



SAFECAST



PHOTO: PIETER FRANKEN

CO-FOUNDER SAFecast

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**SEAN BONNER**

ASSOCIATE PROFESSOR, KEIO UNIVERSITY  
ASSOCIATE RESEARCHER, MIT MEDIA LAB  
// @SEANBONNER



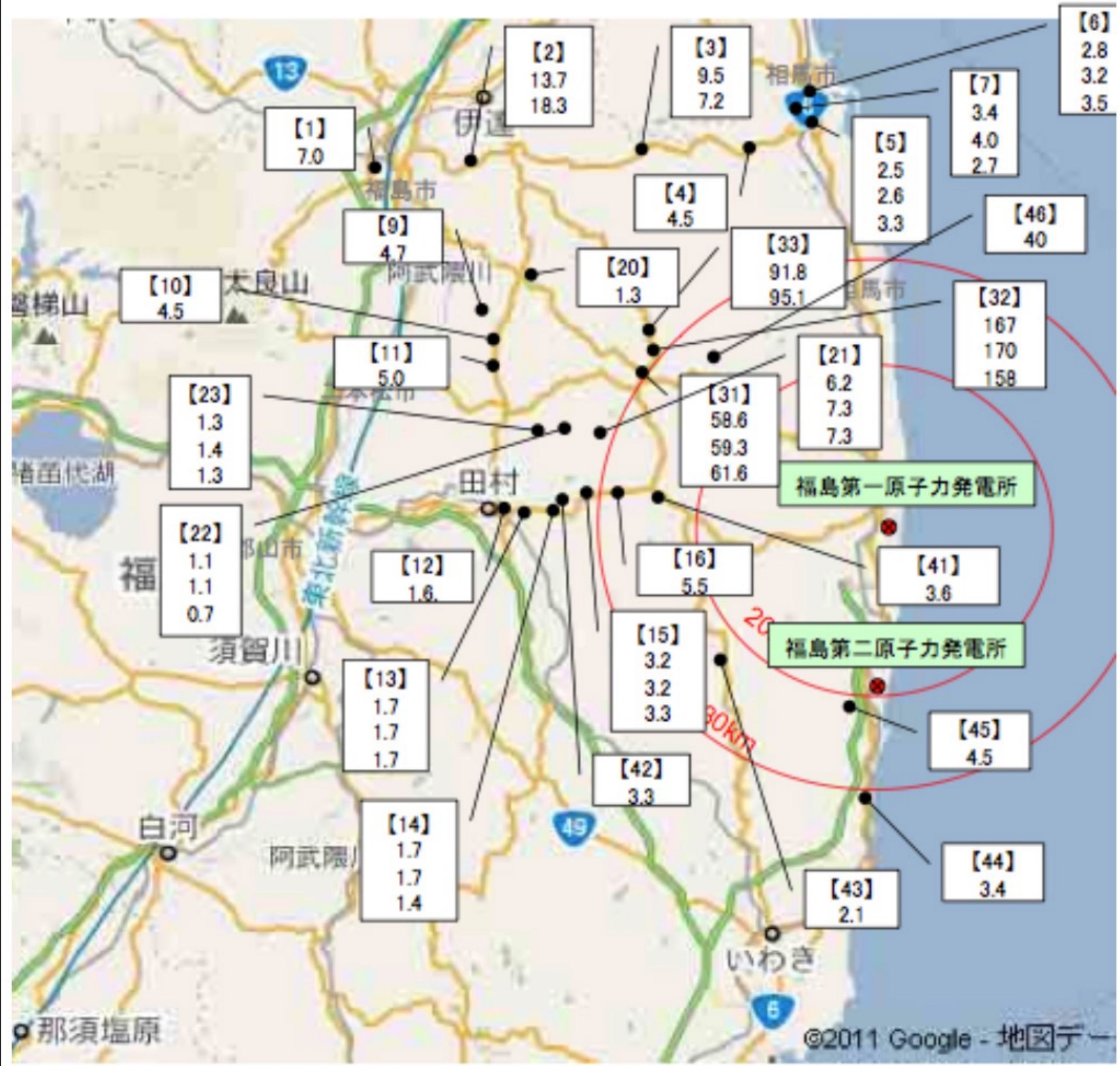
**“THE MOST SUCCESSFUL  
CITIZEN SCIENCE PROJECT  
YET.”**

**CITIZEN SENSING MAY  
BE MORE ACCURATE**

**FUKUSHIMA**

**2011**

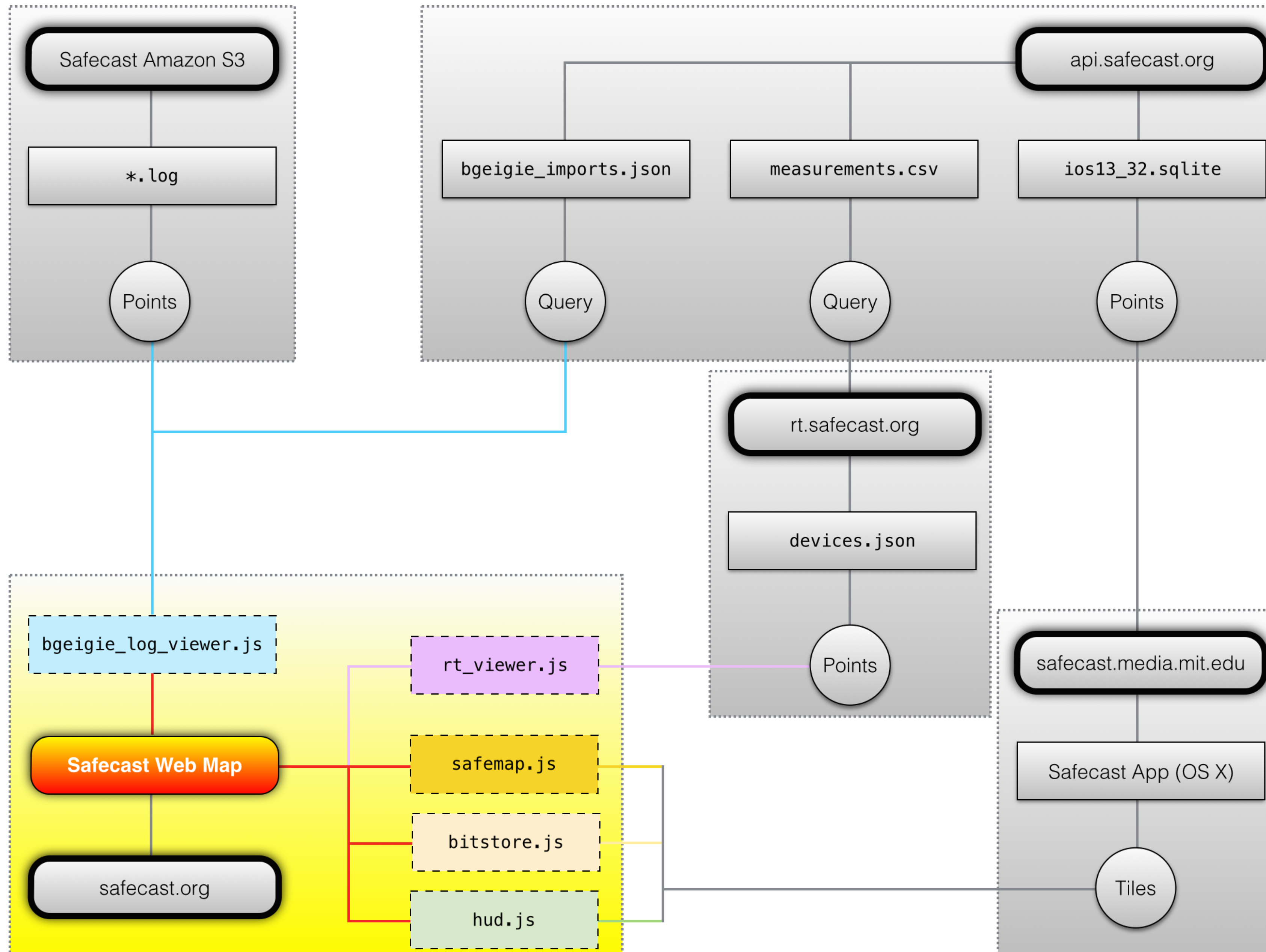








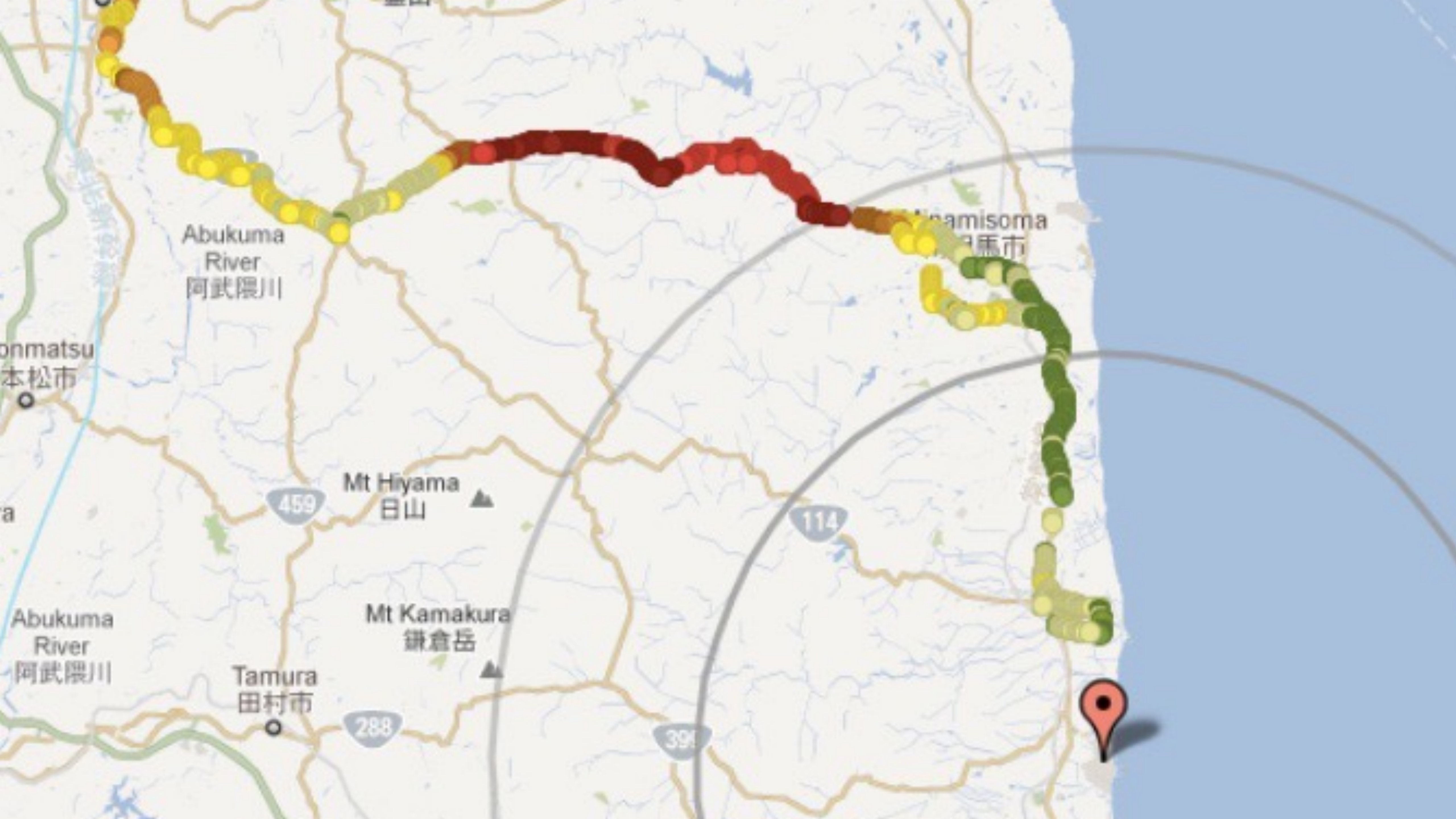




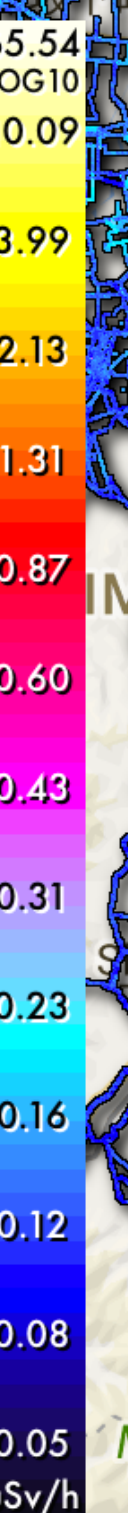
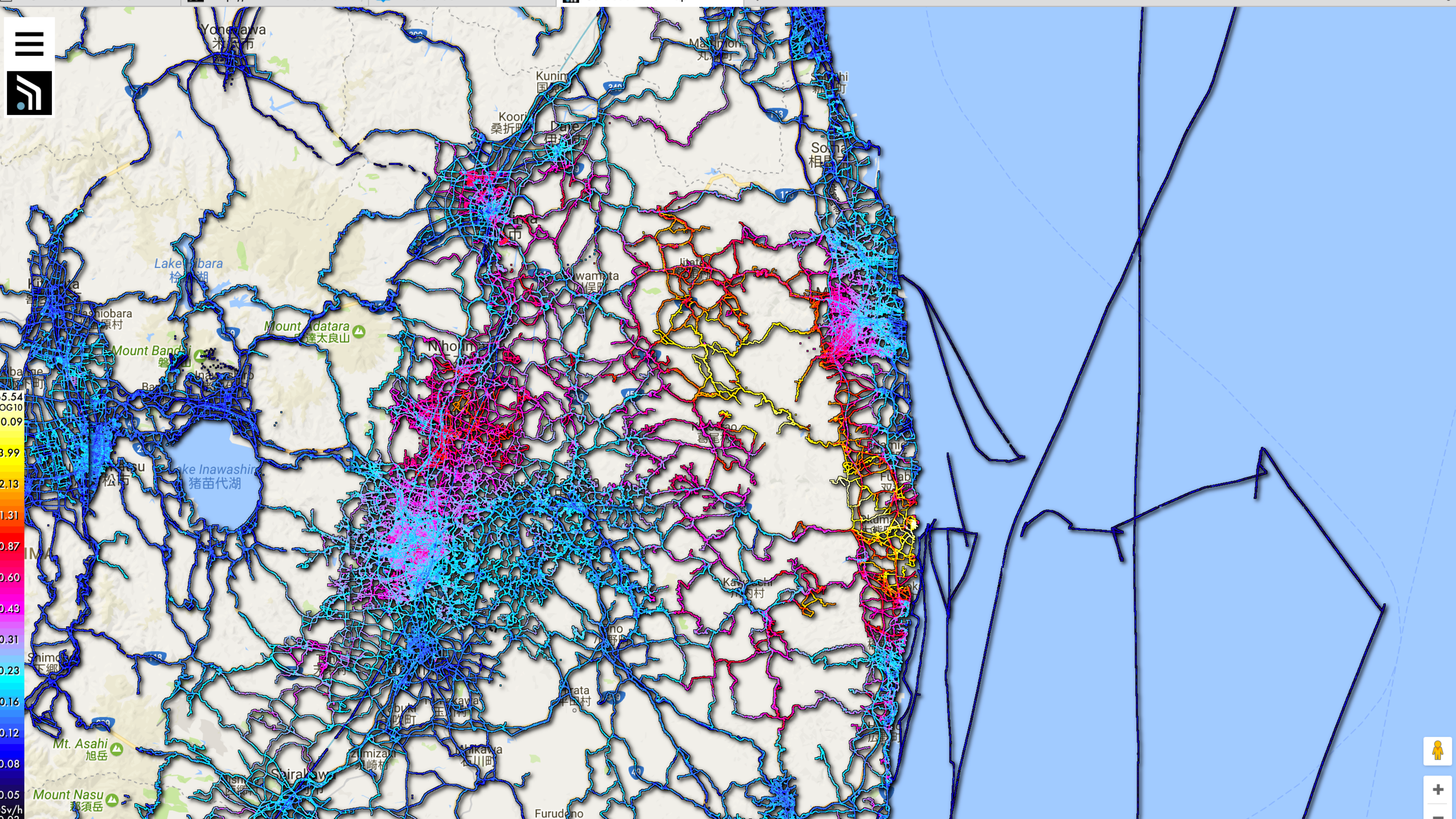




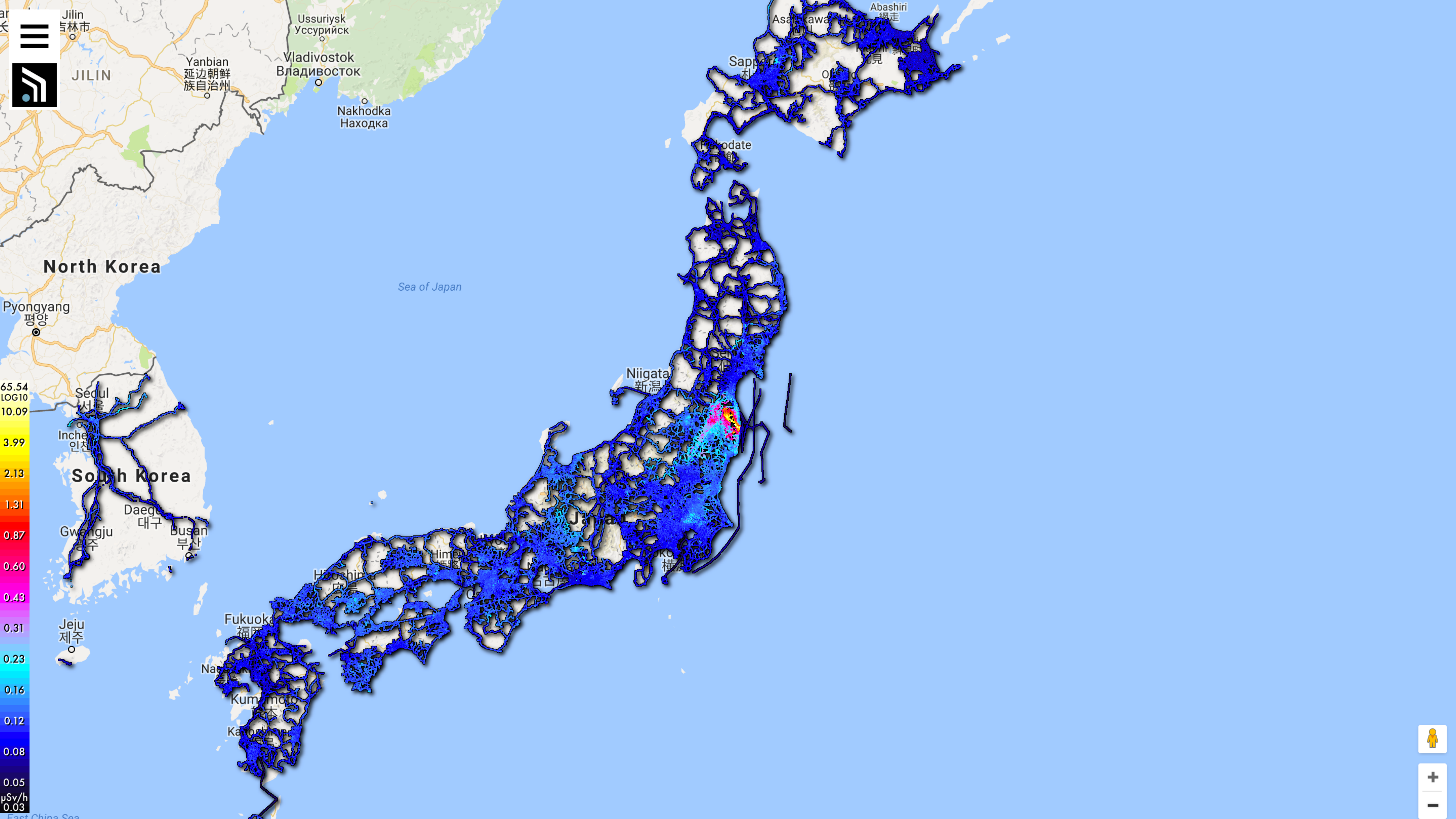




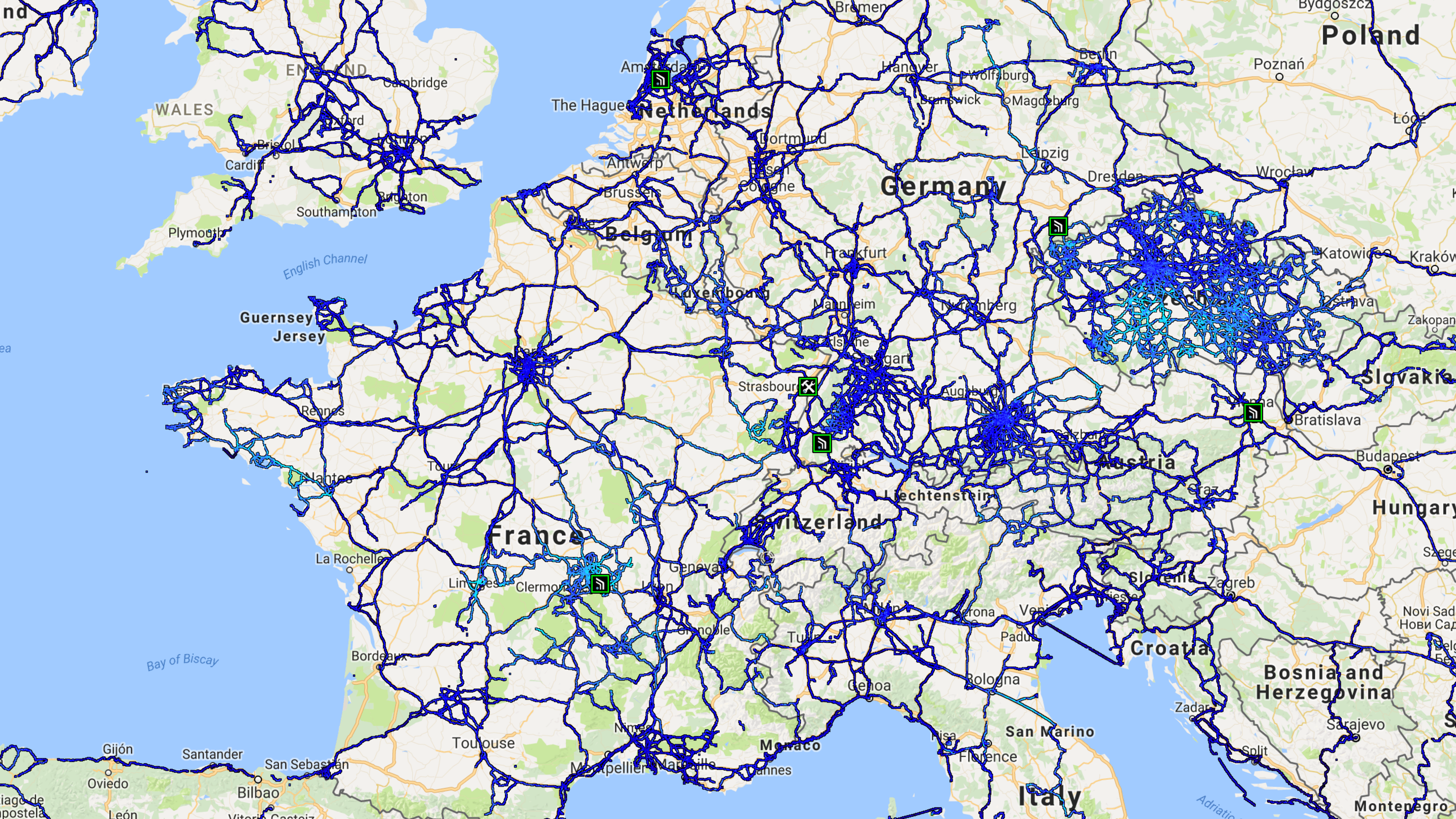












Poland

ENGLAND

Netherlands

Germany

Belgium

Czechia

Slovakia

Guernsey  
Jersey

France

Switzerland

Austria

Hungary

Bay of Biscay

Croatia

Bosnia and  
Herzegovina

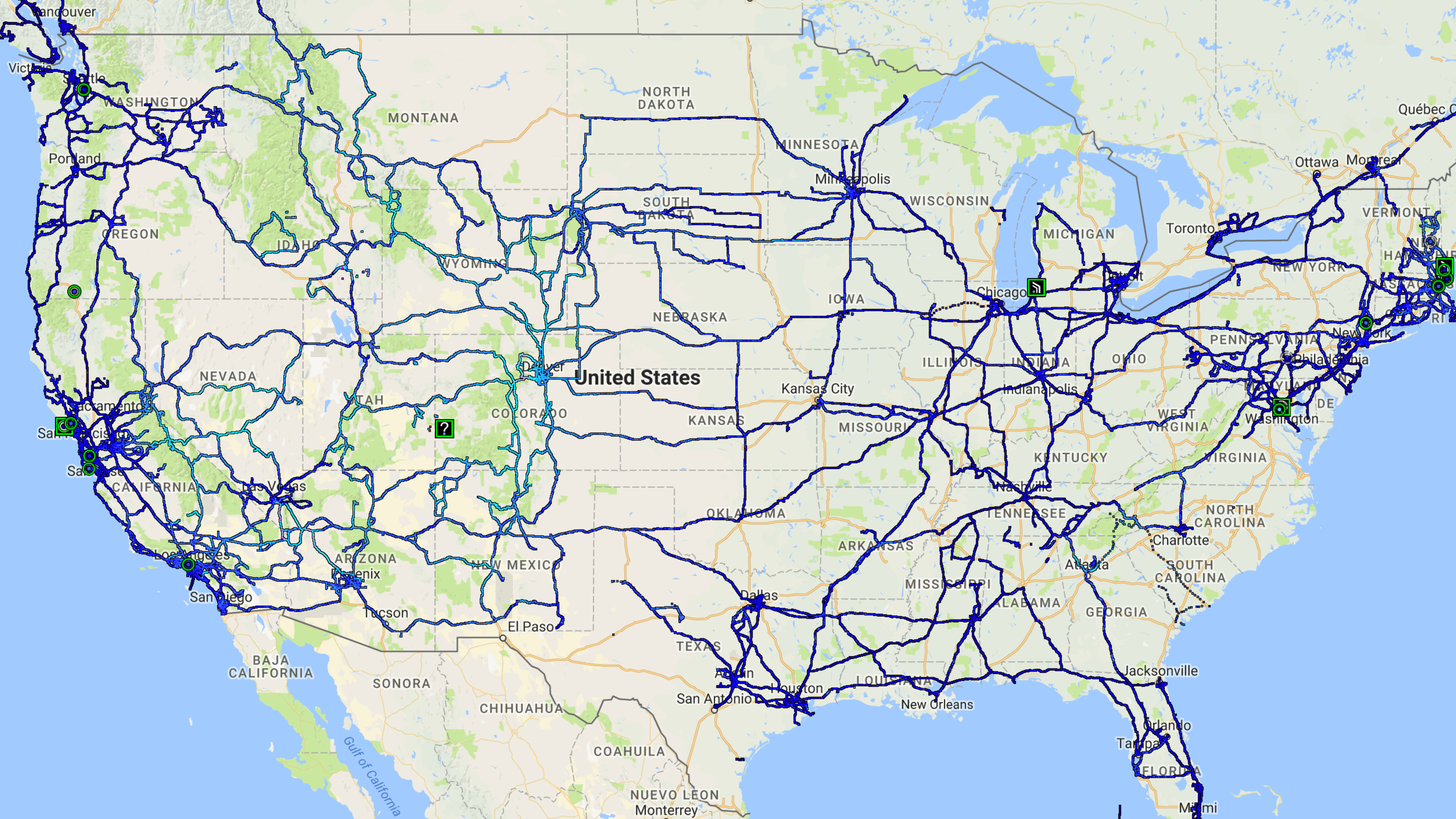
Monaco

San Marino

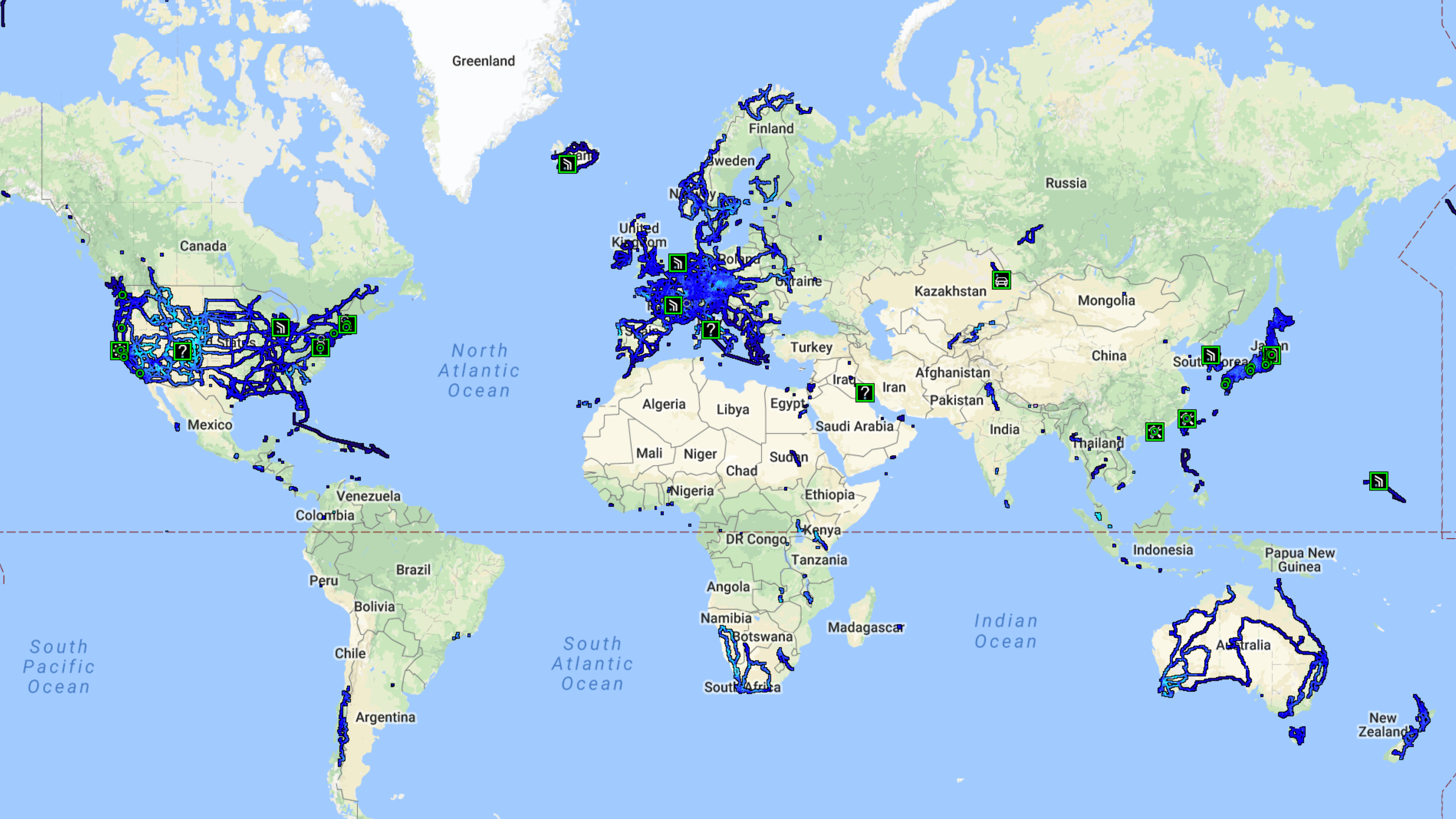
Italy

Montenegro























# スナップショット

SAFECAST SNAPSHOTS

開始日

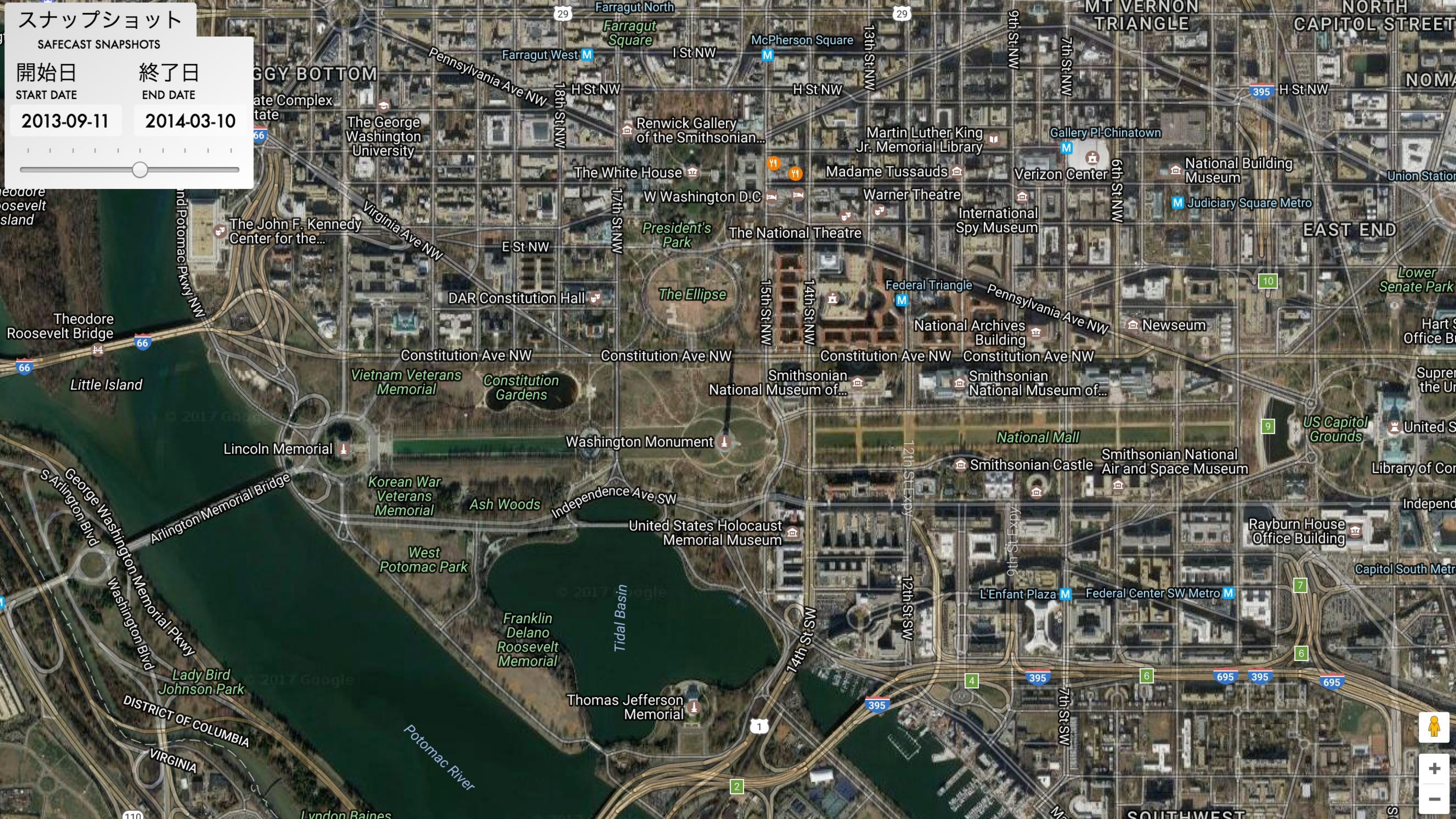
終了日

START DATE

END DATE

2013-09-11

2014-03-10





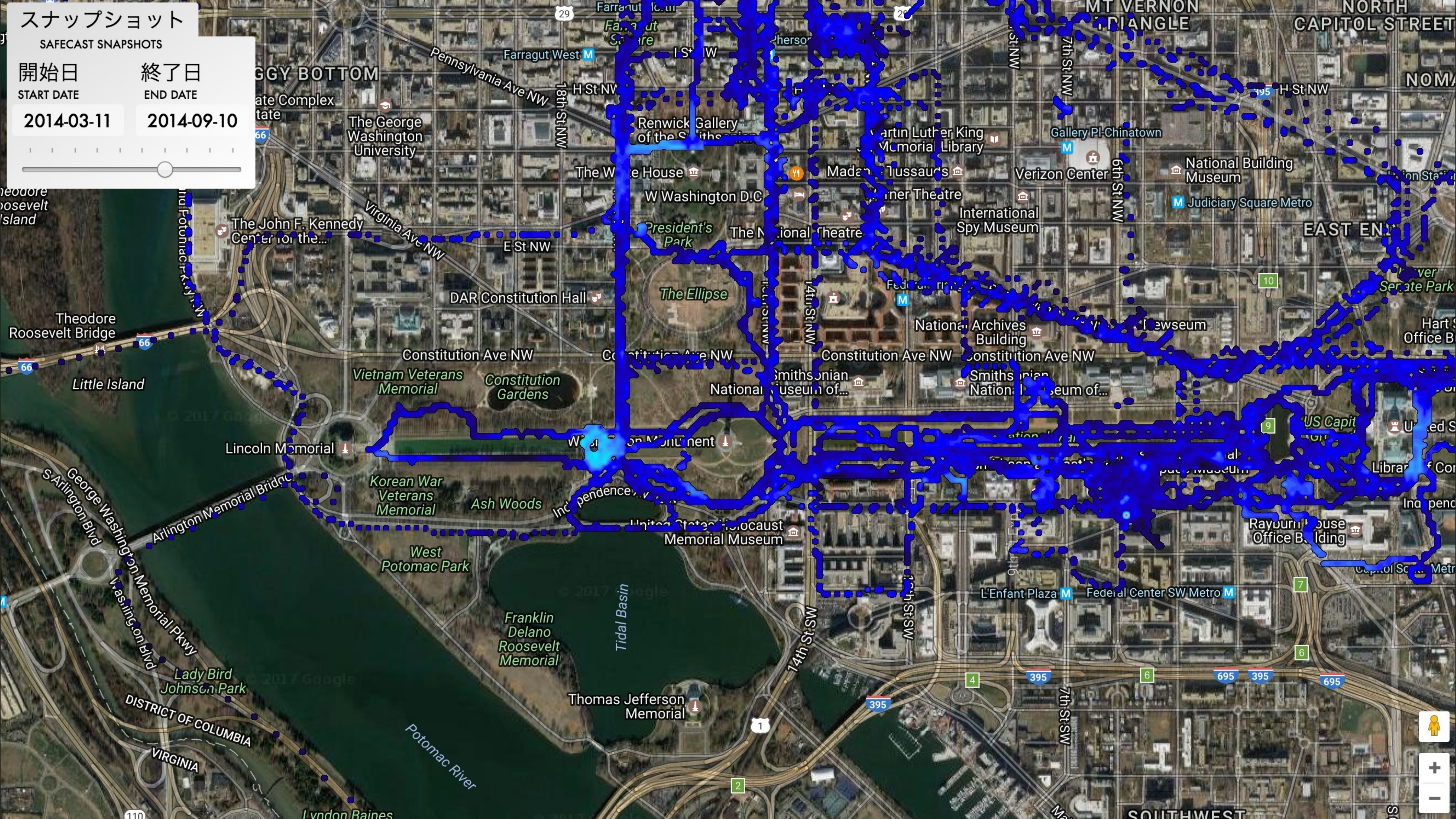
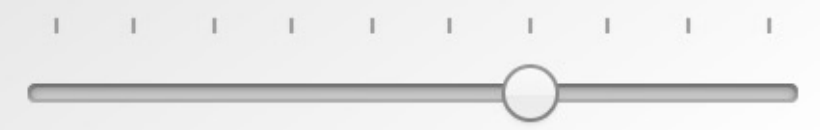
# スナップショット

SAFECAST SNAPSHOTS

開始日 終了日

START DATE END DATE

2014-03-11 2014-09-10





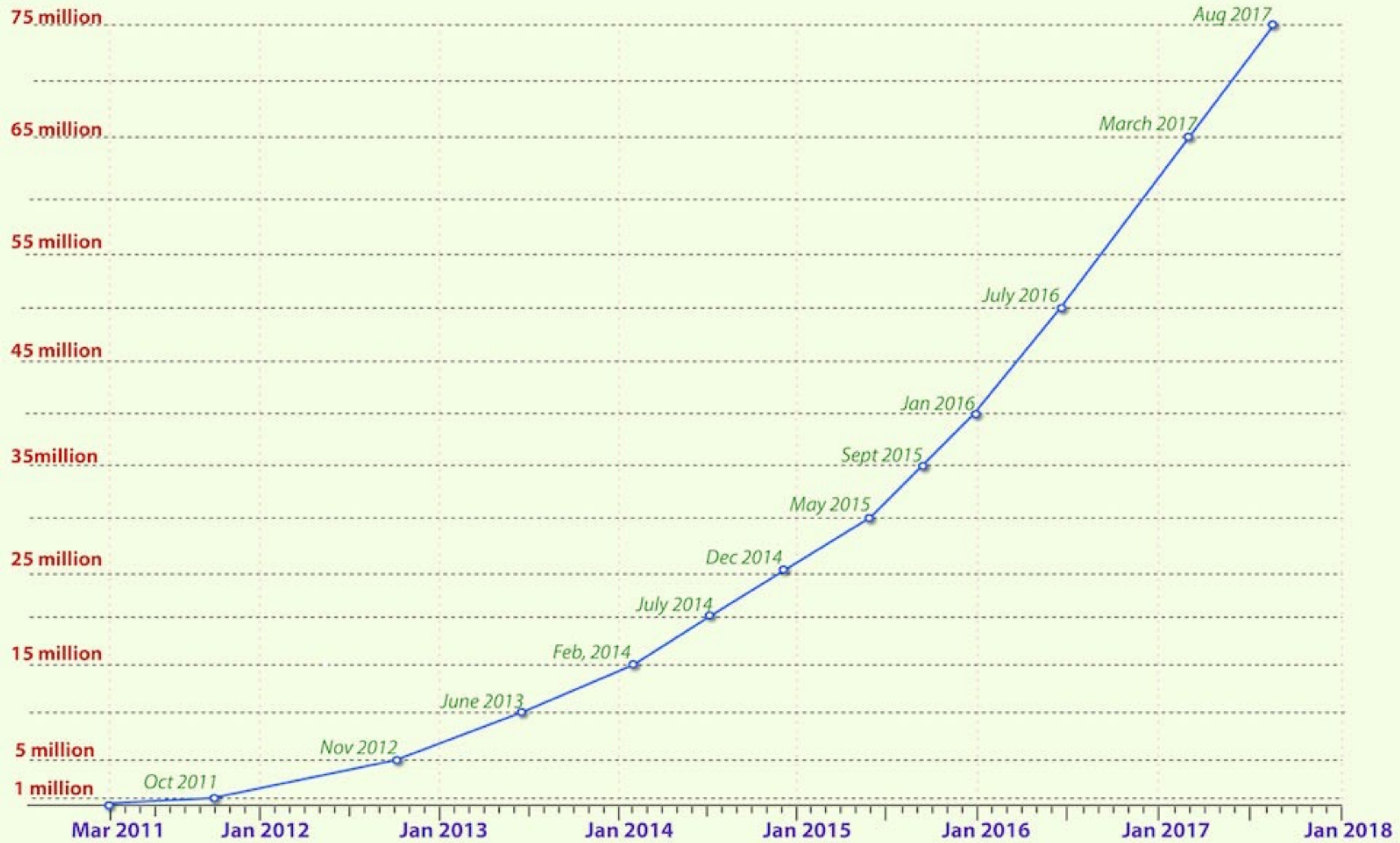


© 2016 Google

Google earth



## Growth of SAFECAST dataset





**SAFECAST PUBLISHES**

**~80 MILLION DATAPPOINTS**

**100% PUBLIC DOMAIN**



**LARGEST EVER**



**THOUSANDS OF  
DEVICES**

**THOUSANDS OF  
VOLUNTEERS**



**THOUSANDS OF  
PROJECTS**

**OPEN STANDARDS  
+ OPEN DATA**



**SINGLE, GOV'T  
SOURCES?**

**CLOSED DATA +  
METHODS?**



**CAN I TRUST THE DATA?  
WHAT DOES THE DATA MEAN?  
CAN I ACCESS MY OWN DATA?**

Concerned Citizen





# #AirQualityEgg



A community-led air quality sensing network that gives people a way to participate in the conversation about air quality.

Created by

#Sensemakers

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927 backers pledged \$144,592 to help bring this project to life.



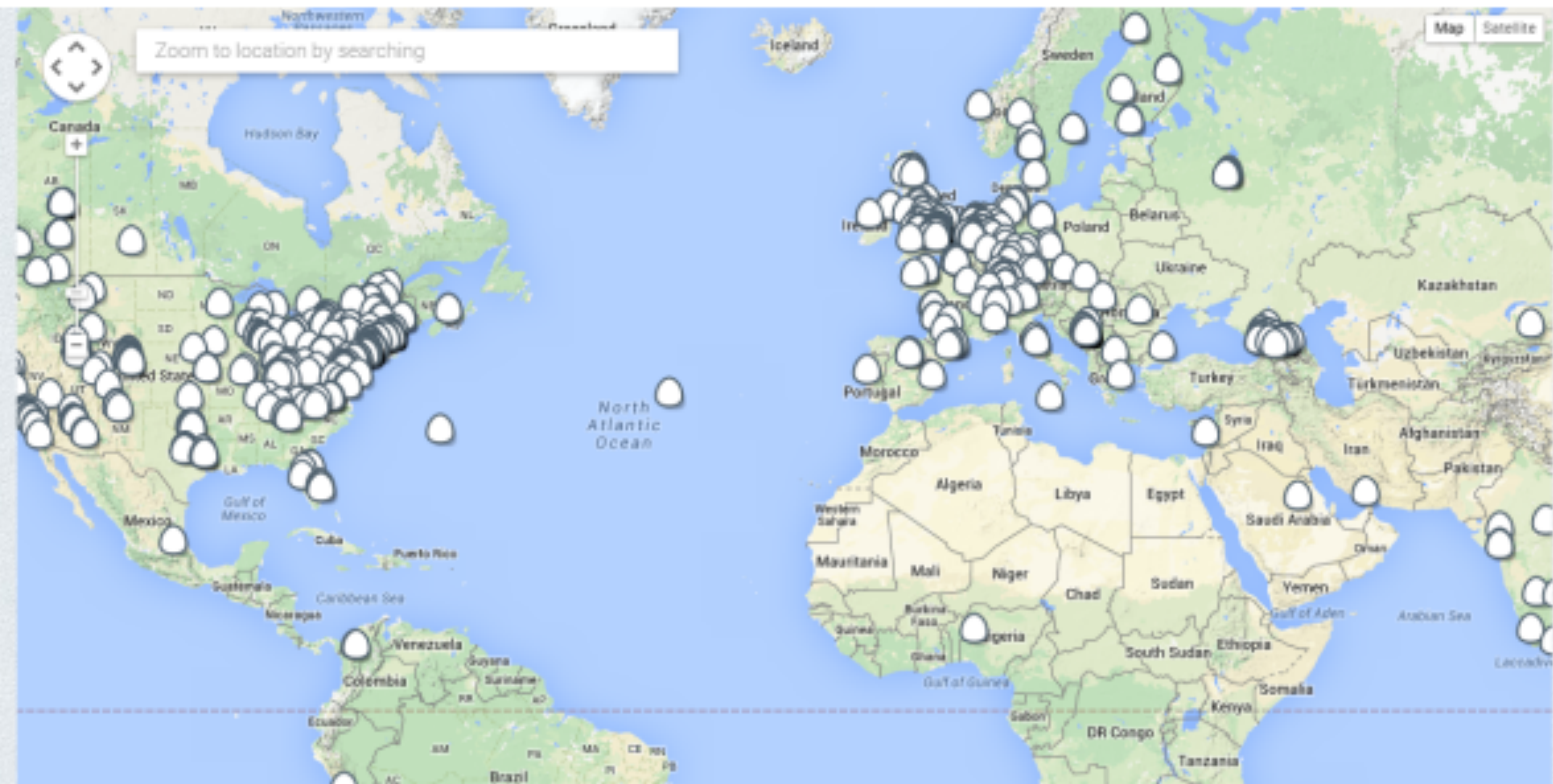


# Air Quality Egg

community-led sensing network

Serial Number

ADD MY EGG





**MARKETING AND SALES  
MASQUERADING AS  
“CITIZEN SCIENCE”**



**“AIR QUALITY EGG”  
DAMAGED TRUST IN  
CITIZEN SCIENCE**



RESOURCES

# Make your purifier a connected product.

Gain insights from your products and customers to unlock the value of the IoT for your business.

[FREE EBOOK: CONNECT A PRODUCT](#)









A large stack of red bricks is shown, with the text "INTERNET OF THINGS" overlaid in white. The bricks are arranged in a grid pattern, and the text is centered across the middle of the image. The background is a blurred view of the brick stack, with some text visible in the top right corner that reads "European Park of Zanzibar".

# INTERNET OF THINGS



A hand is shown holding a reddish-brown brick against a white background. The brick has a rough, cracked texture. Overlaid on the brick is the text 'INTERNET OF NOTHING' in a bold, blue, sans-serif font. The word 'INTERNET' is at the top, 'OF' is in the middle, and 'NOTHING' is at the bottom. The hand is positioned on the right side of the brick, with fingers gripping it.

**INTERNET**

**OF**

**NOTHING**



**EVERYWHERE**

**2017**



## Scientists worried cuts to NASA's Earth science programs could create climate data gap

by Jeff Foust — April 11, 2017



### Most Read

1. SpaceX prepares for its first big NRO launch
2. Trump's exuberance for Mars faces technical and fiscal challenges
3. Latch blamed for JWST vibration test anomaly
4. Cruz interested in updating Outer Space Treaty to support commercial space activities
5. Scientists want NASA and ESA to work together on a Europa lander mission

[SpaceNews Twitter](#)

At a time when NASA earth scientists are concerned their research may be scuttled by the incoming Trump





INDY/TECH

**DONALD TRUMP WILL NOT TURN OFF**

**EPA'S DATA SERVICE, DESPITE**

**WEBSITE'S OWN ALERT, OFFICIALS SAY**





BUSINESS / Michael Hiltzik

# Column Did 'people power' save a trove of EPA data from a shutdown by Trump?



EPA Administrator Scott Pruitt, left, makes nice with coal miners during a visit to rural Pennsylvania this month. (Gene J. Puskar /

## In Case You Missed It



California single-payer healthcare bill passes first committee test





Sections



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Energy and Environment

# EPA website removes climate science site from public view after two decades

By **Chris Mooney and Juliet Eilperin** April 28 at 9:19 PM



## Most Read

**1** Trump really needs an economic boom. So far, he's not getting one.

**2** EPA website removes climate science site from public view after two decades

**3** 'Peak TV' paradox: Why so much great TV has become such bad news for writers

**4** Buses torched, roads blocked, clashes during Brazil strike

**5** Analysis  
Heineken to Pensi: Hold

**43**



**IRMA & HARVEY**

**NOW**





**SAFECAST** ✓

@safecast Follows you

Since 2011, we provide the worlds largest environmental radiation data set, completely open licensed. Tweets by @seanbonner || @safecastjapan (日本語)

📍 Shibuya / Los Angeles

🌐 safecast.org

📅 Joined March 2011



**SAFECAST** ✓

@safecast

Following



The wake of #hurricaneirma is already ugly, so how #TurkeyPoint will handle it is something we need to keep a close eye on. #safecastchat



**rabble** @rabble

Hurricane Irma: "95% of structures on Barbuda were damaged or destroyed, the prime minister says" [bbc.com/news/world-lat...](http://bbc.com/news/world-lat...)

9:44 AM - 7 Sep 2017

1 Retweet



Tweet your reply

### Trends for you

#NationalBeerLoversDay #ThursdayThoughts #DACA #PitMad #TheBachelor Graydon Carter #EIJ17 The First White President Ted Bunch #AdobeForAll

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Emily Michot - emichot@miamiherald.com

#### HURRICANE

# Two South Florida nuclear power plants lie in Irma's path. Are they ready?

Robbins said the plant's reactors are encased in six feet of steel-reinforced concrete and sit 20 feet above sea level. Turkey Point has backup generators, extra fuel and, as a "backup to the backup," replacement parts and materials can be flown in from Tennessee.

The St. Lucie Nuclear Power Plant is equally protected, Robbins said, and can withstand severe flooding from storm surges. St. Lucie's nuclear plant survived Hurricanes Frances and Jeanne in 2005 and Wilma the year after.

When the eye of Andrew passed over Turkey Point, some facilities around the reactor buildings took a beating. Ultimately, the state's oldest nuclear plant suffered \$90 million in damages, including to systems that were supposed to be hurricane-proof.

One of the 400-foot smokestacks for the old oil-burning power plant was cracked in half, even though it was rated to survive 235-mph winds. Andrew blew down all but six of the 41 warning sirens within 10 miles of the plant. The storm left the plant running on backup generators for more than a week to cool the shut-down reactor. A main access road was blocked by debris.

"It handled Andrew as it was designed to," Robbins said. "It's one of the safest and most robust structures in the state, of not the country."



BY ALEX HARRIS

[aharris@miamiherald.com](mailto:aharris@miamiherald.com)



SEPTEMBER 06, 2017 2:00 PM





Seven Hard Lessons  
Federal Responders to  
Harvey Learned From  
Katrina

Into the Deluge

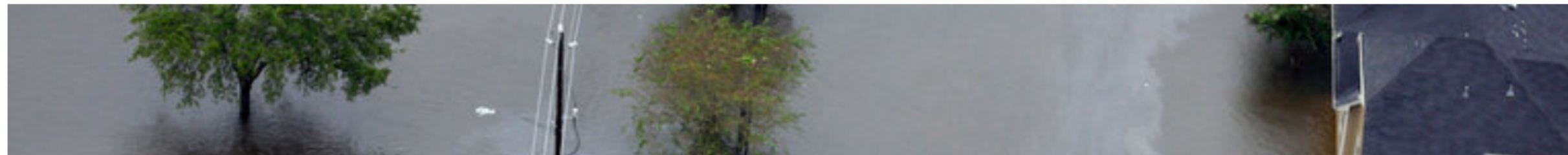


After Harvey Hit, a Texas  
Hospital Decided to  
Evacuate. Here's How  
Patients Got Out.

Where It's M

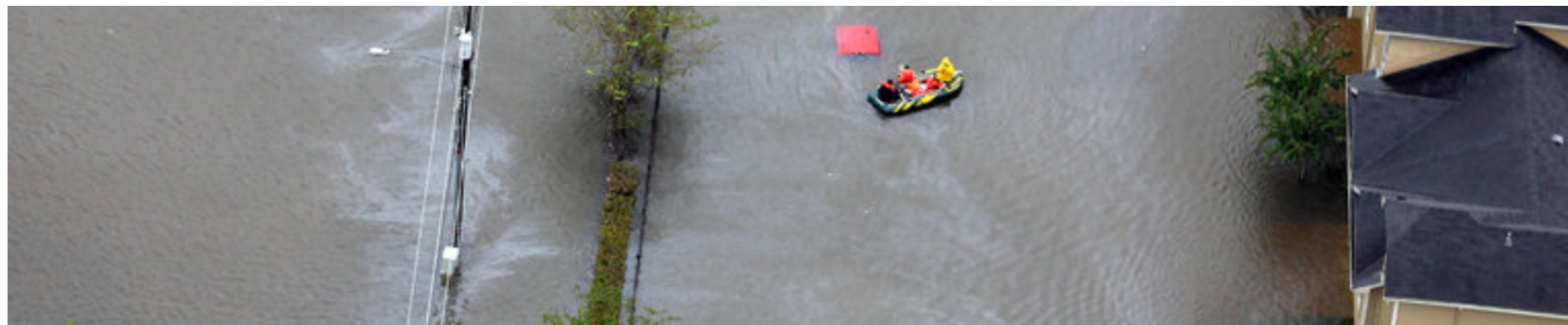
## *A Sea of Health and Environmental Hazards in Houston's Floodwaters*

By HIROKO TABUCHI and SHEILA KAPLAN AUG. 31, 2017



Porfirio Villarreal, a spokesman for the [Houston Health Department](#), said the hazards of the water enveloping the city were self-evident.

“There’s no need to test it,” he said. “It’s contaminated. There’s millions of contaminants.”



Navigating floodwaters brought by Harvey on Tuesday in Houston. David J. Phillip/Associated Press

RECENT

R 1 day ago  
Hovering abo  
question. Wi  
implementat



# AP EXCLUSIVE: Toxic waste sites flooded in Houston area

By JASON DEAREN and MICHAEL BIESECKER  
Sep. 03, 2017

https://ww

RELATED TOPICS

- Houston
- Hurricane Harvey
- Floods
- Environment
- Texas

More from Health



HIGHLANDS, Texas (AP) — As Dwight Chandler sipped beer and swept out the thick muck caked inside his devastated home, he worried whether Harvey’s floodwaters had also washed in pollution from the old acid pit just a couple blocks away.

Long a center of the nation’s petrochemical industry, the Houston metro area has more than a dozen Superfund sites, designated by the Environmental Protection Agency as being among America’s most intensely contaminated places. Many



Analysts see Trump threats to insurers boosting premiums

Today

AP NewsBreak: Medicare card remake to protect seniors

Today

AP FACT CHECK: Single-payer sounds best when it sounds free





## News Releases

### News Releases from Headquarters > Office of the Administrator (AO)

# EPA Response To The AP's Misleading Story

09/03/2017

Good afternoon –

Yesterday, the Associated Press' Michael Biesecker wrote an incredibly misleading story about toxic land sites that are under water.

Despite reporting from the comfort of Washington, Biesecker had the audacity to imply that agencies aren't being responsive to the devastating effects of Hurricane Harvey. Not only is this inaccurate, but it creates panic and politicizes the hard work of first responders who are actually in the affected area.

Here's the truth: through aerial imaging, EPA has already conducted initial assessments at 41 Superfund sites – 28 of those sites show no damage, and 13 have experienced flooding. This was left out of the original story, along with the fact that EPA and state agencies worked with responsible parties to secure Superfund sites before the hurricane hit. Leaving out this critical information is misleading.

Administrator Pruitt already visited Southeast Texas and is in constant contact with local, state and county officials. And EPA, has a team of experts imbedded with other local, state and federal authorities, on the ground responding to Harvey - none of which Biesecker included in



# AP defends itself after EPA attacks 'misleading' report on Superfund sites

By [STEPHANIE EBBS](#) · Sep 4, 2017, 3:26 PM ET

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Jason Dearen/AP

The No Trespassing sign on the barbed-wire fence encircling the 3.3-acre Superfund site barely peeked above the churning flood water from the nearby San Jacinto River...[more +](#)

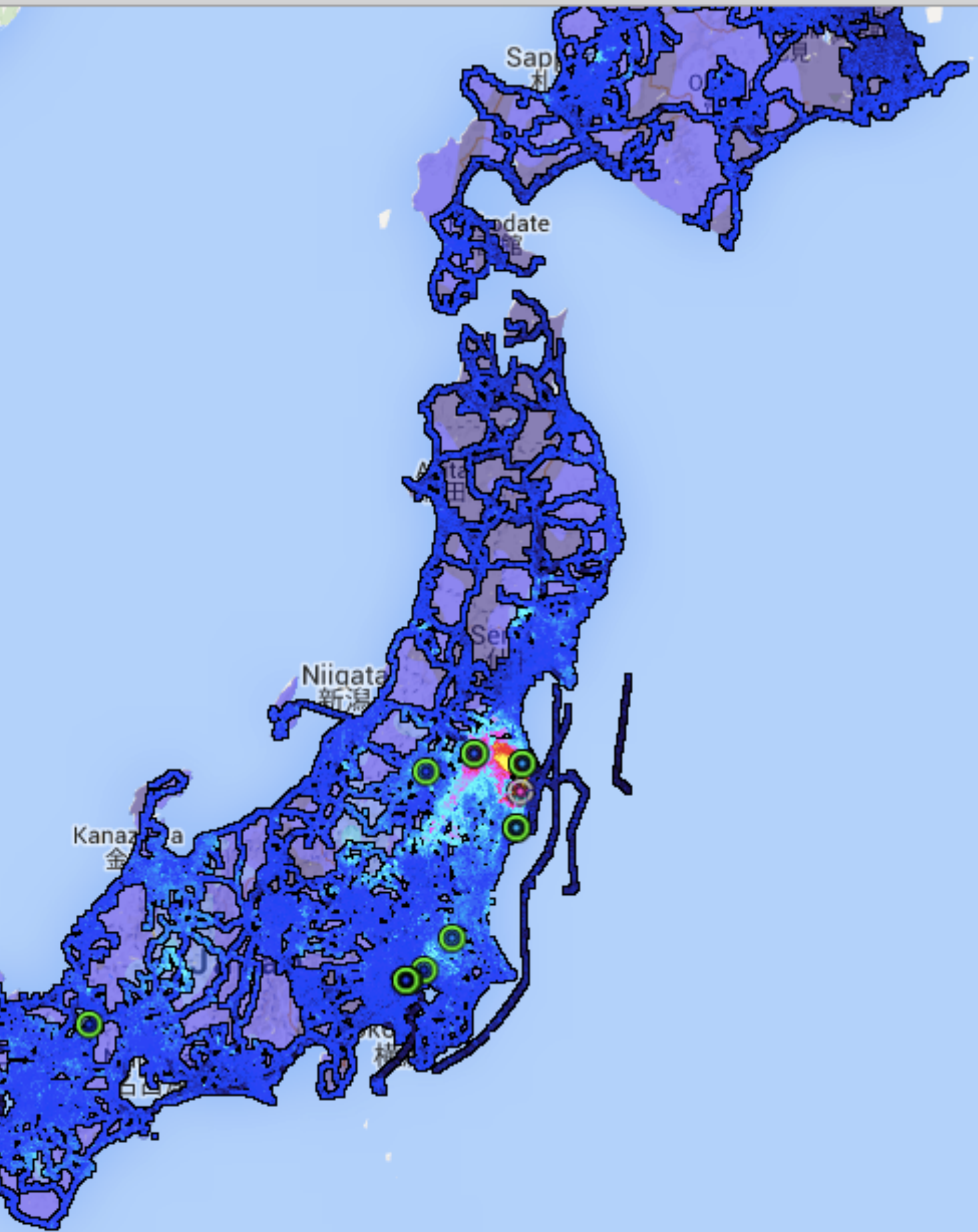


The Associated Press is defending itself after the [Environmental Protection Agency](#) called its reporting on so-called Superfund sites in Texas into question over the weekend, criticizing one journalist for "reporting from the comfort of Washington."



Hurricane Harvey has damaged or flooded at least 13 sites identified by EPA as contaminated by possibly dangerous materials, raising concerns that the materials could spread and pose a





# PRO DATA

DATA = BASELINE

“RIGHT TO KNOW”

DATA REMOVES BIAS

DATA DRIVES ACTION



# ALWAYS OPEN



**ZERO**



# DEPLOY OR DIE

*“to innovate you need to  
reduce the cost of failure”*

*Joi Ito*



**PULL OVER PUSH**





**COMMUNITY  
CENTRIC**

~~**DEVICE  
CENTRIC**~~





**CITIZENS**





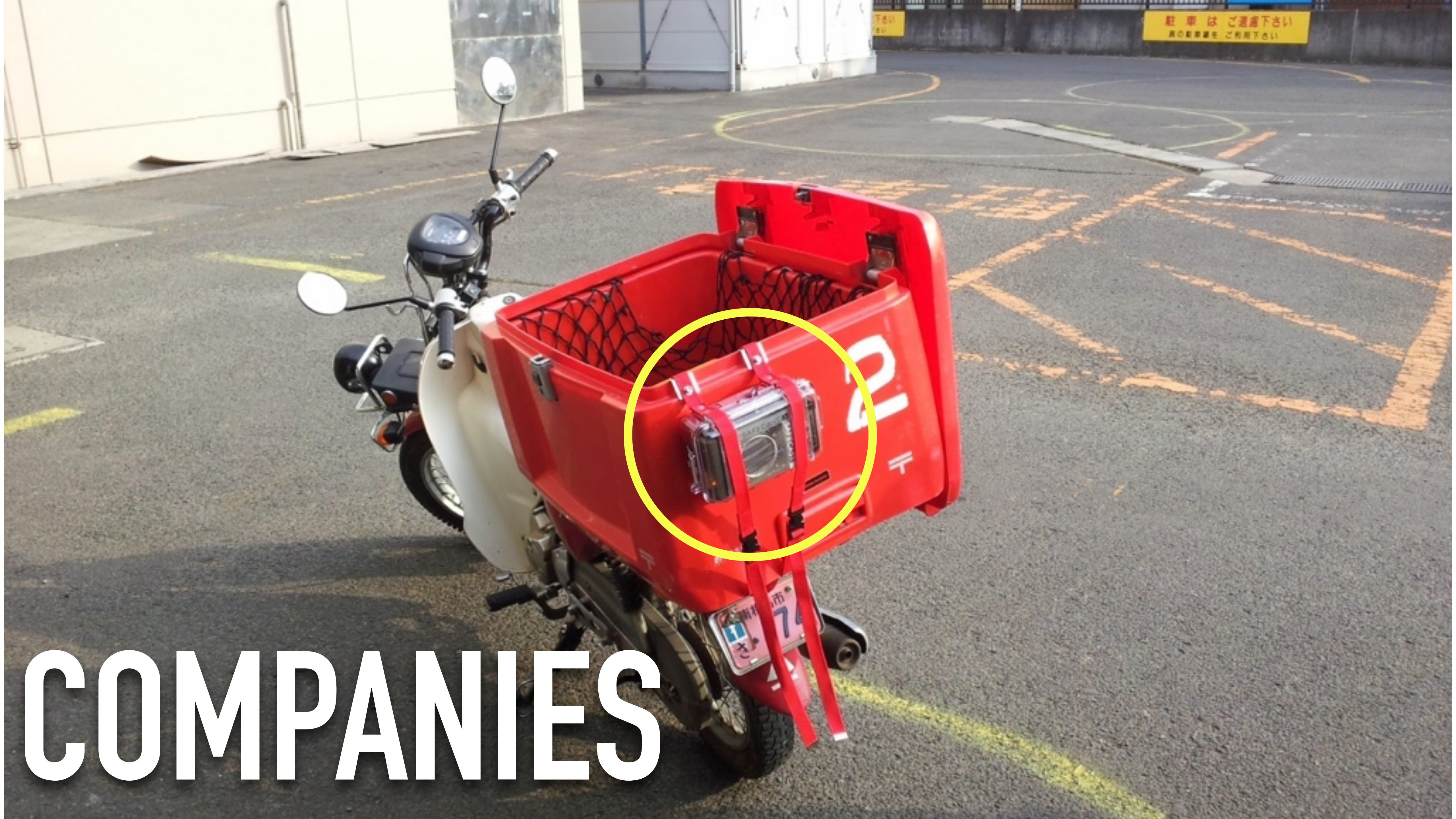
KIDS





**PRESS**





COMPANIES





- Open-source, open hardware, open data
- Designed to be sold as a kit so anyone can build it and upload data

**OFFICIAL  
AGENCIES**





# POLITICIANS







PAPER • OPEN ACCESS

# Safecast: successful citizen-science for radiation measurement and communication after Fukushima

Azby Brown<sup>1,3</sup>, Pieter Franken<sup>2,3</sup>, Sean Bonner<sup>2,3</sup>, Nick Dolezal<sup>3</sup> and Joe Moross<sup>3</sup>

Published 6 June 2016 • © 2016 IOP Publishing Ltd

[Journal of Radiological Protection](#), Volume 36, Number 2



Figures References Citations

## + Article information

### Abstract

The Fukushima Daichi Nuclear Power Plant disaster, which began on 11 March 2011, provided a crucial opportunity to evaluate the safety of the plant (TEPCO), relevant Japanese government

5179 Total downloads

Cited by 4 articles



Turn on MathJax

Share this article



### Abstract

- 1. Introduction
- 2. Method
- 3. Results

### Related content

#### JOURNAL ARTICLES

[Improved communication, understanding of risk perception and ethics related to ionising radiation](#)

[The limits of public communication coordination in a nuclear emergency: lessons from media reporting on the Fukushima case](#)

[The state of radiological protection; views of the radiation protection profession: IRPA13, Glasgow, May 2012](#)

[Looking for citizen-centered communication: dialogues between radiological](#)

# SCIENTIFIC COMMUNITY



# THE SAFecast REPORT

VOLUME 2 - MARCH 2016



[www.safecast.org](http://www.safecast.org)

# CONNECTING RESEARCH

<http://blog.safecast.org/the-safecast-report/>





PROJECT UPDATE

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**SOLARCAST**





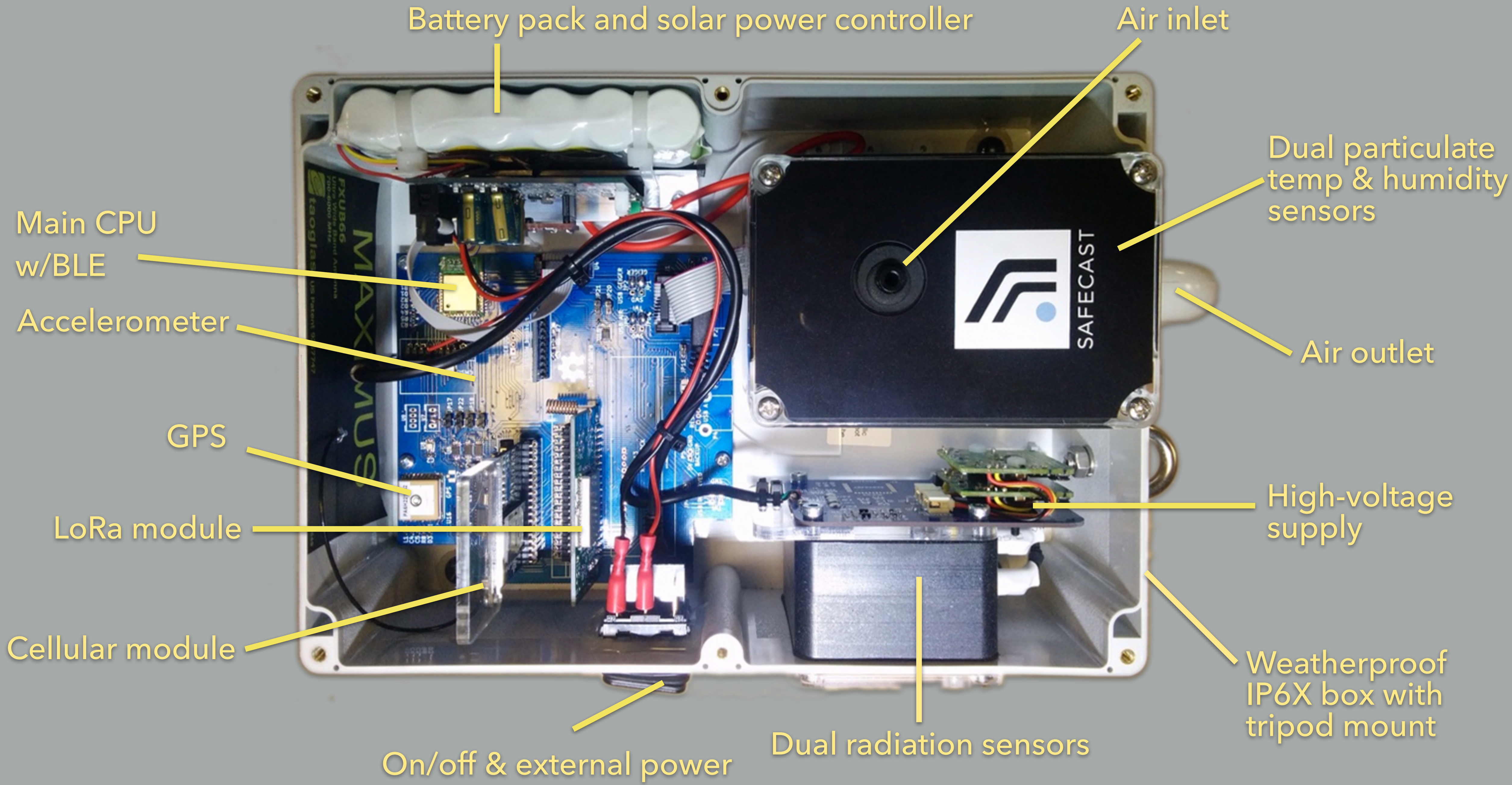


DRIVING PRINCIPLE

**DROP AND FORGET**

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Battery pack and solar power controller

Air inlet

Dual particulate temp & humidity sensors

Air outlet

High-voltage supply

Weatherproof IP6X box with tripod mount

Dual radiation sensors

On/off & external power

Main CPU w/BLE

Accelerometer

GPS

LoRa module

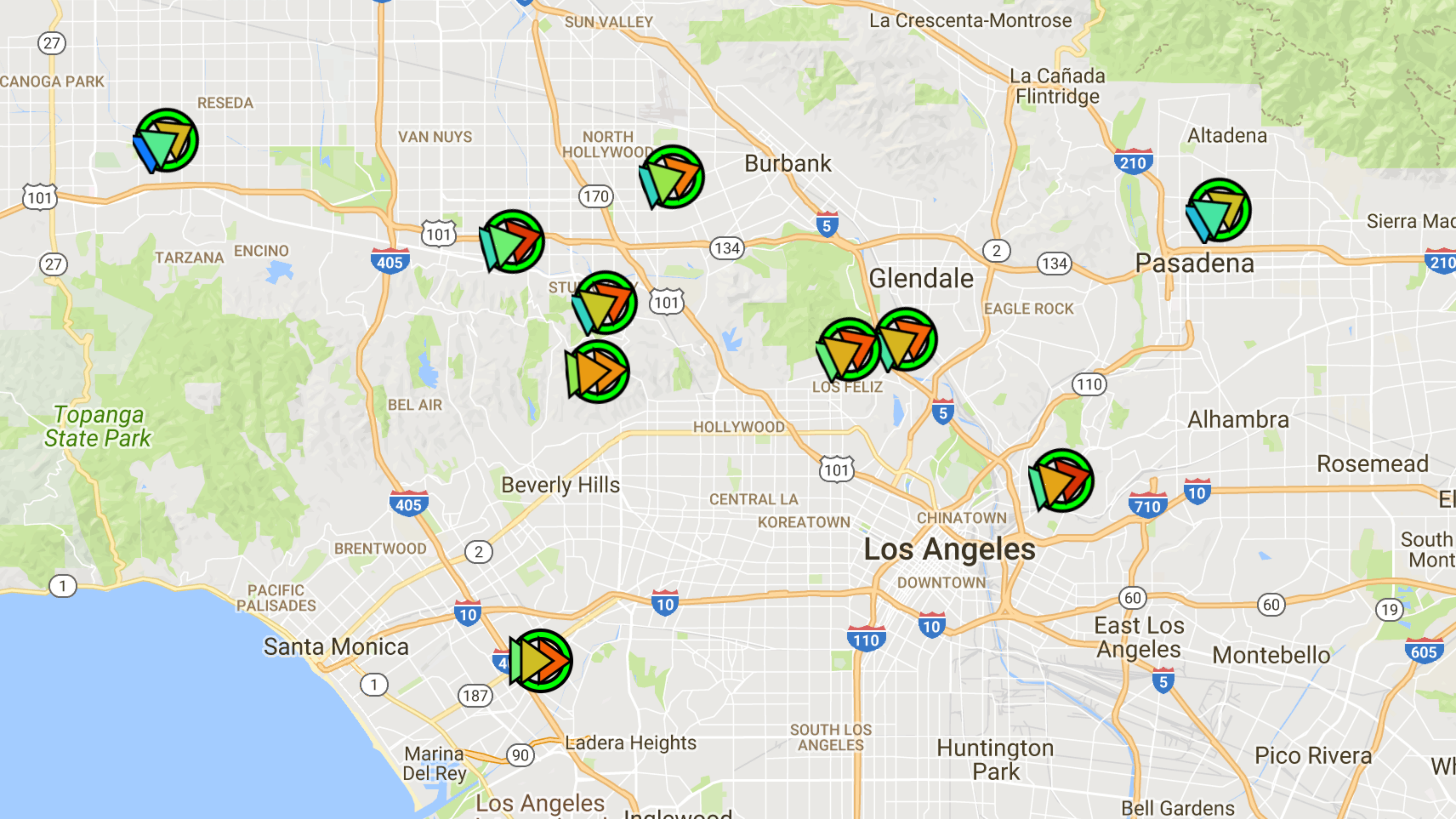
Cellular module



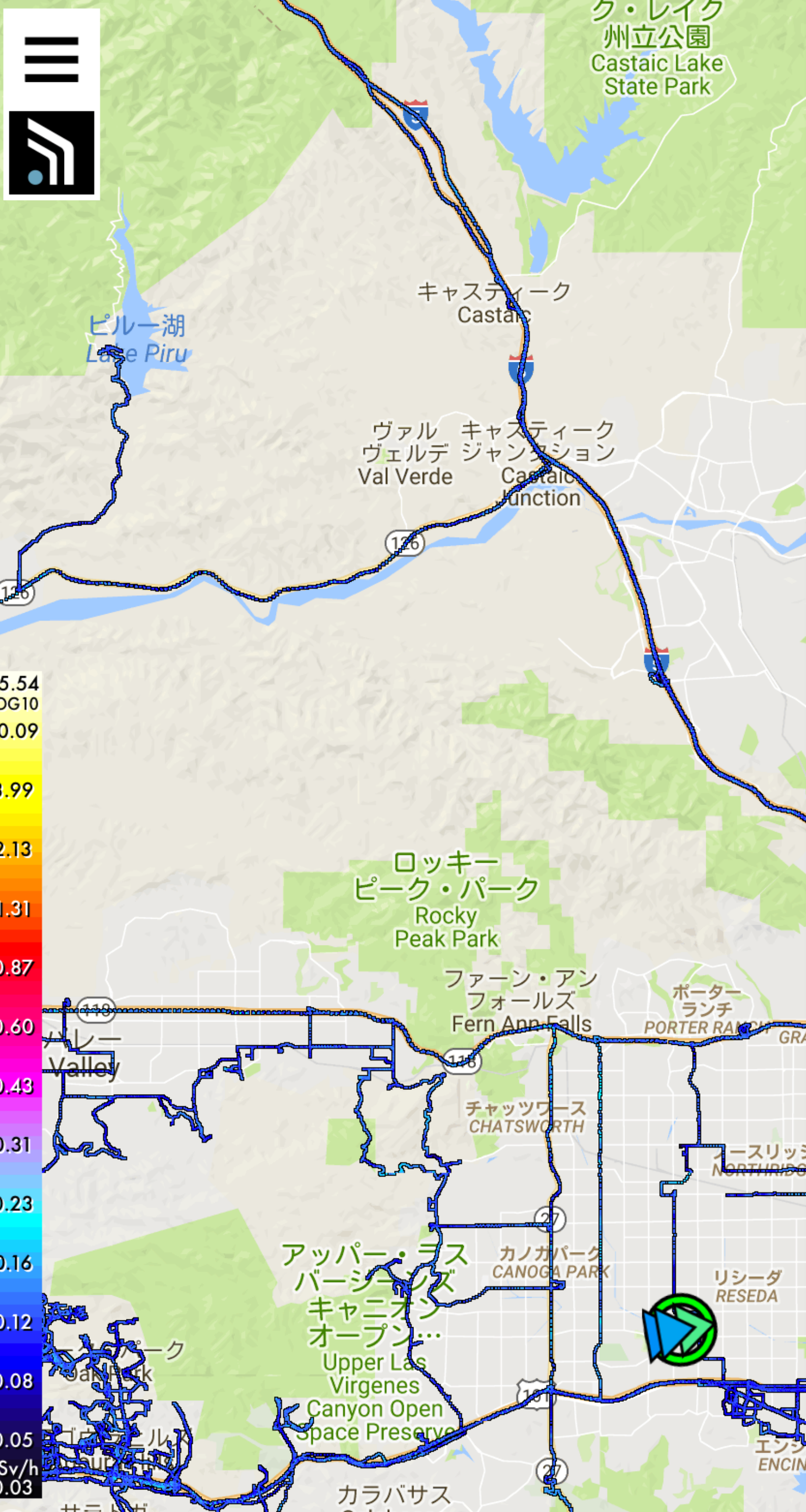




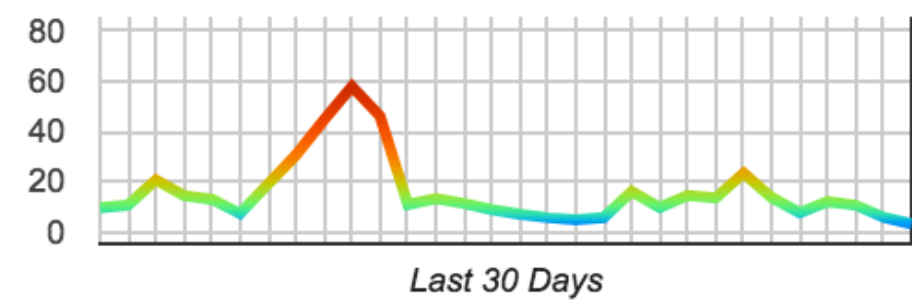
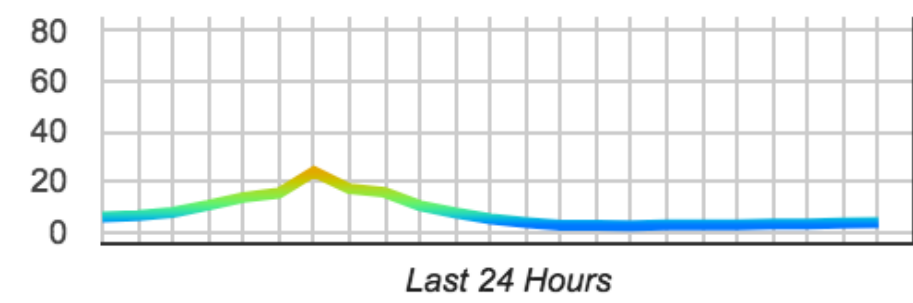




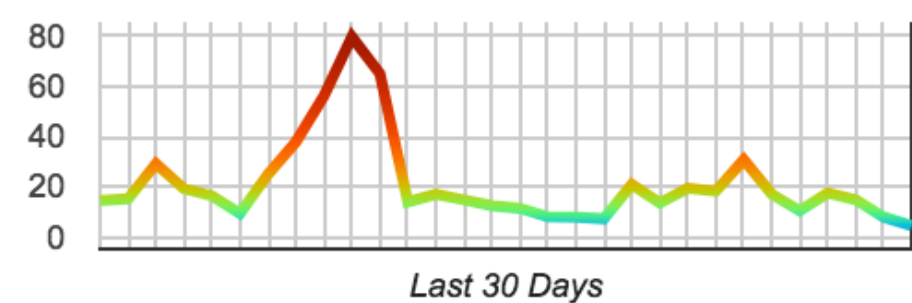
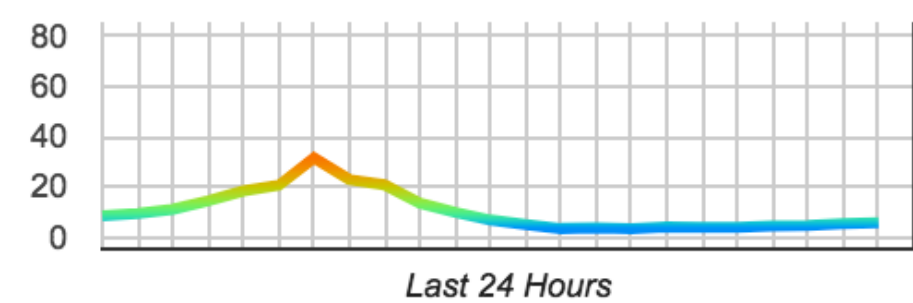




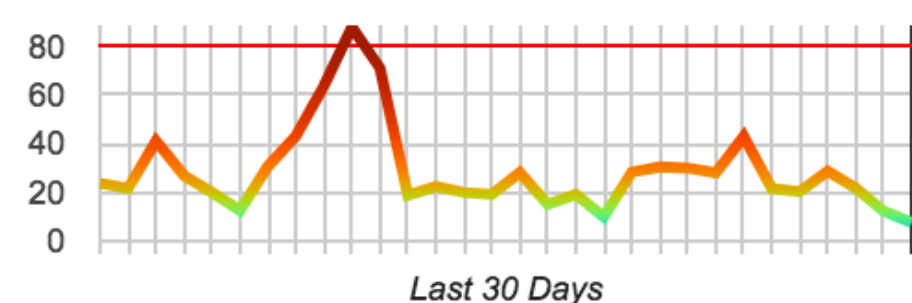
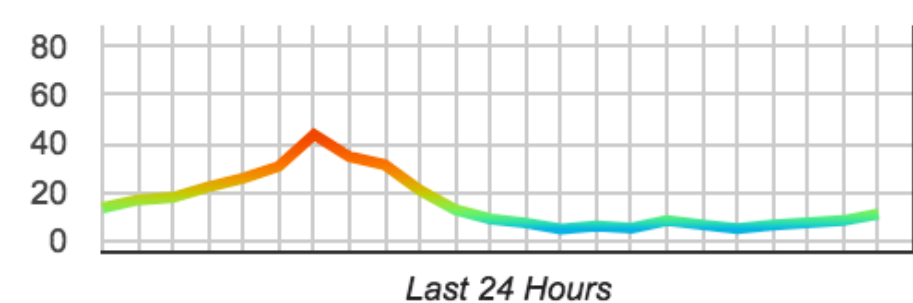
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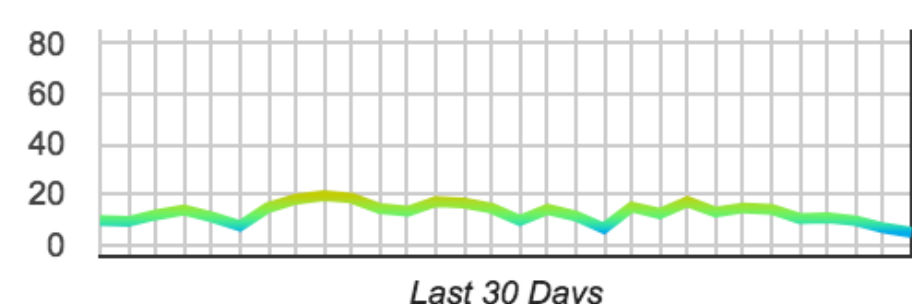
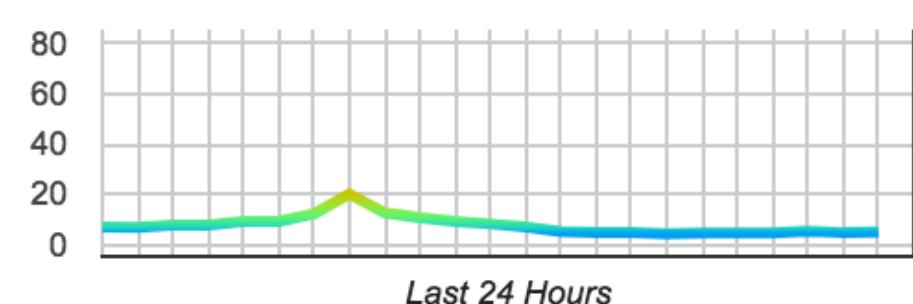
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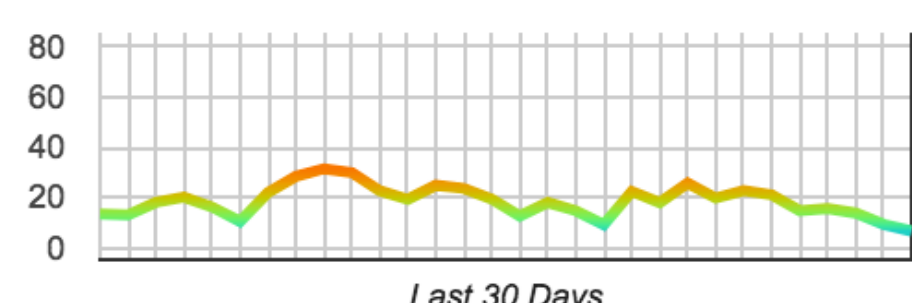
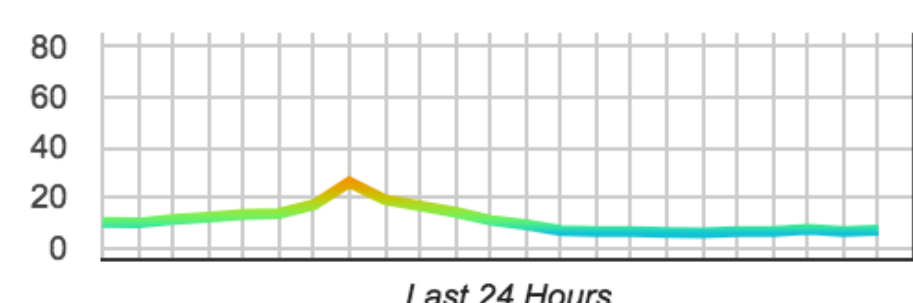
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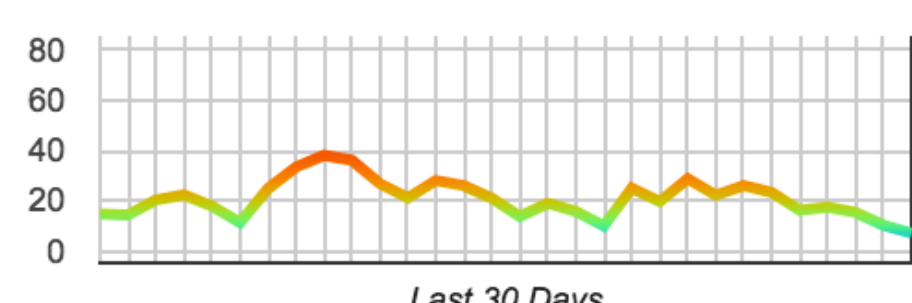
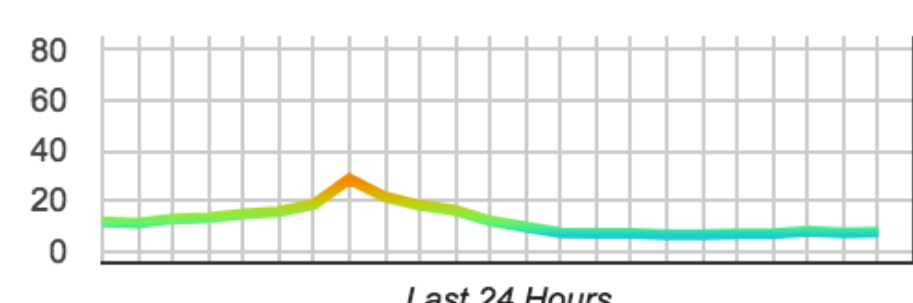
PM 1.0  $\mu\text{g}/\text{m}^3$  (Plantower PMS5003)



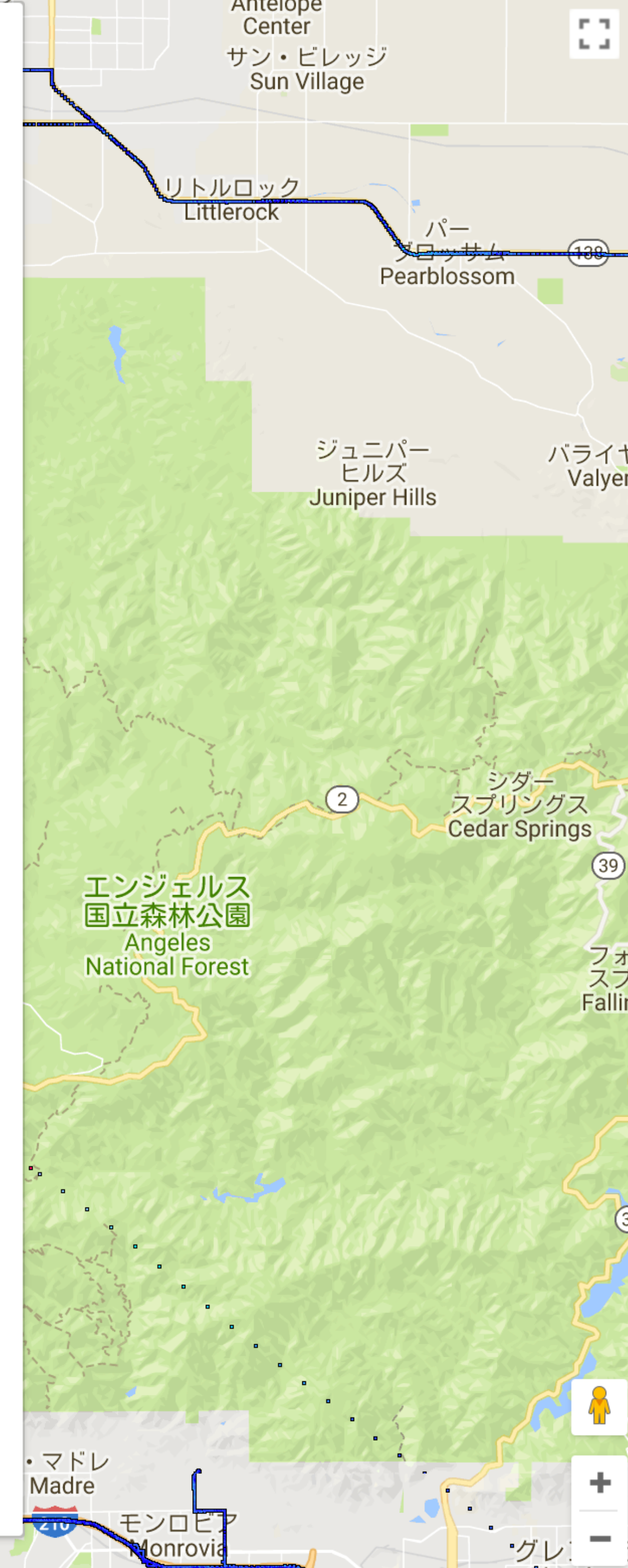
PM 2.5  $\mu\text{g}/\text{m}^3$  (Plantower PMS5003)



PM 10.0  $\mu\text{g}/\text{m}^3$  (Plantower PMS5003)



$\mu\text{Sv}/\text{h}$  (LND 7318)







SAFecast



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