

Interactive comment on “The near-inertial variability of meridional overturning circulation in the South China Sea as shown by an eddy-resolving ocean reanalysis” by J. Xiao et al.

Anonymous Referee #2

Received and published: 13 October 2015

This study used the method of high-resolution ocean reanalysis to investigate the near-inertial variability of meridional overturning circulation in South China Sea (SCSMOC). The results shown and discussed are interesting and the manuscript is also well written. It is certainly worth publishing at Ocean Science. Here I only have a few minor comments/corrections.

Comments:

1. To my understanding, the authors conclude that the near-inertial signal of SCSMOC originates from the region near Luzon Strait but not Luzon Strait. The spatial patterns of near-inertial kinetic energy (Figure 9) show a clear discontinuity between North pa-

C851

cific and SCS at Luzon Strait (which could be pointed out in the discussion). So the statement of Line 8 in the abstract “originates from the Luzon Strait” is not accurate.

2. Generally, both the Luzon strait and Kuroshio intrusion play important roles on SCSMOC. However, from the results of this study, the Luzon strait does not show a dominant effect on near-inertial wave on SCSMOC. I suggest that the authors start the introduction from SCSMOC instead of the Luzon strait.

3. On Page 7, the sentence of “which indicates that the near-inertial signal of the SCSMOC is not unique in nature” needs to be deleted. It will be very beneficial for readers if the authors can discuss in detail the similarities and differences between near-inertial variability of SCSMOC and that of open ocean, such as Pacific or Atlantic.

4. The authors conclude that “most of the signal propagates from 18N (the latitude of the southern tip of the Luzon Strait)”. Figure 8 shows strong near-inertial energy input north of 18N. Can the signal originate from north of 18N? It is hard to tell the location of 18N on figure 6.

5. On Page 9, “An average of about 7 TCs pass through the Luzon Strait ...”. To make the conclusion robust, the authors have to add the number of tropic cyclones (TC) passing through the region near Luzon Strait on ~July 2010 in the discussion.

6. Please define the sub-inertial periods and super-inertial periods” on Page 6.

7. On Page 3, at Line 2, a comma is expected between “...whole SCS basin in winter” and “and in summer...”, to avoid unnecessary confusion.

8 Page 7, Line 14-15. “These cells are not stretched in the meridional direction but in the vertical direction which means each cell consists of the strong upwelling branch and downwelling branch” can be revised as “These cells are stretched not in the meridional direction but in the vertical direction, which means each cell consists of both the strong upwelling branch and the downwelling branch”.

C852

