# Monitoring, Modeling & Technical Coordination

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# Deadline Extension

- EPA is committed to extending the PAMS compliance deadline
- A proposal for a 2-year extension is in process
- This extension will give the monitoring agencies additional time to acquire equipment and expertise to successfully implement the PAMS requirements

# Equipment Contracts

- The EPA is working on four National contracts to assist the monitoring agencies in acquiring PAMS equipment
  - Markes/Agilent Auto-GCs – **Delivery and installation 90% complete**
  - CAS/Chromatotec Auto-GCs – **Contract in process with delivery and installation expected this summer**
  - NO2 Analyzers – contract to be awarded in 2020
  - Ceilometers – contract to be awarded in 2020

# Budget Update

- Funding for PAMS is included in the Section 105 grants
  - Until congressional language allows for the implementation of the proposed reallocation methodology, Section 105 funds will continue to be allocated using the historical allocation methodology
- Regions have the flexibility to adjust State 105 allocations based on knowledge of minimum monitoring requirements and state monitoring networks
  - Where a state network is larger than minimally required, funding may need to be adjusted to address new or revised minimum monitoring requirements
  - Additionally, states have the flexibility to shift their grant dollars from certain activities to fund CAA-required activities

# 179B Guidance (*in progress*): What to expect?

- Characterize the demonstration process
  - When does 179B apply?
  - What regulatory relief can it provide?
  - When to engage with EPA? With the public?
  - What are the different types of demonstrations?
- Highlight tools previously used in 179B demonstrations
  - Consistent with 1994 preamble: conceptual model, emissions, transport, etc
  - Applied previously by border areas
- Characterize other scientific tools and analysis available for 179B demonstrations
- An analytical tiering structure to help right-size demonstrations.

# Examples from previous demonstrations

- Nogales PM10
- Imperial Valley PM2.5

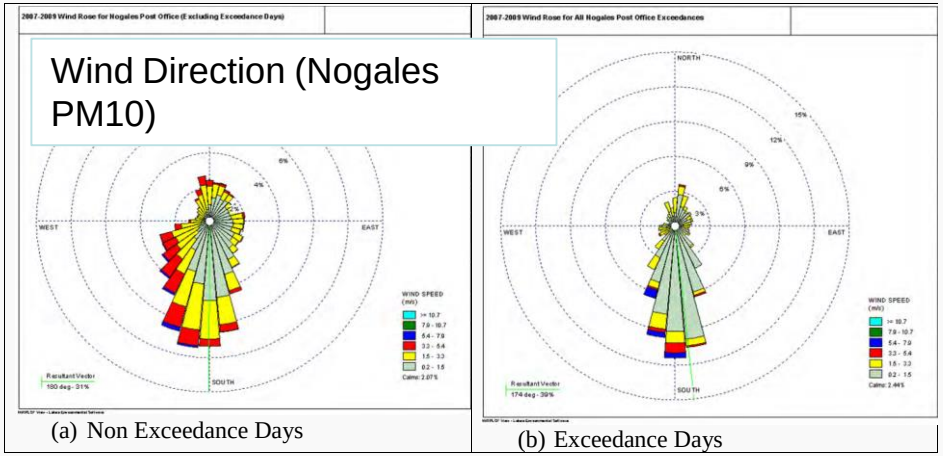
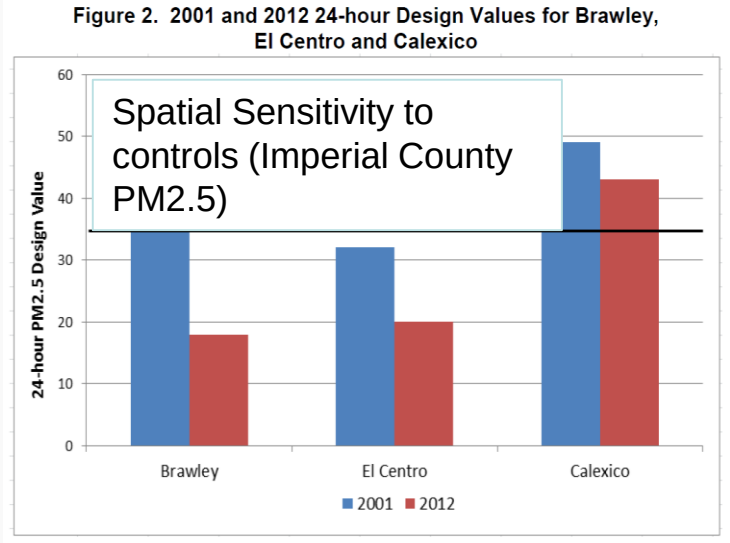
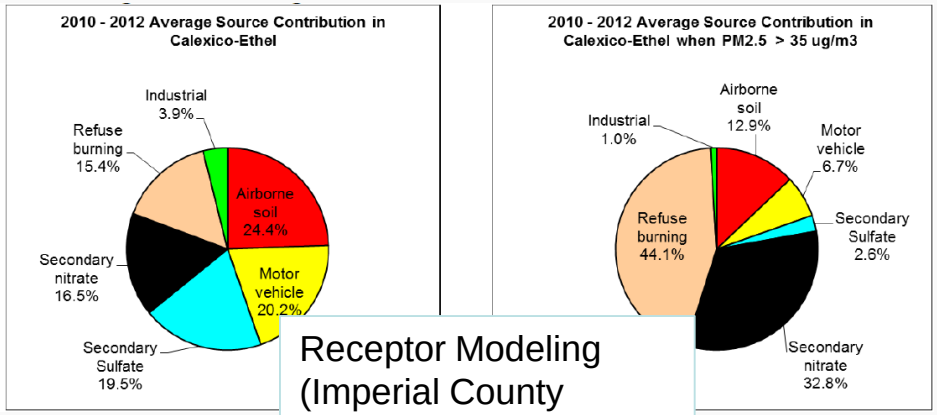


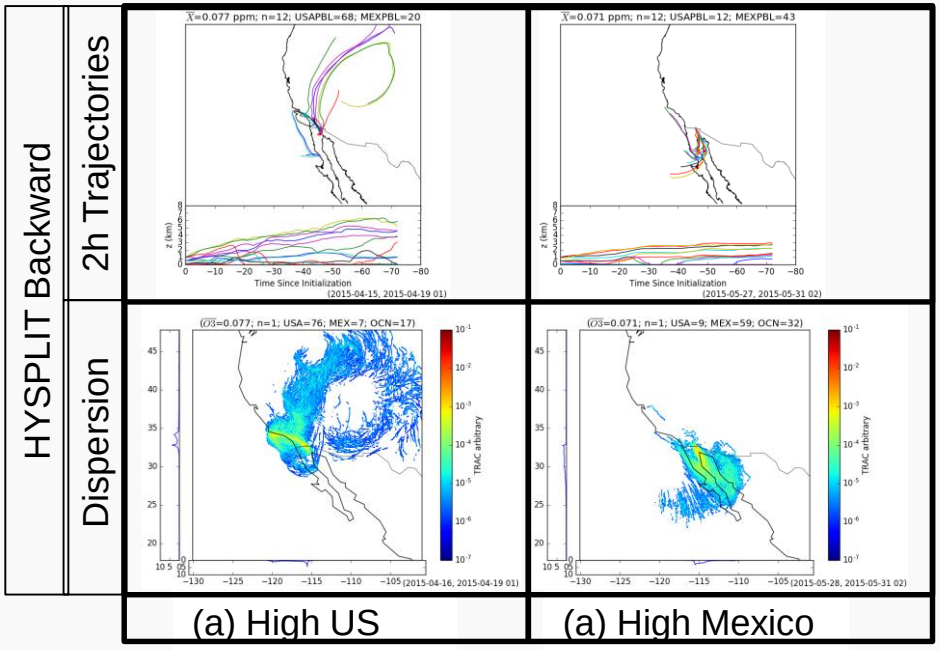

*Figure 1 Nogales, AZ PM10 nonattainment area: wind roses for non-exceedance and exceedance days (ADEQ, 2012, pp. Appendix A, Figure 9)*



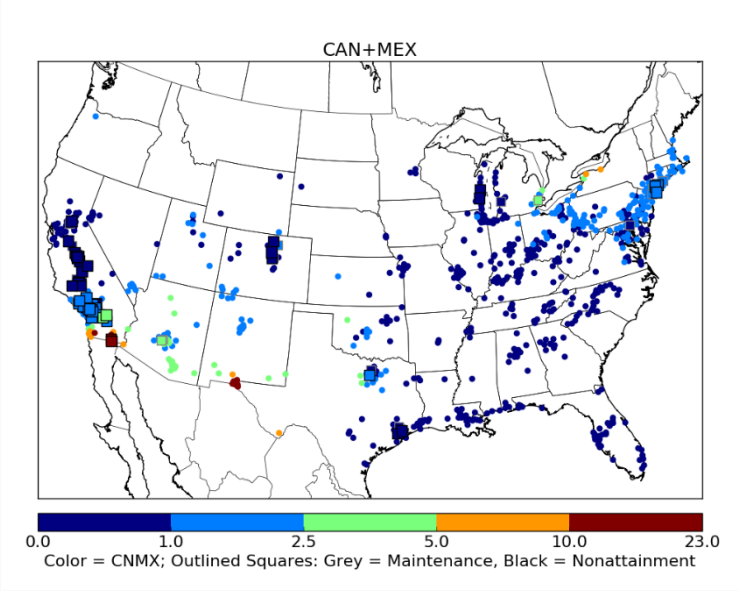



# Examples of additional scientific tools/analyses

- Source-receptor backward dispersion modeling coupled to emission and PBL analysis.




- Photochemical modeling sensitivity, tagging (below), and hybrid sensitivity-tagging analyses.




*Note: Analyses are illustrative and specifics may change.

# Modeled Emission Rates for Precursors (MERPs) Update

- For Tier 1 assessments, EPA generally expects that applicants would use existing empirical relationships between precursors and secondary impacts based on modeling systems appropriate for this purpose.
- MERPs can be viewed as a type of Tier 1 demonstration tool under the PSD permitting program that provides a simple way to relate maximum downwind impacts with a critical air quality threshold.
- EPA has provided draft technical guidance on development and use of MERPs under Appendix W for PSD permitting.
  - Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program (EPA-454/R-16-006 December 2016)
- EPA finalizing version of this guidance document for release by end of April
  - Additional hypothetical single source impact modeling included
  - More details on how to use existing modeling for NAAQS demonstrations (SIL and cumulative tests) and considering secondary PM2.5 for a PM2.5 PSD increment demonstration

# 2016 Beta Platform Release

- Collaborative workgroups have developed 2016 and future-year emissions inventories and associated documentation
- States have provided and reviewed 2016-specific data for many emissions sectors, and some data for future years
- EPA ran MOVES for onroad and nonroad, ran the oil and gas tool for 2016 and projected 2014 NEI emissions to 2016 and to future years
- **The 2016beta release for 2016 data only is now available**
  - http://views.cira.colostate.edu/wiki/wiki/9169
  - The Intermountain West Data Warehouse (IWDW) is hosting the wiki and providing the 2016 data to requestors
- Platform options: MEGAN and BEIS for biogenics; for EGUs both ERTAC EGU and IPM will be available for future years
- The future-year data and scripts are not yet available as emissions for some sectors were just completed in March

# Inventory Collaborative Next Steps

- The Collaborative is now working on:
  - Preparing to release the 2016beta future year data to co-regulators (i.e., MJOs, states, locals)
  - Inventory updates for Version 1.0 (summer, 2019)
- The next quarterly outreach call is June 26th at noon Eastern
  - http://views.cira.colostate.edu/wiki/wiki/9169 #National-Report-Out-Calls
  - More information on the beta and plans for v1 will be available on this call

# EPA's Air Quality Modeling of the 2016 Emissions Platform

- CMAQ and CAMx annual model runs for 2016 have been completed using the beta emissions inventory
- Inputs and outputs from these model runs are being shared with the MJOs and states via the Intermountain Data Warehouse
- EPA is initiating a 2016 platform evaluation forum in an effort to foster collaboration between EPA and the MJOs and states on the evaluation of the 2016 model predictions using ambient measurements

# Planned State-EPA 2016 Model Evaluation Forum

- EPA OAQPS and Regional staff are reaching out to states and MJOs to collaborate on model evaluation for the 2016 platform
- EPA presented this idea to MJOs on March 15
- The forum will
  - Promote collaboration with state partners on characterizing and understanding model performance and identifying performance issues for possible further research by EPA and/or the modeling community.
  - Serve as a venue for forming working teams which will independently meet and investigate model performance issues of mutual interest
  - Provide an opportunity for sharing data and evaluation results
  - Serve as a resource for modelers who intend to use the 2016 modeling platform

# Regional Haze: Technical Guidance on Tracking Visibility Progress

- "Technical Guidance on Tracking Visibility Progress for the Second Implementation Period of the Regional Haze Rule"
  - The guidance was released on December 20, 2018 and fulfills a commitment in EPA's Regional Haze Reform Roadmap
- EPA held a public webinar on February 20, 2019 to explain the guidance contents and answer questions.
- The guidance document and the webinar presentation can be found here:
  - https://www.epa.gov/visibility/technical-guidance-tracking-visibility-progress-second-implementation-period-regional

# Visibility Tracking Metric

- The 2017 Regional Haze Rule revisions require a revised approach to tracking visibility improvements over time.
  - The guidance finalizes a recommended methodology to develop baseline and current visibility conditions, and natural conditions on the 20% *most impaired* and clearest days at Class I areas.
    - The recommended visibility tracking metric focuses on anthropogenic visibility impairment
- Compared to the metric used in the first implementation period:
  - In the eastern U.S.: little difference between metrics
  - In the western U.S.: many sites that were above the URP in 2012-2016 are now at or below the URP with the recommended metric
    - Days selected as the 20% most impaired tend to have:
      - Lower extinction
      - Wider distribution across seasons
      - Higher fractions of sulfate and nitrate, much lower organic carbon
- States can easily download data using the recommended EPA methodology by going to the following website: http://views.cira.colostate.edu/fed/QueryWizard/Default.aspx and choosing the "IMPROVE aerosol, RHR III" dataset

# Glidepath International Adjustment

- The 2017 Regional Haze Rule also includes a provision that allows states to propose an adjustment to the uniform rate of progress (URP) glidepath to account for anthropogenic international sources (and prescribed fires).
- The guidance describes recommended tools and methods to develop optional URP adjustments
  - Year selection for quantifying international visibility impacts
    - Base year or 2028
  - Modeling to estimate anthropogenic international visibility impacts
    - Recommended types of models
      - Regional and global/hemispheric photochemical grid models
    - Modeling techniques
      - Zero-out and/or source apportionment of international anthropogenic emissions

# Modeling for Boundary Conditions

- EPA has applied both GEOS-Chem and Hemispheric CMAQ to model international transport and to develop boundary conditions for national modeling of the US.
  - GEOS-Chem v11-01
    - out-of-box emissions (EDGAR v4.2, NEI daily)
    - Plus 2016 FINN fires + 2016 lightning
    - Using these boundary conditions produced ozone predictions in the US were high-biased
  - Hemispheric CMAQ with updated inventories
    - Easy to use latest EPA derived domestic inventories for consistency
    - Global inventories based on international partnerships
      - EDGAR-HTAP Emissions
      - Updated China inventory from Tsinghua University
  - Continued to improve GEOS-Chem simulations; using CMAQ in 2015 and 2016 platform simulations

# Updated EPA Regional Haze Modeling Summer 2019

- New 2016 based modeling platform with emissions projections to 2028, including sector-based PM source apportionment
  - 2028 projected deciviews and glidepath estimates at Class I areas
  - Estimate of international anthropogenic contributions
  - Model Improvements
    - New 2016 and 2028 emissions from the State/EPA platform collaborative
    - Regional model improvements
      - Updates to CAMx
      - Larger regional domain (including 36km outer domain)
    - Updated boundary conditions
      - Hemispheric CMAQ
  - Modeling will be completed by the end of the summer 2019