

We thank the editor and the reviewer for the additional comments. We have addressed the comments and please find our responses below.

The editor's comments of:

“Impacts of ice-nucleating particles from marine aerosols on mixed-phase orographic clouds during 2015 ACAPEX field campaign”

The reviewer is satisfied with the revisions that address the comments. Some additional minor figure changes are recommended, e.g., changing Figure 8 to include the difference plot. The same might be done for Figure 7.

We have followed the reviewer's suggestion and added the absolute difference in precipitation volume (precipitation rate multiplies surface area) in Figure 7a (black dotted line) and the absolute difference in total precipitation to Figure 8 (right column). Figure captions have been changed correspondingly. The related text changes for Figure 7a are shown in Lines 439-446. No text change is needed for Figure 8.

I have a minor comment on the introduction of previous work on marine INPs. (Line 89-90) "A few previous studies investigated the impacts of marine INPs on precipitation and radiation with global climate models (Hoose et al., 2010; Burrows et al., 2013; Yun and Penner, 2013).."

Some more recent work on marine INPs effects needs to be included such as Zhao et al. (2021), among others:

Zhao, X., Liu, X., Burrows, S. M., and Shi, Y.: Effects of marine organic aerosols as sources of immersion-mode ice-nucleating particles on high-latitude mixed-phase clouds, *Atmos. Chem. Phys.*, 21, 2305–2327, <https://doi.org/10.5194/acp-21-2305-2021>, 2021.

We have included three new publications on the effects of marine INP, including Zhao et al. (2021), Burrows et al. (2022), and Shi et al. (2022) (Line 91).

Refs added:

Burrows, S. M., Easter, R. C., Liu, X., Ma, P. L., Wang, H., Elliott, S. M., Singh, B., Zhang, K., and Rasch, P. J.: OCEANFILMS (Organic Compounds from Ecosystems to Aerosols: Natural Films and Interfaces via Langmuir Molecular Surfactants) sea spray organic aerosol emissions – implementation in a global climate model and impacts on clouds, *Atmos. Chem. Phys.*, 22, 5223–5251, [10.5194/acp-22-5223-2022](https://doi.org/10.5194/acp-22-5223-2022), 2022.

Shi, Y., Liu, X., Wu, M., Zhao, X., Ke, Z., and Brown, H.: Relative importance of high-latitude local and long-range-transported dust for Arctic ice-nucleating particles and impacts on Arctic mixed-phase clouds, *Atmos. Chem. Phys.*, 22, 2909–2935, [10.5194/acp-22-2909-2022](https://doi.org/10.5194/acp-22-2909-2022), 2022.

Zhao, X., Liu, X., Burrows, S. M., and Shi, Y.: Effects of marine organic aerosols as sources of immersion-mode ice-nucleating particles on high-latitude mixed-phase clouds, *Atmos. Chem. Phys.*, 21, 2305–2327, [10.5194/acp-21-2305-2021](https://doi.org/10.5194/acp-21-2305-2021), 2021.

Third Review of:

“Impacts of ice-nucleating particles from marine aerosols on mixed-phase orographic clouds during 2015 ACAPEX field campaign”

Thank you for addressing my concerns and suggestions in your responses. I am mostly satisfied with the responses and the changes to the manuscript. Some of your additional statements help provide fairer assessments when comparing the model to observations, and they more fairly show how new parameterizations can improve certain fields while making others less comparable to the obs.

I very much like the addition of the difference plots in figure 4b that clearly demonstrate the spillover effect. It is much easier to see this effect via the difference plots than just “eyeballing” the differences in figure 4a. It would be helpful to do the same for figure 8, but I am not formally requesting this. I just think it would improve the paper and make the differences more easily visible to the reader.

I still disagree with the overemphasis in the % change in very small precipitation rates in figure 7a, but readers can see this for themselves. A plot of absolute increase in precipitation volume over time might provide a clearer impact, but I am not formally requesting this either.

We have followed the reviewer’s suggestion and added the absolute difference in precipitation volume (precipitation rate multiplies surface area) in Figure 7a (black dotted line) and the absolute difference in total precipitation to Figure 8 (right column). Figure captions have been changed correspondingly. The related text changes for Figure 7a are shown in Lines 439-446. No text change is needed for Figure 8.