

# ***Interactive comment on “Implementing marine organic aerosols into the GEOS-Chem model” by B. Gantt et al.***

## **Anonymous Referee #3**

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### General comments

This paper presents the implementation of an on-line parameterization of marine primary organic aerosol (POA) into the GEOS-Chem model. The authors have then evaluated the surface concentrations of marine OA (MOA) in comparison to the observational data, and showed some outputs regarding atmospheric aging of MOA. They have also provided some candidates for future field studies on marine OA. The present work may provide valuable information on our understanding of the processes of marine POA. The manuscript fits with the scientific scope of GMD. Although the result presented here is valuable, the authors should provide some more explanations that need to be clarified. I recommend its publication in GMD after some revisions raised below.

## Specific comments

(1) I understand that the major focus of this paper is on marine POA, for which the evaluation should be made. However, why was the evaluation made using the observational data obtained at an inland site near Paris in Figure 2? The site might be affected by some other sources such as terrestrial biogenic/anthropogenic sources, which might relate to more complicated processes for OA. The evaluation of the model output with observational data at “clean marine” sites should be more straightforward. The authors should clarify the logics or reasons why they have compared the MOA from the model with OA observed at the terrestrial site.

(2) What is the definition of “MOA” used in this study (or used for the GEOS-Chem)? The definition of MOA might be different from that used in Crippa et al. (2013a). Please clarify this.

(2) Figure 3: More details on the data sets should be presented without just refereeing Grantt and Meskhidze (2013). Please at least provide locations and time scales for each data used for the comparison with some related references. In addition, what is the definition of “clean marine conditions?”

(3) P.5976, L22-26, “Unlike the direct . . .”: I cannot understand the meaning of this sentence.

(4) Figure 5: What are important factors controlling the temporal and spatial distributions of the fractions of marine POA aging? The authors should discuss more on this point.

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Interactive comment on Geosci. Model Dev. Discuss., 7, 5965, 2014.

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