

Review of “Do periodic consolidations of Pacific countercurrents trigger global cooling by equatorially symmetric La Niña?” by J. H. Duke

This paper explores the relationship between internal tide resonance (ITR) in the western Pacific and La Niña and El Niño. This paper deals with the very difficult topic of scale interactions in climate, exploring a wide range of frequencies and mechanisms (from mixing processes to atmospheric teleconnections). Although it uses high-quality observational data set (TAO data), the paper lacks clarity and rigor. It is also very speculative, without any quantitative analysis (all conclusions are based on the visual inspection of the figures). A chain of rectification processes is speculated to support the link between ITR and climate variability (tropical and extratropical) without any clear demonstration.

There is also a lack of accuracy in the definition of the phenomena that are considered here (WWB for instance) and a lack of basic knowledge on the equatorial dynamics and ENSO.

I recommend rejecting this paper.

Other comments:

It is not clear to me what is “a distinct mode of equatorially symmetric La Niña”? It is not a La Niña event to me!

p.5 l.15: “a solar eclipse on 14 December 2001 coincident with another WWB..” A WWB lasts somewhat like 3 to 10 days whereas an eclipse not..!

p.5. Interpretation of Fig 3: A definition of WWB is lacking. From Fig. 3d; it is not possible to me to state if a WWB is going on or not.

Note that the interpretation of Fig. 3 omits the contribution of reflected equatorial waves (not related directly to local wind variation) at the western boundary which may also impacts the SST

p. 6 l.4 : “There is also evidence of an ITR role in later stages of the ENSO”: this sentence is very vague.

p. 6 ; l.12: “This of course..”

p. 6, l. 21: “Close examination of the lunar distance plot of Fig. 4(a) shows...”: this is not obvious from the inspection of the timeseries...it should be quantified.

p. 6, l. 26: “The correlation...is evident..”: so please provide the values!

p. 8, l. 9 to 21: very obscure. The mean circulation in the tropical Pacific is described and this leads to the definition of an hydraulic model of ENSO...!? Please clarify.

p.8 l. 22: “ITR triggers PCC by dissipating cyclonic vorticity, which tips Sverdrup balance towards convergence...”..this sentence is incomprehensible to me!