

Interactive comment on “Burning of olive tree branches: a major organic aerosol source in the Mediterranean” by E. Kostenidou et al.

Anonymous Referee #1

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The manuscript reports on observations of olive-tree burning in the field and laboratory, as well as oxidation/aging experiments of olive tree burning smoke. The type of analysis itself is not unique and has been applied to different samples of biomass. However, the results are unique in a sense that they focus on burning of olive tree branches, which is important for air quality considerations in the Mediterranean region. To put the results in perspective, the authors provide estimates of the annual emission factors of different species from burning of olive-tree branches; these estimates drive the message home that in certain seasons in the area, air quality is strongly by this agricultural practice. The manuscript is well written and presentation of the data is clear. I recommend publication of the manuscript with only a few minor clarifications: 1. Page 7229: Sect. 2.2.6 Why were there both Teflon and quartz filters collected? 2. page 7232:

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line 18: indicate which other BB-OA sources were the data on FTIR functional groups compared with. 3. Page 7233: line 15: Does HR analysis of the spectra indicates dominance of $C_xH_y^+$ fragments or $C_xH_yO_z^+$ fragments at typical hydrocarbon fragments? 4. Page 7233: line 24: it's indicated that during expt 2, 'probably' contribution of flaming phase of the fire was higher. Couldn't some of the gas phase measurements (CO or CO₂) and BC data be used to indicate with certainty how different the flaming/smoldering phases of each expt where? This is an area in the paper that I see a gap in. A better characterization of the fire condition will help putting the results into context. For example on P. 7234, it's mentioned that fresh otBBOA spectra were similar despite differences in the experimental conditions. A better characterization of the different burns will clarify what is and what is not a significant factor for controlling otBBOA chemical characteristics. 5. Page 7233: line 27: how different was the contribution of larger fragments to total OA in different experiments?

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