



# 8<sup>TH</sup> INTERNATIONAL WILDLAND FIRE CONFERENCE

**GOVERNANCE PRINCIPLES:**  
Towards an International Framework  
[www.wildfire2023.pt](http://www.wildfire2023.pt)

Porto-Portugal  
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## Global to Local: NASA's Fire Information for Resource Management System (FIRMS) Supporting Integrated Fire Management

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FIRMS Global Provides Near Real Time and Real Time imagery and fire remote sensing products to users in over 200 countries.



### NRT Geostationary Active Fire Data in FIRMS

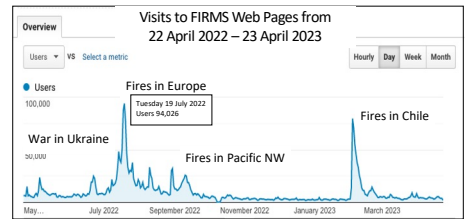
- Observations every 10-15 minutes and available in FIRMS within 30 minutes
- Beta/provisional with filtering thresholds applied
- GOES-16 & 18, Meteosat 9 & 11 SEVIRI and Himawari-8

<https://www.earthdata.nasa.gov/fire/firms/firms-geo-fires>

### Harmonized Landsat/Sentinel-2 Imagery in FIRMS

- Global harmonized Landsat-Sentinel 2 (HLS) true and false color composite imagery
- Landsat 8 and 9 QLI imagery and Sentinel 2A and 2B MSI imagery
- 2-4 day latency

The design and development of FIRMS is informed by a multitude of wildfire management stakeholder groups that rely upon a range of technological solutions and fire information systems. Recent additions to FIRMS include geostationary active fire data and Harmonized Landsat Sentinel-2 (HLS) imagery. While the MODIS and VIIRS active fire data are available to users in less than 3 hours from satellite observation, the geostationary active fire data are available within 15-30 minutes. These data are currently considered a beta product for FIRMS due to their higher number of false detections. The 30-m HLS imagery, available in both true-color and false color composites, are particularly useful for informing higher resolution burned area analyses.



## FIRMS US/Canada Developed through a partnership between NASA and the United States Department of Agriculture Forest Service



Sensor (Platform)	Source	Spatial Resolution	Temporal Resolution	Latency* (Coverage)
ABI (GOES-16 & 18)	NOAA	2km sub-satellite	Sub-hourly	RT -> 20-30 mins (Americas)
SEVIRI (Meteosat 9 & 11)	ELMETS/ESA SAF	3km sub-satellite	Sub-hourly	RT -> 30 mins (Europe-Africa-India)
AHI (Himawari-8)	KCL/JPMMA	2km sub-satellite	Sub-hourly	RT -> 30 mins (Australia-Asia)
MODIS (Terra/Aqua)	NASA LANCE	1km	Twice daily	NRT -< 3 hours (Global)
VIIRS (Suomi NPP/NASA-20)	NASA LANCE	375m	Twice daily	NRT -< 3 hours (Global)
MODIS (Terra/Aqua)	SSEC Univ of Wisconsin	1km	Twice daily	RT -< 30 mins (US-Canada)
VIIRS (Suomi NPP/NASA-20)	SSEC Univ of Wisconsin	375m	Twice daily	RT -< 30 mins (US-Canada)
MODIS (Terra/Aqua)	SSEC Univ of Wisconsin	1km	Twice daily	URT -< 1 mins (US-Canada)
VIIRS (Suomi NPP/NASA-20)	SSEC Univ of Wisconsin	375m	Twice daily	URT -< 1 mins (US-Canada)
OLI (Landsat 8/9)	USGS EROS	30m	8 days <sup>2</sup>	RT -< 30 mins (US-Canada)

\* The pixel size systematically grows from sub-satellite towards the edge of the disk.  
<sup>1</sup> Thermal data are collected for daytime and nighttime observations - 12 hours apart.  
<sup>2</sup> L8 and L9 pixel sizes each have 16-day revisit cycles and their orbits are 8 days out of phase. This does not include potential repetitive observations.  
<sup>3</sup> Latency refers to the estimated time from satellite observation to availability in FIRMS. Near-Real-Time (NRT), Real-Time (RT) & Ultra-Real-Time (URT).

FIRMS US/Canada provides access to additional data for wildfire management needs unique to the United States and Canada. These include real-time and ultra real-time active fire data from MODIS and VIIRS, and 30m Landsat active fire data from Landsat 8 & 9. Additionally, current reporting information for active fires >40 ha, and daily fire danger forecasts are available for the US and Canada. Current fire weather advisories and fire perimeters are also available for the US.

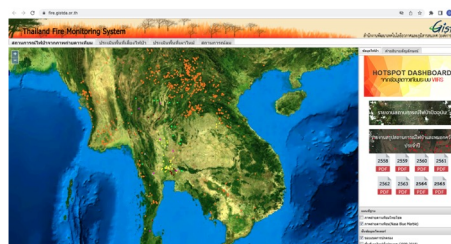
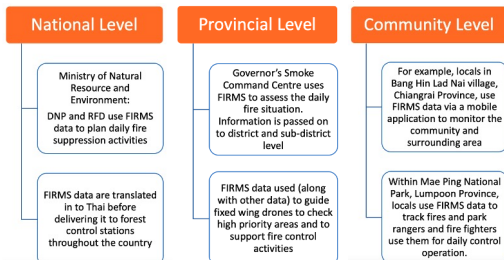
### RT US/Canada Landsat Active Fire Data in FIRMS

- Detection algorithm developed under NASA Applied Sciences Program (2012-2014)
- RT US/Canada Landsat 8/9 LIT OLI data stream provided by USGS EROS
- Active fire detection data available < 25 minutes of satellite overpass

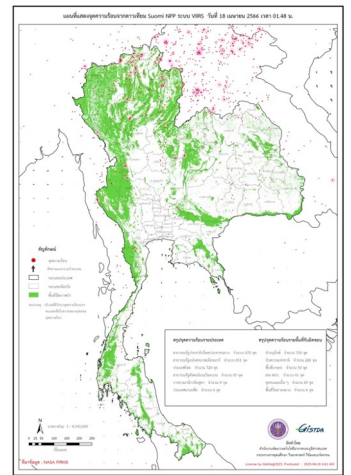
### Contextual Fire Data in FIRMS US/Canada

## Use of FIRMS in Thailand

Data and imagery from FIRMS are routinely used in Thailand by national- to local-level stakeholders to inform wildland fire, smoke and haze management. The two main national-level government agencies responsible for forest fire control (Department of National Parks, Wildlife and Plants Conservation (DNP) and Royal Forest Department (RFD)), have been using data from FIRMS in their daily operations since 2006. In 2021, a working group, set up under the Prime Minister's Delivery Unit (PMDU), started using FIRMS data, along with other secondary information, to assess the wildland fire and smoke haze situation, and deliver reports and recommendations to the Prime Minister's office. Furthermore, regional-level governors and military units use FIRMS to assess daily fire situations. At the local-level, FIRMS is used by Thai citizens and NGOs to closely monitor local active fire situations. According to an advisor to the DNP, "FIRMS becomes the main tool for citizen science fire monitoring during the fire season in Thailand".



FIRMS data are incorporated in to Thai dash boards and maps by the Geo-Informatics and Space Technology Development Agency



For more information and links to FIRMS:  
<https://earthdata.nasa.gov/firms>  
 FIRMS is part of NASA's Land, Atmosphere Near Real-Time Capability for EOS (LANCE)  
<https://earthdata.nasa.gov/lance>, a component of the NASA Earth Observing System of Data and Information System (EOSDIS)

Global Fire Map: <https://firms.modaps.eosdis.nasa.gov/man/>  
 US/Canada Fire Map: <https://firms.modaps.eosdis.nasa.gov/usfs/map/>  
 FIRMS resources: <https://firms.modaps.eosdis.nasa.gov/resources/>, including links to tutorials, FIRMS blogs and FAQs  
 For more near real-time data and imagery visit: NASA's LANCE: <https://earthdata.nasa.gov/lance> and  
 NASA Worldview: <https://worldview.earthdata.nasa.gov>