

Interactive comment on “New particle growth and shrinkage observed in subtropical environments” by L.-H. Young et al.

Anonymous Referee #2

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This manuscript analyses interesting, and quite rarely reported, observations of aerosol shrinkage following their prior formation and growth. The paper is worth to be published, but needs to be partly re-written to highlight this observation and to avoid over-interpreting some other aspects related to atmospheric aerosol formation. My detailed comments are given below.

Major issues:

14 events were reported altogether at 4 sites, and the events were further divided into type A and B events. Because of the very low number of certain type of events at any single site, the authors should avoid making too general conclusions about the results. The number of cases is simply too low. The main emphasis of the paper should be on the particle shrinkage and possible factors causing it.

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The analysis of the formation rates of 1 nm particles (section 3.2) should be taken away from the paper for two reasons: i) there is a very large uncertainty in these values as there is no experimental information on particles concentrations or growth rates between 1 and 10 nm, ii) the number of reported events is very low for any meaningful comparison to other sites.

In principle, I like the case study-approach chosen here. However, having 7 figures (figure 3-9) with exactly the same and very detailed information is definitely too much. Two carefully-selected full figures like that should be enough. For the rest of the cases, it is sufficient to plot the first panel of the figure, from which the time evolution of the particle number can be easily seen.

Minor issues:

The statement particles larger than 50 nm act as CCN should be backed up with a reference.

The total event frequency appears low. Was this because only the most intense events were analyzed, or was the event frequency low also when considering the traditional ways of classifying the event in the literature?

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 18605, 2012.