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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Impacts of an Intense Wildfire Smoke Episode on Surface Radiation, Energy and Carbon Fluxes in Southwestern British Columbia, Canada" *by* Ian G. McKendry et al.

Anonymous Referee #1

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The article by McKendry et al. Impacts of an Intense Wildfire Smoke Episode on Surface Radiation, Energy and Carbon Fluxes in Southwestern British Columbia, Canada, which presents results from the study of the impact of a smoke plume on surface radiation transfer, CO2 exchange with the overlying atmosphere and associated convective fluxes is timely and interesting. However, the authors treatment of the energy balance and carbon flux data is superficial and gives no confidence in their reported results. While they refer readers to other articles which discuss each monitoring site, they fail to mention that the instrumentation at each site is different. The authors need to present details of the instrumentation at each site. They need to clearly demonstrate that flux measurements made by different configurations of instrumentation are robust and re-

liable and that reported differences in radiation, trace gas and energy fluxes between sites are real and not the result of different instrumentation.

The authors must report on the corrections made to energy balance data. For example, even in the articles they cite I could not find reference to correction for air density differences (Webb-Pearman-Leuning correction), data spike removal, gap filling (if any), and the influence of solar heating of the LI-7500 on air density within the instrument's measurement path which needs to be corrected. For the urban site – there's no reference to the possible influence of anthropogenic heat flux. I would suggest a much better example of the energy balance equation is presented than the overly simplistic Oke formula.

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