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Comment

## ***Interactive comment on “Variability of aerosols forecast over the Mediterranean area during July 2013 (ADRIMED/CHARMEX)” by L. Menut et al.***

### **Anonymous Referee #1**

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General comments:

1. As mentioned several times by the authors, this article has a companion paper:

Menut, L., Mailler, S., Siour, G., Bessagnet, B., Turquety, S., Rea, G., Briant, R., Mallet, M., Sciare, J., Formenti, P., and Meleux, F.: Ozone and aerosol tropospheric concentrations variability analyzed using the ADRIMED measurements and the WRF and CHIMERE models, *Atmos. Chem. Phys.*, 15, 6159–6182, doi:10.5194/acp-15-6159-2015, 2015.

In particular, the simulation period, domain, model system & configuration, observations and general topic are either the same or similar, as also evident when comparing both titles.

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Similarities in the two papers are also evident in the Results they present: both include the time series of atmospheric temperature and AOD (e.g. Figures 2 and 10 of this manuscript vs. Figure 8 and 14 of the companion article), and a part of model evaluation (e.g. Table 2 vs. Tables 4 and 5, or Table 4 vs. Table 8). Also, I couldn't help noticing the phrase "to understand the several types of meteorological variabilities influencing ozone and aerosols concentrations", which is only relevant to the previously published article and not to this manuscript, as this does not deal with ozone.

Lastly, and as noted by the authors (cf. pp. 10344 lines 13-14) the added value of this study is the comparison among the 4 simulations/day. Thus, taken into account that most of the above information is duplicated, a lot of text could have been shortened, and/or moved to supplement and/or removed (pls. see specific comments below), the remaining part –to my view- cannot support a stand-alone article.

Thus, my suggestion would have been to merge these two papers to one. In this way, the extra work of this study, which is mainly the inter-comparison among the 4 simulations and the observations, would have been a subsection in the Results of the already published article. Now, that the other article is already published in ACP, I am afraid I have no alternative but to recommend its rejection from publication.

2. The language is the second major issue of this article: is not at all fluent and precise. A lot of grammar mistakes (e.g. precipitations, informations, constraints, variabilities, aerosols optical depth, the fires emissions), syntax errors, awkward and inappropriate expressions (e.g. "Aerosols sources and sinks studies remain difficult", "to act at the right time and place to reduce the anthropogenic part of the emissions.", "Logically, ...", "the same conclusion was done" ) are present. Even if I would have favored the publication of this article, I would have definitely asked for a major review so that its overall readability is improved. The English copy-editing services of Copernicus could have been a solution.

Specific comments:

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The title (“Variability of aerosols forecast over the Mediterranean area during July 2013 (ADRIMED/CHARMEX)”) is rather a general statement than a clear reflection of the main aim of the paper. Moreover, when one compares it with the one of the companion paper (“Ozone and aerosol tropospheric concentrations variability analyzed using the ADRIMED measurements and the WRF and CHIMERE models”) it can be shown that the current manuscript should have been a part of that article and cannot stand as a second paper.

The abstract is written using awkward expressions and sentence structures (e.g. “in order to help scientists to decide. . .”, “Each day, a simulation of four days is performed”, “This variable is at the origin of . . .”). This affects the reader’s comprehension of the text.

The overall presentation is not well structured and clear:

The aim of an introductory section is to provide previous and supporting information for the specific topic and aim of the current publication. Thus, it should not elaborate on general information, e.g. regarding the pollution over the Mediterranean (the first introductory paragraph), or phrases irrelevant to the main topic, e.g. the composition of aerosols (the second paragraph), or a generic review in model evaluation (third paragraph). On the other hand, each of its paragraphs should aim to cover a different aspect of the points that are analyzed in the results’ sections, previous studies, i.e. useful information about the same topic, and finally a number of goals of the current study.

There is no section “methodology” or “results”. The observed parameters used for comparisons are not mentioned. A lot of text is spent to present the models, although widely known and/or presented in Menut et al. (2015). Statistic measures are not presented in advance. Overall, the methodology is the same as in the companion paper, thus even if the results were to support a separate article, a major revision should be made, so that text is replaced by tables, and/or shortened, and/or moved to

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the supplement, and/or completely removed.

Many results are not interpreted and/or analyzed in a sufficient way (e.g. temperature biases, differentiation of wind speed variability per station, variability in wind direction), thus -to my view- the way they are presented cannot support safe conclusions.

Inversely, the two main conclusions reached in the current manuscript are not satisfactorily supported by the results and are found incompetent to support this article.

Many parts of the paper should have either reduced or combined or eliminated. E.g. a) the first three paragraphs of the Introduction (pls. see above comments), b) theoretical reference to processes in the results sections, such as the paragraph in Sect. 4 and 4.1, 5.1 (first paragraph), 6. Most of such information, should be either placed in the methodology, or where attempting to explain the results, or else should be removed. c) First (and the half of next) paragraph of conclusions does not reflect conclusions of this work.

From my personal experience, the number of references is small. As far as giving credit to similar findings from other researchers, I have concerns: no results and/or findings of similar studies are cited in the results sections (4-7).

Abbreviations for the statistical parameters used (e.g. RMSE) are not defined.

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Interactive comment on Atmos. Chem. Phys. Discuss., 15, 10341, 2015.

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