

Dear Authors.

Thank-you for your re-revised manuscript. I am asking you to please consider the “Detailed comments” below [“Technical Corrections”] and then to upload your final manuscript to the Copernicus/OS editorial system for publication. I do not need to see it again. However, it will be copy-edited and you should check that the intended meaning is retained. Please note that the Supplement will not be checked.

Thank-you for publishing in Ocean Science.

Yours sincerely

John Huthnance (editor).

**Response:** We sincerely appreciate your meticulous stewardship of our manuscript and the invaluable guidance you have provided throughout the review process. In this revision, we have carefully addressed every comment and suggestion; the manuscript has been thoroughly updated in response.

Lines 223-224. Please do not use “/” to denote alternatives. Elsewhere you use “(. . .)”. [I am not fond of either but at least please be consistent.] Table 1 caption should explain the meanings of bold type in the table; the text explanation can then be omitted.

**Response:** Thanks for your notice. We have avoided using “/” to indicate alternatives in the revised manuscript, and the explanatory text for Table 1 has been relocated to the table caption. We revise the Table 1 caption as:

Line 222-225: “Table 1. The El Niño (positive MVPC1) and La Niña (negative MVPC1) years. Shelf circulation anomalies in El Niño years with low runoff and in La Niña years with high runoff are generally opposite to those observed in high runoff El Niño years; the former cases, listed as non-bold entries in Table 1, were therefore excluded from subsequent analyses”

Lines 238-240. “during . . . circulation” – this clause has no verb so is unclear. “, reflecting” → “reflect”?

**Response:** Thank you for bringing this issue to our attention. We have rewritten the sentence as follows, eliminating the subordinate clause to improve clarity:

Line 235-237: “Interannual wind anomalies further modulate this circulation: during positive MVPC1 years (El Niño conditions; see Sect. 3.1), northeastward wind stress anomalies arise (Fig. 3e) and reflect ENSO's climatic influence on NSCS circulation.”

Line 298. Better with “,” after “)”

**Response:** We have rewritten the sentence as follows:

Line 291-296: “It is also noteworthy from this figure that landward of the 100-m isobath (excluding the immediate nearshore), the first baroclinic Rossby radius ranges from a few to ~10 km. The radius is given by  $R_o = \sqrt{g'H}/f$ , where  $H$  is the water depth and  $f$  represents the Coriolis parameter. The reduced gravity is defined as  $g' = \Delta\rho/\rho$ , with  $\Delta\rho$  the density difference between the upper and lower uniform layers, and  $\rho$  the domain-averaged density as reference density.”

Regarding equation (2). Please clarify where subscripts ( $x^*$ ) and ( $y^*$ ) are simply components and where they denote derivatives.

**Response:** In equation (2), the subscripts ( $x^*$ ) and ( $y^*$ ) denote the cross- and along-isobath derivatives. Only in the terms  $PGF_{y^*}$  and  $PGF_{y^*}^b$ ,  $y^*$  represents the along-isobath direction rather than derivative.

We have inserted clarifying notes at both locations in the revised manuscript.

Line 317-319: “The  $x^*$  is positive onshore and  $y^*$  is in along-isobath direction and positive  $y^*$  stands for the direction with deeper waters on the left-hand-side. In the terms  $PGF_{y^*}$  and  $PGF_{y^*}^b$ , the subscript  $y^*$  represents the along-isobath direction rather than derivative.”

Figures 5, 7, 9. In your response to the reviewer comment about lack of significance shading, you responded “We therefore chose not to overlay significance shading on the anomaly profiles in order to preserve visual clarity and avoid obscuring the main structures of interest (e.g., the cores of temperature, salinity, density, and stratification anomalies). In the text, we only draw conclusions from the prominent, high-amplitude features, which we have verified to exceed the 90% confidence level.” I think you should please include something of this response in the text or figure 5 caption; other readers may ask the same question and should not have to “hunt” through the discussion to find an explanation. In any case, the reviewer comment will be available to readers when the manuscript is published and it could appear that you have not answered the comment.

**Response:** Thanks for reminding. We have now added the following explanation to the Fig. 5 caption:

Line 307-309: “To maintain the visual clarity of the anomaly cores, which are confirmed to

exceed the 90% confidence level, significance shading is omitted from the profiles, and this approach is also applied in Fig. 7 and Fig. 9.”