

## ***Interactive comment on “On the role of the south Pacific subtropical high at the onset of El Niño events” by Youjia Zou and Xiangying Xi***

### **Anonymous Referee #3**

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The paper studies the impact that a southward migration of the south Pacific subtropical high might have on the onset of El Niño events, using a coarse-resolution coupled ocean-atmosphere model and some proxy data. While the question is potentially interesting I find the manuscript confusing and the proposed mechanism not very convincing. Therefor I do not recommend the paper for publication.

Some comments:

1) A central argument of the paper is that the North Equatorial Countercurrent (referred to as ECC by the authors) moves onto the Equator in response to a southward shift of the SPSH. This is most certainly not the case in reality (and the authors also do not provide convincing evidence that it is the case in their model). As for observed and simulated variations of the NECC on interannual time scales, I recommend the

paper by Hsin and Qiu (2012) and the references therein. They indicate that the NECC indeed does move southward during Eastern Pacific El Niño events but not by more than about one degree.

2) The authors spend quite an amount of text and supplementary figures on the fact that the trade winds do, on average, not converge on the Equator but north of it. This is standard textbook knowledge and by the way also the case in the Atlantic Ocean, in contrast to what the authors claim.

3) The manuscript is rather hard to follow as it is not very well structured (main results are already discussed in the introduction, the methodology is completely missing from the main manuscript), the figures are tiny and the figure captions do not provide the necessary information. For example, in Fig. 3 it is not clear what depth or density range is shown and what time period is considered.

Reference: Hsin, Y.-C., and B. Qiu (2012), The impact of Eastern-Pacific versus Central-Pacific El Niños on the North Equatorial Countercurrent in the Pacific Ocean , J. Geophys. Res., 117, C11017, doi:10.1029/2012JC008362.

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