

# Visualizing California's 2024 Environmental Events with ECOSTRESS Data



HARKER®

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## Goal

Understand what significant environmental events look like in ECOSTRESS data

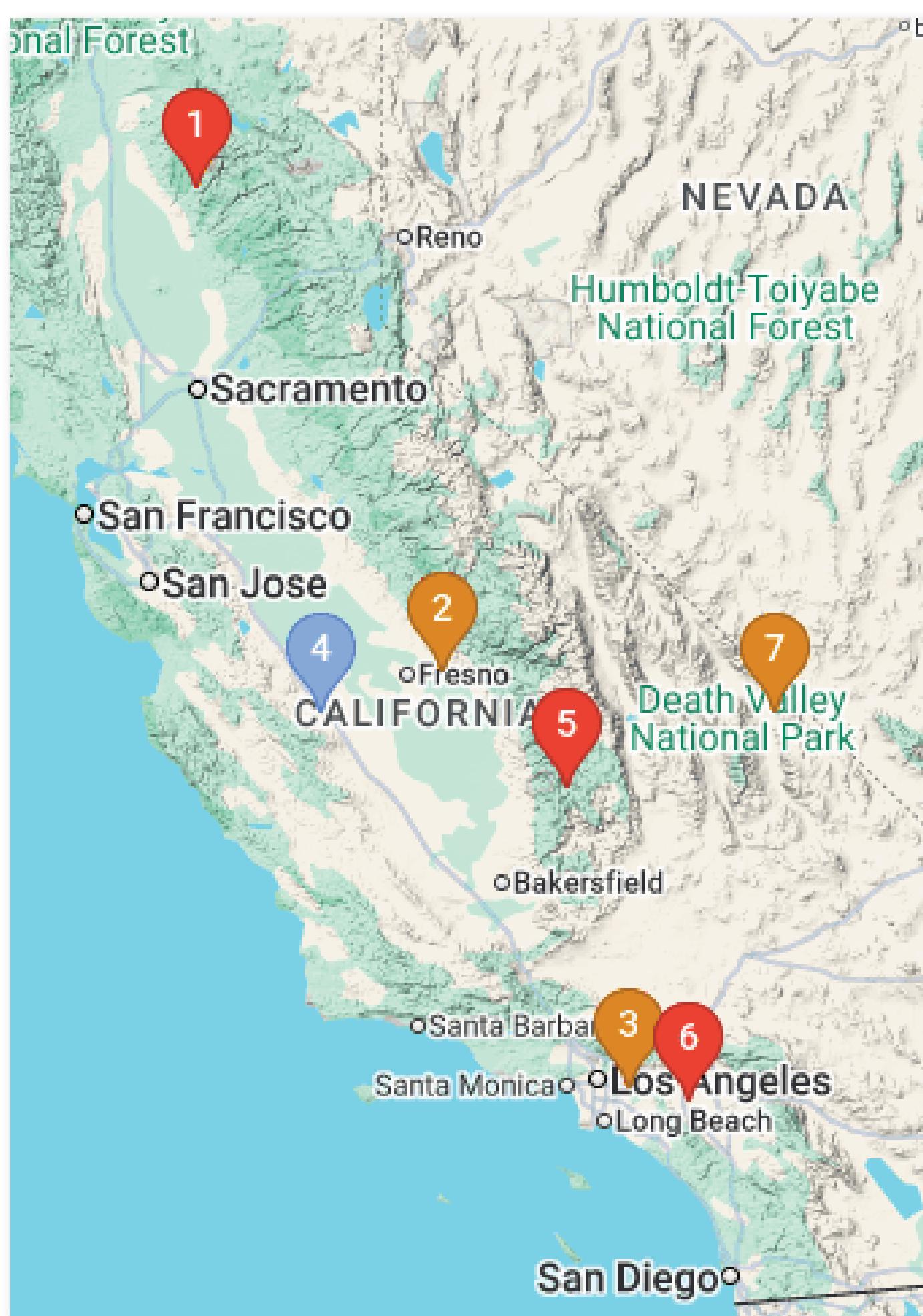
## Method

Create a data pipeline that can convert locations and time spans into interactive web visualization

## Events

### 1. Park Fire

July 24 - September 30  
California's 4th largest wildfire in history. 429,603 acres burned across Butte and Tehama Counties, destroying 709 structures.



### 2. July Heat Wave

July 1-15  
Record-breaking temperatures across Central Valley. Fresno reached 115°F, with widespread temperatures exceeding 110°F.

### 3. September Heat Wave

September 4-10  
Southern California experienced temperatures 10-20°F above normal.  
Heat-related emergency room visits doubled during the event.

### 4. October Drought

October 1-31  
Drought conditions expanded across Central California, affecting 85.47% of the region with severe water stress.

### 5. Borel Fire

July 25 - August 31  
Rapid wildfire spread through Sequoia National Forest during peak fire season conditions.

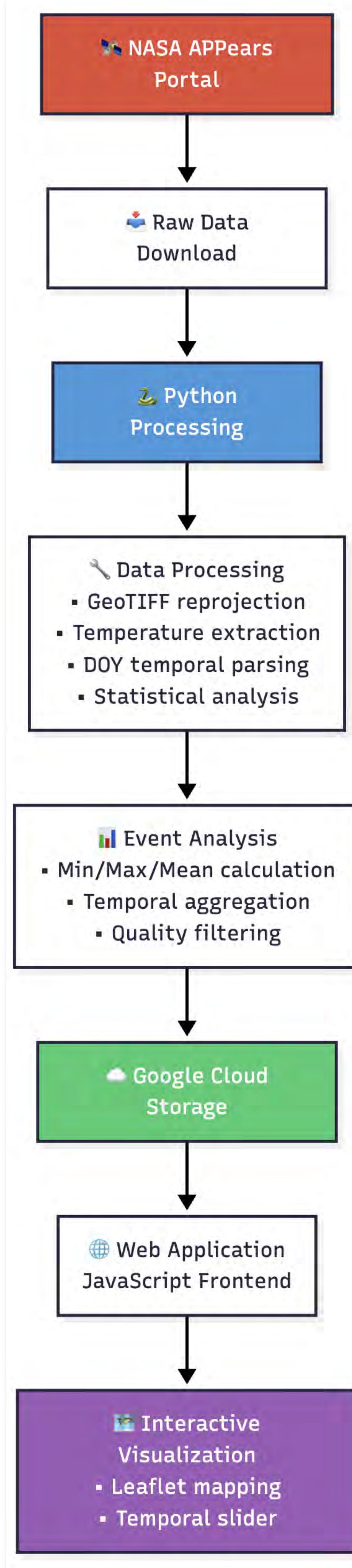
### 6. Line/Bridge/Airport Fires

September 5-30  
Multiple simultaneous wildfires in San Bernardino and Orange Counties during extreme heat period.

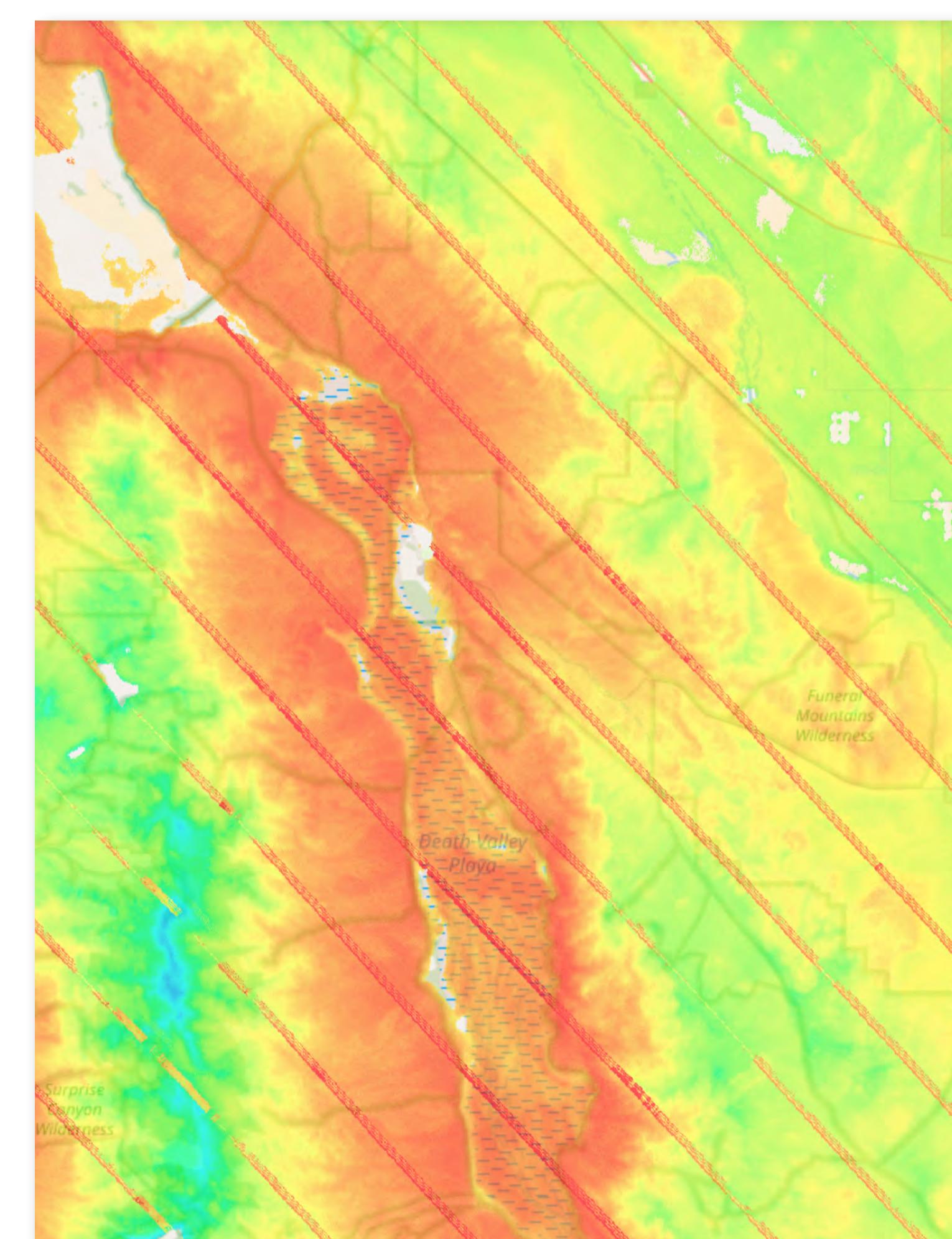
### 7. Death Valley Extreme Heat

July 5-10  
Temperatures approached 130°F, nearing world record levels in one of Earth's hottest locations.

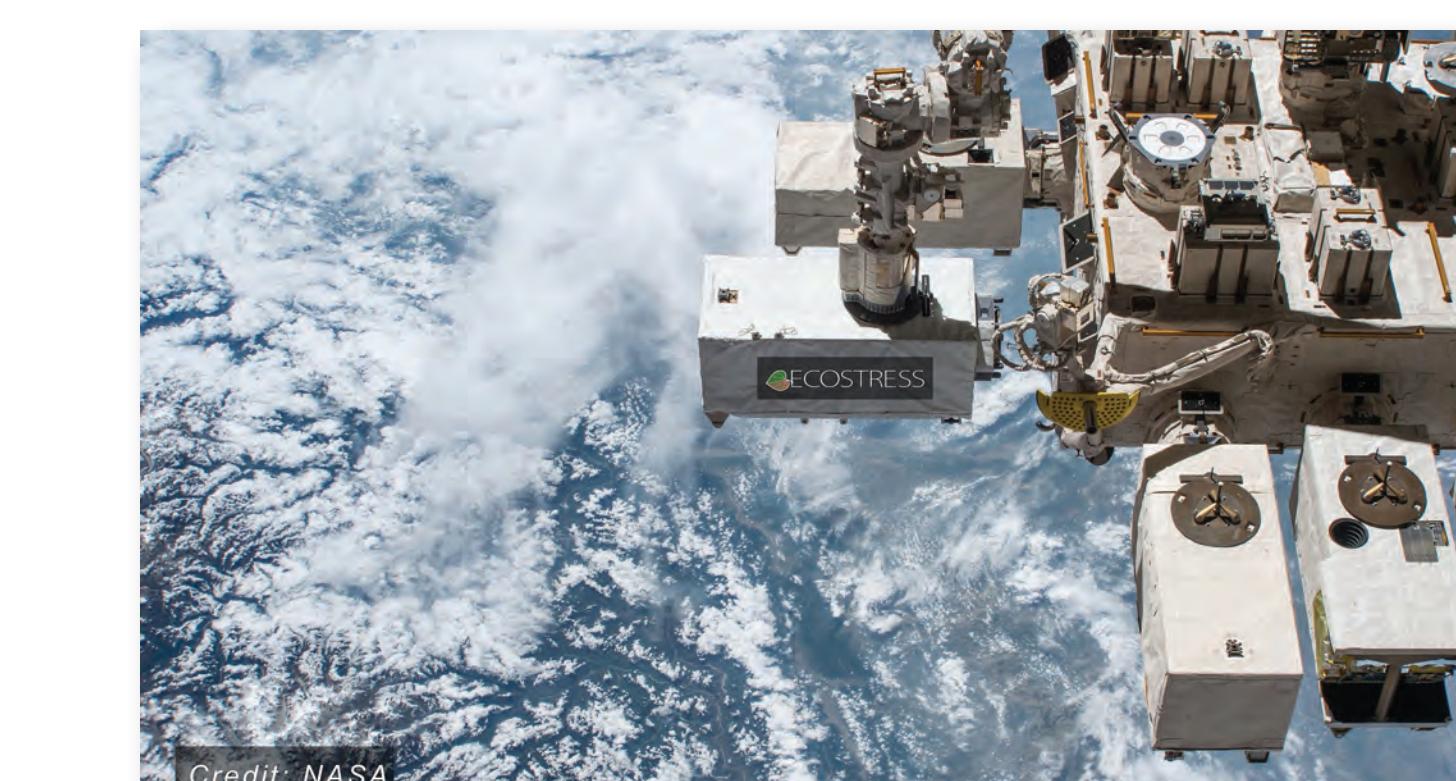
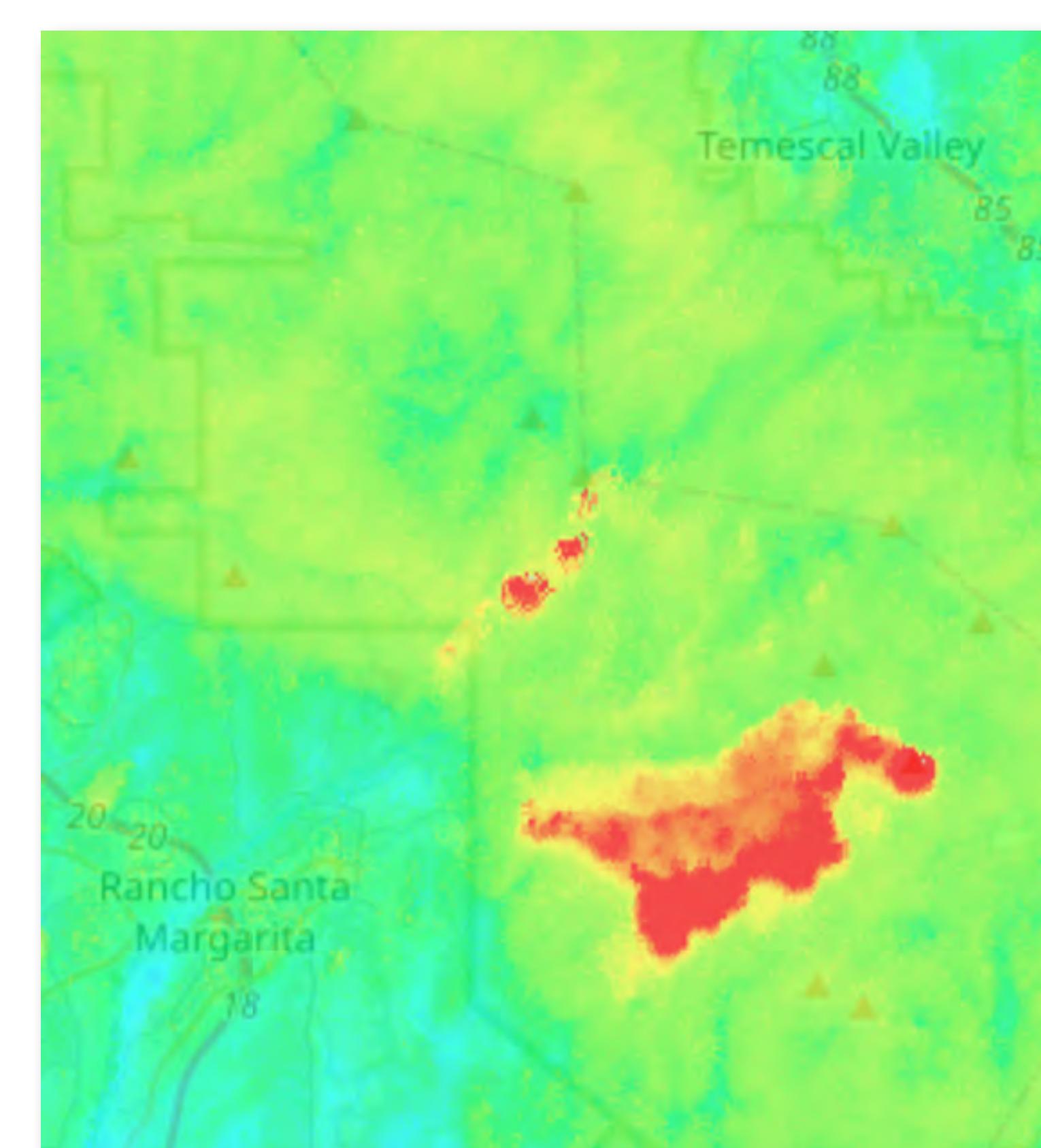
## Flowchart



## Death Valley Extreme Heat



## Line/Bridge/Airport Fires



## Screenshot

Visualizing California's 2024 Environmental Events with ECOSTRESS Data

Select an Event:

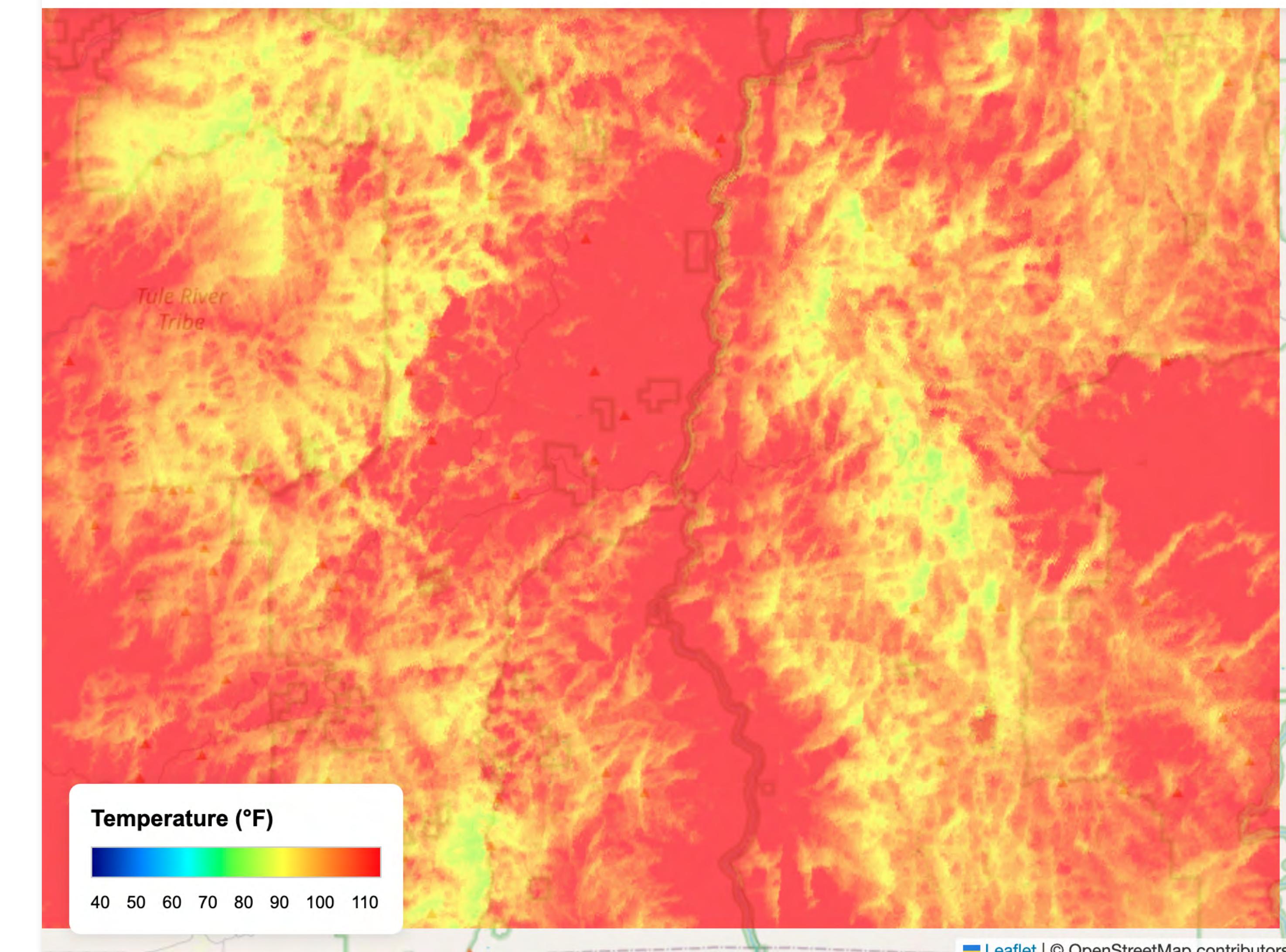
Borel Fire

Date: 2024-08-04 at 11:15 AM

2024-07-27 2024-08-31

Play

Min: 77.7°F | Max: 135.9°F | Mean: 101.8°F



## Challenges

- 1 ECOSTRESS passes over California at a different time each day
- 2 Data sizes are much larger compared to lower resolution MODIS satellite
- 3 Clouds often obscure covered regions

## Results

- 1 Standardized interactive visualizations can quickly show what data ECOSTRESS has available for a specific region
- 2 Sets the stage for deeper exploration of specific events
- 3 Can be combined with MODIS data for multiresolution event analysis

In collaboration with Nidhi Vinod (UCLA), Dr. Joshua B. Fisher (Chapman University), Dr. Lawren Sack (UCLA)