

## ***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**

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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 Budapest, Hungary, as an example. While urban NPF has been studied in a number of papers so far, this manuscript provided several new pieces of insight 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 things are expressed in the paper. For example, it is a real gas-phase H<sub>2</sub>SO<sub>4</sub> concentration, not its proxy, that causes an atmospheric phenomenon. 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 problem concerns size distribution surface plots discussed in section 3.5: phenomena like blizzard or emissions from various sources cause changes in size distributions, which are then seen in the surface plots, but these phenomena 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 that prevents shrinkage to take place actively? And how is SO<sub>2</sub> exactly related to this, i.e. when one would expect changes in SO<sub>2</sub> concentration to affect this process?

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

Finally, there are a few language issues that should be corrected:

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

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tration of SO<sub>2</sub> on page 9)

Page 2, line 9: systematically overviewed

Page 5, line 40: 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. . .

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