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Atmospheric Chemistry and Physics Discussions

Interactive comment on "The composition of nucleation and Aitken modes particles during coastal nucleation events: evidence for marine secondary organic contribution" *by* P. Vaattovaara et al.

Anonymous Referee #2

Received and published: 3 May 2006

General:

Based on two independent measurement methods, the authors show indirectly that nanoparticles particles formed in the coastal atmosphere contain a significant organic fraction. Furhermore, the organic fraction seems to increase when the particle size increases from near the detection limit to close to 10 nm. The finding, although based on a rather limited data set, is important and deserves to be published. Before accepting the paper for publications in ACP, the authors should consider carefully the following

comments and make the appropriate changes into the manuscript.

Major comments:

Discussion on the results presented in Figure 3 associated with laboratory PHA-UCP measurements is very hard to understand for a non-expert. The text on page 344, lines 4-23, should be entirely rewritten.

Bringing up day 7 June (page 3347, lines 10-14) is very odd, since it not analyzed at all. I recommend that the authors remove this text from the manuscript.

On pages 3347-3348, the authors mention CCN production associated with coastal particle formation events. The arguments would be stronger if the authors added a few lines discussing when ultrafine particle may act as CCN (size, hygroscopicity, supersation range) and whether CCN production associated with new-particle formation has been observed in other field investigations.

The paragraph starting from page 3353 and continuing to page 3354 is not very clear. Please reconsider rewriting parts of it.

Basically, I like the discussion presented in the “Conclusions” section. However, I would like to see the authors to say briefly something about the importance of their findings over the open ocean as well.

Minor/technical comments:

Introduction: DMS is not a sole source of non-sea-salt sulfate over the northern Atlantic, a significant portion originates from anthropogenic sulfur.

I do not see Figure 1 very useful for the purposes of this paper. The figure could be removed from the manuscript.

The quality of Figures 7, 8, 9, 12 and 13 is poor. The axis titles should be more readable and the scale of the x-axis should be “hours”, not “days”. Many of these figures could be combined together as their share similar appearance almost the same

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figure captions.

The manuscript contains a few grammatical errors/bugs. The authors should proof read the paper carefully after making the final corrections.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 3337, 2006.