

### **Anonymous Referee # 1**

*In this paper a two-layer conceptual C models was developed in a small subtropical lake to explore how the DIC and DOC fluxes respond to typhoon disturbances on seasonal and interannual time scales. Monthly field samplings were conducted to measure DIC, DOC, and chlorophyll a concentrations to compare the temporal patterns of fluxes between typhoon years and non-typhoon years. It is an interesting study, and the manuscript need to be revised.*

**Response:** Thanks for your comments. The manuscript has been revised, taking into account your comments below.

*(1) Line 176-179, “where, total lake volume ( $V_{total}$ , 53,544 m<sup>3</sup>) departs to the upper layer ( $V_U$ , 45,456 m<sup>3</sup>) and to the lower layer ( $V_L$ , 8,808 m<sup>3</sup>) (Equation 5), and where lake surface area ( $A_S$ ) is 36,000 m<sup>2</sup> and the bottom of lake area ( $A_B$ ) is 3,520 m<sup>2</sup>. The interface is 2.5 m vertically, and the interface area ( $A_I$ ) is 7,264 m<sup>2</sup> in YYL.” The volume of upper layer and lower layer may change in time of different month, it is not a constant number and better to give the explanations.*

**Response:** Thanks for your comment. We have added, “The water depth is steady and changes. However, the change in water depth ranges from 4.56 to 4.66 m during typhoon period. Therefore, we can assume that the changes in lake volumes and areas were negligible.” in the manuscript.

*(2) Line 225-226 “2.3.3 NEP of DIC and DOC, the net ecosystem production was defined as the difference between primary production and ecological respiration due to photosynthesis and respiration via biota”. The net ecosystem production has close relationship with water temperature and solar radiation in each month, especially in non-typhoon years. So, the discussions on the effects on NEP by temperature and solar radiation may be important.*

**Response:** Thanks for your suggestion. We have added a paragraph about the seasonal change of DIC and DOC fluxes in the discussion.

*(3) In the discussion, the CO<sub>2</sub> emission flux in different month for the small subtropical lake may be more interesting.*

**Response:** Thanks for your comment. We have added some sentences about the seasonal change of CO<sub>2</sub> emission in the discussion.