

We sincerely appreciate the reviewer for her/his constructive comments on the manuscript. Our responses are listed as follows in blue. Text is revised accordingly.

Review from Referee #1

Line 66, to my knowledge, this point is still under debate or even out of date if you see Smith et al. (2014). Perhaps the author should rephrase your sentence.

Smith, R.K., Montgomery, M.T. and Thomsen, G.L. (2014), Sensitivity of tropical-cyclone models to the surface drag coefficient in different boundary-layer schemes. Q.J.R. Meteorol. Soc., 140: 792-804. <https://doi.org/10.1002/qj.2057>

Response: We agree that it is under debate how the variations in surface drag coefficients influence tropical cyclone intensity (e.g., Emanuel, 1995; Smith et al., 2014). As Smith et al. (2014) indicated, the increase of the inflow induced by enhanced surface drag coefficient tends to spin up the tropical cyclone, and thus might offset the frictional torque to intensify the cyclone. The discussion of drag coefficients is beyond the scope of our study. To avoid confusion, we delete the misleading sentences in Line 60 (Line 60-67 for text with changes tracked).

Emanuel, K. A.: Sensitivity of tropical cyclones to surface exchange coefficients and a revised steady-state model incorporating eye dynamics, *Journal of Atmospheric Sciences*, 52, 3969-3976, 1995.

Smith, R. K., Montgomery, M. T., and Thomsen, G. L.: Sensitivity of tropical - cyclone models to the surface drag coefficient in different boundary - layer schemes, *Quarterly Journal of the Royal Meteorological Society*, 140, 792-804, 2014.

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Review from Referee #2

Overall I think the manuscript is near-acceptable, with the exception of the abstract. While most of my comments have, in my opinion, been properly addressed, I think this is not the case for lines 20-24 in the abstract (from For experiments ... that of A15). To me it still reads here as if SPRAY-GQ is improving simulations of sea surface temperature and other properties without providing the clarity as to why this is. That is, the physics are not improved, simply the numerical error is reduced. While this is quite clear now in the manuscript, in the abstract, this needs to be further clarified to make sure words like 'significantly improved' are interpreted correctly by the reader.

Response: As suggested, we added the sentence “These improvements are due to the reduced numerical errors” to clarify in Line 23-24.

Please also have a re-read of the manuscript for grammar. Some errors for example:

Line 407: even though --> However

Line 418: thereby --> therefore

Response: Thanks. We have checked the manuscript for grammar and revised as suggested.