We thank both reviewers for their time and effort in revising our manuscript and for their constructive feedback.

Referee #1 recommends acceptance of the manuscript in its current form.

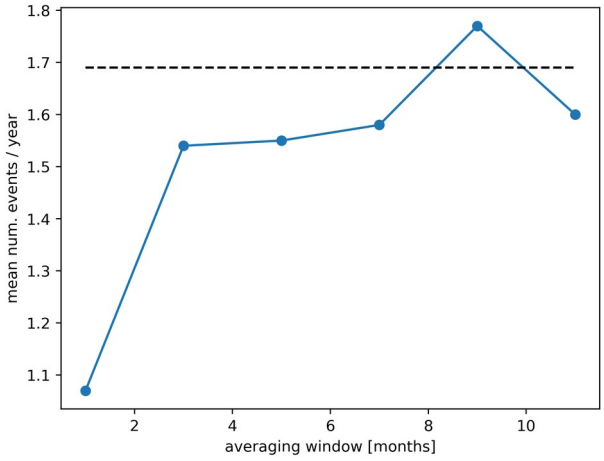
We have revised the manuscript and addressed all comments raised by *Referee #2*. Our responses are detailed below. All changes have been highlighted in blue-green in the revised version of the paper.

1. Validity and Impact of the 3-month Moving Average

When shorter averaging windows are used (e.g. 1 month), the number of MJO events produced by the model sharply drops. This is illustrated in the figure below, showing the mean number of MJO events per year as a function of the smoothing/averaging window. The dashed line corresponds to the mean number of events produced by the model with time-independent forcing (infinite averaging window). Note that while the manuscript reports statistics based on 15 independent simulation runs (to obtain larger samples and more robust statistics), only a single model run was used to produce the figure below.

The model thus seems to require a certain degree of smoothness or persistence (in duration and amplitude) in the forcing to generate MJO events. The chosen 3-month-window averaging seems to be appropriate to represent a range of window sizes suitable to generate MJO events, while still maintaining a time-dependence of the filtered forcing below seasonal or annual scales, in accordance with the objectives of this paper. We feel that performing a more exhaustive sensitivity analysis with more window sizes and increased statistics would be beyond the scope of this study. Specially because we do not expect the model's minimalistic structure to capture all aspects real world complexity.

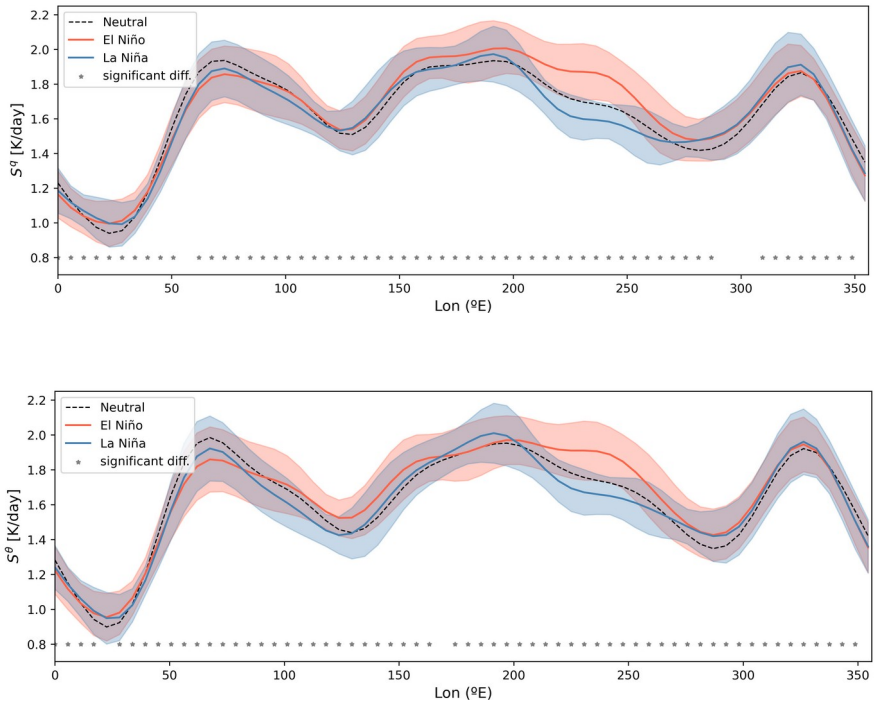
We clarified the reason for the choice of a 3-month averaging window at the end of Section 3 and in the conclusion.



2. Diagnosing the Lack of ENSO Modulation

Following the reviewer's recommendation, we compared the forcing functions during El Niño, La Niña and the neutral periods. The figure below shows the mean Sq and Stheta profiles during each phase of ENSO (lines). The shaded areas correspond to 1 standard deviation around the means. The largest differences are found in the eastern equatorial Pacific (around the NIÑO 3 region, 210°E-270°E).
We used the Kolmogorov-Smirnov test to assess whether the distributions of Sq and Stheta values during El Niño and La Niña differed significantly at each spatial point. We found differences at nearly all points (at significance level 0.05). Locations with significant differences are indicated by stars at the bottom of the figure.
These observations support the argument that the model's lack of response to the ENSO signal reflects structural deficiencies within its design.

We added these figures in the paper, and commented them in the beginning of Section 8 and in section 8.2.3.



3. Statistical Evaluation and p-value Interpretation

We agree with the reviewer's comment and modified the relevant paragraph in Section 7.2, evaluating the results against the standard $p < 0.05$.
We also soften slightly the conclusion of Section 7, regarding the agreement in statistical features.