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Interactive comment on "Summer-time episodic chlorophyll-a blooms near east coast of Korea" *by* Young-Tae Son et al.

Anonymous Referee #2

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The authors analyzed the summertime chlorophyll bloom in the East Sea (Japan Sea) based on the hydrographic data obtained at a fixed buoy site and satellite ocean color and sea surface height data. The subject matter of this manuscript is scientific interest to study the coastal chlorophyll a blooms in a short time scale. It is shown that horizontal advection is the key mechanism for the appearance of the summertime bloom events in the study area. However, more careful analysis is needed to accept it as the conclusion. I would suggest the publication of the manuscript after some moderate revisions, especially in interpretation of results and discussion.

I would like to point out the following comments that may help authors to improve their work.

Major comments:

Upwelling is frequently observed in the east coastal area in the northern hemisphere under the summertime monsoonal (poleward) wind. This means that upwelling can be a major contributor for the chlorophyll a blooming event. Enhancement of vertical mixing associated with the strong wind is also an important process for the local nutrient budget. In the beginning of event E06, temperature decreased in the whole water column which is due to the passage of typhoon as described in the text. However, the authors did not mentioned it as a possible governing mechanism for the blooming event. The documents by the National Institute of Fisheries Science of Korea show that July 2, July 11 and July 23-29, 2013 were the period of low temperature warning in the east coast of Korea including the study area. These periods are coincident with the blooming events. Thus, it must be carefully re-analyzed for the driving mechanism by using all available data, though no clear evidence for upwelling phenomena is shown in temperature data except E07 event in Figure 7. It would be better to show analytically whether the ESROB buoy site, i.e., the distance from the coast, is suitable to monitor the summertime coastal upwelling event.

Minor comments:

Line 76. Please provide the general width of the alongshore current, if possible.

Line 105. Please provide the source for precipitation data.

Line 144. '$\sim$ inducing strong equatorward (before E01)'. Both salinity and temperature increased sharply, especially in the lower layers just before E01 in Figure 5. This is not consistent with the effect of the equatorward flow.

Line 153. ' equatorward currents developed before E04'. Temperature increased in the whole water column before E04 under the equatorward current as well as before E01.

Line 176. 'a high surface CF zone in the northern area'. Is it a general feature in summer only? Why CF is high in the northern area?

Line 237. '4.2. Other mechanisms'. It would be better to add more discussion.

Lines 275, 281, 286. Check ‘Park et al., 2018’. Park and Nam, 2018 ?

Line 297, ‘80%, 8 of 10’. It may not be conclusive.

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