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2021 Western Wildfire Season Impacts on Air Quality

Western Regional Assessment outline

May 17, 2022 draft

Background

Impacts from 2021 wildfire smoke were very widespread across the West and affected several months of monitoring data at many sites related to compliance with the PM2.5, PM10, and Ozone NAAQS. Monitoring sites affected included attainment, nonattainment, and maintenance sites. With both the PM and Ozone NAAQS currently under review and possibly subject to change, the 2021 impacts may be very significant for revised NAAQS. The scale of the wildfire impacts suggests a very large amount of work by states and local air agencies to file Exceptional Event demonstrations. The lengthening of the wildfire season and increase in acres burned over the past several years drives the need to consider whether the Exceptional Events rule analysis-demonstration-concurrence process is efficient and able to function well. The goal of this assessment is to fully lay out the impacted sites and data from the Summer and Fall 2021 on a regional basis to facilitate dialogue about wildfire impacts.

Regional Assessment Elements

* Sheer number of impacted site-days: “seasonal” impacts vs. discrete fire impacts on specific site-days by air quality mgmt. jurisdiction
* Many of these “site-days” are uncontrollable in terms of meeting a NAAQS
* More stringent future levels for PM and Ozone NAAQS – does more site-days analysis help?
* Maps of time periods and geographic areas broadly impacted by smoke – regional analysis

Data Review

* AQS data for 2021 are “certified” as of May 1, 2022
* Cross-reference certified 2021 data to informal data reporting by state and locals as reported and summarized in this paper and presentation materials
* Maps and graphs showing time periods and geographic areas broadly impacted by smoke
* What does more site-days analysis accomplish?

Possible Additional Analysis/Assessment Efforts

* Regional analysis activities to support EE submittals by states and locals in the West
  + What would be helpful for exceptional events analysis?
    - Regional information compilation that multiple agencies could use for context in support of EE submittals
      * Describe which fires and where occurring (size, landowner, fire response, etc. [i.e., NIFC as source)
      * Emissions quantification?
      * Remote sensing results showing regional fire activity and smoke transport
      * Aggregation of supporting information (NWS ASOS, news reports, AirNow, forecasts, et cetera)
  + Formulate conceptual model of regional wildfire smoke impacts?
    - Foster discussions for EPA offices, state and local air agencies to plan and deliver regional results acceptable to EPA for EE submittals.
      * How and with whom does a state or local develop mitigation plans with no additional analysis and planning resources for this amount of wildfire impacts?
    - Clarify where / when monitoring data are showing real health impacts measured as elevated concentrations and/or NAAQS exceedances but are not acceptable as EEs.
      * How and with whom does a state or local develop plans or programs to communicate what those impacts mean?
    - Relative to trends in western wildfire activity and smoke transport, how does a state or local air agency plan now for more stringent future levels of the PM and Ozone NAAQS?
      * What else needs to be monitored?
      * How and with whom does a state or local conduct such planning?
  + Conduct and deliver specific technical analytical results via publicly-accessible website
    - Back trajectories / air mass residence times and potential for wildfire emissions to contribute (similar to [TSS Weighted Emissions Potential and Area of Influence](https://views.cira.colostate.edu/tssv2/WEP-AOI/))
      * Repeatable year-to-year
      * Emissions data from the future Wildland Fire Emissions Data Warehouse
    - Analysis of photochemical ozone potential and fire’s contribution
    - other