We would like to thank the referees for their suggestions and comments. We have listed the referees' comments and written a response below each comment.

Reviewers' comments are in black text; our responses are in blue text.

Anonymous Referee #1

Recommendation:
Accept with Minor Revision

Overview:
This paper investigates the influence of environmental moisture on the intensification of tropical cyclone (TCs) using the Weather Research and Forecasting (WRF) model. Guided by the results of the observational study by Wu et al. (2012), a series of simulations have been conducted with dry/moist air located in different quadrants relative to TC motion. It is shown that generally, the impact of environmental moisture on TC intensification is rather limited. Among the five simulations in this study, only the two extreme cases (i.e., relative humidity are set to the maximum value at each level) show significant impact on storm intensification. Specifically, more moisture in rear of the storm favors TC intensification while more moisture in front of the storm leads to weakening.

In summary, this paper is well written, containing new and exciting results highly relevant to the outstanding issue of TC intensification, although I have some concerns regarding the modeling framework and initialization. Therefore, I recommend that this paper be accepted after minor revision.
We appreciate the referee's evaluation.

Major comments:
1. Section 2.1, line 17-18 (Page 16115), "Simulations are conducted with a parent grid at 9 km horizontal resolution and a vortex-following nested grid at 3 km resolution." Since the simulation is initialized from ECMWF reanalysis (at a resolution around 1x1), the coarsest WRF grid at 9 km horizontal resolution may be too small and could lead to some problems. I suggest that you add another domain at 27 km horizontal resolution and see how the results of your simulations differ.
We have conducted one sensitivity experiment (CTRL-27km) with 3 nested domains at 27 km, 9 km and 3 km horizontal resolutions. As shown in the following figure, there is no significant difference in MSLP (Figure 1a) between the original 2-nested domains and the 3-nested domains. The MSWP in CTRL-27km is also consistent with the original CTRL (Figure 1b). We mentioned in the manuscript that the results are not sensitive to the nested domains in the second paragraph of section 2.1 as following:

"Experiments show that simulated results are not sensitive to the horizontal resolution of the parent grid with similar inner domains."

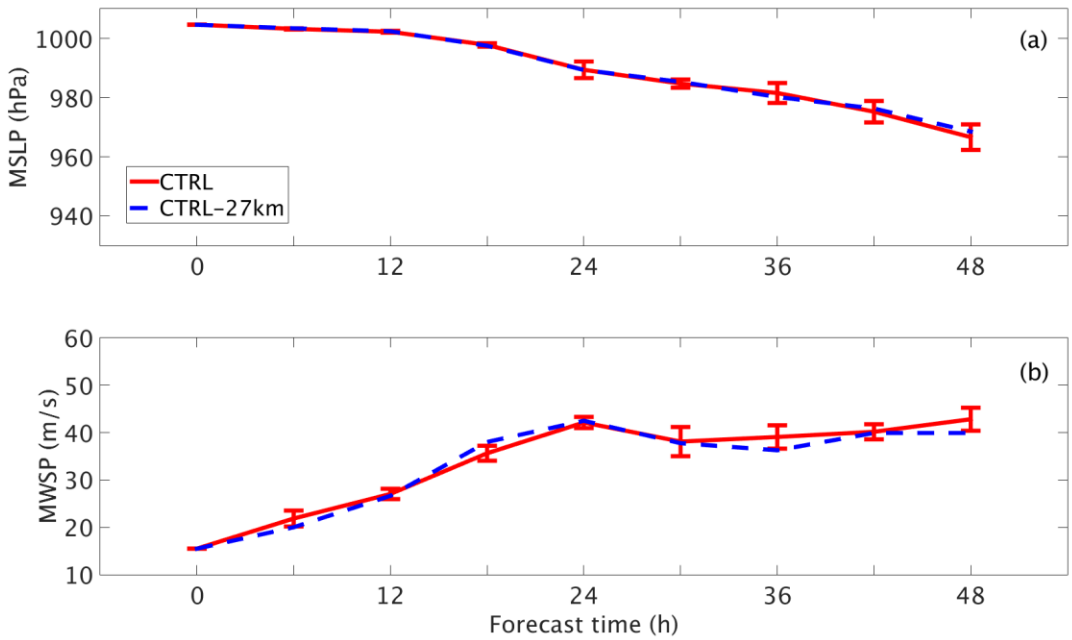

Figure 1. The simulated (a) MSLP (hPa) and (b) MSWP (m/s) in CTRL (red solid line) and CTRL-27km (blue dashed line).

Minor comments:

2. Section 2.2, line 20-22 (Page 16116). Do you mean the maximum RH within the parent domain? Or do you consider any specific radius within the storm center?

It is "the maximum RH within the outer radius of the storm". It is clarified in the revised manuscript.

3. Section 4.1, line 10, change "MRI" to "MFI"

Done.

4. Fig2b, there is a sudden change in MWSP at 30 h for MF and MR experiment, which inconsistent with the trend in MSLP. What is the cause? Is that because of the changes in the storm size for each simulation?

The trend in MSLP is consistent with the trend in MWSP in Fig. 2 of the manuscript. The sudden change at hour 30 is likely due to the intrusion of dry in MF and import of moist air in the MR. Shown in the following Figure 2, the storm sizes in MF, CTRL and MR are slightly different, but the storm size does not change dramatically at hour 30 in each experiment.

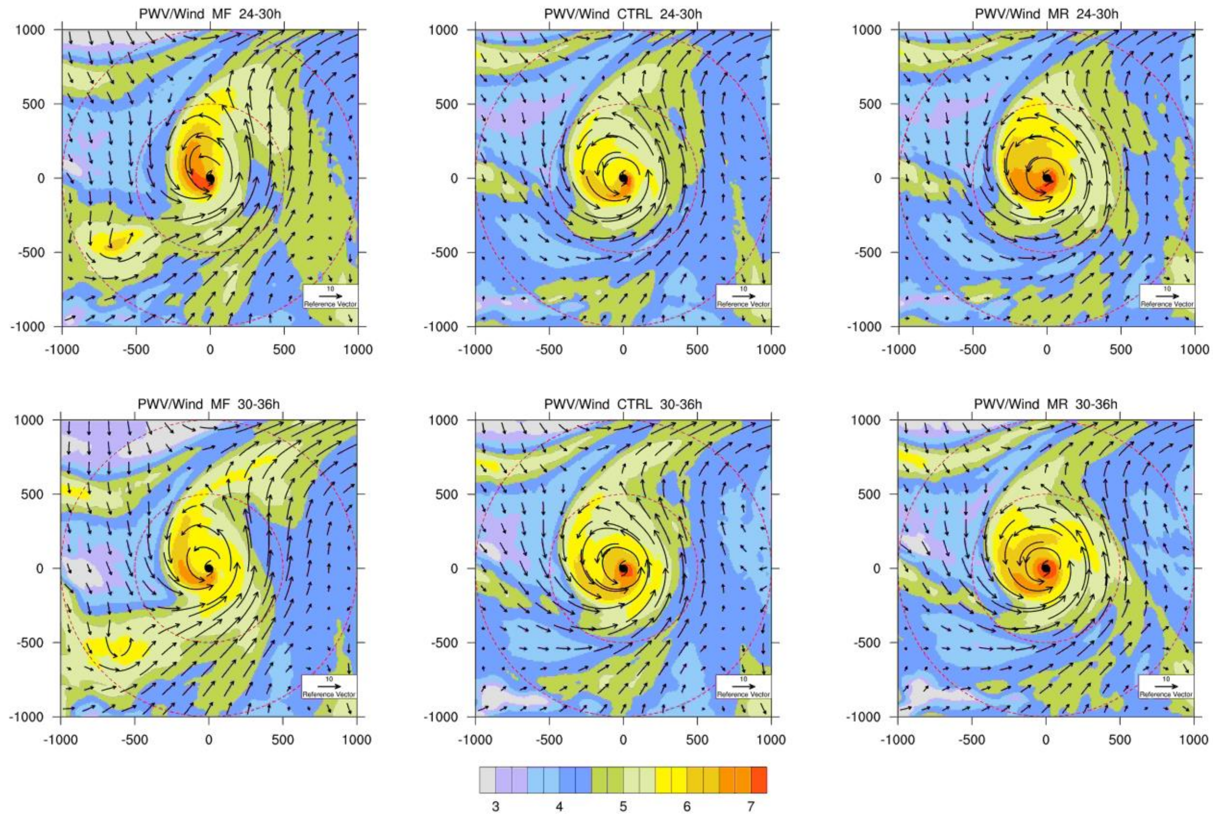

Figure 2. Mean wind vector (m s-1) below 5 km and column-integrated PWV (cm) (shading) at 24-30 h (upper panel) and 30-36 h (lower panel) for MF (left panel), CTRL (middle panel) and MR (right panel).

5. Page 16224, line 11, change “ability” to “abilities”
Done.

6. Fig. 5 shows the differences between the MF and CTRL experiment. It will be clearer if you add another two panels showing the mean wind vector (m/s) and PWV (cm) for each of them (one for MF, one for CTRL). Same for Fig. 8.
Thank you for the suggestion. For space concern, we add the mean wind and PWV for MF and MR together with CTRL in the supplementary Figure 1. It is also included here for your reference (Figure 3).

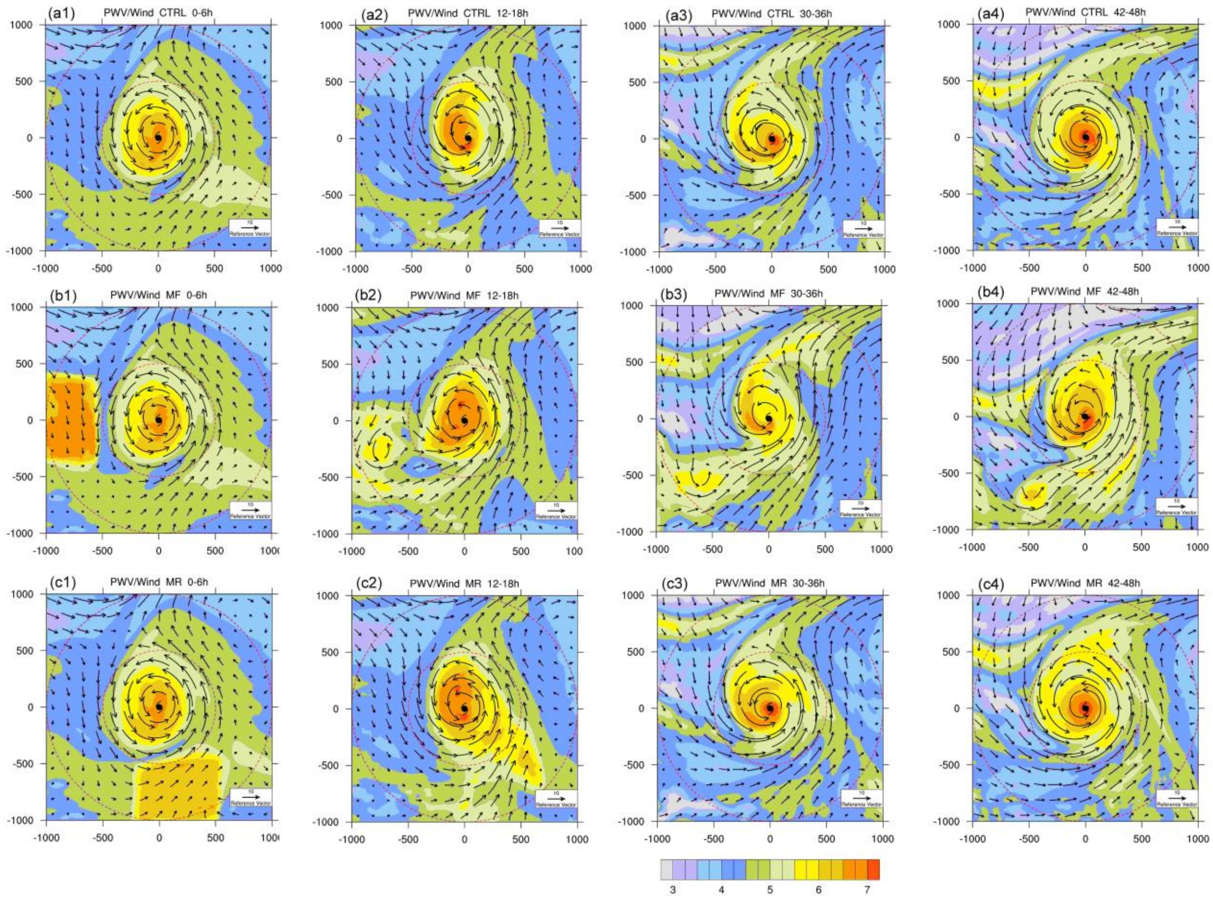

Figure 3. Mean wind vector (m s-1) below 5 km and column-integrated PWV (cm) (shading) for CTRL (panel a), MF (panel b) and MR (panel c) at (1) 0-6 h; (2) 12-18 h; (3) 30-36 h; (4) 42-48h.