Summary/recommendations:
Liang et al. have provided a strong, thorough study of aged biomass burning emissions from California wildfires in 2017. There are several interesting observations within the paper based on many lines of evidence, including mean OS_C distributions, volatility estimates, and fuel markers from different fire types. The research done for this study provides a nice framework for future BB studies. I recommend the paper be published after the following minor comments. As one point to be noted, there were a number of figures that could be slightly modified to make the paper more accessible and digestible, and I have provided specific comments below.

General comments:
Line 122: briefly explain what the 3-cluster solution is, and link to Figure 1a & sect 3.1.

Lines 246-251: Smoke age is estimated for cluster 3; can it be estimated and provided for clusters 1 and 2?

I would note where the subscript '74' comes from in Eq 2 when introducing the equation, I had to search for that (explained several sections earlier).

Sect 3.4: Do the authors have a hypothesis (or hypotheses) on why Factor 6 is the least correlated to any of the other factors?

I recommend briefly explaining what the dendrogram means in Fig 7a.

Sect 3.5: it may be worth pointing out that rapid chemistry and SOA formation may occur before the time of the first set of BAAQMD measurements. Could the authors note the estimated physical distance of the monitors closest to the fires, and provide the range of physical distances in monitors?

Figures/tables:
All of the time series figures could benefit and become much more digestible by clear, consistent markings of different periods (plume, background, etc). See below for more specifics:

Figure 3 & 8: consider marking the different periods discussed in sect 3.2 (plume, background, BB influenced) on the figure to increase its usefulness. (I personally find time series figures that have the background of the plot shaded different colors to indicate different periods to be particularly useful. For example, see figures 1-2 of Mattila et al., 2020)

Mattila, J. M., Arata, C., Wang, C., Katz, E. F., Abeleira, A., Zhou, Y., Zhou, S., Goldstein, A. H., Abbatt, J. P. D., DeCarlo, P. F. and Farmer, D. K.: Dark Chemistry during Bleach Cleaning Enhances Oxidation of Organics and Secondary Organic Aerosol Production Indoors, Environ. Sci. Technol. Lett., 0–6, doi:10.1021/acs.estlett.0c00573, 2020.

Figure 5 & 9: what are the vertical dashed lines? Are these marking specific plume periods? Please specify in the figure caption. Again, marking the different periods can make these types of figures more easy to digest. (See comment for Figure 3 & 8)

Figure 7b: the colors between 3 and 4 and between 1 and 7 are difficult to distinguish. I recommend making all of the colors contrast more here; could also consider using different shapes to help with the contrast.

Technical comments:
There are a number of and minor grammatical errors (primarily in the form of word omissions; e.g. lines 32, 43-44, 223) throughout the paper.

Line 257: 'The Oct 11 nighttime plume': this is referred to the Oct 12 plume in Fig 2. Please make sure how each plume is referred to (Oct 11, Oct 12, etc) is consistent throughout the paper.

Line 433-434: "The levels of PM2.5 at the sites considered here reached peak 0-5 hours after the Napa site." This sentence seems to be missing a word, such as "reached *their* peak"