## Phytoplankton blooms along the Kuroshio due to the Large Meander

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The Kuroshio Large Meander (LM) is known to be highly aperiodic and can last from 1 to 10 years. The stationary cold core formed between the Kuroshio and the southern coast of Japan off Enshunada and approaching warm saltier water on the eastern side of the LM changes the local environment drastically, many commercially valuable fish species distribute differently from the no-LM period, impacting local fisheries. Despite this importance of the LM, the influences of the LM for low trophic levels such as phytoplankton and zooplankton have been still unclear. In this study, satellite daily sea surface chlorophyll data are analyzed in relation to the LM. The results show blooming (positive anomaly of the chlorophyll a concentration) along the Kuroshio path during LM periods, 2004-2005 and 2017-2019, from upstream (Shikoku) to downstream (140ºE). These blooms are started by the triggering meander in both LM periods. Even though the blooming pattern along the Kuroshio region in both LM periods was different, similar positive anomaly patterns emerge inside the meander's trough, suggesting that submesoscale eddy' s restratification of MLD helps the primary production with upwelled nutrients along the Kuroshio. It turns out that there was no relation between the MLD and the wind stress over the large meander regions. Furthermore, we found a strong relationship between the minimum distance of the Kuroshio axis on a designated station located in Cape Shiono Misaki (St-A) and mean chlorophyll-a anomaly, indicating that every time Kuroshio axis detaches from the shore, mean chlorophyll-a anomaly rises. Also, this tendency seems depending on the Kuroshio recirculation strength off Shikoku.