Editor, Ocean Science

Email: editorial@copernicus.org

January 23, 2019

Dear Editor:

Thank you for your letter dated January 18 regarding our manuscript entitled "**Could the mesoscale eddies be reproduced and predicted in the northern south China sea: case studies**" (No: os-2018-74), which was submitted to **Ocean Science** for consideration of publication. We have read reviewer's comments carefully. Following your suggestions, we have gone through the manuscript and made the following changes in the manuscript.

The line-by-line replies for reviewer's comments are shown in the attachments. The original comments are quoted in Times New Roman (Bold) and our responses are in Times New Roman.

Once again, thank you and reviewer for the time and energy spending on reading our manuscript and providing constructive comments and suggestions, which are very valuable in improving the quality of our manuscript.

Enclosed, please find our updated manuscript and reply to the reviewer's comments. We hope this version of our manuscript can meet the standard of publication in this journal, and we look forward to receiving further instruction related to this submission.

Sincerely yours

Dazhi Xu

Comments to the Author:

Thank-you for your revisions. I am now asking for some Technical Corrections for clarity (see Details below) and there is one point where I think you still need to answer a point of Referee 1. After this, your manuscript should go direct to the Copernicus production system with no further intervention by me. However, there will be copy editing and I expect that will make changes. You should check that your intended meaning is kept.

Ans: We are very grateful to the editor for carefully reading our manuscript and proposing constructive revisions. We are also very grateful for your efforts and time to improve the quality of this article.

Details

Line 46. "the scales resolved" seems misplaced; it does not fit with the other items in this sentence.

Ans: Thank you. The words "the scales resolved" have been replaced by "the temporal and spatial variability" in the revised version. (P3, line 46)

Line 57. "marginal sea, in the northwest Pacific, connecting. ." (present wording suggests the Gulf of Mexico is in the northwest Pacific)

Ans: Thank you. The sentence "marginal sea in the northwest Pacific, connecting. ." has been revised in the revised version. (P4, line 57)

Line 59. "Current (KC), Rossby waves . . SCS and especially the"

Ans: Thank you. The sentence "Current (KC), the Rossby waves and the complex topography, the SCS, especially the" has been revised in the revised version. (P4, line 59)

Line 64. Delete "in the" at end.

Ans: Thank you. The words "in the" have been deleted in the revised version. (P4, line 64)

Line 86. Delete "its".

Ans: Thank you. The word "its" has been deleted in the revised version. (P5, line 86)

Line 97. Delete "appear"

Ans: Thank you. The word "appear" has been deleted in the revised version. (P6, line

97)

Line 98. “show that an ocean model including tides or”

Ans: Thank you. The sentence “show that the ocean model includes tides or” has been revised in the revised version. (P6, line 98)

Line 101. Delete “about”.

Ans: Thank you. The word “about” has been deleted in the revised version. (P6, line 101)

Lines 102-104. “. . two typical NSCS anticyclonic eddies (Wang et al., 2008), chosen as representing different generation mechanisms and surviving long enough to be useful, with focus . .”

Ans: Thank you. The sentences “..two typical anticyclonic eddies (Wang et al., 2008), owing to be represented different generation mechanisms and survive long enough to be useful, in the NSCS with focus..” have been revised in the revised version. (P6, lines 102-104)

Line 107. “trajectories”

Ans: Thank you. The word “trajectory” has been replaced by “trajectories” in the revised version. (P6, line 107)

Lines 111-112. “In this study, altimetric data in 2003-2004 was selected, including along-track SLA, totalling 29 passes (about 9300 points) over the domain of CSCS. Considering . .”

Ans: Thank you. The sentences “In this study, the altimetric data between 2003-2004, which includes along-track SLA, totally 29 passes (about 9300 points) over the domain of CSCS was selected. Considering..” have been revised in the revised version. (P6, lines 110-111)

Line 119. Delete “thus”

Ans: Thank you. The word “thus” has been deleted in the revised version. (P7, line 118)

Line 121. “(2012), was . .”

Ans: Thank you. The sentence “..Xu et al. (2012) was used..” has been revised in the revised version. (P7, line 119)

Line 180. “climate” -> “climatology”

Ans: Thank you. The word "climate" has been replaced by "climatology" in the revised version. (P9, line 179)

Lines 226-227. "fig. 5 shows . . AE2 can be well reproduced". Actually figure 5 shows ANP and the model result is not close to the observed ANP. Referee 1 main question 3 was how do you measure "well reproduced"? Perhaps your answer is in the next paragraph lines 228-241? Please correct and clarify this for readers.

Ans: Thank you. As the editor pointed out, the answer to "the referee 1 main question 3" is indeed in paragraph 2 of page 12 (lines 230-241). And this paragraph (P11-12, lines 222-226) is the answer for referee 2 question 4. Furthermore, in order to eliminate the reader's misunderstanding, we deleted word "well" in line 225 (P11) in the revised version.

Line 227. ". . greater than 8 cm in our runs) . .". ANP > 2 and amplitude greater than 8 cm may correspond in your example(s) but this is not a universal relation.

Ans: Thank you. The sentence ".. greater than 8 cm).." has been revised in the revised version. (P11, line 225)

Lines 228-229. "Besides, we also use independent evaluation. Fig.6 compares the assimilating results of AE1 with observations . ."

Ans: Thank you. The sentences "Besides, we also use the independent evaluation, Fig.6 compared the assimilating results of AE1 with the observations.." have been revised in the revised version. (P12, lines 227-228)

Line 232. "CSCASS; the pink curves"

Ans: Thank you. The sentence "..CSCASS, with the pink curves.." has been revised in the revised version. (P12, line 231)

Line 248. "amplitude is greater . . "

Ans: Thank you. The sentence ".. amplitude greater.." has been revised in the revised version. (P12, line 247)

Line 270. ". . Exp5 is set up . ."

Ans: Thank you. The sentence ".. Exp5, is setting up.." has been revised in the revised version. (P13, line 269)

Line 290. ". . AE1 was also predicted . ."

Ans: Thank you. The sentence ".. AE1 can also been predicted.." has been revised in the revised version. (P14, line 289)

Line 310. Delete "thus"

Ans: Thank you. The word "thus" has been deleted in the revised version. (P15, line 309)

Line 315. ". . centres of the two almost coinciding. The . ."

Ans: Thank you. The sentence ".. center of the two almost coincide. The.." has been revised in the revised version. (P16, line 314)

Line 326. "moving" -> "movement"

Ans: Thank you. The word "moving" has been replaced by "movement" in the revised version. (P16, line 325)

Lines 334-336. ". . The observed amplitude of AE2 decays continually at this stage, but the predicted amplitude is almost constant. In . ."

Ans: Thank you. The sentences ".. The amplitude of AE2 from the observation decays continually at this stage, but the amplitude of the predicted almost keeps constant. In.." have been revised in the revised version. (P16, lines 333-335)

Figure 5 caption line 550. "observed" -> "observations".

Ans: Thank you. The word "observed" has been replaced by "observations" in the revised version. (P27, line 540)

Figure 6 caption line 554. Delete "of".

Ans: Thank you. The word "of" has been deleted in the revised version. (P28, line 543)

Figure 7 line 562. ". . figure 6, . ."

Ans: Thank you. The figure number "4" has been corrected and replaced by "6" in the revised version. (P29, line 551)

Figure 8 caption line 583. Delete "moving"

Ans: Thank you. The word "moving" has been deleted in the revised version. (P32, line 564)