

# Satellite to Browser in ~35 minutes: Direct Broadcast VIIRS in RealEarth

CSPP Users' Group Meeting  
June 21-23, 2022, Madison, WI  
Dr. Sam Batzli – SSEC/CIMSS

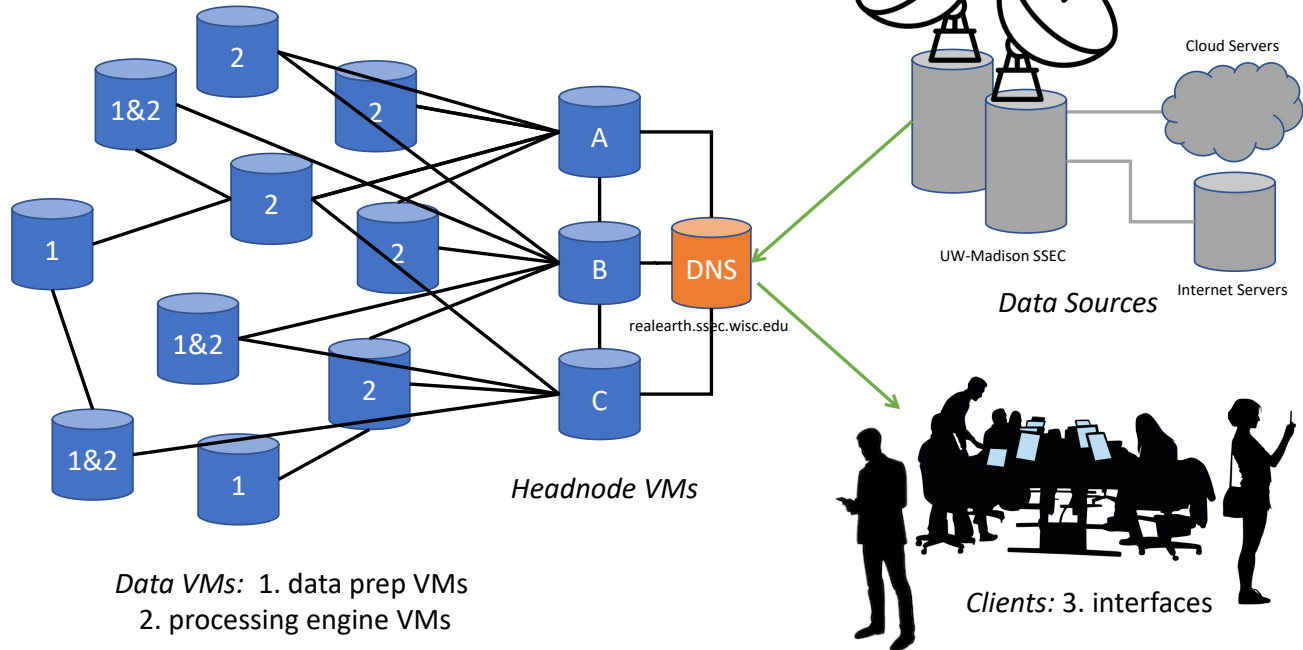


# RealEarth (Real-time data of the Earth)

- RealEarth is a server-based data visualization platform developed at SSEC/CIMSS, University of Wisconsin-Madison that provides satellite imagery and related data products to desktop and mobile browsers.
- It is built on and driven by open-source software including: MapServer, GDAL, Proj4, PHP, JavaScript, and PostgreSQL. It runs on Linux virtual machines.
- The purpose of RealEarth is to provide a simple interface for data visualization and comparison across the atmospheric, oceanic, and Earth science domains.
- Anyone who has wanted to visualize a wide variety of EO data in a common interface immediately encounters basic challenges of spatial, spectral, and temporal resolution that we have (mostly) addressed.

# RealEarth General Architecture

Space Science and Engineering Center, University of Wisconsin-Madison



Current RealEarth Federation includes: 15 Servers and 31 VMs

# VIIRS Direct Broadcast data in RealEarth

- Advantages of RealEarth over other visualization systems:
  - Easy addition of new products (can be pulled or pushed, manual or cron).
  - Users can manually or programmatically add any gridded imagery or spatial point/polygon data.\*  
(\*this is also a disadvantage... more on that later)
- Advantages of RealEarth with Direct Broadcast and CSPP over other inputs:
  - Low latency (pulling DB products directly from CSPP output)
  - A Direct Reception facility can spin-up their own RealEarth VM and immediately have a private (or public) Visualization Platform

# Examples of VIIRS DB in RealEarth

- **True Color** – Madison, Puerto Rico, Honolulu – SNPP
- **False Color** – Madison – SNPP
- **Day/Night Band (DNB)** – Madison, Puerto Rico, Honolulu – SNPP
- **Sea Surface Temperature** Madison – SNPP
- **Active Fires** Madison, Alaska (GINA) – NOAA-20 + SNPP
- **Fire RGB** – Alaska, CIRA (via UW-DB) – NOAA-20 + SNPP
- **Fire Temp RGB** – Alaska, CIRA (via UW-DB) – NOAA-20 + SNPP
- **Fire Temp RGB – 375m** CIRA (via UW-DB) – NOAA-20 + SNPP
- Under development:
  - **Cloud Mask** Madison (for BRIDGE Maps) – NOAA-20 + SNPP
  - **NDVI** Madison (for BRIDGE Maps) – NOAA-20 + SNPP

### Animation & Times

Relative Absolute Product

Show: 24 time steps  
Of: SNPP Sea Surface Tempers

### Products & Layers

Collection: RealEarth

Presets Products Displayed

- SNPP Sea Surface Temperature (SST) - Madison DB**  
 2022-06-19 20:51:00
- SNPP VIIRS True Color - Madison DB**  
 2022-06-19 20:51:00



500 km

Legends

Tools Share

Filled No Labels Location Search

2022-06-19 20:51UTC  
20.96°N 153.46°W



### Animation & Times

Animation controls: Play, Stop, Previous, Next, Full Screen, Refresh

Relative Absolute Product

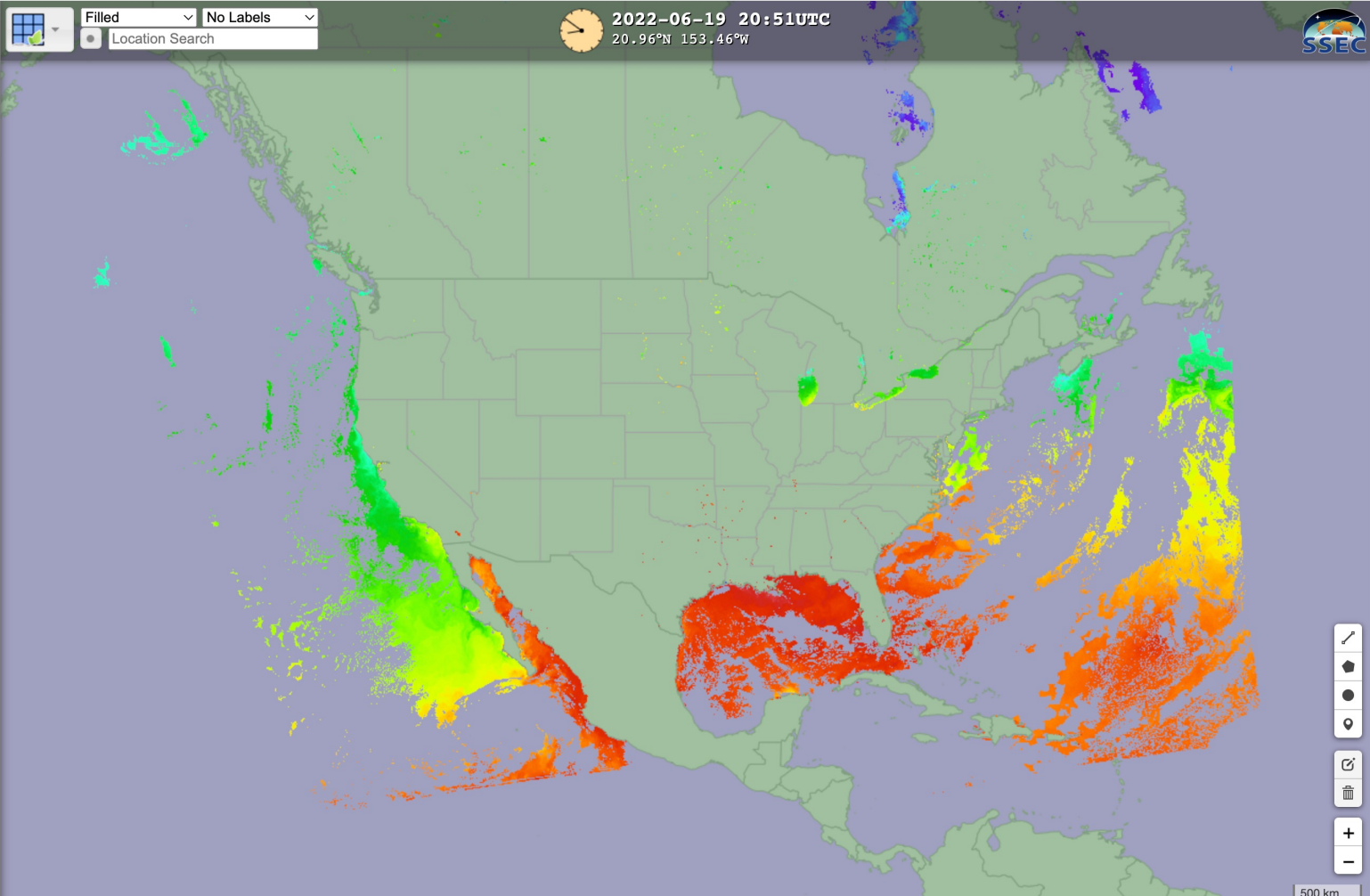
Show: 24 time steps  
Of: SNPP Sea Surface Tempers

### Products & Layers

Collection: RealEarth

Presets Products Displayed

- SNPP Sea Surface Temperature (SST) - Madison DB  
2022-06-19 20:51:00
- SNPP VIIRS True Color - Madison DB  
2022-06-19 20:51:00



500 km

Legends



2022-06-19 20:51UTC  
18.23°N 153.19°W

Filled No Labels  
Location Search



### Animation & Times

Relative Absolute Product

Show: 24 time steps

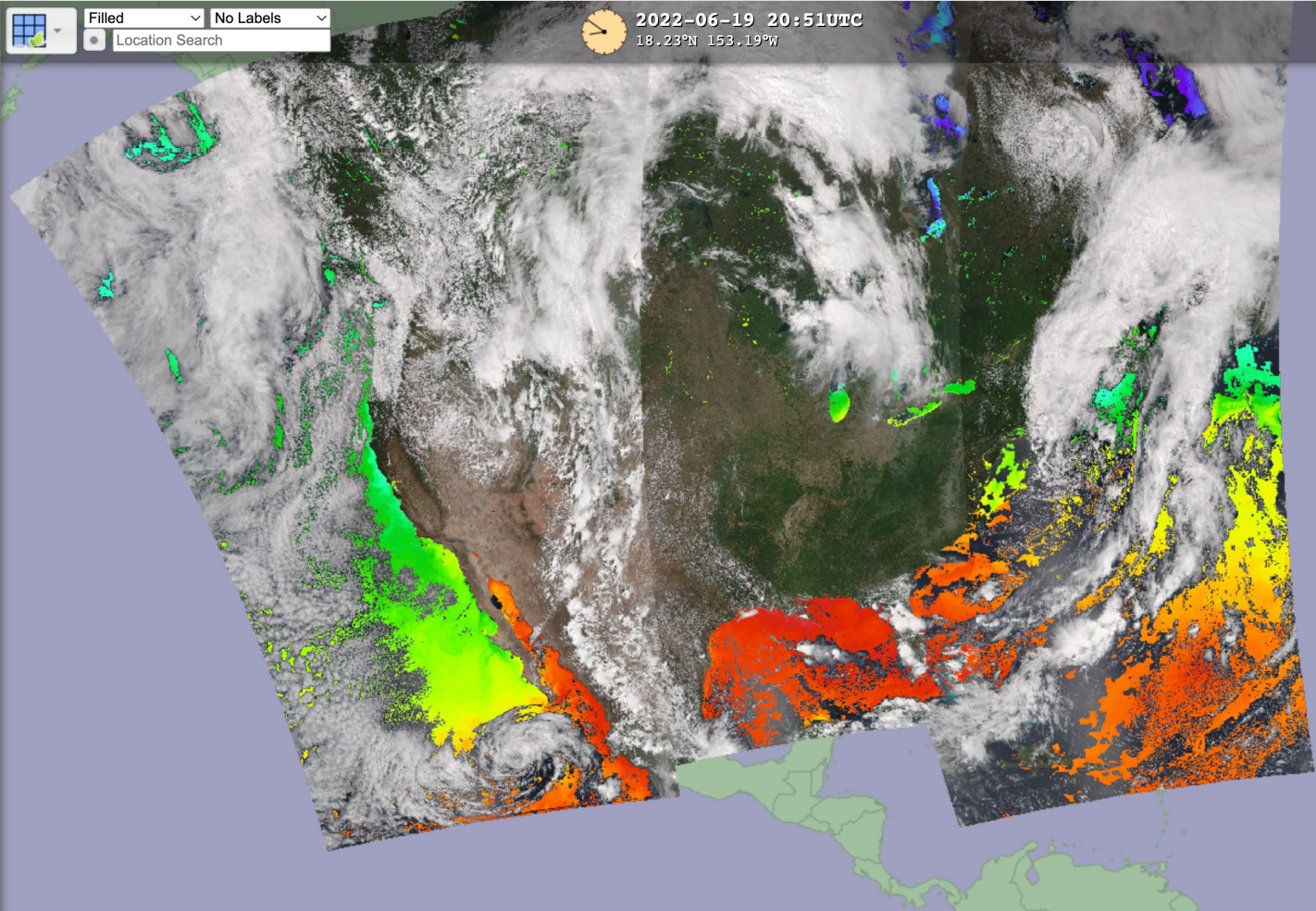
Of: SNPP Sea Surface Tempers

### Products & Layers

Collection: RealEarth

Presets Products Displayed

- SNPP Sea Surface Temperature (SST) - Madison DB**  
 2022-06-19 20:51:00
- SNPP VIIRS True Color - Madison DB**  
 2022-06-19 20:51:00



500 km

Legends



Tools Share

Filled No Labels Location Search

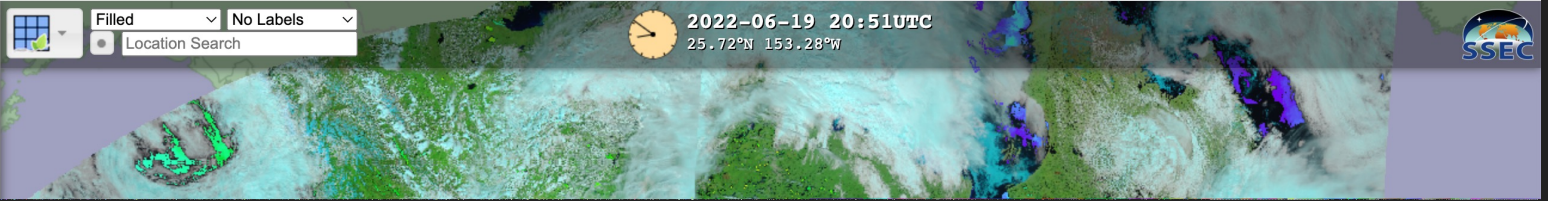
2022-06-19 20:51UTC  
25.72°N 153.28°W



### Animation & Times

Relative Absolute Product

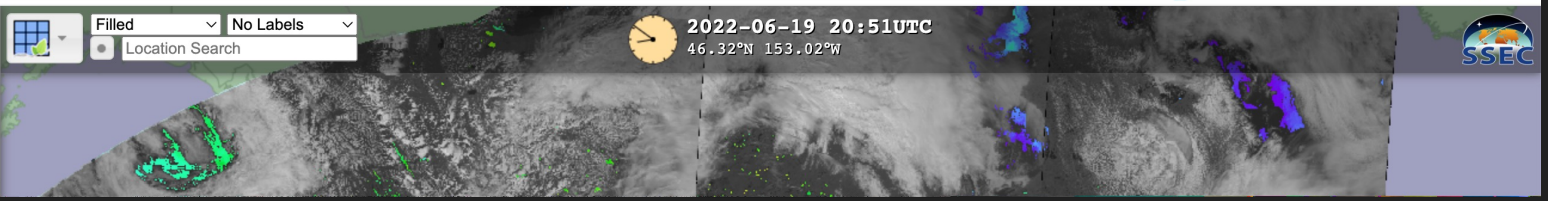
Show: 24 time steps



Tools Share

### Animation & Times

Relative Absolute Product





2022-06-20 10:51UTC  
58.86°N 144.76°W

Filled No Labels  
Location Search

### Animation & Times

Navigation controls: play, stop, previous, next, and a timeline slider.

Relative Absolute Product

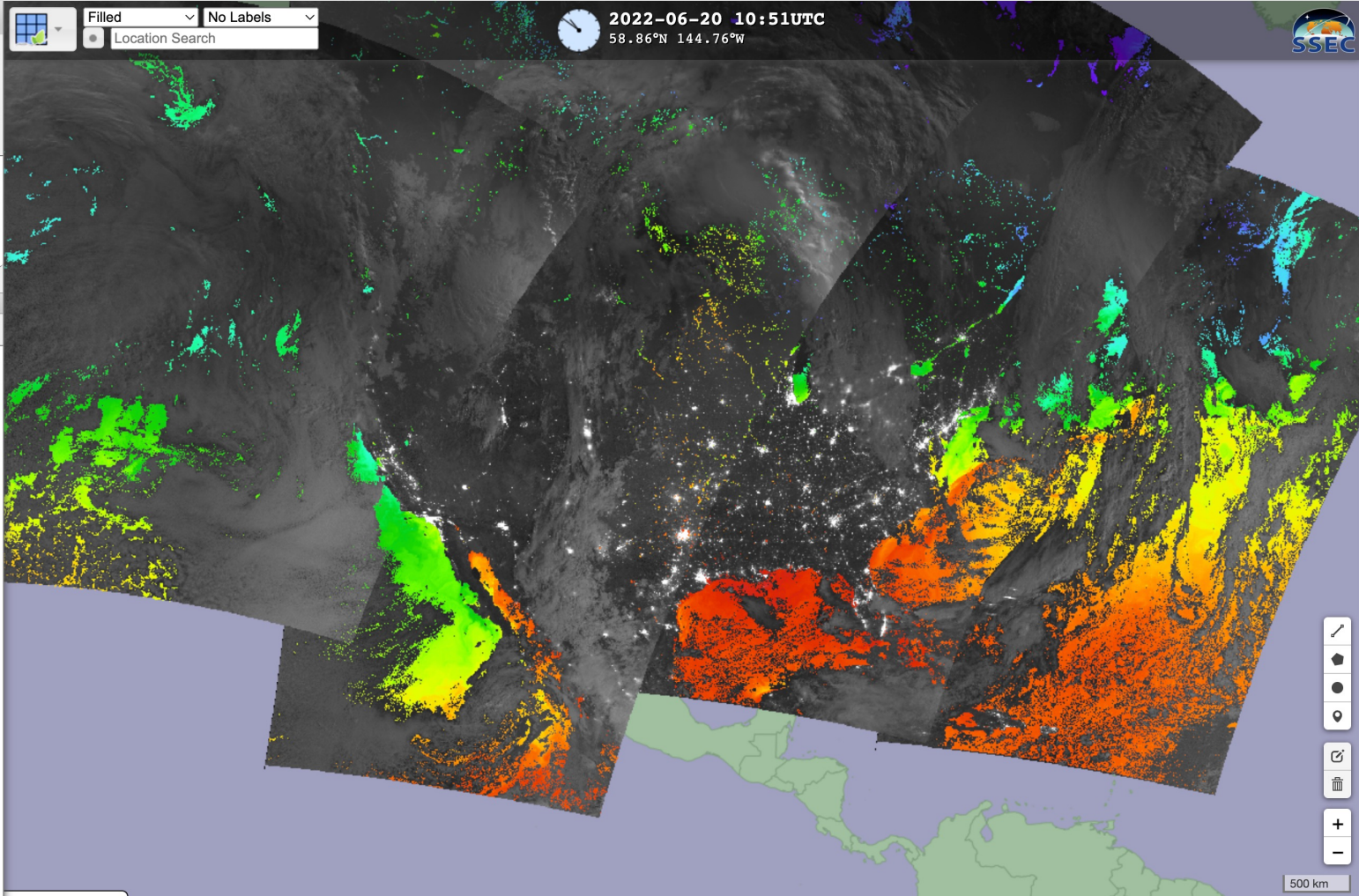
Show: 24 time steps  
Of: SNPP Sea Surface Temper

### Products & Layers

Collection: RealEarth

Presets Products Displayed

- SNPP Sea Surface Temperature (SST) - Madison DB  
2022-06-20 10:51:00
- SNPP Day/Night Band (DNB) - Madison DB  
2022-06-20 10:51:00
- SNPP VIIRS False Color - Madison DB  
2022-06-19 20:51:00
- SNPP VIIRS True Color - Madison DB  
2022-06-19 20:51:00



Map navigation controls: pan, home, full screen, location, share, and zoom in/out buttons.

500 km

Legends

# What is the point of this talk?

- DB and CSPP really matter to applications in RealEarth where low latency is essential
- ...and that would be in the case of Active Fires
- CSPP produces NetCDF and Text files of VIIRS I-band fire detections
- Since 5/24/2022 the Persistent Anomaly flag has been added to CPSS Active Fire product (consistent with the operational global VIIRS Active Fire product by Ivan Csiszar)



Tools ▾

Share



White ▾

No Labels ▾

Location Search



2022-06-21 22:53UTC

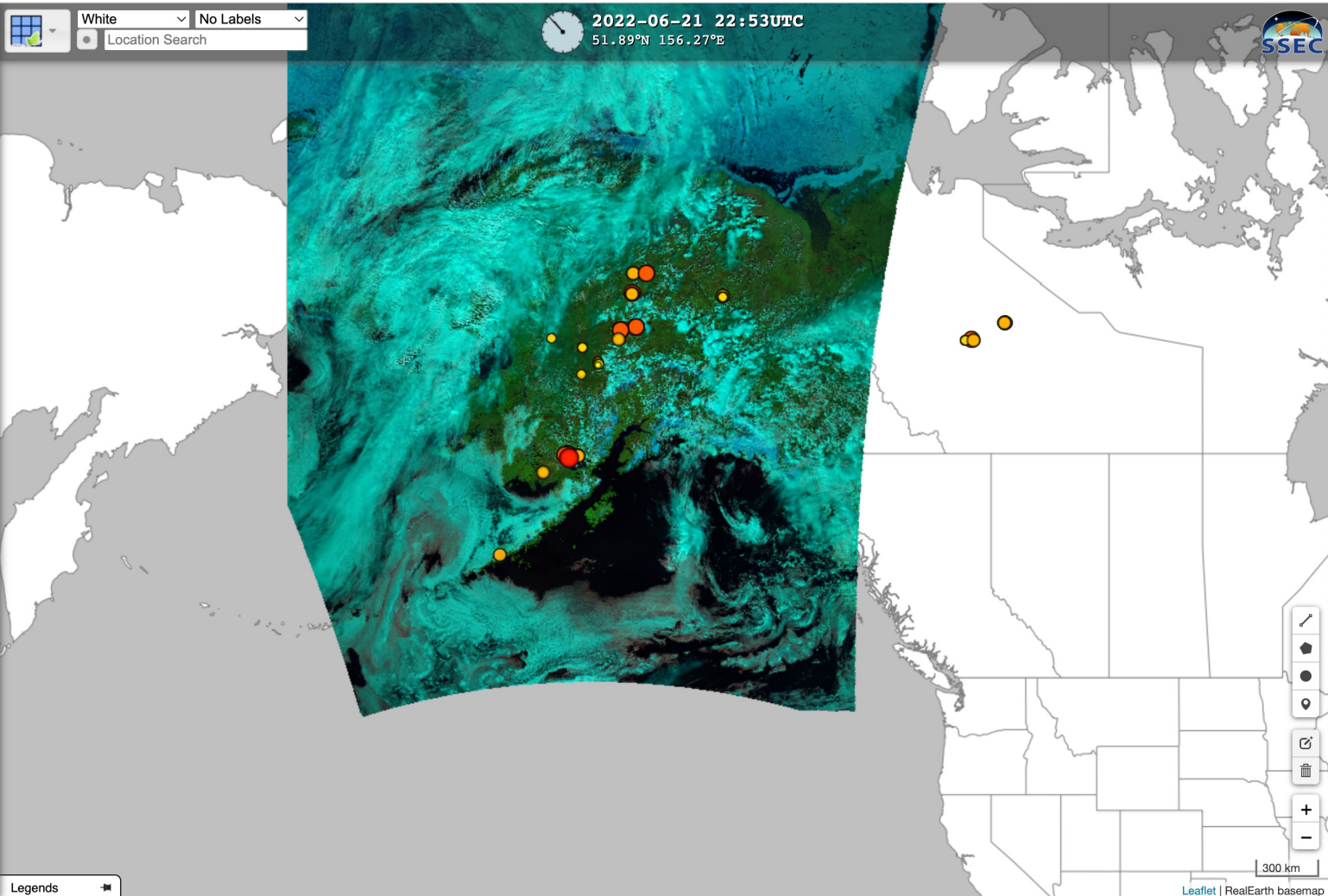
73.00°N 128.32°W





2022-06-21 22:53UTC  
51.89°N 156.27°E

White No Labels  
Location Search



### Animation & Times

Navigation controls: Play, Stop, Previous, Next, Full Screen, Refresh

Relative Absolute Product

Show: 6 time steps  
Of: VIIRS Fire RGB - GINA  
Ending 2022-06-21 22:53:00

### Products & Layers

Collection: RealEarth

Presets Products Displayed

**Fire Radiative Power VIIRS I-band - GINA**  
2022-06-21 22:07:01

**VIIRS Fire RGB - GINA**  
2022-06-21 22:53:00

Legends

300 km



2022-06-21 22:53UTC

57.70°N 151.97°W

White No Labels

Location Search

### Animation & Times



Relative Absolute Product

Show: 6 time steps

Of: VIIRS Fire RGB - GINA

Ending 2022-06-21 22:53:00

### Products & Layers

Collection: RealEarth

Presets Products Displayed

**Fire Radiative Power**  
VIIRS I-band - GINA  
2022-06-21 22:07:01

**VIIRS Fire RGB - GINA**  
2022-06-21 22:53:00

Legends



50 km

Tools Share

### Animation & Times

Relative Absolute Product

Show: 6 time steps

Of: VIIRS Fire RGB - GINA

Ending 2022-06-21 22:53:00

### Products & Layers

White No Labels

Location Search



2022-06-21 22:53UTC  
59.20°N 155.07°W

Lat/Lon: 59.8511°N 155.9811°W

### npp

**Fire Target**

Date/Time: 2022-06-21

I04 Temperature: 340.2K

Radiative Power: 112.9MW

Persistent Anomaly: None

Confidence: Medium

**Latency:**







White No Labels

Location Search



2022-06-21 22:53UTC

60.10°N 155.56°W

Lat/Lon: 59.8511°N 155.9811°W



### Animation & Times



Relative Absolute Product

Show: 6 time steps

Of: VIIRS Fire RGB - GINA

### npp

#### Fire Target

Date/Time: 2022-06-21

I04 Temperature: 340.2K

Radiative Power: 112.9MW

Tools Share

White No Labels  
Location Search

2022-06-21 22:53UTC  
58.08°N 162.24°W



### Animation & Times

Navigation controls: play, stop, previous, next, first, last, and a progress slider.

Relative Absolute Product

Show: 6 time steps  
Of: VIIRS Fire RGB - GINA  
 Ending 2022-06-21 22:53:00

### Products & Layers

Collection: RealEarth

Presets Products Displayed

#### Current Large Fires

2022-06-21 22:03:00

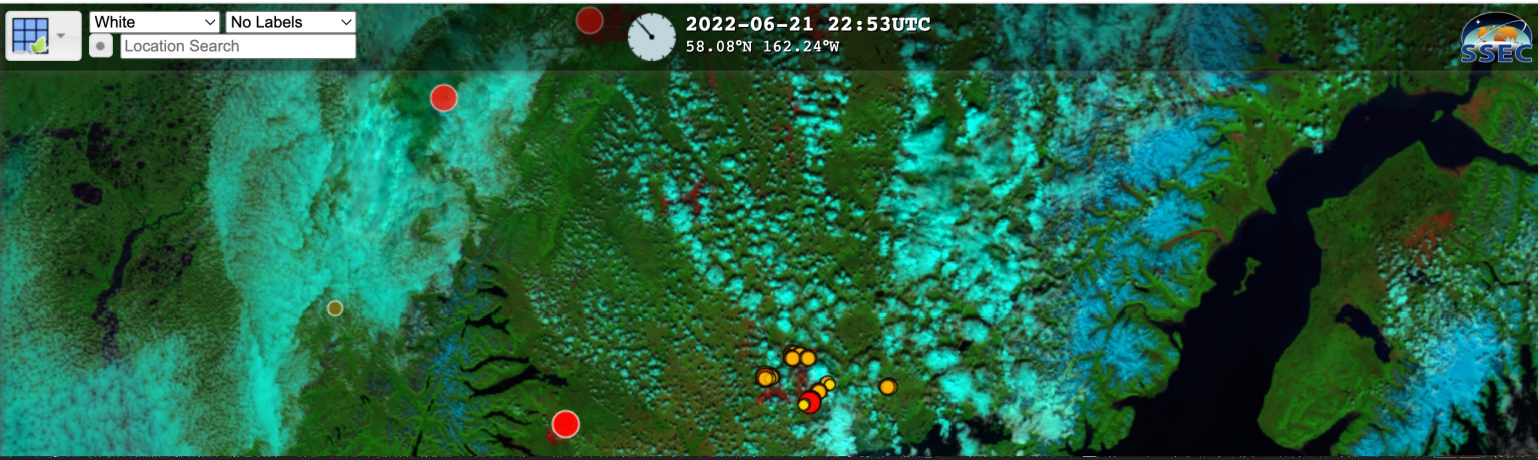




Figure 1. Schematic representation of the experimental design. **Pre-Test** and **Main Experiment** are the two main sections of the experiment. **Pre-Test 1** and **Pre-Test 2** are the two pre-tests. **Main Experiment 1** and **Main Experiment 2** are the two main experiments. Each cell in the grids contains a small diagram of a person sitting at a desk with a computer monitor, representing the experimental setup.



White No Labels Location Search

2022-06-21 22:53UTC  
59.18°N 158.15°W

**Animation & Times**

Relative Absolute Product

Show: 6 time steps

Of: VIIRS Fire RGB - GINA

Ending 2022-06-21 22:53:00

**Products & Layers**

Collection: RealEarth

Presets Products Displayed

**Current Large Fires**

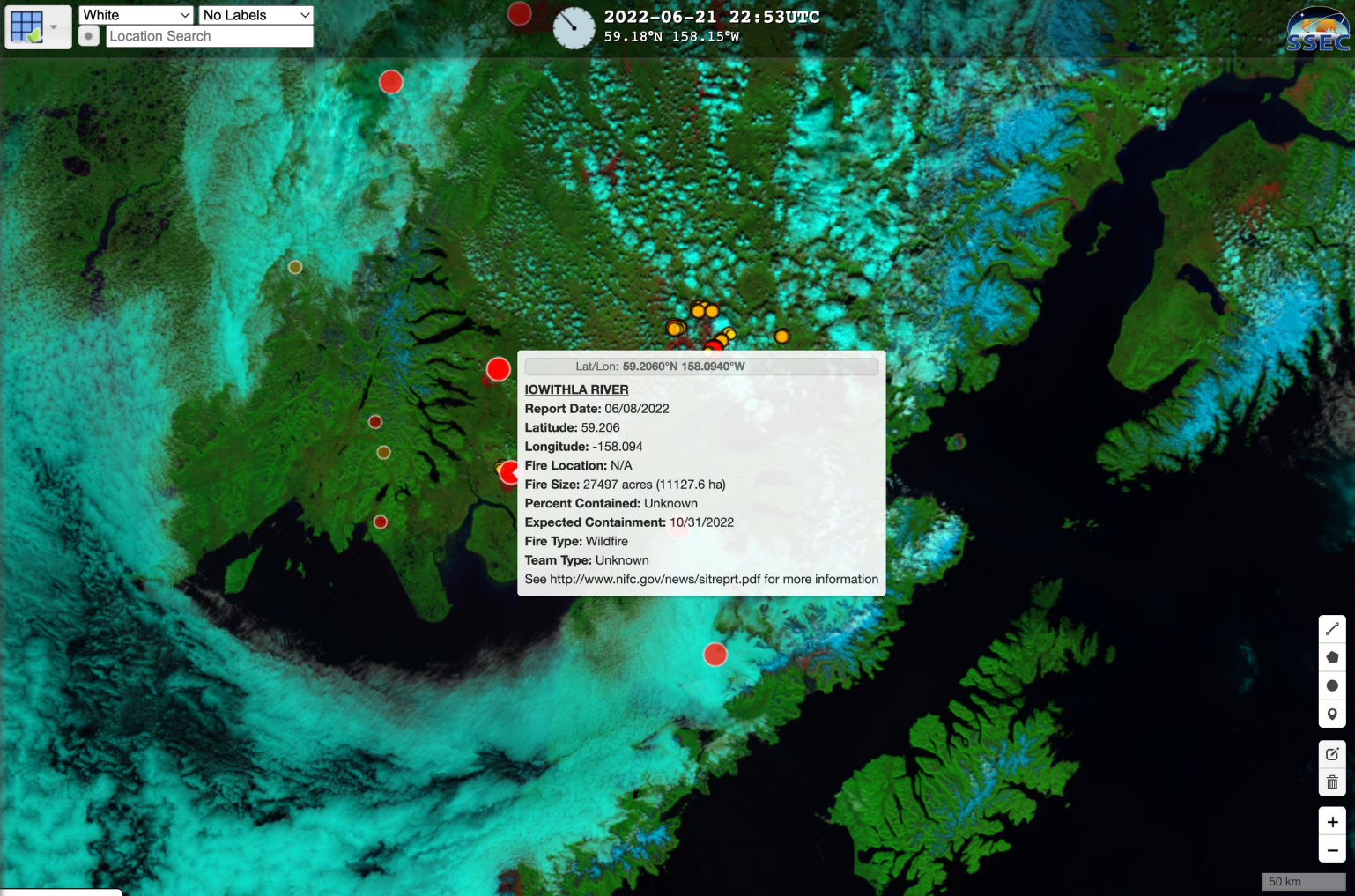
2022-06-21 22:03:00

**Fire Radiative Power VIIRS I-band - GINA**

2022-06-21 22:07:01

**VIIRS Fire RGB - GINA**

2022-06-21 22:53:00



Lat/Lon: 59.2060°N 158.0940°W

**IOWITHLA RIVER**

Report Date: 06/08/2022

Latitude: 59.206

Longitude: -158.094

Fire Location: N/A

Fire Size: 27497 acres (11127.6 ha)

Percent Contained: Unknown

Expected Containment: 10/31/2022

Fire Type: Wildfire

Team Type: Unknown

See <http://www.nifc.gov/news/sitreprt.pdf> for more information

Map navigation controls: pan, home, full screen, location, share, trash, zoom in, zoom out.

50 km

Legends



2022-06-21 22:58UTC

59.544°N 155.465°W

Tools Share

White Labels

Location Search

### Animation & Times



Relative Absolute Product

Show: 6 time steps

Of: Fire Radiative Power VIIRS

Ending 2022-06-21 22:58:13

### Products & Layers

Collection: RealEarth

Presets Products Displayed

#### Current Large Fires

2022-06-21 22:03:00

#### Fire Radiative Power VIIRS I-band - GINA

2022-06-21 22:58:13

#### VIIRS Fire RGB - GINA

2022-06-21 22:53:00



Legends



2022-06-21 22:58UTC  
59.540°N 157.607°W

White Labels  
Location Search

Animation & Times

Relative Absolute Product

Show: 6 time steps

Of: Fire Radiative Power VIIRS

Ending 2022-06-21 22:58:13

Products & Layers

Collection: RealEarth

Presets Products Displayed

- Current Large Fires 2022-06-21 22:03:00
- Fire Radiative Power VIIRS I-band - GINA 2022-06-21 22:58:13
- VIIRS Fire RGB - GINA 2022-06-21 22:53:00



### Animation & Times

▶

Relative Absolute Product

Show: 24 time steps

Of: Fire Radiative Power VIIRS

### Products & Layers

Collection: RealEarth

Presets Products Displayed

**VIIRS Fire Temp RGB - GINA**

2022-06-21 11:18:00

**Fire Radiative Power VIIRS I-band - GINA**

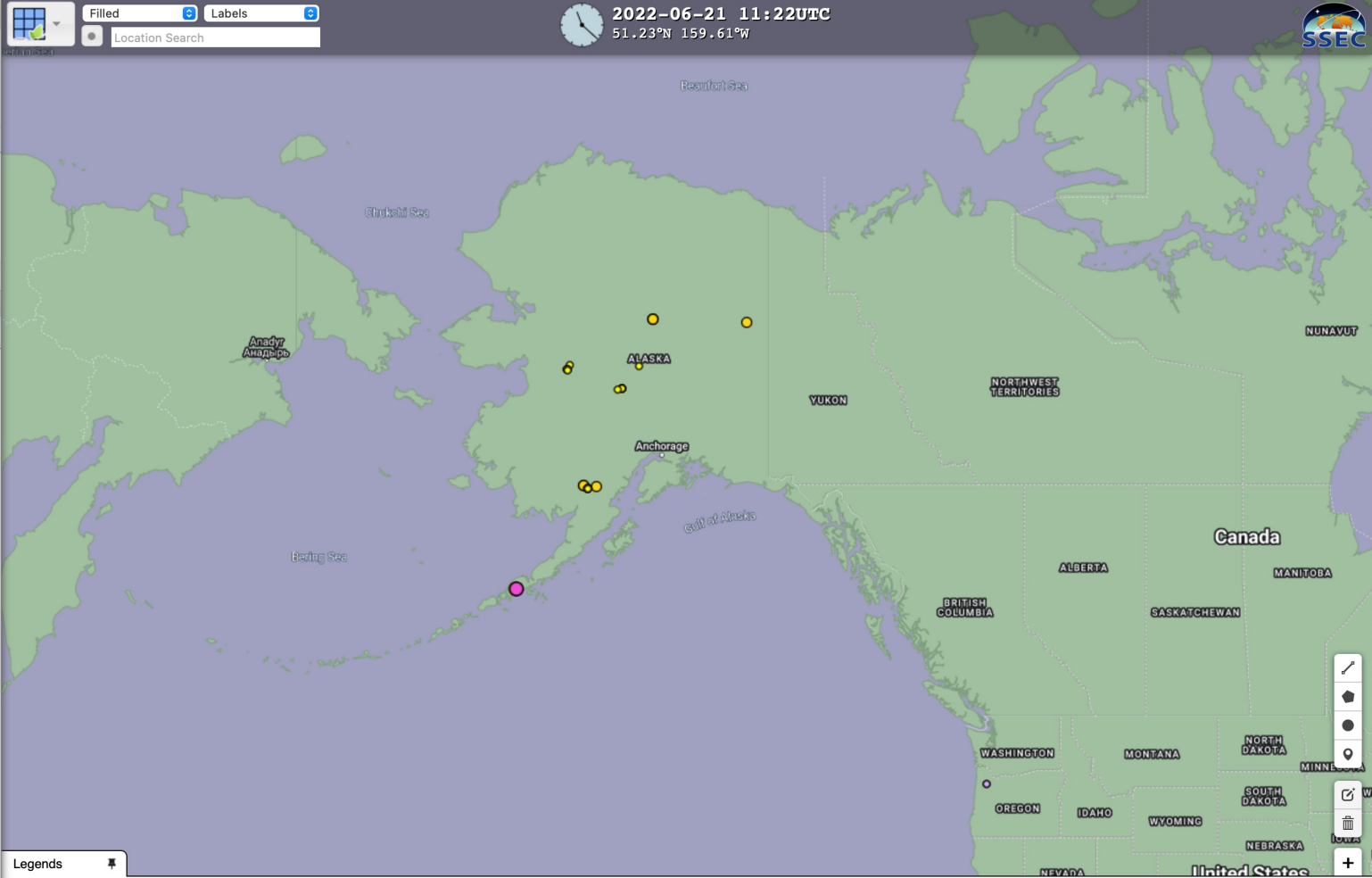
2022-06-21 11:22:37

**Current Large Fires**

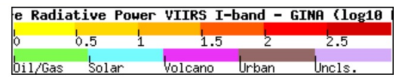
2022-06-21 11:03:00

**VIIRS Fire RGB - GINA**

2022-06-21 11:18:00



Legends



### Animation & Times

Relative Absolute Product

Show: 24 time steps

Of: Fire Radiative Power VIIRS

### Products & Layers

Collection: RealEarth

Presets Products Displayed

**VIIRS Fire Temp RGB - GINA**

2022-06-21 11:18:00

**Fire Radiative Power VIIRS I-band - GINA**

2022-06-21 11:22:37

**Current Large Fires**

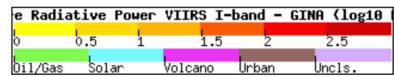
2022-06-21 11:03:00

**VIIRS Fire RGB - GINA**

2022-06-21 11:18:00



Legends





### Animation & Times

Relative Absolute Product

Show: 24 time steps

Of: Fire Radiative Power VIIRS

### Products & Layers

Collection: RealEarth

Presets Products Displayed

**VIIRS Fire Temp RGB - GINA**

2022-06-21 11:18:00

**Fire Radiative Power VIIRS I-band - GINA**

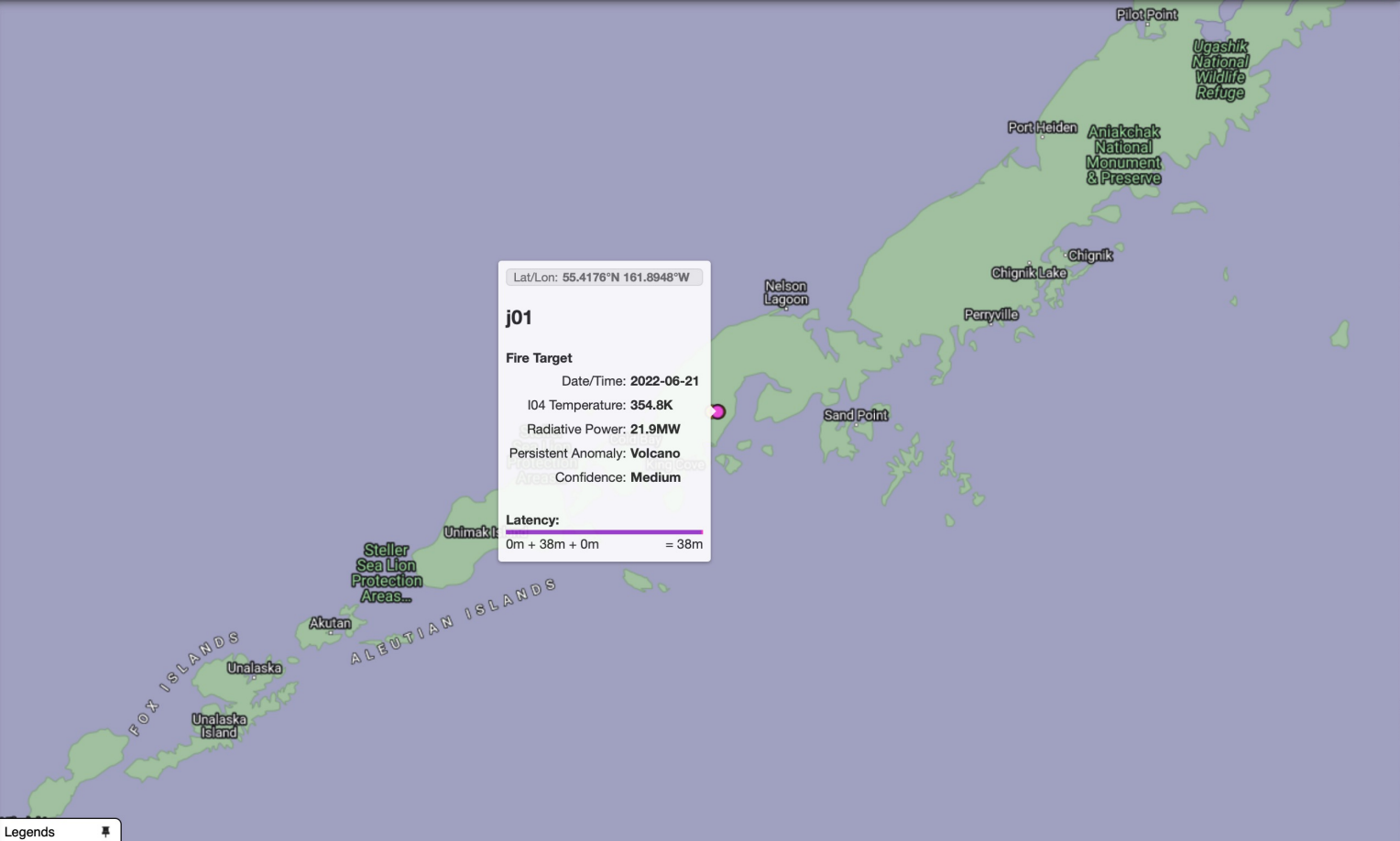
2022-06-21 11:22:37

**Current Large Fires**

2022-06-21 11:03:00

**VIIRS Fire RGB - GINA**

2022-06-21 11:18:00



Lat/Lon: 55.4176°N 161.8948°W

**j01**

**Fire Target**

Date/Time: 2022-06-21

I04 Temperature: 354.8K

Radiative Power: 21.9MW

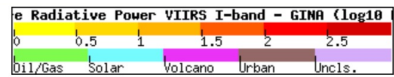
Persistent Anomaly: Volcano

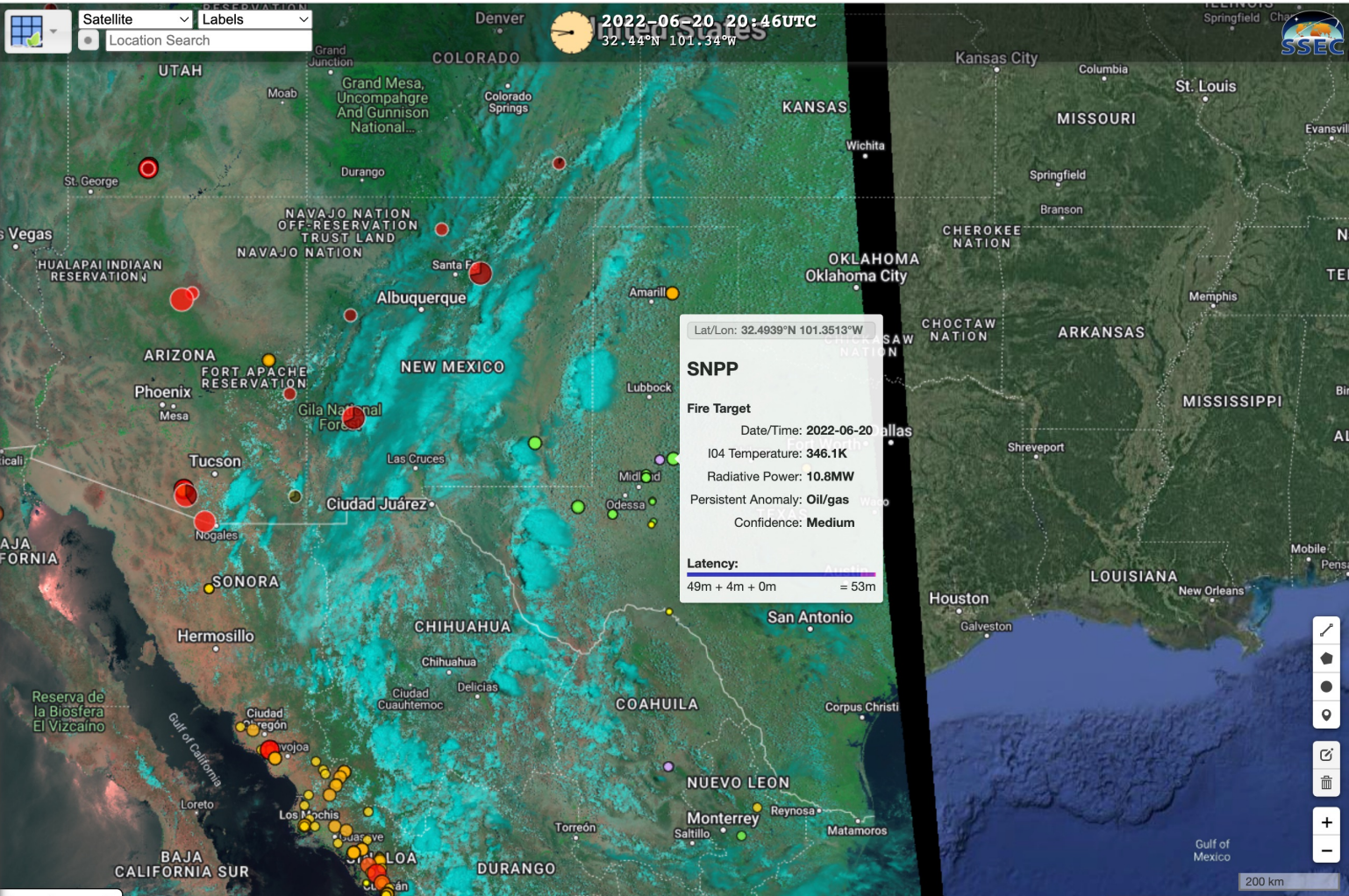
Area Confidence: Medium

**Latency:**

0m + 38m + 0m = 38m

Legends





**Animation & Times**

Tools | Share

Relative | Absolute | Product

Show: 24 time steps  
 Of: VIIRS Fire Temp RGB 375n

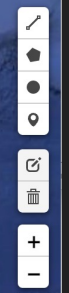
**Products & Layers**

Collection: RealEarth

Presets | Products | Displayed

- VIIRS Fire Temp RGB 375m CIRA  
2022-06-20 20:46:20
- Fire Radiative Power VIIRS I-band DB  
2022-06-20 20:32:00
- Current Large Fires  
2022-06-20 20:03:00
- VIIRS Fire RGB - CIRA  
2022-06-20 20:46:20

Legends



200 km

Animation & Times

Relative Absolute Product

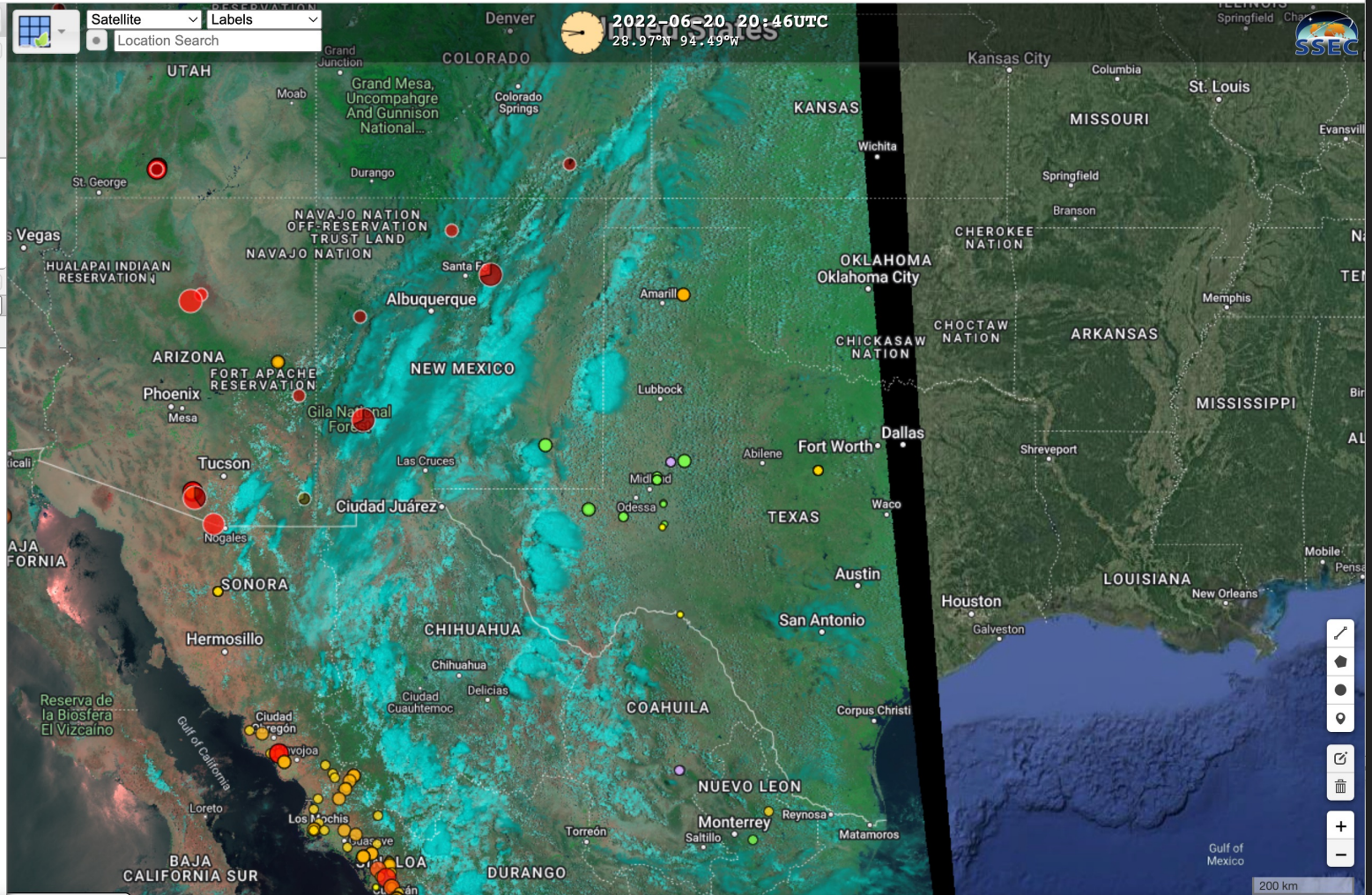
Show: 24 time steps

Of: VIIRS Fire Temp RGB 375n

Products & Layers

Collection: RealEarth

- VIIRS Fire Temp RGB 375m CIRA  
2022-06-20 20:46:20
- Fire Radiative Power VIIRS I-band DB  
2022-06-20 20:32:00
- Current Large Fires  
2022-06-20 20:03:00
- VIIRS Fire RGB - CIRA  
2022-06-20 20:46:20



Tools Share

### Animation & Times

Relative Absolute Product

Show: 24 time steps

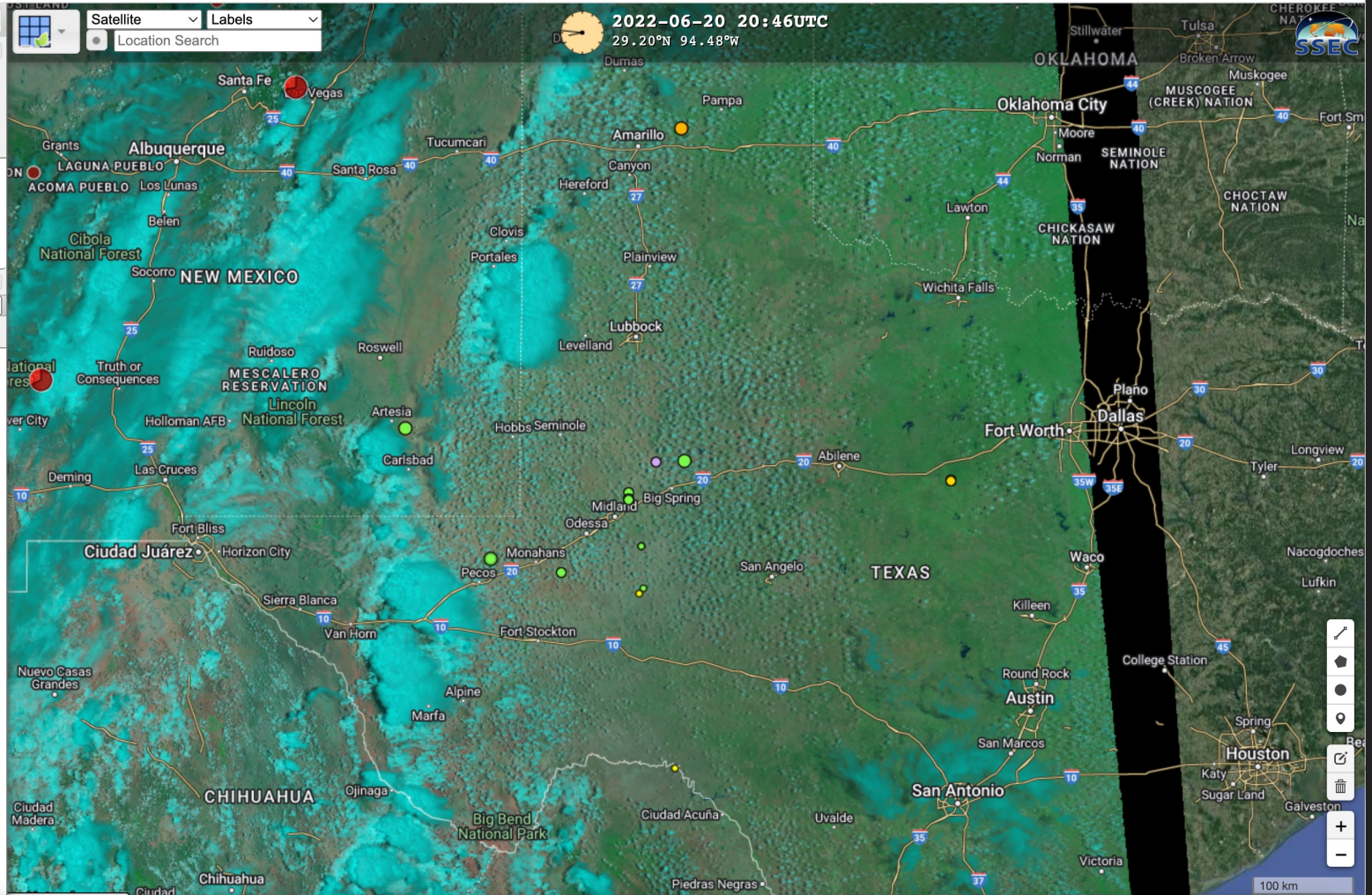
Of: VIIRS Fire Temp RGB 375m

### Products & Layers

Collection: RealEarth

Presets Products Displayed

- VIIRS Fire Temp RGB 375m CIRA**  
2022-06-20 20:46:20
- Fire Radiative Power VIIRS I-band DB**  
2022-06-20 20:32:00
- Current Large Fires**  
2022-06-20 20:03:00
- VIIRS Fire RGB - CIRA**  
2022-06-20 20:46:20





### Animation & Times

Relative Absolute Product

Show: 24 time steps

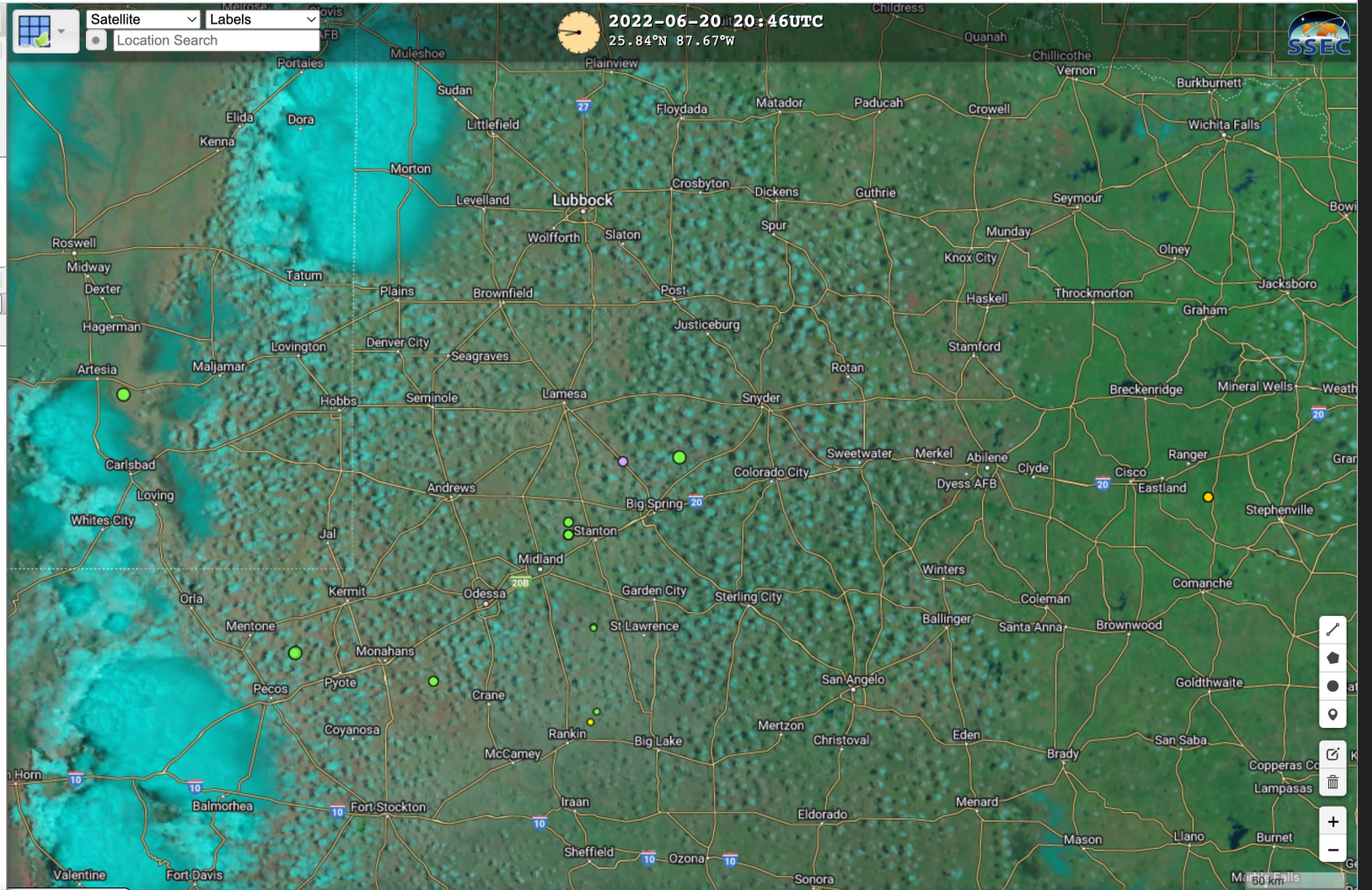
Of: VIIRS Fire Temp RGB 375n

### Products & Layers

Collection: RealEarth

Presets Products Displayed

- VIIRS Fire Temp RGB 375m CIRA**  
2022-06-20 20:46:20
- Fire Radiative Power VIIRS I-band DB**  
2022-06-20 20:32:00
- Current Large Fires**  
2022-06-20 20:03:00
- VIIRS Fire RGB - CIRA**  
2022-06-20 20:46:20



Tools Share

### Animation & Times

Relative Absolute Product

Show: 24 time steps

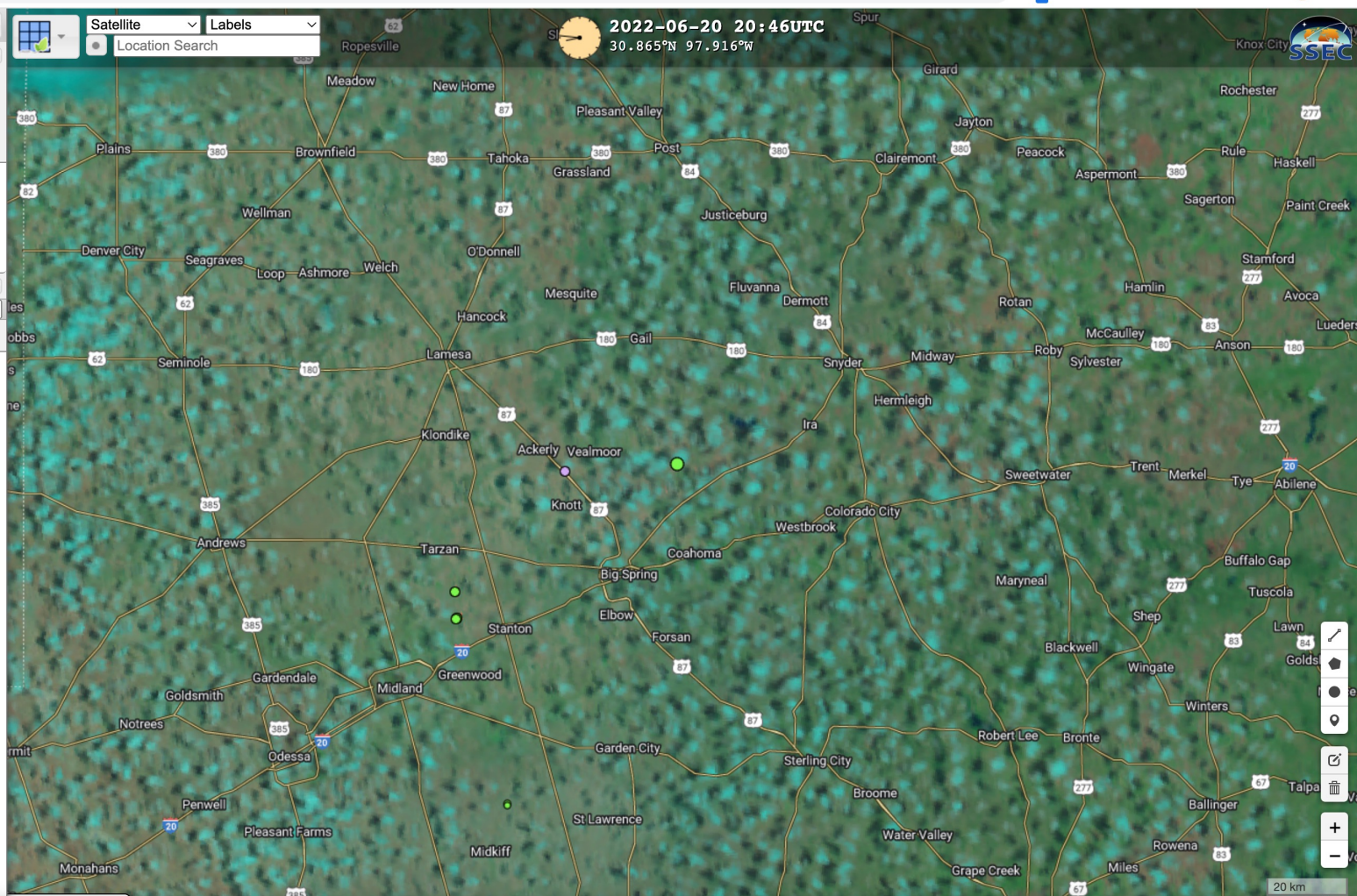
Of: VIIRS Fire Temp RGB 375n

### Products & Layers

Collection: RealEarth

Presets Products Displayed

- VIIRS Fire Temp RGB 375m CIRA**  
2022-06-20 20:46:20
- Fire Radiative Power VIIRS I-band DB**  
2022-06-20 20:32:00
- Current Large Fires**  
2022-06-20 20:03:00
- VIIRS Fire RGB - CIRA**  
2022-06-20 20:46:20





### Animation & Times

Relative Absolute Product

Show: 24 time steps

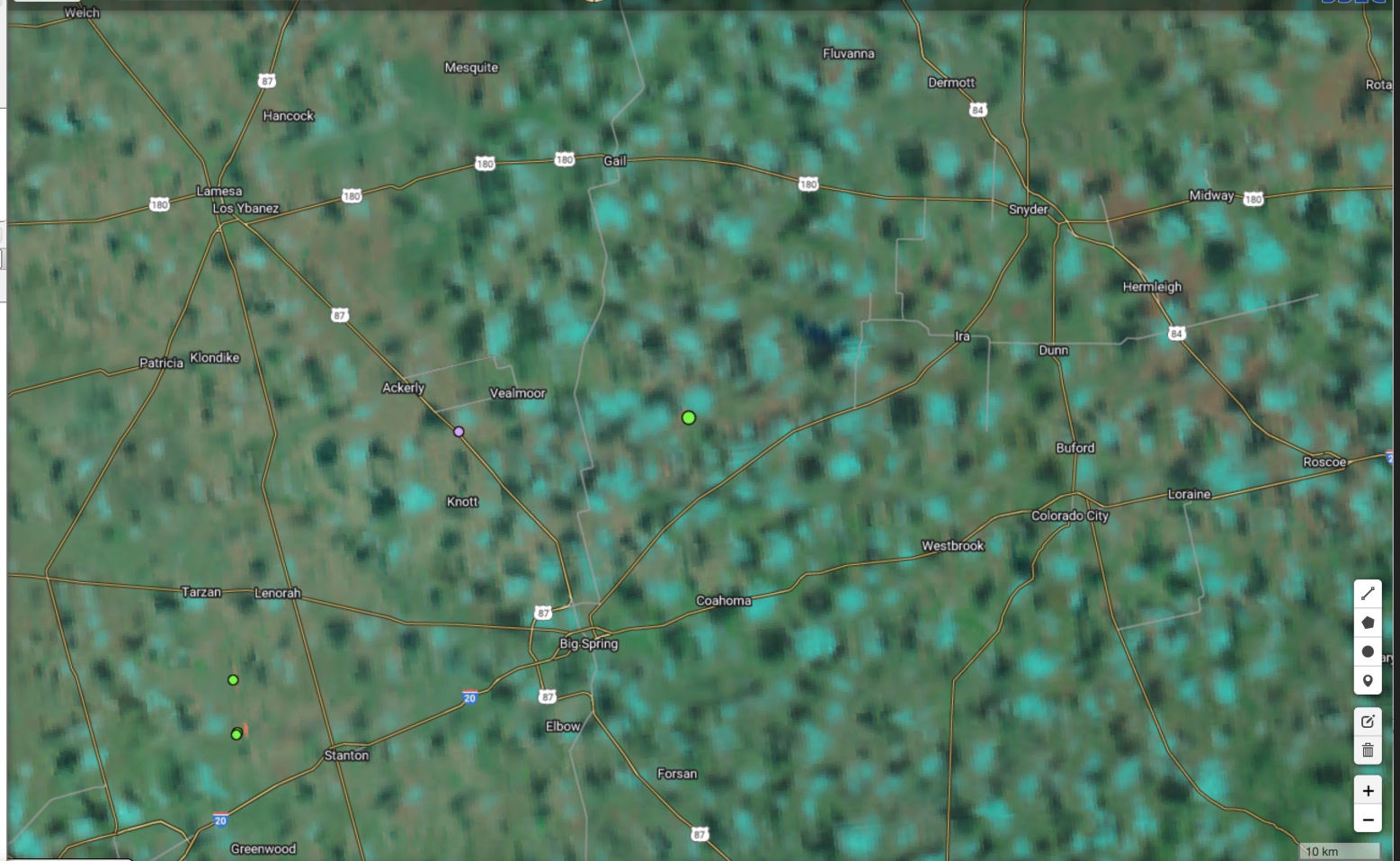
Of: VIIRS Fire Temp RGB 375m

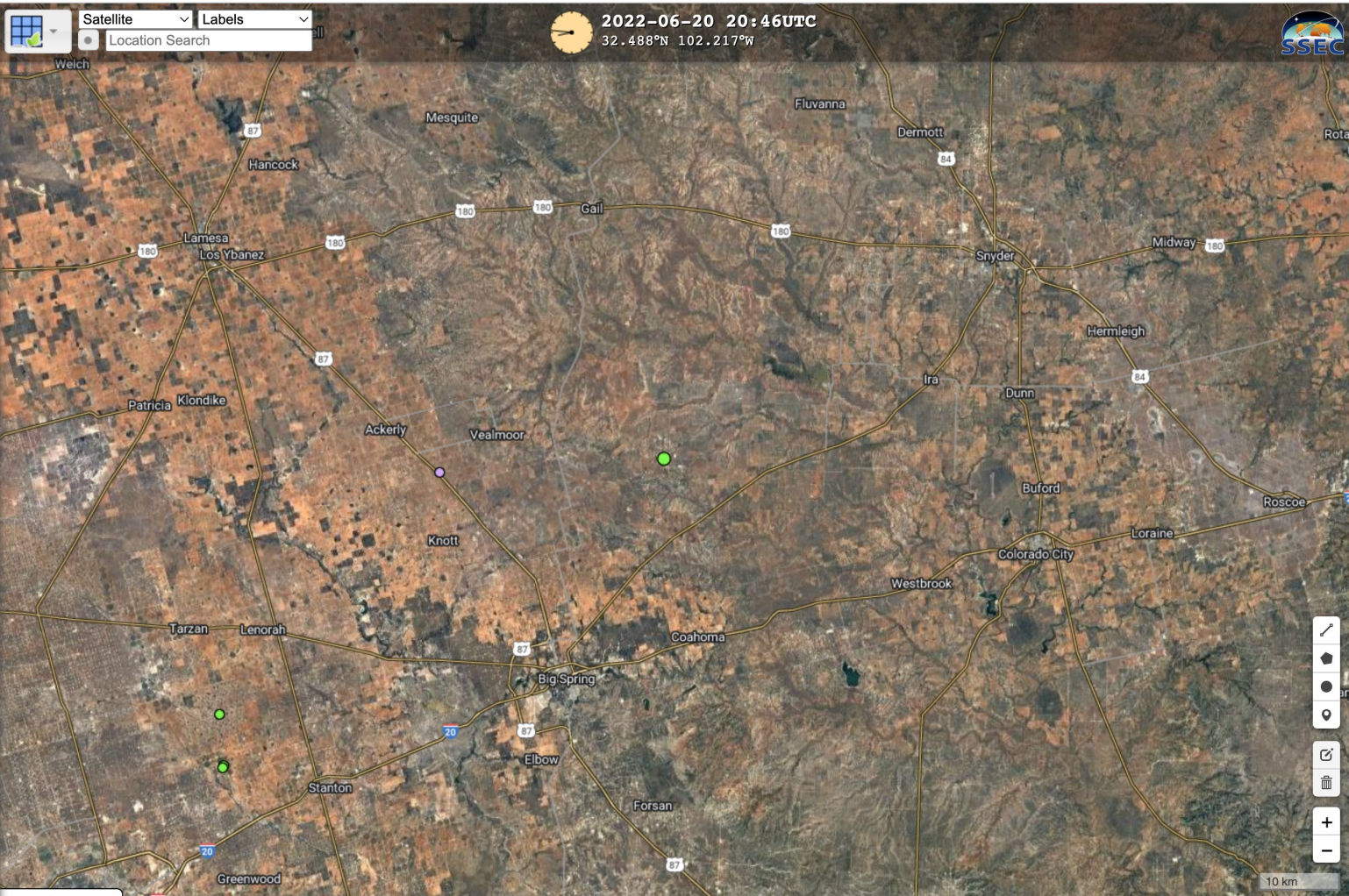
### Products & Layers

Collection: RealEarth

Presets Products Displayed

- VIIRS Fire Temp RGB 375m CIRA**  
2022-06-20 20:46:20
- Fire Radiative Power VIIRS I-band DB**  
2022-06-20 20:32:00
- Current Large Fires**  
2022-06-20 20:03:00
- VIIRS Fire RGB - CIRA**  
2022-06-20 20:46:20





2022-06-20 20:46UTC  
32.488°N 102.217°W



Satellite Labels  
Location Search

### Animation & Times

Navigation controls: play, stop, previous, next, and a progress slider.

Relative Absolute Product

Show: 24 time steps  
Of: VIIRS Fire Temp RGB 375n

### Products & Layers

Collection: RealEarth

Presets Products Displayed

VIIRS Fire Temp RGB 375m CIRA

2022-06-20 20:46:20

Slider control for VIIRS Fire Temp RGB 375m CIRA

Fire Radiative Power VIIRS I-band DB

2022-06-20 20:32:00

Slider control for Fire Radiative Power VIIRS I-band DB

Current Large Fires

2022-06-20 20:03:00

Slider control for Current Large Fires

VIIRS Fire RGB - CIRA

2022-06-20 20:46:20

Slider control for VIIRS Fire RGB - CIRA

Legends





### Animation & Times

Relative Absolute Product

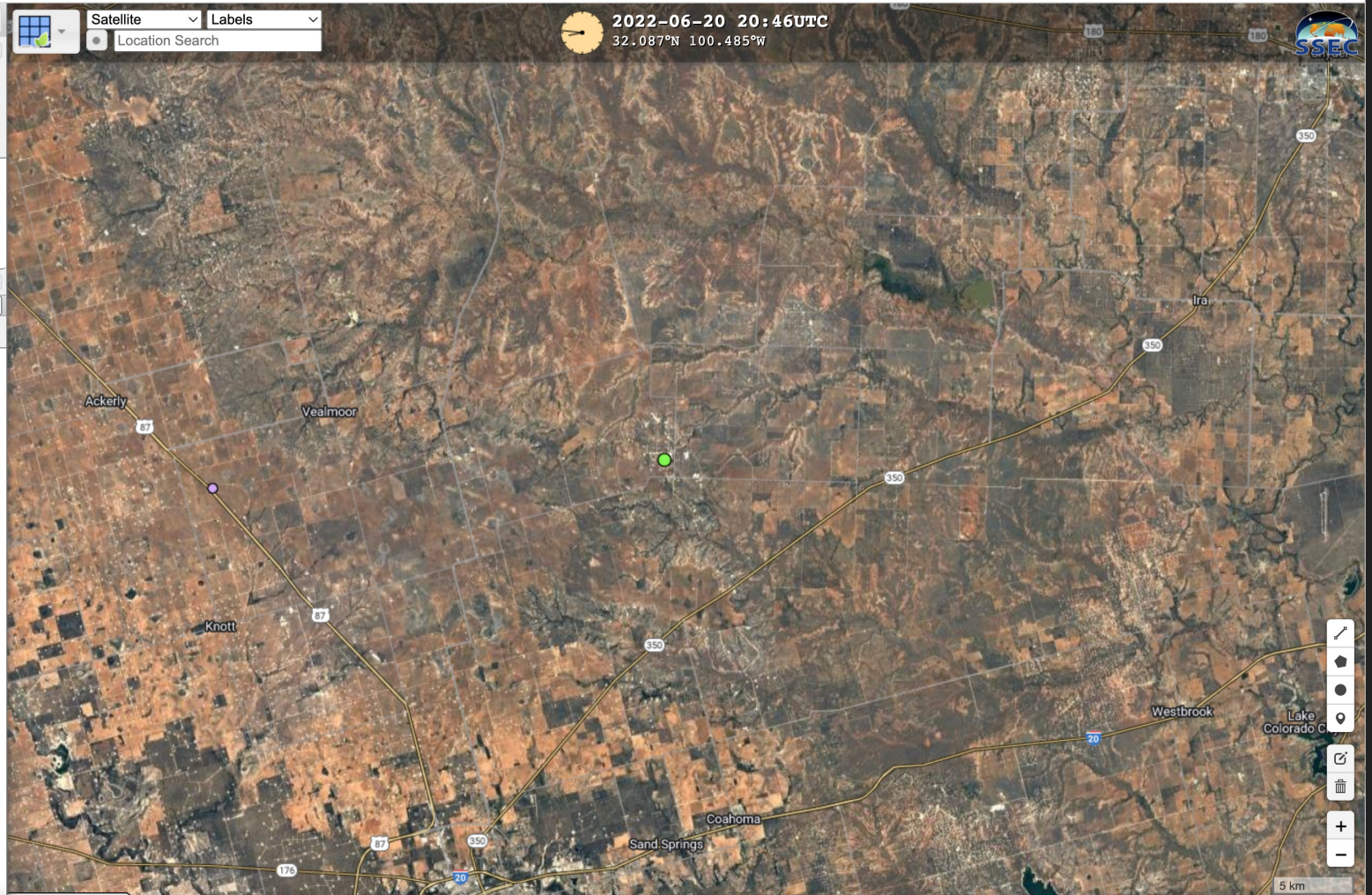
Show: 24 time steps  
Of: VIIRS Fire Temp RGB 375n

### Products & Layers

Collection: RealEarth

Presets Products Displayed

- VIIRS Fire Temp RGB 375m CIRA**  
2022-06-20 20:46:20
- Fire Radiative Power VIIRS I-band DB**  
2022-06-20 20:32:00
- Current Large Fires**  
2022-06-20 20:03:00
- VIIRS Fire RGB - CIRA**  
2022-06-20 20:46:20



Map navigation controls: Home, Full Screen, Location, Print, Refresh, Zoom In, Zoom Out



### Animation & Times

Navigation controls: play, stop, previous, next, first, last, and a progress slider.

Relative Absolute Product

Show: 24 time steps  
Of: VIIRS Fire Temp RGB 375n



Products & Layers

Satellite Labels  
Location Search

2022-06-20 20:46UTC  
32.458°N 101.305°W



### Animation & Times

Relative Absolute Product

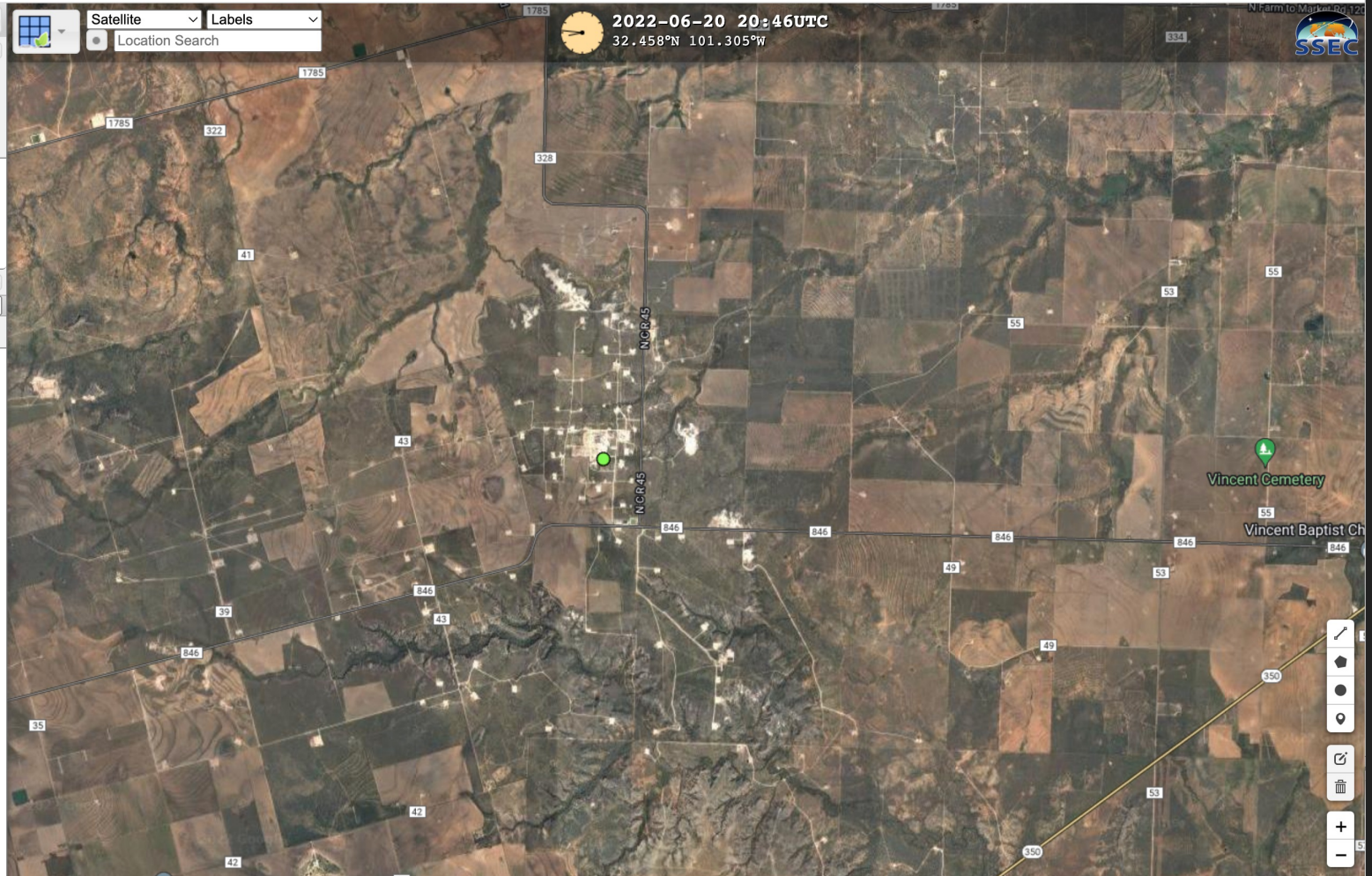
Show: 24 time steps  
Of: VIIRS Fire Temp RGB 375n

### Products & Layers

Collection: RealEarth

Presets Products Displayed

- VIIRS Fire Temp RGB 375m CIRA**  
2022-06-20 20:46:20
- Fire Radiative Power VIIRS I-band DB**  
2022-06-20 20:32:00
- Current Large Fires**  
2022-06-20 20:03:00
- VIIRS Fire RGB - CIRA**  
2022-06-20 20:46:20



Fresh Water Stations  
Legends

### Animation & Times

Timeline controls: Play, Previous, Next, Stop, Full Screen, and Refresh.

Relative Absolute Product

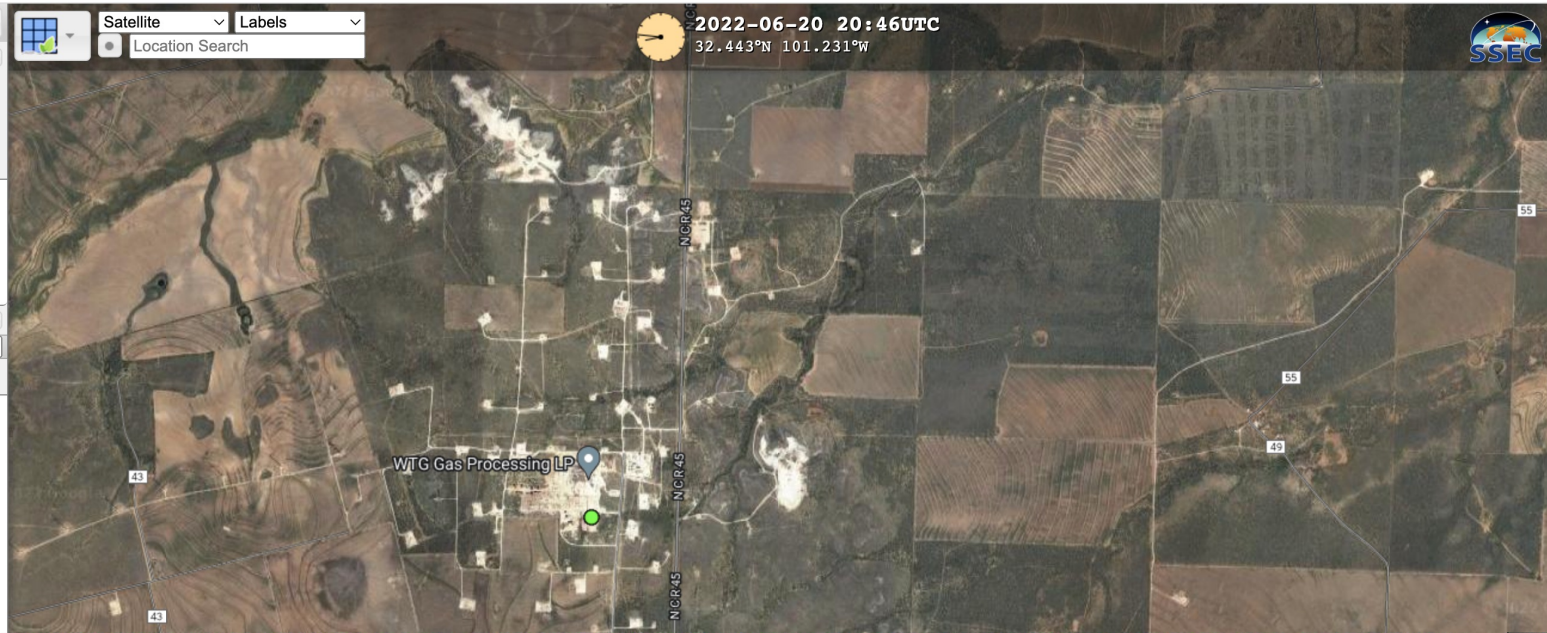
Show: 24 time steps  
Of: VIIRS Fire Temp RGB 375n

### Products & Layers

Collection: RealEarth

Presets Products Displayed

- VIIRS Fire Temp RGB 375m CIRA**  
2022-06-20 20:46:20
- Fire Radiative Power VIIRS I-band DB**  
2022-06-20 20:32:00
- Current Large Fires**





2022-06-20 20:46UTC  
32.4917°N 101.3509°W

Satellite Labels  
Location Search

### Animation & Times

Play  Stop  Previous  Next  Home  End

Relative  Absolute  Product

Show:  time steps

Of:

### Products & Layers

Collection:

Presets  Products  Displayed

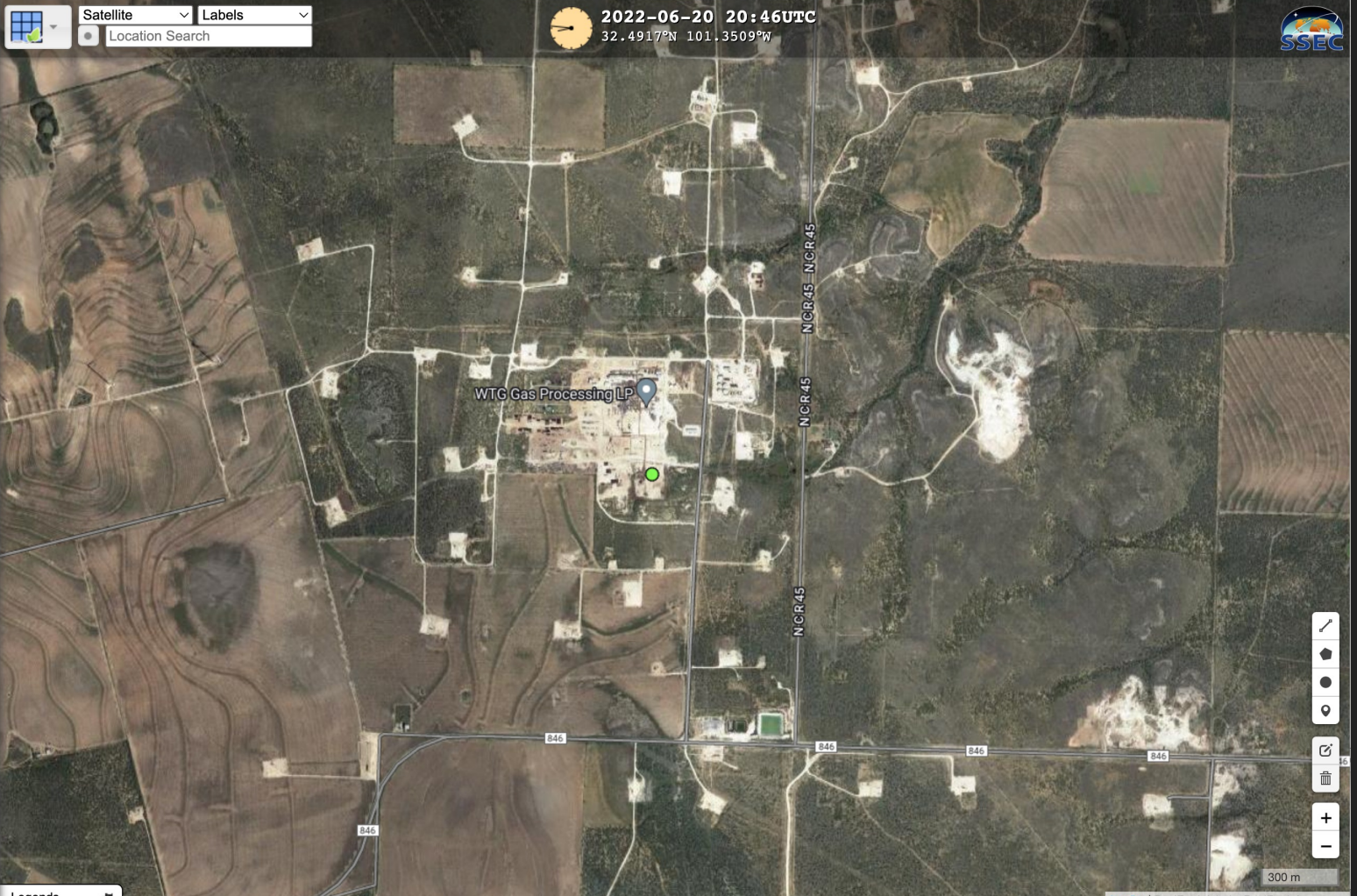
- VIIRS Fire Temp RGB 375m CIRA**

2022-06-20 20:46:20
- Fire Radiative Power VIIRS I-band DB**

2022-06-20 20:32:00
- Current Large Fires**

2022-06-20 20:03:00
- VIIRS Fire RGB - CIRA**

2022-06-20 20:46:20



Legends

Home  Location  Full Screen  Print  Refresh  Zoom In  Zoom Out

300 m



2022-06-20 20:46UTC  
32.4820°N 101.3236°W

Satellite Labels  
Location Search



### Animation & Times

Relative
  Absolute
  Product

Show:  time steps

Of:

### Products & Layers

Collection:

Presets
  Products
  Displayed

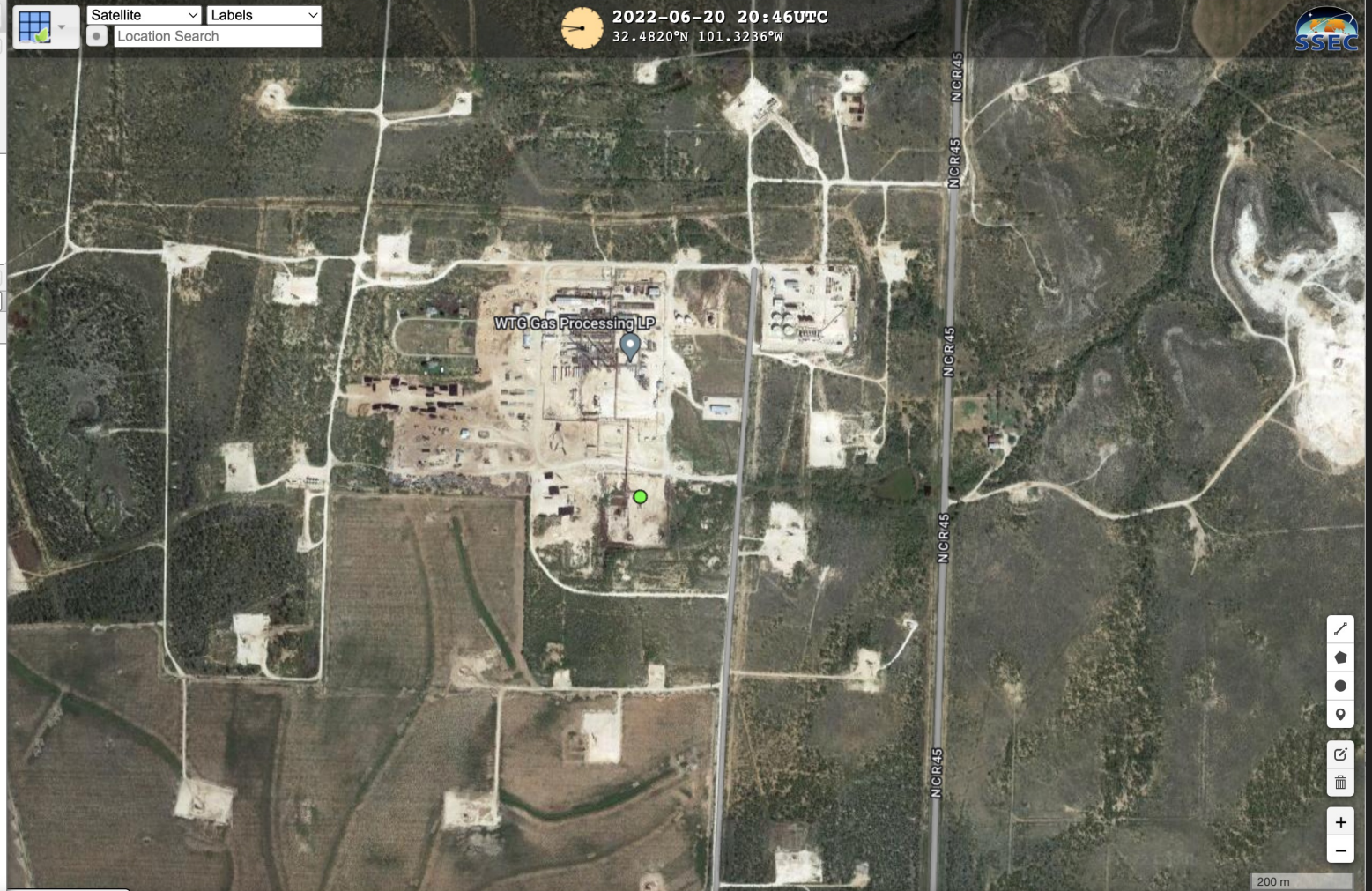
- VIIRS Fire Temp RGB 375m CIRA**

2022-06-20 20:46:20
- Fire Radiative Power VIIRS I-band DB**

2022-06-20 20:32:00
- Current Large Fires**

2022-06-20 20:03:00
- VIIRS Fire RGB - CIRA**

2022-06-20 20:46:20



Home
  Layers
  Location
  Share
  Full Screen
  Print
  Zoom In (+)
  Zoom Out (-)

200 m

Satellite  Labels

Location Search

 2022-06-20 20:46UTC  
32.4918°N 101.3573°W



**Animation & Times**

Relative Absolute Product

Show: 24 time steps

Of: VIIRS Fire Temp RGB 375n

**Products & Layers**

Collection: RealEarth

Presets Products Displayed

- VIIRS Fire Temp RGB 375m CIRA  
 2022-06-20 20:46:20
- Fire Radiative Power VIIRS I-band DB  
 2022-06-20 20:32:00
- Current Large Fires  
 2022-06-20 20:03:00
- VIIRS Fire RGB - CIRA  
 2022-06-20 20:46:20

Legends



### Animation & Times

Navigation controls: play, stop, previous, next, and a time slider.

Relative Absolute Product

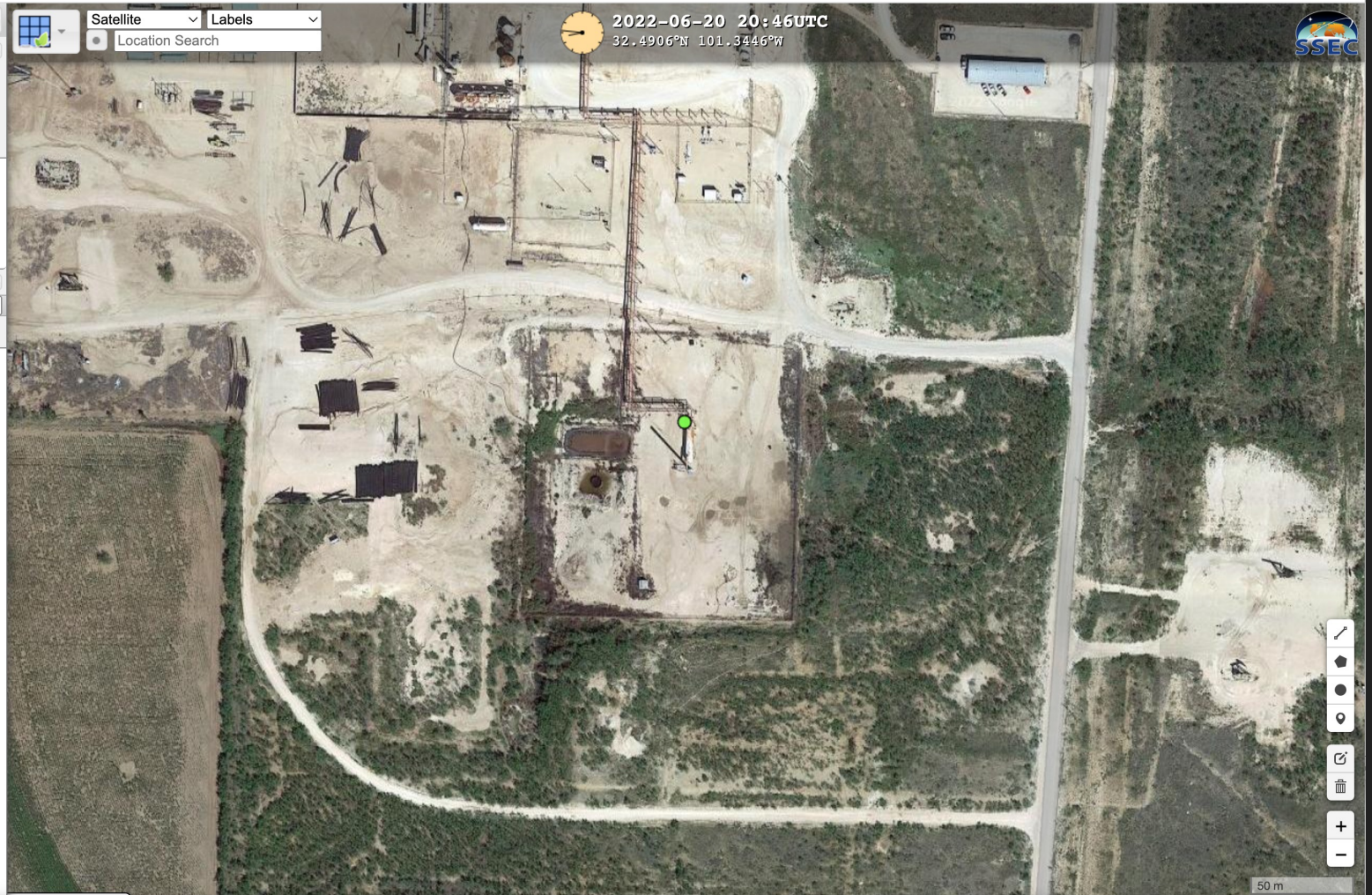
Show: 24 time steps  
Of: VIIRS Fire Temp RGB 375n

### Products & Layers

Collection: RealEarth

Presets Products Displayed

- VIIRS Fire Temp RGB 375m CIRA**  
2022-06-20 20:46:20
- Fire Radiative Power VIIRS I-band DB**  
2022-06-20 20:32:00
- Current Large Fires**  
2022-06-20 20:03:00
- VIIRS Fire RGB - CIRA**  
2022-06-20 20:46:20



Map navigation controls: pan, zoom in, zoom out, and other tools.

50 m





2022-06-20 20:46UTC  
32.49299°N 101.35146°W

Satellite Labels  
Location Search

**Animation & Times**

Relative Absolute Product

Show: 24 time steps

Of: VIIRS Fire Temp RGB 375m

**Products & Layers**

Collection: RealEarth

Presets Products Displayed

- VIIRS Fire Temp RGB 375m CIRA  
2022-06-20 20:46:20
- Fire Radiative Power VIIRS I-band DB  
2022-06-20 20:32:00
- Current Large Fires  
2022-06-20 20:03:00
- VIIRS Fire RGB - CIRA  
2022-06-20 20:46:20



Legends



20 m



2022-06-20 20:46UTC  
32.493587°N 101.351367°W

Satellite Labels  
Location Search



### Animation & Times

Relative Absolute Product

Show: 24 time steps  
Of: VIIRS Fire Temp RGB 375n

### Products & Layers

Collection: RealEarth

Presets Products Displayed

**VIIRS Fire Temp RGB 375m CIRA**

2022-06-20 20:46:20

**Fire Radiative Power VIIRS I-band DB**

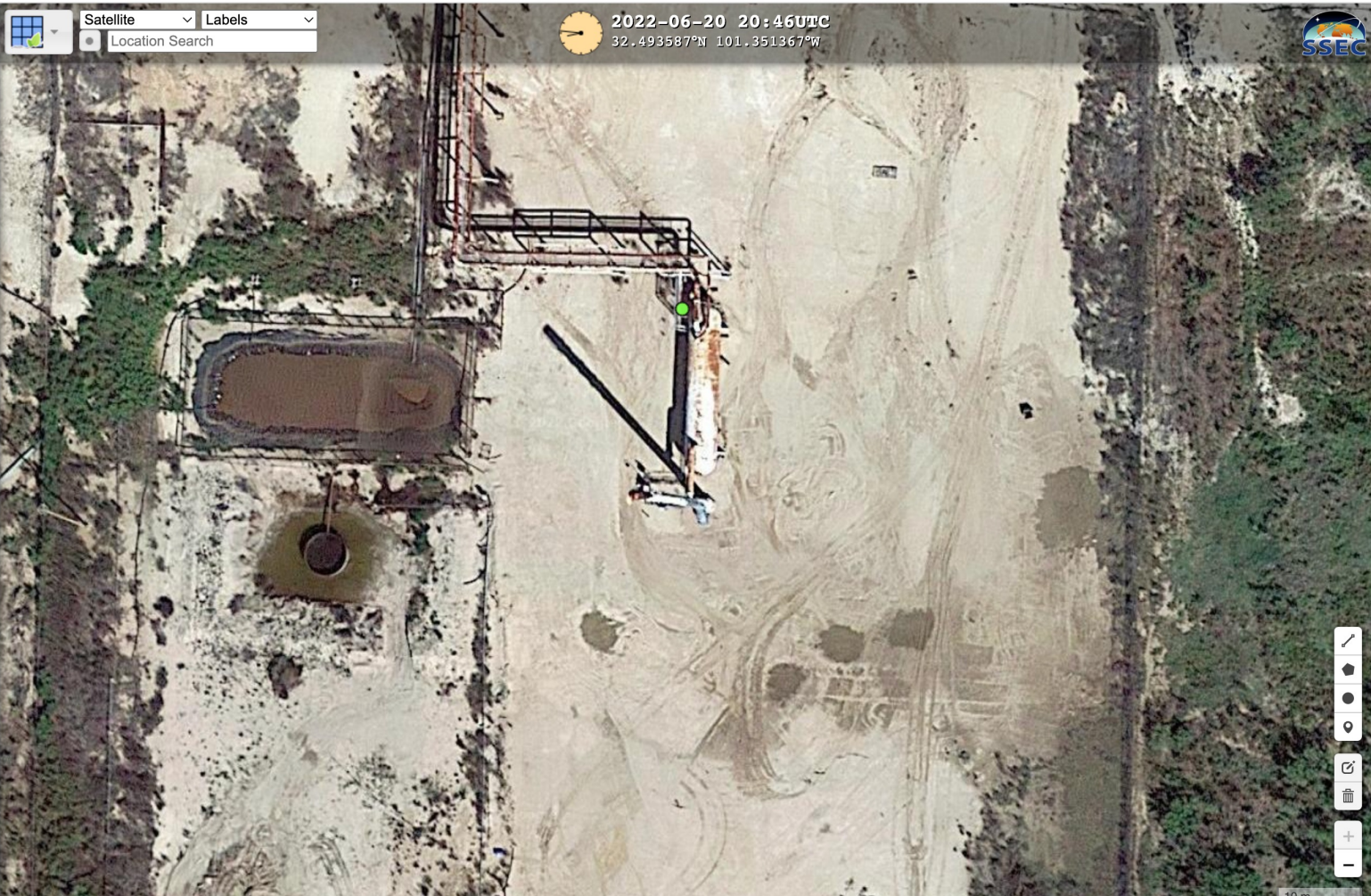
2022-06-20 20:32:00

**Current Large Fires**

2022-06-20 20:03:00

**VIIRS Fire RGB - CIRA**

2022-06-20 20:46:20



Legends

# Some General Challenges

- Users can manually or programmatically add any gridded imagery or spatial point/polygon data...
- We now have 1,608 products (1,141 released)
- Since 2016, 1.13 million unique IPs have visited RealEarth
- We have served 8.05 billion tiles

# RealEarth™ Administration (public3 v9.6)

### System Activity

Localhost  
20 Cores 31% 0 642  
27 GB  
222 GB Load In Out

re1.ssec.wisc.edu:8001  
20 Cores 17% 0 658  
27 GB  
228 GB Load In Out

re1.ssec.wisc.edu:8002  
20 Cores 31% 0 820  
27 GB  
228 GB Load In Out

### System Utilities

- [System Dashboard](#)
- [Apache Status](#)
- [FPM Status](#)
- [Nagios Overview](#)
- [Version Changelog](#)

### Usage & Stats

- [Live Usage](#)
- [Federation Activity](#)
- [Usage Statistics](#)
- [Users](#)

### Backup

- [Download backup](#)

## Child Nodes

- Show topology
- Add new child node

### asylum.ssec.wisc.edu

VM	Status	Activity	Products	Redirect	Share	Delete
: 8001 <a href="#">himawari</a>	Version 9.6	14 Cores 1% 0 0 31 GB 8 TB Load In Out 49 ms	DayNight (76)	✓ ✕ ±	✓ ✕	🗑️
: 8002 <a href="#">bedlam</a>	Version 9.6	6 Cores 4% 0 0 16 GB 4.8 TB Load In Out 40 ms	AWF-G17-ABI-FD-BAND01 (64)	✓ ✕ ±	✓ ✕	🗑️
: 8003 <a href="#">demento</a>	Version 9.6	14 Cores 86% 9 665 16 GB 3.2 TB Load In Out 69 ms	AMV-LLhigh (86)	✓ ✕ ±	✓ ✕	🗑️
: 8011 <a href="#">cascade</a>	Version 8.1 DB Mismatch Product Gen.	8 Cores 22% 0 0 16 GB 30 GB Load In Out 39 ms	None	✓ ✕ ±	✓ ✕	🗑️

### capital.ssec.wisc.edu

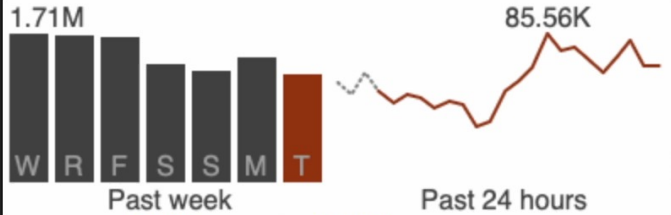
VM	Status	Activity	Products	Redirect	Share	Delete
: 8001 <a href="#">skai</a>	Version 9.6	20 Cores 1% 0 0 63 GB 21.9 TB Load In Out 40 ms	npp-viirs-bands-day (25)	✓ ✕ ±	✓ ✕	🗑️
: 8002 <a href="#">mutiny</a>	Version 9.6	24 Cores 6% 0 0 39 GB 5.5 TB Load In Out 92 ms	Isat8-look-fc (10)	✓ ✕ ±	✓ ✕	🗑️
: 8011 <a href="#">brewery</a>	Version 8.8 DB Mismatch Product Gen.	16 Cores 31% 0 0 16 GB 46 GB Load In Out 47 ms	None	✓ ✕ ±	✓ ✕	🗑️

### epscloud.ssec.wisc.edu

VM	Status	Activity	Products	Redirect	Share	Delete
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# Live RealEarth™ Usage

Since 2016-09-01



1.14K products, 1.13M users served

8.05B total hits, 10.00K in the past 8m

1	GOES East ABI Full Disk B13 "Clean"	1,553
2	GOES East ABI ConUS B13 "Clean"	1,088
3	Global Infrared - Aviation	994
4	Global Infrared - Tops	913
5	Hydro Estimator Rainfall	737
6	Global Infrared	532
7	GOES East ABI Full Disk B02 Hi-Res	524
8	GOES East GLM Full Disk Group	480
9	GOES-East GLM FED CONUS	483
10	GOES East ABI ConUS B02 Hi-Res	403
11	MRMS MergedReflectivity	266
12	GOES East ABI ConUS RGB True	201
13	Global Visible	189
14	GOES West ABI Full Disk B13 "Clean"	157
15	GOES East ABI Full Disk RGB True	120
16	GOES East ABI ConUS B13 "Clean"	113
17	GOES West ABI ConUS B02 Hi-Res	113



Head: 3 nodes  
1578 Product Hits  
76 Ingests

Legend

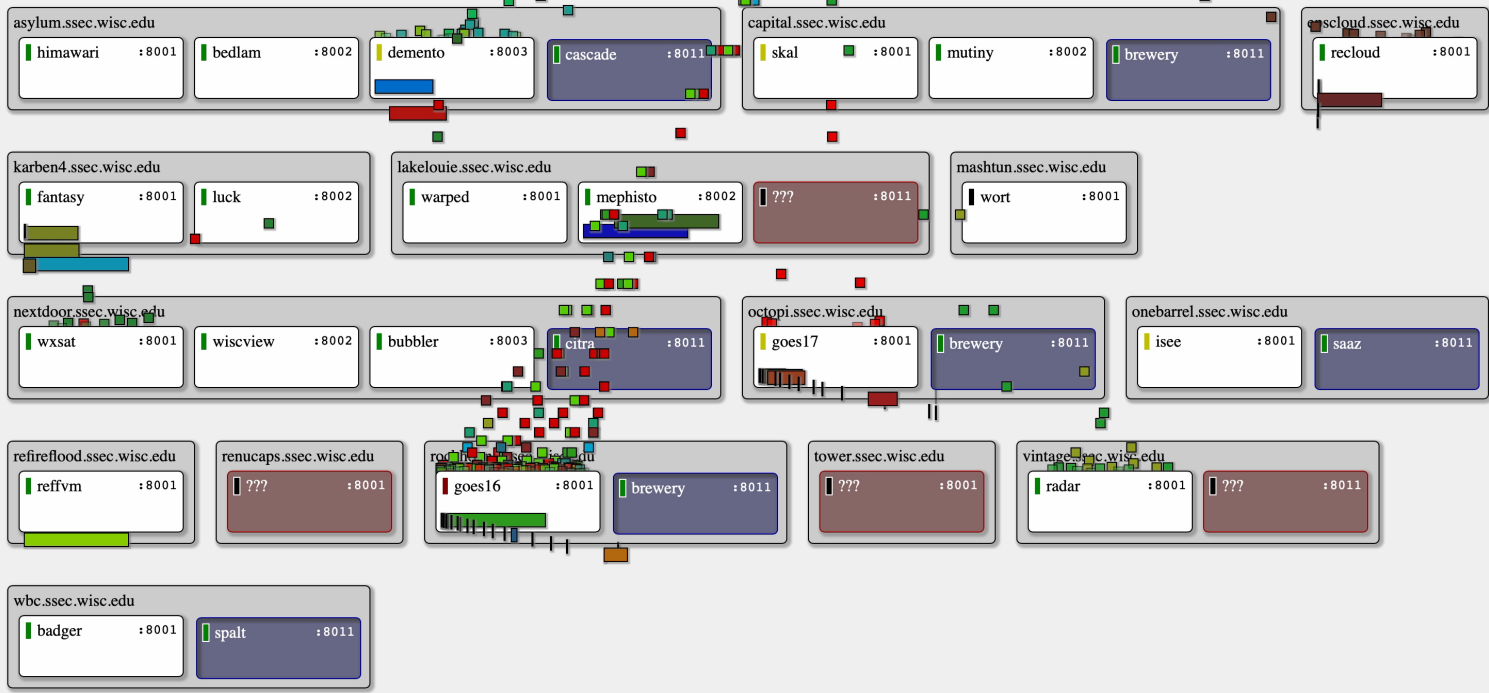
RE Node   Data Source   Unknown

Stop & Inspect

Product Labels: Off On

Ingest Labels: Off On

Federation  
Collector



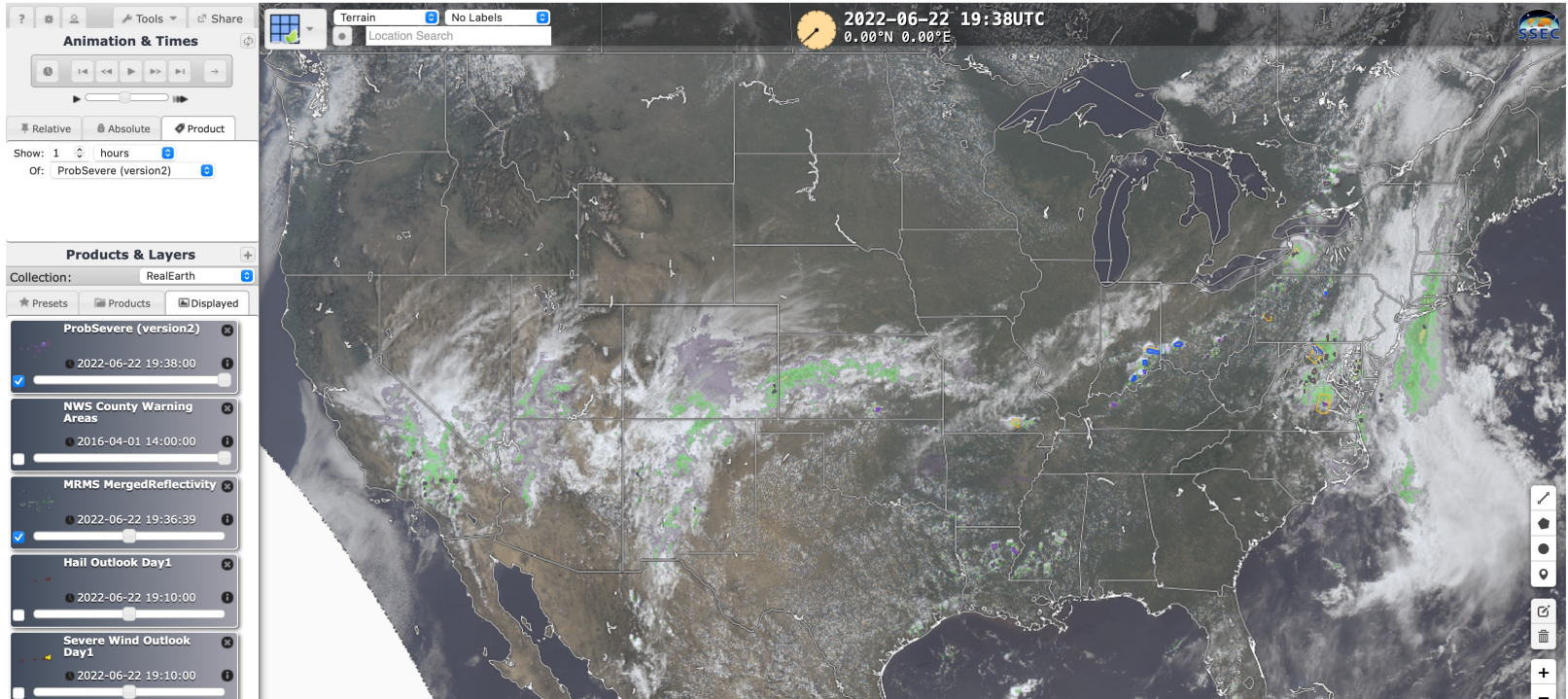
# Some General Solutions

- Concept of “Collections” and “Categories”
- Enforcing ownership (when a product breaks, the owner is responsible to fix)
- Project-specific VMs and custom websites (Floods, Gridded NUCAPS, Prob Severe, Fires [development])
- Tutorials and Documentation

# ProbSevere v2

ProbSevere version 2 is operational at NWS/NCEP Central Operations.

- [How to change ProbTor threshold for outer contour](#)
- [Training materials](#)







# NOAA Satellite Proving Ground Global Flood Website

NRT NOAA global flood map products and information

- HOME
- REAL EARTH FLOOD PRODUCTS**
- SPONSOR, QUICK GUIDES AND REFERENCES
- BLOGS AND USEFUL LINKS
- TOOLS, ARCHIVE AND TRAINING LINKS

- US Flood Products
- Asia Oceania Flood Products
- Global Flood Products
- Precipitation and Ice products

## Flood Products

### VIIRS 5-day composite

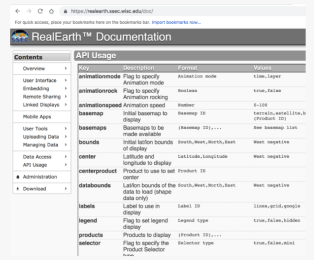
- VIIRS flood product on SNPP & NOAA-20
- Composite of the previous 5 days
- Product updates once daily at ~0700 UTC
- All tiles available at ~1030 UTC
- RealEarth [direct link](#)
- FTP link for GIS files [direct link](#)

### VIIRS 1-day composite

- VIIRS Flood Product: US (direct broadcast)
- VIIRS Floodwater Depth: US (direct broadcast)
- VIIRS Flood Product: Global
- ABI Flood Product (daily)
- Joint ABI/VIIRS Flood Product
- AHI Flood Product (daily)

## Documentation

### Where to get help?



Contents	API Usage
Overview	API Usage
User Interface	API Usage
Embedding	API Usage
History Saving	API Usage
Level Display	API Usage
Module Apps	API Usage
User Tools	API Usage
Interacting Data	API Usage
Map	API Usage
API Usage	API Usage
Administration	API Usage
Download	API Usage

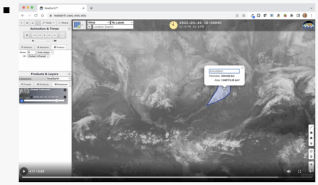
RealEarth is a rapidly developing visualization platform. As such, documentation often lags behind (sorry about that...). However, quick interface help is available with the “?” button in the top left corner of the browser interface. Additionally we do have fairly extensive documentation for the basic functional elements and API at <https://realearth.ssec.wisc.edu/doc/>

We are developing some Quick Guides and tutorials to help people discover the many hidden features of RealEarth.

### Contact

Email us at [realearth@ssec.wisc.edu](mailto:realearth@ssec.wisc.edu).

### Quick Guides and Videos



#### Intro to the RealEarth browser interface-I

URL, map panel, add a product, pan/zoom, change base map, transparency, basic animation, drawing tools, settings, logins, legends.



#### Intro to the RealEarth browser interface – II

# Many people to thank...

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