

Wildfire detection in the US and Canada within a minute of satellite observation

FIRMS recently integrated **ultra real-time** (URT) MODIS and VIIRS active fire data, within a minute of satellite observation, from multiple direct readout ground stations in the continental US (CONUS).

See "[FIRMS Adds Ultra Real-Time Data from MODIS and VIIRS](#)" article on [Earthdata.nasa.gov](https://earthdata.nasa.gov)

This is the first routine service provided by FIRMS for detecting wildfires over the continental United States from NASA and NOAA low-Earth orbit satellites with a latency of less than 60 seconds from Earth observation to wildfire detection. The ultra real-time processing has been made possible by the Space Science and Engineering Center (SSEC) at the University of Wisconsin-Madison with funding from NASA's WildFireSense program. Software systems enable the SSEC to stream direct broadcast data in real-time from each antenna to a central collection point at the University of Wisconsin-Madison, which then ingests and merges the data, including de-duplication of overlapping data, in real-time.

Currently URT data are received from Madison, Wisconsin (2 antennas), Hampton, Virginia and Mayaguez, Puerto Rico. In addition to the URT, Real-Time (RT) data are received from Honolulu, Hawaii and Monterey, California (after the pass is complete). Latency for RT data is 20–30 minutes. It is anticipated that the real-time data will be expanded to include additional CONUS stations and stations in Alaska and Hawaii.

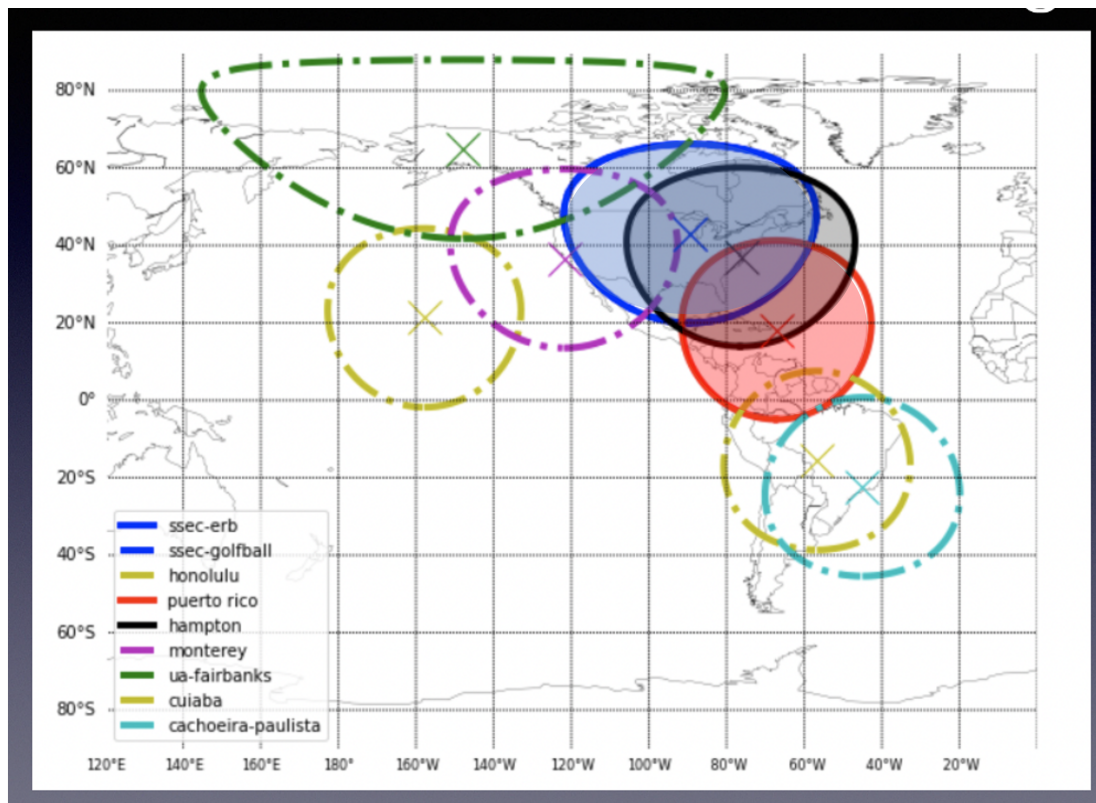
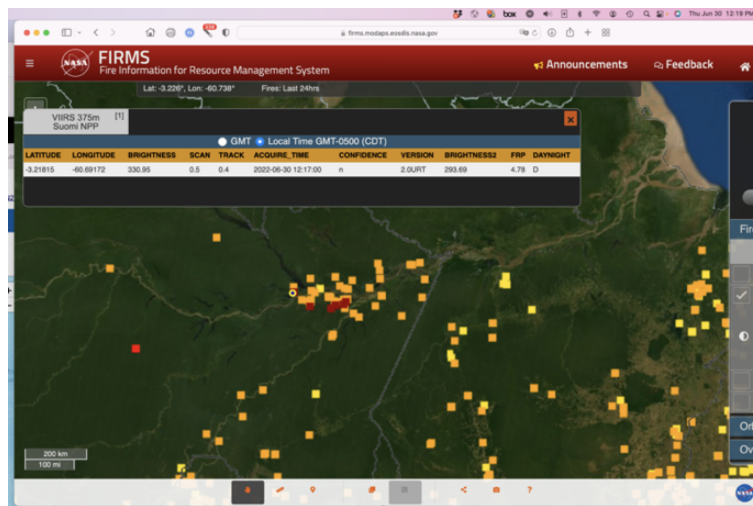


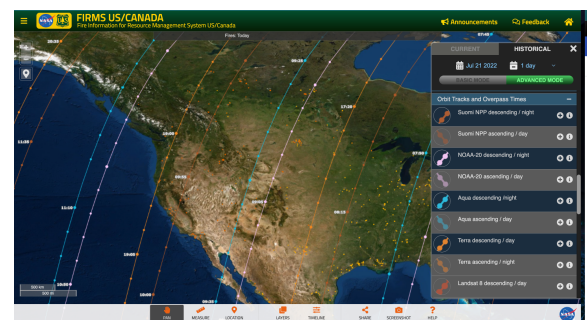
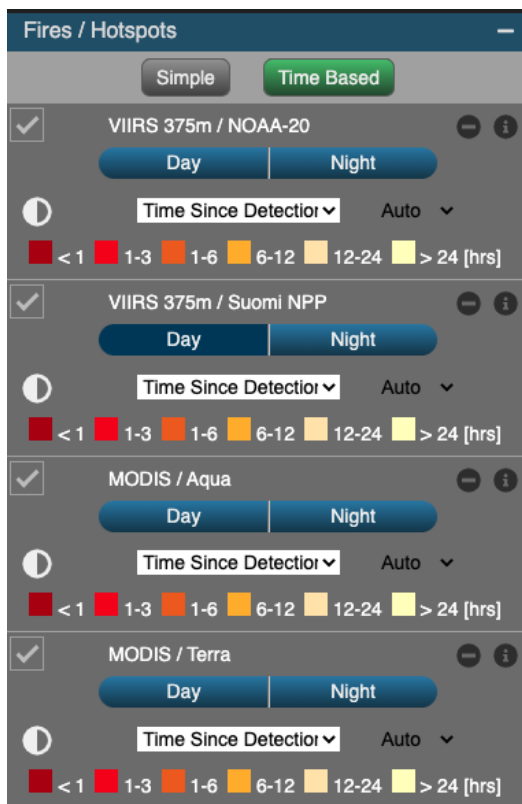
Figure showing current and planned coverage of Direct Broadcast stations collecting ultra real-time and real-time data

URT and RT thermal anomaly / fire detections are processed using the LANCE FIRMS active fire algorithms, so the data are comparable with the NRT data from LANCE.

- URT and RT data are available in both FIRMS and FIRMS US/Canada Fire maps and can be identified by the URT or RT suffix in the "version" - found by clicking on the fires to view the attributes.
- URT and RT data are also available in the WMS and WFS map services and KMZs.
- URT and RT data will roll off the system within six hours as the NRT data becomes available.



Screenshot showing URT fire detected on 2022/06/30.
The fire was observed at 12:17 CDT and displayed in FIRMS at 12:19 CDT
(as shown by computer time on top right of screen)



Screenshot showing descending overpass times from Suomi-NPP, NOAA-20, Aqua and Terra. These can be added by going to Advanced Mode and then selecting tracks from the Orbit Tracks and Overpass Times.

Once you have the Orbit tracks loaded, make sure the fires display using the "Time-Based" option and the look for the deep red colored squares.

Users can see the real-time fire detections by selecting the Time Based option which color codes fires by Time Since Detection. However it is important to note that the URT and RT fires only show up within a minute of satellite fly-over so users need to know when the satellite passes overhead. To find out what time the satellite overpass is you can load the orbit tracks. (see next screenshot)