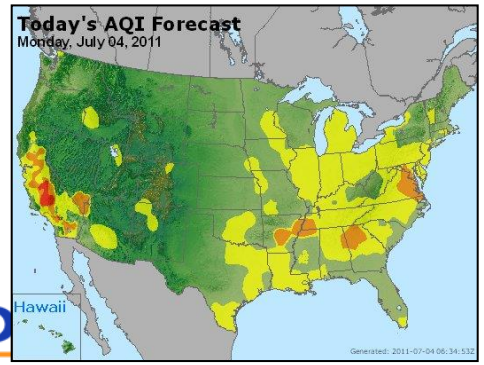
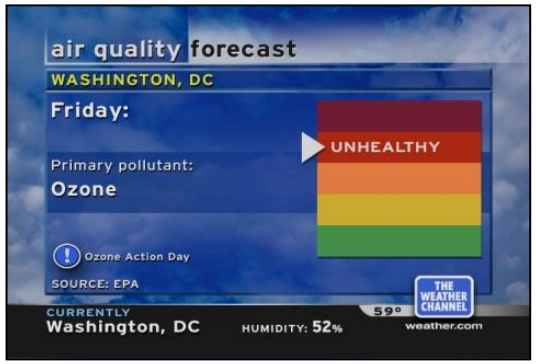
September 2017

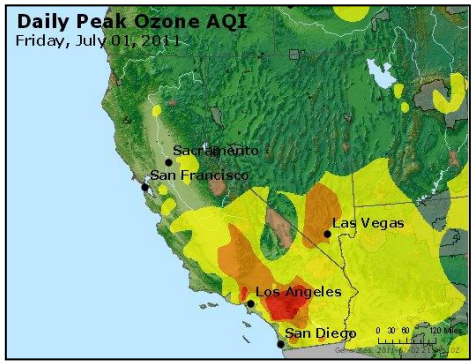
Air Quality Forecaster Focus Group Workshop

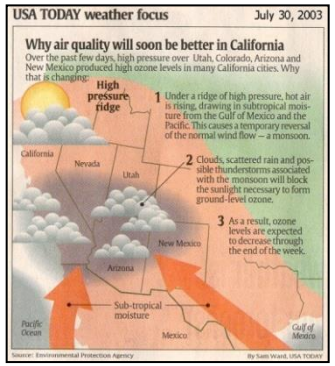
AirNow System Basics

- Year Round 24/7 coverage/delivers real-time data (ozone & particles) for 50 States, 6 Canadian Provinces and 24 U.S. National Parks
- Next-day AQI forecasts for over 400 cities (summer) and over 300 cities (year-round)
- Successful iPhone and Android apps
- State-of-the-science information about air pollution health effects for the public, media and stakeholders
- Public/Private partnerships with The Weather Channel, USA Today, CNN, weather service providers, NOAA National Weather Service



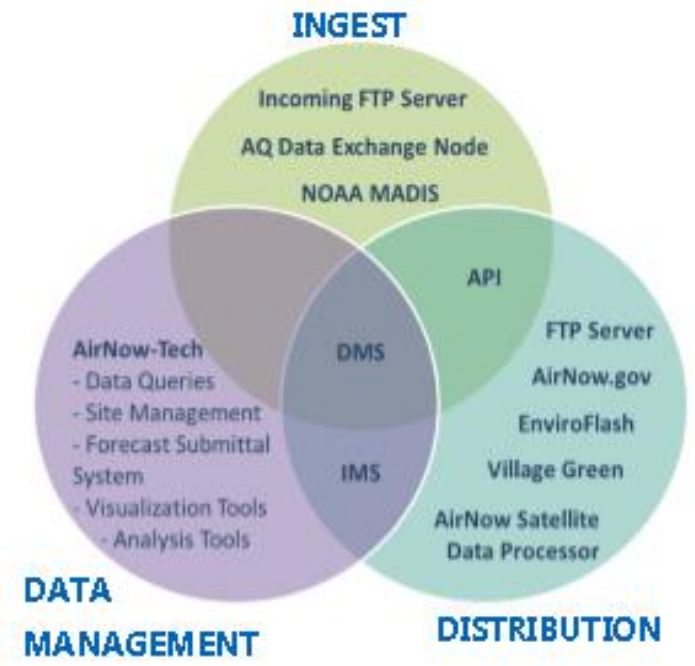






AirNow System: Main Elements

- Monitoring and Acquisition of Data
- AirNow Data Flow
- AirNow-Tech
- Forecasting
- Community



Audiences

Public

- **Website: 4.8 million views/yr**
- **iPhone App: 100+ installed/wk; more than 50,000 installed total**

State/local/tribal agencies

- **280,000 EnviroFlash subscribers**
- **210 million people in areas that have AQI forecasts**

Media

- **Estimate 3.7 million viewers of AirNow information – USA Today, Weather Channel**

Emergency response

- **Public and states used AirNow to convey info about BP, Katrina, and wildfires**

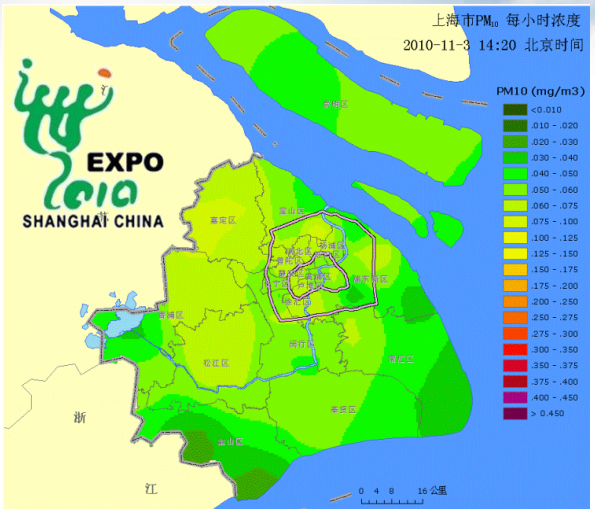
Others

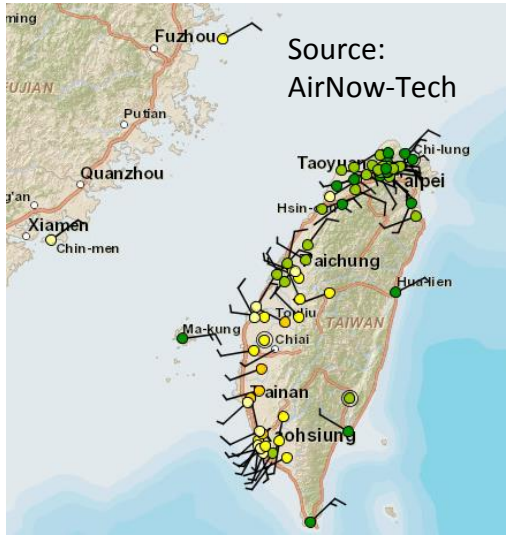
- **Epi studies, researchers, other federal agencies**

AirNow

AirNow International

- **State-of-the-science data management system**
- **Successful pilot at the 2010 World Expo in Shanghai**
  - Second pilot in Monterrey, Mexico in 2012
  - Third pilot in Zhejiang Province in 2013
  - Three systems in Mexico
- **Data exchange from Environmental Protection Administration Taiwan (EPAT) to AirNow system**
- **Encouraging data sharing in Southeast Asia**
  - **Evaluating: Vietnam, Thailand, Jakarta**

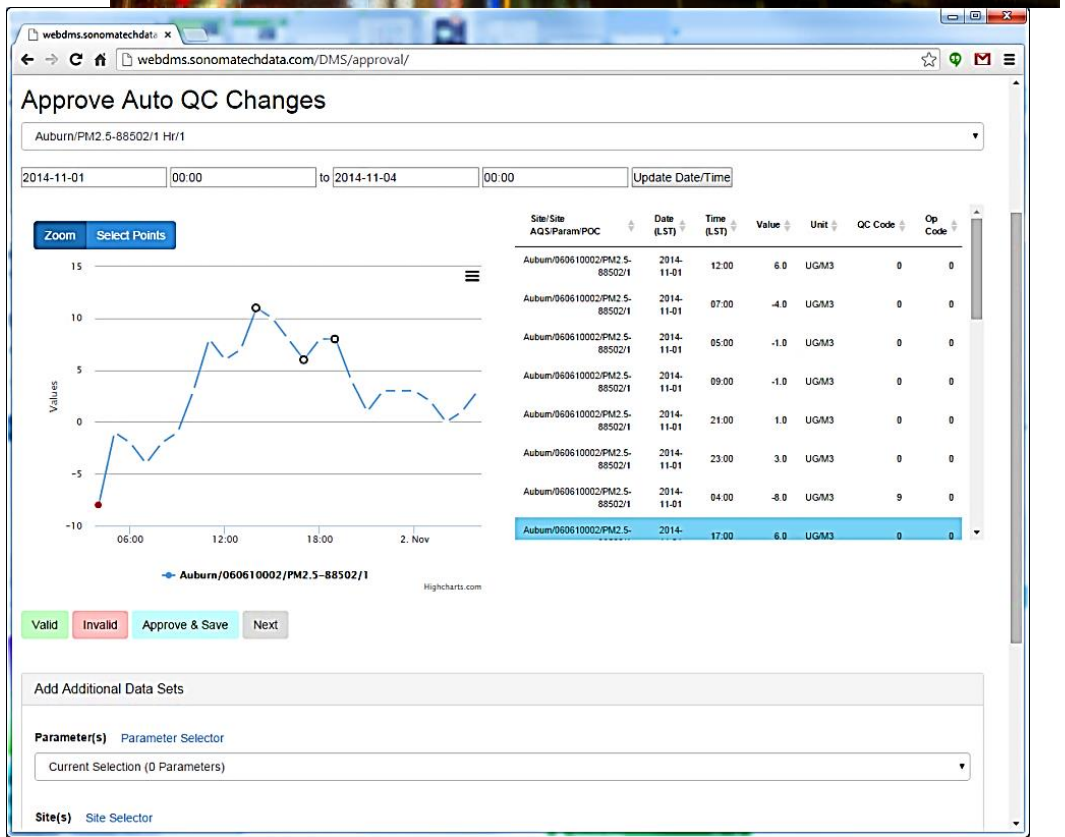




Source:
AirNow-Tech

Future Directions for AirNow

- **Redesign Airnow.gov**
  - Mobile friendly
  - "Persona"-based process
  - Welcome input from forecasters
- **AirNow-Cloud**
  - Build a new cloud-based version of the international components
  - Easier to deploy, scalable
  - "Try before you buy"
  - In discussions with Nepal as a pilot



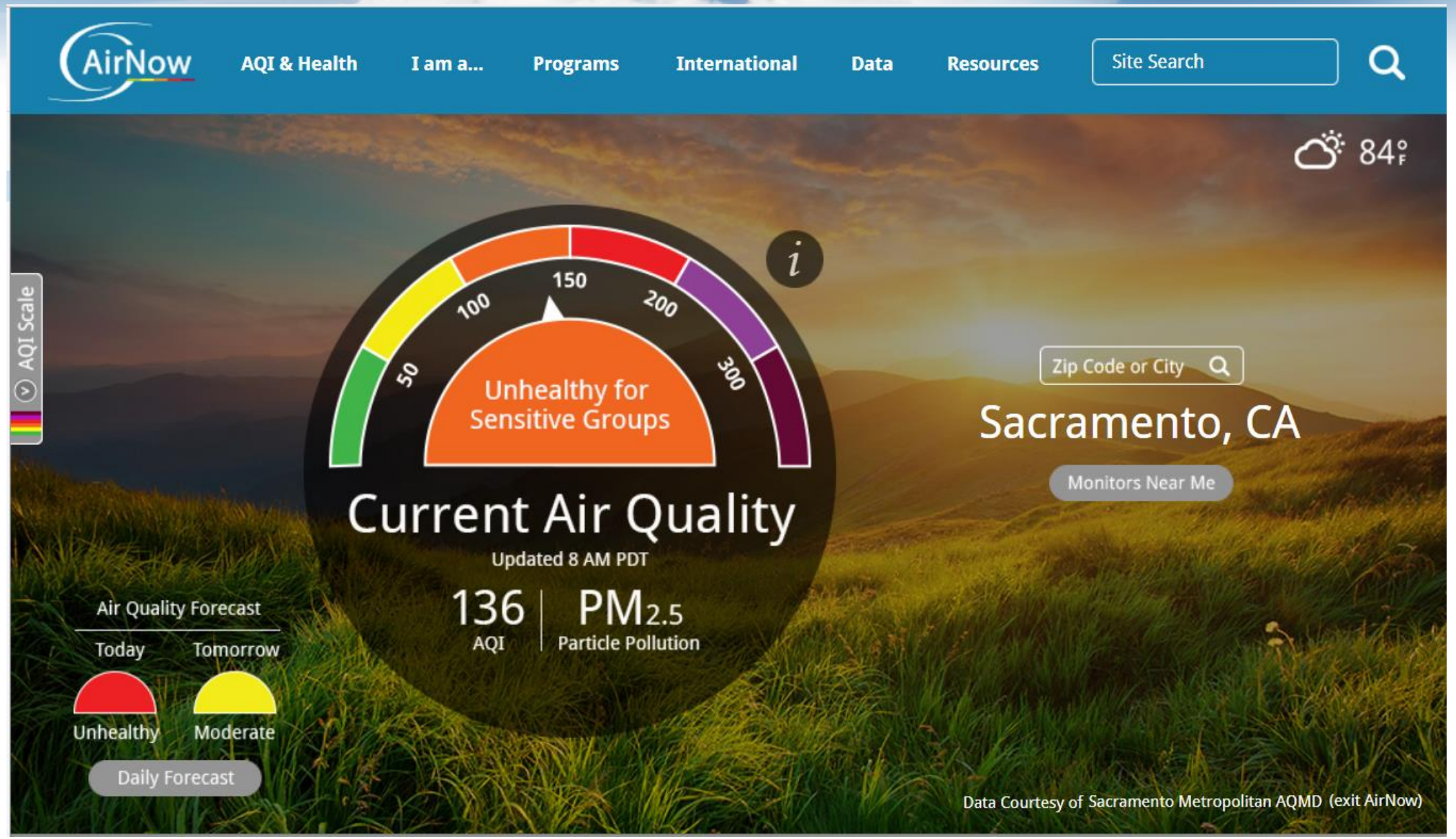
Since last time…

Redesign of AirNow.Gov underway!

- Represents a “re-imagining” of the entire AirNow site
  - Using 11 personas, we attempted to classify our userbase
  - Analyzing Google Analytics to see how the current site is used
  - “Starting from scratch” rather than tweaking existing interfaces
- Thus far
  - Internal brainstorming sessions late last year
  - Began working on visual prototypes in Spring
  - Some user testing done virtually
  - Hoped to test at the National Air Quality Conference

AirNow

Sneak peek …



AirNow

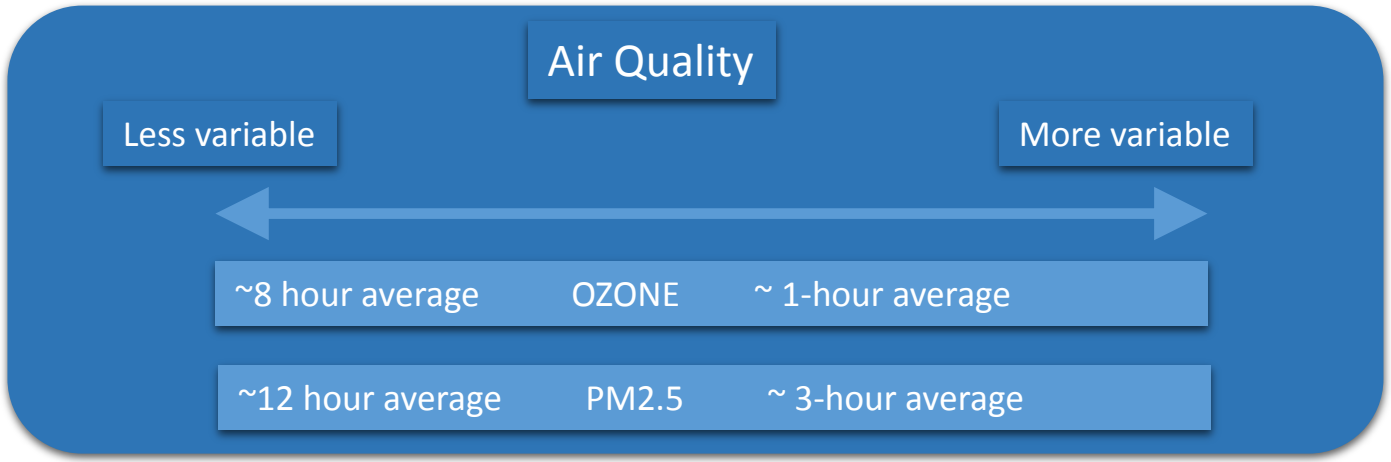
NowCast Method

- "NowCast" replaces what was known as the PM2.5 and Ozone surrogate equations
- Exists to calculate an hourly value to show realtime Air Quality Index values
- Uses a real-time "windowed" approach, making it more reactive and requiring no ongoing data analysis
- Since last year, we have discovered issues with ozone NowCast. It appears to be biased a bit high. More analysis is being done and we hope to make some changes for the upcoming ozone season.
- NowCast affects forecast "verification" and EnviroFlash alerting

AirNow

The NowCast Method

- An average of the previous 8 -12 hours
- If air quality is less variable, the hours are weighted more evenly (approaching the NAAQS averaging period of 8 hours for ozone and 24 for PM2.5)
- If air quality is more variable, recent hours are weighted more heavily



AirNow

Village Green benches report to AirNow

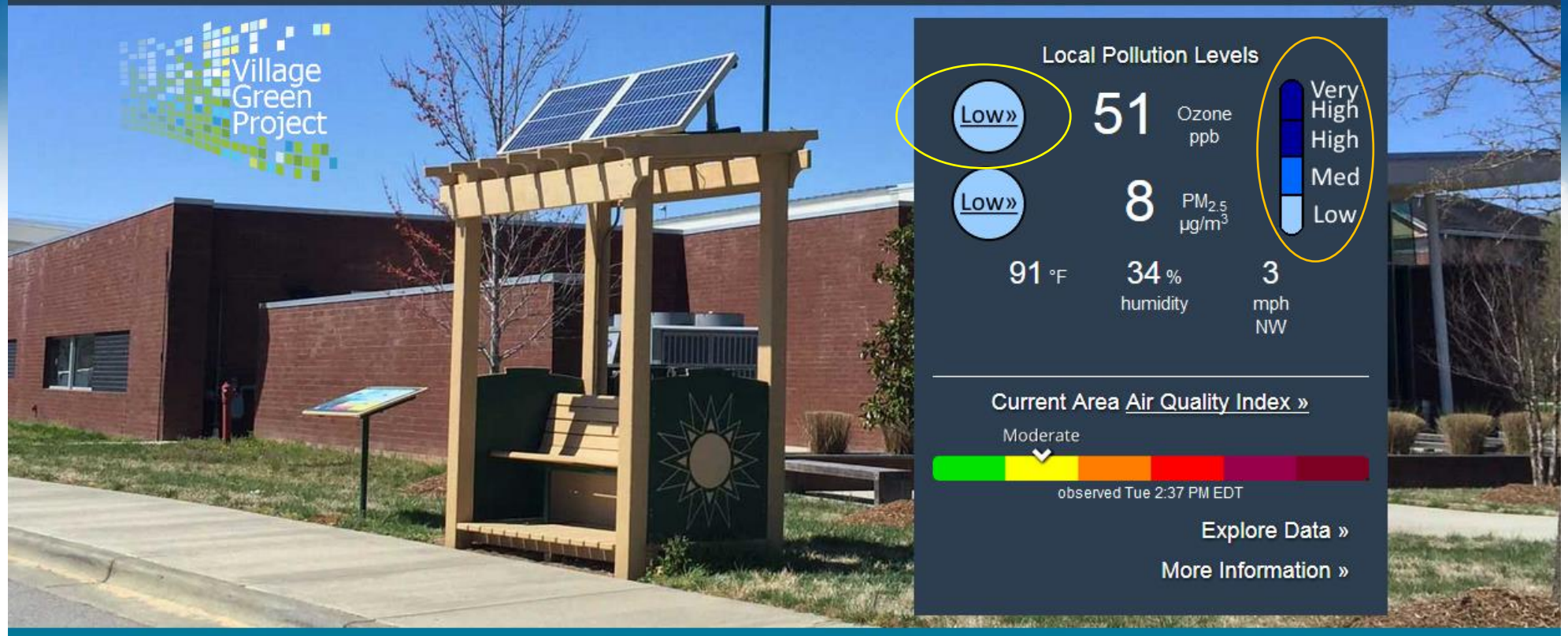
Park Benches

- Meteorological Instruments
- Solar and wind powered

Components Stored Behind Bench

- Air Sensors (PM & Ozone)
- Communications Component
- Power System

Select a City Durham, NC Menu

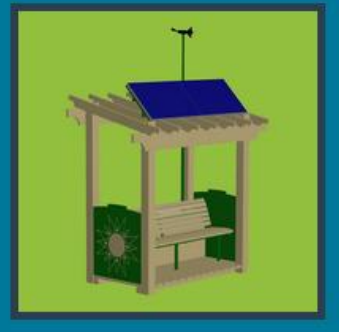


Welcome to the Village Green Project

a research effort to discover new ways of measuring air quality and weather conditions in community environments.

Measuring and communicating on-the-spot air quality and weather conditions for research and awareness

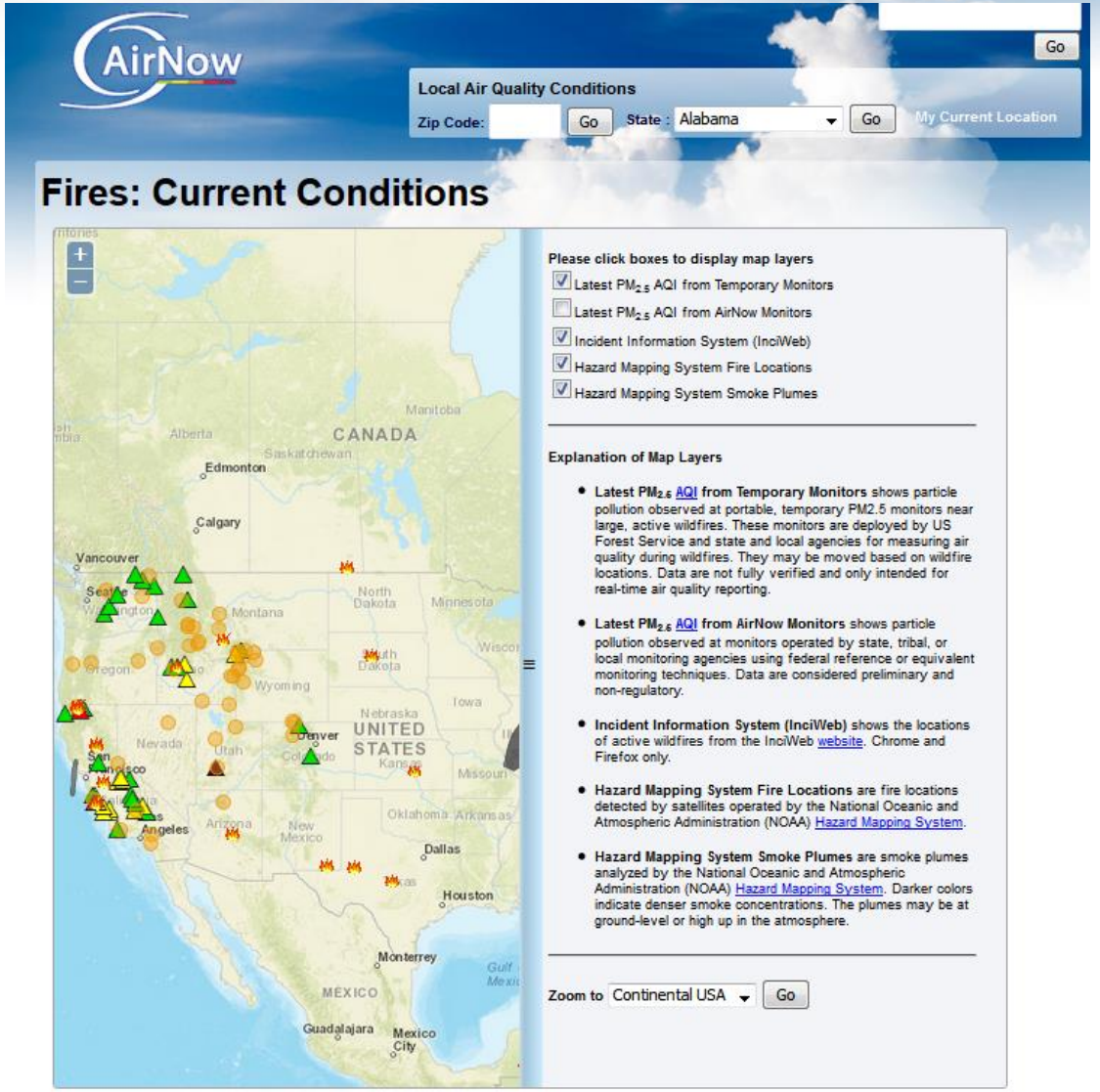
Developing small and rugged data collection systems that can be powered by the wind and sun



Partnering with communities to pilot test the new technology in outdoor community spaces.

Smoke and Wildfire Map

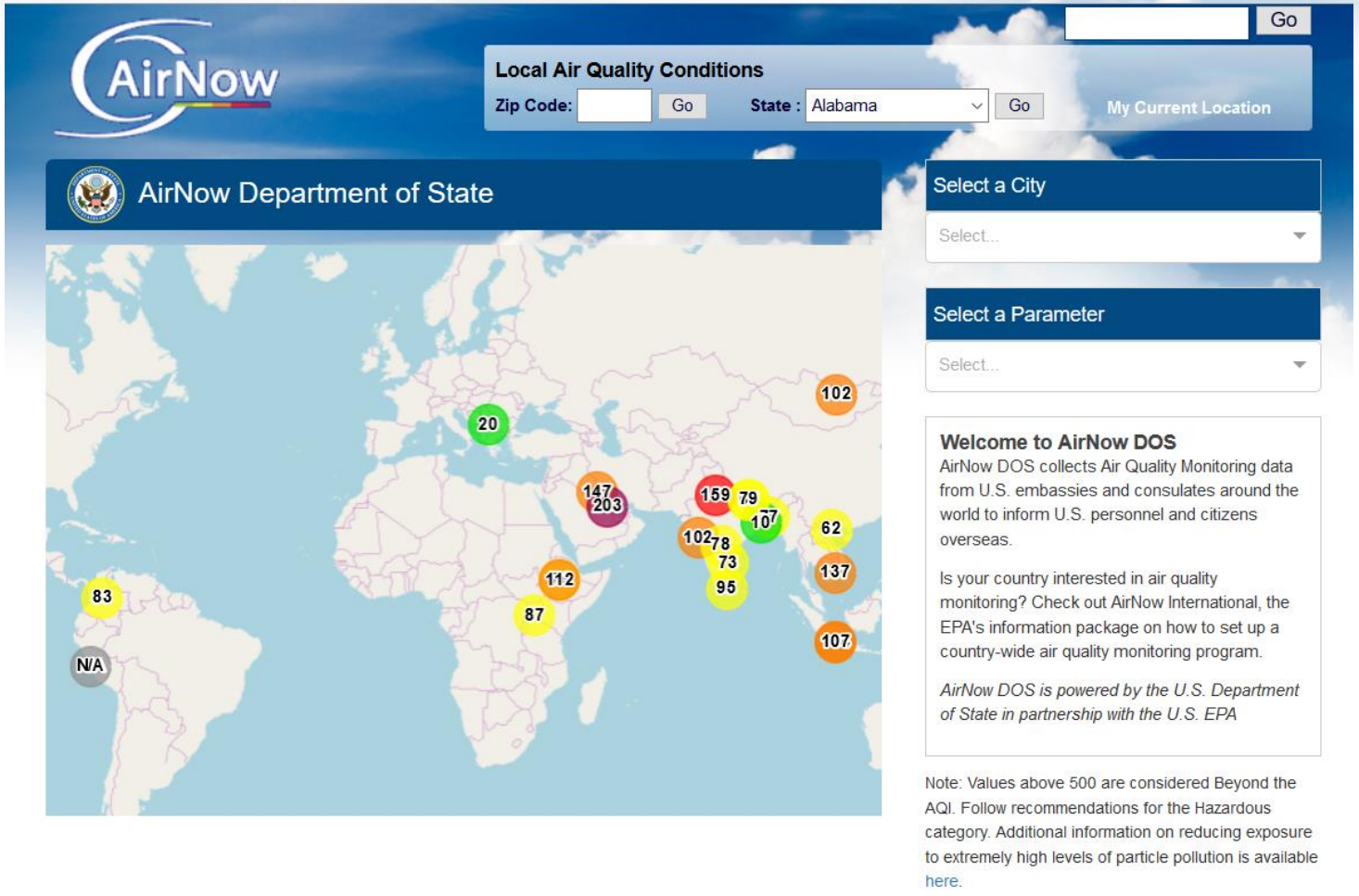
- USFS data flowing into AirNow
- They are delivering real-time data for all USFS currently deployed emergency monitors.
- Incredible traffic the week of Labor Day – AirNow visits up 450%



AirNow

Department of State Monitoring

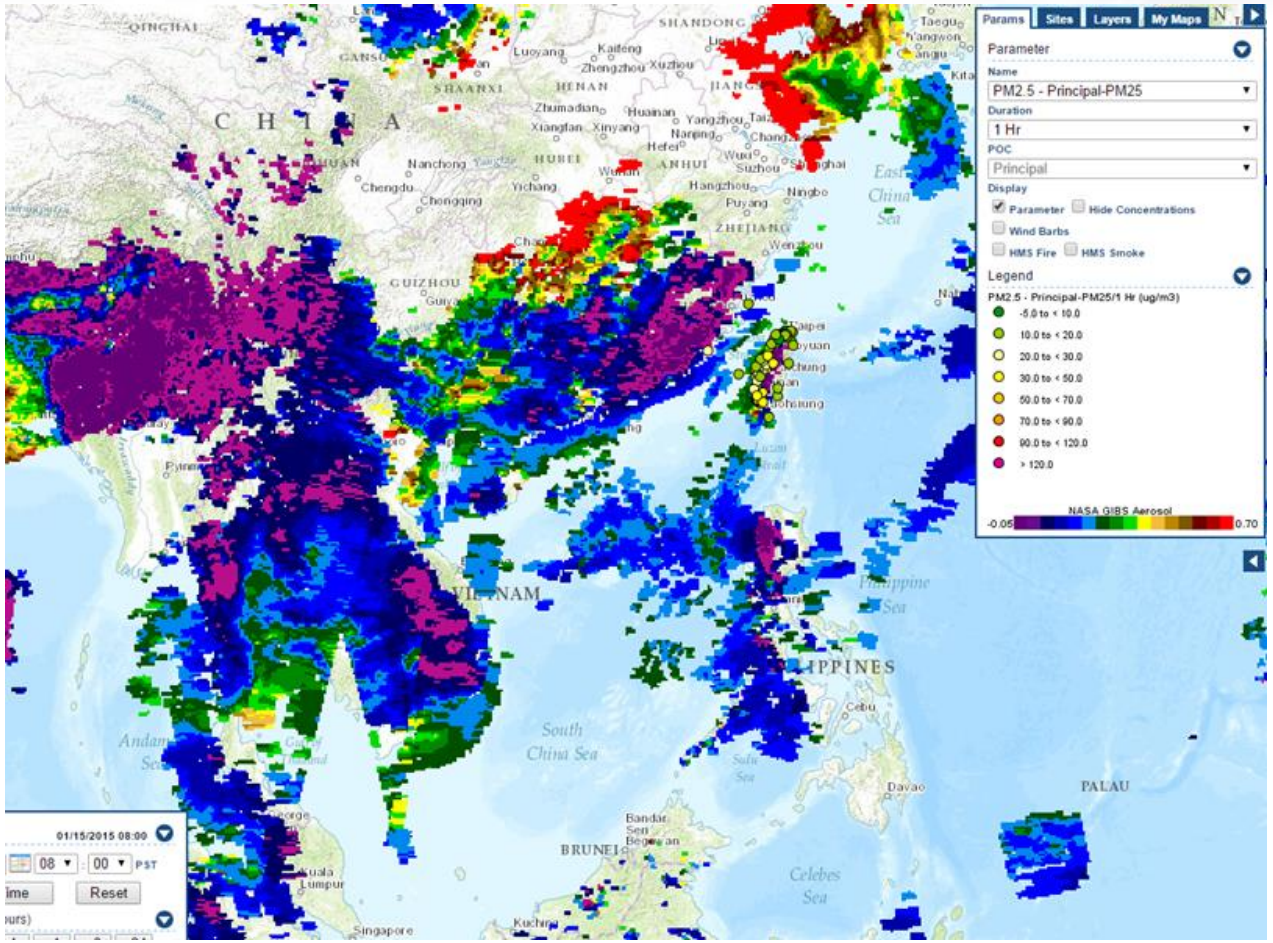
- Agreement between USEPA and DoS
- DoS has 29 monitors around the world, added several ozone sites this year



AirNow

AirNow-Tech

- Decision Support System – management and analysis tool for the AirNow and AirNow-I Program
- GIS functions – HYSPLIT trajectory tool, satellite, and smoke products
- Data queries, personalized tools, preferences, and services
- Ability to view meteorological and air quality data
- Worldwide satellite data
- Password-protected user accounts



Data Flow to AirNow Tech

- International partners
  - Format data in AirNow AQCSV format
  - Validate file format
  - Push data to AirNow FTP site

- Participating
  - Taiwan, since 2014
  - Soon: Thailand, Vietnam, Jakarta

Contact info

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