Smoke Monitoring in Response to Wildfires and Prescribed Fire

Josh Hall, USFS
Wildland Fire: Smoke Workshop
November 2014
Albuquerque, NM

Where and how do we set up monitors?

- In communities likely to be affected by smoke that don't have monitors
  - Fire Camps
  - Schools, Hospitals
  - Fire Departments

- Compliments the current network of air quality monitors

http://www.airnow.gov/index.cfm?action=airnow.local_s

AirNow - New Mexico Air Q...

Suggested Sites | R3 USDA Forest Service Int... | R3 USDA Forest Service Int... | Google Maps | Web Slice Gallery | Google

Go

AirNow

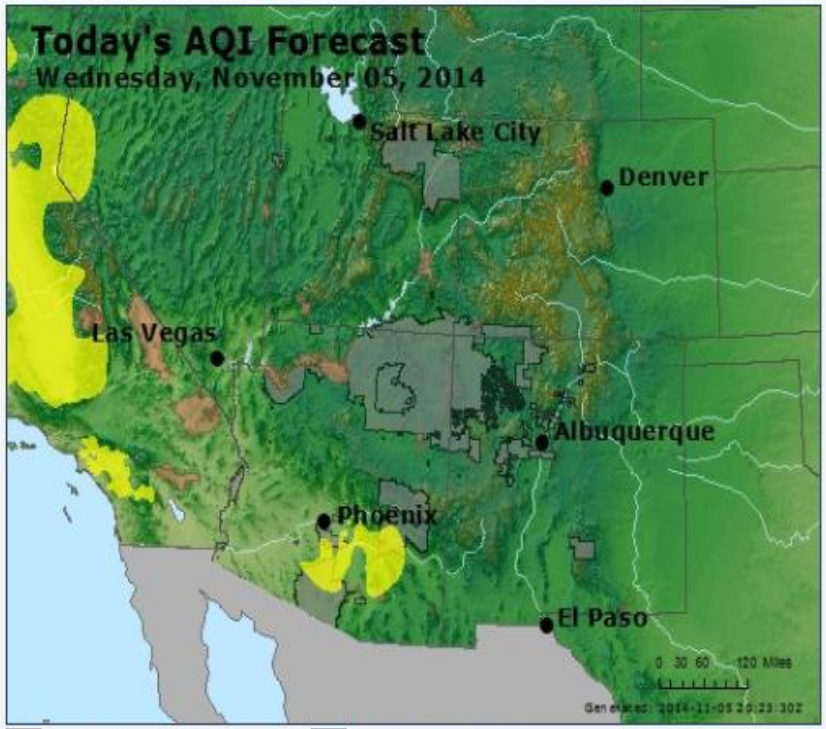
Local Air Quality Conditions

Zip Code: Go State : New Mexico Go National Summary

AirNow Home >> **New Mexico**

Data courtesy of: City of Albuquerque Environmental Health Department, New Mexico Environment Department

Forecast | Current AQI | AQI Loop | More Maps



National Parks/Monuments Tribal Boundaries

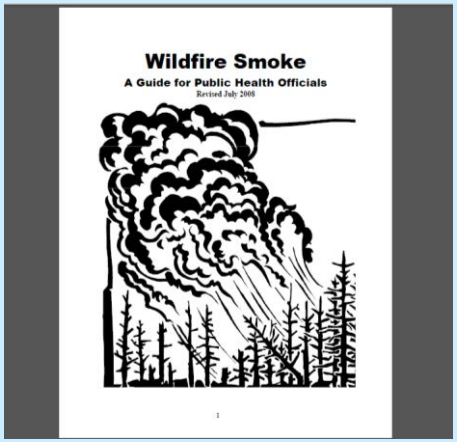
The tribal boundaries shown here are provided by the Bureau of Indian Affairs and are intended to be used as a general spatial reference only. They are not a formal determination of tribal boundaries by the EPA.

Click on the city name for more detailed information. printable summary	FORECAST		CURRENT AQI
	Wed Nov 5	Thu Nov 6	
Albuquerque	42	45	33
Dona Ana County	42	42	31
San Juan County	41	45	29

AQI – Air Quality Index

AQI Category	Index Values	Revised Breakpoints ($\mu g/m^3$, 24-hour average)
Good	0 - 50	0.0 – 12.0
Moderate	51 - 100	12.1 – 35.4
Unhealthy for Sensitive Groups	101 – 150	35.5 – 55.4
Unhealthy	151 – 200	55.5 – 150.4
Very Unhealthy	201 – 300	150.5 – 250.4
Hazardous	301 – 400	250.5 – 350.4
	401 – 500	350.5 – 500

Short term averages from Wildfire Smoke Guide



Air Quality Guide for Particle Pollution		
Category	Concentration PM 2.5 (ug/m3- 1-3 hr. avg.)	Concentration PM 2.5 (ug/m3- 24 hr. avg.)
Good	0-38	0-12
Moderate	39-88	12.1-35.4
Unhealthy for Sensitive Groups	89-138	35.5-55.4
Unhealthy	139-351	55.5-150.4
Very Unhealthy	352-526	150.5-250.4
Hazardous	526+	250.5+

Fire Cache Smoke Monitor Archive - Windows Internet Explorer provided by USDA Forest Service

http://www.wrcc.dri.edu/cgi-bin/smoke.pl

Live Search

Favorites | Fire Cache Smoke Monitor Archive

Fire Cache Smoke Monitor Archive

Smoke Monitoring Stations | About Smoke Monitoring | Contacts

Best viewed with 800 X 600 or greater screen resolution.

Smoke Monitor Locator Map

Start | EthoStream - Win... | Fire Cache Smo... | Monitoring | RX410_ep11jlpBO... | Search Desktop | 6:13 AM

INTERAGENCY REAL TIME SMOKE MONITORING

USDA FOREST SERVICE

DOI Bureau of Land Management

DOI Fish & Wildlife Service

WELCOME TO THE INTERAGENCY REAL-TIME SMOKE PARTICULATE MONITORING WEB SITE

Smoke management is a critical aspect of wildland fuels reduction. Airborne smoke particulate, especially particulates smaller than 2.5 um in diameter (PM2.5), generated when burning biomass pose potential health, visibility, safety, and nuisance problems. Forest and fire managers and air quality specialists require real-time particulate concentrations to effectively assess concerns when managing prescribed burns.

This web site provides real-time smoke concentration data (along with some other meteorological information) from portable smoke monitors. Historical data from past monitoring efforts are also available.

The data on this site from monitors deployed in support of fuels reduction activities will assist fire managers in properly managing fire and smoke. In addition to fuels reduction efforts, smoke monitors may also be deployed near wildfires to assist State and local health departments determine the geographic location and extent of health risks from smoke.

Raw data presented for this site are collected in "near-real time" and are intended only as an indicator of recent air quality. Data must be interpreted with caution. The data have not been validated by human review and may contain errors. These data are provided for public awareness and Federal Land Manager review only. They should not be used in any medical or scientific study. Contact your regional air program manager to obtain quality-assured quarterly data summaries or access to fully-validated raw data.

Real Time Data

The Real-time monitoring data section features current particulate concentrations and internal meteorological conditions of deployed monitors.

Historical Data

The historical data section features past particulate concentrations and internal meteorological conditions of deployed monitors.

Washington State - Air Monitoring

DEPARTMENT OF ECOLOGY
State of Washington

- Maps
- Air Monitoring Sites
- Most Recent Data
- Site/Group Reports
- Historical Data/Links
- Login

Close Menu

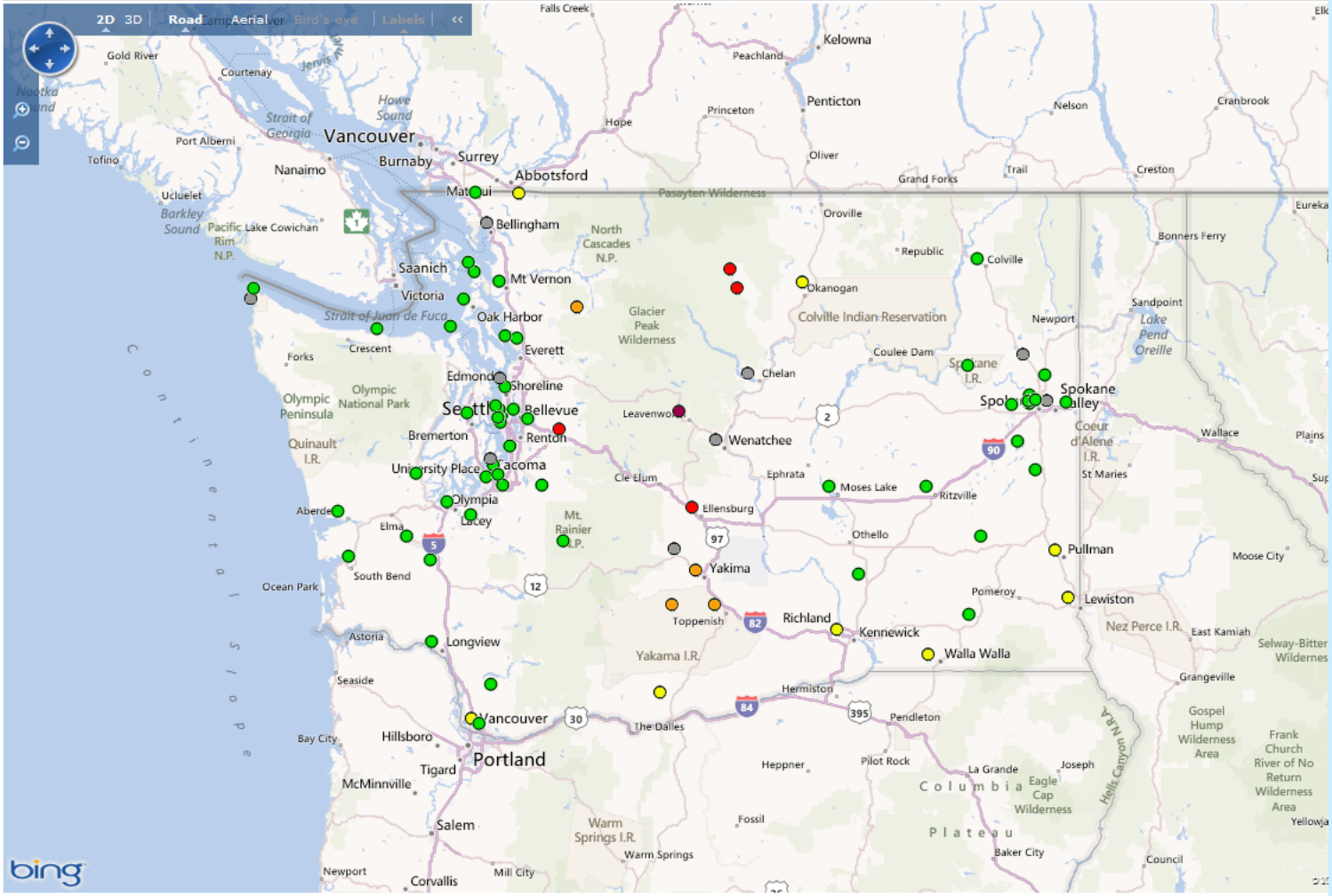
Most recently collected data have yet to be thoroughly reviewed for validity and should be considered preliminary.

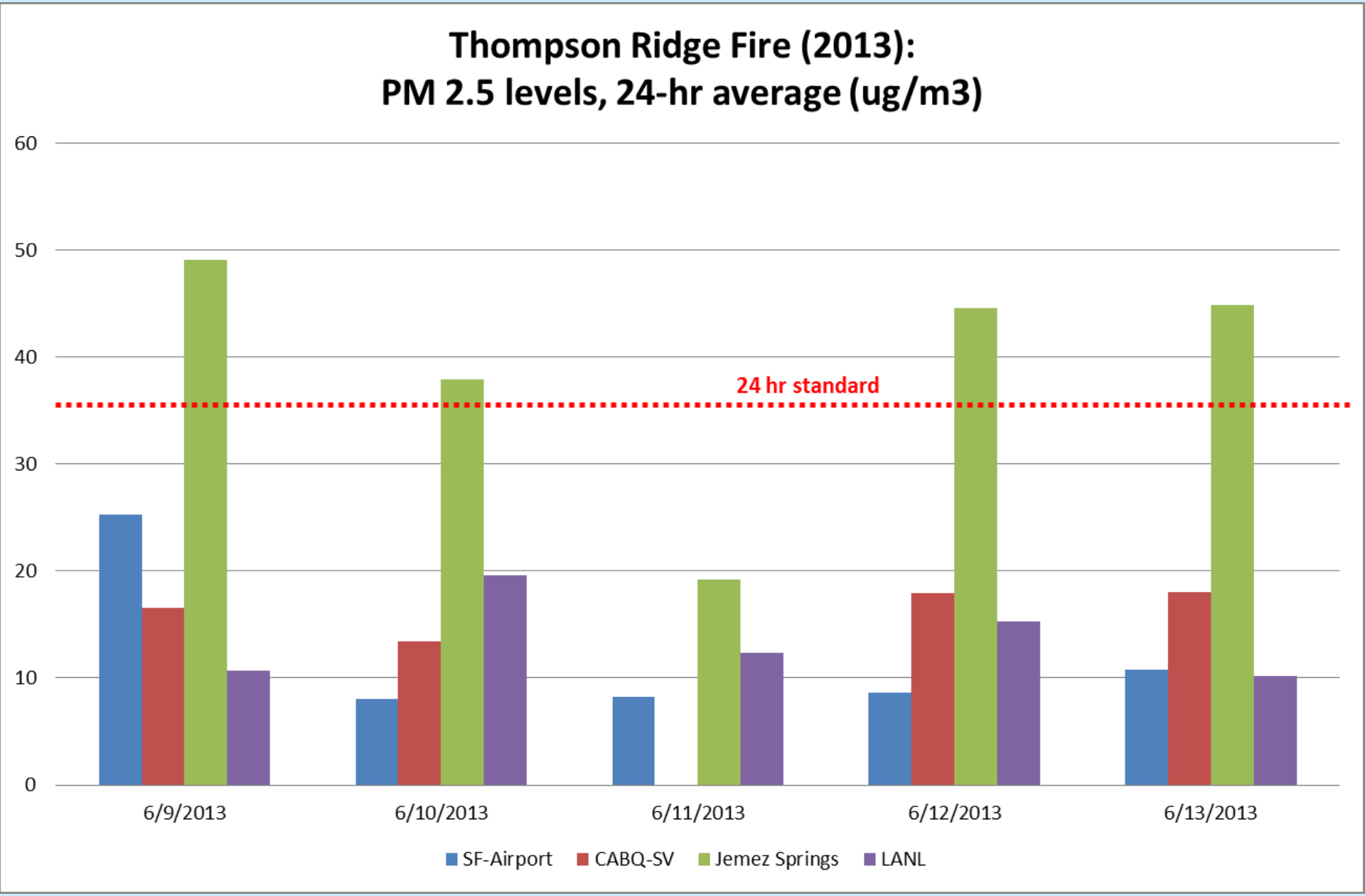
Click WAQA Legend for details

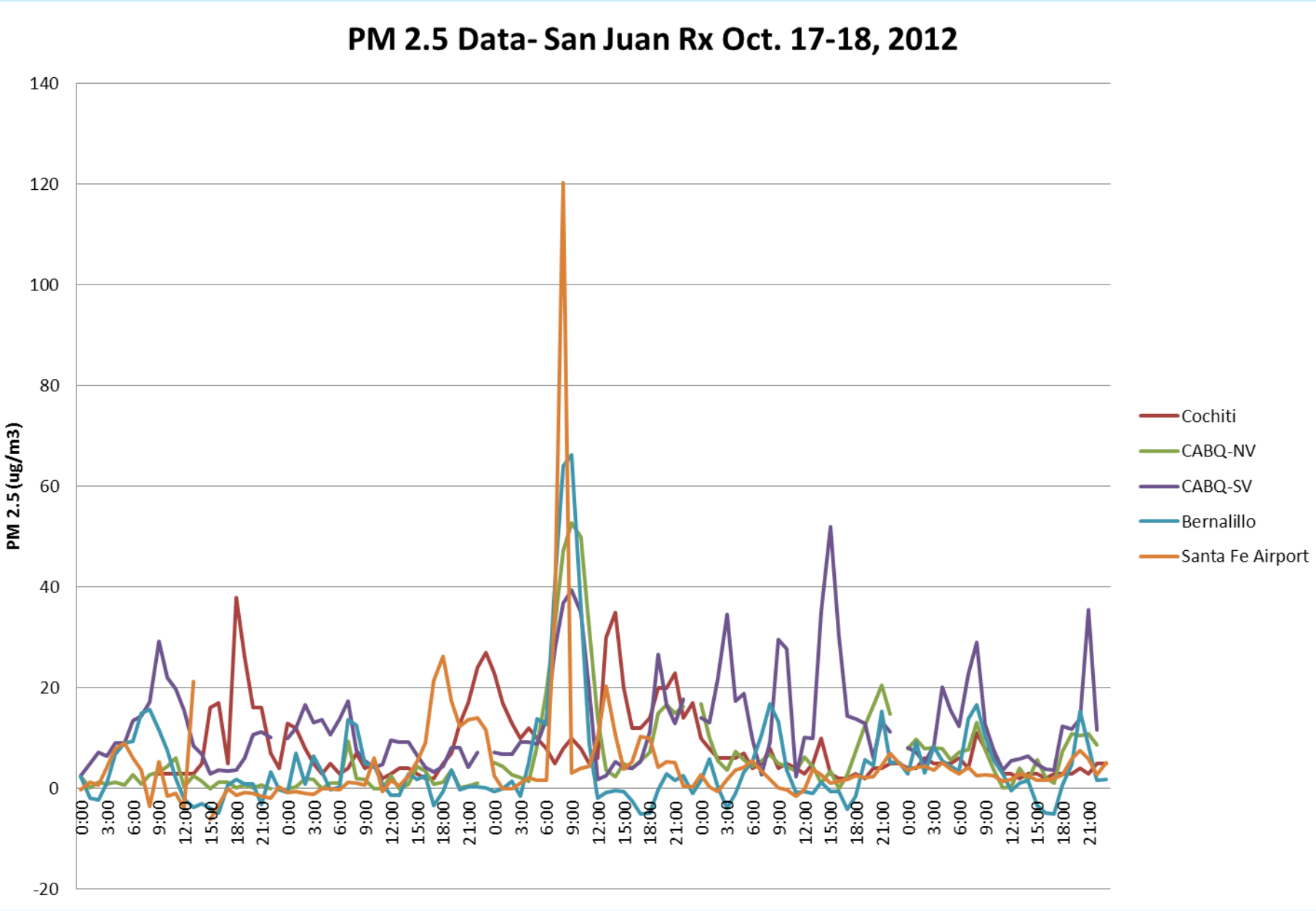
WAQA Legend

- Good
- Moderate
- Unhealthy For Sensitive Groups
- Unhealthy
- Very Unhealthy
- Hazardous
- No WAQA Data

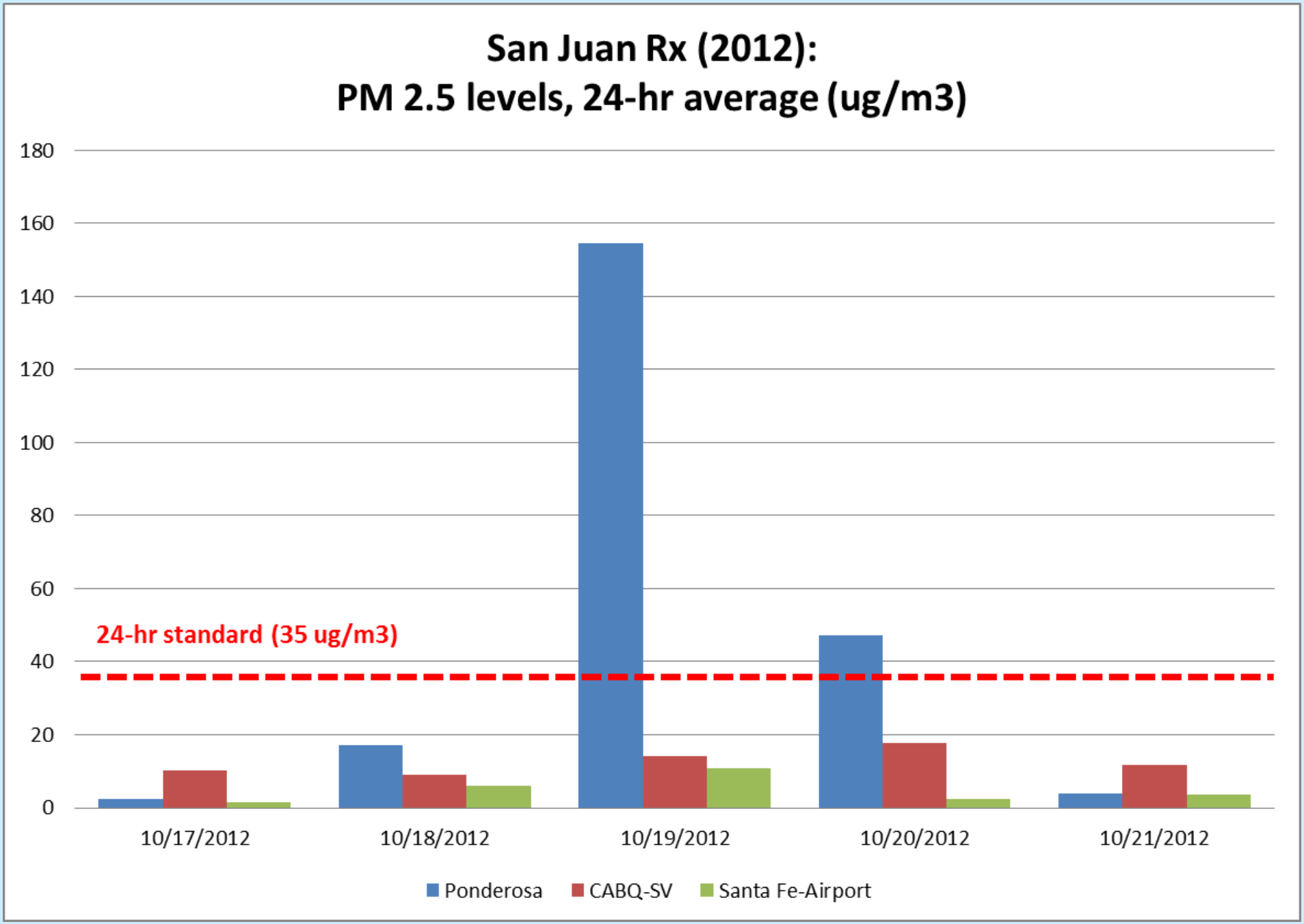
Click dot to view air monitoring and site information 1280 * 1024




Thompson Ridge Fire (2013):
PM 2.5 levels, 24-hr average (ug/m3)
60
50
40
30
20
10
0
24 hr standard
6/9/2013
6/10/2013
6/11/2013
6/12/2013
6/13/2013
SF-Airport
CABQ-SV
Jemez Springs
LANL


PM 2.5 Data- San Juan Rx Oct. 17-18, 2012
PM 2.5 (ug/m3)
140
120
100
80
60
40
20
0
-20
0:00
3:00
6:00
9:00
12:00
15:00
18:00
21:00
Cochiti
CABQ-NV
CABQ-SV
Bernalillo
Santa Fe Airport

San Juan Rx (2012):
PM 2.5 levels, 24-hr average (ug/m3)



An Alternative to Monitors?

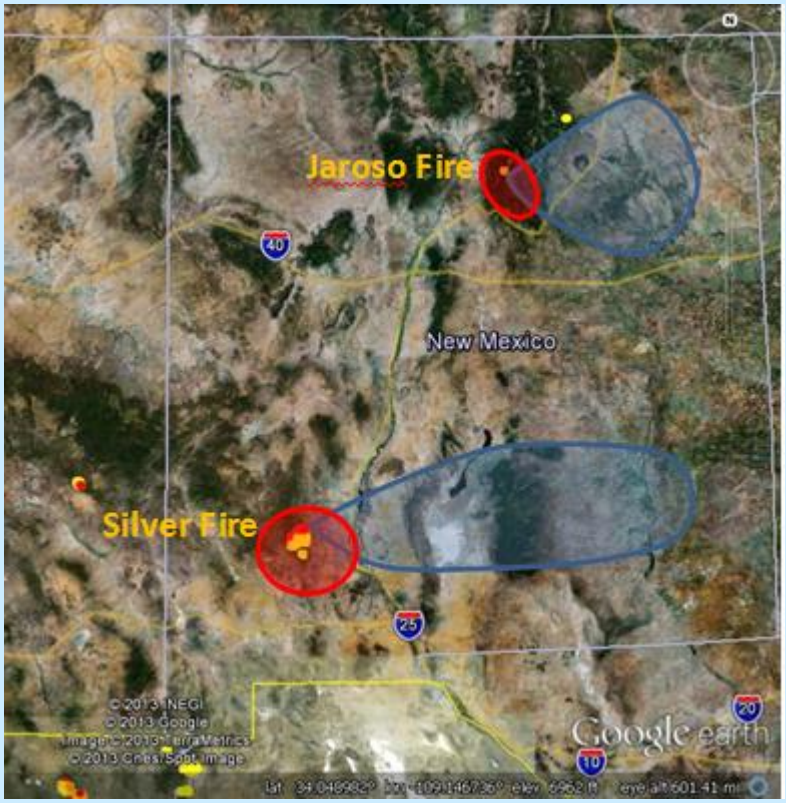
Visibility Ranges Used to Determine Health Effect Categories	
Visibility Range	**Health Effect Category**
13.4 miles and up	Good
13.3 miles to 8.8 miles	Moderate
8.7 miles to 5.1 miles	Unhealthy For Sensitive Groups
5.0 to 2.2 miles	Unhealthy
2.1 to 1.3 miles	Very Unhealthy
less than 1.3 miles	Hazardous

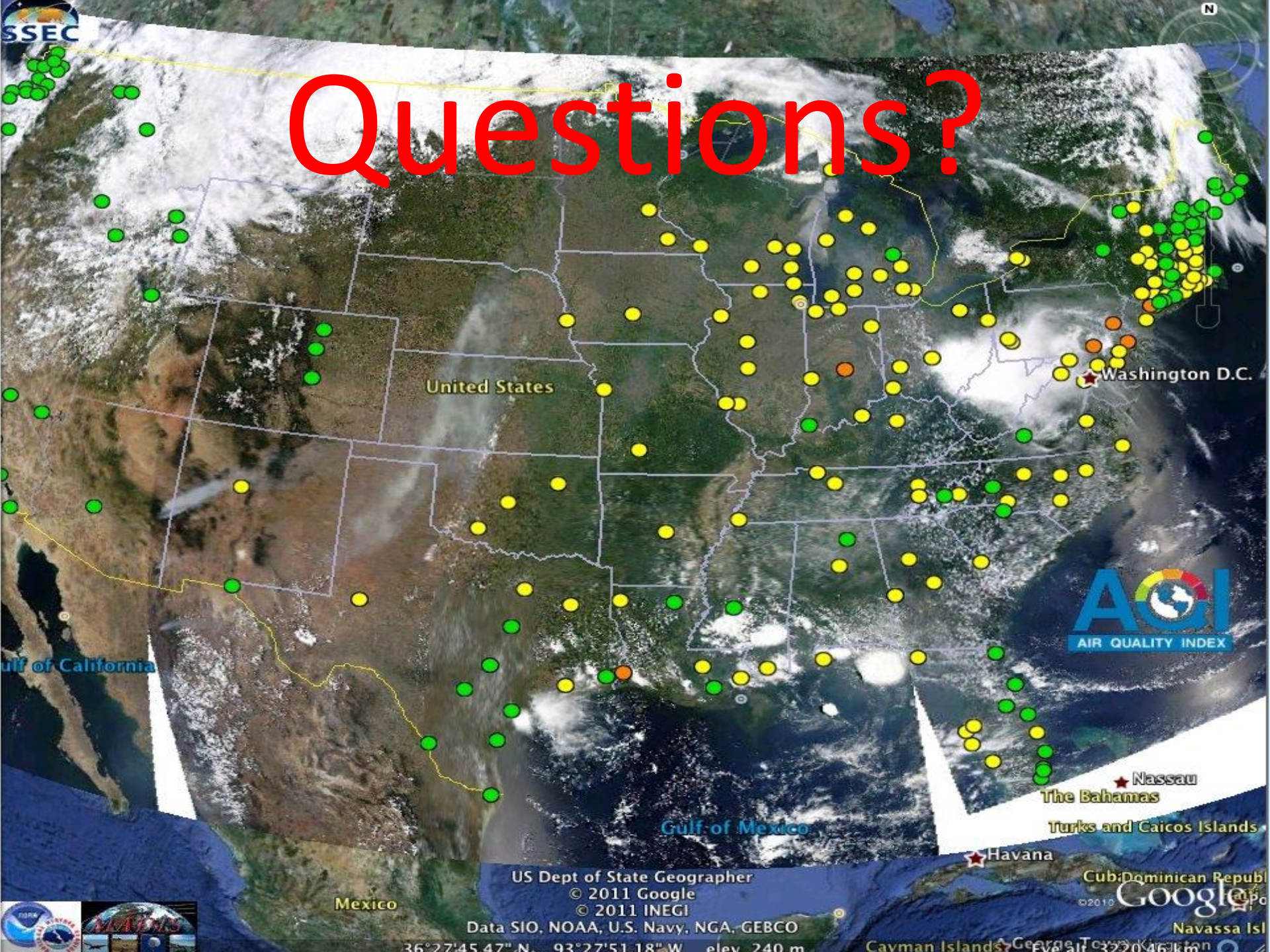
1. Face away from the sun.
2. Determine the limit of your visible range by looking for targets at known distances (miles).
3. Visible range is that point at which even high contrast objects totally disappear.
4. Use the values above to determine if it's safe to be outside.

What do we do with the information?

- Use the data to inform our partners: Department of Health, New Mexico Environment Department, local governments, the public.

- Validate models and forecasts
- Evaluate magnitude of impacts
  - For communities
  - Feedback to land managers




Questions?
SSEC
United States
Washington D.C.
AQI
AIR QUALITY INDEX
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Gulf of Mexico
Nassau
The Bahamas
Turks and Caicos Islands
Havana
Mexico
US Dept of State Geographer
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Navassa Isl
Cayman Islands
MAIMS