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***Interactive comment on “Parametric representation of the cloud droplet spectra for LES warm bulk microphysical schemes” by O. Geoffroy et al.***

**Anonymous Referee #2**

Received and published: 27 November 2009

General:

The paper investigates parametric representations of cloud droplet number spectra with help of observational data. The topic is clearly important one. The paper is very clearly written and relatively well structured. I do not find any scientifically errors. I have a few minor suggestions for improvements.

Scientific Comments:

The authors use measurement data from too field campaigns. They could comment a bit more detail on quality/suitability/sufficiency of the data for the purpose of this work. Do these two campaigns cover sufficiently different cloud types? How accurate are

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measured cloud droplet spectra and does this have any implications on the analysis performed in the paper? Are the chosen data best available, or would there be data somewhere that would fit even better for this purpose?

Page 17646, lines 18-20: The authors should be more careful in what they call accurate. Although the parameterization/representation give a good average estimate a certain value of  $M$ , individual values are still scattered around this best estimate.

In section 7.2, the tuning parameters have been optimized with respect to LWC. Are there any other obvious quantities for which a similar optimization could be made? If there are, the authors could mention them. This information would be valuable when extending this analysis further in future studies.

Technical comments:

The contents of Figures 2 and 3 have been explained both in the text and in figure captions. Such duplication should be avoided. My recommendation is to keep the text in figure caption but remove the corresponding parts from the bulk text.

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Interactive comment on Atmos. Chem. Phys. Discuss., 9, 17633, 2009.

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