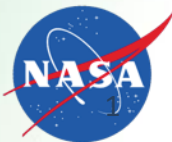


NASA Wildfire Research and Applications Efforts & Contributions to GEO-GWIS

Vince Ambrosia

**Associate Program Manager
NASA Applied Science Program (ASP)**

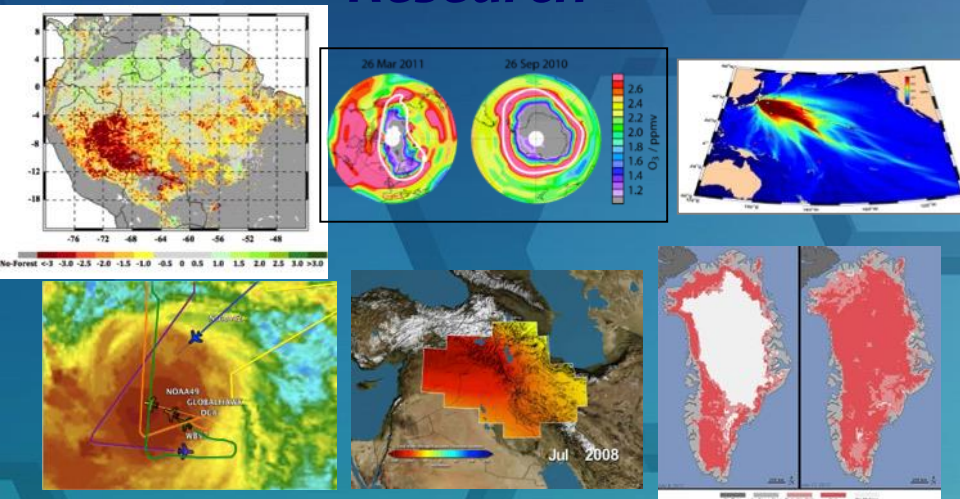
4 October 2019
12th EARSeL Forest Fire Special Interest Group (FF-SIG) Workshop
Consiglio Nazionale delle Ricerche
Rome, Italy



NASA's Earth Science Division



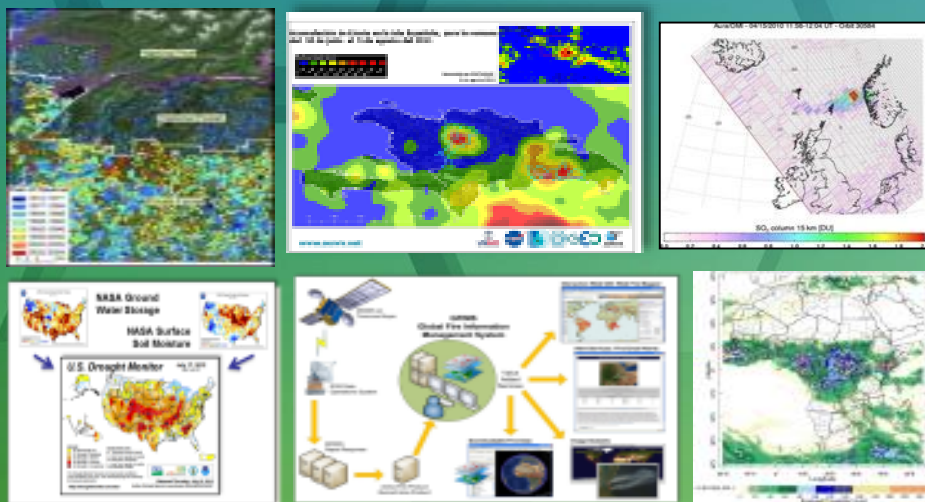
Research



Flight



Applied Sciences



Technology



Applications Themes & Societal Benefit Areas

Emphasis in
4 Applications Areas



Health &
Air Quality



Water
Resources



Disasters

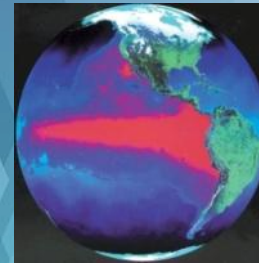


Ecological
Forecasting

Support opportunities in
5 additional areas



Agriculture



Climate



Weather



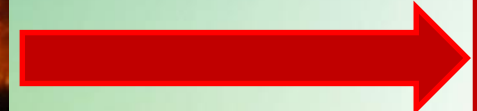
Energy



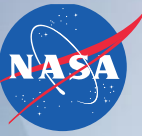
Oceans



Crosscutting theme:
Wildland Fires



NASA ASP Wildfire Management Team



Lawrence Friedl:
NASA Applied Sciences
Program Director

David Green
NASA ASP Disaster Program Manager

Vince Ambrosia:
Associate Program Manager

ROSES-2011 A.35 Phase II Projects



Zachary Holden / USDA Forest Service:

A Prototype System for Predicting Insect and Climate-Induced Impacts on Fire Hazard in Complex Terrain;

Sher Schranz / NOAA:

Wildland Fire Behavior and Risk Prediction;

James Vogelmann / USGS EROS Center

Improving National Shrub and Grass Fuel Maps Using Remotely Sensed Data;
Modeling to Support Fire Risk Assessments;

Birgit Peterson / USGS EROS Center:

Enhanced Wildland Fire Management Decision Support Systems;

Karyn Tabor / Conservation International Forest Center:

An Integrated Forest and Fire Monitoring System for Improved Forest
Management in the Tropics;

Wilfrid Schroeder / University of Idaho:

Development of a Remote Sensing Active Fire Data Sets in Support of
Fire Monitoring;

Joshua B. Smith / USGS EROS Center:

Using Fire Detections to Map Fires in the US;

Maureen C. Anderson / Michigan Tech Research Institute (MTRI):

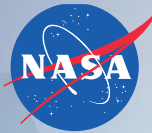
Using Remote Sensing and Process-Based Hydrological Models to Increase Understanding of
Fire Effects on Watersheds and Improve Post-Fire Remediation Efforts;

Keith Weber / Idaho State University

RECOVER: Rehabilitation Capability Convergence for Ecosystem Recovery;

• Projects completed in 2018 at end of 4th year of applications development;
• Applications development efforts were highlighted at the AFE & IAWF
Wildfire Continuum Conference (Special Session & Open Workshop),
Missoula, MT, May 21-24, 2018.

Advertising Our Successes



2-page Fact Sheets (IAWF, USFS, CI, USGS, AFE, TFRSAC, ESRI, other partners)

2-page Fact Sheets (IAWF, USFS, CI, USGS, AFE, TFRSAC, ESRI, other Partners)

WRF-SFIRE: Wildland Fire Behavior and Risk Forecasting; Coupling Weather and Fire Behavior Models

Problem: Most operational fire behavior forecasting models are designed to forecast fire behavior based on weather conditions at the fire site. They use either local or global weather forecast output, which may not accurately represent the actual fire behavior. The WRF-SFIRE model is a next-generation fire behavior forecasting model that is designed to forecast fire behavior based on weather conditions at the fire site. It is designed to forecast fire behavior based on weather conditions at the fire site. It is designed to forecast fire behavior based on weather conditions at the fire site.

Solution: The WRF-SFIRE model is a next-generation fire behavior forecasting model that is designed to forecast fire behavior based on weather conditions at the fire site. It is designed to forecast fire behavior based on weather conditions at the fire site. It is designed to forecast fire behavior based on weather conditions at the fire site.

NASAfacts

FIRECAST: A Near Real-Time Monitoring System Improving Forest Management in the Tropics

Challenge: The use of the world's natural forested areas for timber production, agriculture, and other purposes is increasing. This is leading to a loss of biodiversity and a decrease in the ability of these forests to absorb carbon dioxide. The FIRECAST system is designed to monitor forest health and provide early warning of potential problems.

Solution: The FIRECAST system is designed to monitor forest health and provide early warning of potential problems. It is designed to monitor forest health and provide early warning of potential problems. It is designed to monitor forest health and provide early warning of potential problems.

NASAfacts

Applied Science Program - Wetland Fires

Challenge: The Wetland Fires program is designed to monitor wetland fires and provide early warning of potential problems. It is designed to monitor wetland fires and provide early warning of potential problems. It is designed to monitor wetland fires and provide early warning of potential problems.

Solution: The Wetland Fires program is designed to monitor wetland fires and provide early warning of potential problems. It is designed to monitor wetland fires and provide early warning of potential problems. It is designed to monitor wetland fires and provide early warning of potential problems.

NASAfacts

Improving Shrub and Grass Fuel Maps using Remotely Sensed Data to Support Fire Risk Assessments

Challenge: Shrub and grass fuel maps are essential for fire risk assessments. However, traditional methods of mapping these fuels are often expensive and time-consuming. The use of remotely sensed data can provide a more efficient and accurate way to map these fuels.

Solution: The use of remotely sensed data can provide a more efficient and accurate way to map these fuels. It is designed to map these fuels and provide early warning of potential problems. It is designed to map these fuels and provide early warning of potential problems.

NASAfacts

TOPOFIRE: a topographically resolved wildfire danger and drought monitoring system for the continental United States

Fire Danger in Complex Terrain: Fire danger is a complex phenomenon that is influenced by many factors, including topography, weather, and fuel. The TOPOFIRE system is designed to monitor fire danger in complex terrain and provide early warning of potential problems.

Solution: The TOPOFIRE system is designed to monitor fire danger in complex terrain and provide early warning of potential problems. It is designed to monitor fire danger in complex terrain and provide early warning of potential problems. It is designed to monitor fire danger in complex terrain and provide early warning of potential problems.

NASAfacts

Enhanced Wildland Fire Management Decision Support using Lidar-Infused LANDFIRE Data

Challenge: Wildland fire management is a complex task that requires a lot of data and information. The use of lidar-infused LANDFIRE data can provide a more accurate and detailed view of the landscape, which can help fire managers make better decisions.

Solution: The use of lidar-infused LANDFIRE data can provide a more accurate and detailed view of the landscape, which can help fire managers make better decisions. It is designed to provide a more accurate and detailed view of the landscape, which can help fire managers make better decisions.

NASAfacts

Advanced Wildfire Mapping and Modeling Tools

User Requirements: Wildfire mapping and modeling tools are essential for fire management. However, many existing tools are often expensive and difficult to use. The development of new tools that are more user-friendly and affordable is a high priority.

Solution: The development of new tools that are more user-friendly and affordable is a high priority. It is designed to provide a more user-friendly and affordable way to map and model wildfires. It is designed to provide a more user-friendly and affordable way to map and model wildfires.

NASAfacts

NASA RRED: Rapid Response Erosion Database

Challenge: Rapid response erosion data is essential for disaster response and recovery. However, many existing databases are often outdated and incomplete. The NASA RRED database is designed to provide a more up-to-date and complete view of erosion data.

Solution: The NASA RRED database is designed to provide a more up-to-date and complete view of erosion data. It is designed to provide a more up-to-date and complete view of erosion data. It is designed to provide a more up-to-date and complete view of erosion data.

NASAfacts

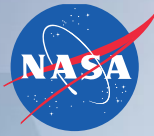
RECOVER: Rapid Response Erosion Database

Challenge: Rapid response erosion data is essential for disaster response and recovery. However, many existing databases are often outdated and incomplete. The RECOVER database is designed to provide a more up-to-date and complete view of erosion data.

Solution: The RECOVER database is designed to provide a more up-to-date and complete view of erosion data. It is designed to provide a more up-to-date and complete view of erosion data. It is designed to provide a more up-to-date and complete view of erosion data.

NASAfacts

EO Socioeconomic Impacts for Wildfire Support



Solicitation: NASA's objectives are to exercise analytic techniques and methodologies, articulate the impacts of Earth Observations applications in social and/or economic terms, contribute to the body of literature, and advance cross-disciplinary connections and collaborations.

- ***Quantifying potential economic benefits of incorporating gridded fuel moisture and weather data into wildland fire decision support in the Northern Rocky Mountains.***

Zachary Holden

- ***Socioeconomic impact analysis of linking remote sensing and process-based hydrological models to improve post-fire remediation efforts.***

Mary Ellen Miller

- ***Using Earth Observations to Assess the Socioeconomic Impact of Human Decision Making During the Suppression of a Wildland Fire***

Sher Schranz

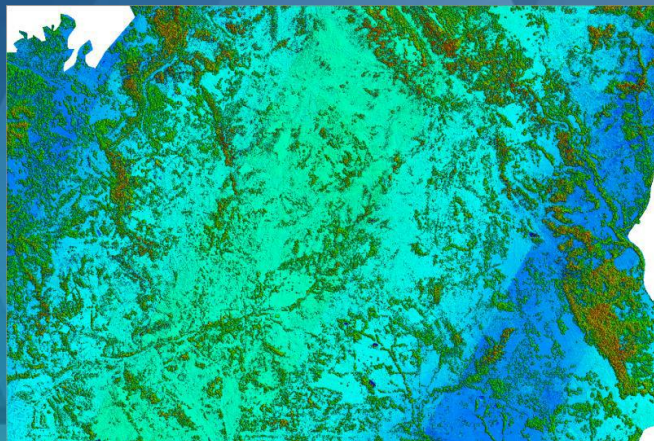
- ***Evaluating the Socioeconomic Impacts of Rapid Assembly and Deployment of Geospatial Data in Wildfire Emergency Response Planning: A Case Study using the NASA RECOVER Decision Support System (DSS)***

Keith Weber

Sonoma County Ag Preservation & Open Space District RRNRESS Project

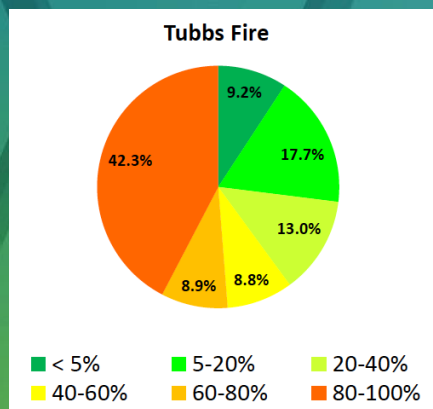


2013 (top) pre-fire vs. 2018 post-fire imagery

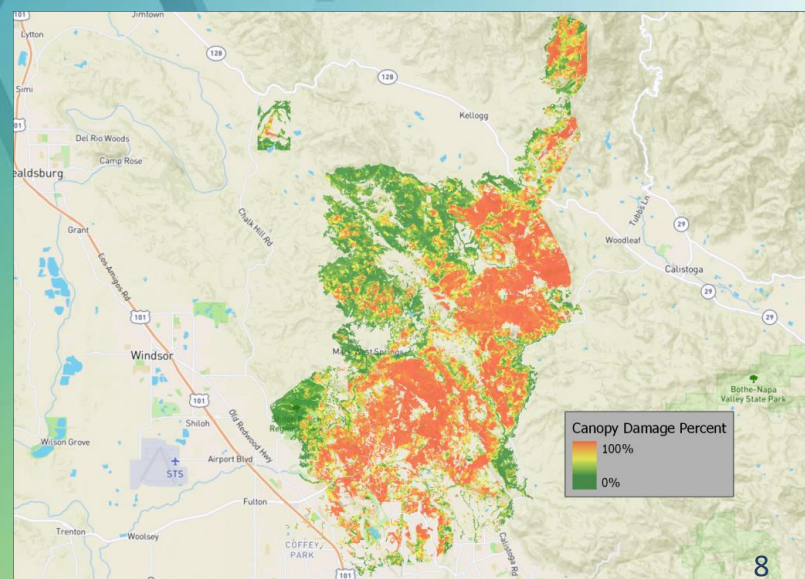


A difference image of the 2013 lidar based nDSM versus the 2018 post fire nDSM.

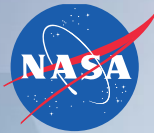
Tubbs Fire Canopy Damage Map



Percent of Tubbs Fire Area by percent woody damage class.



Disaster Program 2018 Solicitation



NASA ROSES-18 A.37 DISASTERS

“Earth Science Applications: Disaster Risk Reduction and Response”

- ~80 LOI Submitted
- ~40 Proposals Submitted
- Proposal Panel Reviews: 10-11 Oct 2018
- Wildland Fire was a solicited element of the overall call for proposals
- Expected Program Budget in 1st year of new awards: ~\$4M
- Period of Performance: 4 years with budget phase-down
- Expected Range of Annual Award / projects:
 - \$400-600K / teams
- \$150-300K for single applications
- ---
- Five (5) proposals submitted with a “Fire” focus; one was funded:
 - *Coupled Interactive Forecasting of Weather, Fire Behavior, and Smoke Impact for Improved Wildland Fire Decision Making (K. Hilburn, CSU)*

NASA Disaster Program Website (Fire)



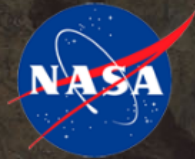
disasters.nasa.gov/fires

Getting Started Getting Started Imported From Fir... 12th EARSeL Fore... NASA Earth Scien... Fire and Smoke |... Wildfires | Earthd... Brazilian institute... ESD Resources | I... L



NASA Applied Sciences Program | www.nasa.gov

Search



LATEST

ORGANIZATION

DISASTERS

RESOURCES

DISASTERS » Fires

Fires

Overview

Wildland fire research and applications spans across multiple NASA programs, and fire itself, is an integral natural process that acts to maintain ecosystem biodiversity and structure. Wildland fire, which includes any non-structure fire that occurs in vegetation or natural fuels, is an essential process that connects terrestrial systems to the atmosphere and climate. However, the effects of fire can be disastrous, both immediately (e.g., poor air quality, loss of life and property) and through post-fire impacts (floods, debris flows/landslides, poor water quality).

NASA Earth observations and models are used to support pre-, active- and post-fire research, as well as the applicable use of these data and products in support of management decisions and strategies, policy planning and in setting rules and regulations. A few examples are provided below that highlight NASA capabilities and our ability to engage partners



Image Credit: Conard

Tools & Resources

- **NASA Wildfires Program**
- **Global Wildfire Information System**
🔗(GWIS): The Global Wildfire Information System is a joint initiative of the GEO and the Copernicus Work Programs. The Global Wildfire Information System (GWIS) aims at bringing together existing information sources at regional and national level in order to provide a comprehensive view and evaluation of fire regimes and fire effects at global level.
- **Global Fire Weather Database (GFWED)**: The Global Fire WEather Database (GFWED) integrates different weather factors influencing the likelihood of a

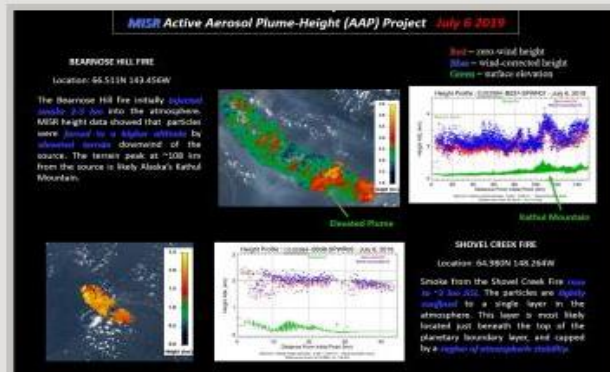
NASA Disaster Program Website (Fire)



Latest Updates

July 26, 2019

MISR Charts Plume Heights and Aerosol Characteristics for the 2019 Alaska Wildfires

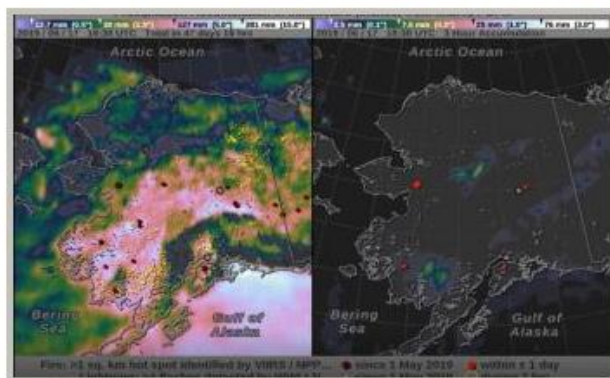


These images compiled by NASA's Multi-angle Imaging SpectroRadiometer (MISR) Active Aerosol Plume-Height Project illustrate smoke heights from the Bearnose Hill and Shovel Creek fires in Alaska on July 6. MISR's stereo texture and color images enable accurate mapping of wildfire smoke-plume heights, distinguishing smoke plumes from clouds based on detected particle properties. On July 6 and 8, MISR observed multiple fire plumes emanating from a wildfire outbreak across Alaska. Imagery from the Moderate Resolution Imaging Spectroradiometer (MODIS) on July 6 shows dense smoke from the...

[Read More](#)

July 25, 2019

NASA Satellites See the Effects of Rainfall on the 2019 Alaska Wildfire Season



NASA's satellite-based estimates of global precipitation can provide valuable information to officials monitoring the many wildfires that have been scorching Alaska this summer. Although wildfires regularly occur every Alaskan summer, July 2019 proved a particularly active month. Few rain gauges exist in the remote expanses of Alaskan wilderness, but wildfires unchecked can spread to populated areas within the state. Satellite-based precipitation estimates are therefore particularly valuable because of precipitation's relationship to wildfire hazard. The embedded video, above, shows data...

11

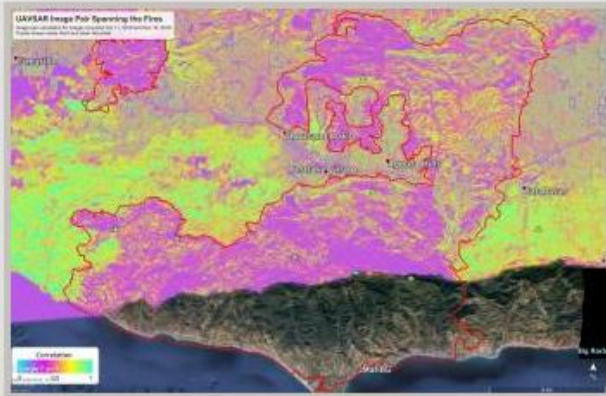
[Read More](#)

NASA Disaster Program Website (Fire)



December 6, 2018

NASA Deployed Research Aircraft Over The CA Wildfires



UAVSAR image overlaid a Google Earth Map. The red borders are fire extent from the Woolsey Fire in California. NASA deployed a research aircraft on Nov. 15 for a nighttime flight over the California Woolsey Fire. The NASA C-20 aircraft carried sensors to map the fire scar, with a goal of identifying areas at risk of catastrophic mudslides in the coming winter rains. The aircraft took off from its base at NASA's Armstrong Flight Research Center in Palmdale, California, carrying the Uninhabited...

[Read More](#)

November 10, 2018

NASA/NOAA Satellites Capture Smoke Transport from California Wildfires



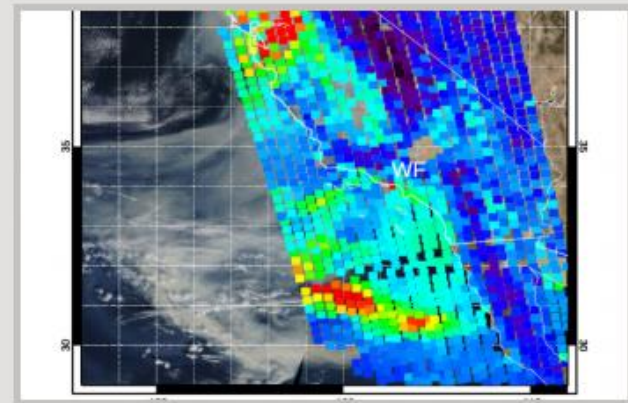
The recent catastrophic fires in California have yielded scenes of chaos in the region and the NASA Disasters program is working on providing the most recent satellite information that could help people on the ground. Dispersed smoke through the region has serious impacts on air quality and satellite information can bring several perspectives of smoke layers that are released into the atmosphere. Two satellites, the NASA/NOAA Suomi National Polar-orbiting Partnership, or...

NASA Disaster Program Website (Fire)



November 15, 2018

Carbon Monoxide from California Wildfires Observed by NASA



The Measurement of Pollution in the Troposphere (MOPITT) instrument is flying on board NASA's Terra satellite. It observes Carbon Monoxide (CO) in the troposphere through thermal and near infrared channels. This product was created by the MOPITT Near-Real Time system on Saturday November 10, 2018 and submitted to NASA Worldview. The images clearly show enhanced levels of carbon monoxide associated with the Camp and Woolsey wildfires in northern and...

[Read More](#)

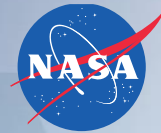
November 14, 2018

NASA Near Real-Time VIIRS Products Show Extent of California Wildfires through LANCE



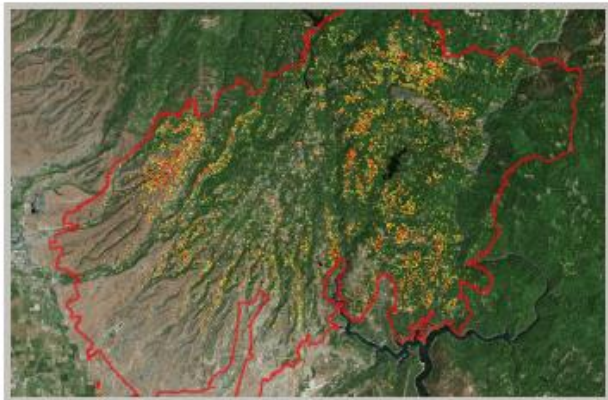
The images below show the California wildfires located by NASA Visible Infrared Imaging Radiometer Suite (VIIRS) Near Real-Time Fires and Thermal Anomalies product (in red points) from the Land, Atmosphere Near real-time Capability for EOS (LANCE). The map of California was provided through VIIRS true color imagery via NASA Worldview from November 9 - 12, 2018. The images show the extent of the Camp Fire, Woolsey Fire and Hill Fire burning in California. The red outlines with smoke indicate areas of active fire....

NASA Disaster Program Website (Fire)



November 13, 2018

Camp Fire Damage Proxy Map



Camp Fire ARIA DPM The Advanced Rapid Imaging and Analysis (ARIA) team at NASA's Jet Propulsion Laboratory in Pasadena, California, created this Damage Proxy Map (DPM) depicting areas of Southern California that are likely damaged (shown by red and yellow pixels) as a result of the Camp Fire in Northern California. The map is derived from synthetic aperture radar (SAR) images from the Copernicus Sentinel-1 satellites, operated by the European Space Agency (...)

[Read More](#)

November 13, 2018

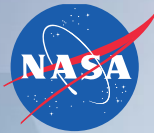
Woolsey Fire Damage Proxy Map



Woolsey Fire ARIA DPM The Advanced Rapid Imaging and Analysis (ARIA) team at NASA's Jet Propulsion Laboratory in Pasadena, California, created this Damage Proxy Map (DPM) depicting areas of Southern California that are likely damaged (shown by red and yellow pixels) as a result of the Woolsey Fire. The map is derived from synthetic aperture radar (SAR) images from the Copernicus Sentinel-1 satellites, operated by the European Space Agency (ESA). The pre-event...

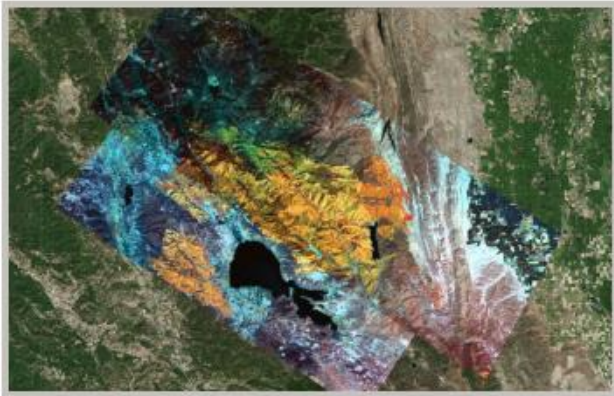
14
[Read More](#)

NASA Disaster Program Website (Fire)



August 9, 2018

ER-2 MASTER False Color RGB Imagery from the Summer 2018 California Wildfires



False color RGB image of the Mendocino Complex fires from ER-2's MASTER sensor, collected on 8/9/18. The ER-2 aircraft carrying the MASTER (the NASA MODIS/ASTER) sensor flew over Mendocino Complex Fires on August 9, 2018. The sensor captured images of both fires in the area with the Ranch Fire on the north side of Clear Lake and the River Fire on the south side. The products are false color RGB composites, which allow for the identification of various features within the...

[Read More](#)

August 6, 2018

ISS Georeferenced Digital Camera Images of California Wildfires 2018



These collections of visible-wavelength (RGB) digital camera images were taken by astronauts onboard the International Space Station on August 2-4, 2018, then manually georeferenced by members of the Earth Science and Remote Sensing Unit at NASA Johnson Space Center. The images provide regional context, and may be useful for visualization of the ongoing event. Higher spatial resolution images may be suitable for spatial analysis to support decision...

15
[Read More](#)

NASA Disasters Mapping Portal



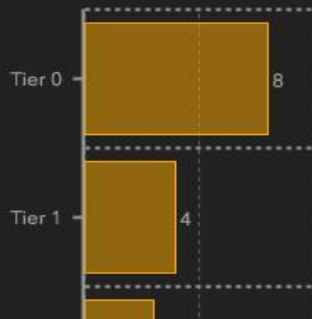
NASA Disasters Mapping Portal

Si

Wildfires

Wildland fire research and applications spans across multiple NASA programs, and fire itself, is an integral natural process that acts to maintain ecosystem biodiversity and structure. Wildland fire, which includes any non-structure fire that occurs in vegetation or natural fuels, is an essential process that connects terrestrial systems to the atmosphere and climate. However, the effects of fire can be disastrous, both immediately (e.g., poor air quality, loss of life and property) and through post-fire impacts (floods, debris flows/landslides, poor water quality).

15 Responses



100 Most Recent Responses in Map

- 2/18/2019 - Chile Wildfires
- 11/10/2018 - California Wildfires: Camp Fire
- 11/10/2018 - California Wildfires: Woolsey Fire
- 8/7/2018 - California Wildfires Summer 2018: Redding,



16





Event Response Story Maps

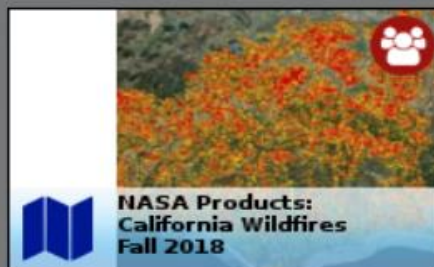
These Story Maps contain NASA Products created for these events and other information to help interpret the data.



Recent NASA Products for the California Wildfires of

A collection of NASA's products used in response to the Summer 2018 wildfires in California.

[Explore](#)



NASA Products for the California Wildfires in Fall

NASA Products for the California Wildfires in Fall 2018

[Explore](#)



Disasters Program Response to the 2018

Disasters Program Response to the 2018 California Wildfires

[Explore](#)



Mendocino Wildfire Complex

[Explore](#)

Event Responses

Click the links below to open the Product Gallery and discover NASA Products created for a specific event response.

- [California Wildfires Summer 2018](#)
- [California Wildfires November 2018](#)
- [Southern California Wildfires December 2017](#)



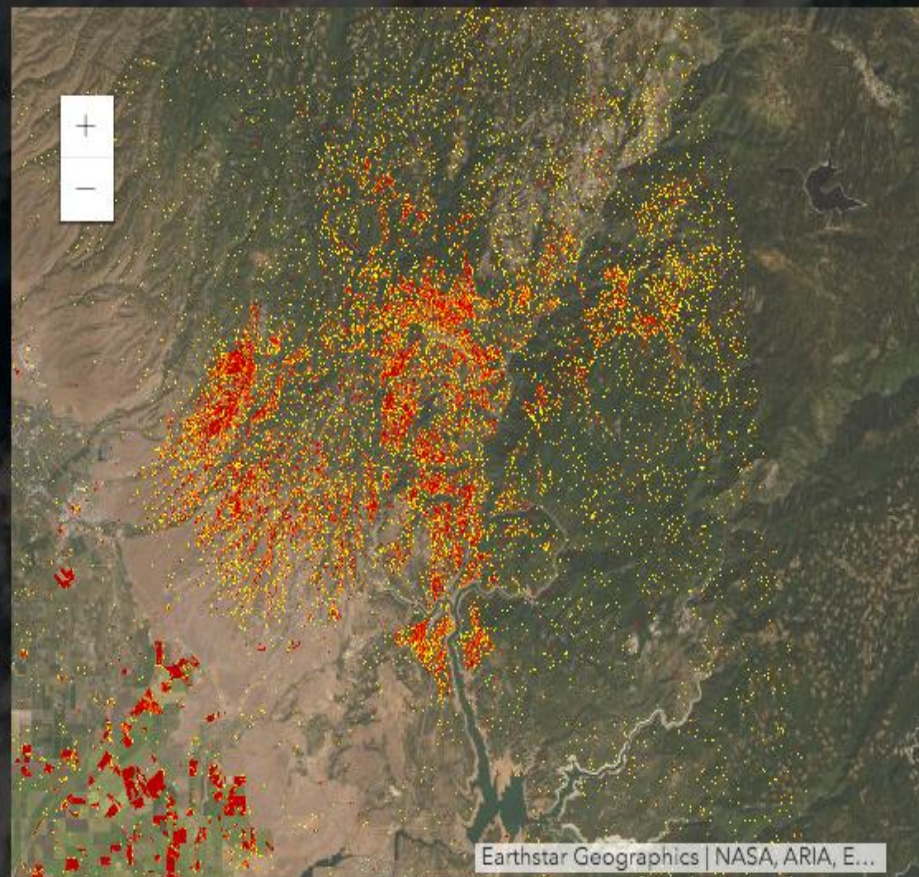
ARIA Damage Proxy Map



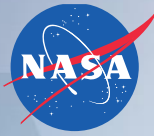
ARIA Damage Proxy Map for Camp Fire Produced Using ESA Sentinel-1

ARIA Damage Proxy Map for Camp Fire Produced Using ESA Sentinel-1

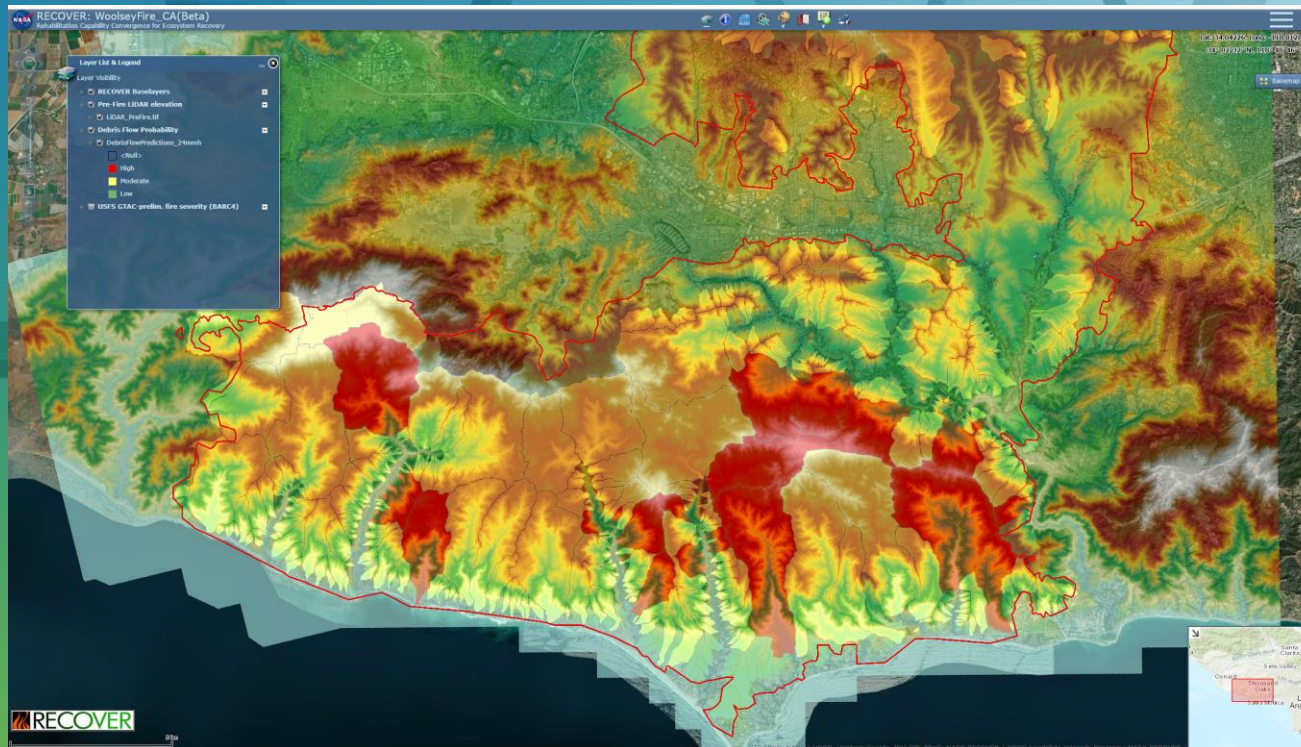
Explore



Supporting 2018 Wildfires



- In 2018, the NASA Applied Science Disaster Program supported a few California wildfires with decision support system tools, and damage assessment maps from UAVSAR and analysis (JPL team) of SENTINEL-1 SAR data. NASA's ER2, with the MASTER instrument, collected / distributed fire imagery through the Disaster portal for the Mendocino Complex Fires (River & Ranch Fires).
- Keith Weber & Mary Ellen Miller supported post-fire rehab (BAER) work on the the Mendocino Complex, Carr Fire, Woolsey Fire.



Group on Earth Observations (GEO)



Global Wildfire Information System (GWIS)

GWIS Timeline



2013 - Copernicus and GEO support development of GWIS as an extension of EFFIS



Creation of Forest Fire Experts Group in EC

2001-GOFC-Fire holds a joint workshop with the CEOS LPV on Fire Product Validation in Lisbon



2011-GOFC / EARSel-FF-SIG Propose GWIS in Stresa, Italy



EFFIS becomes operational in 2000

2003-Rapid damage assessment was introduced to EFFIS; quasi-real time maps of burned areas in southern Europe.

2004-EFFIS Fire Database was established

2001-20xx GOFC-GOLD Fire Implementation Team Meetings to promote joint developments of global fire monitoring and EFFIS

GWIS Operational



NASA Supports 3 GWIS Teams
Luigi Boschetti, Robert Field
Schroeder / Giglio

NASA GEO Support Solicitation



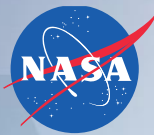
- Solicitation offered by NASA Earth Science and Applied Science Program;
- To demonstrate a strong ability to support and advance GEO, to further U.S. and NASA interests, and to demonstrate U.S. and NASA commitments to GEO;
- To foster broader domestic involvement in a U.S. national approach to GEO and the Work Programme;
- Advance the use of Earth observations to inform decisions and actions and broaden the organizations routinely using them;
- Increase international collaboration and partnering across GEO and broaden the GEO community.

A.50 GEO Work Programme

3.8 Global Wildfire Information System (GWIS)

- **Robert Field (Columbia University)**
 - *“Enhancements to the Global Wildfire Fire Information System: Fire Danger Rating and Applications in Indonesia”*
- **Wilfrid Schroeder / Louis Giglio (/ NOAA / UMd)**
 - *“Development of a Harmonized Multi-Sensor Global Active Fire Data Set”*
- **Luigi Boschetti / David Roy (U. of Idaho & MI. State Univ.)**
 - *“Using the NASA polar orbiting fire product record to enhance and expand the Global Wildfire Information System (GWIS)”*

GWIS Prototype



GWIS e provides a WMS viewer that includes R/T information sets such as Fire Danger, Active Fires, Fire Emissions, Burned Areas, Fuels, on a global scale.

Map Options

☐ COUNTRY BOUNDARIES

Fire Danger Forecast

☐ FIRE DANGER FORECAST

Source: ECMWF (6 km res.)

Index: Fire Weather Index (FWI)

Date: 05 Sep 2019

Rapid Damage Assessment

Select a date-range

Last 1 Day Last 7 Days Last 30 Days

From: 29 Aug 2019 To: 05 Sep 2019

ACTIVE FIRES

☐ MODIS ☐ VIIRS

BURNED AREAS

☐ MODIS (Last update: 2019-06-13)

☐ MODIS & VIIRS NRT

FIRE EMISSIONS

☐ Black Carbon ☐ Methane

☐ Carbon Dioxide ☐ Carbon Monoxide

☐ Sulfur Dioxide ☐ Nitrogen Oxides

☐ Organic Carbon ☐ Particulate Matter

☐ Non-Methane Hydro-Carbon

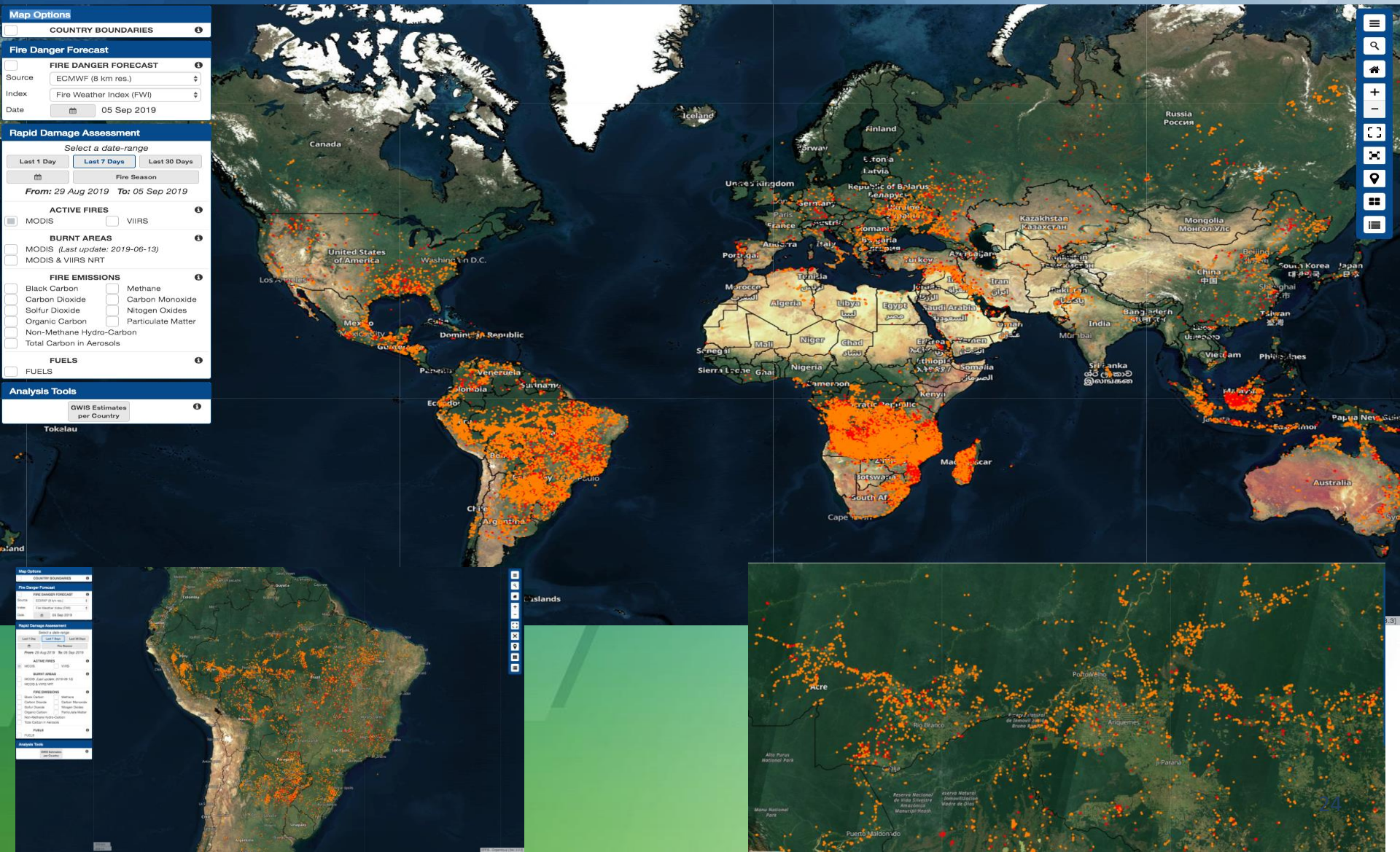
☐ Total Carbon in Aerosols

FUELS

☐ FUELS

Analysis Tools

☐ GWIS Estimates per Country



GEO-GWIS

- **Objectives:** Provide an overview of relevant uses of GWIS and navigation through the GEO-GWIS tools and map services
- **Dates:** 19 July 2018
- **Agenda / Schedule:** One, 2-hour session on 19 July 2018. Materials can be accessed on own time following the completion of the webinar
- **Audience:** National and international entities involved in wildfire management or responsible for providing fire statistics on regional or national wildfire events. Professionals interested in implementing satellite capabilities for wildfire management activities.

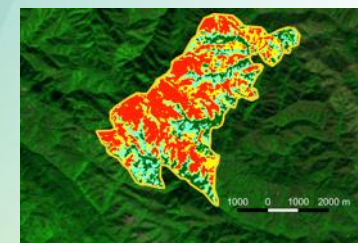


Fire danger forecast
Very low danger
Low danger
Moderate danger
High danger
Very high danger
Extreme danger
Hotspot

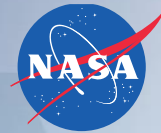


Burned Area Detections

- **Objectives:** Utilize an open source tool (QGIS; J. Picotte, USGS-EROS) to download Landsat imagery to identify suitable images for fire mapping, and subsequently create an automatically-derived, MTBS-like threshold burn severity products. Provides a much needed tool to allow worldwide users to track and map fires.
- **Dates:** 12 July 2018
- **Agenda / Schedule:** Workshop taught by Josh Picotte (USGS-EROS)
- **Audience:** National and international entities involved in burn severity assessment or providing fire statistics on regional or national wildfire events.



Contact Information



NASA Applied Science Program

<http://appliedsciences.nasa.gov/>

<http://disasters.nasa.gov/fires>

<https://appliedsciences.nasa.gov/programs/wildfires-program>

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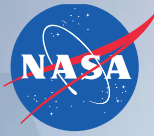
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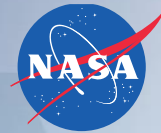
Vince Ambrosia

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NASA Disaster Program Website (Fire)



October 13, 2017

Santa Rosa Scarred by Fire



Acquired October 11, 2017 Acquired October 11, 2017 **Devastating wildfires** have burned through California's wine country since October 8, 2017, taking dozens of lives and leaving thousands of people homeless. Even communities distant from the fires have been plagued by ...

[Read More](#)

August 1, 2017

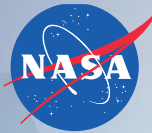
ISS Georeferenced Digital Camera Images from Montenegro Wildfires 2017



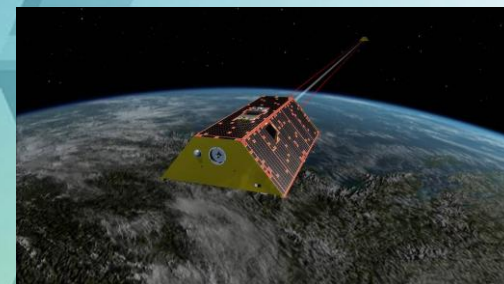
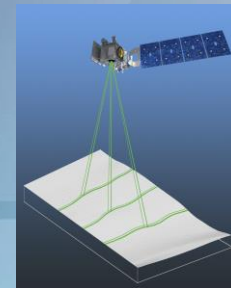
[Click here to view the full image collection and download high quality georeferenced images.](#) This collection of digital camera images was taken by astronauts onboard the International Space Station on August 1st, 2017, then manually georeferenced by members of the Earth Science and Remote Sensing Unit at NASA Johnson Space Center

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[Read More](#)

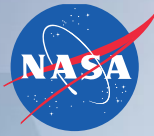
Recent NASA EO Satellite Launches



- **ICESAT-2**: Ice, Cloud and land Elevation Satellite), launched 9-15-18; Uses lasers and a very precise detection instrument to measure the elevation of Earth's surface.
- **ECOSTRESS**: ECOsystem Spaceborne Thermal Radiometer Experiment on Space Station (ECOSTRESS); launched to ISS on 6/29/18; Measures temperature of plants to better understand how much water plants need and how they respond to stress;
- **GRACE-FO**: Gravity Recovery and Climate Experiment Follow-on , launched 5/22/18; Tracking Earth's water movement to monitor changes in underground water storage, the amount of water in large lakes and rivers, soil moisture, ice sheets and glaciers, and sea level caused by the addition of water to the ocean;
- **GEDI**: Global Ecosystem Dynamic Investigation Lidar; Launched to ISS on 5 Dec 2018; Characterize the effects of climate change and land use. Special issue in Environmental Research Letters (ELR) titled: *"Focus on the Global Ecosystem Dynamics Investigation: Research, Applications and Policy Implications"*.



GWIS Goals in GEO WP 2020-2022



- *Provide harmonized fire information (e.g. fire danger)*
- *Promote networking of fire information providers through annual workshops;*
- *Establish operational links with other wildfire communities;*
- *Integrate / harmonize regional wildfire information data sources;*
- *Develop, implement and promote interoperability and communication*
- *Coordinate / promote capacity building and training activities*