

NW-AIRQUEST 101

Suggestion from Mark Buford, NWCA at end of 2014 meeting:

A brief history of the consortium...why it was created, how it is paid for, what products/services it provides (basically a review of what is on the website) some discussion about UW vs WSU and their roles. Who uses the products and services and for what purposes.

Follow-up suggestion:

- 1) Drawing partly from Information on Web Page, create a presentation available any time, introducing NW-AIRQUEST to new members/attendees.
- 2) It could also be used to inform future air directors and managers of products, their users and value to their agencies..

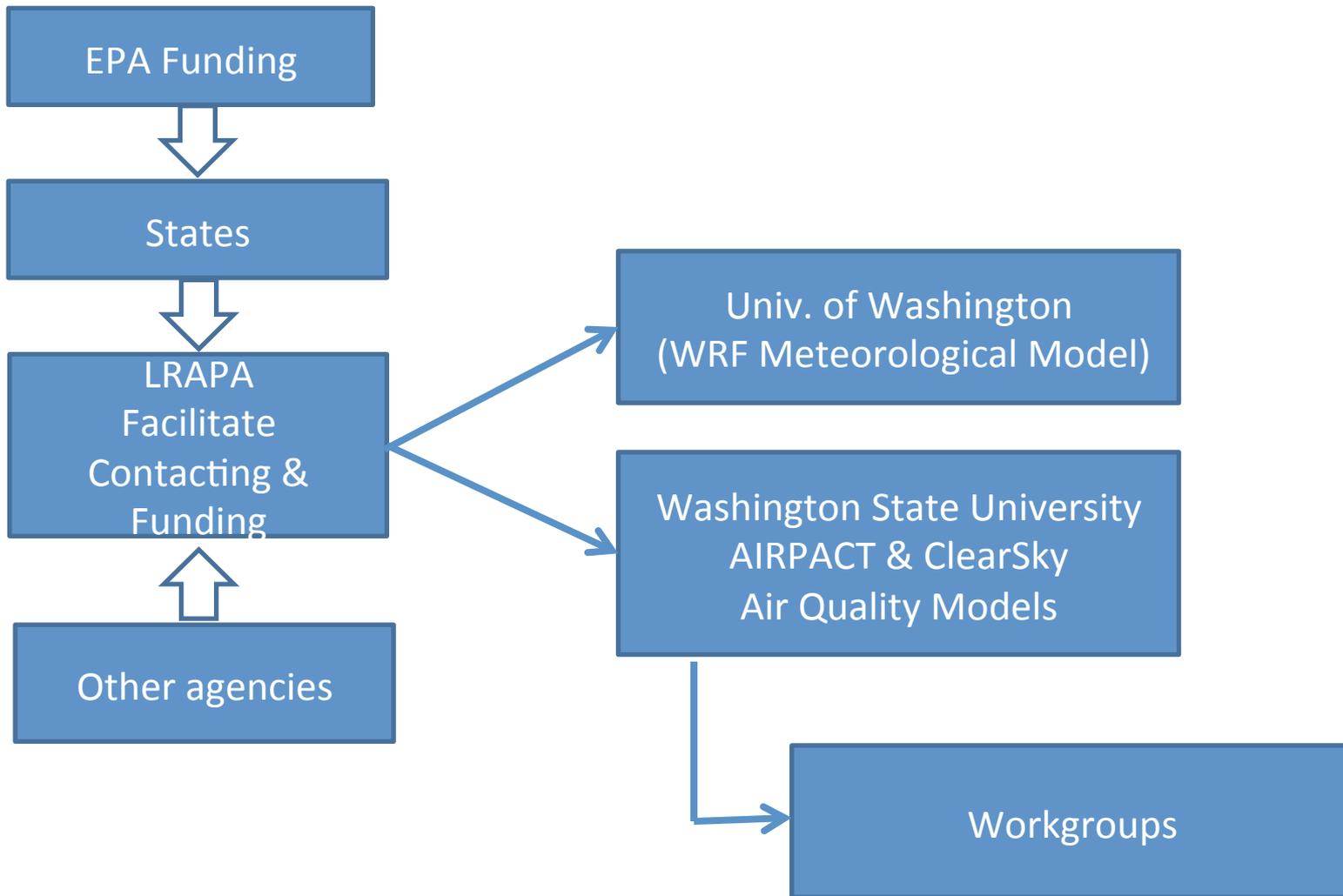
Preliminary Draft of NW-AirQuest 101

- Work in progress
- Most basic background is on the webpage
- Presentation needs input from others
- Hopefully close enough to assist new attendees this week

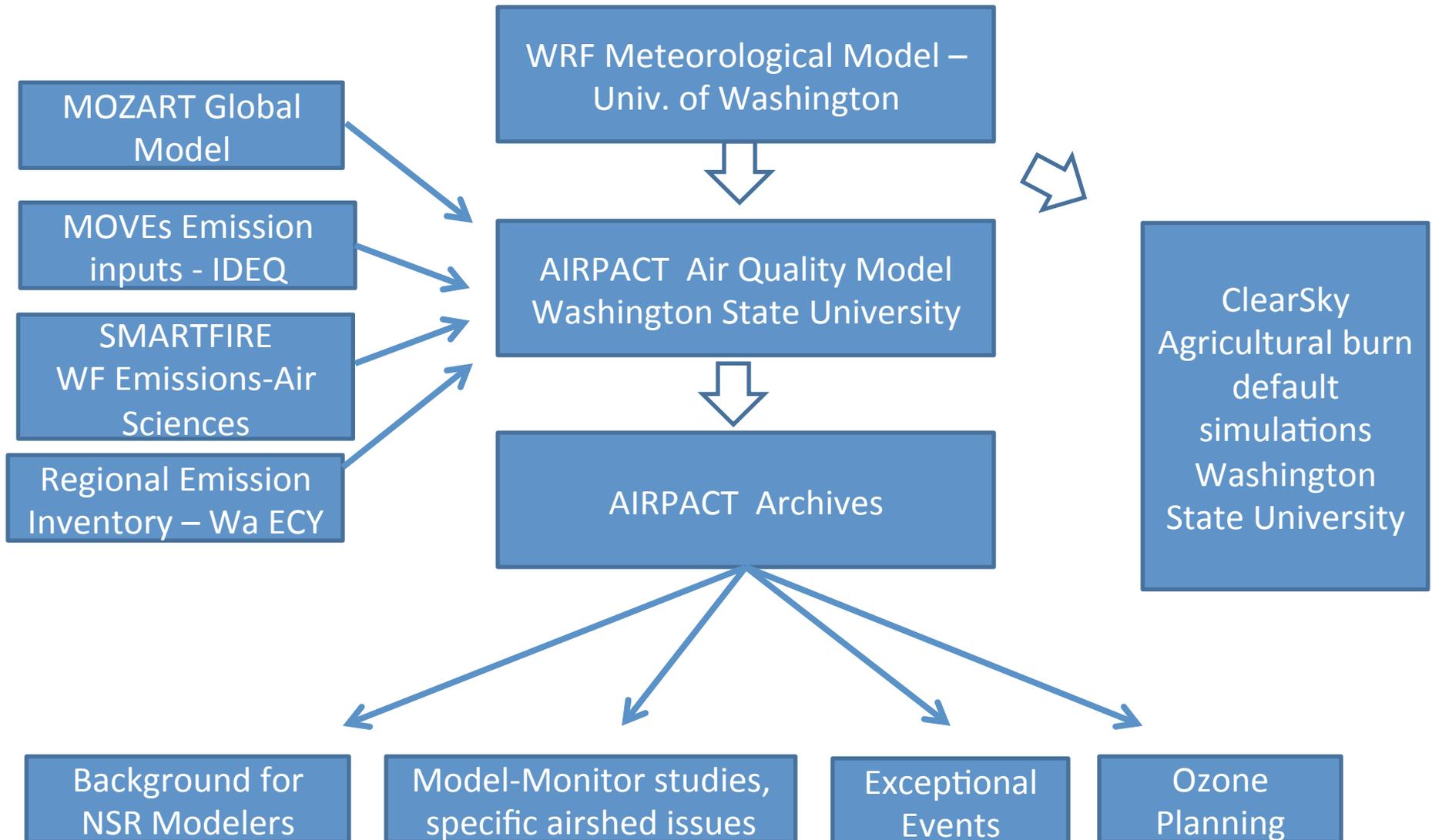
NW-AirQuest

- Why and when was it created?
 - ?
- How is it paid for?
 - Member agencies
- Who uses the products?
 - Air quality forecasters, citizens, agency modelers, analysts, burn coordinators.

NW-AIRQUEST Organization

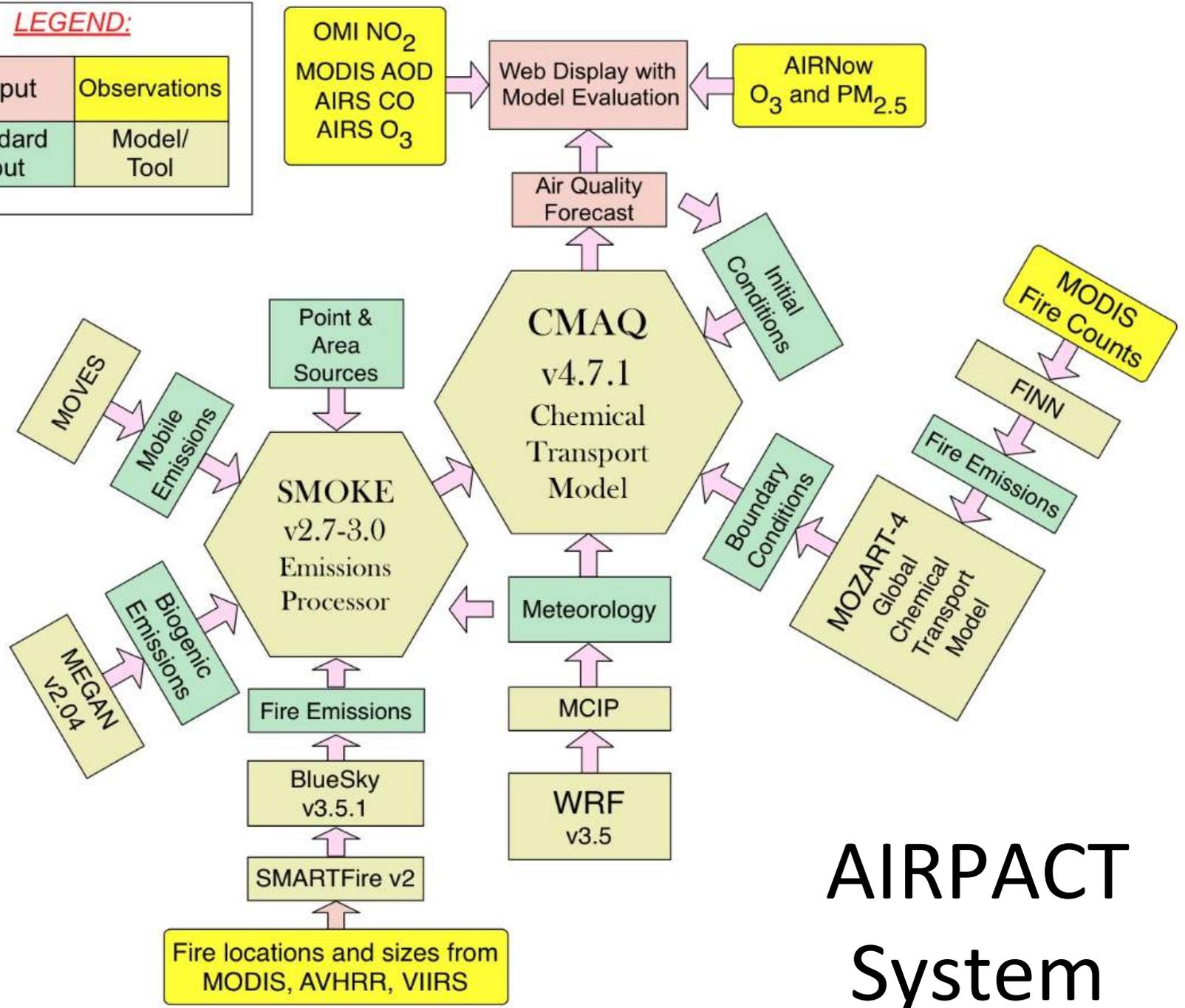


NW-AIRQUEST Models & Model Inputs



LEGEND:

Output	Observations
Standard Input	Model/ Tool



AIRPACT System

NW AIRQUEST



Northwest AIRQUEST seeks to develop, maintain, and enhance a sound scientific basis for air quality management decision-making in the Pacific Western Region of North America (encompassing the states of Washington, Oregon, Idaho, Montana, and Alaska in the United States, and the provinces of British Columbia and Alberta in Canada.)

Related Programs:

- [AIRPACT](#)
- [ClearSKY](#)
- [BlueSky](#)
- [MM5 Forecasting](#)

Northwest Regional Modeling Consortium

• Feb 5, 2015 •

[agenda](#)

Overview

Overview

1.0 The NW-AIRQUEST Mission

NW-AIRQUEST seeks to maintain and enhance a sound **scientific basis for air quality management decision-making** in the Pacific Western North America Region. It achieves such a basis through **collaboration** and sharing of experiences to remain abreast of the state-of-the-science and to develop **regionally consistent technical approaches** to emission inventories, air quality modeling, and air monitoring. NW-AIRQUEST cooperation enhances the effectiveness of individual members in a **mutually beneficial** relationship while operating within the **resource constraints** of each member organization.

Objectives

- Providing sound **scientific advice** to, and receive appropriate input or **direction from, decision-makers** for the management of air quality issues within the Region;
- **Development, operation, and improvement of** urban and regional numerical **air quality forecast systems** to form an archival database of simulated atmospheric data. A key effort will involve coordinating emission inventory and air quality observational databases for model application and evaluation;
- Development, evaluation, and application of **tools for specific measurement and modeling studies** to address particular issues, or to answer specific science questions related to air quality in the Pacific Western North America Region;
- **Education, technology transfer, and communication to enhance understanding of current air quality issues**, to improve capabilities among all members for using advanced modeling systems to address these issues, and to promote wide-spread communication of methods and results throughout the Region; and
- **Collaboration with other scientific groups**, particularly organizations with similar goals in other regions, and organizations involved in the science disciplines associated with air quality and related environmental resources.

Organization

- Membership: State, Local, Federal (US & Canadian) agencies with Air Quality interests and issues.
- Rotating Chairmanship
- Work is accomplished through:
 - University of Washington- WRF Weather modeling
 - Washington State Univ. – AIRPACT and ClearSky
 - Some tasks contributed by member agencies
- Workplans and Contracts with UW and WSU are developed by committee and facilitated by Lane Area Regional Air Pollution Agency.

NW-AIRQUEST comprises a virtual air quality science center dependent on active involvement of all its sustaining, collaborative, and associate members.

- * U.S. EPA Region 10
- * Nez Perce Tribe
- * Idaho Department of Environmental Quality
- * Oregon Department of Environmental Quality
- * Lane Regional Air Protection Agency
- * Washington Department of Ecology
- * Benton County Clean Air Agency
- * Northwest Regional Clean Air Agency
- * Olympic Regional Clean Air Agency
- * Puget Sound Clean Air Agency
- * Southwest Clean Air Agency
- * Spokane Regional Clean Air Agency
- * Yakima Regional Clean Air Agency
- * University of Washington
- * Washington State University

AIRPACT Web Page

NOTE: When animation is paused, switching between species will require you to click play in the animation controls in order for the imagery to appear.

Date Displayed: [Jun 17, 2015](#)

View Settings

Misc Overlays

Species Animations

- | | | |
|--|---------------------------------------|--|
| <input type="radio"/> OZONE | <input type="radio"/> AOD | <input type="radio"/> NO _x |
| <input checked="" type="radio"/> OZONE 8hr avg | <input type="radio"/> CO | <input type="radio"/> SO ₂ |
| <input type="radio"/> PM2.5 | <input type="radio"/> HCHO | <input type="radio"/> VOCs |
| <input type="radio"/> PM2.5 24hr avg | <input type="radio"/> ISOPRENE | <input type="radio"/> AORGC |
| <input type="radio"/> WS PM2.5 Tracer | <input type="radio"/> NH ₃ | <input type="radio"/> ANO ₃ |
| | <input type="radio"/> VISIBILITY | |

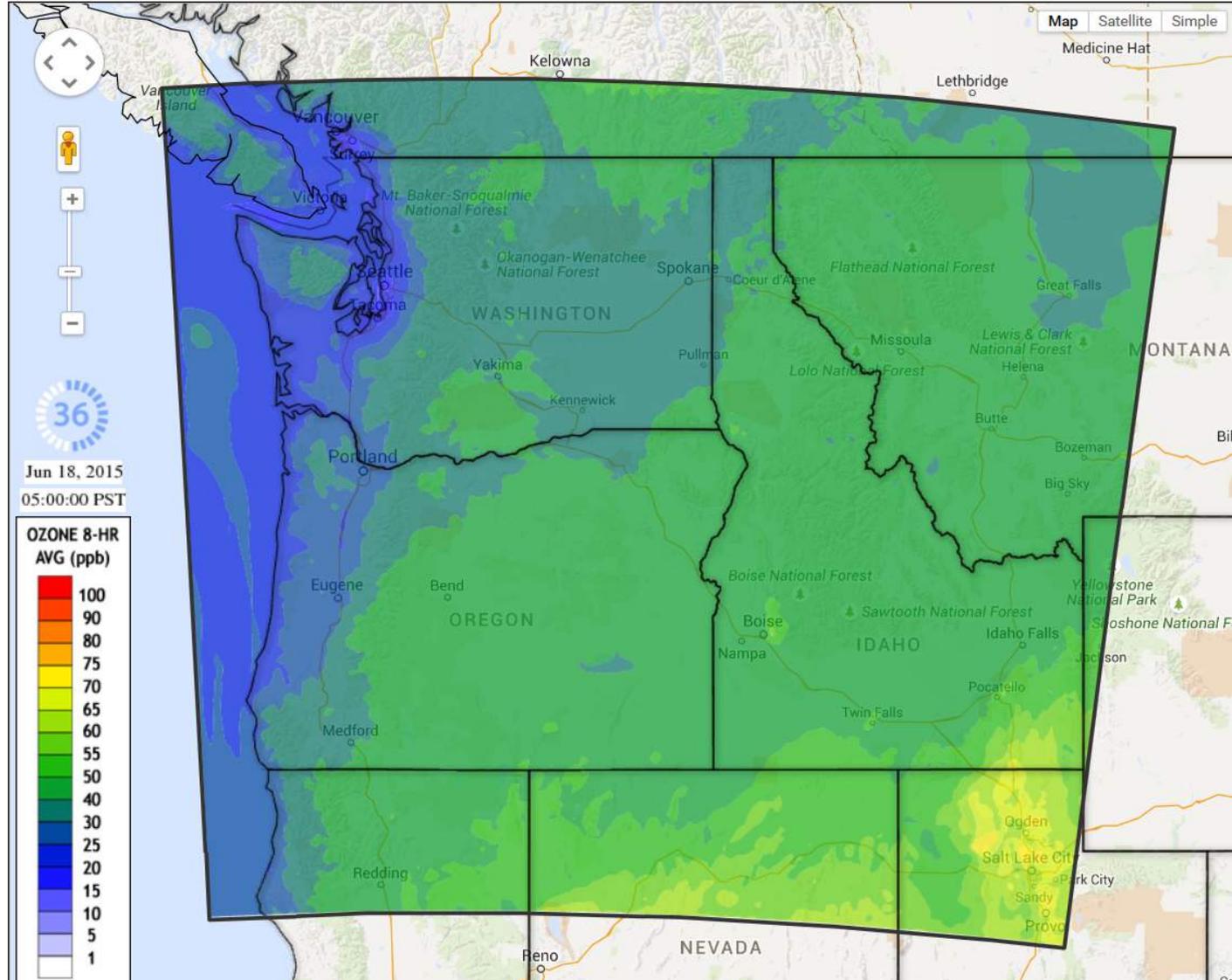
Note: Animations available May 1, 2012 onward
(AORGC and ANO₃ available beginning June 24)

Emissions Animations

Meteorology Animations

Satellite Imagery

MOZART-4 Imagery



AIRPACT-4 vs. AIRNow Performance Charts

Station:

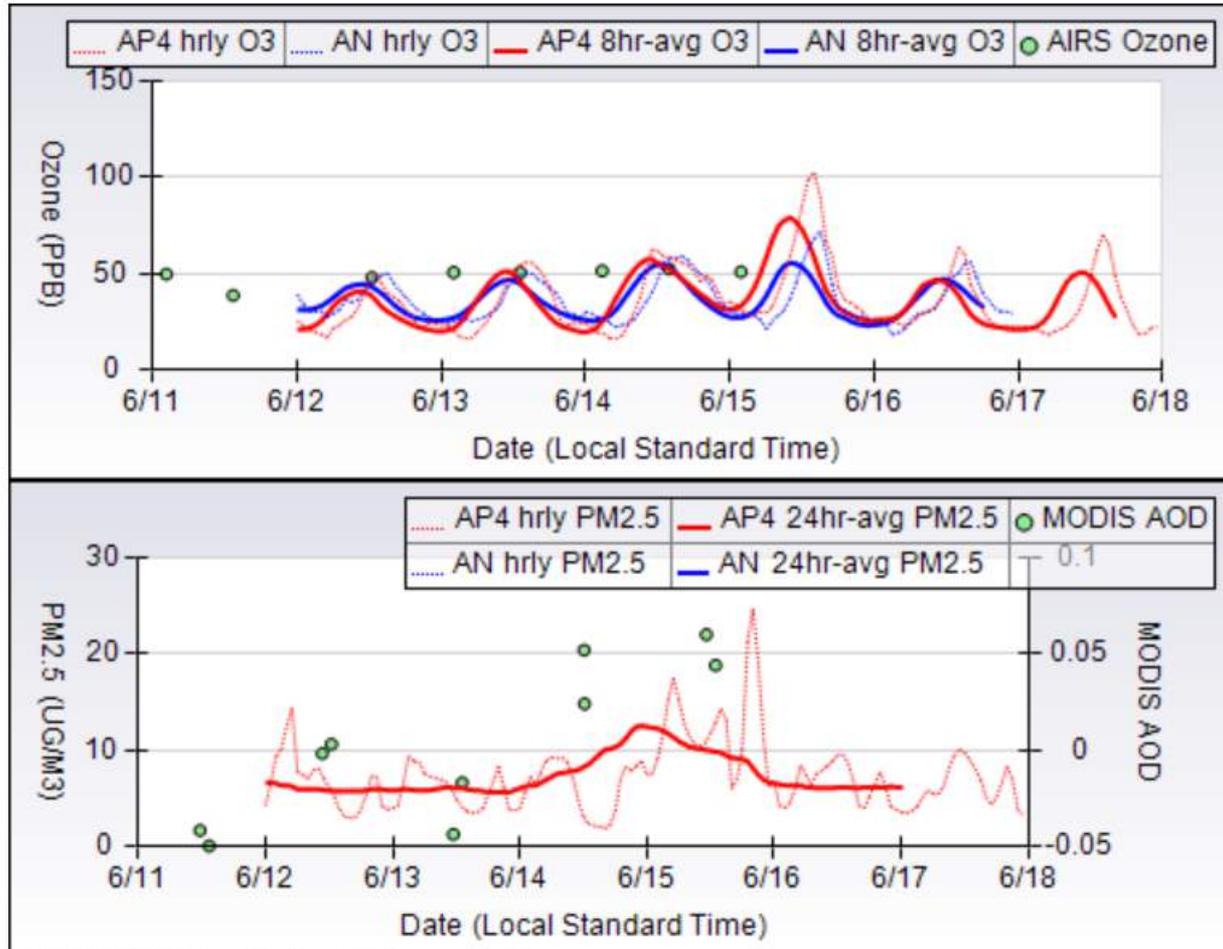
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Start:

End:

[\(Refresh Page\)](#) [\[Monthly Stats\]](#)

Lat, Long: 45.2593, -122.5882 [Map It](#)

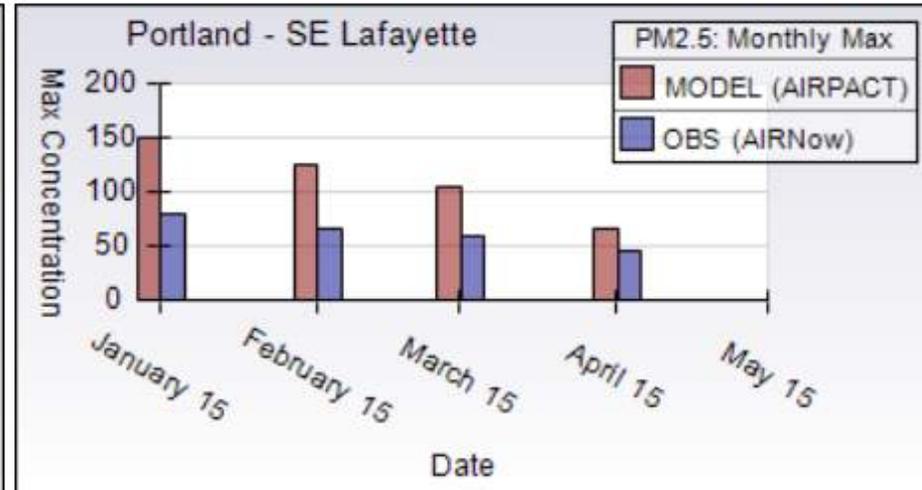
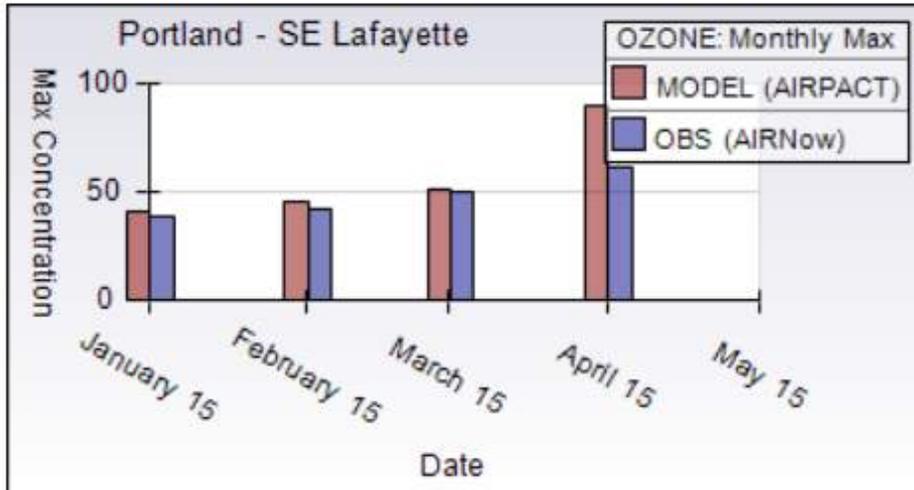
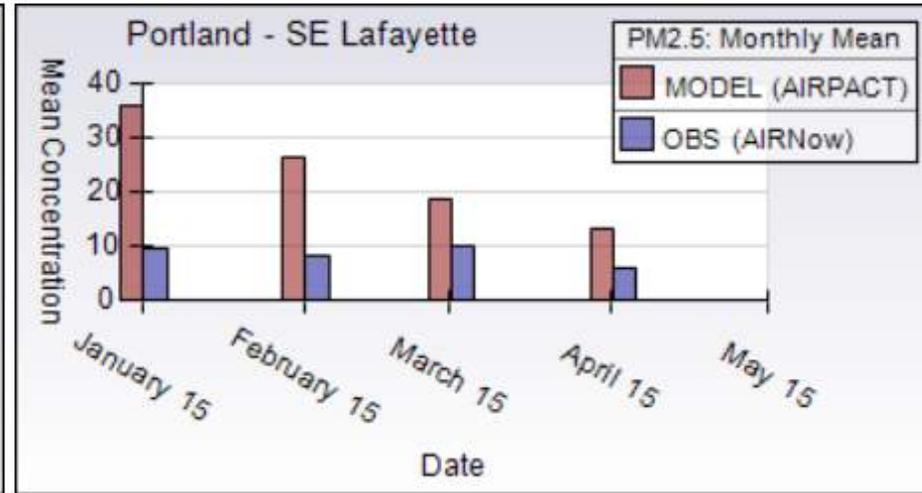
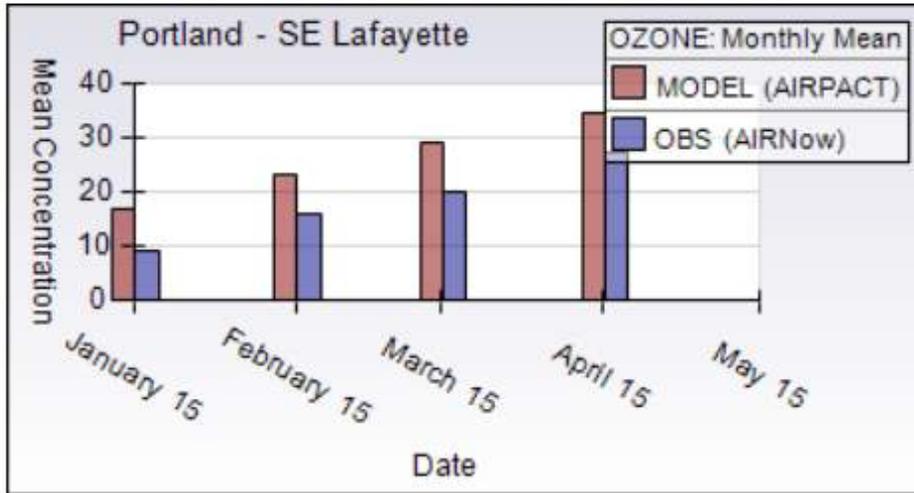


2015 AIRPACT-4 vs. AIRNow Performance Charts

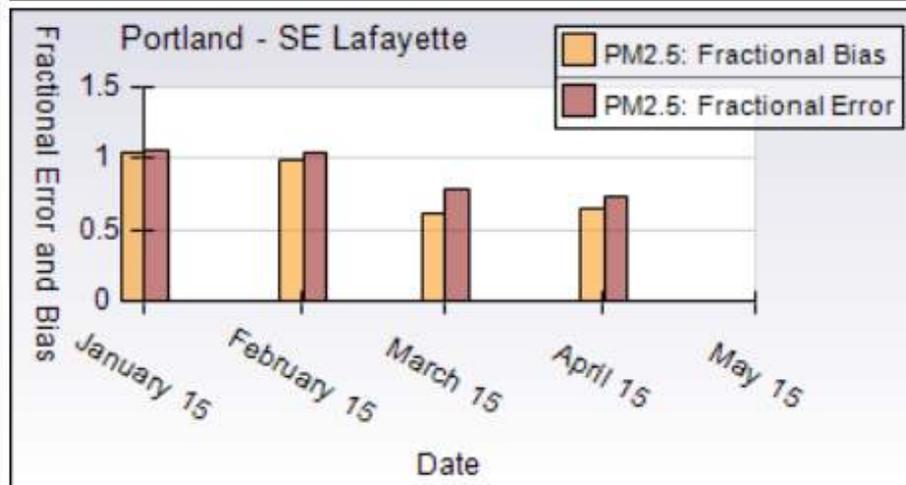
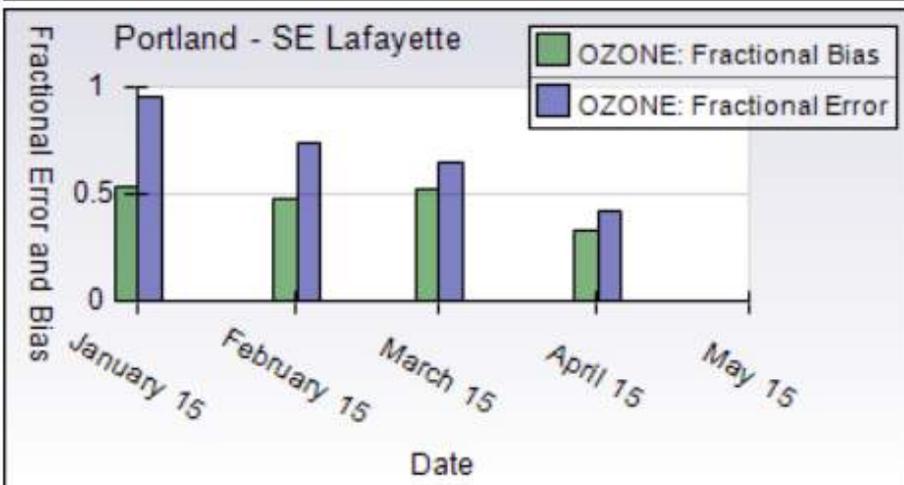
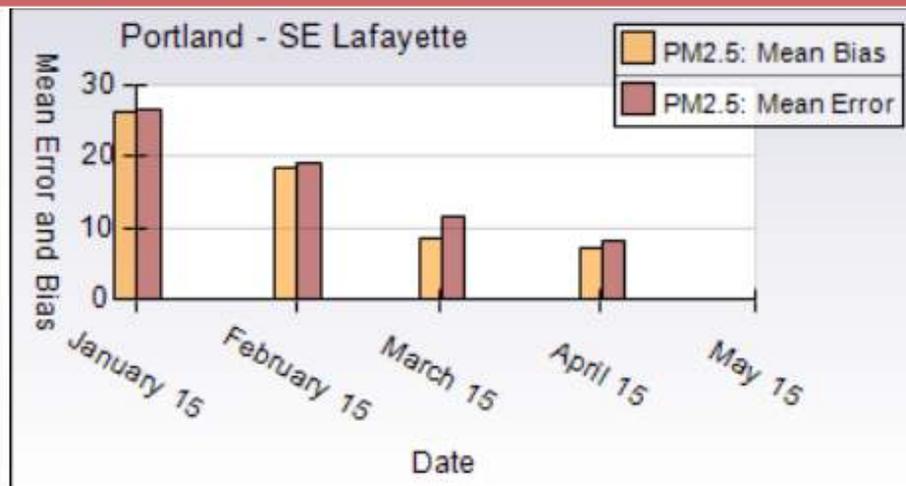
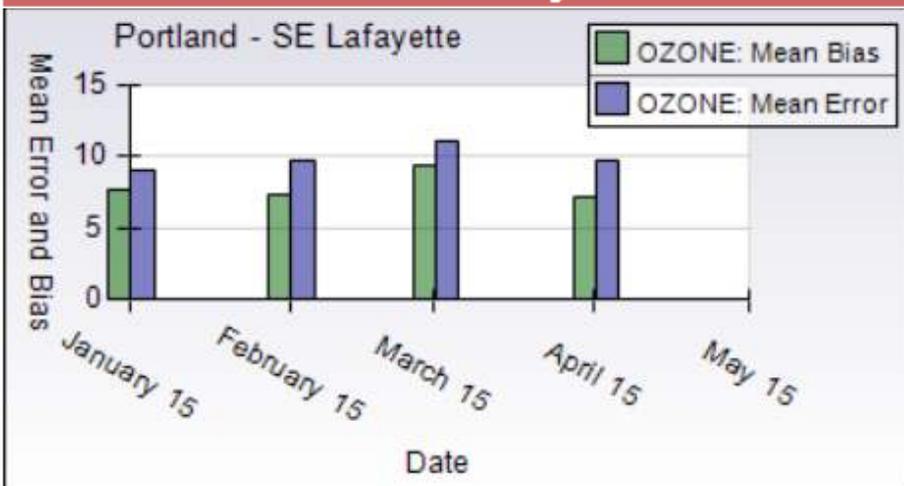
Moving averages are plotted at the beginning of the averaged interval.

Performance Statistics published on Web page for all sites

2015 AIRPACT-4 Monthly Statistics



2015 AIRPACT-4 Monthly Statistics



Lookup 2009–2011 design values of criteria pollutants

This tool facilitates the retrieval of design values at user-specified locations across Washington, Oregon and Idaho.

- [Overview](#)
- [Methodology](#)
- [FAQs](#)

For single point queries, click the map below to select a point, or manually enter coordinates in Lat/Long or UTM.

Latitude (decimal degrees) or UTM Northing (m):

Longitude (negative decimal degrees) or UTM Easting (m):

UTM Zone (10-12; leave blank if entering Lat/Longs):

Download output in CSV file?: ▼

Submit coordinates

For multiple point queries, upload a CSV file containing the coordinates (25 kB max): [See instructions for formatting the CSV file](#)

Download output in CSV file?: ▼

Submit file



Disclaimer: Monitoring and modeling data used in this application are processed according to rules governing the calculation of design values. However these data may differ from the official numbers due to various reasons. As such these data should not be used for determining compliance with Federal NAAQS.

Questions about this product? [Please send us an email](#)

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PLEASE NOTE: Any background concentrations at coordinates not within 2 grid cells of Washington, Oregon or Idaho -- marked with a NO in the 4th row below -- should be used with caution.

Lat or UTMN	46.52637
Lon or UTME	-120.2856
UTM zone	
In Washington Oregon or Idaho	YES
PM_{2.5} 24hr µg/m³	25
PM_{2.5} annual µg/m³	6.7
O₃ daily 8hr max ppb	54
O₃ for PVMRM ppb	48
NO₂ 1hr ppb	15
NO₂ annual ppb	2.3
SO₂ 1hr ppb	1.7
SO₂ 3hr ppb	1.4
SO₂ 24hr ppb	0.6
SO₂ annual ppb	0.2
CO 1hr ppb	907
CO 8hr ppb	539
PM₁₀ 24hr µg/m³	76
PM₁₀ no extremes 24hr µg/m³	54

Document Downloads

NW–AIRQUEST Annual Meetings:

- [2014 \(June 18–20\)](#)
- [2013 \(June 5–7\)](#)
- [2012 \(June 6–8\)](#)
- [2011 \(June 1–3\)](#)
- [2010 \(Mar 31–Apr 2\)](#)
- [2008 \(September\)](#)
- [2007 \(October\)](#)
- [2006 \(December\)](#)

NW–AIRQUEST/NRMC Quarterly Meetings:

- [2015 \(February\)](#)
- [2014 \(November\)](#)
- [2014 \(February\)](#)
- [2013 \(December\)](#)
- [2013 \(February\)](#)
- [2012 \(October\)](#)
- [2012 \(February\)](#)
- [2011 \(October\)](#)
- [2011 \(February\)](#)
- [2010 \(October\)](#)

NW–AIRQUEST Conference Call Minutes:

- 2012: [Mar 27](#)
- 2011: [Dec 14](#)
- 2008: [Jan 22](#), [Apr 29](#), [Jun 24](#), [Aug 19](#)
- 2007: [Jan 24](#), [Mar 20](#), [May 1](#), [Jun 19](#), [Aug 14](#), [Oct 4](#), [Oct 25](#), [Nov 15](#)
- 2006: [May 23](#), [Jul 17](#), [Aug 29](#), [Oct 31](#), [Dec 4–5](#)

Final report to EPA for the STAR air quality/climate change project

Mar 6, 2008: "[Impact of Climate Change on U.S. Air Quality using Multi-scale Modeling with the MM5/SMOKE/CMAQ System](#)"

Glossary

- WRF – Weather Research Forecast Model. Operated by Univ. of Wa, produces the met inputs to AIRPACT.
- AIRPACT – Regional forecast model operated by WSU under contract to NW-AIRQUEST, providing daily operational forecast of criteria pollutants PM, Ozone etc., precursors and toxics.
- CMAQ – CMAQ is the Community Multiscale Air Quality model, a photochemical grid model with full meteorology and chemistry.
- SMOKE – Sparse Matrix Operator Kernel for Emissions, a pre-processor for CMAQ that adds the chemical species, temporal variation and spatial variation to the emissions inventory.
- MCIP- Meteorology-Chemistry Interface Processor transforms WRF met parameters for input into CMAQ

Glossary (continued)

- MOVES – Motor Vehicle Emissions Simulator EPA mobile sources model that provides emissions inputs into SMOKE/CMAQ for each hourly T, RH.
- SMKREPT – A processor which provides summary tables of the final emissions input into CMAQ by the SMOKE pre-processor, e.g. in monthly or annual format.
- ClearSky2 – A separate CMAQ simulation that produces simulation of agricultural burning scenarios requested by burn coordinators in the member agencies, to aid in making daily burn calls.
- MOZART – Global photochemical model which ingests emissions worldwide and provide hourly dynamic boundary conditions for the CMAQ model.
- SAPRC - State Air Pollution Research Center chemical mechanism

Glossary (continued)

- BlueSky – USFS modeling system to forecast wildfire and prescribed fire smoke transport.
- SMARTFIRE – Fire emissions modeling framework based on satellite fire-detections.
- OSAT – Ozone Source Apportionment Technique.
- MEGAN - Model of Emissions of Gases and Aerosols from Nature (i.e. biogenic emissions)
- AirNow – EPA online system for real-time and archived monitoring data.

Acronyms (from CMAQ training), p. 1

BCs	Boundary Conditions
BCON	Boundary Conditions processor
CB-IV (or CB4)	Carbon Bond-IV chemical mechanism
CB05	Carbon Bond '05 chemical mechanism
CCTM	CMAQ Chemical Transport Model
CEMPD	Center for Environmental Modeling for Policy Development (UNC-IE)
CMAS	Community Modeling and Analysis System
CMAQ	Community Multiscale Air Quality model
CTM	Chemical Transport Model
CVS	Concurrent Versions System
GMT	Greenwich Mean Time
I/O API	Input/Output Applications Programming Interface
ICs	Initial Conditions
IE	Institute for the Environment (UNC)
JPROC	Photolysis Rate processor
MCIP	Meteorology-Chemistry Interface Processor
MM5	Fifth Generation Mesoscale Model
NCAR	National Center for Atmospheric Research
NOAA	National Oceanic and Atmospheric Administration
NO _x	Oxides of nitrogen
O ₃	Ozone

Acronyms p. 2

PAVE	Package for Analysis and Visualization of Environmental data
PBL	Planetary Boundary Layer
PDM	Plume Dynamics Model
PinG	Plume-in-Grid
PM	Particulate Matter
PM _{2.5}	Particulate Matter less than 2.5 μm in diameter
PPB	Parts Per Billion
PPM	Parts Per Million or Piecewise-Parabolic Method advection scheme
PSU	Pennsylvania State University
QSSA	Quasi-Steady State Approximation model
RADM	Regional Acid Deposition Model
RADM2	Regional Acid Deposition Model version 2
SAPRC	State Air Pollution Research Center chemical mechanism
SMOKE	Sparse Matrix Operator Kernel Emissions processor
SO _x	Oxides of Sulfur
UNC	University of North Carolina
UTC	Universal Time Coordinate
WRF	Weather Research and Forecasting model