NW-AIRQUEST WORK PLAN: NEXT YEAR AND BEYOND

- In November, air directors asked me to discuss use of current NW-AIRQUEST products, ideas for next year's work plan, and the associated level of effort with technical managers/staff
  - Individual meetings were held with technical representatives from most state and local agencies and three tribes
  - High level overview of conversations were reported back to managers/directors at most agencies, who were supportive of continued funding of NW-AIRQUEST (waiting to hear final commitment from one agency)
  - We are working under the assumption that the funding level will remain the same for the coming year
- Today's agenda:
  - Summary of discussions with member agencies/tribes and proposed long-term NW-AIRQUEST direction (Nicole, EPA)
  - Initial proposal for next year's WSU work plan (Von, WSU)
- Please voice your questions and comments as we go through the slides

HIGH-LEVEL TAKE-AWAY MESSAGES PRESENTED TO DIRECTORS/MANAGERS

- **NW-AIRQUEST is valued** both as a consortium for discussing technical issues and as a forum for development of technical tools

- Many **members are using the current products** or would like current products to be maintained for future needs

- **Members have product/research needs on par with the current budget**

- There is a **need for training on NW-AIRQUEST products** and on technical topics related to these products (primarily air quality forecasting)

- Members are supportive of **continued focus on regional forecasting tools plus other value-added tools/research**

MORE DETAILED TAKE-AWAYS FOR A TECHNICAL AUDIENCE

- AIRPACT
  - Is AIRPACT part of our long-term direction?
    - Yes, unless/until there is a better model that supports all user needs (not just forecasting)
  - Most needed AIRPACT improvements?
    - 3-day forecasts
    - Add tribal boundaries to map
    - Strategic focus on forecasting situations not handled well by current model
      - Rotating focus on needs of specific members?
      - Focus on "big ticket" issues that will help multiple members (e.g., mountain valleys, coastal conditions, wildfires)?
      - Members open to solutions that both involve AIRPACT and do not involve AIRPACT

- Background concentration look-up tool
  - Broadly used across the region
  - Support for continued maintenance of this tool

- Machine learning
  - Broad support for continuing/extending focus on machine learning methods for PM and ozone
  - Support for careful evaluation of pros/cons of machine learning vs. AIRPACT vs. incorporating ML into AIRPACT
  - Requests for training on the methods and their limitations

- Additional work groups/ focus areas
  - Broad support for NW-AIRQUEST continuing to have work groups or projects focusing on a variety of air quality topics
  - A number of members specifically voiced support for continuing to evaluate low cost sensors and how they can be used for forecasting

- Training and shared tools
  - Broad support for 2x/yr forecasting training
    - NW-AIRQUEST, Consortium, FS, and other tools
    - Discuss limitations and best practices
  - A number of members requested a repository or other collection of forecasting tools and other shared resources

NEXT STEPS

- Nicole/EPA will work on developing 2x/yr forecasting training with input from others in this group. Trainings would hopefully include:

  - Both in-person and webinar participation options, for NW-AIRQUEST participants and other regional agencies/entities

  - Training on specific tools (e.g., AIRPACT, WRF output, FS tools)

  - Information on the set of resources available and identifying what's best for a particular forecasting situation

  - Walk-throughs of forecasting under different circumstances (e.g., PM vs. O3, state-wide vs. local, winter vs. summer)

- WSU has developed a initial proposal for next year's work plan (next presentation) assuming the current level of funding is maintained

- One additional request coming from the WA air directors briefing was to continue to think outside of the (funding) box, as some agencies may have additional funds available at times for specific high-need projects

  - The next slide presents a non-exhaustive list of ideas that have been mentioned to me that are not likely to be in this year's work plan. Those not attributed a university group were mentioned by agencies or tribes.

  - What, if anything, on this list (or not on this list) is highly important to this group?

ARE THERE ANY OTHER BIG PROJECTS THAT WE SHOULD FOCUS ON?

- Low-cost sensors

    - Integrating low cost sensor measurements into the AIRPACT modeling

    - Information sharing on how you help communities who want to do their own measurements.

    - Evaluation/information sharing on low-cost sensor vs. FRM/FEM measurements

    - Repository for code or other tools for small sensor work

    - Deploy a low-cost sensor network in a specific area and use measurements to improve ML/AIRPACT modeling (WSU; Lee/Walden/Vaughn)

    - Develop standardized methods to use low-cost sensors and filtration methods that could be easily applied by community members during smoke events, building on Seattle pilot project (UW; Jaffe)

- Historical event analysis

    - Tools for exceptional event analyses (ozone and PM)

    - Training on analysis of historical events using available tools

    - Add Lagrangian capabilities to AIRPACT to evaluate historical events

    - Continued modeling asthma attack prevalence for specific events (WSU)

    - Deploy automated sampler measurements of wildfire smoke tracers in a specific area, using an established method (UW; Jaffe)

- Forecasting

    - Influence of wildfires on ozone concentrations

    - Developing a network of ceilometers to measure wildfire smoke and using the data to validate AIRPACT modeling

    - Forecasts that include both wildfire and prescribed burn impacts

    - Develop a fire weather matrix that incorporates meteorological parameters and provides a rating based on past conditions in the area that can be used for both wild and prescribed fires

    - Fire weather/wildfire forecasting tool that combines the range of output from all fire models, so we know the uncertainty

    - Develop a forecasting information/tool repository

    - Forecasting tools for local events (e.g., oil spills)

    - Case studies on ozone/temperature (using UW's mesoscale model output)

    - Land use regression modeling

    - Alternative approaches for machine learning for ozone and PM forecasts, building on past work in the Jaffe research group (UW; Jaffe)

- Other

    - Evaluate ultrafine particles

    - Evaluate long-range transport impact on PNW air quality