The authors thank Referee #2 for his/her precious comments for further improving and clarifying the ACPD paper. We have considered all recommendations, and made the appropriate alterations. Our responses to the comments are as follows.

General comments

Response to Comment 1
We fully agree with the Referee, and made several modifications in the text including section 2.2, and regarding the usage of the misleading expression “track” in particular in section 3.3. The term questioned was removed as well. We also clarified better our objectives at some other places in the MS. The endpoint of a trajectory and the projected area of the city indicate the furthest distance and its uncertainty where the actual new particle formation event extended, and, therefore, we would like to keep this analysis in the MS. The discussion, however, was substantially modified to emphasize our goals and results better. To avoid any misunderstanding, we modified the title as well to be more specific and precise.

Specific comments

Response to Minor comment 2
The wind roses were generated from wind speed and wind direction data measured at a height of 2 m above ground level on the sites. At the same time, the backward trajectories were calculated for an arrival height of 200 m. Direct comparison of their results has limitations, which we expressed now better in the text.

Response to Minor comment 3
Length scales were added to Figures 4-6 as requested.

Imre Salma
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15 July 2014

The authors thank Referee #3 for his/her precious comments for further improving and clarifying the ACPD paper. We have considered all recommendations, and made the appropriate alterations. Our responses to the comments are as follows.

Response to Comment 1
A separate section "Conclusions" was added now as requested by the Referee.

Response to Comment 2
A brief overview and comparison to the literature data on nucleation frequencies and seasonal variations were added now to the MS as follows:
The values are larger than for ordinary background or remote sites [cf. Kulmala et al., 2004; Manninen et al., 2010; Kerminen et al., 2012], and somewhat larger than but comparable to most urban environments [e.g., Qian et al., 2007; Borsós et al., 2012; Dall'Osto et al., 2013]. The nucleation frequency is known to be related to local properties such as concentrations of precursors and condensable species, of existing aerosol particles, and meteorological conditions which determine the radiation flux, degree of atmospheric stagnation or transport [Kiendler-Scharr et al., 2009]. The monthly mean frequencies exhibited a remarkable seasonal variation with a minimum in winter, and two local maxima. In the city centre, the largest frequency happened in April, and a smaller maximum appeared in September. In the near-city background, two similar maxima occurred in March and September. The shift in the spring maxima for the two locations could easily be caused by differences between the particular years, and a longer-term observation has been in progress to refine this feature. The seasonal variation of the monthly mean nucleation frequency fits well into the second group of measurement sites reported by Manninen et al. [2010]. It is worth mentioning that the K-puszta measurement site - which is also located in the Carpathian Basin - shows the same seasonal pattern. This suggests that nucleation events in the basin can take place in a larger area with the same occurrence properties.

Response to Comment 3
The paper by Kristensson et al. was recently published as forthcoming paper in Boreal Environment Research 19 (suppl. B), 2014. It citation was updated.

Response to Comment 4
Formation rate and growth rate were meant by nucleation and growth properties in the referred sentence, which was reformulated now.

Response to Comment 5
Length scales were added to Figures 4-6 as requested.

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15 July 2014