

### Reviewer #3

Thank you for your further review. We addressed the comments below, again in blue font.

The authors have addressed the majority of my comments. While I think there remain other interesting avenues to explore regarding both the model and tracker performance, they seem reasonable as targets for future work. I have a few remaining minor comments below.

Line 135. While the vorticity isn't calculated on a pressure level (I'd argue this is relatively trivial, but perhaps this wasn't done at runtime), an approximate pressure level can be provided to make it more comparable to previous tracker literature. For 2.5km over the ocean, I assume this is approximately 700 hPa.

The manuscript now states that this corresponds to roughly 750 hPa.

Line 147. Close parentheses.

The parentheses are now closed.

Line 155. There may be a benefit to at least reporting this first translational speed in km/day which provides a better idea of the spatial movement of a TC (and what distance normalized to 24 hours it must travel to exceed the criteria).

The manuscript now states that 20 m/s corresponds to 1728 km per day.

Line 160. Would be good to add another sentence here speculating as to why (or at least bridging with the false alarms). I assume things like warm seclusions in extratropical cyclones are flagging short-lived cyclones in the mid-latitudes.

The manuscript now names upper-level temperature gradients as the main cause for short-lived false positives, that are removed by the lifetime criterion.

Line 235. This possibility is undercut a bit by using observed SSTs (e.g., see some of the work from Malcolm Roberts et al., that showed ensembles of simulations using observed SSTs do a good job reproducing inter-annual variability (e.g., observed ACE), although I think the behavior of the model is well-within the envelope published in the TC/model literature.

Since the simulations are intended to represent arbitrary TC seasons, we believe that the wording we chose is confusing. To clarify, the manuscript now states that the simulations produce ACE values that are realistic in the sense that the values fall within a range that is reasonable for an arbitrary season, not necessarily for the 2013 season.

Line 323. Add language to specify that the track is terminated when \*at least one\* of the 4 things occurs.

The manuscript now states clearly that only one of the listed events need to occur for the track to be terminated.

Line 352. Since the translation cutoff is reporting in m/s, provide the translational speed across these great circle distances.

The distances and velocities are now explicitly stated.

Line 421. I assume this is the vestige of preparing a student's thesis for publication (also, see author contributions). I have no issue with using the term "thesis" but if the authors would like to change it to "manuscript" or "paper" they should feel free to.

This is indeed vestigial, and has been changed to "paper."

Figure 13. Why isn't the integral 1.0 of the bars (e.g., if you add the percentage of all the blue bars it appears to be  $\sim 0.2$ ). Is this because they need to be also multiplied by the range (5 m/s)? Would either tweak the figure or caption to clarify.

The figure has been change to clearly show what percentage of TCs fall into a specific bin.