

Interactive comment on “On the transition between heterogeneous and homogeneous freezing” by K. Gierens

K. Gierens

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Response to Comments of Reviewer 2 of 30 January 2003

I agree with all the points the reviewer makes and will consider them in the revised version.

Ad Point 2.

It is true that hemispheric differences of cloud formation mechanisms can also be a consequence of a larger variance of vertical wind velocities in the NH compared to the SH. However, a more frequent occurrence of high updraft speeds in the NH would imply a higher frequency of homogeneous nucleation, which is under thermodynamic control. Hence, this effect alone cannot explain the weaker thermodynamic control of cirrus formation in the NH compared to the SH. Most probably, both effects are at work in the atmosphere and should be considered in models.

Ad Point 3.

Let us first look at Eq. 21: here the uncertainties are collected mainly in the uncertain value of s_0 . This should be considered a free parameter for models.

In “Summary and conclusions” I have explicitly written that resulting values should not be taken as exact quantities. Yet, in the revised version I will repeat there why these are no exact numbers.

Interactive comment on Atmos. Chem. Phys. Discuss., 2, 2343, 2002.

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Interactive Discussion

Discussion Paper