

APPENDIX A WORK PLAN

Project title: NW-AIRQUEST Regional Air Quality Modeling System:
AIRPACT and ClearSky2

Project Duration: July 1, 2016 – June 30, 2017

Goal and scope of project: In keeping with the [Mission and Objectives](#) of NW-AIRQUEST (the Northwest International Air Quality Environmental Science and Technology Consortium), the members have established this Work Plan to provide support for NW-AIRQUEST for operation, enhancement, and evaluation of the [AIRPACT](#) and ClearSky regional air quality model forecast systems. The AIRPACT system, accessed at <http://lar.wsu.edu/airpact/>, currently operates year-round on a daily basis to produce detailed maps of pollutant concentrations for a domain that includes Idaho, Oregon, Washington, and portions of southern British Columbia and Alberta. ClearSky also operates on a daily basis to provide smoke transport and dispersion forecasts for default agricultural burn scenarios within the region.

Overall direction is provided by Air Directors of Washington, Idaho and Oregon and other agency members who contribute to funding NW-AIRQUEST.

What is the environmental outcome? Daily operation of these modeling systems will improve our ability to make knowledgeable decisions to manage air quality in the Pacific Northwest and to protect public health.

Who will benefit from this project? This project directly benefits federal, state, tribal and local air quality managers in Washington, Oregon, and Idaho and the population of the three states who breathe the air.

Work Plan:

Washington State University (WSU) is responsible for the daily operation and maintenance of the AIRPACT and ClearSky forecast systems. WSU is also responsible for the evaluation of model performance and enhancements or upgrades as needed. This work plan outlines the ongoing and specific tasks for WSU during FY2016.

Washington State University will:

Ongoing Tasks
1. Provide daily forecasts of air quality for the three state region that can be used as guidance in daily air quality management
2. Provide near real-time verification statistics of the current AIRPACT system accuracy by pollutant, by month, and provide for user access to AIRPACT results and monitoring data for user-defined periods for download and user analysis.
3. Continue to maintain a ClearSky run to include scenarios of prescribed agricultural burns.
4. Track and continue to improve model performance so that model predictions provide useful guidance for air quality forecasting.
5. Maintain ambient air monitoring data streams from AIRNow as well as images of satellite

- retrievals.
6. Continue improvements and requested additions to web graphical display.
7. Maintain the “Change Log”, posted on the AIRPACT website.
8. Archive daily model output of the first 24 hours of forecast for each day and provide access to same upon requests from users. Web-based graphical displays for each day’s first 24 hours of forecast should be available for the most recent 5 years and gridded model output files should remain accessible for at least one month.
9. Modify AIRPACT as needed to respond to changes in fire emissions produced by other organizations.
10. As requested by members, make Google Map API map images for PM_{2.5} and ozone (as seen on the main AIRPACT page) available for other NW-AIRQUEST partners to use on their respective websites, with appropriate referencing.
11. Ensure R web server hosting background concentrations lookup tool (<http://bglookup.cce.wsu.edu>) remains functional

One-Time Tasks

SFY 2016 Tasks	SFY 2017	Time Frame
Inventory updates and issues	Correct wildfire plume rise error	Error corrected, evaluation underway, report on results at the June and October meetings
Carry over to SFY 2017 Modeling of Rare Field Campaign.	Carry over to SFY 2017 Modeling of Rare Field Campaign.	Continue modeling analysis December 31, 2016
Public Page with hypothetical/default fires.	Public Page with hypothetical/default fires.	

NEW TASKS 2016-2017		
Develop NOx & CO performance charts (comparison of modeled versus monitored).		October 1, 2016
Incorporate dust-suppression module for rain days (AFDUST)	Do before winter starts & test	October 1, 2016
Develop graphics for Smoke Report and implement automatic generation of emission summaries	Discuss @ annual meeting, + webpage work	December 31, 2016
Add the north, south, and east boundaries to the “vertical curtain plots” page. Also, add mid-domain cross-sections at state borders.	Web page work	December 31, 2016
Add modeling evaluation for DAY2	Charts needed	March 1, 2017
Investigate Direct Decoupled Method for source attribution for selected case studies	Ongoing w/ Periodic progress reports	June 1, 2017
Hosting wood smoke PM forecast models from formulas shared by the state and local agencies	Working group discussion needed @ annual meeting	October 1, 2016

Deliverables	
SFY 2017 Tasks	Time Frame
<p>1. The 1st day forecast products will be produced and updated to the website by 6am Pacific/7am Mountain local time every day with a reliability goal of 95% or better pending availability of WRF outputs and excepting other external factors such as power failures. The 2nd day forecast products will be produced and updated to the website within 6 hours after the 1st day products with the same reliability target as the 1st day forecast. Web graphics of Day 2 forecasts will remain available for 5 days, after which they will be taken down and the corresponding CMAQ files deleted. However data for evaluating model performance on both Day 1 and Day 2 will be retained.</p> <p>It is important to note, that the members desire a greater reliability, especially during the winter wood heating season, but don't want to set an unachievable target. However, tracking reliability and failure modes is a reasonable starting point.</p>	<p>Continuous accumulation of completeness statistics.</p> <p>Present completeness statistics at a mid-year meeting and Annual Meeting.</p>
<p>2. Mid-Year report must be provided to Project Sponsor for the period ending December 31, 2016. The mid-year report must be provided no later than 31 days after the end of the reporting period, by January 31, 2017. The mid-year will include:</p> <ol style="list-style-type: none"> description of the project status status of specific deliverables and scoring for performance measures (deliverables 1 – 2 above). description of obstacles or problems encountered, and amount billed on the project to date. 	<p>January 31, 2017</p>
<p>3. Provide an annual “state of the model” report detailing progress made against specific deliverables, status of performance measures, problems encountered and or resolved, and future direction/ recommendations. The report shall include a description of model validation protocols used and validation results developed to date. This report will also include updates, as appropriate, on workplan items and related projects. The “state of the model” report must be provided to Project Sponsor for the contract period ending June of the contract year, however it may be provided in the form of a presentation at the Annual Meeting, if held in June.</p>	<p>No later than June 30, 2017</p>
<p>4. SMKREPT product(s) with input from members on product platform and format.</p> <p>Annual Summary of SMKREPT-based products covering the first complete annual cycle.</p>	<p>June 30, 2017</p>

Project Period: July 1, 2016 through June 30, 2017.

Project Sponsor: Jerry Boyum, LRAPA

Project lead or technical lead: Dr. Brian Lamb, Washington State University.