

Interactive comment on “Sources of organic ice nucleating particles in soils” by T. C. J. Hill et al.

Anonymous Referee #3

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This paper is an interesting and useful contribution, generally well done and clearly written. There is little I can remark in addition to what has already been said in the two earlier reviews.

Abstract, last sentence: What do you mean by “. . .protected by different mechanisms.”? Perhaps it should say something like “. . . and susceptible to different forms of stress.”? None of the treatments applied in the study did test protective mechanisms, they all targeted weak points in certain groups of INPs, from which protective mechanisms can not necessarily be deduced.

Page 5, line 2: At least some of the INP fraction $< 0.45 \mu\text{m}$ must have been lost from the sample during chloroform treatment. Did you process controls in the same manner without chloroform?

Page 11, line 28: Here, the reader could be referred to another study currently dis-

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cussed in ACPD (<http://www.atmos-chem-phys-discuss.net/acp-2015-1018/>), exactly showing the mentioned possibility.

Page 12, lines 13-14: Does the statement about fungal species having very sporadic occurrences of vegetative growth before dying away also apply to saprophytic soil fungi, such as *M. alpina*? I would have thought they have a more steady resource supply, hence vegetative growth. Crop residues of the preceding season are found in most cropped soils at least until new residues are supplied by a new crop.

Fig. 2: The almost perfect complementation on the colder side of the bulk soil spectra in Fig. 2a and 2b by data from Tobo et al. (2014) requires additional discussion. Data by Tobo et al. (2014) relates to particles of $0.6 \mu\text{m}$ diameter, probably with a much larger specific surface area than that of the bulk soils studied here. Expressed in terms of INPs per gram dry soil, I would therefore expect much smaller numbers for the bulk soil, compared to those of particles of $0.6 \mu\text{m}$ diameter. The good correspondence between the two sets of data might be due to several biases fortuitously cancelling each others effects.

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