

Interactive comment on “High concentrations of biological aerosol particles and ice nuclei during and after rain” by J. A. Huffman et al.

Anonymous Referee #4

Received and published: 14 March 2013

General comments

This manuscript by J. A. Huffman et al. provides an overview over some measurements and findings during the BEACHON-ROMBAS campaign. Time series of fluorescent biological aerosol particle (FBAP) concentrations, ice nuclei (IN) concentrations measured by different methods, and precipitation are shown. The main finding is a strong increase of FBAP and IN after precipitation. It is further more demonstrated that the IN in wet conditions mainly consist of biological particles. Two previously unknown species of ice nucleation active fungi are identified.

As this paper has already received a number of comments, I will keep my review short. I find this article very interesting and certainly worth being published in ACP. However, in

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my opinion the current format does not match this journal. The paper is unnecessarily short, and the description of the methods and the discussion of the results should be expanded. All the figures and tables which are currently in the supplement should be moved to the main text.

Some of the results presented here have already been reported in the recent GRL paper by Prenni et al. (doi:10.1029/2012GL053953), so the authors should carefully distinguish and explain what is shown here in addition to or with a different focus than in the other paper.

My main question about the findings presented here is the following: Why has this increase after precipitation not been observed in previous publications (some by the same authors) on FBAP time series? Could it be that this effect is something specific to this ecosystem? If this could be the case, then the last paragraph of the conclusions should be reformulated to much less general and more careful statements.

Detailed comments

- Abstract: In my opinion, the abstract should contain more quantitative information. I find the word “dramatic” inappropriate for a scientific paper.
- What does BEACHON-ROMBAS stand for?
- SOM should be spelled out.
- Fig. 1: Why is the precipitation data discontinuous? Is it only shown when above a certain threshold?
- Fig. 2: Please add the temperature at which IN were measured into the axis labels.

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- Fig. 5: I agree with one of the other referees that this figure does not contain much useful information. It could be improved by adding more details, e.g. the suggested emission mechanism and the nucleation/impaction scavenging.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 1767, 2013.