

## ***Interactive comment on “Seasonality of CO<sub>2</sub> in coastal oceans altered by increasing anthropogenic nutrient delivery from large rivers: evidence from the Changjiang-East China Sea system” by W.-C. Chou et al.***

**W.-C. Chou et al.**

wcchou@mail.ntou.edu.tw

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Response to Referee #3's comments:

Thank you very much for your time and effort in reviewing our manuscript and providing constructive comments, which have greatly helped us in revising the manuscript. We have carefully read your comments and have revised the manuscript in accordance with your suggestions. Our responses to each comment are provided below.

1. Is it possible statistical analysis of pCO<sub>2</sub> values between 1990s and 2000s.

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The available pCO<sub>2</sub> values in the 1990s can be found in Table 1 of Tsunogai et al. (1999), in which only pCO<sub>2</sub> values at hydrographic stations were given. Based on the limited pCO<sub>2</sub> values listed in Table 1 of Tsunogai et al. (1999) (pCO<sub>2</sub>1990s) and the measured pCO<sub>2</sub> values in the present study (pCO<sub>2</sub>2000s), differences between pCO<sub>2</sub>1990s and pCO<sub>2</sub>2000s in the defined inner and outer shelf regions were assessed using an analysis of variance (f-test) followed by a comparison of means (t-test), and a significance level of 0.05 was used to determine significant statistical differences. As shown in the attached Table, pCO<sub>2</sub>2000s is significant lower in summer but higher in autumn and winter than pCO<sub>2</sub>1990s in the defined inner shelf region. In contrast, no significant difference between pCO<sub>2</sub>2000s and pCO<sub>2</sub>1990s in summer and winter was found in the defined outer shelf region. Though pCO<sub>2</sub>2000s is significant higher than pCO<sub>2</sub>1990s in autumn in the outer shelf region, its difference (372±9 in 2000s vs. 353±19 uatm in 1990s) is much smaller than that in the same season in the inner shelf region (406±34 in 2000s vs. 311±19 uatm in 1990s). Generally, these results agree well with the relevant statements in the manuscript (Page 19005, Line 7-11).

2. Figure 1, 2: Figs 1 and 2 were so complicated to make out. Is it possible to draw a line between the inner shelf near the Changjiang Estuary and the outer shelf of the ECS.

We have drawn 50 m isobath on Figures 1 and 2 to clearly show the boundary of the inner and outer shelf.

3. Figure 6: What do the dashed line in the second figure of conceptual diagram mean?

The dashed line in Figure 6 indicates the depth of pycnocline (PD), defined as the depth with the steepest vertical gradient in density, based on which the water column was divided into the surface (above the PD) and the bottom (below the PD) layers.

Please also note the supplement to this comment:

<http://www.biogeosciences-discuss.net/9/C9406/2013/bgd-9-C9406-2013->

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