

# Building a Global Sensor Network





“You don’t need a weatherman to know which way the wind blows”

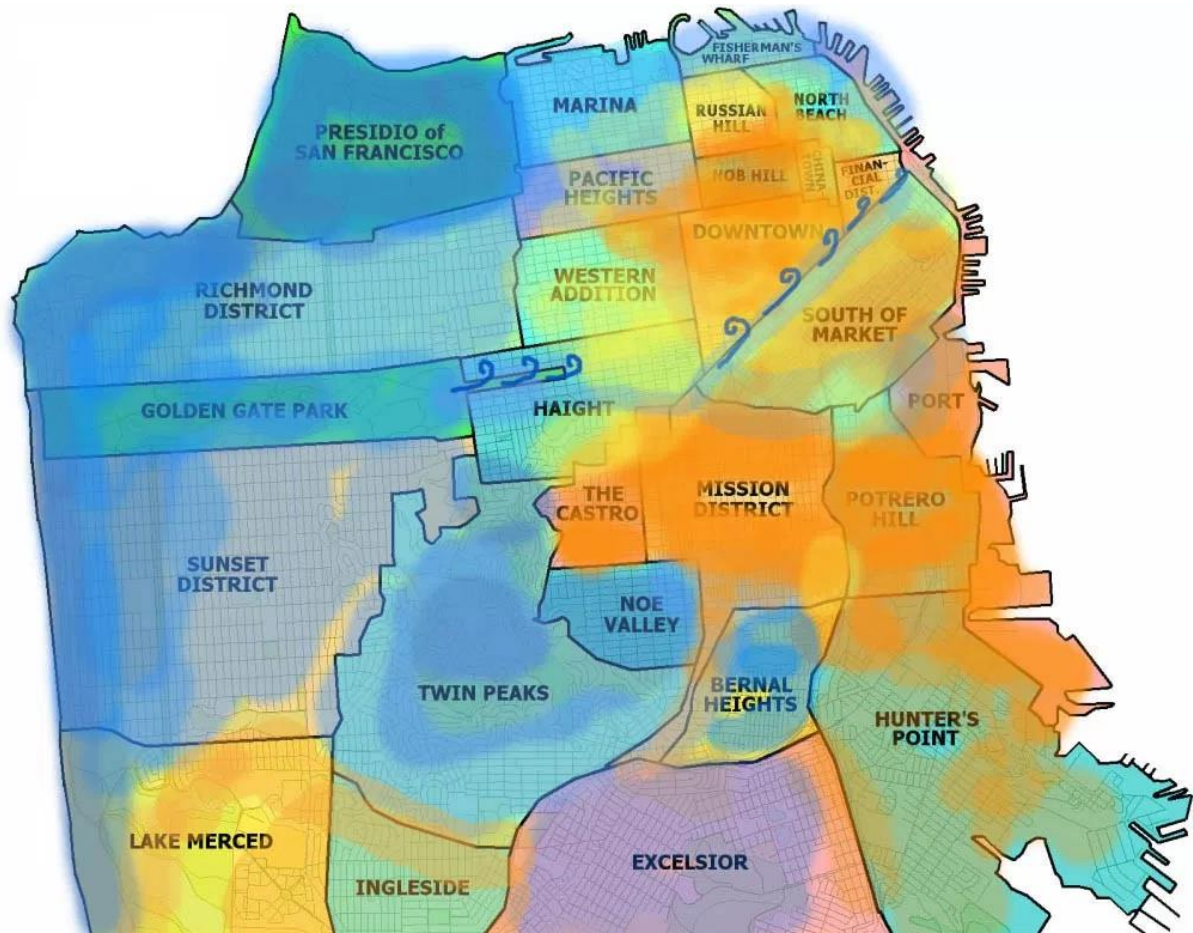
[Subterranean Homesick Blues](#)





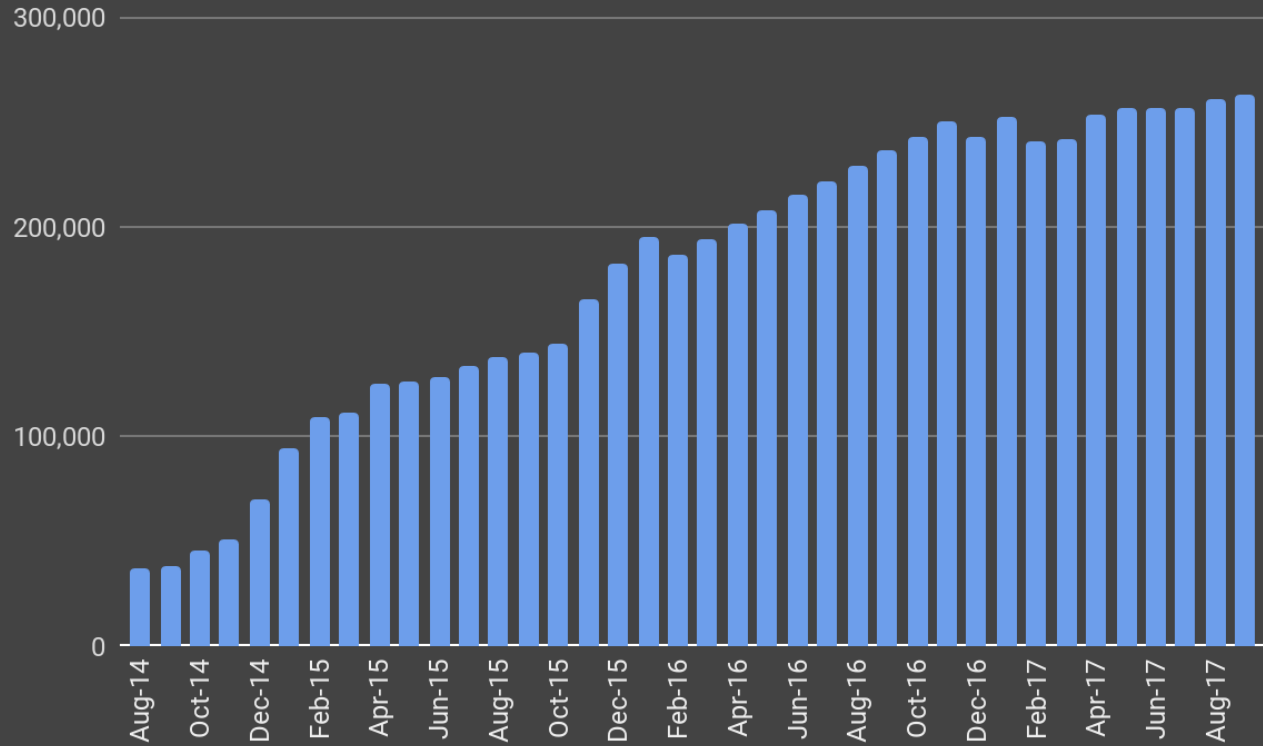


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$ telnet rainmaker.wunderground.com
```



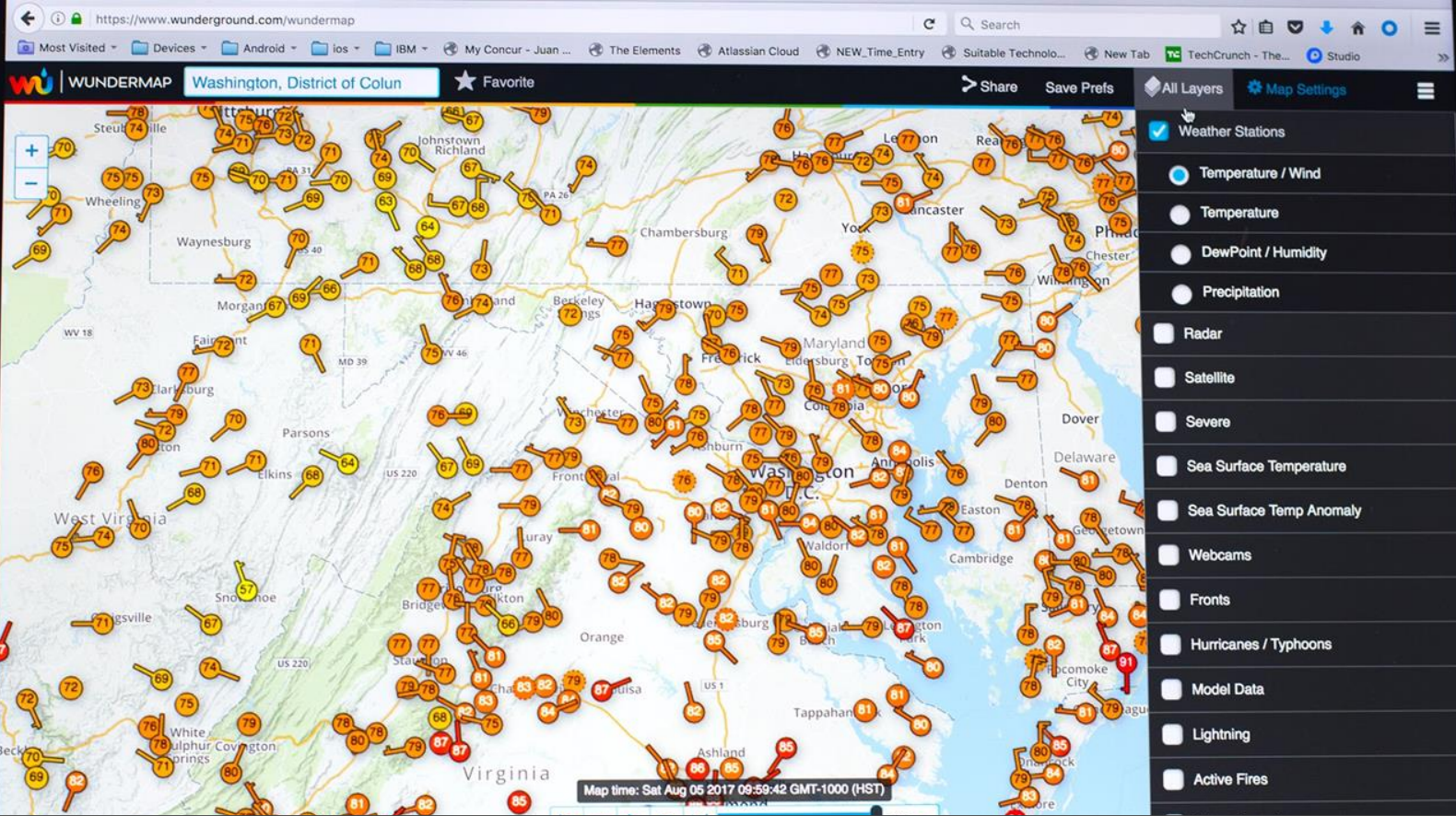


First year sign-ups: 283 stations



Weather Underground Personal Weather Station Network





Now, 263,000 Personal Weather Stations

Lesson 1: agree on  
standards early

# The value of the network

For PWS owners:

- A user friendly dashboard
- Real-time data & visualization on web and apps
- Sense of community



For non-PWS users:

- Hyperlocal real-time information not found elsewhere
- Archive of data
- Sense of community

## “Ken,” weather station owner



“Ken” is 65 years old and retired. He was in the IT industry and made over \$150,000 a year. He’s always been passionate about weather and loves gadgets. Personal weather stations scratch both itches. He has a smart home with a smart thermostat and a garden with moisture sensors, so he has an interest in tying the PWS to his home.

Lesson 2: get to know  
citizen scientists well



# How to get your Gold Star

Your weather station online and data flow uninterrupted for at least five days.

Your sensor values fluctuate throughout the day -- not too slow, not too fast.

Your sensor values are within a reasonable range of other sensors in your vicinity.



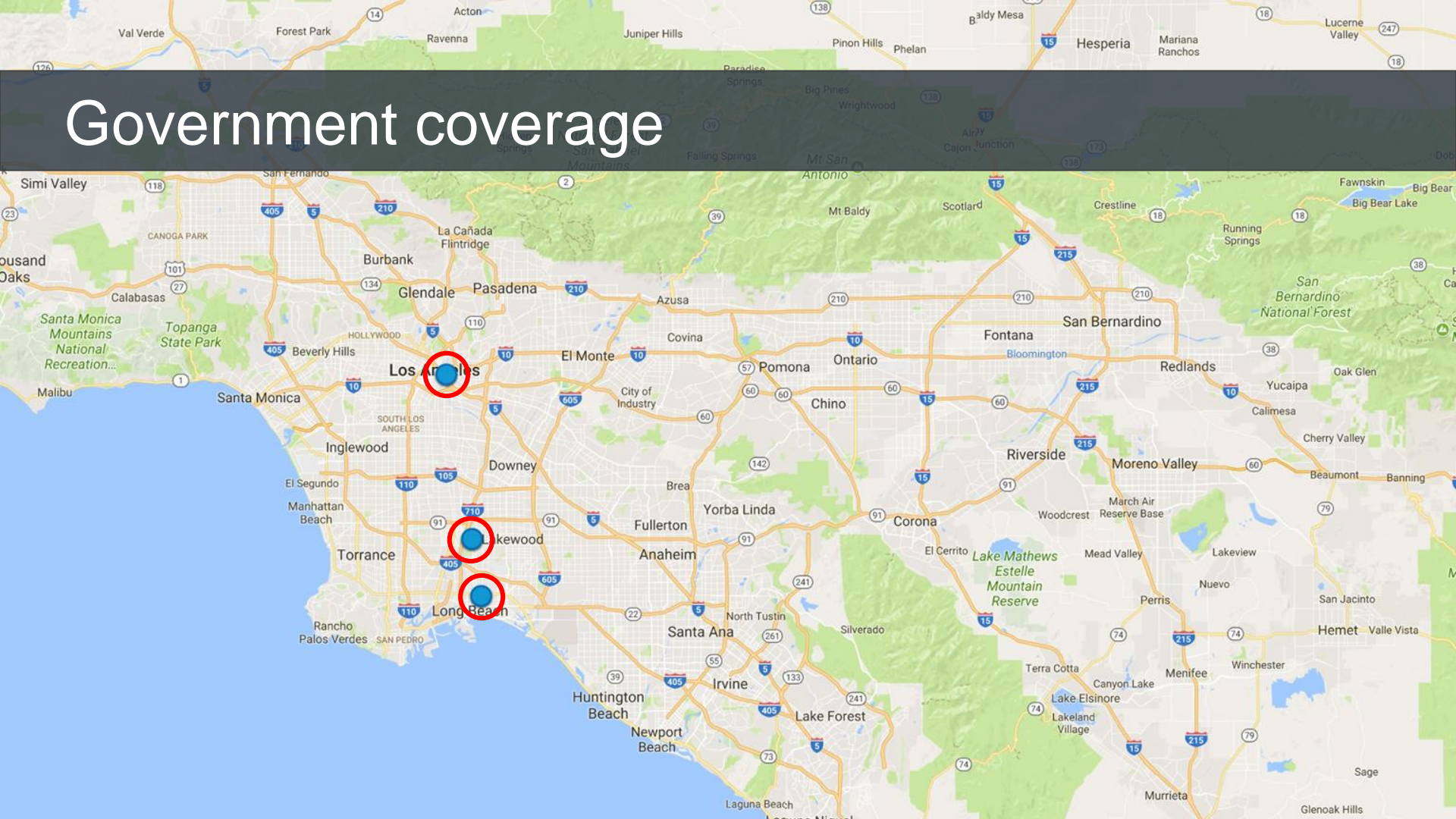
Lesson 3: give small  
rewards



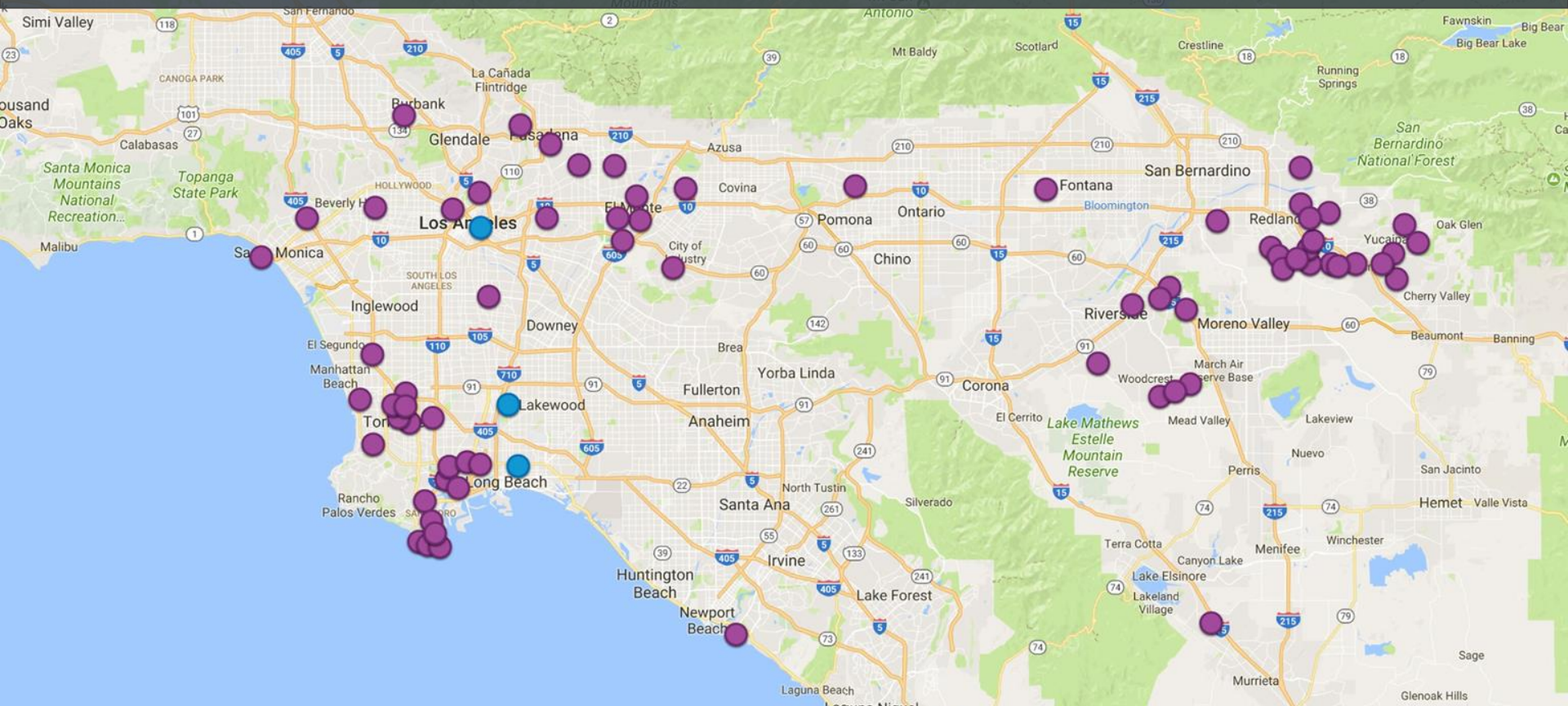
# The Next Phase

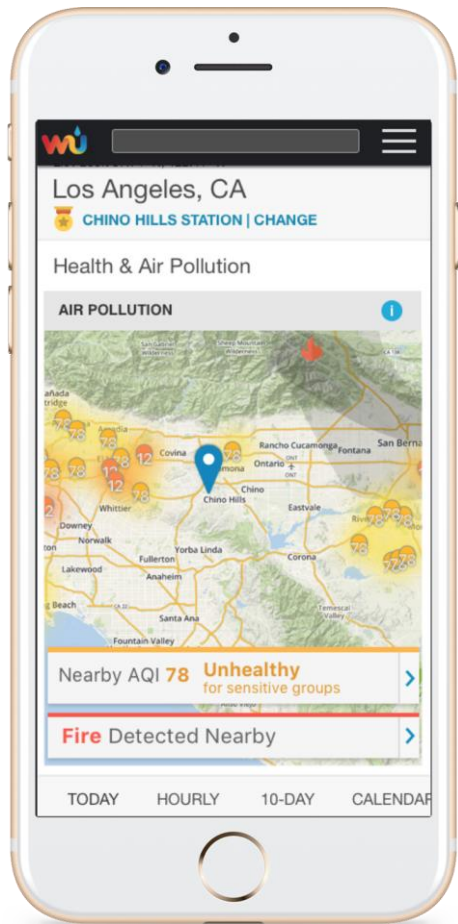


# Government coverage



# PurpleAir's coverage





# Where we need help

How do you do quality control with AQ data?

How do you communicate AQ information?

Should we continue to use AQI?

How do we calibrate low-cost sensors with government resources?

# WU Network

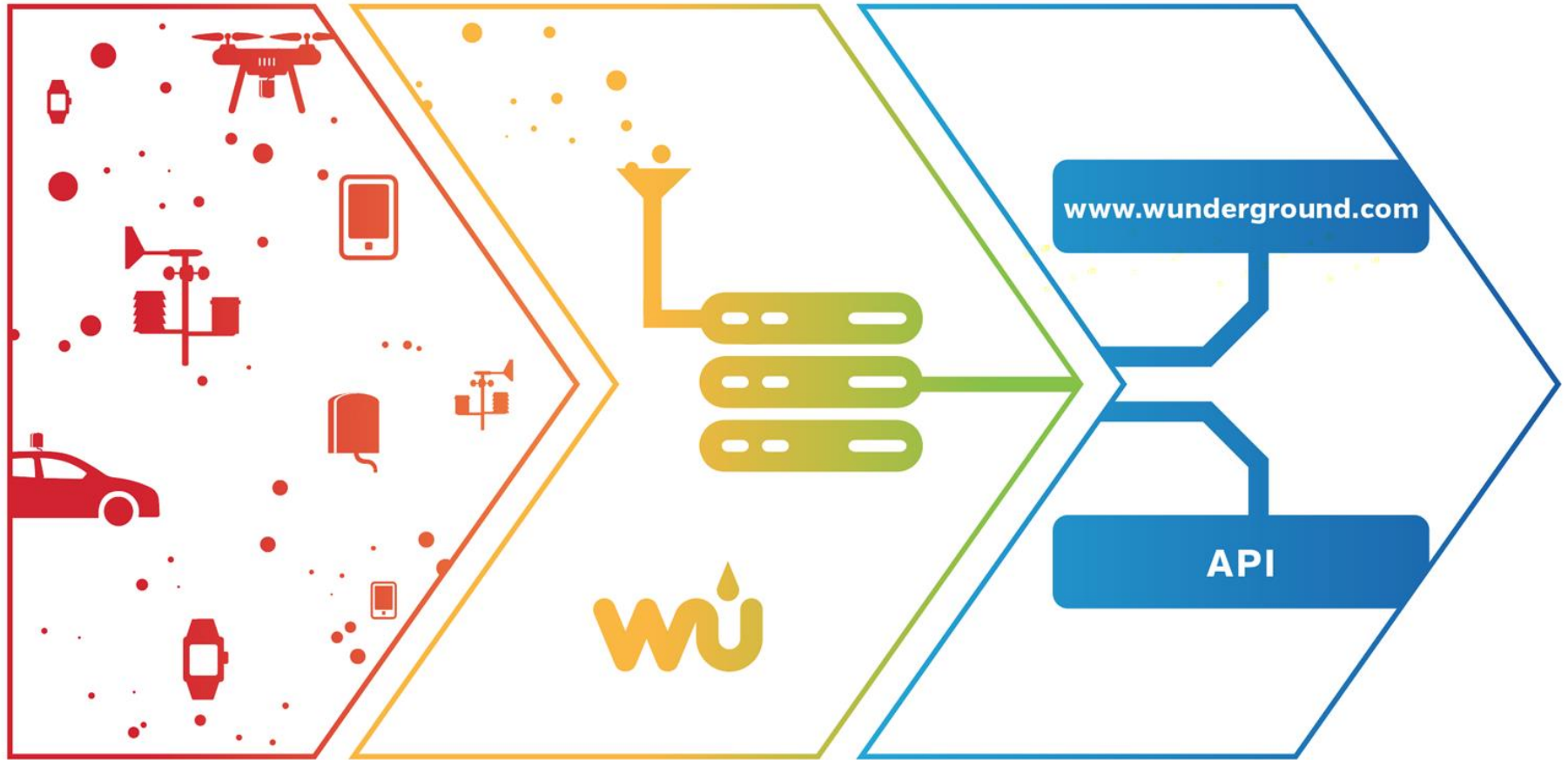
**Collections.** We model several sensors on one device, so if one sensor on a five-sensor device is out, we can exclude just the faulty sensor.

**Location.** Data tagged with real-time lat-long and altitude.

**Extensibility.** Flexible schema to accommodate any environmental sensor. Plus extensive meta-tagging.

**Scale.** Data is stored in The Weather Company's massive storage infrastructure.

**Availability.** Device owners can get the data back out through Weather Underground's modern, developer-friendly weather API's.



[www.wunderground.com](http://www.wunderground.com)

API