

Interactive comment on “Primary aerosols and secondary inorganic aerosols budget over the Mediterranean basin during 2012 and 2013” by Jonathan Guth et al.

Anonymous Referee #1

Received and published: 3 October 2017

The paper aims to estimate the aerosol budget over the Mediterranean region using a chemistry-transport model, focusing on two years based on available field campaigns in the Mediterranean region. The model is evaluated against satellite and surface observations. The paper is well-written and easy to follow, with a satisfactory level of the English language. I find the paper publishable in ACP, given the minor comments provided below are addressed.

Introduction

Some key findings of the observations from the three campaigns can be provided in this section. Page 3, lines 3-4: this sentence can be moved to materials and methods

C1

or results, it is not relevant in this part of the introduction.

Mocage model

Can the authors explain the How the vertical and temporal distributions of emissions are done? Does MOCAGE run on hourly resolution input? How about the speciation of NMVOCs in the model?

Evaluation

Please use the full names (e.g. MNMB and other similar acronyms) when they first appear in the text.

What are the units in Tables 1 and 2? Is MNMB in %? Use these units in the text too (e.g. MNMB is lower, between -0.5% and -1%).

Figure 2 shows that AODs are generally underestimated in the eastern Mediterranean in 2013, compared to 2012. Can you comment on this? Is this the meteorology?

Figure 3 can be moved to materials and methods as it does not present any results but the information about the stations and what they measure.

The first 3 paragraphs of section 3.3. also fits better to materials and methods section as it introduces the data used for evaluation.

Is it more correct to say that class 10 represents urban than highly polluted?

The bias in AOD is much smaller compared to bias for the surface stations. Can the authors discuss the reasons for this?

Can the authors explain why they only use EMEP stations?

Some evaluation on deposition using e.g. EMEP stations could be useful as the budget is dependent on this term.

Figure 10 fits better to Materials and Methods.

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