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

### **Anonymous Referee #1**

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The manuscript presents a study case of an eastward moving extratropical disturbance that appears to force a convectively coupled disturbance in the tropics of similar periodicity and zonal wave number. The results are based on 2D spectral analysis of reanalysis and OLR data for the period of Dec 2012 - Dec 2013. This is an important topic that is within the scope of ACP; however, I have three major concerns:

(1) The authors mention a number of times that this type of phenomena has not been observed before, except for one citation on Magana and Yanai (1995) work on Mixed Rossby-Gravity waves. However, there are a large number of observational studies that point to lateral forcing as a mechanism for excitation of tropical disturbances. For example:

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- Straub, K. H., and G. N. Kiladis, 2003: Extratropical forcing of convectively coupled Kelvin waves during austral winter. *J. Atmos. Sci.* 60, 526-543.

- Meehl, G. A., G. N. Kiladis, K. M. Weickmann, M. Wheeler, D. S. Gutzler, and G. P. Compo, 1996: Modulation of equatorial subseasonal convective episodes by tropical-extratropical interaction in the Indian and Pacific Ocean regions. *J. Geophys. Res.*, 101, 15,033-15,049.

- Kiladis, G. N., and M. Wheeler, 1995: Horizontal and vertical structure of observed tropospheric equatorial Rossby waves. *J. Geophys. Res.*, 100, 22,981-22,997.

The papers above offer additional references as well.

(2) Except for a paragraph in section 4 relating the particular event to a SSW, there is never a mention of why the authors have chosen to look at this particular case, and how it relates to climatology. The spectral analysis presented for Dec-2012 to Feb-2013 should be compared to DJF climatology. I would also suggest expanding the discussion of SSW by comparing to other SSW events.

(3) There is no methods section in the paper, so it is not clear how the results are obtained. For example: (i) How are the spectra calculated? (ii) Are the results qualitatively robust to the filtering band?

Below is a list of typos/ minor comments:

15139 - I5 The MJO is not defined and there is no reference for it. 15139 - I12 Kiladis (1993) should be Kiladis (1998) 15140 - I7 Doesn't ERA-interim starts in 1979? 15143 - I11 zonal wavenumber 3 should be zonal wavenumber 5?

As the manuscript stands now there are no substantial conclusions reached and the scientific methods are unclear, therefore I recommend it to be reconsidered after major revisions.

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Interactive comment on *Atmos. Chem. Phys. Discuss.*, 15, 15137, 2015.