

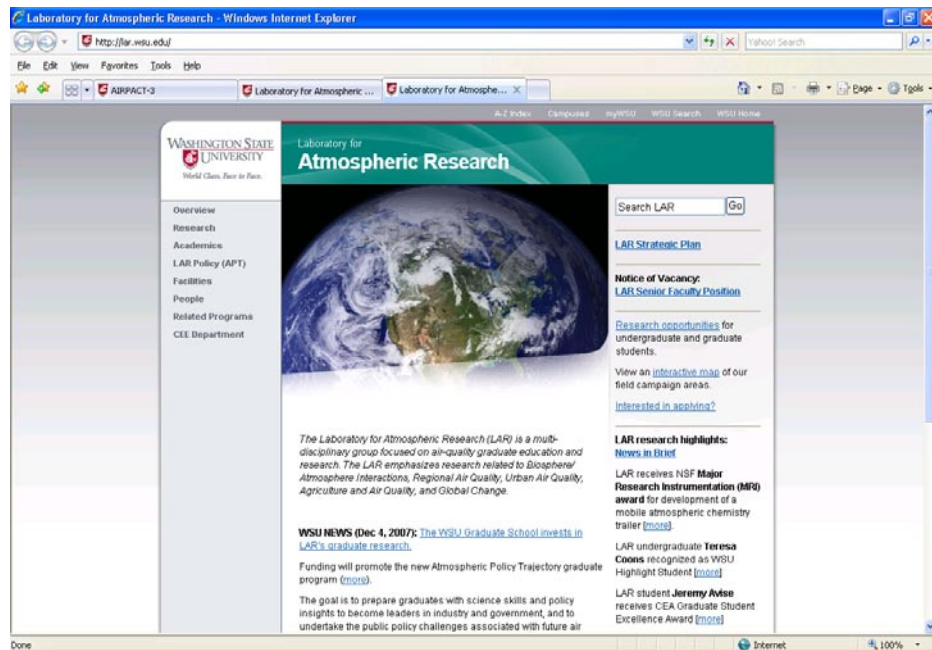
Using Nevron Charts for .NET, we offer web-site visitors a means to graph data accumulated in a database of observed and model-predicted data on air quality



Laboratory for Atmospheric Research Department of Civil and Environmental Engineering Washington State University

The Laboratory for Atmospheric Research (LAR) is part of the Department of Civil and Environmental Engineering at Washington State University (WSU). The LAR is a multi-disciplinary group focused on air-quality graduate education and research. For more information, visit <http://lar.wsu.edu>.

Project Industry: Education / Research / Academia
Project type: Atmospheric Science Research / Web




AIRPACT-3: Air Quality Forecast System

AIRPACT-3 is an automated numerical computation system for predicting air quality for the immediate future of one to three days for Idaho, Oregon and Washington. The system runs daily to predict ozone, particulates, and other pollutants in the Pacific Northwest from both anthropogenic and biogenic sources.

AIRPACT-3 predicts air quality by calculating the chemistry and physics of air pollutants as determined by pollutant emissions within the context of the background, natural air chemistry and predicted meteorology. AIRPACT's project name, the Air Information Report for Public Access and Community Tracking, reflects the goal of bringing meaningful information on the quality of the air (or the level of air pollutants) to the public from a variety of sources, including both model results and monitoring stations.

Using Nevron Charts, we offer web-site visitors a means to graph data accumulated in a database of observed and model-predicted data on air quality in order to evaluate model performance.



Air-quality forecasting for the Pacific Northwest

AIRPACT-3

- * AIRPACT Users Poll *
- AIRPACT-3 Home
- Current Simulation
- Previous Simulations
- Satellite Products
- Intro to AIRPACT
- Domain
- Collaborators
- Background
- Disclaimer
- Contact Info
- Related Programs
- LAR Homepage
- AIRPACT-3 Performance**
- AIRPACT-3 / CMAQ Animations

AIRPACT-3 Performance - Chart Tools

The following links display AIRPACT-3 CMAQ forecast results versus AIRNow observations at all domain-included AIRNow-reporting sites. AIRPACT-3 and AIRNow results are updated daily; simulation data predict today's forecast, while observation data run one day behind the simulation data. AIRPACT-3 comparators are surface layer cell concentrations as forecast on the hour.

[AIRPACT-3 vs. AIRNow Observations - PM2.5 and OZONE, hourly comparison charts](#)

[AIRPACT-3 vs. AIRNow Observations - additional parameters \(where available\), hourly comparison charts](#)

Lacey (hourly PM2.5)

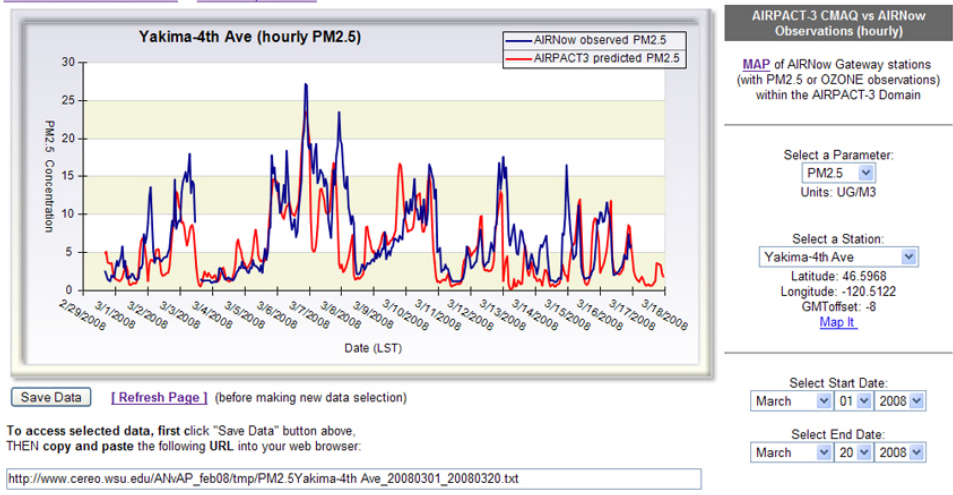
Seattle (hourly PM2.5)

Seattle-Tacoma (hourly PM2.5)

Seattle-Tacoma (hourly PM2.5 & OZONE)

Challenges include coordinating incoming data streams (i.e., the two data sources: hourly air-quality observations and model simulation data), developing efficient strategies for joining the two data sets, and graphically and statistically comparing the results for numerous air monitoring stations across the northwestern U.S. in near real-time.

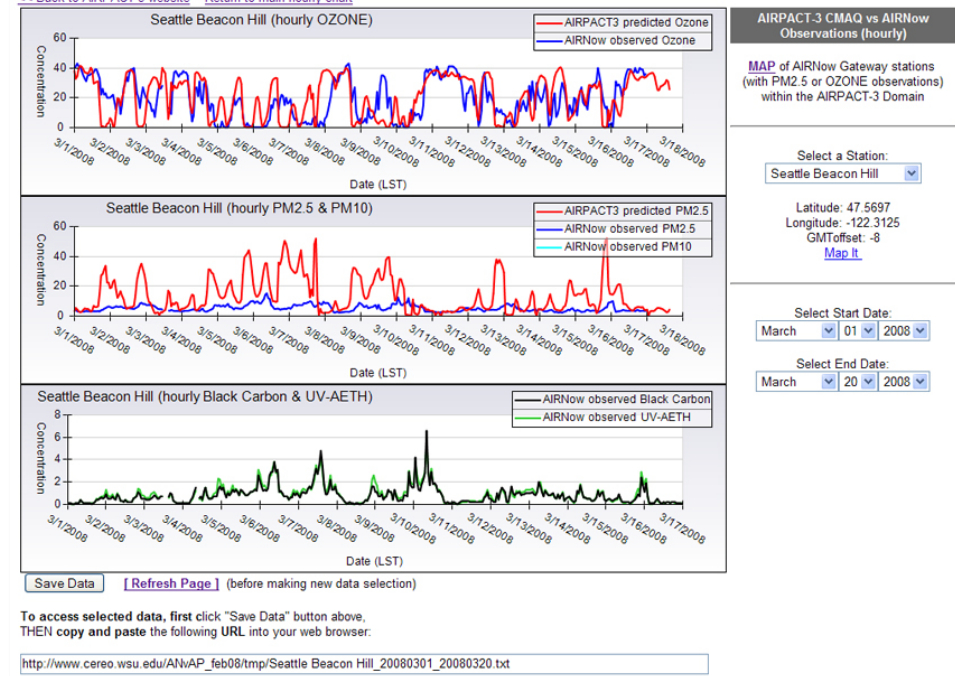
[<< Back to AIRPACT-3 website](#) [Additional parameters](#)



The regional air-quality monitoring and forecasting community requires a variety of graphical tools to analyze model performance. Colleagues at the [Puget Sound Clean Air Agency](#) in Seattle, WA—who use a [trend-graphing tool](#) developed with Nevron Charts to generate plots of pollutant and meteorological data—recommended Nevron Charts to our research group as a means to visually display model performance on the Internet, thus addressing one of our project objectives, that of providing graphical results to downstream product users.

Currently, we are using Nevron Chart for .NET to produce multiple, time-series line plots comparing air quality observations with model predictions. Users can select which pollutant and monitoring station to plot, along with the date range of interest. Chart axes are auto scalable, and the charts use data-binding and auto-post-back for dynamically generated graphs. Through time, we hope to expand the use of Nevron Chart tools in our air-quality and climate research.

[<< Back to AIRPACT-3 website](#) [Return to main hourly chart](#)



Development time was approximately 5 months, with one developer having no previous Visual Basic or Nevron Chart experience.

The development environment is Microsoft Windows XP and Windows Server 2003. Some UNIX preprocessing is required, before importing the data into a Microsoft SQL Server 2005 database. The final web application is assembled with Microsoft Visual Studio 2005.

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Project URL: <http://lar.wsu.edu/airpact-3/performance.html>