

# ***Interactive comment on “Changes in tropical cyclones under stabilized 1.5 °C and 2.0 °C global warming scenarios as simulated by the Community Atmospheric Model under the HAPPI protocols” by Michael F. Wehner et al.***

## **Anonymous Referee #2**

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General comments: This paper describes changes in tropical cyclone (TC) activities simulated by the Community Atmospheric Model under the HAPPI protocols. The HAPPI protocol is a relatively smaller change in global mean temperature at 1.5 and 2.0 stabilizing levels compared to those mostly used for time slice experiments under global warming condition. One might have expected that the simulated signals of TCs would be smaller or not be detected. However, in this paper, the simulation shows robust changes in TC activities similar to those obtained the existing literatures. In particular, the reduction of TC number, particularly that of Category 0, over the global

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domain is very robust and consistent. Projections of such extreme events as tropical cyclones under the condition of the HAPPI protocols are informative and useful for the society. This paper should be published soon with some minor revision suggested below.

The projection of the characteristics of tropical cyclones should also be tabulated. The data will be compiled later for comparison with other model results. Please refer to IPCC AR5 (Chapter 14, Supplementary Material).

Specific comments: p. 10, Fig. 5: The curve for HAPPI 1.5 is not visible. Please clarify the figure.

p. 11, Fig. 6: This figure should be compared to observation. Add bars of the observational number of ACE. Why ACE in the South Indian Ocean is so high? Please add explanation.

p. 12: “Chavas et al. (2016)” (L8) is not included in the reference list, so that the definition of “Chavas radii” (L9) is not clear. We cannot understand the following sentences in the paragraph and Fig. 8. Please explain why the radii is larger for the weaker tropical cyclones.

p. 14, L16-18, “. . . are not significantly altered in warmer climates, most notably the robust relationship between maximum wind speeds and central pressure minima”: The conclusion of the subtle behaviors is specific to this model. In particular, pressure-wind relation likely depends on the model resolution. Such remarks should be added.

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