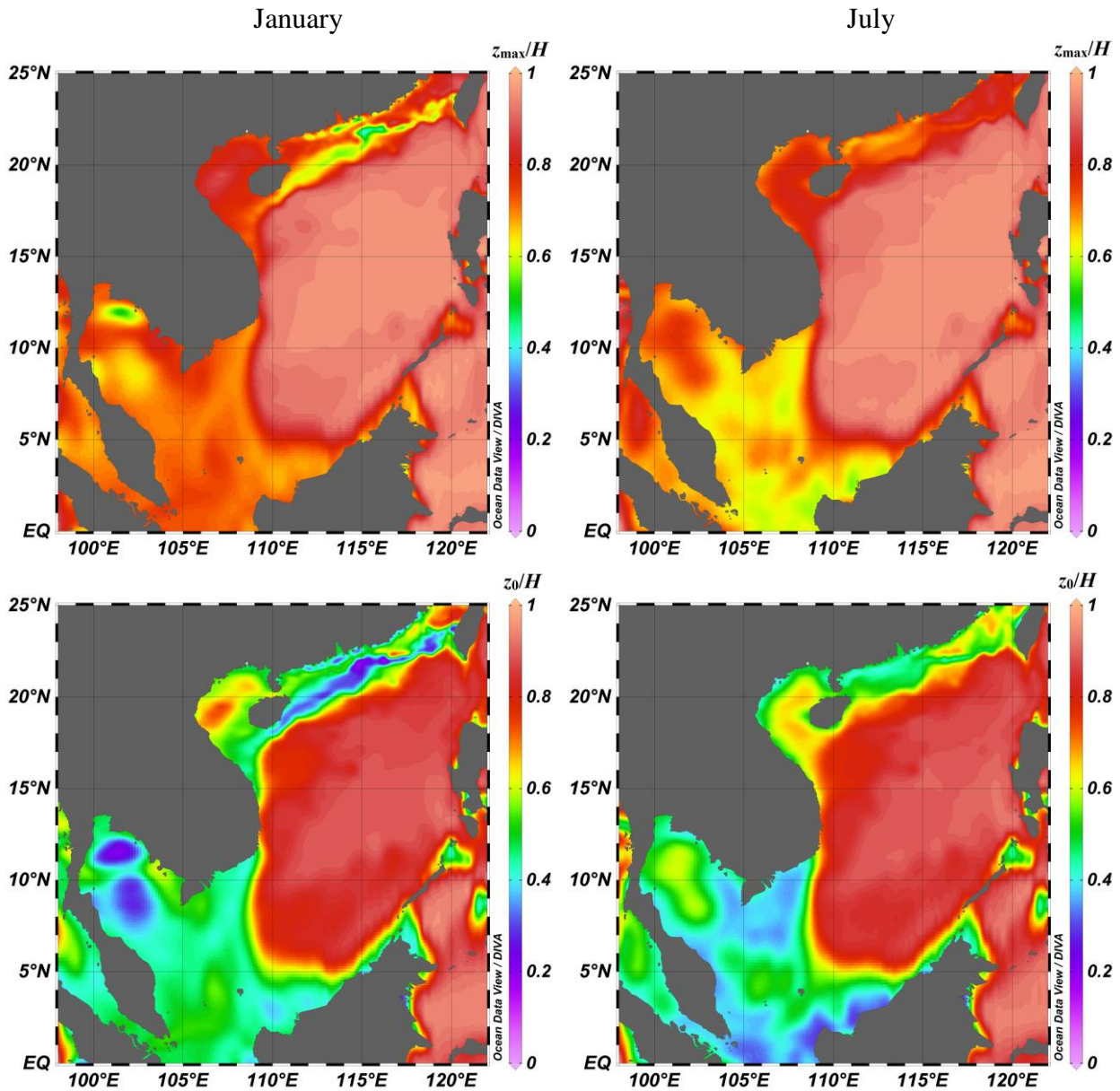
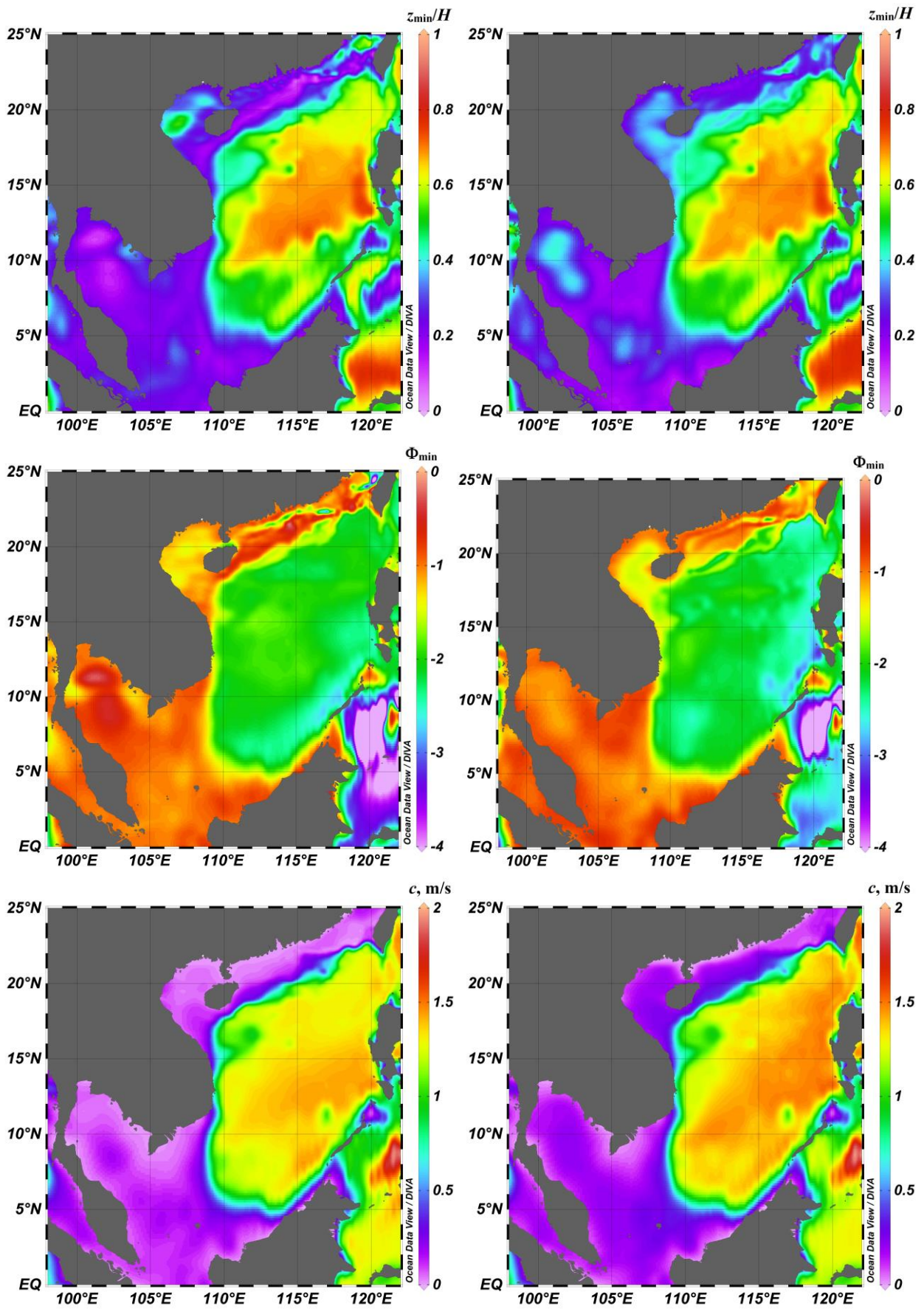


We very much appreciate the overall positive attitude of the referee to our manuscript and thank him for particularly useful comments. The comments, questions and suggestions of the referee are presented in italics.

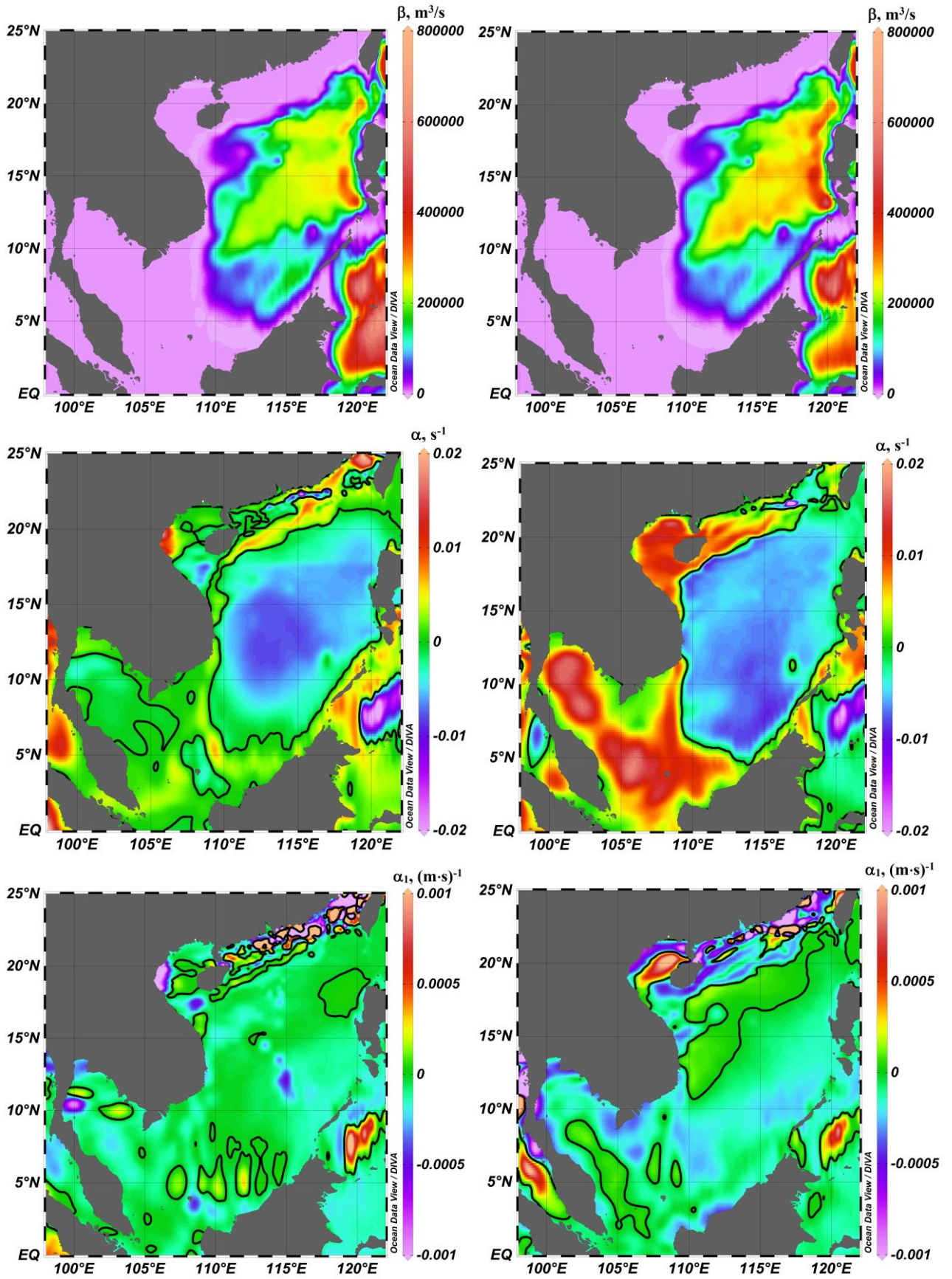
1. *"The authors examined the summer July conditions in the SCS, and I wonder if the authors have also looked into winter conditions?"*

During preparation of the manuscript we constructed maps of the coefficients and parameters of Gardner's equation for both January and July. These maps are mostly qualitatively and quantitatively similar to each other (except for the parameters  $\alpha$  and  $\alpha_1$ ).









Thus, seasonal changes in these parameters are generally fairly small and/or do not have a clear pattern. As the manuscript is already quite long and contains many figures, we decided not to include the maps for winter conditions into the paper. However, we added short comments on seasonality of these parameters into the manuscript (on pages 11 and 20).

“Even though several properties of water masses of the South China Sea exhibit extensive seasonal variations, this feature not necessarily becomes evident in terms of kinematic parameters of internal waves of the second mode. The maps of quantities that express the normalised stratification conditions ( $z_{\max}/H$ ,  $z_0/H$ ,  $z_{\min}/H$ ,  $\Phi_{\min}$ ) and the linear parameters  $c$  and  $\beta$  for January (not shown) qualitatively almost coincide with similar maps for July. The match is almost perfect in the deeper area of the basin. The largest quantitative differences (on the order of 20%) occur in shallow areas of this sea. However, both coefficients at the nonlinear terms of Gardner equation have substantial seasonal variations. The values of the coefficient  $\alpha$  at the quadratic term change insignificantly from July to January in deeper areas but are instead of very small values in July quite large (around and above  $0.01 \text{ s}^{-1}$ ) in shallow areas. The values of the coefficient  $\alpha_1$  at the cubic nonlinear term vary in a complicated manner between January and July”

2. " *Internal waves in the SCS are not excited by interactions of barotropic tides with the Kuroshio.*" Thank you for highlighting this issue. The wording is changed as follows: (page 1, 25)

"These powerful disturbances are usually excited by tide-topography interaction in the Luzon Strait where Kuroshio serves as a background current that may greatly modify the generating conditions. The resulting internal waves are further modified by numerous islands, seamounts and other bathymetric features in the Luzon Strait (Liu et al., 1998, 2004, 2006; Cai et al., 2002; Rump et al., 2004, 2015)."

3. *P.1 L.10: is 'release of storm surges' a type of 'strong atmospheric disturbances'?*

We mean that internal waves may be generated by storm surges also. We changed the sentence a little bit in order to make sure that we have in mind “indirect and/or delayed impact of such [strong atmospheric] disturbances (e.g., release of storm surges)“.

4. *P.3 L.34: while I admit that it is meaningful to construct such 2D spatial kinematic maps of internal waves in the SCS as the authors have done, I don't think it can be as 'urgently needed'.*

We agree this adjective is too insistent. Thus, we deleted it and say now that these maps are “useful”.

5. *P.4 L22 and elsewhere: Brunt–Väisälä frequency*

Thank you, this notion is correct.

6. *P.9 L6-12: I don't think it correct and necessary to have such a discussion here about the radiation from the sun; suggest remove it.*

We agree that this discussion is not really necessary in this paper, so omitted it and only mention in the revised version that spatial variations of the incoming radiation may have a certain impact on patterns of kinematic parameters of internal waves:

“Even though water depth is one of the most important factors governing the propagation speed of internal waves, stratification of water masses equally contributes to the properties of the propagation of internal waves. Its impact is apparently complemented by variations in the amount of incoming radiation from the Sun. These variations may be one of the reasons of the presence of the meridional pattern of the phase speed of internal waves of the second mode. This meridional pattern is well known for internal waves of the first mode (Talipova and Polukhin, 2001).”

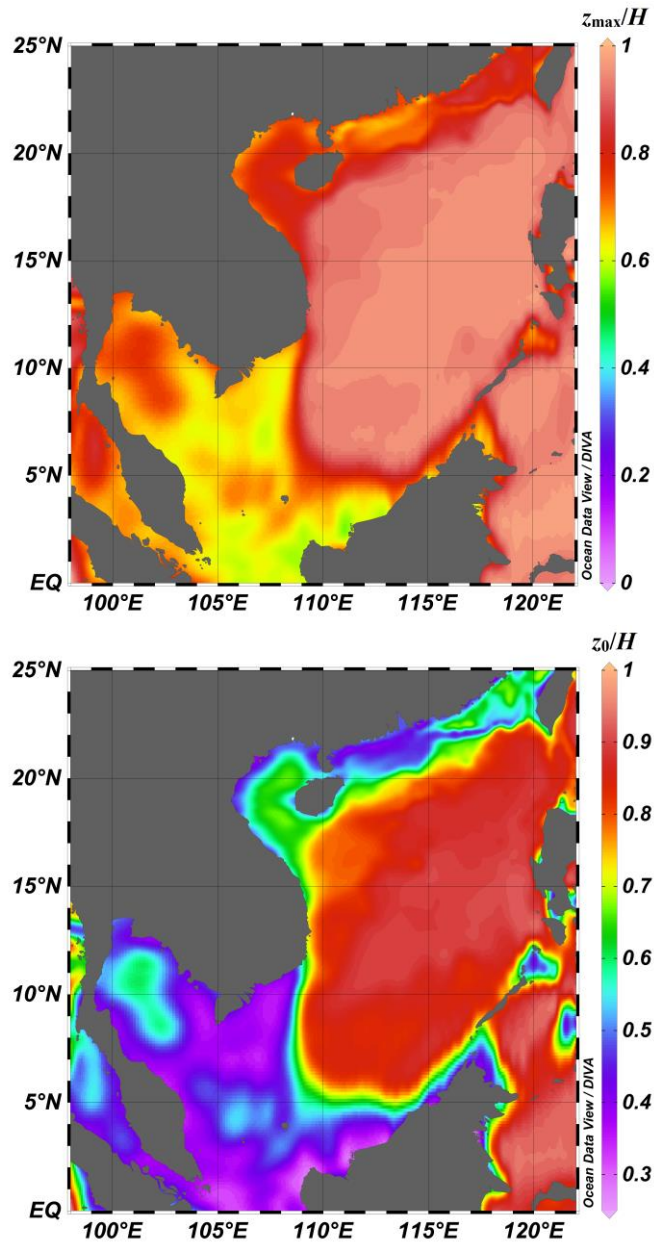
7. *P.12 L.25: 'Data availability' is not about the data that you used during your research, but it is about your own output data in the work*

It is changed as follows:

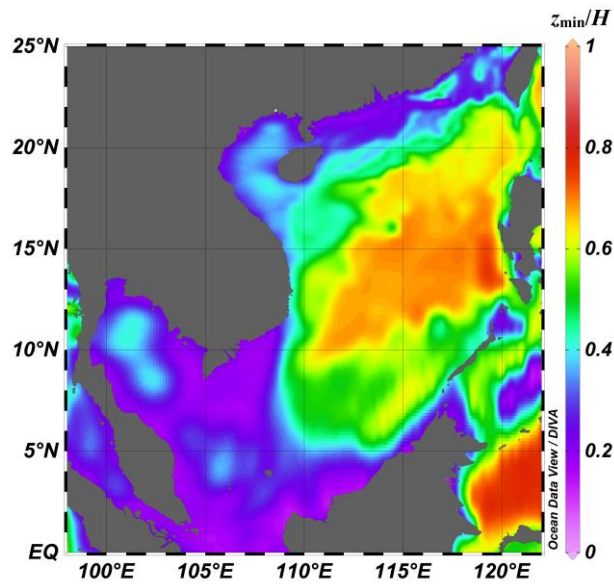
“The derived maps of the parameters as well as underlying data for histograms and scatter plots may be obtained from the authors in digital form via requests by e-mail”

8. Figs. 6-8: please consider using the same colorbar scale in these three figures such that the readers can have a more direct comparison of the three different depths. This also applies to Figs. 11 & 13.

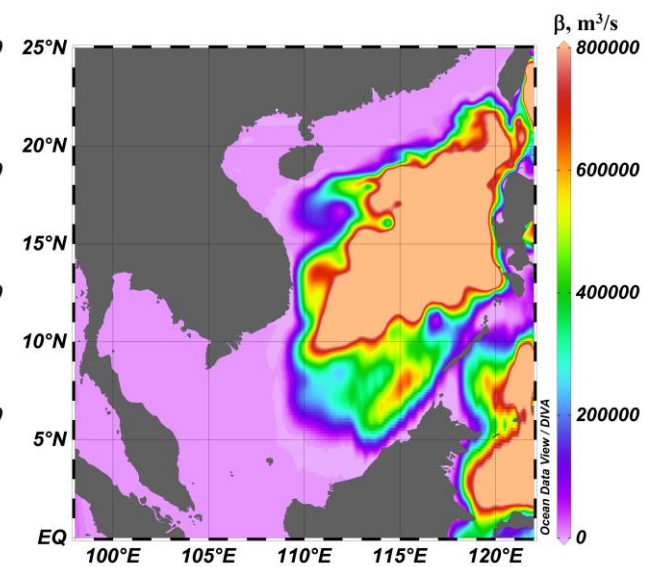
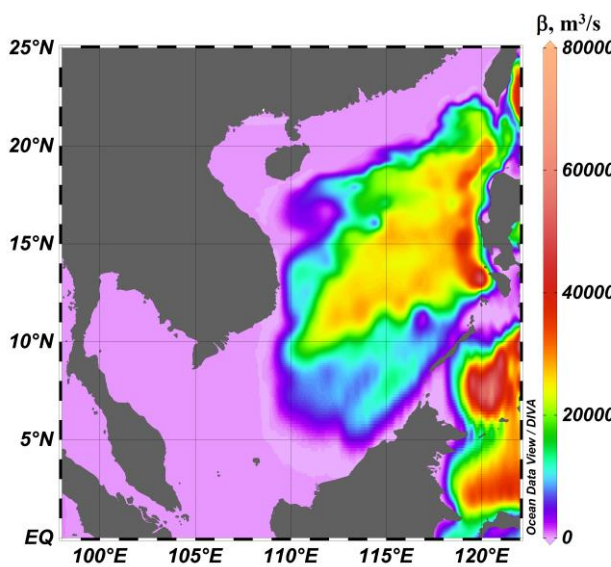
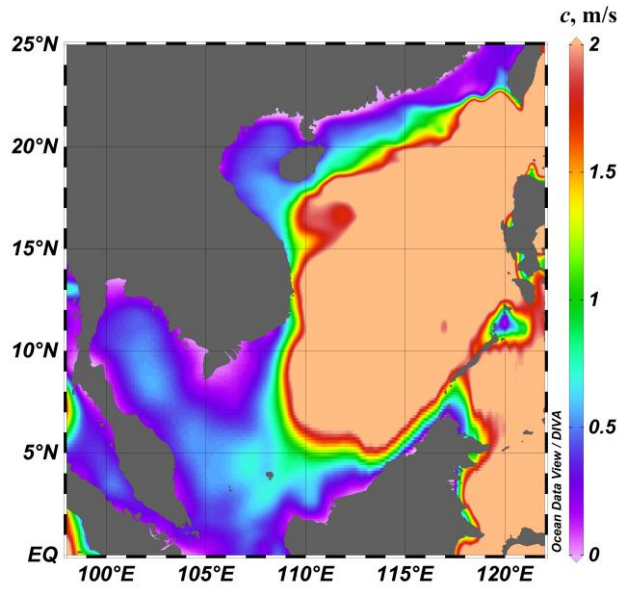
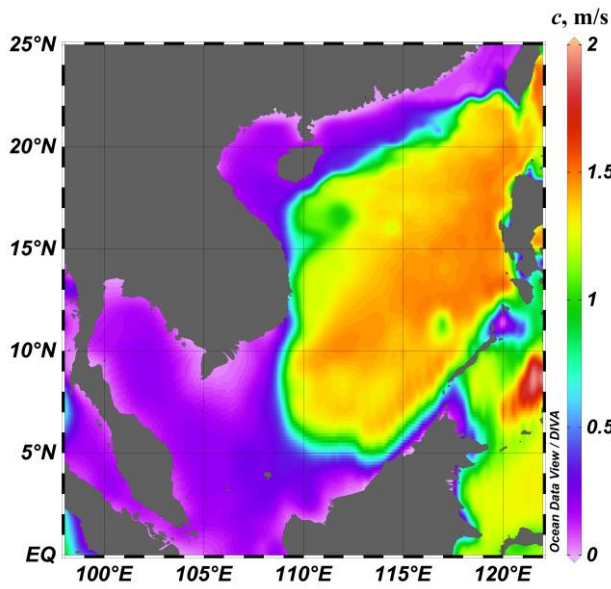
Figs. 6–8. Thank you; we have redrawn the images as recommended by the Referee. The scales have the same range (0,1). Note that they became less informative as fewer colors are used for each quantity due to the narrower range.





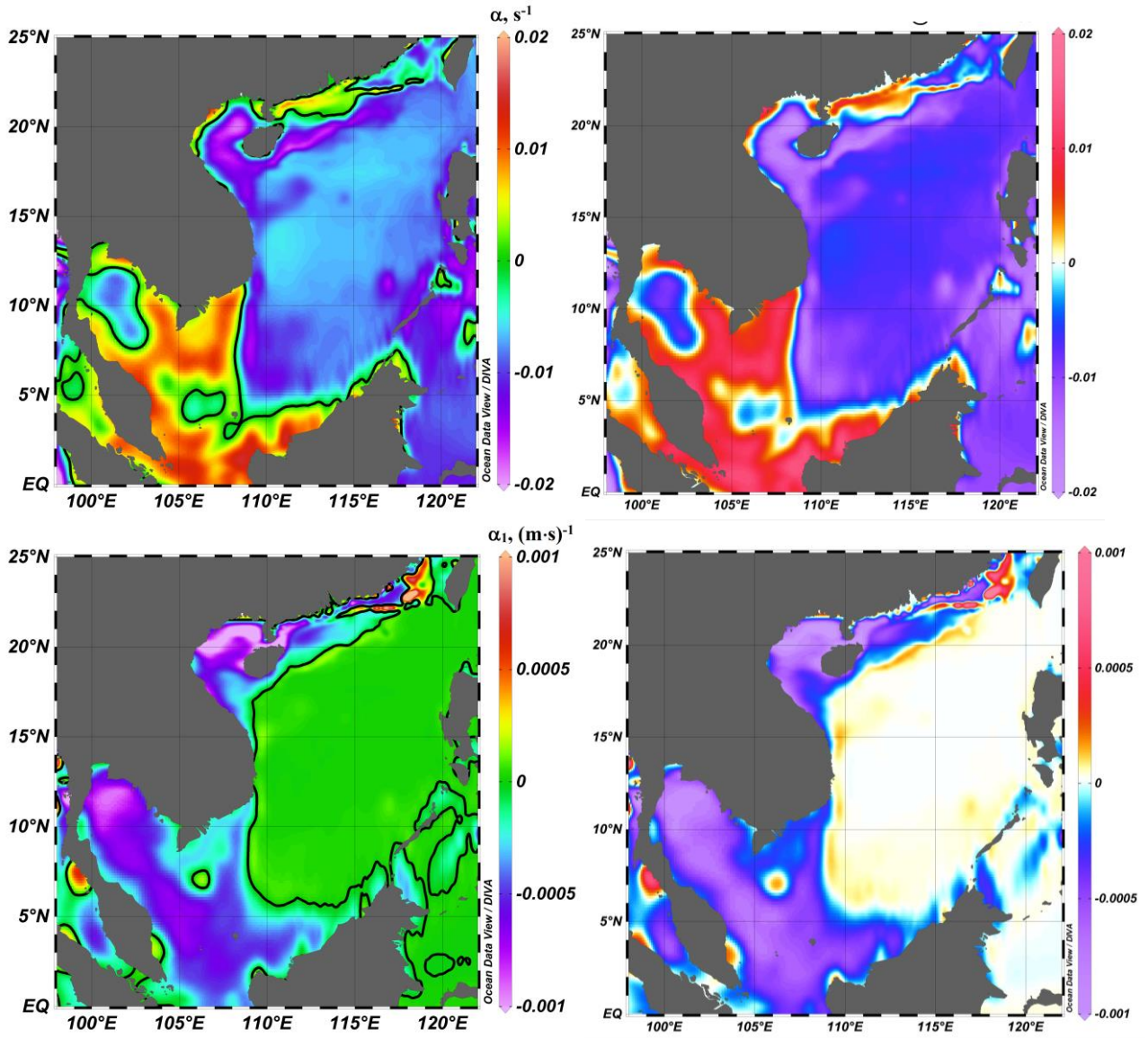


Figs. 11 & 13. The colorbar range is decreased for mode I (right column) to match the scale with the one used for mode II (left column).



9. Figs. 14 and 16: please consider using a white-centered colorbar for a better visualisation of positive and negative values.

Thank you for this suggestion. However, it was not easy for follow. See an example for mode I below, left column. It turned out that white-centered blue-red palette was less effective (having less colours) to present the necessary information. Such white-centered plots are given for comparison, see below, right column. Thus, we chose another way. Namely, for a better visualization of negative and positive values we added the zero contours to the maps of nonlinear parameters (Figs. 14 and 16).



### Technical corrections

1) P.2 L.3: text correction: unnecessary word removed 2) P.2 L.5-6: sloppy; please reword: reworded as: **It is likely that higher modes of long internal waves are often generated in the World Ocean.** 3) P.3 L10: Carnes, 2009: Of course, thank you 4) P.6 L.20: quadratic term of Eq. (1)? Should be Eq. (1); thank you 5) P.7 L.19: Kurkina et al. (2017): Corrected 6) P.8L. 7: text correction: unnecessary letters removed 7) P.8 L. 12: text correction. unnecessary word removed 8) P.9 L.24&25: Fig. 13C: Thank you; corrected 9) P.11 L.24: ... solitons are strongly...: reworded as

“such solitary waves are strongly nonlinear“. 10) P.12 L.16: *...are qualitatively similar...*: Reworded to make the claim unambiguous 11) Fig. 12 caption: *with a power function* (8): Thank you; corrected.