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Interactive comment on “Inter-annual variation of chlorophyll in the northern South China Sea observed at the SEATS Station and its asymmetric responses to climate oscillation” by K.-K. Liu et al.

Anonymous Referee #1

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Using the satellite and SEATS station data, the authors carefully analyzed the seasonal and interannual variability of Chl in the northern SCS and attributed the asymmetric responses of Chl to the water column structural differences. During El Nino events, weaker wind leads to shallower pycnocline, less nutrients in the euphotic zone and thus suppressed phytoplankton production, whereas during La Nina events weakened throughflow leads to thicker surface layer, which results in less effective nutrient pumping (Fig. 13) and thus damped recoveries of Chl. The analyses are rather straightforward and the paper is well written. However, the paper could be strengthened if the followings were included.

1. Is it possible to conduct a quantitative analysis of the surface layer heat budget to

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determine how much reduction of the throughflow can account for a deepening of the thermocline by 20-30m in January 2000? Is there any contribution from the stronger wind mixing (positive wind anomaly) at the time? 2. Are there concurrent profiles of Chl or phytoplankton biomass as the T/S and NO₃ in Figure 13 so it can be sure that nutrient pumping is ineffective during La Nina events despite the stronger wind rather than that the surface Chl concentration is diluted because of deeper mixing? 3. P6917, line 1-10: It is suggested that the peak Chl value in December 1999 was due to a cyclonic eddy, but this isn't supported by SSHA (Fig. 9c). Is there any other evidence to show the occurrence of a cyclonic eddy near SEATS station at that time?

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