

New AirNow-Tech Features and Demonstration

Alan Chan, Marcus Hylton, and Michael Haderman
Sonoma Technology, Inc.
Petaluma, CA

for

National Air Quality Conference
Austin, TX

January 25, 2018



Outline

- Background
- Features
- Demonstration
- Next Steps

Background

Growing AirNow user community and amount of data

AirNow Metrics	October 2014	February 2016	December 2017
Number of data records	1 billion	1.4 billion	1.9 billion
Number of Village Green sites	0	6	8
Number of EnviroFlash subscribers	184,000	195,000	200,000
Number of Department of State (DOS) sites	0	16	25
AirNow-Tech/API users	3,113	4,800	7,900
API/app developer requests	31 million	55 million	70 million

Background

AirNow Program Needs

- Big data (e.g., small sensors, sub-hourly data)
- Scalable and robust data system
- Expansion to additional international users
- Ease of data management
- Compatibility with mobile devices
- Improved usability
- New worldwide analysis tool



Features of New System

- Site/parameter management
- QC checks and Approval Mode

Sacramento Metro. AQMD

Alan Chan

Dashboard

Data Analysis

Network

Sites

Instruments

Status

Quality Control

Notifications

Settings

System Administration

Forum

Station ID	State/County (Code)	AQS Code	Full AQS Code	Latitude	Longitude	UTC Offset	Elevation
060670002	Antelope - North Highlands	0002	060670002	38.71209	-121.38109	-8	90
060670006	Ardenwood - Del Paso	0006	060670006	38.613804	-121.368004	-8	83
060670007	Ardenwood/Watt	0007	060670007	38.610313	-121.38154	-8	60
060670011	Ardenwood	0011	060670011	38.30259	-121.42084	-8	21
060670012	Ardenwood	0012	060670012	38.683304	-121.16446	-8	333
060670015	Ardenwood	0015	060670015	38.593327	-121.50373	-8	0
060670014	Ardenwood - Goldenland Court	0014	060670014	38.650715	-121.50665	-8	13
060679991	Ardenwood - Seco	9991	060679991	38.34381	-121.10998	-8	223
060674001	Ardenwood - Stockton Blvd.	4001	060674001	38.556328	-121.458496	-8	27
060675003	Ardenwood - House	5003	060675003	38.494476	-121.21113	-8	194
060679999	Ardenwood	9999	060679999	32.15	-121.28	-8	0

Sacramento Metro. AQMD

Quality Control

Quality Control

Standard Checks

Advanced Checks

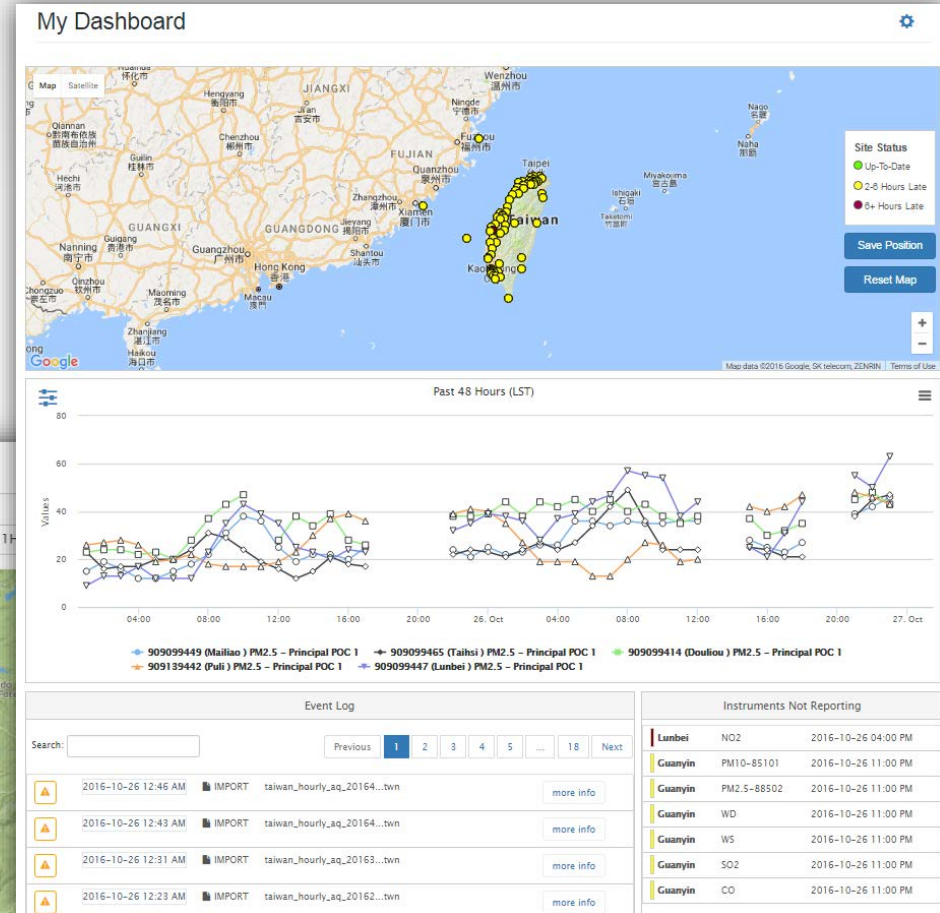
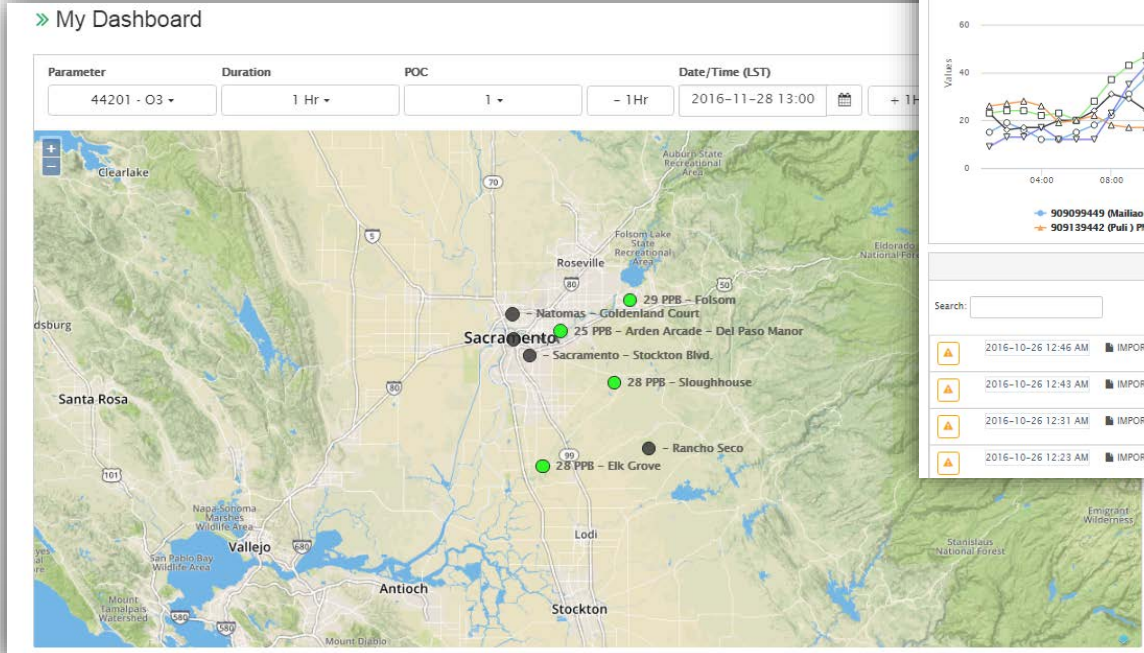
View QC Checks for Site and Parameter

Type	Condition	QC Code Action	Data Time Range (LST)	Actions
Range	> 10 PPM	Suspect	Anytime	⚙️
Range	> 111 PPM	Suspect	Anytime	⚙️
Range	> 12 PPM	Invalid	Anytime	⚙️
Rate of Change	> +/-5 PPM	Invalid	Anytime	⚙️

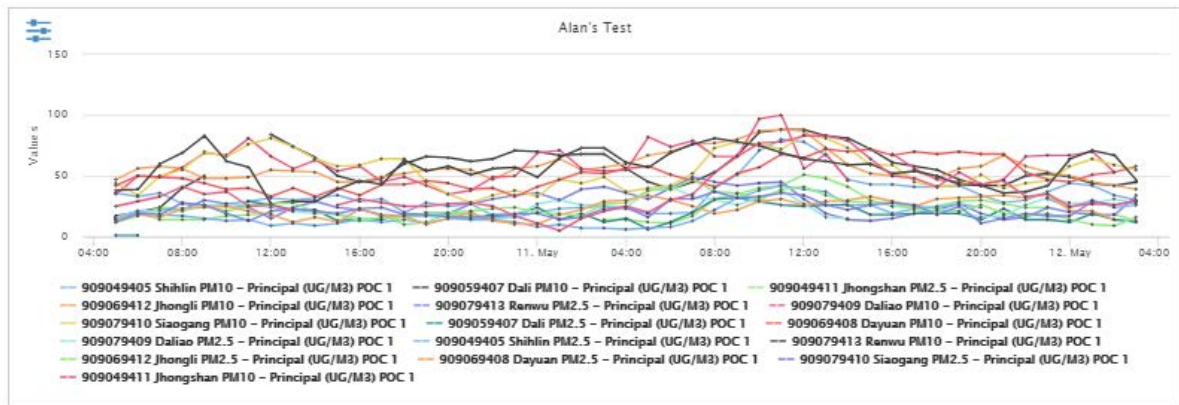
Add QC Check

Dashboard Widgets

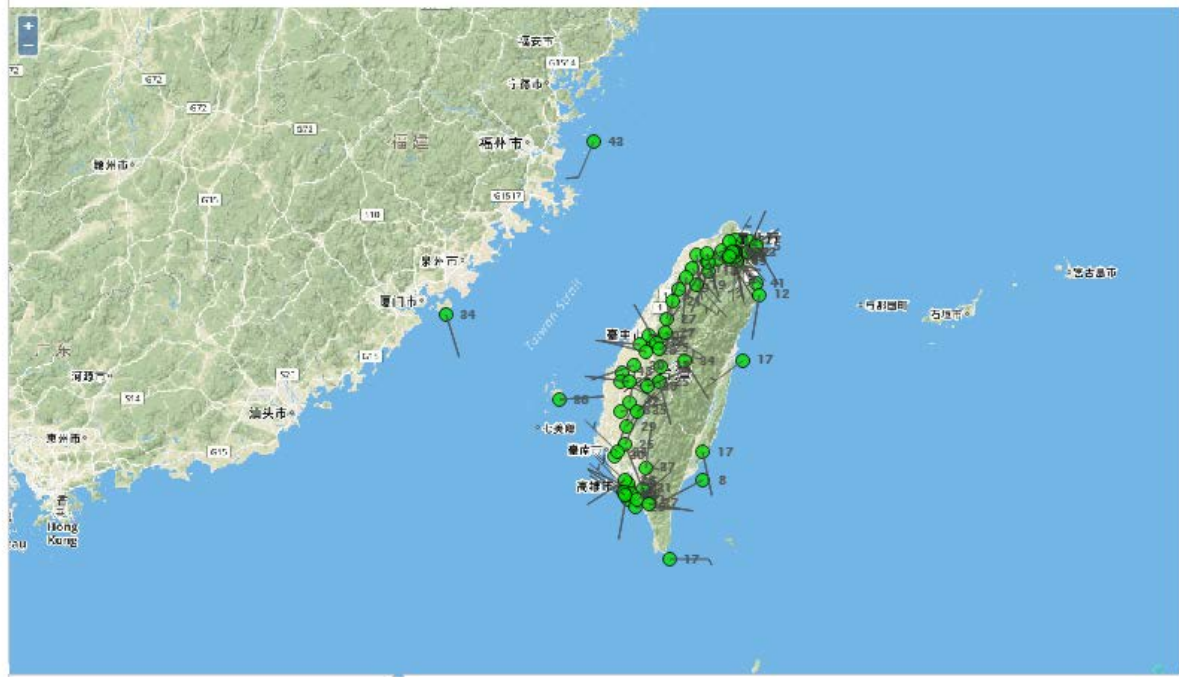
- New widgets
 - Recent trend
 - Concentration map
- Users can add, remove, and rearrange widgets



» My Dashboard

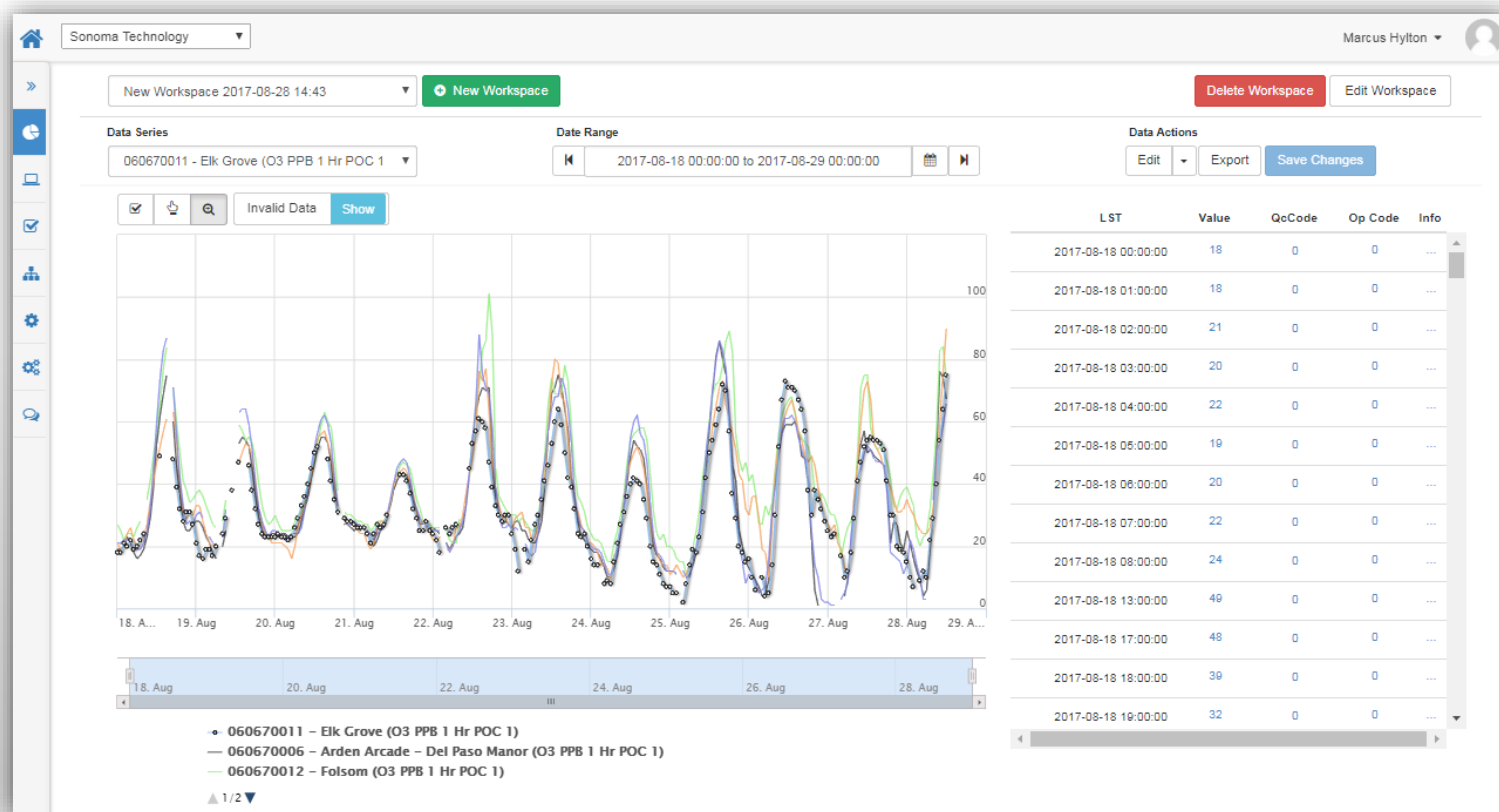


Parameter	Duration	POC	Date/Time (LST)			
O3 ▾	1 Hr ▾	1 ▾	- 1Hr	2017-05-12 04:00	+ 1Hr	Options ▾ Save



Data Queries

- Interactive data validation and approval
- Data editing
- QC checks





QC Checks

[+ Add QC Check](#)[Standard Checks](#)[Advanced Checks](#)

View QC Checks for Site

909029448 - Danshuei

and Parameter

1 Hr

(88502) PM2.5

1

Type	Condition	QC Code Action	Data Time Range (LST)	Actions
Range	> 75 UG/M3	● Suspect	Anytime	⚙️
Range	< -4.99 UG/M3	● Invalid	Anytime	⚙️
Range	> 175 UG/M3	● Invalid	Anytime	⚙️
Sticking	Identical values \geq 10 UG/M3 for more than 4 hours	● Invalid	Anytime	⚙️
Rate of Change	> +/-40 UG/M3	● Invalid	Anytime	⚙️



QC Checks

[+ Add QC Check](#)[Standard Checks](#)[Advanced Checks](#)

View QC Checks for Site

909029448 - Danshuei

and Parameter

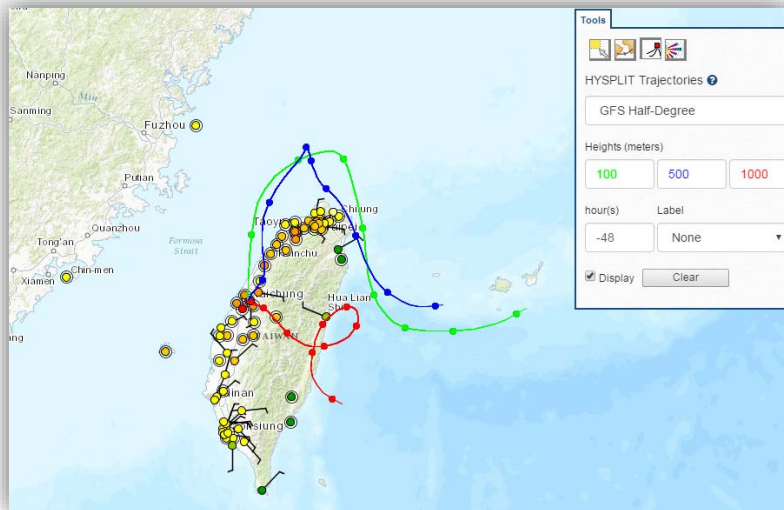
1 Hr

(88502) PM2.5

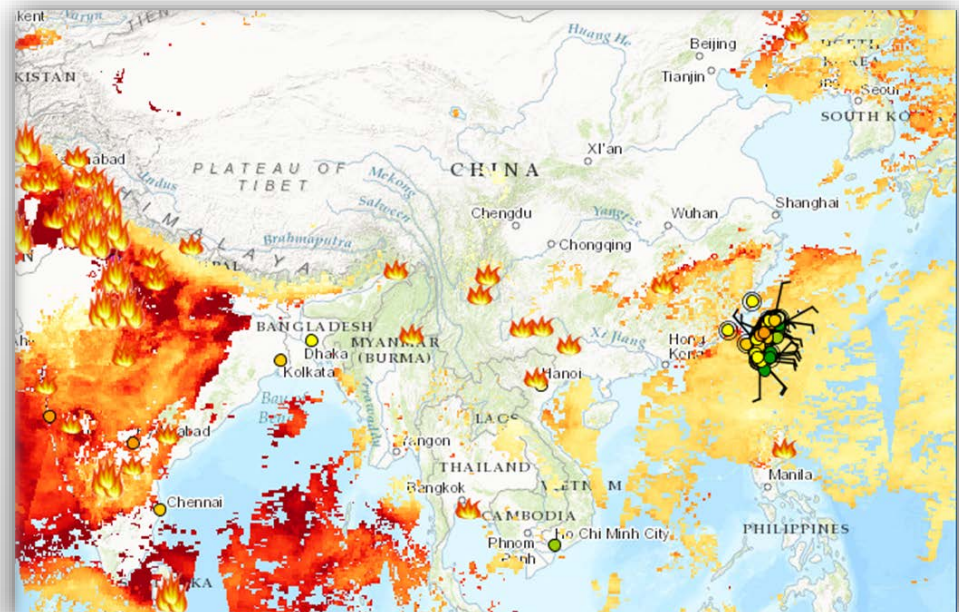
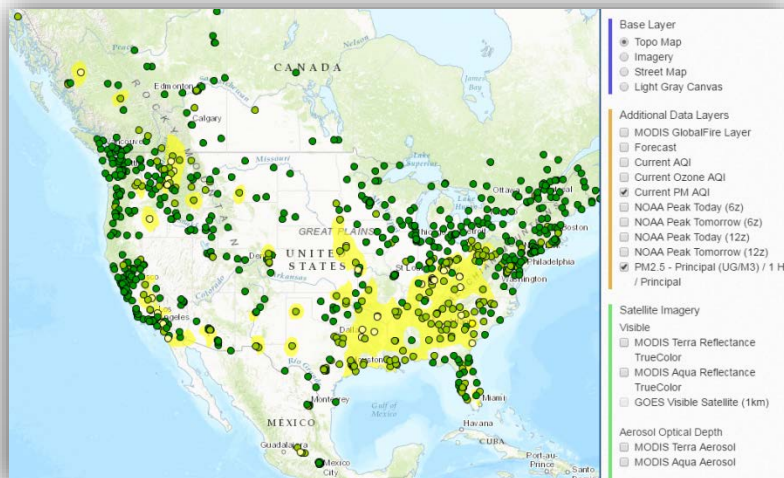
1

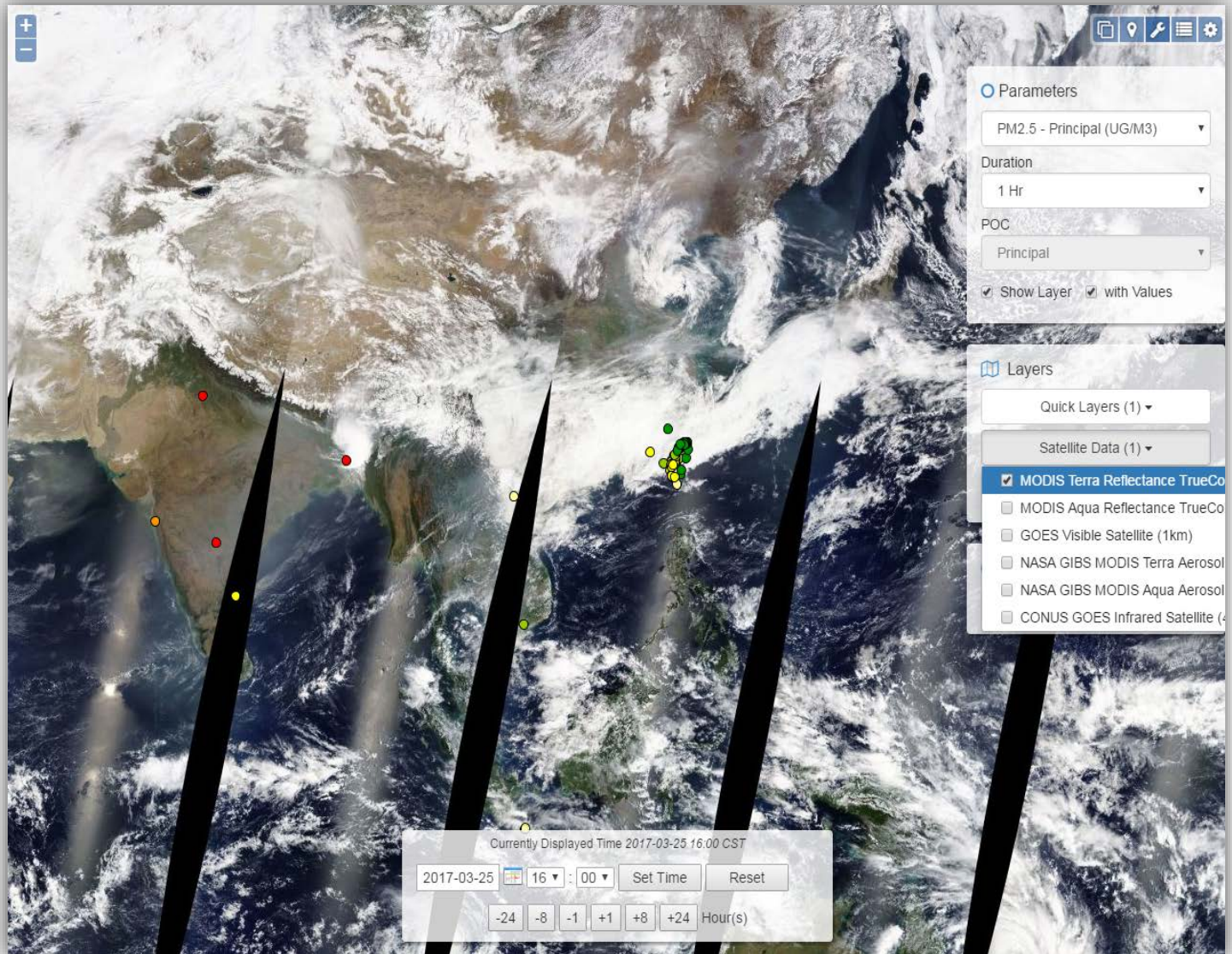
Type	Test Site	Test Parameter	Start Hour	End Hour	Value	Data Points	QC Code	Actions
Range (>)	909029448 - Danshuei	1 Hr (88502) PM2.5 UG/M3 - POC 1	Midnight	11 PM	75	0	● Suspect	
Range (<)	909029448 - Danshuei	1 Hr (88502) PM2.5 UG/M3 - POC 1	Midnight	11 PM	-4.99	0	● Invalid	
Range (>)	909029448 - Danshuei	1 Hr (88502) PM2.5 UG/M3 - POC 1	Midnight	11 PM	175	0	● Invalid	
Sticking	909029448 - Danshuei	1 Hr (88502) PM2.5 UG/M3 - POC 1	Midnight	11 PM	10	0	● Invalid	
Rate of Change	909029448 - Danshuei	1 Hr (88502) PM2.5 UG/M3 - POC 1	Midnight	11 PM	40	0	● Invalid	

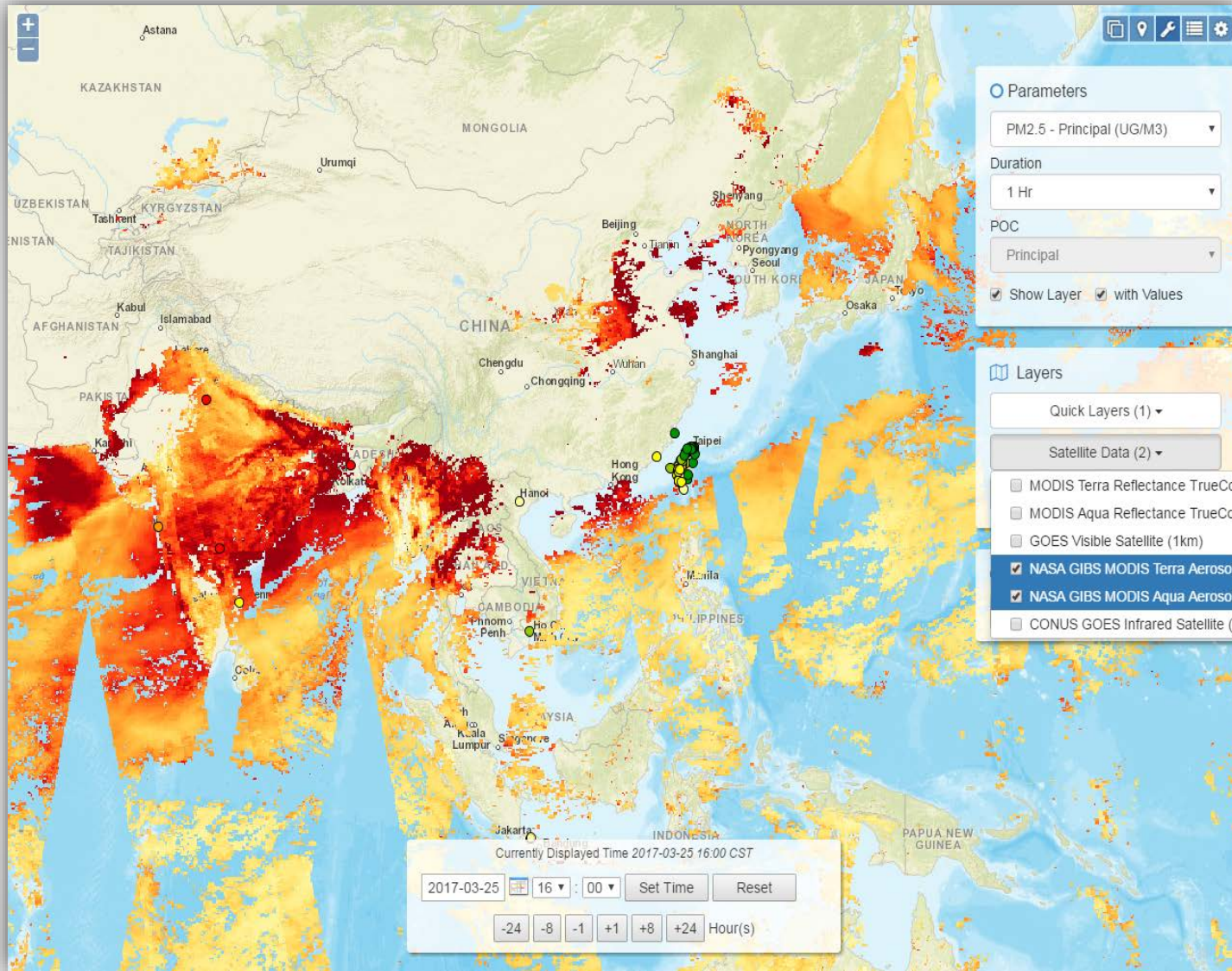
Navigator Enhancements

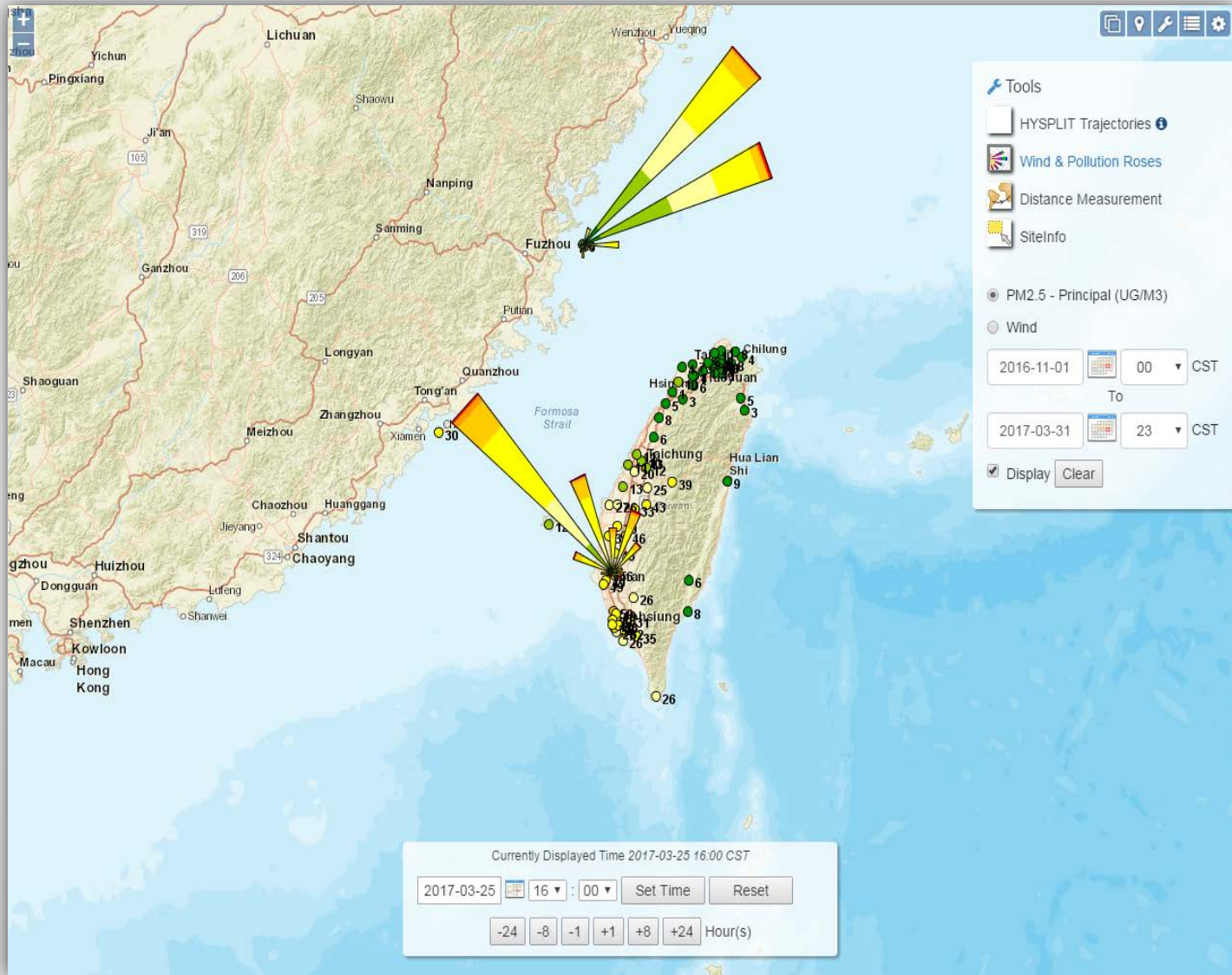


- Global point-and-click HYSPLIT trajectories
- Global fire layer









Next Steps

- Complete development and quality assurance
- User testing (let us know if you are interested)
- Feedback and fixes
- Phased roll-out
- Deployment to all users
- Webinars and tutorials

Contact



Alan C. Chan

Manager, AirNow and
International Programs

alan@sonomatech.com

707.665.9900

STi

Sonoma Technology, Inc.
Innovative Environmental Solutions

sonomatech.com

[@sonoma_tech](https://twitter.com/sonoma_tech)