

## ***Interactive comment on “Tropical response to extratropical eastward propagating waves” by S. Sridharan and M. Sandhya***

### **Anonymous Referee #2**

Received and published: 1 July 2015

In this study, the authors investigated the influence of extratropical eastward propagating waves on the tropics using a space-time spectral analysis for the period of December 2012 to February 2013. The topic is interesting, and such a study may contribute to improve our understanding of the origin of tropical waves. However, there are several flaws in the paper. In particular, the conclusion is based on the similarity of wavenumber-frequency spectrum between the extratropical and tropical regions. There is lack of dynamical explanation. Data of one winter were analyzed. It is unclear if the results are statistically significant. The analysis methodology was not described. The discussions were not well performed. Therefore, I don't recommend publication of this paper in its current form.

Specific comments:

C4216

- 1) It is unclear why the authors chose the winter of 2012/13? Why not using more years? There is no assessment of statistical significance of the wavenumber-frequency spectrum.
- 2) It is unclear what waves were detected in the extratropical and tropical regions. The tropical wavenumber-frequency spectrum analysis was done at 15N for OLR (Fig. 6). Then what kind of wave is it for wavenumber 5 at 18 days that propagates eastward? Is it Kelvin wave? What is the structure (horizontal and vertical) of the wave?
- 3) It is unclear through what mechanism the extratropical waves excite or influence the tropical waves.
- 4) There is no description of methodology. How was the wavenumber-frequency spectrum calculated? What filter was used to extract the 15-20 day waves? There is also no reference. How were the amplitude and phase defined? Without a clear description, it is difficult to follow the discussion. For example, on page 5 lines 10-16, it is hard to understand the meridional propagation of waves from the phase change in latitude.

Other comments:

- 1) Page 2, line 9: "dominant than" → "larger than".
- 2) Page 3, line 5: define the "MJO".
- 3) Page 6 line 2: this sentence was repeated (lines 26-27 of Page 5).
- 4) Page 6 lines 27-29: I don't see any eastward propagation.
- 5) Page 7, lines 11-13: Eastward propagation is not clear or very limited in longitude.
- 6) Page 7, line 19: "shorter zonal wavenumbers" → "smaller zonal wavenumbers".
- 7) Page 8, line 1: was SSW defined?
- 8) Page 8, lines 14-16: Unclear what "poleward tilt in phase" means. Why baroclinic in NH and barotropic in SH?

C4217

C4218