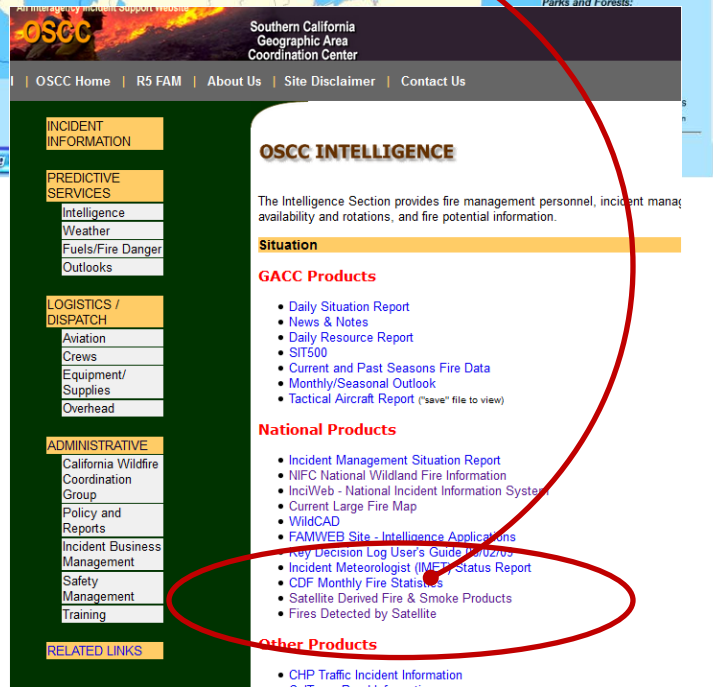
NIFC Fire Information
NIFC Large Fire Incident Map
Canadian Wildfire Map
SPC Fire Weather Forecast
GEOMAC Wildfire Viewer
Alaskan Fire GIS display
Alaska Interagency Coordination Center
MODIS Rapid Response
WFABBA at CIMSS
INCIWEB

Air Quality

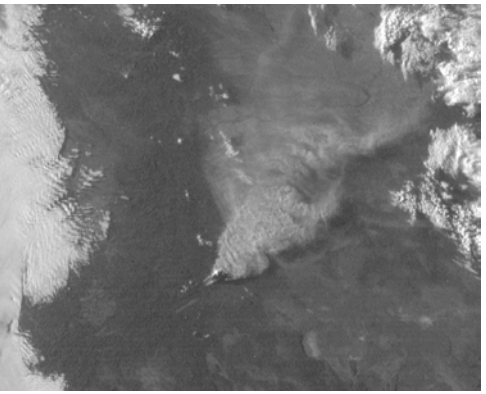
NWS Air Quality Forecast Guidance
The Smog Blog
Kilauea Volcano Daily Status Report
OMI SO2
NASA data portal
NRL Aerosol page
NRL Aerosol links
NOAA Earth System Research Lab
RAMSDIS G-11 Blowing Dust Product
CIMSS Saharan Dust Graphic

More Information about the SSD Fire Program
Recent Presentations, Posters, and Papers

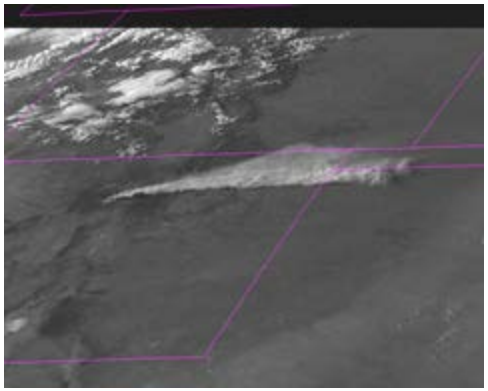




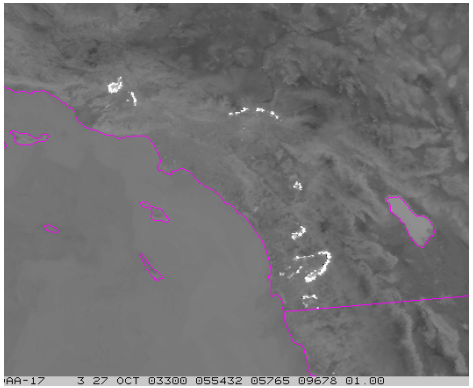
HAZARD MAPPING SYSTEM



GOES-WEST



GOES-EAST



NOAA-AVHRR

MODIS

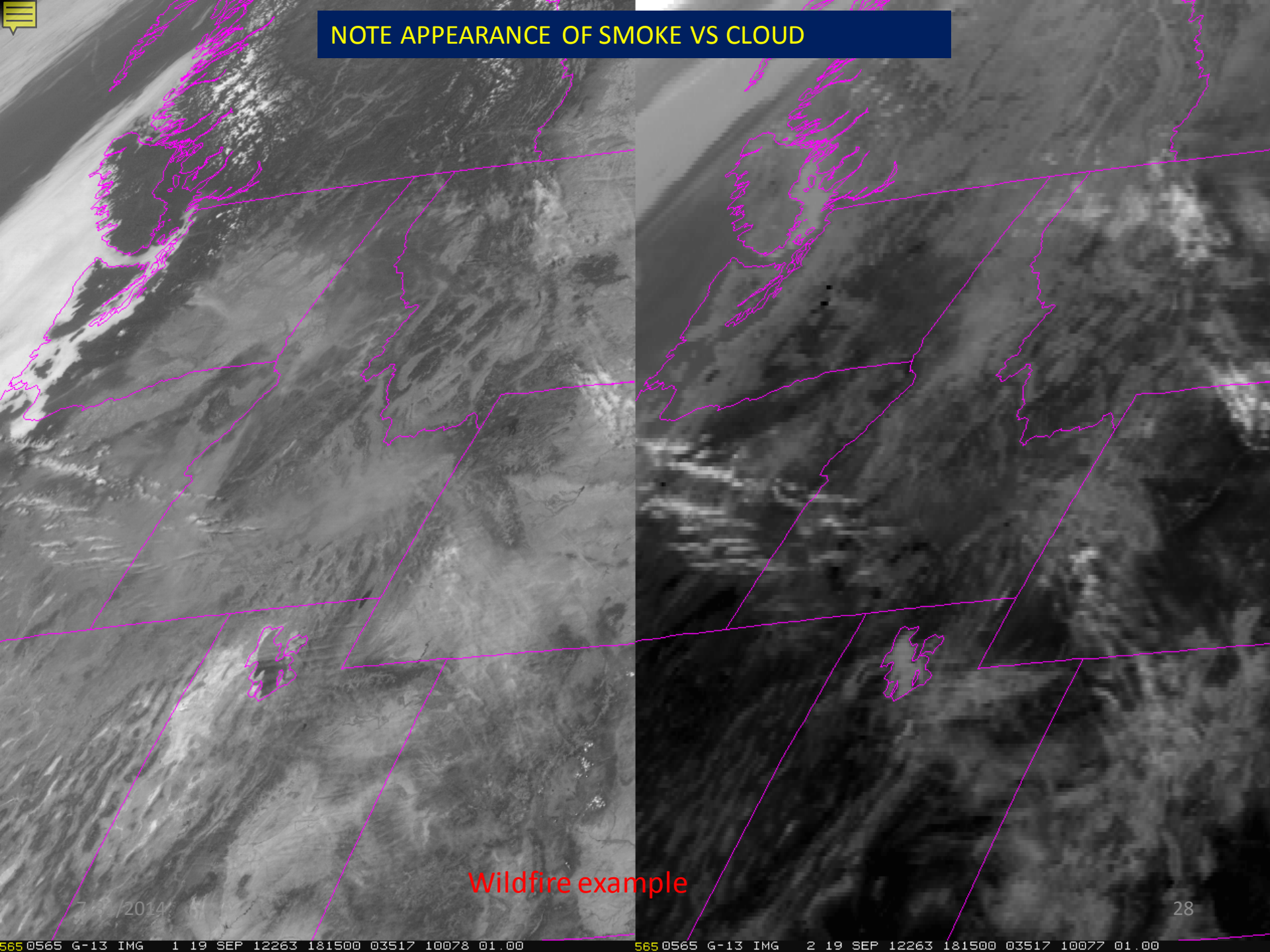
HMS Incorporates 2 geostationary (GOES-East/West) and 7 polar orbiting (Terra/Aqua and NOAA-15,18,19 and METOP-A/B)

Over 200 looks per day in areas of overlap

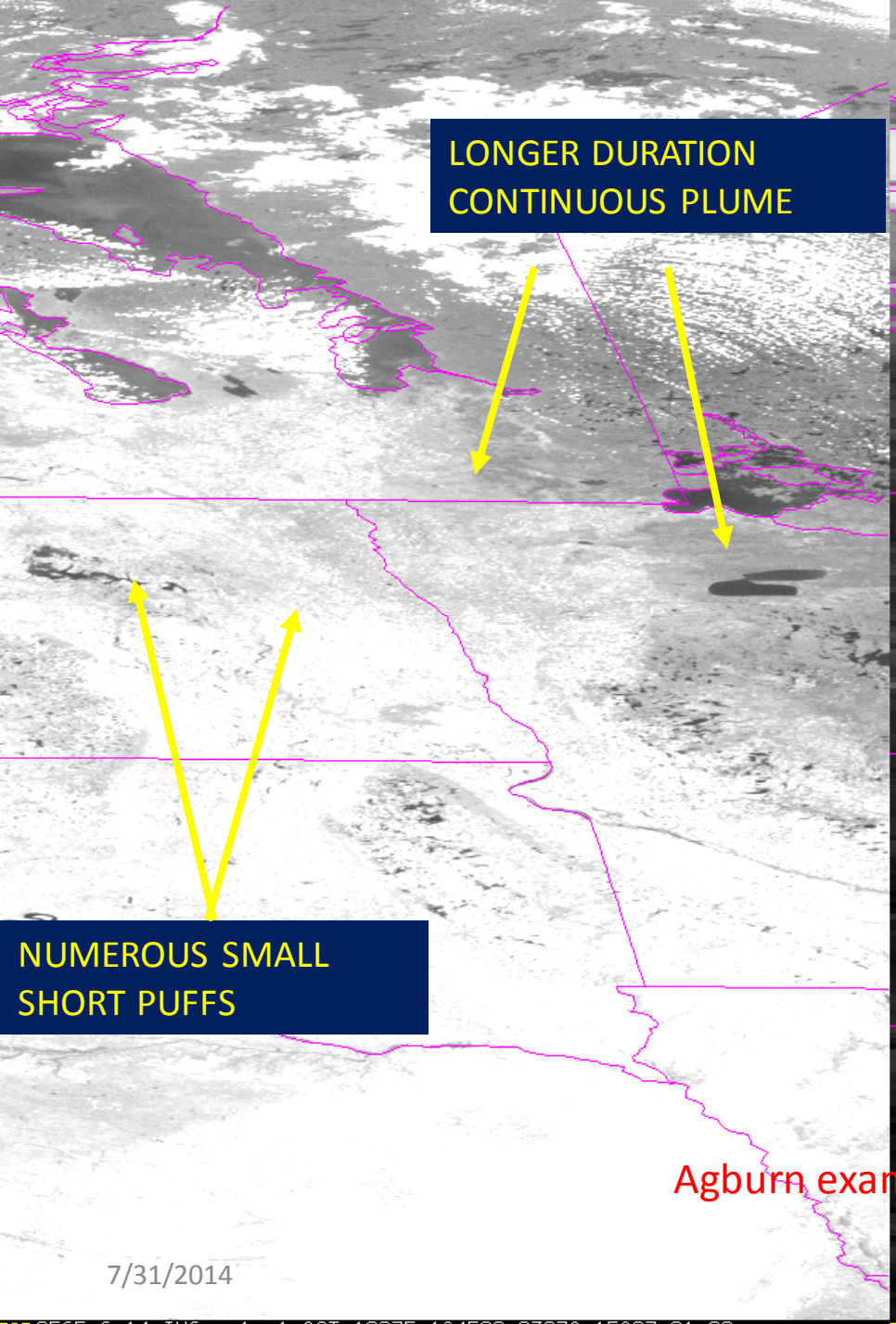
POES spacecraft provide 2 orbits/day in mid latitudes, more frequent over Alaska/Canada

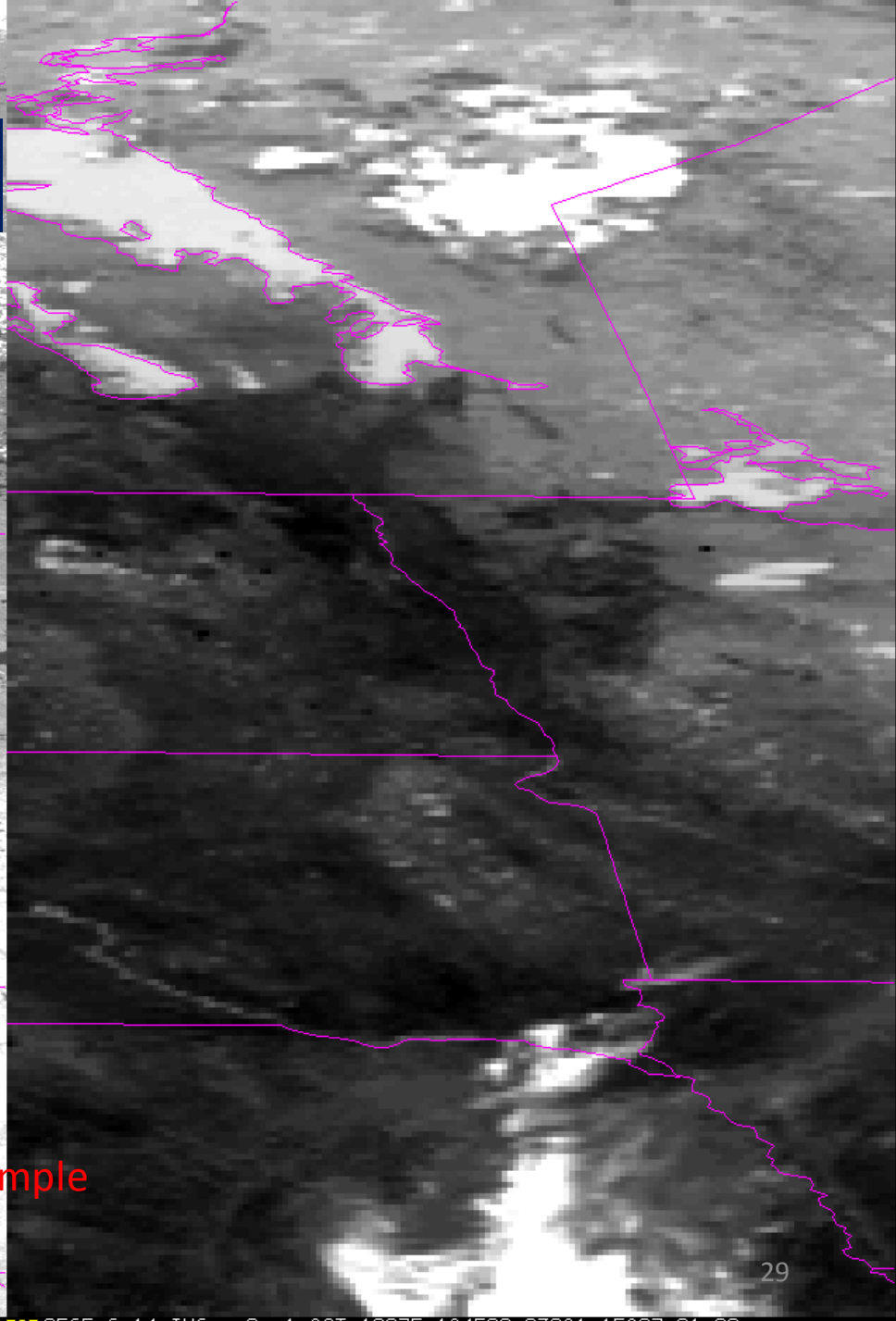
Analysis performed year-round for contiguous US, Hawaii and Central America, seasonally for Alaska and Canada (> 7.5 million miles^2)

NOTE APPEARANCE OF SMOKE VS CLOUD



Wildfire example

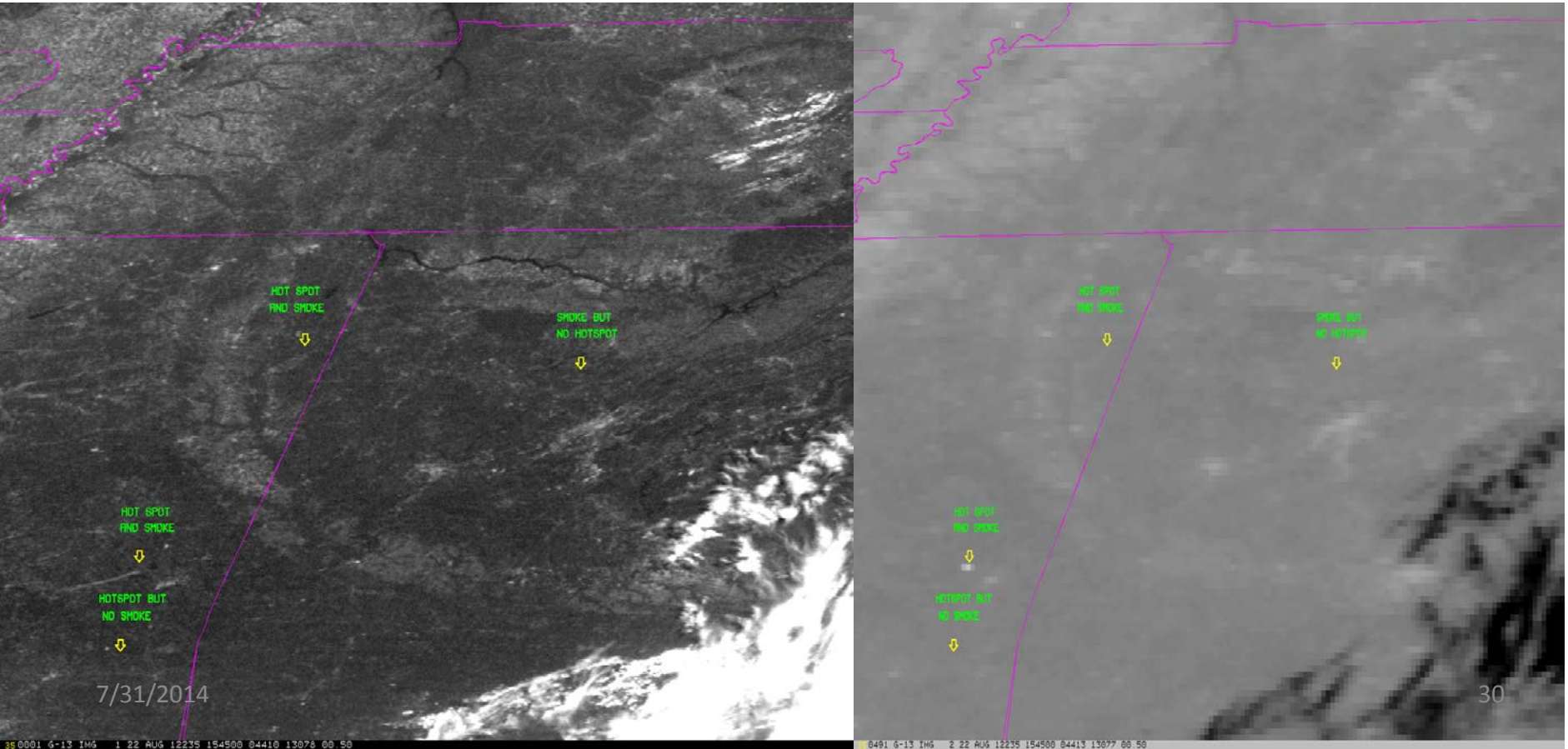




Agburn example

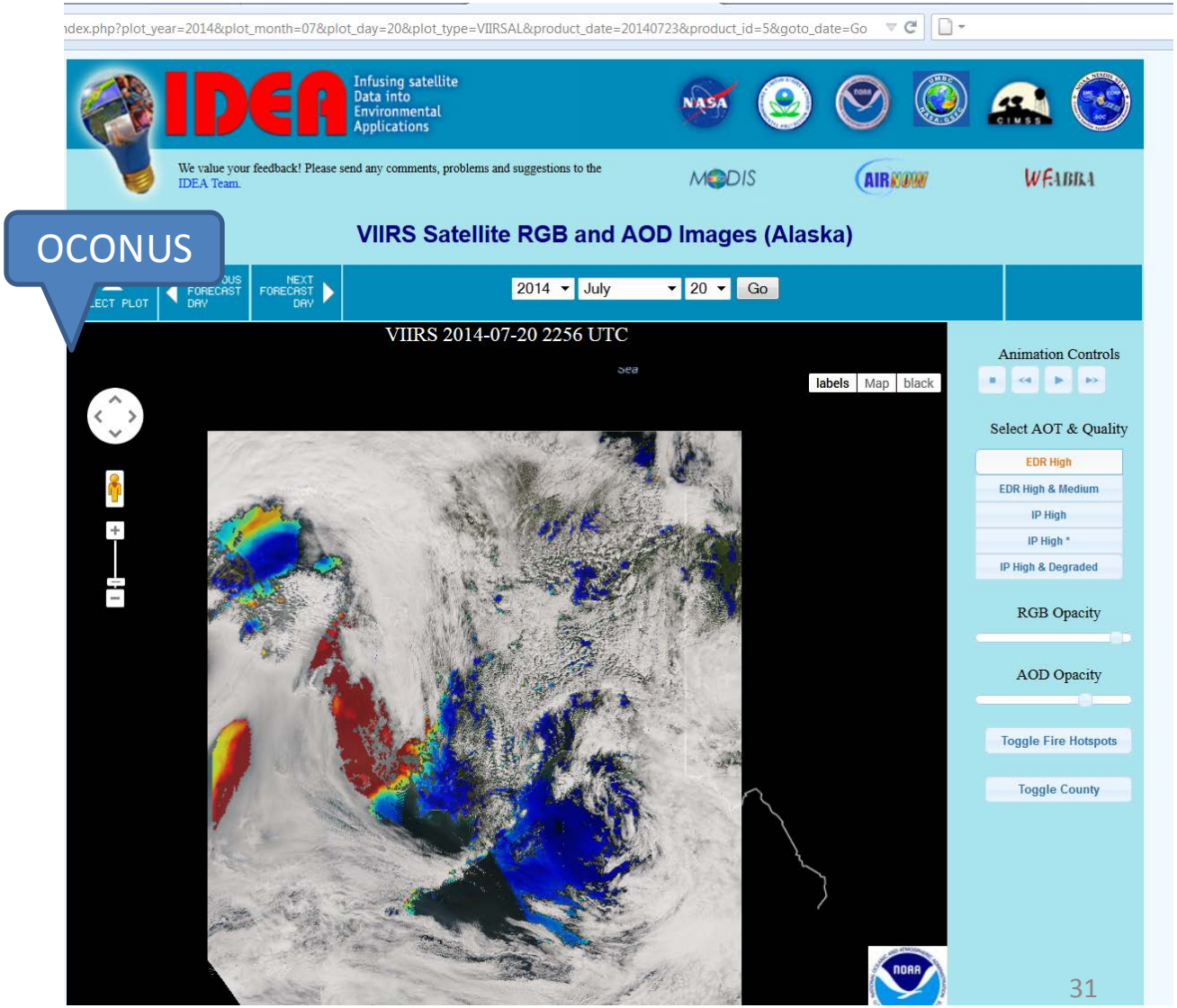
- Not all hotspots produce detectable smoke

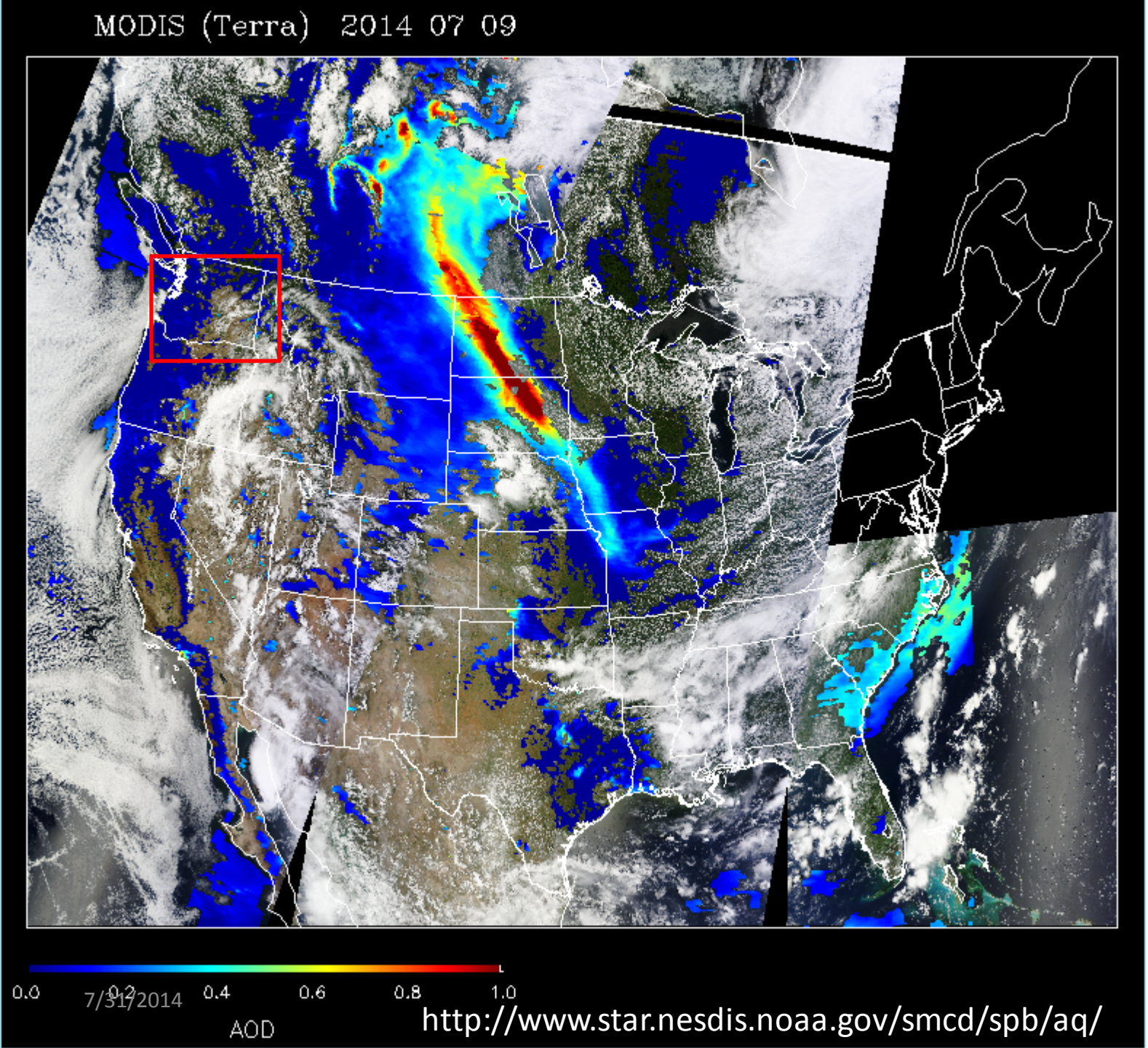
- Not all detectable smoke has a hotspot (at least in GOES)



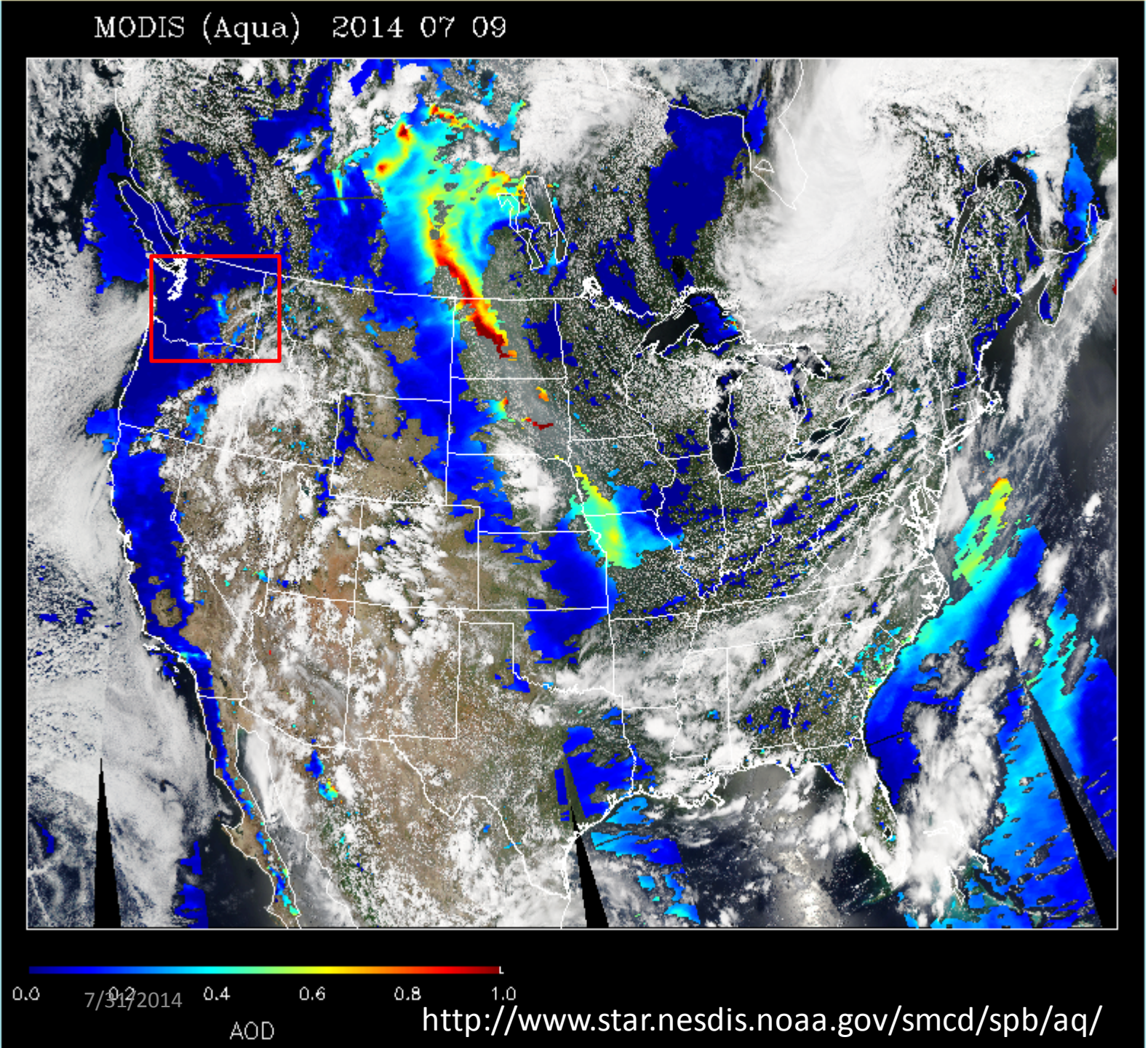
IDEA (Infusing satellite Data into Environmental Applications)

IDEA web page for CONUS and OCONUS (Alaska) showing VIIRS granules for AOT (pixel level and aggregated at different quality levels), RGB, and fire hot spots are provided to users with a latency less than 2 hrs. With Fire and Smoke Initiative, the latency will be brought down to less than 30 minutes





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



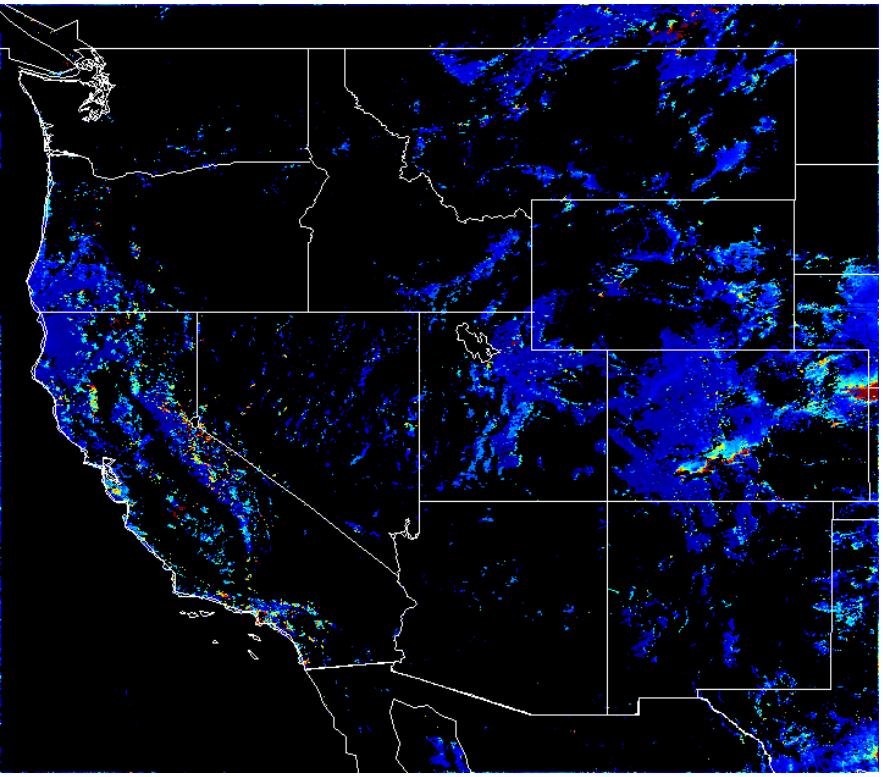
http://www.star.nesdis.noaa.gov/smcd/spb/aq/

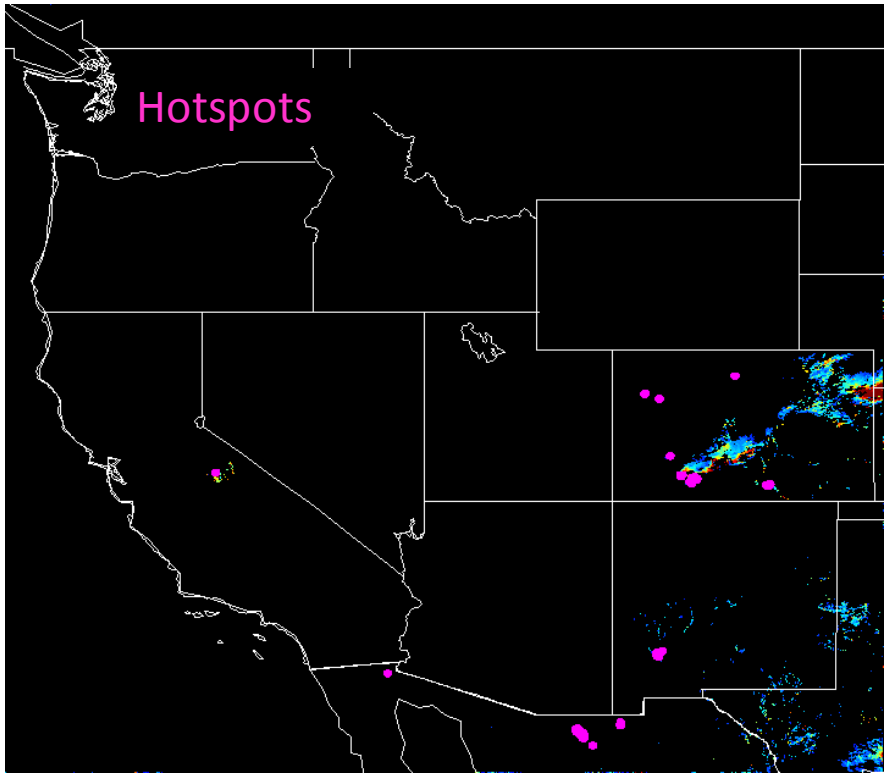
West Fork Complex Fire: VIIRS "Smoke AOT" on June 21, 2013

IP AOT (High Quality) at 750m Resolution

ASDA Algorithm

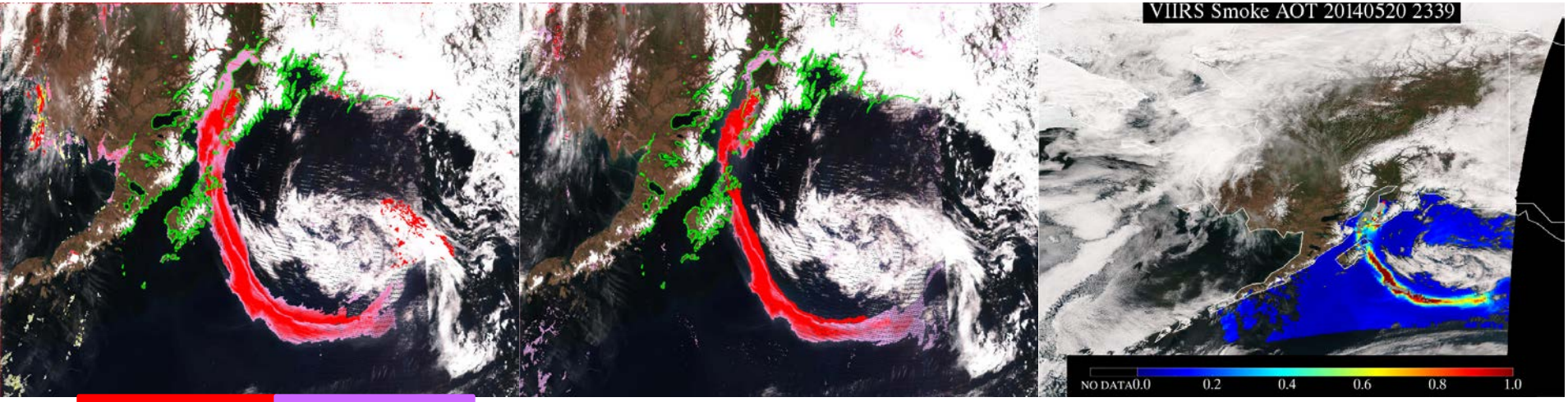
IP Smoke AOT (High Quality) at 750m Resolution





Testing of Different Smoke Detection Algorithms on VIIRS Data

JPSS RR Algorithm | GOES-R ABI algorithm | ASDA Algorithm

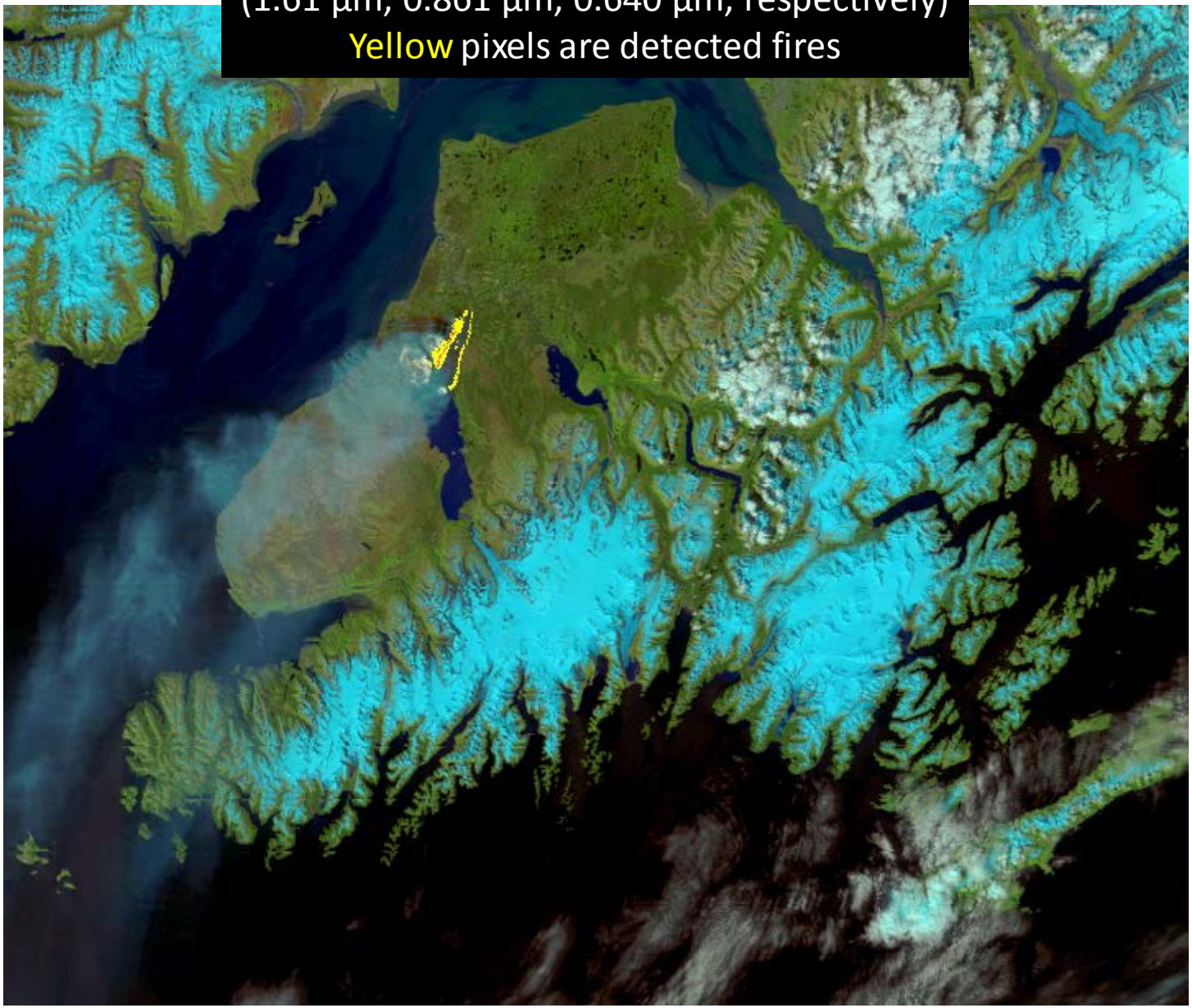


Thick Smoke | Thin Smoke

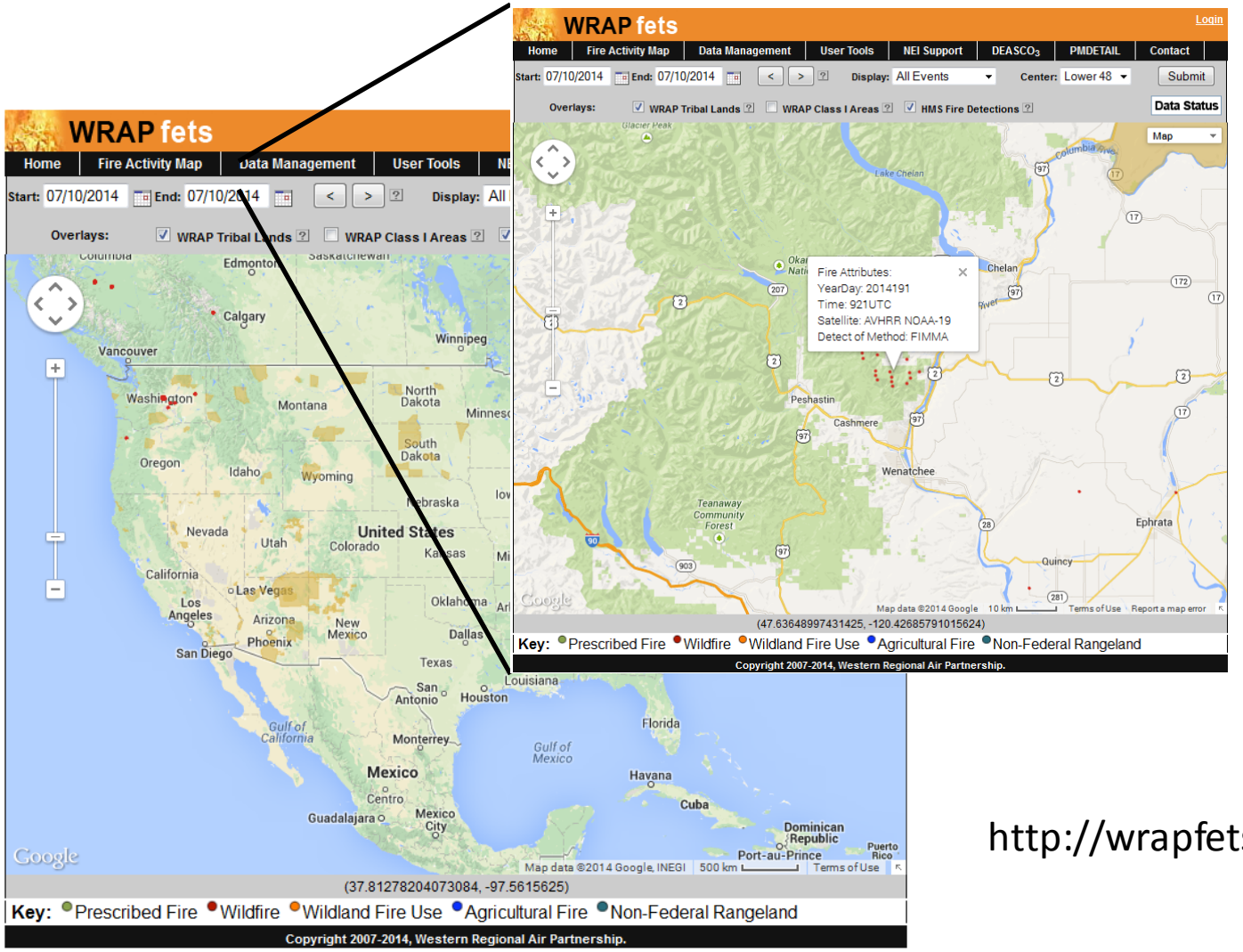
Funny River Fire Southern Alaska on 05/20/2014

- Smoke event nicely captured by VIIRS
  - Qualitative smoke detection has some data artifacts: false dust detection, false smoke detection in between clouds. But this smoke was mixed in with clouds quite a bit so hard to tell if smoke near clouds is true or not. Need to evaluate further.
  - ASDA "smoke AOD" product is quantitative but has a higher latency due to run time of the ASDA algorithm
- Question to users: which product do you prefer? A qualitative product generated with lower latency or a quantitative product with higher latency

I-band false color “RGB” using bands 3-2-1
(1.61 µm, 0.861 µm, 0.640 µm, respectively)
Yellow pixels are detected fires

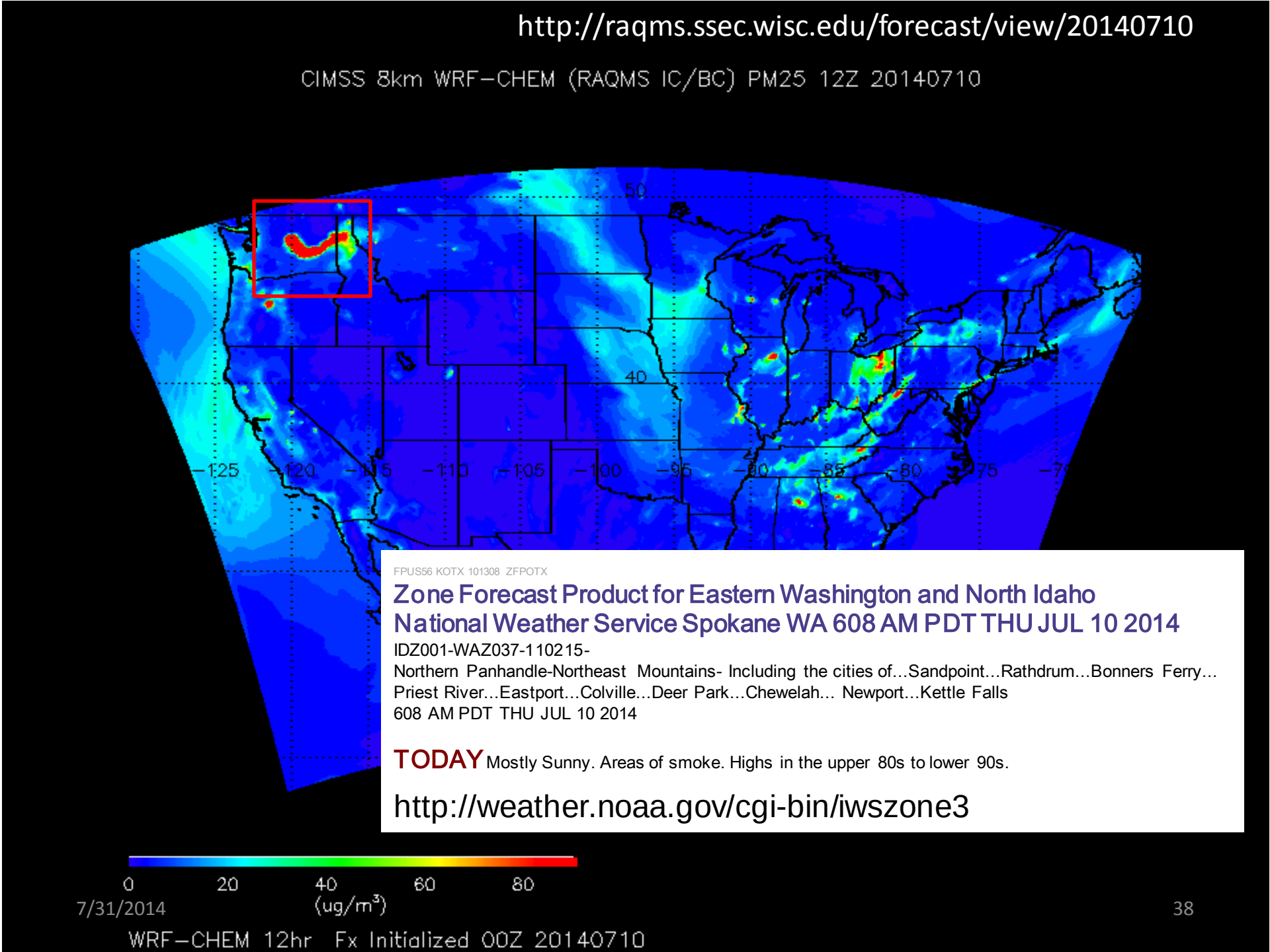


WRAP FETS



http://wrapfets.org/map.cfm

http://raqms.ssec.wisc.edu/forecast/view/20140710



FPUS56 KOTX 101308 ZFPOTX

Zone Forecast Product for Eastern Washington and North Idaho
National Weather Service Spokane WA 608 AM PDT THU JUL 10 2014

IDZ001-WAZ037-110215-
Northern Panhandle-Northeast Mountains- Including the cities of...Sandpoint...Rathdrum...Bonners Ferry...
Priest River...Eastport...Colville...Deer Park...Chewelah... Newport...Kettle Falls
608 AM PDT THU JUL 10 2014

TODAY Mostly Sunny. Areas of smoke. Highs in the upper 80s to lower 90s.

http://weather.noaa.gov/cgi-bin/iwszone3

Examples from the Pacific Northwest (July 2014)

Buzzard Complex, OR

- Fires started from lightning on July 14
- Contains 5 fires:
  - Beaver Creek 22,863 acres
  - Buzzard Fire 282,801 acres
  - Twin Reservoir 10,355 acres
  - Bartlett 728 acres
  - Saddle Draw 79,000 acres
- 395,747 acres (98% containment)
- Currently the largest fire in the U.S. and 2nd largest in state history

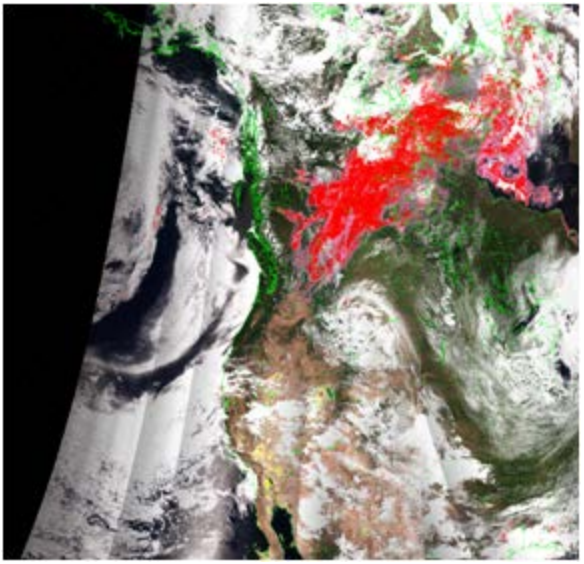
Carlton Complex, WA

- Fires started from lightning on July 14
- The Carlton Complex consists of four fires: Stokes Fire, Gold Hikes Fire, French Creek Fire and the Cougar Flat.
- The fires made significant runs towards the cities of Brewster and Pateros between July 17th and 18th, consuming approximately 300 homes in its path and destroying critical infrastructure
- These fires grew into one larger fire on July 20th at approximately 243,291 acres
- Currently at 251,025 (64% containment)

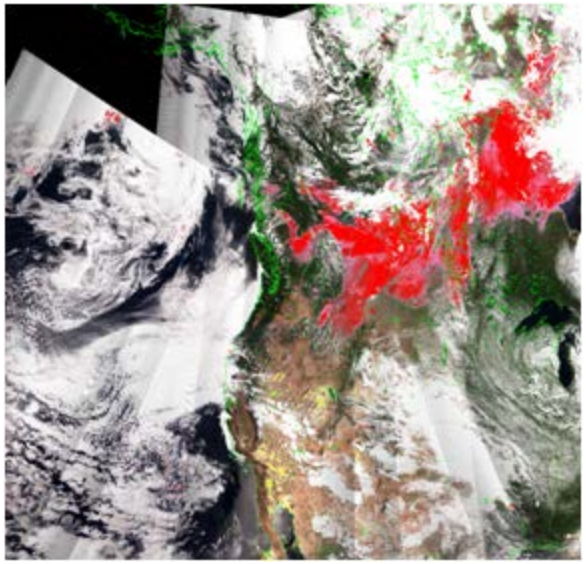
Smoke plumes from fires in Washington

Thick Smoke | Thin Smoke

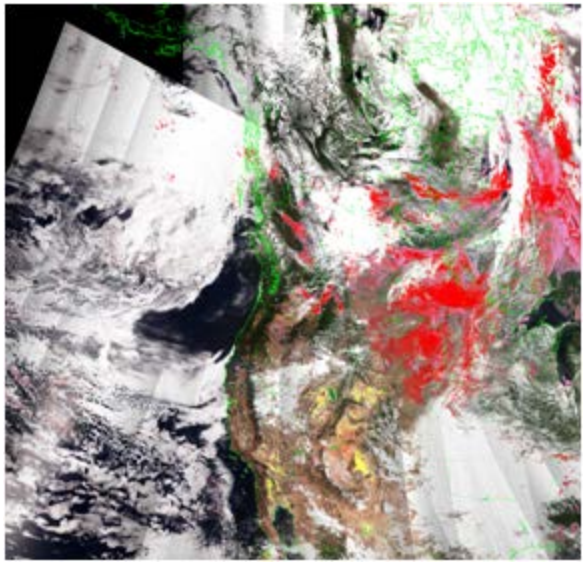
07/15/2014



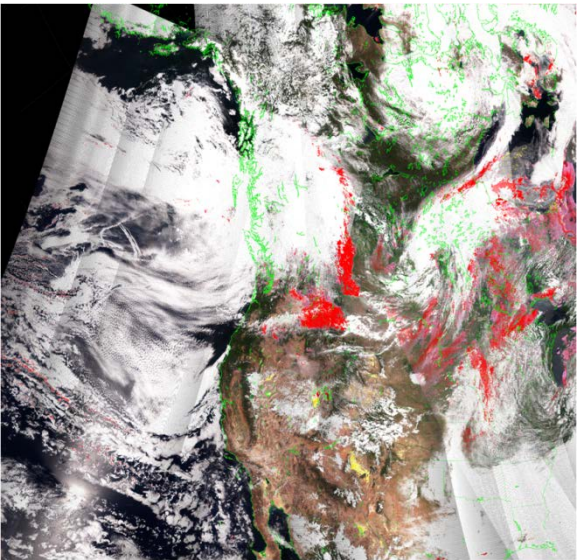
07/16/2014



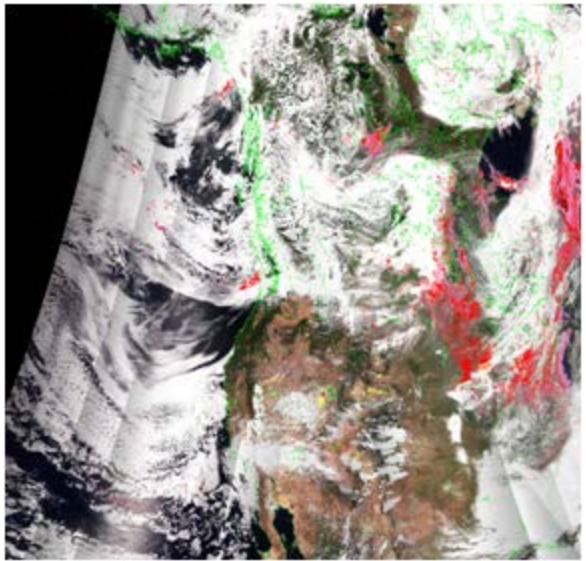
07/17/2014



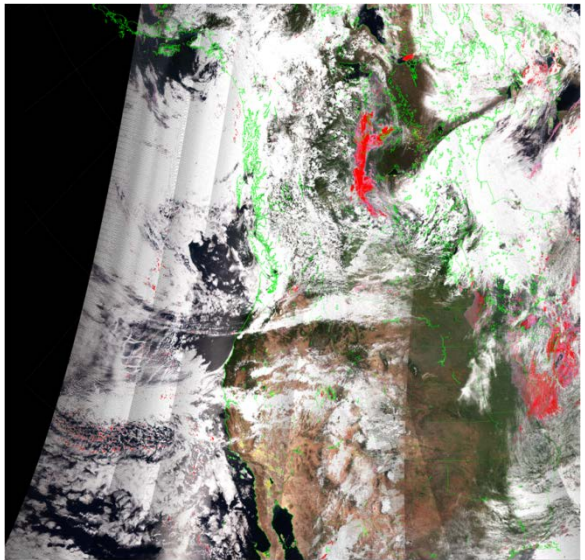
07/18/2014

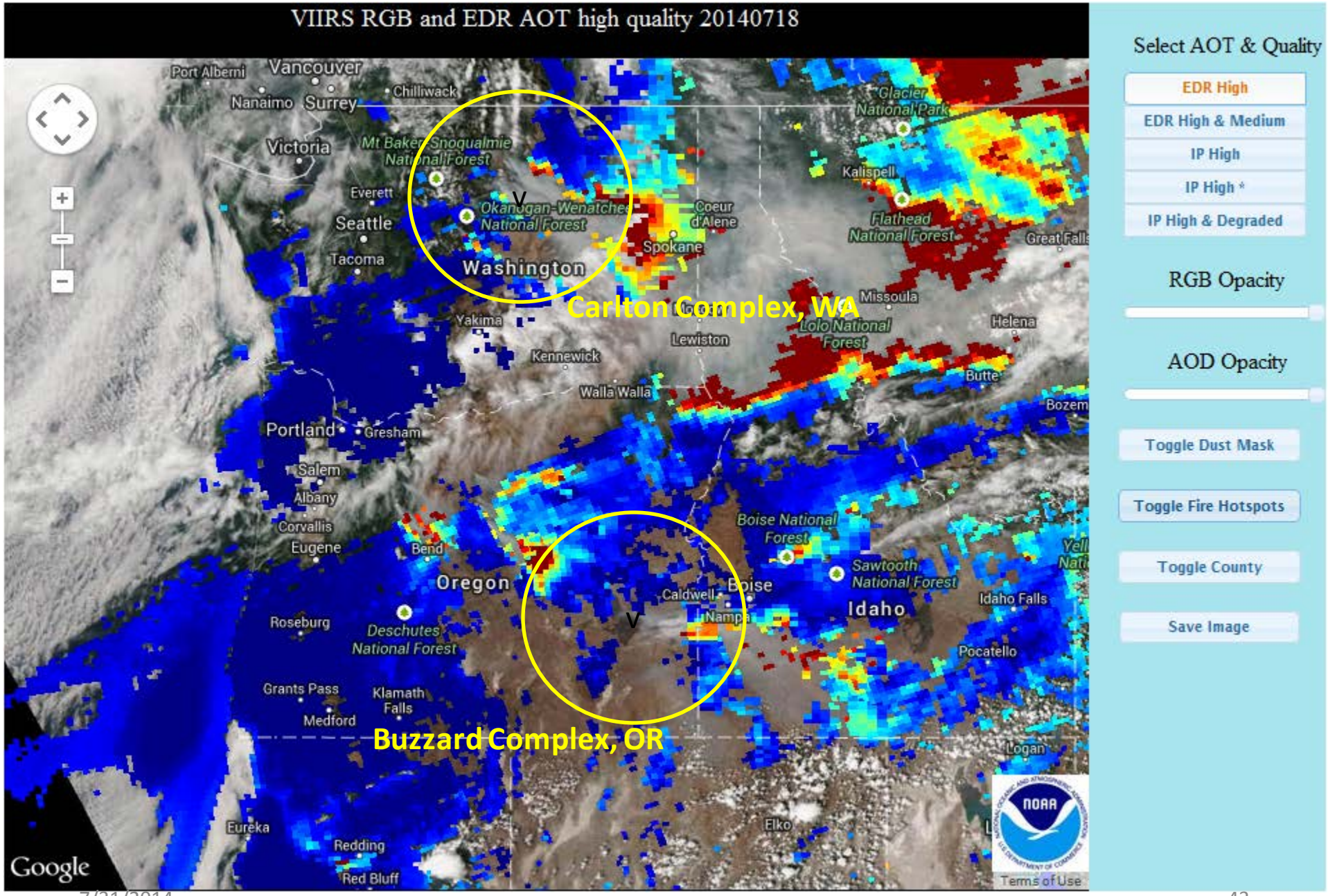


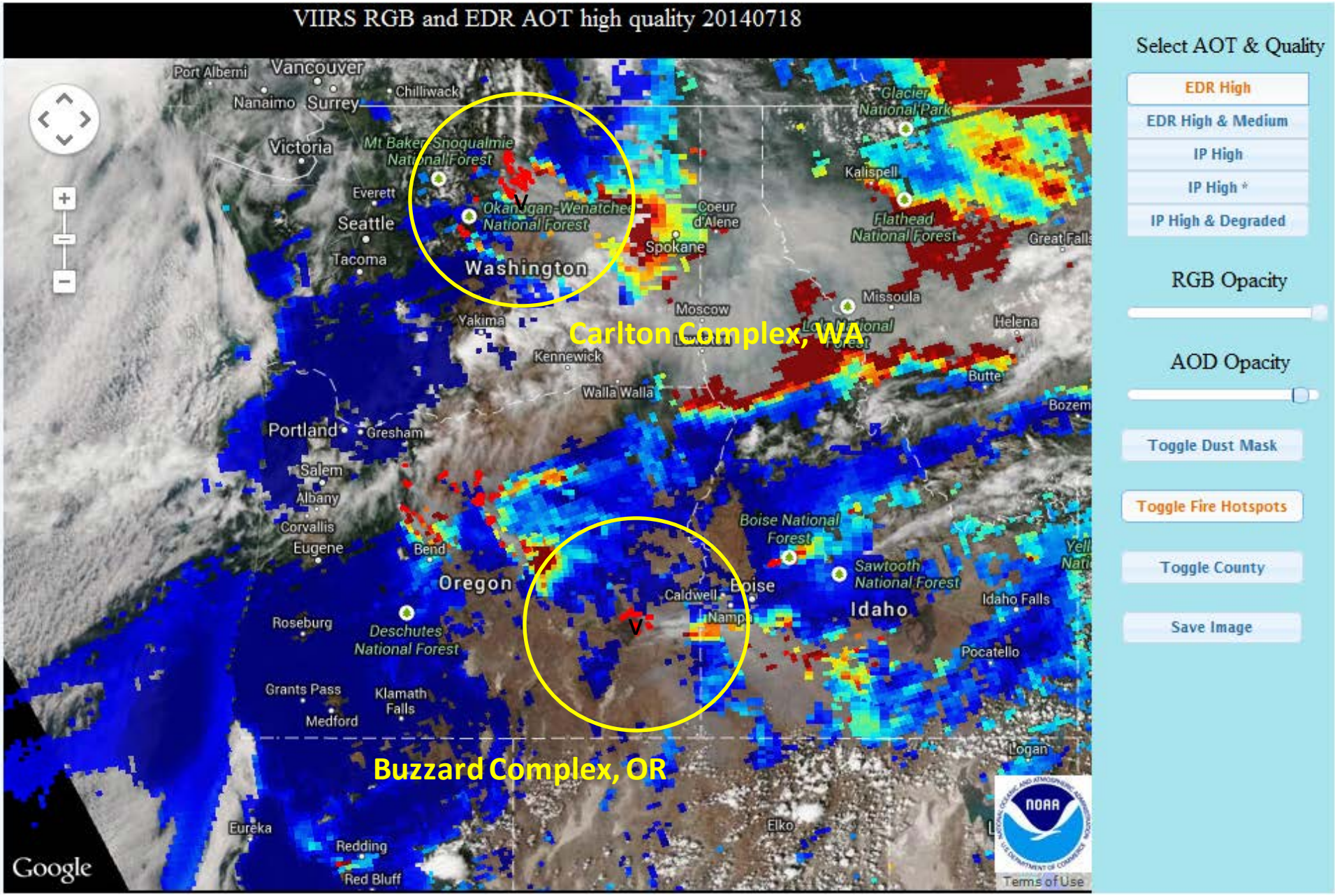
07/19/2014



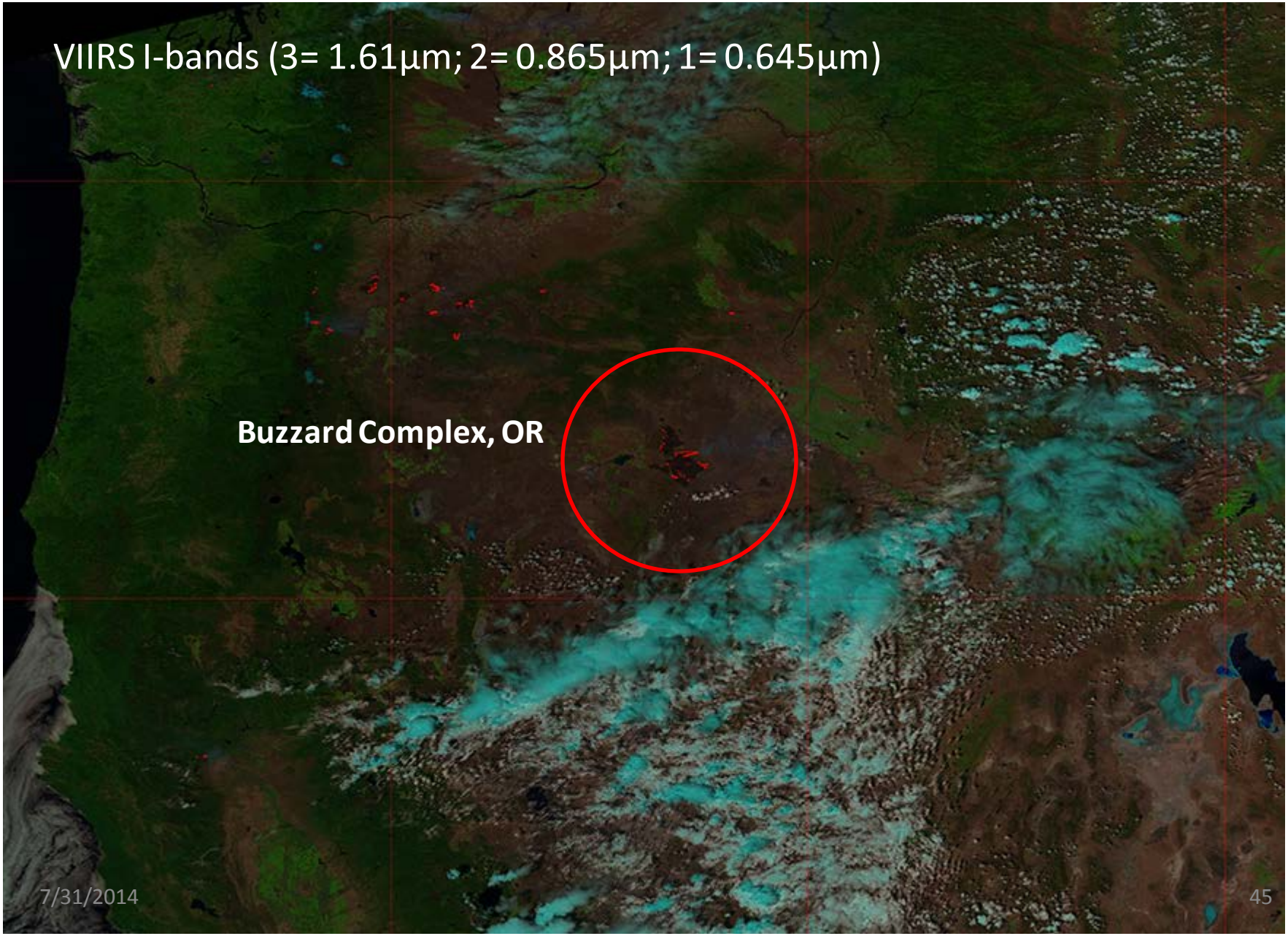
07/20/2014

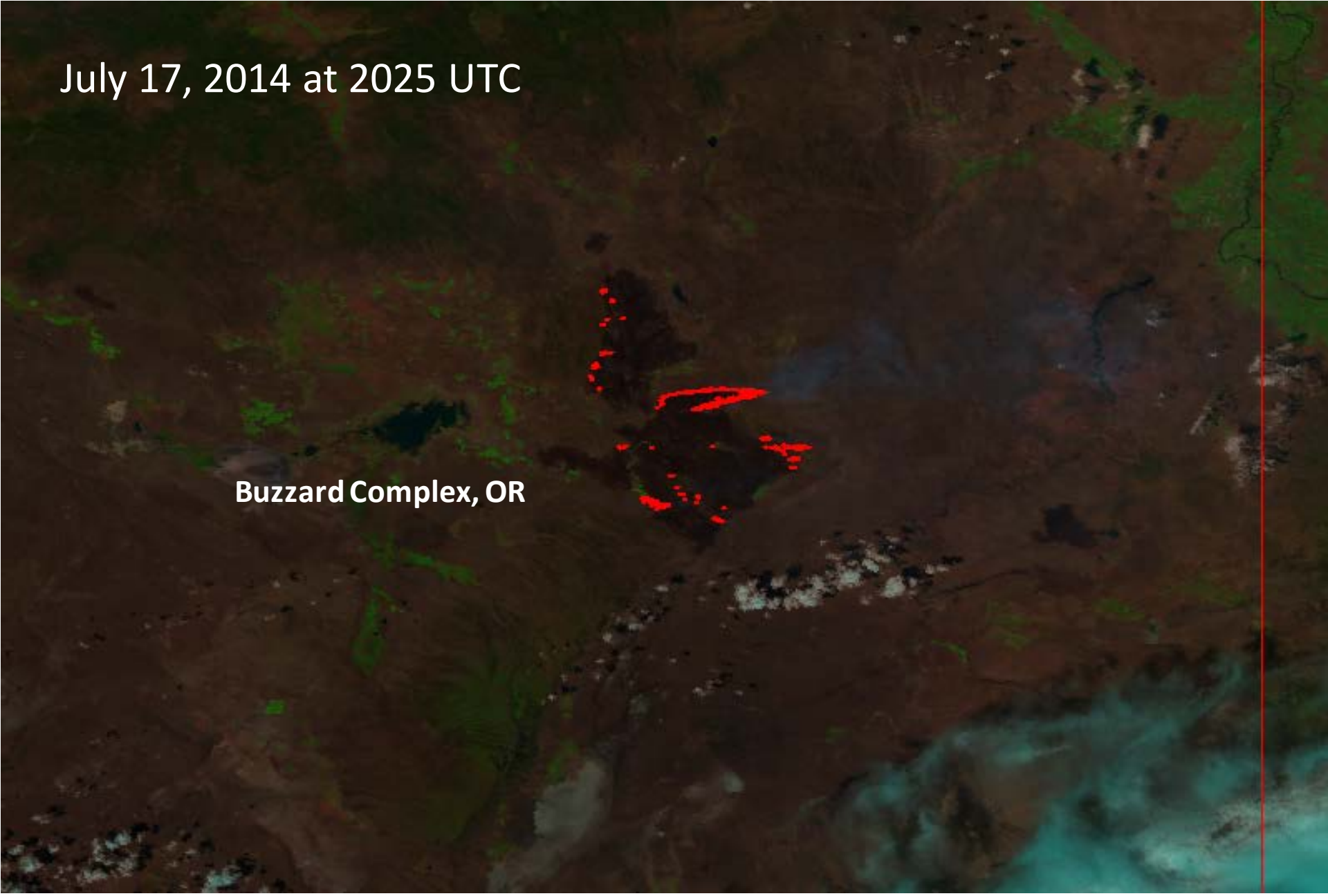



VIIRS RGB and EDR AOT high quality 20140718
Carlton Complex, WA
Buzzard Complex, OR
Select AOT & Quality
EDR High
EDR High & Medium
IP High
IP High *
IP High & Degraded
RGB Opacity
AOD Opacity
Toggle Dust Mask
Toggle Fire Hotspots
Toggle County
Save Image
Vancouver
Port Alberni
Nanaimo
Surrey
Chilliwack
Victoria
Mt Baker-Snoqualmie National Forest
Everett
Seattle
Tacoma
Okanogan-Wenatchee National Forest
Washington
Spokane
Coeur d'Alene
Glacier National Park
Kalispell
Flathead National Forest
Great Falls
Missoula
Lolo National Forest
Helena
Butte
Yakima
Lewiston
Kennewick
Walla Walla
Portland
Gresham
Salem
Albany
Corvallis
Eugene
Bend
Oregon
Roseburg
Deschutes National Forest
Grants Pass
Medford
Klamath Falls
Boise National Forest
Sawtooth National Forest
Caldwell
Boise
Nampa
Idaho
Idaho Falls
Pocatello
Logan
Elko
Eureka
Redding
Red Bluff
Google
NOAA
Terms of Use

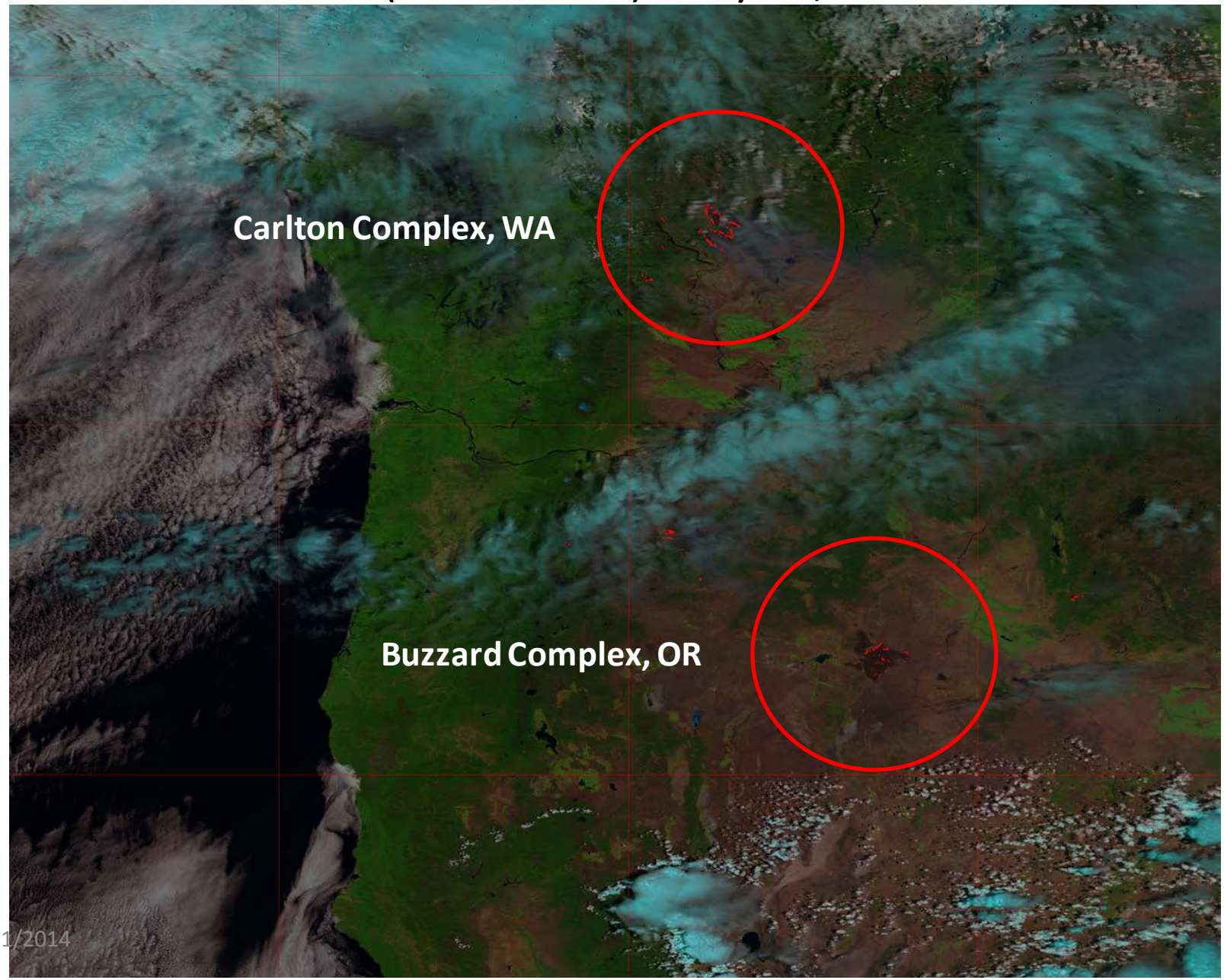

VIIRS RGB and EDR AOT high quality 20140718
Select AOT & Quality
EDR High
EDR High & Medium
IP High
IP High *
IP High & Degraded
RGB Opacity
AOD Opacity
Toggle Dust Mask
Toggle Fire Hotspots
Toggle County
Save Image
Carlton Complex, WA
Buzzard Complex, OR
Washington
Oregon
Idaho
Vancouver
Port Alberni
Nanaimo
Surrey
Chilliwack
Victoria
Everett
Seattle
Tacoma
Spokane
Coeur d'Alene
Kalispell
Missoula
Helena
Great Falls
Butte
Bozeman
Moscow
Yakima
Kennewick
Walla Walla
Portland
Gresham
Salem
Albany
Corvallis
Eugene
Bend
Roseburg
Grants Pass
Medford
Klamath Falls
Eureka
Redding
Red Bluff
Boise
Caldwell
Nampa
Idaho Falls
Pocatello
Logan
Elko
Glacier National Park
Flathead National Forest
Mt Baker-Snoqualmie National Forest
Okanogan-Wenatchee National Forest
Boise National Forest
Sawtooth National Forest
Deschutes National Forest
Google
Terms of Use

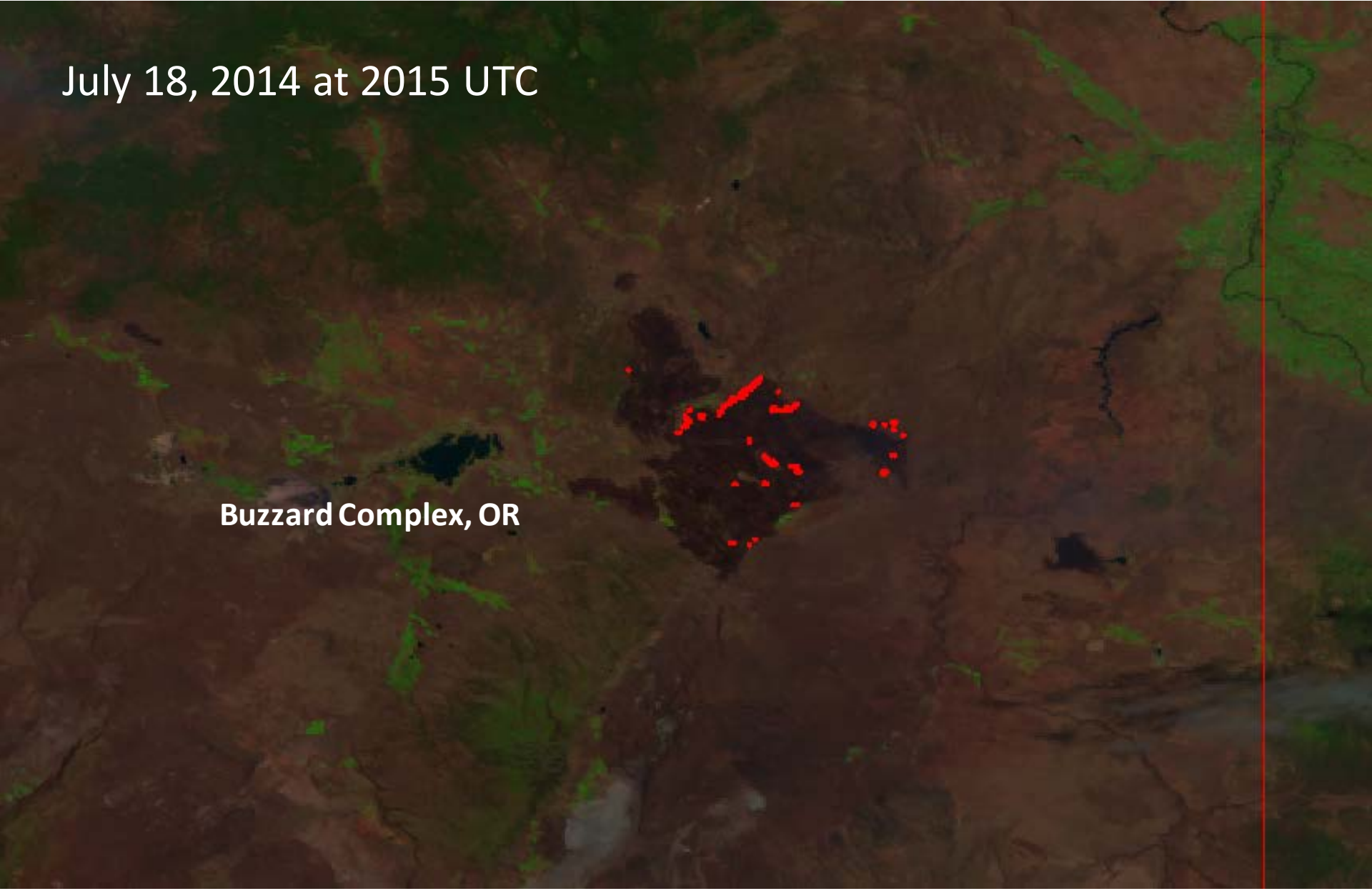
NPP VIIRS I-band RGB (bands 3-2-1): July 17, 2014 at 2025 UTC

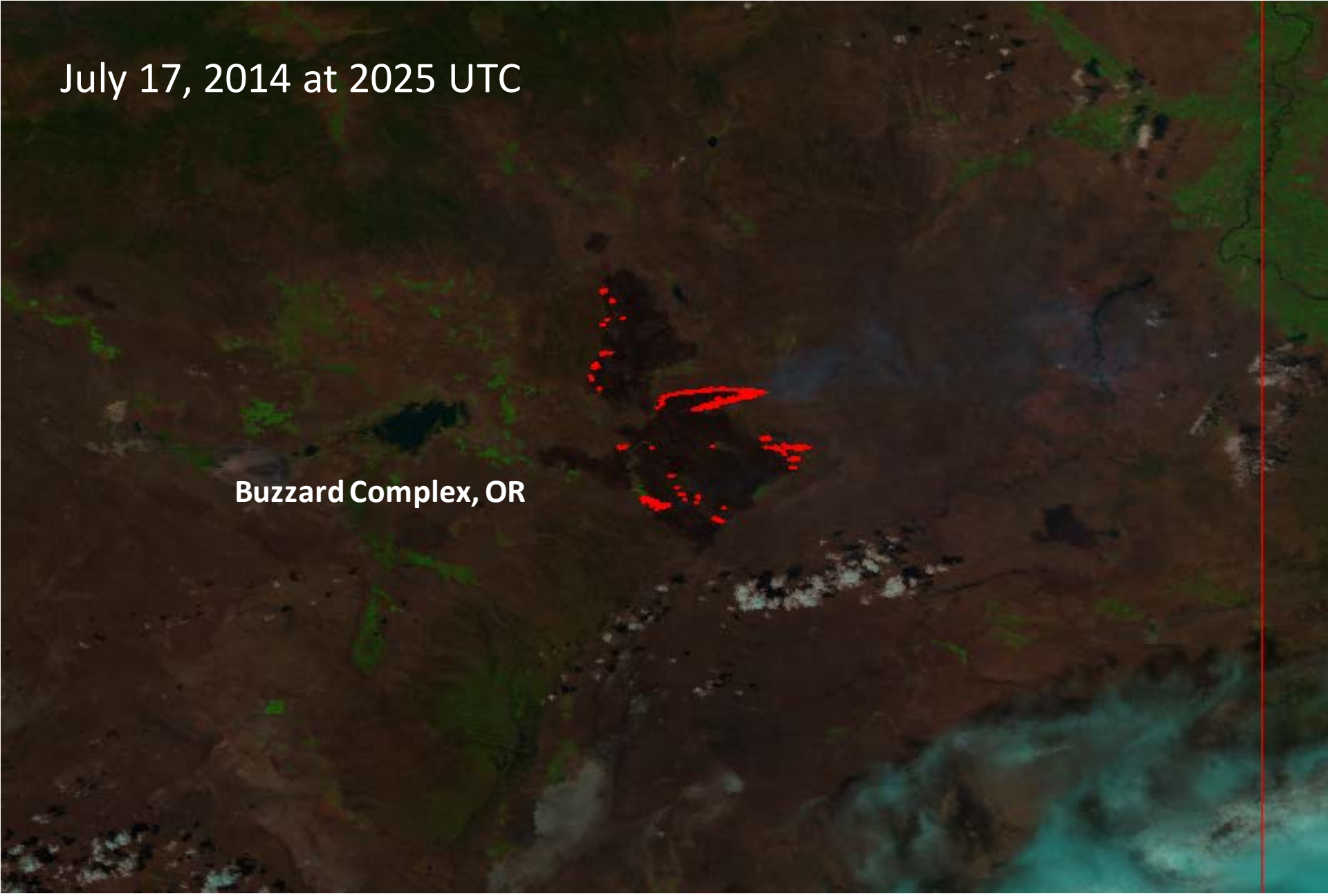



July 17, 2014 at 2025 UTC
Buzzard Complex, OR

NPP VIIRS I-band RGB (bands 3-2-1): July 18, 2014 at 2015 UTC




July 18, 2014 at 2015 UTC
Buzzard Complex, OR


July 17, 2014 at 2025 UTC
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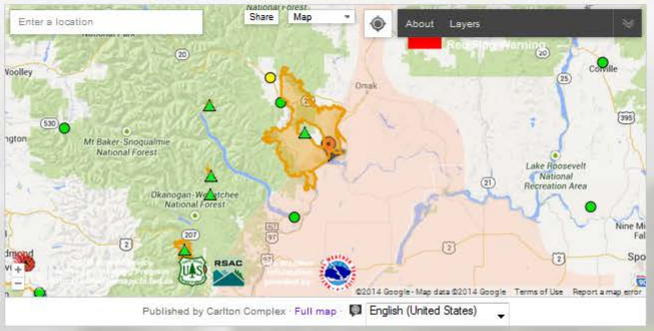
Carlton Complex Information

Welcome to the Carlton Complex blog, the official site for information on the fires of the Carlton Complex south of Winthrop, Washington. The blog is posted by the Information Officers on the teams assigned to the Complex. Call for Fire Information 509-996-9971 or for questions en espanol, call 360-280-4352. We encourage your comments below each post. Please let us know how we're doing.



Carlton Complex | Methow Valley News - Carlton Complex Fire: 7/29 Update from Incident Command

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CARLTON COMPLEX

OFFICIAL FIRE INFORMATION

WEDNESDAY, JULY 30, 2014

7-30-2014 South Zone Update

Fire Name: Carlton Complex (South Zone)

Acres: 251,026 (total complex) ***Start Date:*** 7/14/2014 ***Cause:*** Lightning

Location: The Carlton Complex South Zone is located on private, state and federally managed lands north of Chelan, Washington.

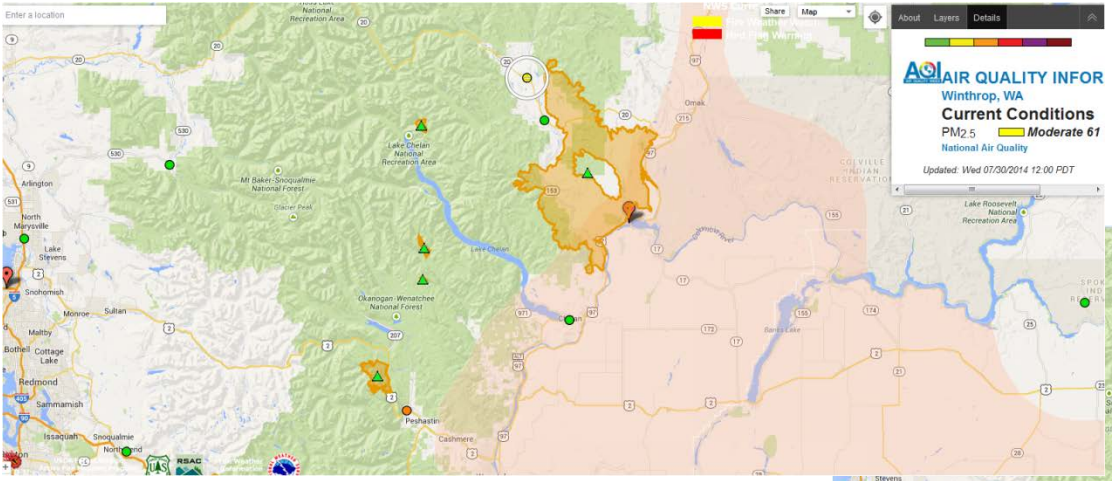
Current Information:

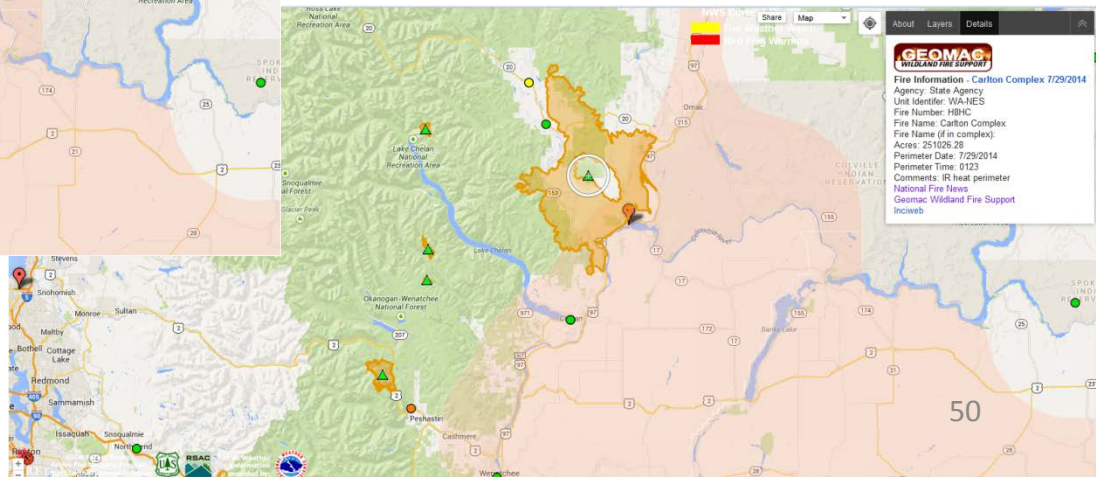
CARLTON COMPLEX LINKS

- Carlton Complex on Twitter
- Carlton Complex on Inciweb
- Carlton Complex on Facebook

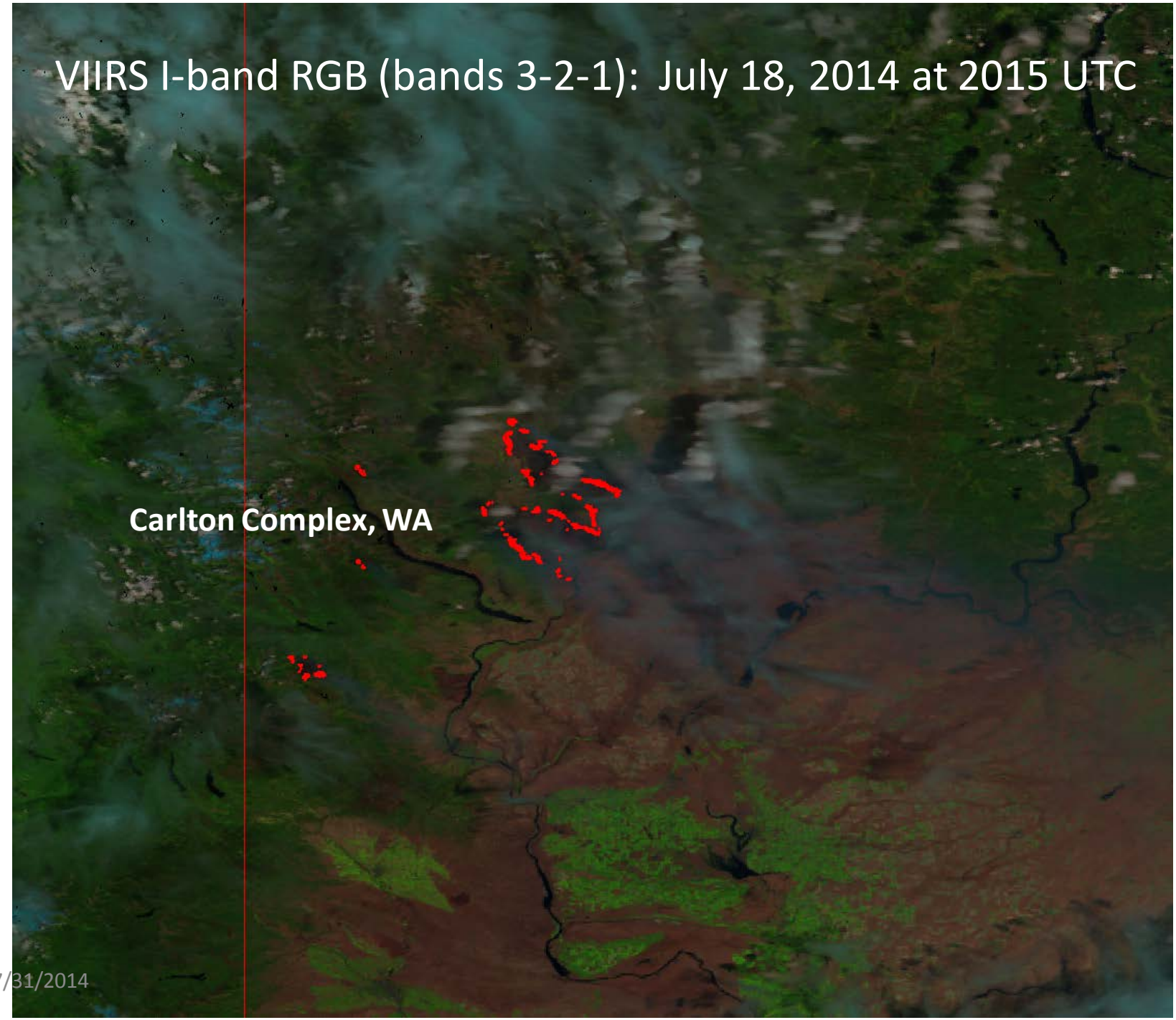
SOUTH OKANOGAN LINKS

- Okanogan County Fire District 6





VIIRS I-band RGB (bands 3-2-1): July 18, 2014 at 2015 UTC



Strategies into Action (1)

- Partner with NWS and Incident personnel, national, and state officials responding to a Western Region (WR) 2014 Fire Event
- Test and deliver VIIRS fire and smoke detection products with a low latency and high accuracy to the Western Region for use during fire events.
  - Current plan is to meet with predictive services unit members at the National Interagency Coordination Center (NICC) and several Geographical Area Coordination Centers (GACCs).
  - Question needs to be asked and answered:
  - “WHO is our end-user?” and “WHAT do they need and want?”

Strategies into Action (2)

- Develop one stop web-based system to distribute fire and smoke data for the two NWS test beds.
  - Common Operating Pictures (COP) model?
  - Two types of products: (1) fire and smoke products generated from DB data with enhanced product accuracy and latency less than 30 minutes; (2) Other value-added products based on IDPS for on-going/post-event analysis.
  - Will use real time access to IDPS/NDE data feed as a backup in case of glitches with DB data
  - Provide webinars on product/tool use
  - Implementation of products into AWIPS II through LDM