Interactive comment on "ReOBS: a new approach to synthetize long-term multi-variable dataset and application to the SIRTA supersite" *by* Marjolaine Chiriaco et al.

Anonymous Referee #1

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The paper describes data and methods for obtaining a specific and useful dataset from SIRTA supersite observatory. This will foster the use of the data for manifold applications of interest for the whole community. The described methodology could be also of interest for other observational communities for better exploiting and presenting their datasets.

The topic is well suited in the scope of the journal and present high quality data and procedures. There are some small points that could be improved for increasing the impact of the paper itself:

- different time periods are reported in the text, sometimes 15 y, other 14y and often 10

y. Please check this aspect and try to homogenize the wording in this sense

- I counted 40 variables in table 2 and not fifty as stated in the paper. Please check

-page 6, why a decade for the oldest one? you spoke about 15y....confusing for the reader

- page 10: describe the flag 2 or its absence, not clear

- page 11- Figure 3b, 3c and 3d do not illustrate the difference but the pdfs, these plots highlight the eventual differences

- page 11/fig 3c: Orly count seems to be lower in number respect to the others: are the pdf normalized or not? explain this better please.

- page 12: how the weight are assigned? the text here should be clearer

- page 13/table 3 how these numbers are set? Please explain.

- page 15: clearly it is not possible to report here the sensitive tests but please explain in which sense you had this sensitivity test...

- page 16: "the lidar signal intensity is estimated using the scattering ratio" plesae rephrase because literally this is not correct. Additionally, in the Table 1 would be more correct to report Lidar backscattered signals

- -Table 2: you never refer into the text to the Lidar molecular profiles which actually is not clear to me what it is: typically, with lidar measurement molecular profile is not retrieved but assumed from external sources. Please explain better and eventually remove this variable from the dataset.

- page 17: please explain why 2 versions of files are provided by ReOBS

-page 19: line 1: instead of cloud optical thickness I suppose particle optical thickness (i.e. aerosol+cloud) is more suitable

- Fig 6b: the ticks seem to be located not in the middle of corresponding bars but at left

edge, please improve the plots in this sense

- page 20-21 lidar simulator not clear. are these into the reOBS? In any case, would be much better to call it something like space-borne lidar observation simulator, because if I well understood is a tool for simulating the CALIOP signal to be expected if the atmospheric scene observed by SIRTA is captured by the CALIOP.

- Page 20: modify spatial with space-borne

- lines 652-653 probably a cut& paste issue. Please check

- figure 9: report the caption of the color bar close to it and not as title

- table3: please check formatting

-table 1 & 2: the formatting could be improved. I would suggest to have the table horizontally oriented

-line 403: check the reference