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Comment on egusphere-2022-547

Yuntao Wang (Referee)

Referee comment on "Satellite-detected sea surface chlorophyll-a blooms in the Japan/East Sea: magnitude and timing" by Dingqi Wang et al., EGUsphere, https://doi.org/10.5194/egusphere-2022-547-RC1, 2022

The study of Satellite-detected sea surface chlorophyll-a blooms in the Japan/East Sea: magnitude and timing by Wang et al. applied satellite observations over 20 years for identifying the chlorophyll bloom in the Japan/East Sea. By comparing with all the major physical parameters, e.g., wind, eddies and fronts, they find the impact of solar radiation and stratification are actually more important to determine the bloom of phytoplankton. The presented information is interesting, but the scientific soundness should be further confirmed. In particular, the satellite observations are limited in the surface, but the nutrient supply at subsurface is also predominant. A major revision is necessary for presenting the credibility of their conclusion and improving the description.

Major comments:

- The dynamical dependence between interannual index and regional chlorophyll should be further investigated. It is not surprising to find some statistically significant correlation, but the underlying mechanisms should be further explored. The authors tried to present a dependence between ENSO and chlorophyll bloom via the intensity of Tsushima Warm Current. If this is the case, the intensity of the current should be added for presenting a comprehensive relationship. In particular, the lag among ENSO, warm current, front, chlorophyll is of great interesting.
- Highly similar method has been formerly applied in other oceans, e.g., the South China Sea. But they presented more robust features with intercorrelation at seasonal/semiseasonal and interannual variability that the authors should consider to implement in this study. In particular, the seasonal/semiseasonal cycles are usually prominent for all the parameters (Legaard and Thomas, 2006) and a significant correlation can be achieved all the time by adding a lag. It is more meaningful to explore the dependence at interannual variability after removing the

seasonal/semiseasonal cycle.

- The authors should explore some better manner to present the seasonal signal in Figure 6. The information is very straightforward and multiple images are not necessarily needed to show the features. Similar method has been applied in the Kuroshio Extension region that can be applied here as well where similar patterns can be combined.
- Most of the correlations are very small between blooms and interannual index (Figure 10) that are not statistically significant. The figure can be moved into supplementary material.

Minor comments:

- In Figure 1, though it is a schematic image, the Subpolar front is not corrected presented and please refer to Xi et al. (2022) for a more realistic pattern. Kuroshio is wrongly spelled. Change the 'Pacific' to horizontal direction.
- Figure 2: Reduce the size of dots. List the equation of linear regression in the figure.
- Figure 3: Reduce the color range from 0.2~5 to 0.3~3 or some others that can emphasize the difference. Add the contour of 0.55 as a reference like Figure 4.
- Figure 4: Reduce the color range from 0.1~10 to 0.1~6 or some others that can emphasize the difference.
- The same colorbars should be applied respectively for spring bloom / fall bloom in Figure 11.
- Define PAR in the abstract at their first appearance. And it was wrongly spelled as PAT.

Reference:

Legaard, K. R., and Thomas, A. C. (2006), Spatial patterns in seasonal and interannual variability of chlorophyll and sea surface temperature in the California Current, J. Geophys. Res., 111, C06032.

Xi, J. et al. (2022) Variability and Intensity of the Sea Surface Temperature Front Associated with the Kuroshio Extension. Front. Mar. Sci. 9:836469.