Atmos. Chem. Phys. Discuss., 9, S2958–S2959, 2009
www.atmos-chem-phys-discuss.net/9/S2958/2009/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "An investigation of nucleation events in a coastal urban environment in the Southern Hemisphere" *by* J. F. Mejía and L. Morawska

Anonymous Referee #3

Received and published: 20 August 2009

The manuscript (An investigation of nucleation events in a coastal urban environment in the Southern Hemisphere) by J. F. Mejia and L. Morawska presents an interesting data set in an area which still is and will be for the near future very important for the scope of ACP. The small amount of measurements available from places outside of Europe and North America makes the data collected during the 5 campaigns in West-Australia very valuable. Although I have to agree to the referee 1 that at this stage the manuscript is not in the way it could be published in Atmospheric Chemistry and Physics. The authors need to put more effort in the analyses of the data and rethink the way to present the measurements.

I do not want to mention all the points from the first referee again (although I agree with him completely) but more concentrate on some additional comments which hopefully could contribute to the improvement of the manuscript and its publication in ACP:

1. Dividing the measured particle size distributions in event and none event days with the limitation of the high cut off size at 14 nm will be problematic even with the clear criteria given by referee 1. One possibility would be to calculate certain aerosol dynamic parameters for each day (growth rate, condensation and coagulation sink) and use this information to get J values at lower sizes based on the formula published originally by Kerminen and Kulmala (J. Aerosol Science., 33, 609–622, 2002). In this way the authors could distinguish between days with high nucleation rates and low and could get also information about the concentrations of the condensing vapors.

2. The plots in figure 2 should then be divided for days with observed or calculated new particle formation and non-event days. In the way the authors presented this figure at the moment, only small valuable information is achieved.

3. Concerning the distribution of the event and non-event days in sections of air origin back trajectories would add important information and should be considered beside measured wind direction. By comparing these graphs for event and non-event days a more clear pattern concerning the observed particles in the different size ranges could appear.

4. The results in point 2.5 (should be not under methods) and the discussion under 3 are at this stage only a listing of the observations without combining it to scientific valuable information. The authors should spend more time in thinking of the reasons why new particle formation was observed on certain days and why not by using their measurements and hopefully some simple modeling tools as mentioned above.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 2195, 2009.

ACPD

9, S2958–S2959, 2009

Interactive Comment