

Fire Detection: Data Access & Analysis

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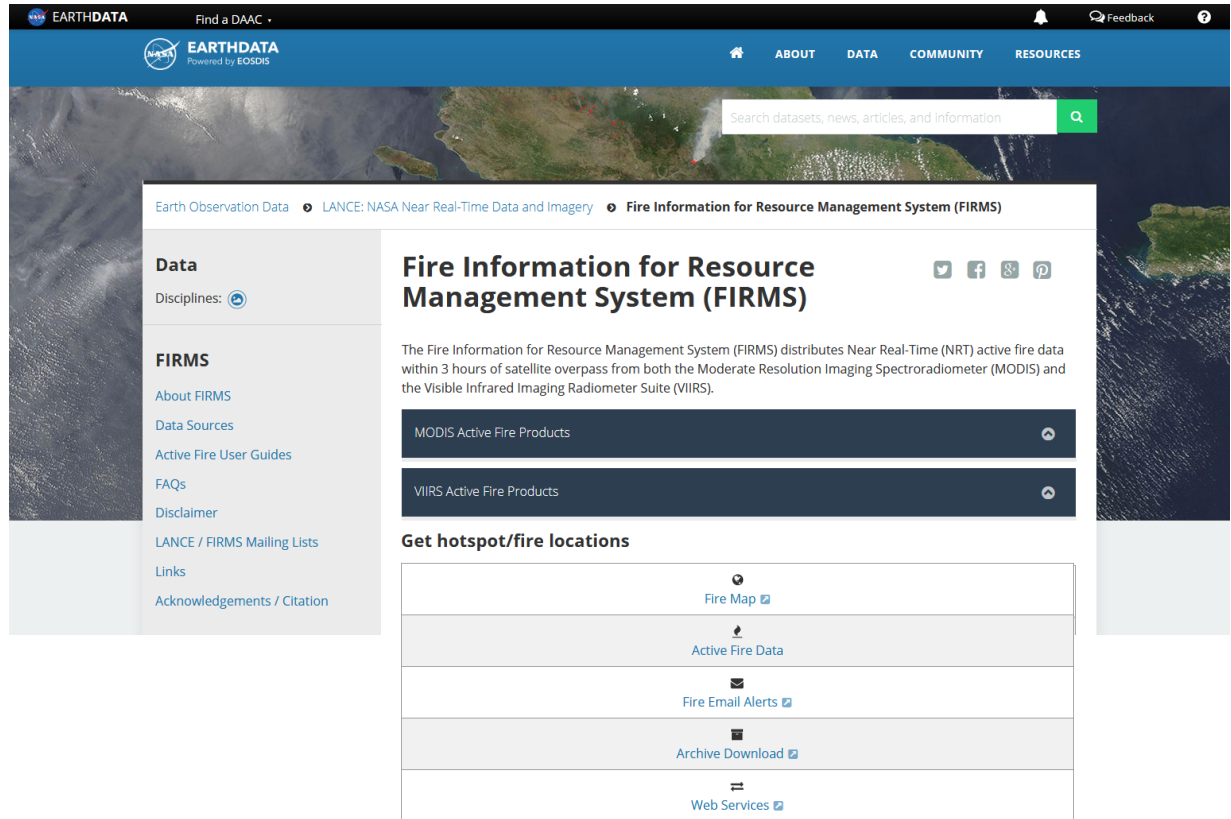
Satellite Remote Sensing of Dust, Fires, Smoke, and Air Quality, July 10-12, 2018



Fire Information for Resource Management System (FIRMS)

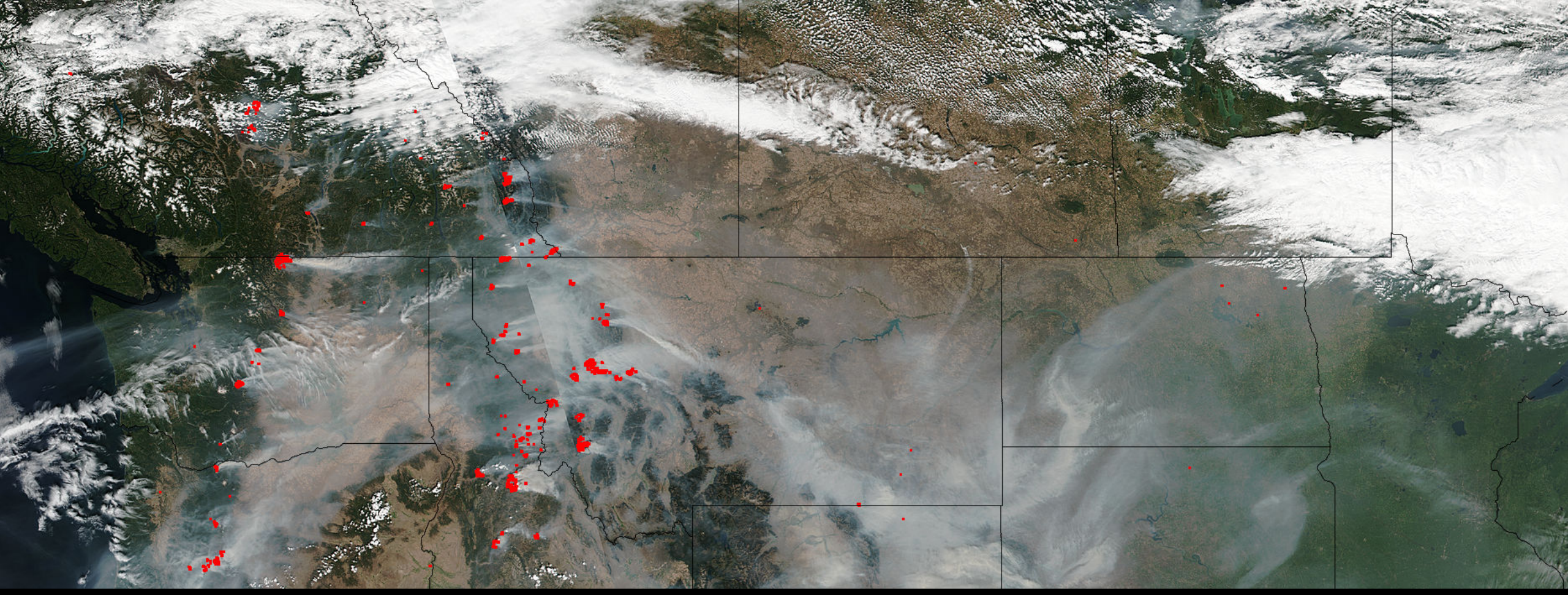
<https://earthdata.nasa.gov/earth-observation-data/near-real-time/firms>

- Near real-time (NRT) active fire data within 3 hrs of satellite overpass
- Global MODIS and VIIRS fire locations
- Historical data available
- Available in:
 - Email alerts
 - GIS-friendly file format
 - Visualization in **Web Fire Mapper** or **Worldview**



The screenshot displays the Earth Data website interface for the Fire Information for Resource Management System (FIRMS). The page features a blue header with the NASA EarthData logo and navigation links for ABOUT, DATA, COMMUNITY, and RESOURCES. A search bar is positioned at the top right. The main content area is titled "Fire Information for Resource Management System (FIRMS)" and includes a brief description: "The Fire Information for Resource Management System (FIRMS) distributes Near Real-Time (NRT) active fire data within 3 hours of satellite overpass from both the Moderate Resolution Imaging Spectroradiometer (MODIS) and the Visible Infrared Imaging Radiometer Suite (VIIRS)." Below this, there are two dark blue buttons labeled "MODIS Active Fire Products" and "VIIRS Active Fire Products". A section titled "Get hotspot/fire locations" contains a list of links: "Fire Map", "Active Fire Data", "Fire Email Alerts", "Archive Download", and "Web Services". A left-hand sidebar menu lists various options under "Data" and "FIRMS", including "About FIRMS", "Data Sources", "Active Fire User Guides", "FAQs", "Disclaimer", "LANCE / FIRMS Mailing Lists", "Links", and "Acknowledgements / Citation".





Web Fire Mapper

Step 1: Click Fire Map

The screenshot shows the NASA EarthData website interface. At the top, there is a navigation bar with the EarthData logo and a search bar. Below the navigation bar, a breadcrumb trail reads: "Earth Observation Data > LANCE: NASA Near Real-Time Data and Imagery > Fire Information for Resource Management System (FIRMS)".

The main content area is titled "Fire Information for Resource Management System (FIRMS)". It includes a description: "The Fire Information for Resource Management System (FIRMS) distributes Near Real-Time (NRT) active fire data within 3 hours of satellite overpass from both the Moderate Resolution Imaging Spectroradiometer (MODIS) and the Visible Infrared Imaging Radiometer Suite (VIIRS)." Below this, there are two buttons: "MODIS Active Fire Products" and "VIIRS Active Fire Products".

Under the heading "Get hotspot/fire locations", there is a list of links. The "Fire Map" link is circled in red. Other links in the list include "Active Fire Data", "Fire Email Alerts", "Archive Download", and "Web Services".

On the left side of the page, there is a sidebar menu with sections: "Data", "FIRMS", and "Data from FIRMS". The "FIRMS" section includes links for "About FIRMS", "Data Sources", "Active Fire User Guides", "FAQs", "Disclaimer", "LANCE / FIRMS Mailing Lists", "Links", and "Acknowledgements / Citation". The "Data from FIRMS" section includes links for "Fire Map", "Fire Alerts", "Active Fire Data: SHP / TXT / KML", "Web Services", and "Archive Download".



Step 2: Display Fires Detected by MODIS for the Past 24 hours

The screenshot displays the NASA FIRMS (Fire Information for Resource Management System) web interface. The main map shows North America with numerous orange dots representing fire detections. A yellow box highlights the 'Quick View' panel on the right, which contains the following elements:

- Time Selection:** Buttons for 'today', '24 hrs' (selected), '48 hrs', '72 hrs', and '7 days'.
- VIIRS 375m Layer:** A checkbox that is currently unchecked, with 'Day' and 'Night' sub-selectors.
- MODIS / Aqua Layer:** A checked checkbox, with 'Day' and 'Night' sub-selectors and a 'Show FRP' checkbox.
- MODIS / Terra Layer:** A checked checkbox, with 'Day' and 'Night' sub-selectors and a 'Show FRP' checkbox.
- VIIRS - Corrected Reflectance (true d):** A checkbox that is currently unchecked.

The interface also includes a left sidebar with 'Fire Map', 'Active Fire Data', 'Fire Alerts', 'Archive Download', and 'Web Services'. The bottom of the screen features a toolbar with 'PAN', 'IDENTIFY', 'BASEMAPS', 'OVERLAYS', and 'MAXIMIZE' buttons, along with a scale bar (1000 km) and a 'Last Updated' timestamp.



Step 3: Zoom Over Region of Interest and Identify Area of Maximum Fire Density

The screenshot displays the NASA FIRMS (Fire Information for Resource Management System) web application. The interface is divided into several sections:

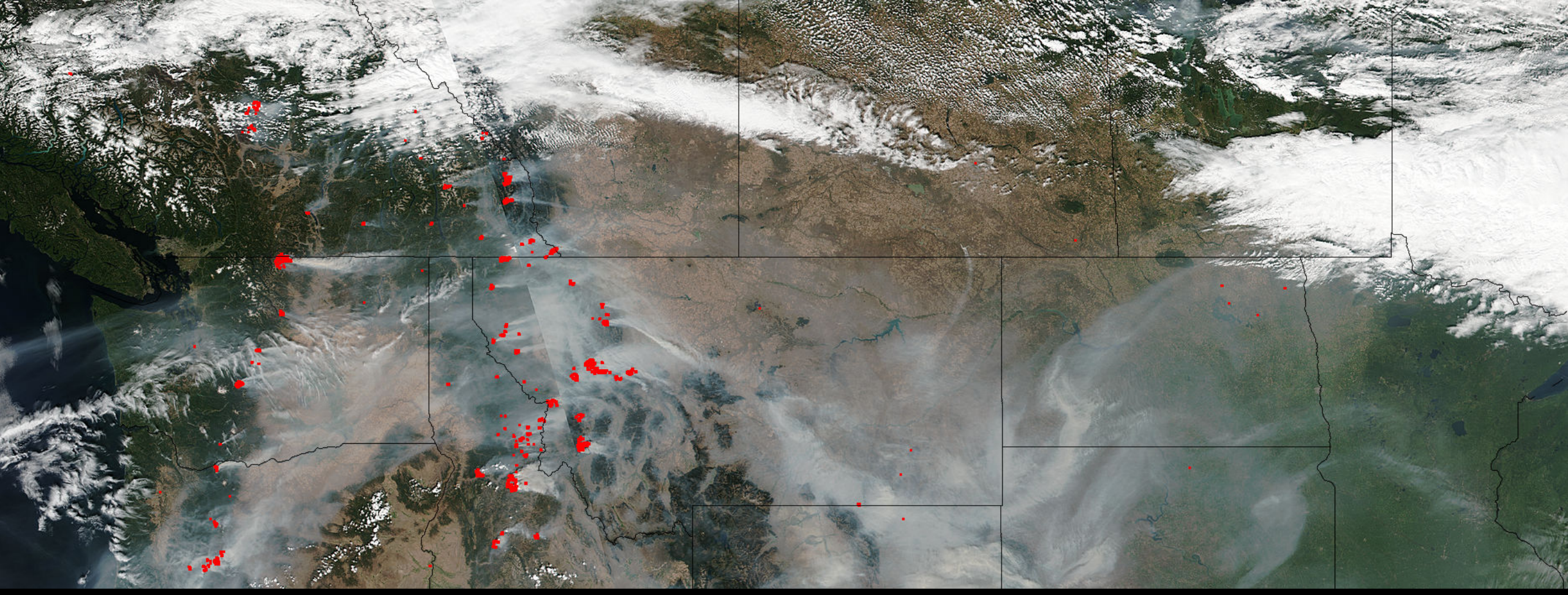
- Header:** Features the NASA logo, the title "FIRMS Fire Information for Resource Management System", and a "Feedback" link.
- Map Area:** Shows a satellite-style map of the United States with orange square markers indicating fire locations. A scale bar at the bottom left indicates 200 km. The text "Fires: Last 24 hrs" is visible at the top of the map.
- Left Sidebar:** Contains navigation icons for "Fire Map", "Active Fire Data", "Fire Alerts", "Archive Download", and "Web Services".
- Right Panel (Quick View):** Offers a "Quick View" tab and a "7 days" time range selector. It lists data layers:
 - VIIRS 375m (with Day/Night toggle)
 - MODIS / Aqua (with Day/Night toggle and Show FRP checkbox)
 - MODIS / Terra (with Day/Night toggle and Show FRP checkbox)
 - VIIRS - Corrected Reflectance (true d)
- Bottom Bar:** Includes navigation icons for PAN, IDENTIFY, BASEMAPS, OVERLAYS, and MAXIMIZE, along with the NASA logo and version information: "Last Updated: 2018-06-07 17:42 GMT, Version: VIIRS 375 m".



Exercise & Questions

- Repeat Step 3 using VIIRS datasets
- What are the differences in fire counts between MODIS and VIIRS?





Active Fire Data

Active Fire Data

<http://earthdata.nasa.gov/earth-observation-data/near-real-time/firms/active-fire-data>

- Download active fire products
 - MODIS (C6 2000/2002 – Present)
 - VIIRS (12 Jan 2012 – Present)
- Past 24 hrs, 48 hrs, 7 days
- KML, WMS, text file formats
- Data older than 7 days can be obtained through the archive
 - <https://firms.modaps.eosdis.nasa.gov/download/>

Earth Observation Data > LANCE: NASA Near Real-Time Data and Imagery > Fire Information for Resource Management System (FIRMS) > Active Fire Data

Active Fire Data

Download active fire products from the Moderate Resolution Imaging Spectroradiometer (MODIS) (MCD14DL) and the Visible Infrared Imaging Radiometer Suite (VIIRS) 375 m (VNP14IMGTDL_NRT) for the last 24, 48 hours and 7 days in shapefile, KML, WMS or text file formats. VIIRS data complement the MODIS fire detections but the improved spatial resolution of the 375 m data provides a greater response over fires of relatively small areas. Read more about VIIRS...

Data older than 7 days can be obtained from the [Archive Download Tool](#) - please note you will be re-directed to the updated FIRMS (beta). Users intending to perform scientific analysis are advised to download the standard (science quality) data.

Please note:

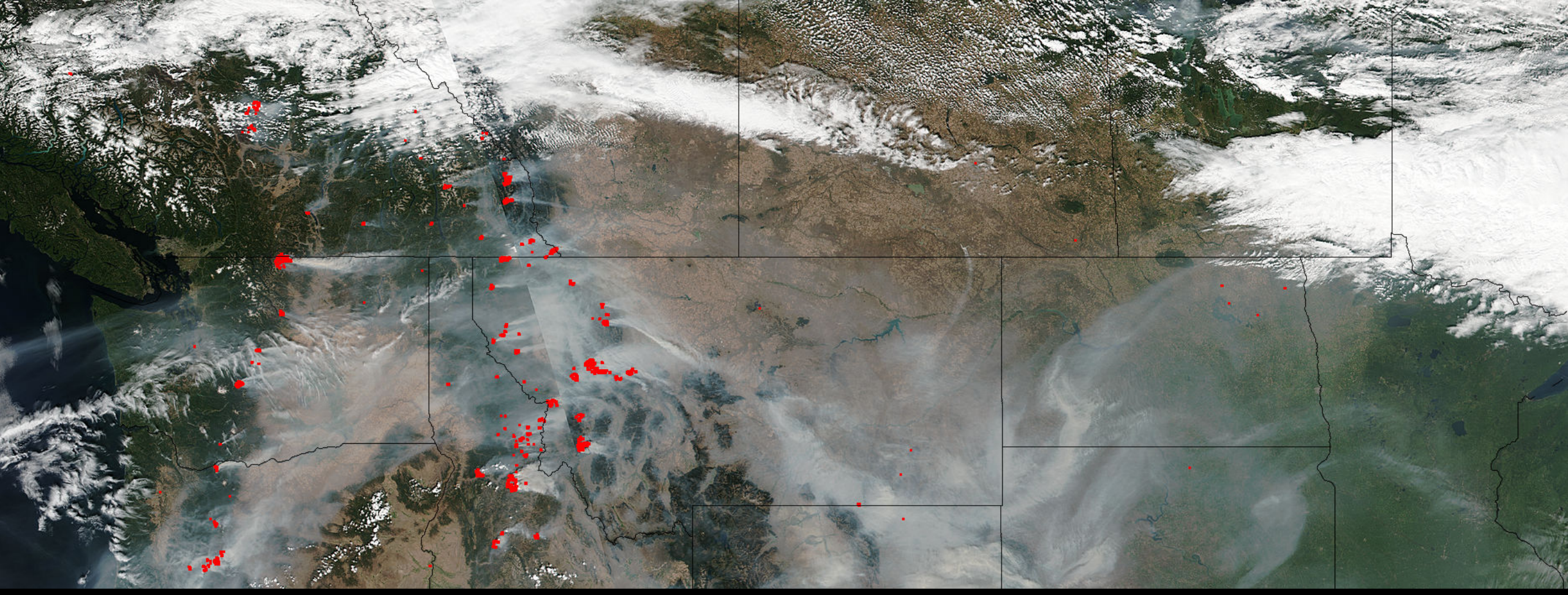
- MODIS C6 is available from November 2000 (for Terra) and from July 2002 (for Aqua) to the present.
- VIIRS 375 m data are currently available from 20 January 2012 to the present.



Exercise

- Explore the various data formats for which active fire data is available
- Download data for USA and Hawaii over the past 24 hours in KML format
- Open the file in Google Earth

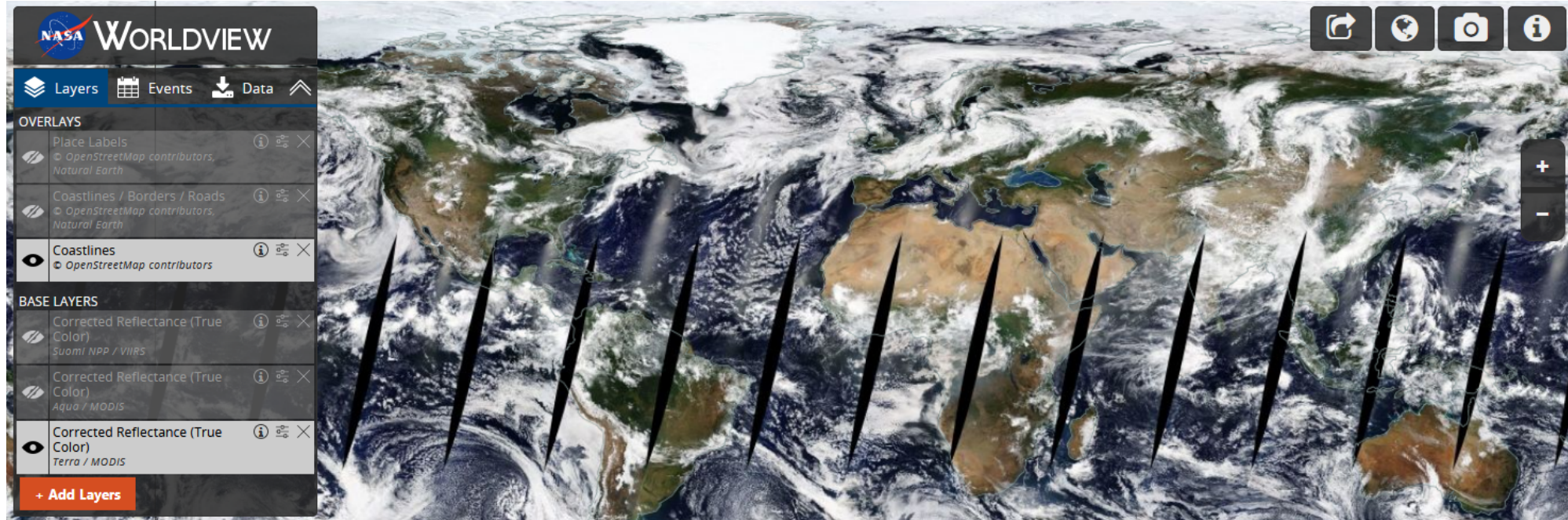




Worldview

NASA Worldview

<https://worldview.earthdata.nasa.gov/>



- Application that allows the user to:
 - interactively browse, save, or share satellite imagery layers
 - download the data
- Some imagery available in near real time (NRT) or within three hours of observation



Exercise

- Display VIIRS fire detection without any base layer from August 27- September 7, 2017
- Zoom in and animate over the NW US / British Columbia.

