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Interactive comment on “Source areas and trajectories of nucleating air masses within and near the Carpathian Basin” by Z. Németh and I. Salma

Anonymous Referee #3

Received and published: 10 July 2014

This manuscript investigates the connection between air mass origin and atmospheric nucleation. The investigation is based on a full year of measurement data at two sites in Budapest. The authors apply a novel data analysis approach, which makes the investigation original enough to warrant publication. I do not find any scientific errors methods, data treatment or interpretation. The paper is also clearly written and well organized (with the exception of missing conclusions, see below). I can recommend accepting this paper for publication after the authors have considered the following rather minors comments.

Although this is a very short paper, I would still like to see a separate "Conclusions"

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sections after the results. This could be very short, i.e. listing of couple of the most important new findings and their implications, along with some recommendations for future research related to this issue.

The discussion about the nucleation frequency in section 3.1 should be sharpened a bit. For example, what do the authors mean by stating that the observed nucleation frequency at their sites is considerably large? A long-term study at 12 European background sites indicates nucleation frequencies between about 20 and 50%, so the observations in Budapest are well in this range (Manninen et al. 2010, ACP, p. 7907). Stating that nucleation frequencies are lower in many urban locations should be backed up with concrete examples. In general, I would like to see a bit more concrete comparison to literature data in terms of the nucleation frequency and its seasonal cycle.

The authors refer to the paper by Kristensson et al. (2013) when describing the method applied in this work. What is the current status of this manuscript (it was submitted in 2013), and has the methodological approach undergone any changes during the potential revision process of this paper?

Page 9234, line 23: what is meant by properties of nucleation and growth events here?

Since one of the main ideas of this paper is to link observed nucleation events to air mass origin, it would be extremely important to illustrate explicitly the spatial extent of this phenomenon. Therefore, I would strongly recommend adding clear length scales to Figures 4-6.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 9225, 2014.

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