

Interactive comment on “Ultrafine particle formation in the inland sea breeze airflow in Southwest Europe” by R. Fernández-Camacho et al.

Anonymous Referee #2

Received and published: 16 September 2010

General

The paper presents a study based aerosol particle number, BC, PM₁₀, gas, and meteorological measurements. Unfortunately there are no size resolved particle measurements, thus only statistical methods can be applied so separate different emission sources. However, the approach seems to work and demonstrates how to handle a smaller dataset. The paper is relatively well written, but needs to be checked concerning consistency and so on. Also it seems like not all the available data were used for statistics, thus the conclusions could provide more information.

Comments in detail

C7628

Introduction:

Page 17754, Line 4: What do you mean by ‘ultrafine’ particles. This word is used for very different size ranges, thus it needs to be defined in the beginning of each paper.

Page 17756, line17: I think there are instruments available measuring below 2.5 nm (NAIS and so on, there is also one new CPC, measuring down to 2 nm, developed by Mikko Sipilä). This should be mentioned here.

Measurements:

Page 17759, Line 20ff: The measurement period is given here, but usually not all data are available all the time. Please give data coverage for the different parameters.

Page 17760: I do not believe that your CPC is measuring down to 2.6 nm. Did you measure the calibration curve? If yes, please show it. Otherwise you may refer to published calibration measurements, e.g. Hermann et al., 2007, J. Aerosol Sci., there the DP50 was usually above 3 nm.

Results:

Page 17763 Line: 11: 0 – 23 h should be 0 – 5 h

Page 17764, line 15 ff: The method to segregate between directly emitted particles and those formed later from the gas phase is very interesting and may help to interpret other datasets. But, it is difficult (or impossible?) to distinguish between new particle formation from anthropogenic sources and others?! This has to be discussed in the paper. If the authors think this is possible a clear explanation needs to be given.

Interpretation of Figure 4: If N and BC are correlated new particle formation seems to play a minor role. This should be mentioned and discussed. In fact, the parallel BC measurements are a good way to distinguish between anthropogenic and other emissions. PC-Analysis: Why did the authors not include meteorological parameters? I think they are very important, e.g. wind direction and should be included. Please

C7629

modify the MS in that way!

Page 17767, line 28: PC1 should be PC2, please check also the rest of the MS for this!

Page 17768, line 1, ..the analysis... Which analysis do you mean here?

Page 17768, line 7: N1 should be N2, please check also the rest of the MS for this!

Conclusions:

More interpretation concerning the different sources would be nice. E.g. is it possible to distinguish between traffic and industrial emissions?

What is the major and new outcome of the study?

It should be clearly stated what the advantage of this methods is and also where the limitations are!

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 17753, 2010.

C7630