Review of Manuscript: MWR-D-14-xxxxx
Title: Tropical cyclones and the MJO over the Southern Indian Ocean

Author: Jane Doe Author

Recommendation: Major revisions

General Comments:

This manuscript analysis the cyclogenesis over the South Indian Ocean using the ERA Interim reanalysis and the IBTrACS dataset. By comparing systems that intensify and become tropical storms and those that do not, the author identifies the characteristics necessary for the transition from tropical depression to tropical storm. An area of preference for cyclonegenesis is identified, as well as the modulation by MJO and ENSO. The paper is very interesting, analyzing composites of the environment before the formation of TCs and the relationship with ENSO and MJO in the south Indian Ocean. The composites of the 3 different regions of TC formation are quite interesting. I like the methodology used by the author and the results are significant. However, there is a lot of confusion on the definitions used in the manuscript (TD, cyclogenetic TD, cyclogenetic TS, TC, TD initiation, TS initiation). The author needs to specify his definitions clearly in the paper and used them without ambiguity.

I had a really hard time following the discussion, as I first read the paper, because of the confusion with these definitions. I strongly suggest that the author's definitions should agree with those widely used in the hurricane community (see the National Hurricane Center website). It would be important to revise the text using clear unambiguous definitions.

Another issue is the choice of adjustable thresholds. The author does not discuss how these thresholds were chosen. There is no discussion either on the sensitivity of the results to these thresholds. Many the quantities examined in the paper, such as frequency, duration are clearly dependent on these thresholds, so this is an important issue, that needs to be considered. Once these issues are addressed, the manuscript will be greatly improved.

Specific Comments:

1. Line 17: please explain what is meant by: "the western side of the active MJO phase" - is this referring to the suppressed convection phase of the MJO?

2. I found the nomenclature used by the author in the paper confusing. He separates "tropical depression" and "tropical cyclones", as being different entities. However, if you look at the National Hurricane Center definition of

tropical depression it says: "Tropical Depression: A tropical cyclone in which the maximum sustained surface wind speed (using the U.S. 1-minute average) is 33 kt (38 mph or 62 km/hr) or less." Therefore, a tropical depression is a tropical cyclone, it's just a weak tropical cyclone. I had problems reading the paper due to this issue, it makes the paper confusing to readers that are used to the traditional definition of tropical cyclones. Tropical cyclones that reach 34kt become tropical storms, they do not become tropical cyclones then, they are tropical cyclones transitioning from tropical depression to tropical storm. I strongly suggest that the author edit the manuscript using these official NHC definitions.

3. Another nomenclature problem: what is your definition of cyclogenesis? In my view would be when a tropical cyclone forms, i.e. when you first have a tropical depression. My understanding is that what the manuscript is referring to "cyclogenesis" is when the storm becomes a tropical storm. This needs to be clearly defined and stated. It is confusing to read sentences like: "focus more on the TD initiation phase than on the cyclogenesis phase from existing TD". The transition from TD to TS for me is an intensification process, not a cyclogenesis process. All these definitions need to be clear in the paper and I would suggest following the convention of the NHC.

4. Another nomenclature issue that needs to be clear in the paper is the difference between TD and TD-type disturbance. At times they seem to be used interchangeably, and I would rather this didn't happen. For instance, when defining a TD-area, is the author aiming in tracking tropical depressions (TD) or tropical depression-like disturbance?

5. Introduction: I recommend that a paper that examined the large-scale environmental conditions associated with the global modulation of TCs by the MJO be cited here: Camargo, Wheeler and Sobel, JAS (2009). Their results are definitely relevant for this discussion.

6. Page 8: The criteria for defining the "TD-area" are not very clear, especially using adjustable thresholds. The range of thresholds is huge: -80 to -705 m2/s2 and I would like to see a discussion on how the author came up with these thresholds, and what is the justification for choosing these specific thresholds. How sensitive re the results of the paper to these thresholds?

7. Page 9: how are the thresholds of vorticity and duration determined? 8. Page 9: Why storms forming between 20S and 30S are excluded from the analysis?

9. Page 12: "TD or TS initiations": what is the difference? Please give clear definitions.

10. Page 12: "TD and cyclogenic TD": please define each of them, it's not clearly defined in the previous section

11. Page 12: Each RSMC has specific criterium of when to start a TC, some with minimum thresholds for windspeed (e.g. North Indian Ocean), others without (e.g. Atlantic). In order for your comparison with the South Indian Ocean RSMC TD tracks (which is what is in the IbTRACS) to be clear, you need to give the criteria that is used in the South Indian Ocean.

12. Page14: "average delay": what is meant by delay here? Is this the time for the storm to go from TD to TS? Why is this called a "delay"? Minor comments: Page 4, Line 13: "above the North Atlantic" should be changed to "in the North Atlantic" Page 11, Line 22: "Composite are" should be "Composites are" Page 18, Line 9: "mostly du" should be "mostly due"