

Wildfire Air Quality Response Program

Four Corners Air Quality Group Meeting

San Juan College, Farmington, NM

October 24, 2018

Josh Hall

Forest Service

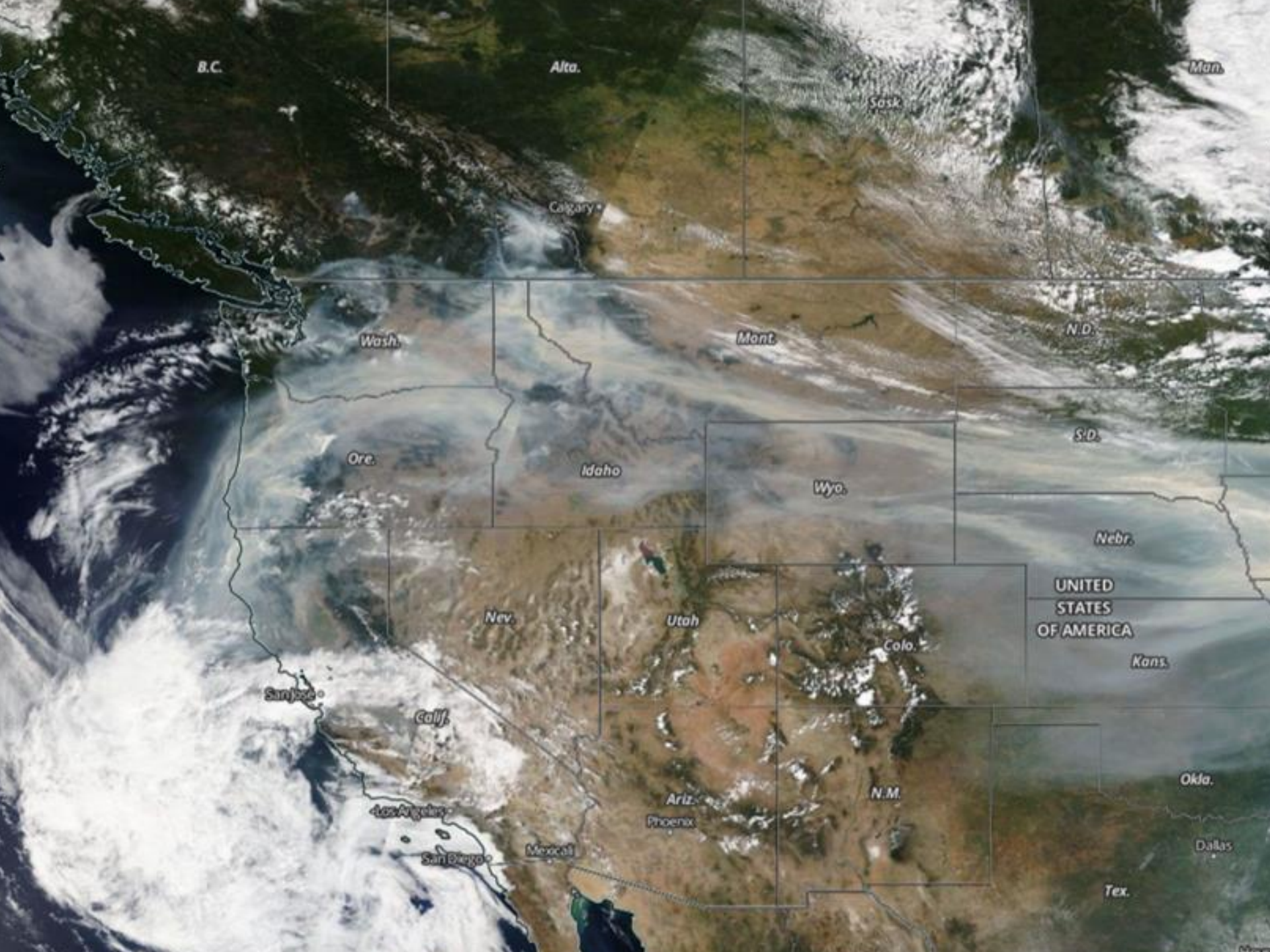
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Smoke and Fire

- Wildfires single biggest source of high-level air quality impacts (in U.S.)
- Single wildfires to multiple regional wildfires causing significant impacts to millions
 - Health, Safety, Economics, Disruption of Life, Children/School/Athletics impacts
 - **Long durations** of high levels of pollutants
 - Can contribute to fatal traffic accidents
- **Public** impacts of smoke: 1 in 3 households has someone with respiratory issues, E.g. children & adults with asthma (26 million), COPD (6.3%), emphysema, (communities will vary higher & lower)
- Sensitive groups at risk: people with asthma, older adults and those of low income. Science: pregnant women, diabetics. No PM is healthy – EPA Integrated Science Assessment
 - \$11 to \$20 Billion Dollars estimated annual medical costs due to short term exposure based on 2008-2012 wildfire seasons (longer term is higher); \$8-\$80/Day medical cost (modelled)
 - Annual mortality estimates based on PM2.5 impacts from biomass burning:
 - 180, 000 globally and 2,500/yr in US based global model, CSU Study 5,000/yr to 25,000/yr,



B.C.

Alta.

Man.

Sask.

Calgary

Wash.

Mont.

N.D.

Ore.

Idaho

S.D.

Wyo.

Nebr.

Nev.

Utah

UNITED STATES OF AMERICA

Colo.

Kans.

San Jose

Calif.

Okla.

Los Angeles

Ariz.
Phoenix

N.M.

Dallas

San Diego

Mexicali

Tex.

 High Country News

Saving baby Jo from the smoke

A mother grapples with her decision to flee the 416 Fire with her infant daughter. (109 kB) ▾



<https://www.hcn.org/issues/50.12/wildfire-essay-saving-baby-josephine-from-durango-colorado-416-fire-smoke>

An Evolving Interagency Program-

Wildfire Air Quality Impacts and Prescribed Fire Smoke Management

- EPA Regulations- Ozone, Fine Particulate Matter (PM2.5), Regional Haze, Exceptional Events.
 - If wildfire is a potential contributor to these (emergency) episodes, the EPA urges implementing state and local agencies to coordinate with the land management agencies, as appropriate, in developing plans and appropriate public communications regarding public safety and reducing exposure.
- Interagency Wildland Fire Cohesive Strategy has provided a greater understanding of partner issues and concerns including smoke
- Wildfires are longer and larger with smoke impacts to fire personnel & the public with higher levels of smoke
- Land managers assess broad range of risks and complexity
- Land managers know more of what the fire will do in terms of: fire size, growth rate, intensity, fuels, consumption, emissions, weather, duration,...

Smoke Information and Predictions

Timely smoke impact information and predictions reduce risk to both fire personnel and the public

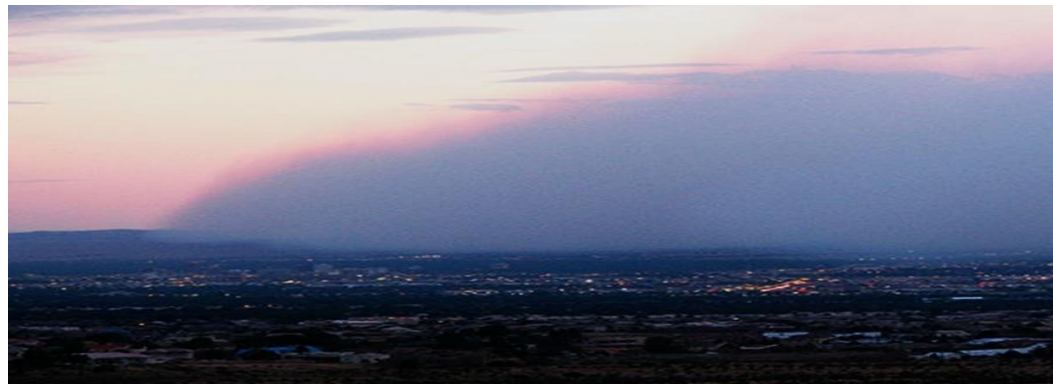
- Studies show change in people's behavior and health outcomes

- If people know what to expect: they plan & react better
- Sensitive individuals will take protective actions when warned (NM DOH 5-3-1; EPA AIRNow)
- People respond when informed of higher risk levels
- Important that health messages be consistent
- Early messaging/intervention found to be most effective

Increase public confidence

Increase exposure reduction measures

Based on best science



Wildland Fire Air Quality Response Program

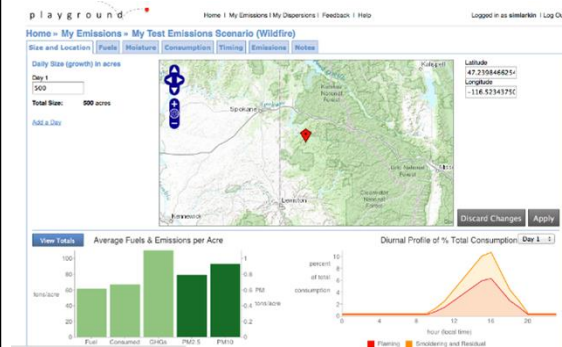
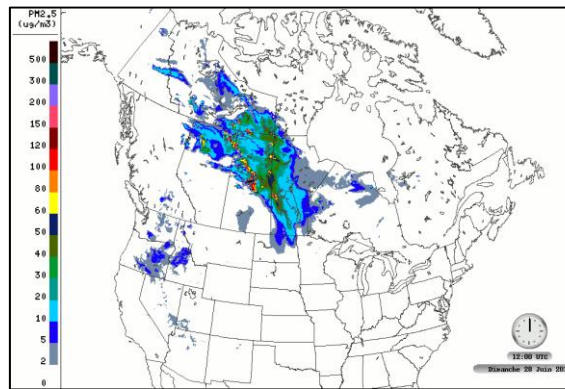
- Interagency response (2011-Present)
- Operationally addressing wildfire smoke
 - Public health
 - Transportation safety
 - Fire personnel exposure
- Four components:
 - Modeling (Daily fire/smoke runs)
 - Monitoring (Cache of 30+ PM2.5 units)
 - Messaging / Communication (Daily Outlook)
 - Air Resource Advisors (ARA)
 - Active Coordinated Response
- Integration / coordination
 - EPA, NOAA, NASA, CDC, States, and beyond



Modeling - Research, Development, Application and Feedback

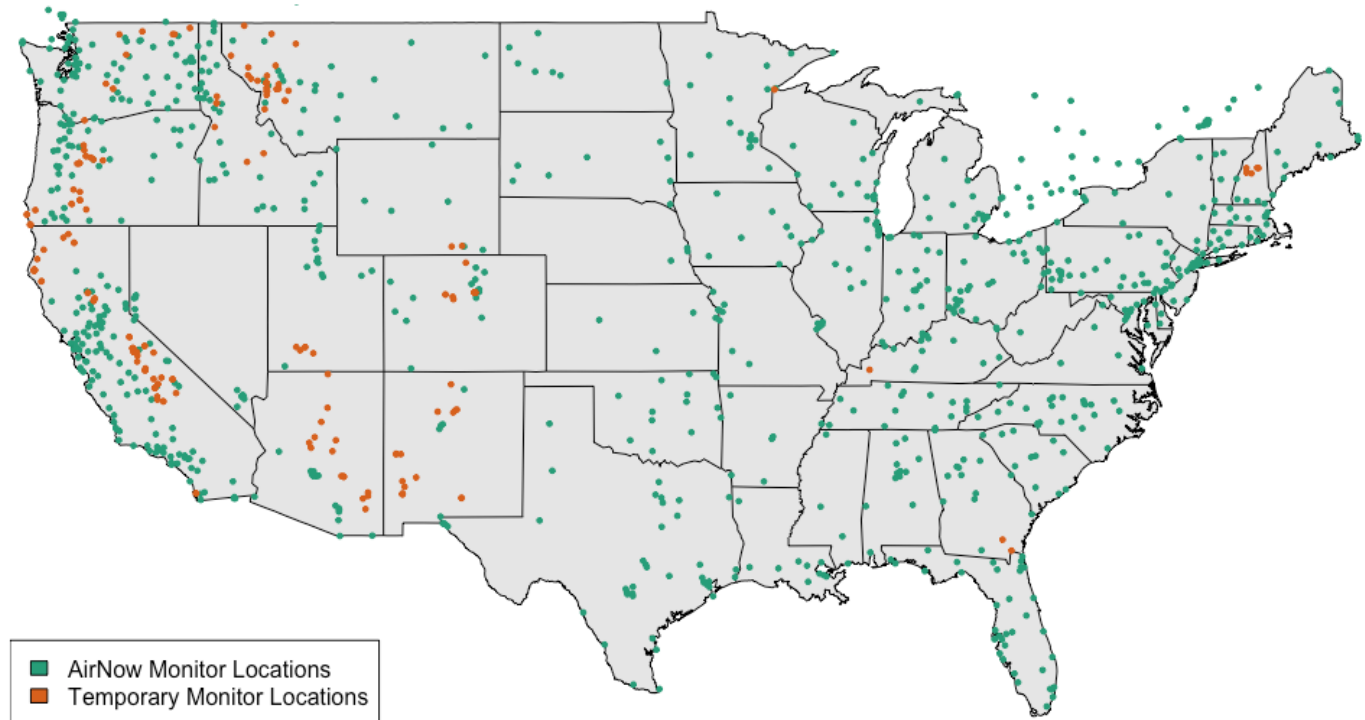
USFS PNW Research Station – AirFire Team

- Over 3000 daily smoke dispersion model runs completed (2017)
- Customized ARA smoke dispersion model runs done at a rate of 2-3 per day during the peak fire season
- 1 million + trajectories calculated
- Canadian emissions into models
- Information from these products heavily used across the web



Temporary Monitor Deployments

- Numerous temporary PM2.5 monitor deployments complemented permanent monitoring networks



Air Resource Advisors

Smoke specialists deployed as part of an Incident Management Teams


- 48 ARA's and 48 trainees
- Highly diverse group: FS, BLM, NPS, FWS, EPA, State Forestry, Tribes, NRCS, State Air, County FD and AD's.
- Backgrounds: Wildland Fire, Air Quality, Meteorology
- Training: Annual 2013-2018

Enables: Reduction of smoke exposure through behavior modification messages (public or personnel)

- Part of an Incident Management Team Structure
- Incident information to be made available for modeling, to develop on-incident and state smoke outlooks and other documents for communication
- Active coordination with state/tribal/local air quality regulatory agencies, public health...departments and impacted communities

Communications

- Create Smoke Outlooks & Impact Summaries
 - WFAQRP Programmatic Goal: Reduce exposure through behavior modification
 - AQI for yesterday, today, tomorrow
 - high & low impact time periods
- Work closely with air regulatory and health agencies
- Sync communications across impacted areas, and incident commands
- Provide critical additional information:
 - Monitor data and interpretation
 - Daily fire activity
 - Fire behavior predictions
 - Meteorology
- PIO info and posting on net, Inciweb, blogs, social media
- Coordinate with partners on traffic smoke impact response efforts



Smoke Outlook for 7/04 - 7/05
SW Colorado 416 Fire
 Issued at: 2018-07-04 14:48 UTC


Outlook for SW Colorado

Fire
 Fire size is 53,260 acres at 37% containment. Minimal fire behavior is expected today with smoldering the dominant source of smoke.

Smoke
 Communities along the Animas River valley from Hermosa to Aztec will continue to see smoke impacts overnight. As we have seen over the last week, there will be no reprieve today or tomorrow from dense morning smoke in areas along the Animas River valley including Hermosa, Durango and Bondad. Areas west of the fire including Cortez and Dolores may see light smoke tonight. Areas north and east of the fire should enjoy overall good air quality.

What is an AQI?
 The colored dots on the Outlook map tell you how clean or smoky the air is expected to be over the day. Each color represents an Air Quality Index (AQI) value. Use the chart near the bottom of this page to determine the level of clean or polluted air that each colored dot represents and what actions you should take if smoke is in the air.

Daily AQI Forecast for Jul 04, 2018



Station	Yesterday hourly	Tue 7/03	Forecast Comment for Today -- Wed, Jul 04	Wed 7/04	Thu 7/05
Bondad			Dense smoke in the morning lifting around noon today, returning after midnight		
Durango			Dense smoke in the morning lifting around noon, returning after midnight		
Ignacio			Mostly clear with occasional periods of haze today		
Hermosa			This morning's dense smoke lifting by noon, returning at similar levels after midnight		
Vallecito			Moderate conditions this morning, clear this afternoon		
Silverton			May see some haze this afternoon, otherwise a nice clear day		
Aztec			Smoke reaching Unhealthy levels this morning, clearing by noon		

Issued 2018-07-04 14:48 UTC by Andrea Holland, Air Resource Advisor

Air Quality Index (AQI)	Actions to Protect Yourself
Good	None
Moderate	Unusually sensitive individuals should consider limiting prolonged or heavy exertion.
USG	People within Sensitive Groups* should reduce prolonged or heavy outdoor exertion.
Unhealthy	People within Sensitive Groups* should avoid all physical outdoor activity.
Very Unhealthy	Everyone should avoid prolonged or heavy exertion.
Hazardous	Everyone should avoid any outdoor activity.

Disclaimer: Forecasts may be wrong; use at own risk. Use caution as conditions can change quickly. See your health professional as needed. Smoke sensitive groups should take appropriate precautions.

Additional Links
 San Juan Basin Public Health – <http://sjbph.health.state.or.us/416-fire-updates/>

by USFS Wildland Fire Air Quality Response Program – www.wildlandfiresmoke.net
 SW Colorado Updates – tools.airfire.org/production-outlooks/SWColorado
 Smoke and Health Info – www.airnow.gov/index.cfm?action=smoke.index

Questions?

