

***Interactive comment on* “Evidence for impacts on surface-level air quality in the Northeastern U.S. from long-distance transport of smoke from North American fires during LISTOS 2018” by Haley M. Rogers et al.**

Anonymous Referee #2

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Referee Comment ACP-2019-700

General Comment: The paper describes lines of evidence leading the authors to conclude that two pollution events experienced in the New York City Metro area and along coastal Connecticut during August 2018 were in large part attributable to emissions from biomass burning events. The paper is well written and nicely presented. There is nothing ground-breaking in the results, but it is a solid paper and deserves to be published largely as is.

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Specific Comments: The authors are *mostly* good about being precise in their wording so as not to mislead the reader about what was actually observed. As someone who is sensitive to this I did find a few places where more precise wording is warranted. I have noted these instances as “Technical Corrections”.

Lines 38-44: Missing in the introduction is any mention or discussion of aging and chemical transformations that occur in biomass burning plumes. For the present study the authors rely on “persistent” tracers that remain somewhat (or mostly) intact over the multiple days it takes to reach their measurement site. I’m not suggesting a detailed discussion here, but some acknowledgement of the process and how it might affect the study is needed. Maybe just a couple of sentences or a short paragraph?

Line 114: The very high CO spikes at the YCFS on 8/16 and 8/29 deserve some attention. It seems likely to me that these spikes are caused by “hyper-local” sources, and they are more than a factor of three greater than the high smoke influenced values and a factor of two higher than anything seen in Bridgeport (and Queens). Maybe a delivery truck idling near the inlet? Or a “dirty” ship sending a plume over the site? I suggest the authors look more carefully at their data to make sure these spikes are not caused by a local contamination source.

Lines 130-133: The authors should be aware (and potentially indicate in the paper) that August 5, 6, 7, 10, 16, 28, and 29 were all identified as “Air Quality Health Alert” days in New York State. In each case ozone was predicted to be the pollutant of greatest concern, but since high ozone and high PM_{2.5} often occur simultaneously, it is not surprising to have high PM levels on August 6, 7, and 10.

Line 250: Following up on this, the authors only mention that 8/29 was an air quality health alert day. The 16th and 28th (also study days) were also AQHA days for the NYC metro area or nearby communities.

Line 269: The data availability sentence seems a little terse. At least identify the public repositories.

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Technical Corrections: Line 16: Insert “at surface-level sites” between “in” and “arriving”.

Line 74: While the AE33 and 48i can be configured to provide 1 second data, I don't think that is the case for the BAM 1020. It is typically configured to provide only 1 hour averaged data.

Line 134: The identification of panels A and B are reversed.

Line 141: Change “in” to “over”.

Line 146: Add “at YCFS” between “peaking” and “on”.

Line 155: Suggest rewording this to read, “that smoke from aloft was available for transport to the surface, followed by the increases in . . .”.

Lines 167 and 173: The words “compared to YCFS (starred)” are out of place in the first sentence. I suggest taking them out of this sentence, and adding a second sentence that simply reads, “The YCFS is indicated by a star.”

Line 239: Change “in” to “over”.

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