

NW-AIRQUEST Annual Meeting Notes

December 4 & 5, 2006

Lacey, Washington

Session 1: State of the Modeling / Level of Accuracy

- Opening comments - Mike Gilroy
 - As a group, we must ensure we meet requirements set by our air directors so the science group jibes with the administrative group.
 - A matrix of parameters/needs
 - Create a yardstick for our accountability
- Straw man approach to model accuracy - Rick Hardy
 - A modeler's point of view on model accuracy - the relative sense is more accurate than the absolutes
 - The goals should reflect state of the art and be reasonable
 - Performance criteria reflect how models are used
 - Probability maps, or similar, might be the way to go
 - Results should be better with time (focus investment)
 - Over time, what do we see? What do forecasters see?
- AIRPACT-3 status and near-term objectives - Joe Vaughan
 - AIRPACT is going to a new Linux box, WEPS integration, new Web pages to be made, and evaluation and path-finding of model will take place
 - There has only been one day of failed runs; associated with disk space, in November
- Preliminary comparison of AIRPACT ad AURA satellite NO₂ - Farren Thorpe
 - Dutch and American algorithms - focus put on the American algorithm
 - There is a constant bias toward the American algorithm
 - No correlation with cloud cover
 - AIRPACT and American algorithm are similar in urban areas with fires lacking (with reasonable PBL height)
 - The max value in AIRPACT was compared to the AURA column value
- CMAQ results from AIRPACT AQ forecasting and STAR climate change - Brian Lamb
 - Air quality (change) in the future - 2050
 - Simulated 1990-1999 and 2045-2054 in 12-km and 36-km
 - Temperature change is not consistent in all cities of Pacific Northwest, the PBL increases as the temperature rises in the future (about 2 degrees), and the winds remain the same
 - More days exceed the standards
 - Isoprene emissions increase in poplar plantation scenario and that increases ozone
- AIRPACT-3 ozone prediction evaluation May - July 2006 - Bob Kotchenruther
 - WSU forecast system was used
 - Washington and Oregon had exceedances during this period and it gave an opportunity to see how AIRPACT is performing and where to place effort
 - Model did not catch peaks and over predicted

- Model performance evaluation using a mobile lab - Brian Lamb
 - Enthusiasm in building a mobile lab to take measurements in order to see what is happening in the model (get more species)
 - WSU submitted a proposal and it was accepted and this one will be followed by another
 - The project was portrayed as educational with satellite uplink and outreach involved
 - The budget for the mobile lab is \$1 million and it looks to be right around \$800K to have it outfitted as desired - WSU is looking for uses and ideas
- Discussion: Updating emissions data for NW-AIRQUEST models - Sally Otterson
 - Data in AIRPACT is 3 years old and new EI data should be made available
 - Coordination to get data from all agencies in NW-AIRQUEST is necessary
 - Spatial data on VMT is needed too
 - BC has 2005, as do all states in NW-AIRQUEST (EIs are being completed by June 2007)
 - All agencies should send data and methodology to Sally at Ecology
- Ozone modeling (PSCAA & WSU) and forming reduction strategies - Kathy Himes
 - A general view of ozone issues and fixes
 - 1996 - low RVP fuel and stage 2 controls were bumped to 2015 to see what the effect was
 - Impacts negligible with controls
- ClearSky status and near-term objectives - Joe Vaughan
 - Evaluate plume-rise in CALPUFF; newer emission parameters increase plume heights
 - Highly sensitive to wind speed and direction; 12-km is slightly better
 - Interested in working on 3D CALPUFF, wind roses, and doing more with 1-km ClearSky
 - ClearSky is tied to the NASA ROSES project
- National boundary level issues - Cliff Mass
 - PBL - in models this is the weakness and it is most severe for stable boundary conditions (shallow cold air a few hundred meters thick)
 - Many problems go in to this PBL issue
 - Not much work is being done on PBL anymore
 - At a national level, we need PBL work done
 - Locally, a few are willing to work on PBL issue if funding is available
 - Leadership is missing
 - Current state of the modeling = more stable and robust than ever
 - Testing current version of WRF, but currently MM5 is verifying better
 - So, new WRF is coming
 - www.probcast.com - location where some of the probability forecasts are available by your zip code
 - Data simulation - based on ensembles and availability of new weather observations
 - UW is about to do ensembles with a new cluster down from 45-km to 12-km -- high quality analysis - can overcome some PBL issues

- **Modeler's Open Forum - Jeff Arnold**
 - Further discussion on level of accuracy issues -- poll users, not just modelers on what they need
 - **Ideas and Discussion:**
 - Model prediction/observation is not so great in AIRPACT for the naive user
 - It won't tell you the AQI will be 80 tomorrow
 - Toxics is impossible to do this for when PM2.5 is tough already
 - It was brought up that the Air Directors don't think toxics should be done in AIRPACT
 - We need some way to talk to the Air Directors more frequently to get issues and suggestions before them
 - What is acceptable risk per the Air Directors with what we do with these products we generate?
 - Mechanisms for the level of accuracy are needed to get us there with a table a year from now that is all filled in with standards for the products
 - NWS models have been around for 50 years and still cannot be trusted at times for forecasts. Our AQI forecasts might be a decade away from that level.
 - A couple focus groups should be put together to come up with goals and ideas for us to shoot for on accuracy
 - End user interaction/survey should drive what is needed from each product in the form of expected accuracy
 - We need to keep showing need to the Air Directors for these products
 - Rick Hardy to run a focus group from the modeler's perspective
 - AIRPACT user's group fits into this discussion and we need training on it and forecasting since personnel turnover in agencies has been high in the last year
 - Can we get Class I areas on NW-AIRQUEST products so public can see levels and visibility in these places?
 - WSU would like to use PSCAA Web graphics and ideas when developing new Web pages, is that doable?
 - Yes, per Mike Gilroy

Session 2: Project Updates / Workshops / Grant-funded Work

- **Convening an AIRPACT user's group for NASA-funded ROSES work - Joe Vaughan**
 - NASA ROSES grant requires a benchmark of how products are used currently
 - Only AIRPACT doesn't have a user's group currently
 - Would like a user's list, to survey them, and to take AIRPACT on the road to different agencies
 - Looking to convene group in Spring 2007
 - States and agencies are to compile a list of users
 - Chris will send out an e-mail via the NW-AIRQUEST listserve to ask for AIRPACT users

- CALPUFF Incident Modeling System - Rick Hardy
 - A GUI was created in-house, maps effected areas, estimates concentrations, estimates the number of people impacted by incident, and provides addresses of those impacted
 - ALOHA is the model currently used, but it has drawbacks
 - Homeland Security money might be available, so maybe we go after it to do this modeling
 - A run with this new system takes about 45-90 minutes
- Workshop results: Establishing critical loads - Elizabeth Waddell
 - Looking at nitrogen and sulfur deposition in national parks in region 10 (not Alaska) and Rocky Mountain National Park
 - A diverse group of researchers was involved in the workshop to determine the critical loads
 - www.cdhe.state.co.us/ap/rmnp.html - Web site for workshop information
 - Looking specifically at changes in diatom community
- Emissions inventory GIS-based tool - Colin di Cenzo
 - Needed better special resolution in inventories and to be able to create maps and other things while still being able to adjust older inventories and to be able to see trends, so a new software was developed and purchased
 - Also, the EI data needs to be able to go into models easily
 - Want many agencies to be able to share in this program and use its tools (It is free to all that use an the same background system)
 - The program allows a bottom up inventory with GIS technology, improves accuracy per modeling grid square, will put EI data into SMOKE-ready files, and might be ready for a May 2007 delivery
- Idaho's BART Analysis System - Wei Zhang
 - Produced tool for BART modeling related to Regional Haze SIPs in order to speed the work
 - It uses three years of CALMET, Python, Visual Basic
 - The interface allows parameters to be selected a source to be chosen, as well as species and 12- or 4km domain in CALPUFF
 - Creates a scenario summary for modeler review before run is made
 - The documentation is almost ready and it can be made available to other agencies and states when a general public license and disclaimer are tied to it

Session 3: Monitoring Work

- Impact of new NAAQS on monitoring networks - Bruce Louks
 - PM2.5 standard changed only, PM-coarse stays as PM10 for now (revisited in 5 years)
 - NCORE sites for monitoring to be set-up by July 1, 2009 across country
 - Part 58 changes added specific dates for monitoring reports and certification
 - PM2.5 network will shrink and funding will shift toward NCORE
 - Funding is so limited for monitoring that we might not be able to monitor for smoke management in the near future

Session 4: Administration Work

- Election of new NW-AIRQUEST administrative liaison (chairman) - Chris Ramsdell
 - It's Chris again as no other nominations were made
 - To run a two-year term
- Future of NW-AIRQUEST open discussion - All
 - More frequent communication with the Air Directors than once a year is needed and desired by NW-AIRQUEST
 - A lot of work is going on within NW-AIRQUEST and the way they are going is good, but limited in some ways
 - Vital that we continue to exist for the funding of these needed and necessary products
- Working groups discussion on direction - Chris Ramsdell and All
 - Project-based groups were selected as the way to go in order to better ensure completion of tasks
 - The following list of project-based work groups was created:
 - Level of Accuracy Focus Group - Rick Hardy, Mike Gilroy, Chris Ramsdell
 - Fine Particulate / Speciation Sites Group - Kathy Himes, Bruce Louks
 - EI (2005 AIRPACT data update) - Sally Otterson, Chris Ramsdell, Jeff Stocum, Colin di Cenzo
 - Liaison Group - Chris Ramsdell, Mike Gilroy, Bruce Louks, Rob Wilson
 - Monitoring Issues and related Communication to Air Directors - All
 - AIRPACT Working Group - Chris Ramsdell to send e-mail, then Brian Lamb, Joe Vaughan
 - Student Involvement Group - Brian Lamb, Joe Vaughn, Cliff Mass
 - PBL / WRF Group - Mike Gilroy, Cliff Mass, Brian Lamb
 - Deposition (membership drive) - Brian Lamb, Joe Vaughan
 - Decided: A bullet or two from each conference call or meeting will be shared with the Air Directors based on what the entire NW-AIRQUEST group decides at the end of each call - we'd add "Is there anything more you'd like us to work on?" to our sharing of the bullet or two
- Next NW-AIRQUEST conference call - Week of January 21-27