

Interactive comment on “Contiguous United States wildland fire emission estimates during 2003–2015” by Shawn P. Urbanski et al.

Anonymous Referee #2

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General comments

Large wildfires have increased dramatically in many western U.S. regions under the century droughts that have lasted for nearly two decades, emitting a large amount of air pollutants and impacting air quality and human health not only at the burned sites and surrounding areas but also in remote downwind regions. There are urgent needs to simulate and evaluate these impacts according to the EPA NAAQS which includes standards for PM2.5 and O₃ at daily scale. The high-resolution daily wildfire emission inventory in CONUS developed in this study, the Missoula Fire Lab Emission Inventory (MFLEI), is very valuable for the smoke modeling and impact assessment efforts. The result analyses provided in this study are useful for improving our understanding of the features of fuel loading, fire consumption, and emissions in CONUS.

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Specific comments

1. A large number of fuel, fire, and other sources are used when estimating fire emissions based on Eq.1. It would be helpful to provide a diagram to summary the major sources and connections.
2. Comparisons are provided between this inventory and several previous ones in the introduction section. It would be useful to briefly compare the results, especially with the previous daily inventory.
3. This new inventory provides daily emissions. Surface fuels at 10- and 1-hr vary at this scale. Why fuel moistures of 1000-h and 100-h rather than 10- and 1-hr fuels are used?
4. This inventory provides 250-m fire emissions. Fuel moisture is obtained from NFDRS station. What is the resolution of the NFDRS station and how could the resolution mismatch between the fire emission and NFDRS station affect the emission estimates?
5. It is indicated that MFLEI will be updated, with recent years, as the MTBS burned area product becomes available. MFLEI also uses other fire sources such as FOD. What would be the impacts if FOD is not updated in the future?
6. Subsection 3.5: The title includes “agricultural fires” but they are not discussed in this subsection.
7. Section 5: It is more like a summary than conclusions.