

Dear authors,

Thanks for your great efforts. Both reviewers are very positive about the revision. I have a minor point that has been mentioned by one of the reviewers. From my point of view, the data assimilation scheme or how to assimilate the lightning data should be clearly stated in the abstract and in the introduction. Otherwise, it does cause some confusion.

Best regards,

Topical editor

GMD

Yuefei Zeng

Dear Editor Zeng,

Thank you very much for your above comments, we have now added the following sentences in Abstract and Introduction, respectively:

In Abstract: "The LTA technique uses lightning data to trigger the Kain-Fritsch convective parameterization via realistic temperature and moisture perturbations."

In Introduction: "Specifically, the LTA technique uses temperature and moisture perturbations to trigger KF deep convection where lightning is observed, resulting in a parameterized cloud with realistic characteristics based on the local environment and our understanding of lightning-producing convective clouds."

Thank you again and hope this revision would lead to the acceptance of this manuscript.

Daiwen Kang

On behalf of all the co-authors.