

We appreciate the reviewers' and the editor's valuable comments and constructive suggestions, which have helped us greatly improve the manuscript. We have carefully revised the manuscript according to these comments. Point-by-point responses are provided below. The original comments from the reviewers are in black; our responses are in blue; and the quotations of the corresponding revisions from our manuscript are in *italics*.

Replies to Reviewer #1

Using a cloud-resolving atmosphere-ocean coupled model - Weather Research and Forecasting (WRF) in conjunction with the Regional Ocean Model System (ROMS), this study quantitatively assesses the aerosol microphysical effects and aerosol-modified ocean feedbacks during Hurricane Katrina. It highlights the importance of accounting for the effects of aerosol microphysics and ocean-coupling feedbacks to improve the forecast of TC destructiveness, particularly near the heavily polluted coastal regions along the Gulf of Mexico. Thus, I think it is worthy for prompt publication with minor modifications.

Line 51, "increasing" should be "increase"?

Revised as suggested.

Line 57-59, Observational studies that aerosols modify the generating environment of TCs could be also mentioned here, such as that over Atlantic region by Sun and Zhao (2020, doi: 10.1029/2020JD033454).

Thanks for the suggestion. We have now discussed Sun and Zhao (2020) as the representative observation-based studies and modified the text as below:

Line 56-59: *There now exist compelling evidence that natural and anthropogenic aerosols play critical roles in the genesis and development of TCs from both observational and modeling perspectives (Khain et al., 2010; Herbener et al., 2014; Khain et al., 2016; Pan et al., 2018; Sun and Zhao et al., 2020; Rosenfeld et al., 2012; Wang et al., 2014).*

Line 69-70, moving "models" behind "most operational forecast"?

Revised as suggested.

Line 245, "enable" should be "enables"

Revised as suggested.

Line 264, "is" should be "are"?

Revised as suggested.

Line 434, What do the authors mean "evidence in by ..."?

We removed "by".