

## ***Interactive comment on “A New Index For The Wintertime Southern Hemispheric Split Jet” by Stella Babian et al.***

### **Anonymous Referee #2**

Received and published: 12 December 2017

This manuscript proposed a new index for the wintertime Southern Hemispheric split jet based on the principal components. Compared with the existing split indexes, this new one considers the split jet as hemispheric rather than a regional feature. Further analysis indicated that the newly defined index has a strong coherence with the Antarctic Oscillation (AAO), but the split jet variability is less dependent on the phases of ENSO.

This paper is well written, and the proposed index could be used as an extra index for understanding the mechanism of the wintertime Southern Hemispheric split jet. I have major concerns regarding the ENSO modulation of the split jet variability as detailed below. At this point I cannot recommend publication of this paper.

Major point

C1

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The modulation of ENSO on the split jet index has not been robustly investigated in this study, since the time scale studied here for the split jet index is the sub-seasonal, while the ENSO varies on seasonal to inter-annual time scales. The proposed index is highly correlated with AAO, which has a strong month to month variability, so it is not surprising to see that there is no correlation between the index and ENSO on the monthly time series. I would recommend investigating the relationship between the seasonal mean split jet index and the seasonal mean ENSO index.

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Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2017-840>, 2017.

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