

Interactive comment on “Time-series measurements of biochemical and physical properties in the southwestern East/Japan Sea during the spring transition in 2010” by Y.-T. Son et al.

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We received the handling editor’s comment after we uploaded detailed responses to two anonymous referees as the supplements. First, we thank editor for the comments.

1. Among the comments from the editor that the fluorescence data are poorly calibrated, we received the same comment from Referee #1 and we responded to it by calculating percent dissolved oxygen saturation and saying “During the bloom period, dissolved oxygen was supersaturated with the degree of supersaturation up to 120 %

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indicating significant photosynthetic production of oxygen, and temporal variation of the percent saturation is well correlated with that of the chlorophyll fluorescence, both of which strongly suggest the observed high chlorophyll fluorescence represents the high chlorophyll concentration due to the spring bloom.” Please refer to our response to Referee #1 in the supplement with a related figure. Our response may also be an answer to the editor’s comment about the temperature-normalized DO data.

2. Regarding the editor’s comment on the surface spring bloom. We did not explicitly mention that the spring bloom did not occur at the surface. Rather, our focus is on the occurrence of the bloom at 30 m based on the observation. We showed the 7-day composite MODIS surface chlorophyll distributions (Fig. 13) showing the high chlorophyll concentration between April 4-22, indicating the spring bloom also occurred at the surface.

3. Malfunction of nitrate sensor. We used ISUS nitrate sensor with a separate battery package in a container we made, both of which were attached to the mooring line. We used the separate battery package to ensure high-resolution sampling and long-term use. Unfortunately, the contact inside the battery container was a little loose, and a contact fault occurred from the beginning, and we think the contact became normal somehow only from May 7.

Certainly, this work was mostly based on a single point mooring with not much supplementary data, and we discussed the limitation of the present study at the end of discussion. On the other hand, we argue this piece of work contains some valuable information on a factor affecting the onset of the spring bloom which has never been considered, the springtime advection of the ESIW. (Please also see our response to Referee #2 in the supplement.) Undoubtedly, more observational efforts should be put forth for more clear understanding of the bloom in this highly productive area, and we think this study provides some motivation and direction of the future study and observation.

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