

Atmos. Chem. Phys. Discuss., referee comment RC1
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Comment on acp-2022-715

Anonymous Referee #1

Referee comment on "Model-based insights into aerosol perturbation on pristine continental convective precipitation" by Mengjiao Jiang et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2022-715-RC1>, 2022

Comment to "Model-based insights into aerosol perturbation on pristine continental convective precipitation"

With WRF simulations, this study investigates the aerosol impacts on pristine continental convective precipitation over Naqu, China. It is found that under relatively polluted conditions, the onset of precipitation is delayed with increased cold rain intensity. The finding is interesting and worthy for publication.

In this study, different amount of aerosols have been considered and analyzed, I wonder if the surface topography (particularly TP region) along with aerosol types could play a role and analysis of these effects could be highly valuable. Of course, considering the focus of this study, these aspects could also be done in future by simply stating them in the final section.

Line 50, "Due to"

Line 50-52, Ma et al. (2018, doi: 10.1002/2017MS001234) might be able to serve as a support for this claim.

Line 54-57 and 88-90, A recent three-pole (Arctic, Antarctic and TP) aerosol characteristics study shows the aerosol type comparison results, including the aerosol types and sources over the TP, which is worthy to mention, Yang et al. (2021, doi: 10.5194/acp-21-4849-2021).

Line 66-67, This is true, while adding the reason could be more appreciated, such as "due to high sensible heat and low air density".

Line 84-86, A reference is necessary for this result.

Line 103, "in the TP"

Line 142, "pristine continental environment"?

Line 145, "be regarded a a ..." should be "be regarded as a ..."

Line 205-207, It might be better to indicate the unit too.

Line 209-211, Actually, some other types of aerosols could also serve as INP, thus I would suggest adding "in model" here to constrain.

Line 231-276, What is the spin-up time for the simulations?

Line 304-306, Considering the potential uncertainties, one digit number might be enough for the increase.

Line 322, "occurs" should be "is"

Line 351, This is not accurate. Early description said 2 times concentrations, while here shows "2 times more abundant than ..."

Line 365-366, Particularly over the Pearl River Delta region as a few studies indicated, which are worthy to cite. Note that this should be also related to aerosol types.