

Interactive comment on “Temporal consistency of lidar observables during aerosol transport events in the framework of the ChArMEx/ADRIMED campaign at Menorca Island in June 2013” by P. Chazette et al.

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Reviewer 2 This reviewer agree that co-located lidar and Cimel measurement data at Menorca Island are very unique. However, a context in sections 3.1 and 3.2 is similar to the contents of conventional papers, especially published by the authors. The quality of this paper will be enhanced if the authors highlight the major findings of this work compare to previous papers from the study region. In addition, some sentences should be concisely written. Same (or similar) expressions and/or words were too often repeated. We have tried to be more concise and have rewritten some parts of

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the mentioned sections for better clarity. If the aerosol optical and physical data from ground-based in-situ or airborne measurements during the campaign are available, please add them to in this work (e.g. line 23-26 of page 32731). Yes, there were some in-situ measurements close to the ground. These values were found to be irrelevant for comparison with the lidar profiles because they are mainly representative of very local sources. The ground-based station is close to the sea and very influenced by sea spray. The temporal evolution of the aerosol properties observed in the tropospheric column is not marked at the ground level. Contrariwise, the integrated measurements of the in situ sunphotometer are relevant and accounted for.

To get more general conclusion, the comparison between SEVIRI and Cimel at Menorca should be made with long-term data, not for only the intensive period data (Fig. 8). The objective is not to draw a general conclusion. The calibration and validation of spaceborne instrument are made at the global scale, using for example all the ground-based sunphotometers. On this base, the calibration may be correct. Nevertheless such general consideration can be put in default for regional cases. The discrepancy that can be observed could also be a function of the season. It cannot be investigated at length here. The goal for this paper was only to verify the agreement of the SEVIRI-derived aerosol optical properties with our measurements. We have corrected them before building regional AOT map. The correction determined here is not necessary true for other applications. We have specified this point.

Section 4: If the aerosol type classification from CALIOP are available along the backward trajectory, please add it. Yes, they are. For the pollution aerosol situations, the AOT is small and aerosol mixings are present in the atmospheric column. In such condition, the aerosol typing derived from CALIOP is not reliable. We have checked the aerosol identification of CALIOP for the events of desert dust and biomass burning aerosols. The first one is well identified as polluted dust. It is not shown in the paper but we have added a sentence. For the second one, the description is given in the companion paper of Ancellet et al. (2016), as explained in the text. The plume is

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identified over the Atlantic Ocean as a smoke and polluted dust. We have added this information in the text.âĀĀ

Please also note the supplement to this comment:

<http://www.atmos-chem-phys-discuss.net/15/C12441/2016/acpd-15-C12441-2016-supplement.pdf>

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