

**Dear Dr. Robinson,**

**Thank you very much for your editorial comments and suggestions. We have taken all of your comments and have revised the MS accordingly. Details of the revisions are explained in the enclosure.**

**We would like to thank you again for your consideration and comments that significantly improved the quality of the MS.**

**Sincerely,**

**Minhan Dai**

## Enclose: Response to Editor's comments

Page 2 line 35: Do you mean 'rather than the spatial variance or the bulk uncertainty'?

Response: We revised it to “It is important to note that the standard deviations in these flux ranges mostly reflect the spatial variation of  $p\text{CO}_2$  rather than the bulk uncertainty.”

Page 2 line 41: Delete 'a reasonably agreeable estimate of'? the 'agreeable' here could mean that the magnitude of the estimate is 'agreeable' or 'likeable' ?

Response: We revised it to “our estimation of the coastal ocean air-sea  $\text{CO}_2$  fluxes have converged to about 0.2 to 0.5 Pg C yr<sup>-1</sup> at a global scale”.

Page 3 line 47: clumsy sentence

Response: We revised it to “Having stated so, it remains, however, challenging to reliably assess the carbon fluxes in individual coastal systems that are often featured by the greatest spatial and temporal variations (Cai and Dai, 2004; Dai et al., 2013; Dai et al., 2009; Zhai et al., 2013)”.

Page 3 line 53: is 'embedded' the appropriate word here?

Response: We revised it to “Finally, many coastal oceans have been impacted by anthropogenic activities, the signals of which remains however challenging to decipher (Chou et al., 2007; Omar et al., 2003).

Page 3 line 56: 'featured with' = 'characterised by'?

Response: We revised it to “characterized by” in the revised MS.

Page 3 line 66: is 'remarkable' the appropriate word here?

Response: We changed it to “significant”.

Page 4 line 73: 'suffering' = 'suffer'?

Response: we revised it to “suffer”.

Page 4 line 74: all in past tense?

Response: All citations are in present tense.

Page 4 line 93: assess whether the description of the Domains is needed here as it precedes a more detailed description in the 'study area' section.

Response: We moved this section from *Introduction* to *Study Area*.

Page 6 line 123: check sentence structure / meaning here.

Response: We deleted this sentence in the revised MS.

Page 7 line 149: you could rearrange these sentences to avoid the term 'home made' and simply referencing the appropriate references?

Response: It was a “home-made” system including equilibrator, non-dispersive infrared spectrometer (Li-Cor® 7000) CO<sub>2</sub> detector, etc.

Page 7 line 155: clumsy sentence.

Response: We revised it to “The bow intake for air sampling was installed ~ 10 m above the sea surface to avoid contamination from the ship”.

Page 8 line 167: clumsy sentence.

Response: We revised it to “ $p\text{CO}_2$  in the air was calculated similarly using  $x\text{CO}_2$  in the air and the barometric pressure.”

Page 11 line 258: large? rather than 'great'?

Response: We revised it “large” in the revised MS.

Page 12 line 279: clumsy sentence - not sure which amplitude was 5-10 - the ECS or Mauna Loa.

Response: We revised it to “However, the amplitude of the seasonal variation in air CO<sub>2</sub>

concentration over the ECS was larger than that over the open North Pacific (Mauna Loa station), the latter of which was 5 to 10 ppm.”

Page 13 line 307: is 'remarkable' the appropriate word here rather than 'evident' or 'apparent' or 'significant'?

Response: We revised it to “In addition to the strong seasonal variation, intra-seasonal variability was also substantial.”

Page 13 line 313: characteristics of what?

Response: We revised it to “the overall characteristics of the  $p\text{CO}_2$  distribution”.

Page 14 line 314: is 'remarkable' the appropriate word here?

Response: We changed it to “conspicuous” in the revised MS.

Page 17 line 402: 'generically revealed'?

Response: We deleted “generically” in the revised MS.

Page 18 line 428: replace 'drop'.

Response: We revised it to “drawdown” in the revised MS.

Page 19 line 460: replace 'very rough'.

Page 19 line 461: clumsy sentence. 'takes a longer time than the 3 month long seasons defined here' ?

Response to lines 460-461: We revised to “These values were much lower than the dynamic inshore areas (Domains I and II) and might be negligible and the re-equilibrium of  $\text{CO}_2$  takes a longer time than the 3 month long seasons defined here (Zhai et al., 2014).”

Page 21 line 518: clumsy sentence.

Response: We revised it to “The low  $p\text{CO}_2$  in Oct 2006 might be induced by a local bloom as reflected by the high degree of oxygen saturation in the surface water” in the

revised MS.

Page 21 line 521: degree of oxygen saturation?

Response: We revised it to “the degree of oxygen saturation” in the revised MS.

Page 521 line 531: delete 'b' ?

Response: Deleted as suggested.

Page 24 line 592: delete 'are mandatory' replace with 'and'.

Response: Revised as suggested.