

Interactive comment on “Aerosol-landscape-cloud interaction: Signatures of topography effect on cloud droplet formation” by Sami Romakkaniemi et al.

Anonymous Referee #2

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This manuscript presents a well-performed numerical experiment to investigate topography effects on cloud droplet activation. The paper is, in general, well-written and properly structured, with no apparent scientific errors. My only major concern is related to potential implications resulting from this study. The authors only bring up the importance of considering topography effects when analyzing cloud-related measurement data at their measurement site (see abstract and conclusions). I think this work might have broader scientific implications, i.e. cloud activation studies in other hill-cloud sites or cloud droplet activation in general in environments having a complicated topography. The authors should shortly discuss this issue, for example at the end of their conclusions. My other, mainly minor concerns are detailed below.

C1

Page 3, lines 2-5: The statement made in these lines (...are mainly used to study...) needs a reference/references.

Page 5, lines 3-5. What was the basis of setting 0.02 g/m³ as the minimum LWC level? How was the maximum LWC level of 0.25 g/m³ found? Is it general knowledge or was it obtained from some kind of sensitivity tests specific for this orography case?

Page 8, lines 2 and 17; caption of figure 2: "trend" is generally considered as a property of a time series and should not be used in describing other types of gradients. Please modify.

Page 8, line 26: Please explain what is meant by standardized quantities here.

Page 13, line 6: The reader may be a bit confused about what enhancement in CDNC means here without going back in the text. Please add a few words here to make the text more readable.

Figure 2: Panels a-d differ so much from panels e-f in this figure that I would recommend splitting Figure 2 into two separate figures (Figs. 2 and 3). Furthermore, the y-axes of panels e and f do not have a unit.

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-1015, 2016.

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