

Interactive comment on “El Niño Southern Oscillation influence on the Asian summer monsoon anticyclone” by Xiaolu Yan et al.

Anonymous Referee #3

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General Comments

This paper examines how the Asian summer monsoon anticyclone is affected by ENSO, and what the implications are for ozone transport in the subtropical UTLS region. In general I find the paper interesting and insightful, and I appreciate the use of measurements, reanalysis, and model results to examine the role of ENSO on ozone in the ASM region. I do have some comments below to help improve the paper.

Specific comments

The colorbars have been improved for most plots since I reviewed the paper last. I think the red/blue colorbar could also be used for Figure 11, I'm not sure why that one is different.

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Page 3, line 1-2: It's unclear to me what is meant by “We investigate how long ENSO related statistically relevant differences can be diagnosed”. What is meant by long? You investigate the length of these relationships? Or is it meant to mean you look at differences over a long time period? It's not clear.

Page 3, lines 14-15. Why this particular threshold of 0.9? What is the sensitivity to threshold? (i.e., how much do the results change for different thresholds?)

Page 4, lines 3-4: Might explain more- is the significance assessed using a 2-tailed student t-test, for example?

Page 7, lines 2-5: Do you have a sense for how robust these ENSO features are relative to internal variability? The reanalysis period is still relatively short to evaluate dynamical differences. See, e.g., Deser et al. (2017).

Figure 3/4/6- indicate in caption what the different colored dots mean, if anything. Figure 3 should also have something about the dashed region being significant (it's a bit confusing because in Fig. 4 the dashed region indicates significance, however, in Figure 3 the differences should be insignificant by JJA, correct?). Finally, in Fig 3 the x-axis is labeled as “Month” but Figure 4 says “Month after DJF”. Month makes more sense to me if these are indeed the months; does “Month after DJF” imply that 0=March?? Or does 0=JFM? It would help to label the axis tick marks with exactly what is meant.

Technical Edits

Page 2, line 30: “only few”->“few” or “only a few”

Page 5, Line 26: should be “mainly in the western Pacific”

Page 8, Line 3: “is by a factor” -> “is a factor”

Page 10, Line 4: “are by more than three times” ->“are more than three times”

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