

Interactive comment on “Long range transport and mixing of aerosol sources during the 2013 North American biomass burning episode: analysis of multiple lidar observations in the Western Mediterranean basin” by G. Ancellet et al.

Anonymous Referee #2

Received and published: 18 December 2015

In the presented work gives an extensive examination of the aerosol situation in summer 2013 in the Western Mediterranean area. The paper is well written and interesting to read, and I have only minor comments which should be considered before publication in ACP.

Introduction: You define BER as extinction to backscatter ratio. In Section 3.1 you define the lidar ratio (LR) as BER-1. To my knowledge the general definition of the LR is extinction-to-backscatter ratio.

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Section 2.1: Please give references for this information.

Section 3.1: Can you give a reference for the forward Klett inversion? Please give more information on the exponent k (order, differences depending on aerosol type).

Section 3.3: What do you mean by ‘Atlantic dust sources’?

Figure 1: Please give the time of the CALIOP tracks and the FALCON 20 flight in the figure caption.

Figure 2: Panels are not top and bottom. Would it be possible to use the same scale for both panels?

Figure 3: How do you explain the very inhomogeneous structure in Depol and CR (especially on 21 June) which seems not really to correspond with the layering shown in R532-plot? Also on 22 June the intensive optical properties seem to be very variable within the aerosol plume. I would not expect such large differences.

Figure 8: Please indicate the source of these plots (FLEXPART?) in the figure caption.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 32323, 2015.

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