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
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 val-
idaion 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. Nev-
ethertheless 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 cor-
rected them before building regional AOT map. The correction determined here is not
ecessary 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 Aancellet et al. (2016), as explained in the text. The plume is
identified over the Atlantic Ocean as a smoke and polluted dust. We have added this information in the text.

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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