

Comment on “Multiple mechanisms for chlorophyll-a concentration variations in coastal upwelling regions: A case study east of Hainan Island in the South China Sea” - the revised version, by Junyi Li et al.

The manuscript is improved. However, the authors should make some revisions before the manuscript can be published. My comments are listed below.

1. In section 3.2 the explanation about the insignificance of trends, from line 260 to 262, should appear after line 280 or at the end of the section, because not only the trends of UI and WSC but also the trends of upwelling area and UEH SST are not statistically significant. Besides, please change “HEU” in Fig. 4b to “UEH”.
2. Line 312-313: -0.3 is the correlation coefficient between wind UI and Chl-a from 2003-2012 or 2003-2020? If for 2003-2012, how about the relationship between wind UI and Chl-a from 2013-2020?
3. Line 494-500: "During El Niño events, the weakened southwesterly monsoon suppresses ocean upwelling (Jing et al., 2011; Kuo et al., 2008). The reverse occurs during La Niña events. Jing et al. (2011) found that the significantly strengthened wind stress of the 1998 summer induced strong upwelling, and the Chl-a concentration was much higher than in any of the other years. Yu et al. (2020) showed that the interannual variability indicates low levels of Chl-a southeast of Vietnam during El Nino years because of the weakened southwest monsoon. These previous studies conclude that the weakening sea surface wind appears in El Nino years”. Note that in Jing et al. (2011)’ work, they demonstrated that the wind stress strengthened in the continental shelf of the northern South China Sea (SCS), particularly in the eastern Hainan Island - the same area of this study, in summer 1998 associated with the 1997-1998 El Nino, not La Nina. They also indicated that due to the anticyclonic atmospheric circulation anomaly over the SCS and northwest Pacific, the local southwesterly winds in the northwestern SCS are dramatically enhanced, whereas the southwesterly winds are weakened in the central and western SCS (Fig. 8 in their work). Jing et al., (2011) is contrary to the conclusion drawn in the last sentence as well as the author’s response (1) to the fifth major comment.
4. Regarding the author’s response (2) to the fifth major comment, note that Fang et al. (2006) and Huynh et al. (2020) also showed that the spatial variability of the monsoon winds under the El Nino (La Nina) effect is not in-phase in subregions of the SCS. In Hong and Zhang (2021), station C is located off the northeastern Leizhou Peninsula; Fig. 2b in their work shows that the trends of the annual mean wind speed between station C and the eastern Hainan are out-of-phase from 1979 to 2019, decreasing trends at station C, whereas increasing trends in eastern Hainan. A strong increasing trend of positive wind stress curl was detected in eastern Hainan during 1979-2019 (Fig. 10). Additionally, Hong and Zhang (2021) also indicated that the surface wind speed in eastern Hainan has a positive correlation with ENSO (Figs. 8-9).