

## ***Interactive comment on “The effects of different environmental factors on biochemical composition of particulate organic matters in Gwangyang Bay, South Korea” by Jang Han Lee et al.***

**Anonymous Referee #2**

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The manuscript, “The effects of different environmental factors on biochemical composition of particulate organic matter in Gwangyang Bay, South Korea” written by Lee et al., describes the seasonal changes of the biochemical composition such as proteins, lipids, and carbohydrates of the particulate organic matter and investigates the major environmental controlling factors for the changes of biochemical composition. This paper is very interesting to present seasonal biochemical composition of particulate organic matter responding to various environmental factors and the food quantity assessed in Gwangyang Bay since previous studies have focused mainly on different biochemical compositions as the authors mentioned that. The present study has

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scientific merits and originality in that: 1. the topic, “biochemical composition of particulate organic matter as indicators of food quality and quantity”, is very intriguing enough to draw much attention for understanding marine ecosystem especially here in Gwangyang Bay; 2. the study is one of few studies that employed seasonal biochemical composition of particulate organic matter responding to various environmental factors; 3. authors found that river-derived dissolved inorganic nitrogen loading is a major governing factor for determining the biochemical composition in a natural bay system which implies that man-made artificial dams could cause a serious disturbance in the ecosystem.

Overall, I would recommend publication of this manuscript for Biogeosciences after some minor revisions. I hope to see authors undertake revisions in an appropriate manner because I really want to see the final version of this paper in print.

Some minor comments are listed below: -. Be consistent with Gwangyang Bay or bay throughout the text. -. Be consistent with average or mean in the results. -. (Section 2.1) What time did usually authors make samplings? I'm wondering if there is tidal influence and/or diurnal changes? -. (line 76) indicate t (ton ?). -. (lines 83-83) Describe how to determine 3 light intensities from secchi disk. -. (line 157 in section 2.5) Describe what Winberg (1971) is. -. (3. Results) Indicate statistics results in the result section. -. (Section 4.1) The first sentence in 4.1 section is repeated as the result section of 3.1. Remove it. -. (Table 6) No description for Table 6 is shown in the result section. Describe it in the result section before the discussion on that in the discussion section. -. (Section 4.4) The first sentence in 4.4 belongs to the result. -. (Table 7) Be consistent with the unit in Table 7 and the text. -. The conclusion section is needed to be revised since some parts in the conclusion repeat some results.

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