Atmos. Chem. Phys. Discuss.,
doi:10.5194/acp-2016-239-RC1, 2016

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Measurement, growth types and shrinkage of newly formed aerosol particles at an urban research platform" *by* I. Salma et al.

Anonymous Referee #1

Received and published: 20 April 2016

The manuscript discusses several features related to atmospheric new particle formation (NPF) in an urban environment by taking measurements conducted in a research platform located in Budabest, Hungary, as an example. While urban NPF has been studied in a number of papers so far, this manuscript provised several new pieces of insigth into this topic, making the manuscript original enough for publication. The manuscript appears to be scientifically sound, with no major errors in methods or data interpretation. I would recommend accepting this paper for publication after the authors have carefully considered the mostly minor comments outlined below.

My main problem with this paper is that it deals with several topics, all of which are not very tightly related to each other. More specifically, the authors define 6 objectives

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(O1...O6) for this paper at the end of section 1. I am not saying that some of this material should be left out, but it might help the reader if the authors would organize the list of their objectives somehow. For example, O1 is not really an objective but rather a description of a platform. O2 is a real objective, but closely connected with O1, so O1 and O2 could somehow be tied together. Of the rest, O3 is a method-related objective, while the purely scientific O4-O6 are all related to NPF.

There are a couple of minor issues related to the logic how thing are expressed in the paper. For example, it is a real gas-phase H2SO4 concentration, not its proxy, that causes an atmospheric phenonmenon. The fact that the real concentration was not available, but was estimated using a proxy, is OK but should not be mixed with the true cause-effect relationship. This should be corrected in both abstract and conclusions section. The same problems concerns size distribution surface plots discussed in section 3.5: phenomena like blizzard or emissions from various sources cause chanbes in size distributions, which are then seen in the surface plots, but these phonemena do not affect the surface plots by themselves. Please modify.

The first sentence of the introduction " ...NPF...relevant in urban environments as well" contains information not mentioned in the paper: "as well" gives the impression that NPF may be more important in non-urban environments, but there is nothing in the paper to back up this.

I do not fully understand what is meant in lines 4-5 on page 9. Is limiting the shrinkage something the prevents to shrinkage to take place actively? And how is SO2 exactly related to this, i.e. when one would expect changes in SO2 concentration to affect this process?

I do not understand what "wide variety" refers to in line 4 on page 2.

Finally, the are a few language issues that shoud be corrected:

Articles are missing from several places (e.g by a continuous on page 7, The concen-

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tratoin of SO2 on page 9)

Page 2, line 9: systematically overviewed

Page 5, line40: summarized

Page 7, line 29: surface plots

Page 8, lines 22-24: there is something wrong (missing?) in this sentence.

Page 9, line 21: should not, however, be fully. . .

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-239, 2016.

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