

Weather Clim. Dynam. Discuss., referee comment RC2
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Comment on wcd-2021-66

Anonymous Referee #2

Referee comment on "Southwestward propagating quasi-biweekly oscillations over the South-West Indian Ocean during boreal winter" by Sambrita Ghatak and Jai Sukhatme, Weather Clim. Dynam. Discuss., <https://doi.org/10.5194/wcd-2021-66-RC2>, 2021

This paper documents the convectively coupled quasi-biweekly oscillation (QBWO) in the South west Indian ocean. The paper is easy to read and is rather descriptive in nature. The introduction is expansive and provides relevant background on the topic and ends with a clear statement of the goals of the paper. The discussion section recaps some of the physical mechanisms of the genesis of this oscillation.

Despite some promising initial discussion of background moisture distribution (the authors appeared to hint at some moisture mode type behavior) a vorticity budget was the route taken here. This does not address the organization and modulation of convection (perhaps a moisture or moist static energy budget would be useful for that). The key result here is that planetary vorticity advection accounts for the propagation of the wave and stretching to its amplification. The former is consistent with the notion that the wave is an ER type mode and the latter points to the vorticity generation by convergence/divergence associated with convection.

In section 5, the paper presents some material on tropical cyclone formation during the QBWO of 2008--2009. This is also easy to read and is again descriptive in its treatment with no calculations or diagnostics (beyond maps of filtered fields)

Over all, the paper provides documentation of the QBWO in a basin that has not received as much attention as compared to other basins. The results are not necessarily novel but will be useful reference points for future work(such as evaluation of theoretical and conceptual models of this phenomenon).

Other comments:

- The authors might wish to consider calculating statistical significance for their composite anomalies and only show values that are deemed significantly different from zero.
- The data and methods seem reasonable
- Line 160: Just to be sure, can you add a few lines (connecting constant phase) on Fig. 2 to illustrate the wave (phase) propagation. Can you also estimate the southward phase speed and check if they are realistic and the patterns in the Hovmoller represent propagation.
- Line 165: Same as above, but for the group speed.
- Line 207: How does an oscillation die? Is it being damped or absorbed by the background flow? Or is the "weakening" of the composite anomalies simply because one is averaging a band-passed field many days away from the reference time (lag 0). Figure 8: Any idea why the structure changes from 1st baroclinic to a tilt? Is it really tilting or is that simply an artifact of the contouring/shading?
- Line 484: OLR anomalies are the visible outcome of moist convection. Please rephrase this sentence to make it less redundant.
- Section 5 on the impact of the QBWO on tropical cyclone formation is again very qualitative in the way it is presented. No real issues here but a more comprehensive study would need simulations with a full physics model and sensitivity experiments.