

Interactive comment on “Hygroscopicity of the submicrometer aerosol at the high-alpine site Jungfrauoch, 3580 m a.s.l., Switzerland” by S. Sjogren et al.

Anonymous Referee #1

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This is a very well-written manuscript that deserved to be published in Atmospheric Chemistry and Physics. Only minor revisions are needed.

First, please be more specific with the term "aerosol loading" on page 13703 (line 16), since this may mean different thing depending on the research topic (PM mass concentration, AOD, aerosol extinction, total particle number concentration etc.).

Second, please define AS (apparently ammonium sulfate) on page 13707.

Third, the discussion on the concept "GF" on page 13708 may not be clear for most of the readers. The authors might consider opening it a little bit more.

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Fourth, the assumed growth factor of 1.2 for organic compounds at RH=85% is seems rather high (page 13714) compared with the values observe in most laboratory experiments conducted for organic particles. This should be mentioned in the paper and a potential explanation for this difference would be useful.

Finally, on page 13716 (lines 15-17) it is stated that "The hygroscopicity for summer indicates a similar chemical composition for different sizes, while during winter the hygroscopicity increases with size". On the other hand, on page 13713 (lines 18-20) it is stated that "It is hypothesized that smaller particles contain a larger fraction of organic compounds from secondary organic aerosol (SOA) formation". Taken together, these two statements would indicate little SOA formation during summer and effective SOA formation during winter, which does not sound quite correct. Could there be other reasons for the observed size dependence of the growth factors beside SOA formation? For example, what could be the role of aging and associated sulfate formation by cloud processing in larger particles?

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 13699, 2007.

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