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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Californian wildfire plumes over Southwestern British Columbia: *lidar*, sunphotometry, and mountaintop chemistry observations" *by* I. McKendry et al.

Anonymous Referee #1

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Californian wildfire plumes over Southwestern British Columbia: Lidar, sunphotometry, and mountaintop chemistry observations By I.G. McKendry et al. MS No.: acp-2010-498

This paper describes the observation data analysis during the Californian wildfire, especially the transport to northern US and Canada occurred in 2008. Authors combined several observation data from ground/space Lidar data, sunphotometery and chemical compositions at high mountain sites. They showed the very good and clear evidences of Californian wildfire plume arriving to their observation sites. The contents of this

paper are descriptive and primitive, and their analysis is also qualitative. In some part, it gives me difficulties to get the over all view of wildfire plume transport including the horizontal and vertical dimension of plume. I understand that the purpose of this paper is to describe the characteristics of Californian wildfire plumes transported to Canada. I recommend publishing in ACP after minor revision based on the suggestion listed below. However, for the future step of analysis, I strongly suggest to combine with numerical transport model results (such as NRL aerosol global model) to get and show more detailed structure and transport of such a plume.

Major Comments:

Kittaka et al. (2007a, b) is missing in the list

Section 2.2: Which version of CALIPSO data is used?

Section 3.1: Which satellite data are used? What parameter does it show in Figure 2?

Section 3.2: Do you examine color ratio of CALIPSO lidar data?

Figure 1: I recommend adding the hysplit trajectory starting the CO peak time of Figure 7 (i.e. July 2nd – 3rd and, August 8th)

Figure 2: Lidar attenuated backscatter ratio is used in this figure. Is it possible to make inversion of this data to extinction coefficient by assuming lidar ratio S1? If it is can, I recommend to draw averaged vertical profile during the observation peak period.

Figure 6: Are CALIPSO orbit paths of July 1 and April 26 correct? I examined the NASA CALIPSO lidar browse web site, but it seems different. Please make crosscheck of it. It might be useful to include the vertical feature mask and aerosol subtype analysis including in CALIPSO version 3.01 browse image.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 21047, 2010.