



Forecast Submittal System

Verification

AirNow Forecasts, NOAA related activities, AirNow Tech

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Forecast Submittal System

Verification

Report of:

- ▶ Modifications that have been performed on the Forecast Submittal System
- ▶ Air Quality MOS
- ▶ Status of current development efforts
- ▶ Future directions



Forecast Submittal System

Verification

- ▶ The AIRNowTech FSS has a built-in tool to calculate forecast verification statistics
- ▶ All metrics based on AQI category

Forecast Verification

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Forecast Verification

Choose agency:

Choose Forecaster:

Choose parameter:

Forecast Source:

Choose date(s): to

Threshold:

Good / Moderate

Moderate / USG

USG / Unhealthy

Unhealthy / Very Unhealthy

or

Enter an AQI:

Forecast:

Current Day Next Day Day 2 Day 3 Day 4 Day 5

Compare to:

AIRNow Observations

Rolling Averages

Column summaries:

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Forecast Submittal System

Verification

► Metrics include:

- Percent correct
- Bias
- False Alarm Rate
- Critical Success Index
- Probability of Detection
- Skill score (improvement over persistence)

[Statistics](#) [Raw Data](#) 6 Records Returned [Export CSV](#)

Click on the column heading to sort

Agency	City	Forecasts	Percent Correct	Bias	FAR	CSI	POD	Skill	Matrix
Sacramento Metro. AQMD	Auburn	30	60	2.11	58	40	89	6	10 11 1 8
Sacramento Metro. AQMD	Elk Grove	30	70	1.45	44	50	82	24	12 7 2 9
Sacramento Metro. AQMD	Folsom	30	70	1.45	44	50	82	24	12 7 2 9
Sacramento Metro. AQMD	Placerville	31	61	2.00	55	43	90	0	10 11 1 9
Sacramento Metro. AQMD	Roseville-Rocklin	32	63	1.91	52	45	91	11	10 11 1 10
Sacramento Metro. AQMD	Sacramento	32	72	1.38	39	55	85	28	12 7 2 11



Forecast Submittal System

Verification

Extended forecast statistics

- ▶ Calculation only worked for current- or next-day forecasts
- ▶ Code was updated to work for Day 2 through Day 5 forecasts

Forecast Verification

Choose agency: CT1 - Connecticut Dept. of Environmental Prot

Choose Forecaster: All Forecasters

Choose parameter: Ozone

Forecast Source: Agency

Choose date(s): 8/4/2011 to 9/4/2011

Threshold:

Good / Moderate

Moderate / USG

USG / Unhealthy

Unhealthy / Very Unhealthy

or

Enter an AQI: 101

Forecast: Current Day Next Day Day 2 Day 3 Day 4 Day 5

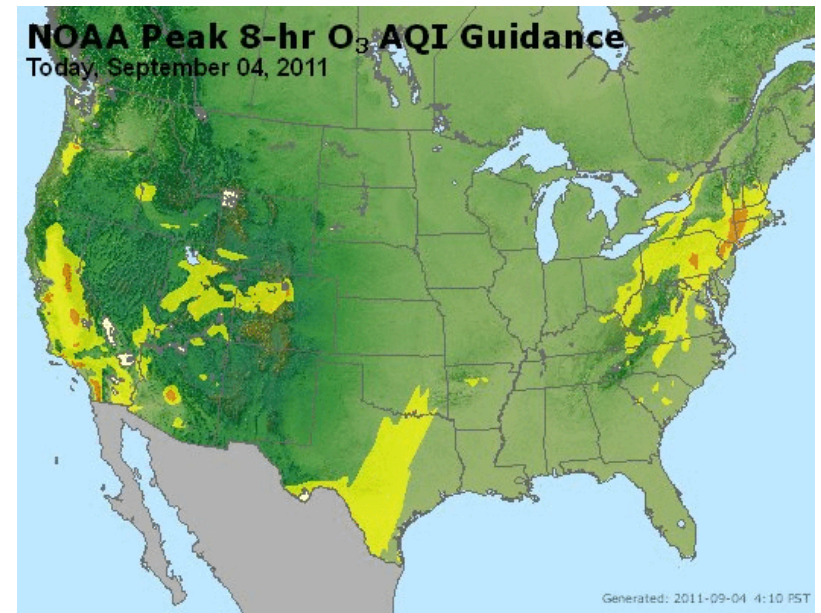
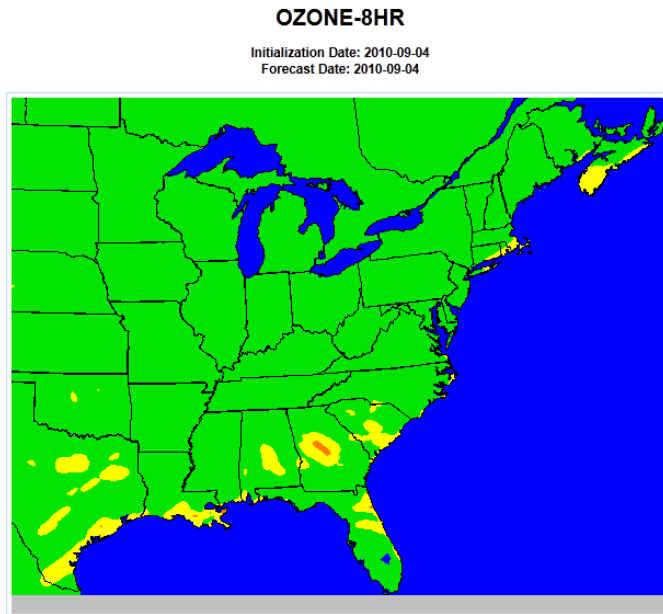
Compare to: AIRNow Observations Rolling Averages

Column summaries:

Submit

Additional NOAA-related tasks

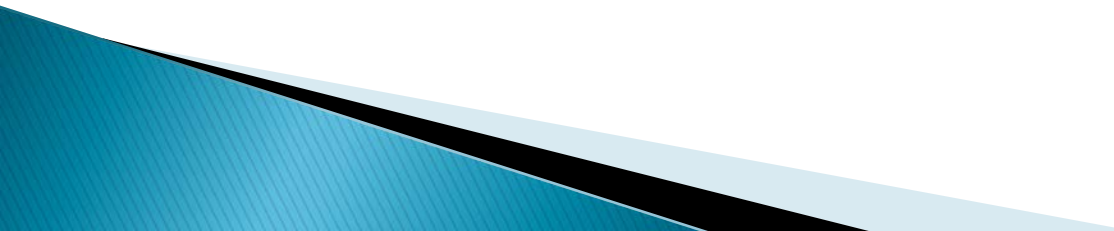
- ▶ AQMOS began displaying the new full-domain maps of NOAA predictions, replacing the old MapGen images



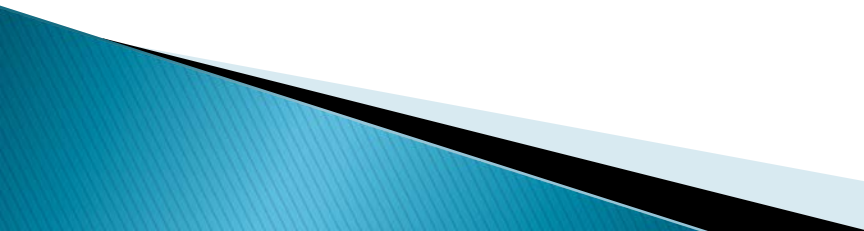
Additional NOAA-related tasks

- ▶ EPA is now delivering PM_{2.5} hourly files

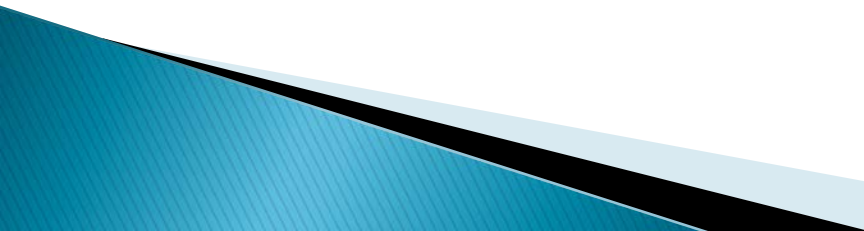
AirNowTech 2.0 is here!

- ▶ Modify AirNow to use expanded data and metadata available from AQCSV file ingest and AQS backfill
 - ▶ Redesign data query screens to improve options and visualization tools
 - ▶ Enable data editing and quality control
 - ▶ Redesign Navigator for better performance and enhanced features
 - ▶ Improve general usability and performance
- 

AirNowTech 2.0: Data Query

- ▶ Save query configurations for re-use
 - ▶ Select parameters by AQS code, duration, or POC
 - ▶ Query sub-hourly data
 - ▶ Display data in pivoted and unpivoted views
 - ▶ Export data in CSV or KML format
 - ▶ Display in interactive line graphs or scatter plots
 - ▶ Edit data values and set QC Codes
 - ▶ Batch edit data and QC Codes
 - ▶ Filter outputs by QC Code or data source
- 

AirNowTech 2.0: Navigator

- ▶ Select different base layers
 - ▶ View site details and parameters measured
 - ▶ Select parameters by name, duration, or POC
 - ▶ Toggle layers on/off
 - ▶ View wind barbs
 - ▶ Navigate through time
 - ▶ Run HYSPLIT trajectories
 - ▶ View Hazard Mapping System fire locations and smoke plumes
 - ▶ Select satellite data layers including MODIS True Color Imagery and Aerosol Optical Depth
- 

Future Directions

- ▶ AirNow Satellite Data Processor (ASDP)
 - Remote sensing 24-hour PM_{2.5} product delivered daily
 - Uses algorithm developed in EPA's NASA ROSES project, which processes two AOD runs into a nationwide 4-km grid of ground-level PM_{2.5}
 - NOAA's NESDIS is hosting the algorithm at present
 - Data Fusion algorithm chooses either satellite or kriged observation for each grid cell
 - AirNow national map products will use this technology in FY14

Future Directions

- ▶ NOAA's AQF guidance
 - We hope NOAA continues the AQF, as our forecasting community consults it regularly
 - In the absence of the AQF, air quality forecasters will have to rely upon other methods – local models, statistical, neural networks, etc.
 - EPA's AirNow program cannot provide nationwide guidance like the AQF

Questions?

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