



# Chlorophyll Concentration Dynamics in the Southern California Bight

Craig Gelpi

Catalina Marine Society, craig@catalinamarinesociety.org

A long-term time series of MODIS data is used to investigate chlorophyll dynamics in the Southern California Bight. In addition to the annual variations expected in temperate seas, we look for influences of the Channel Islands and episodic events, such as Autumnal high-speed winds (Santa Anas). For Santa Monica Bay, a secondary maximum is found to occur around September and October. The relation between winds, SST and chlorophyll for this secondary maximum is explored.



Figure 1. Study site

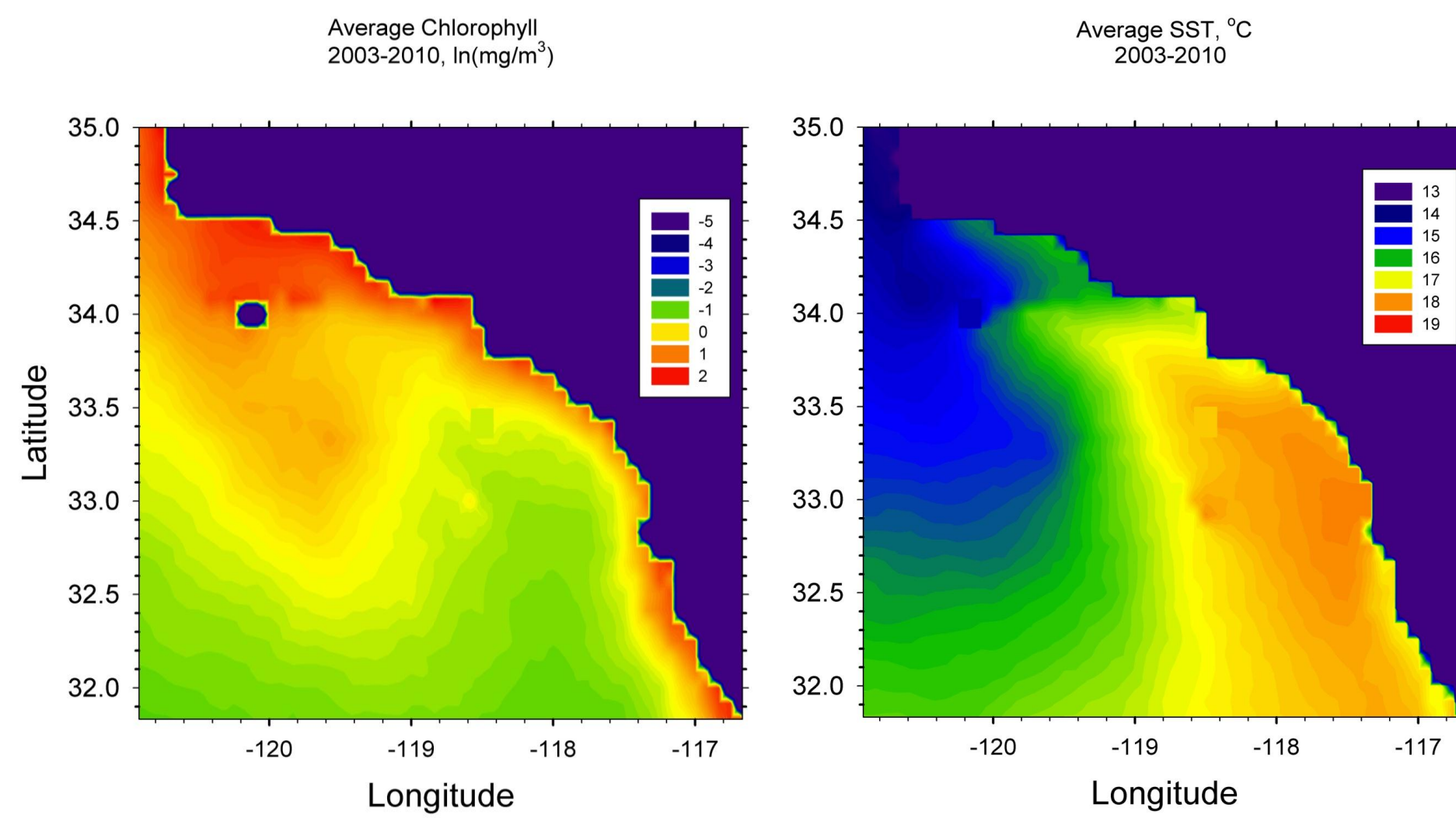


Figure 2. 8-year mean Chl & SST

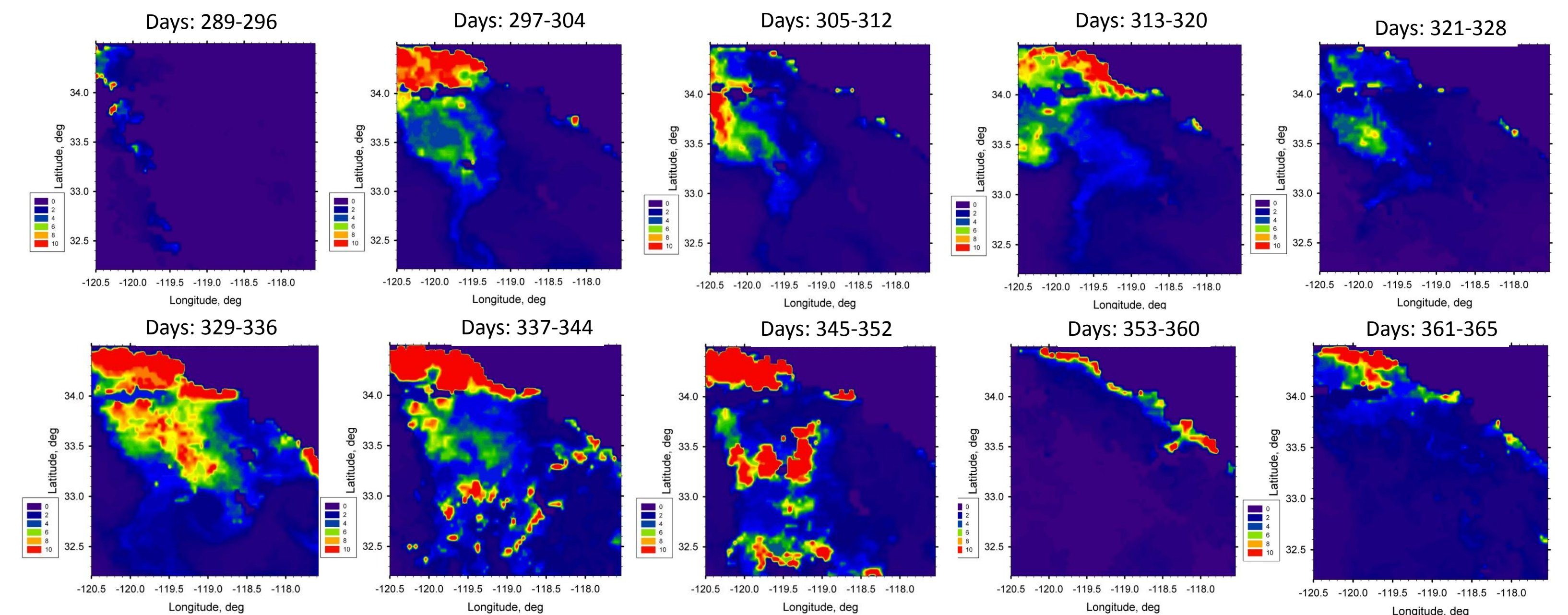


Figure 6. 8-day, 4-km sampling of 2010 Chl event, suggesting event originates in Santa Barbara Channel.

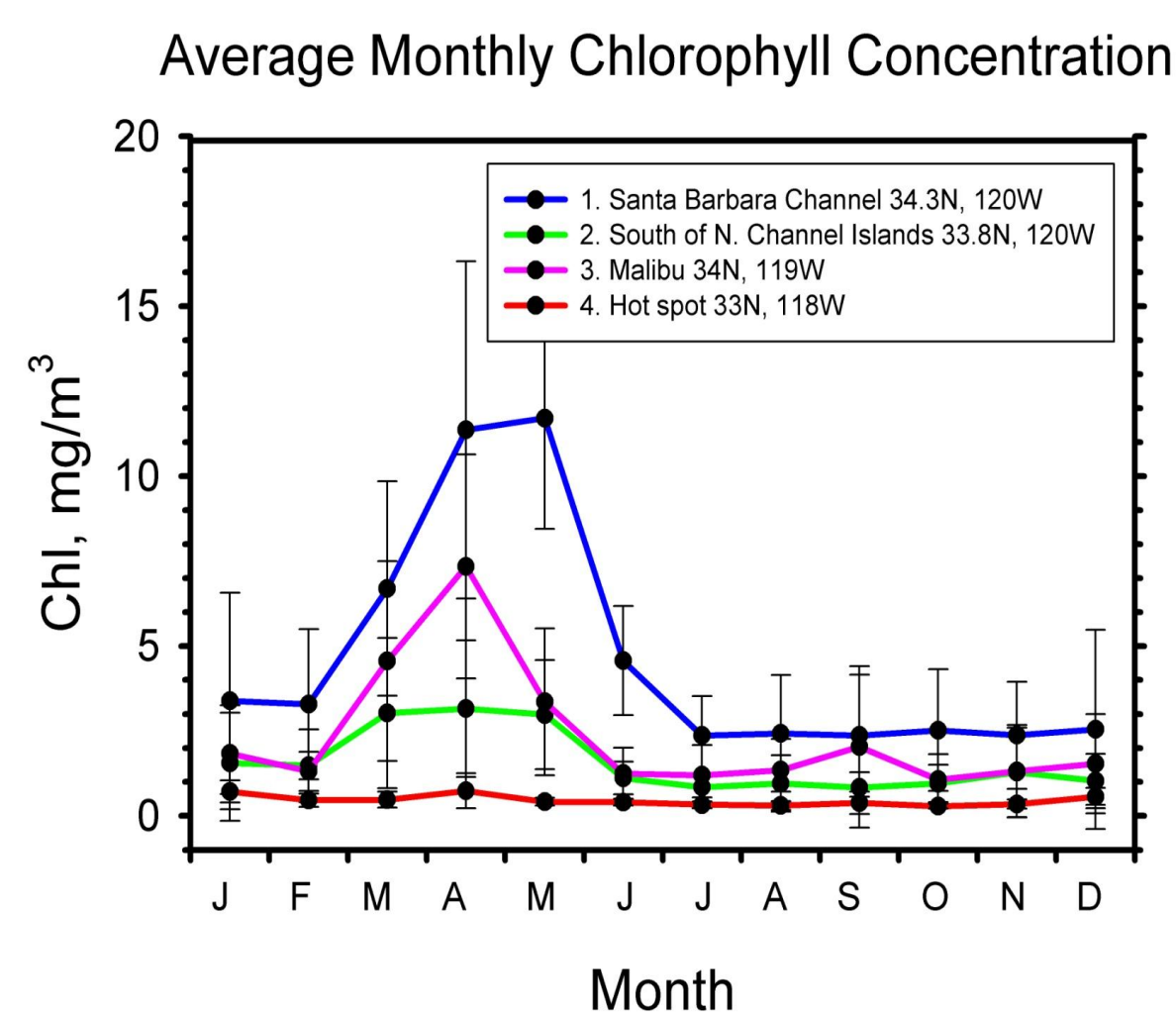
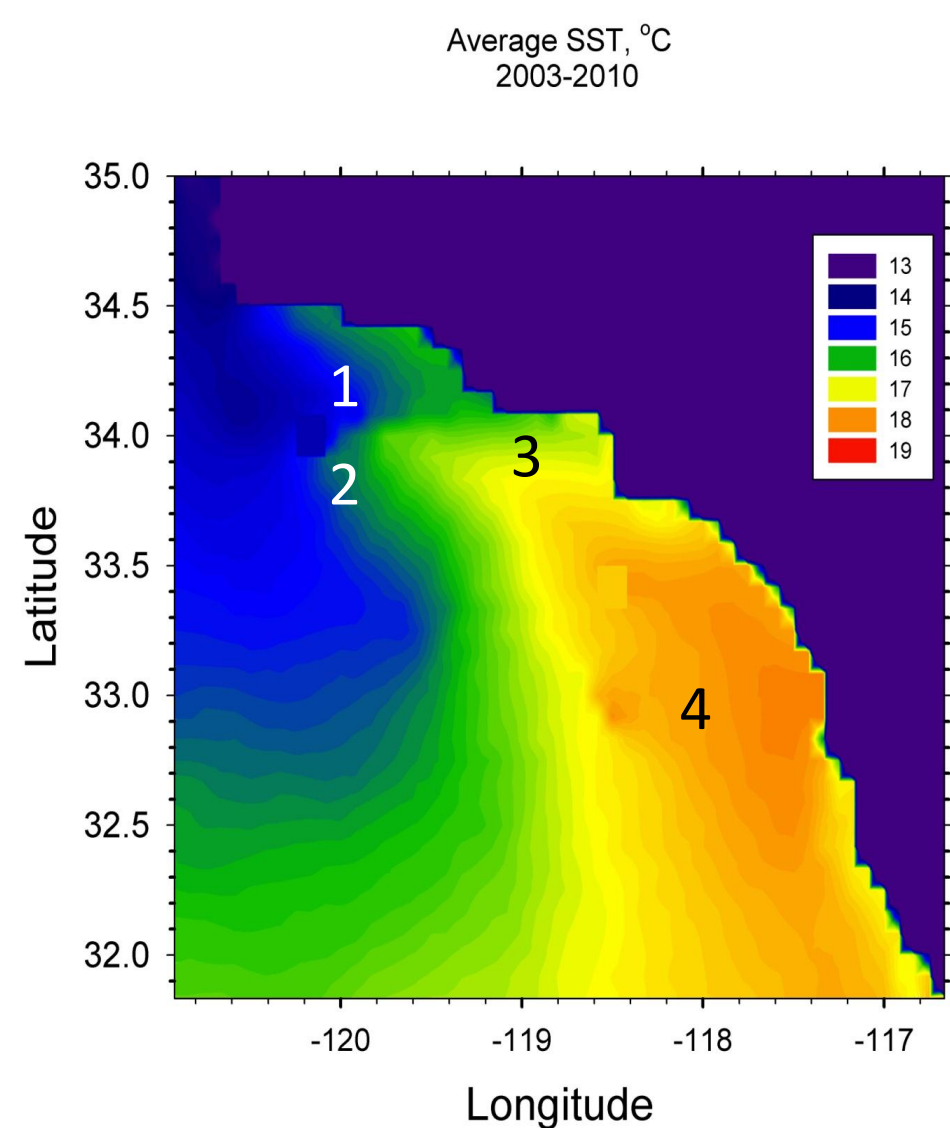


Figure 3. Monthly Chl averages for 4 sites.

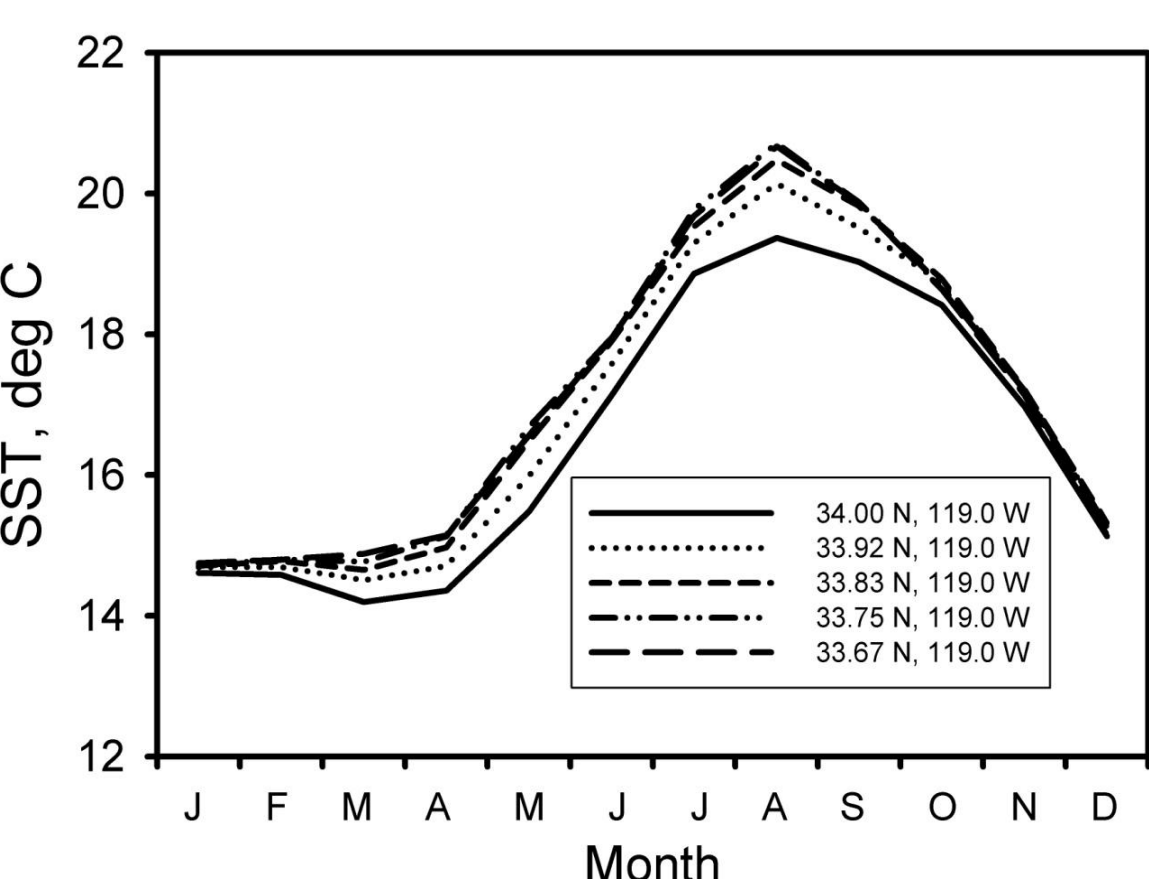
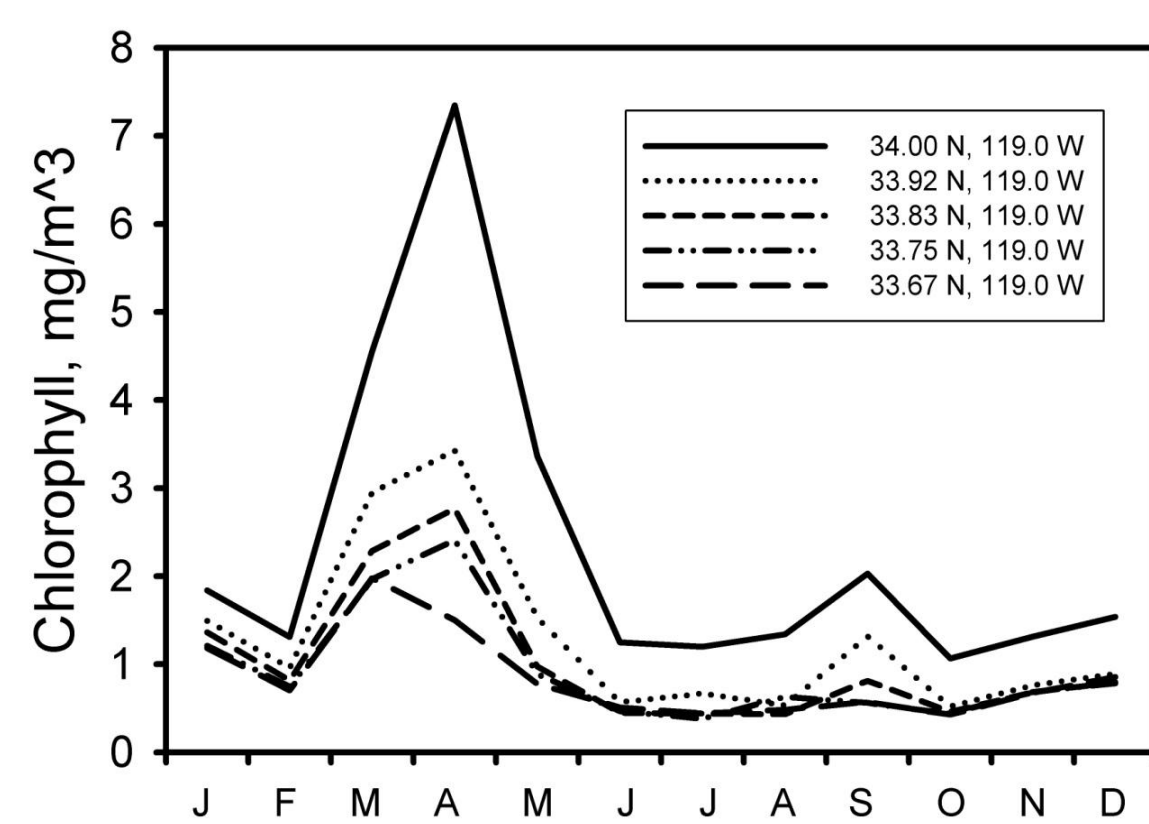


Figure 4. Latitudinal Chl diminishes with distance from shore at Malibu.

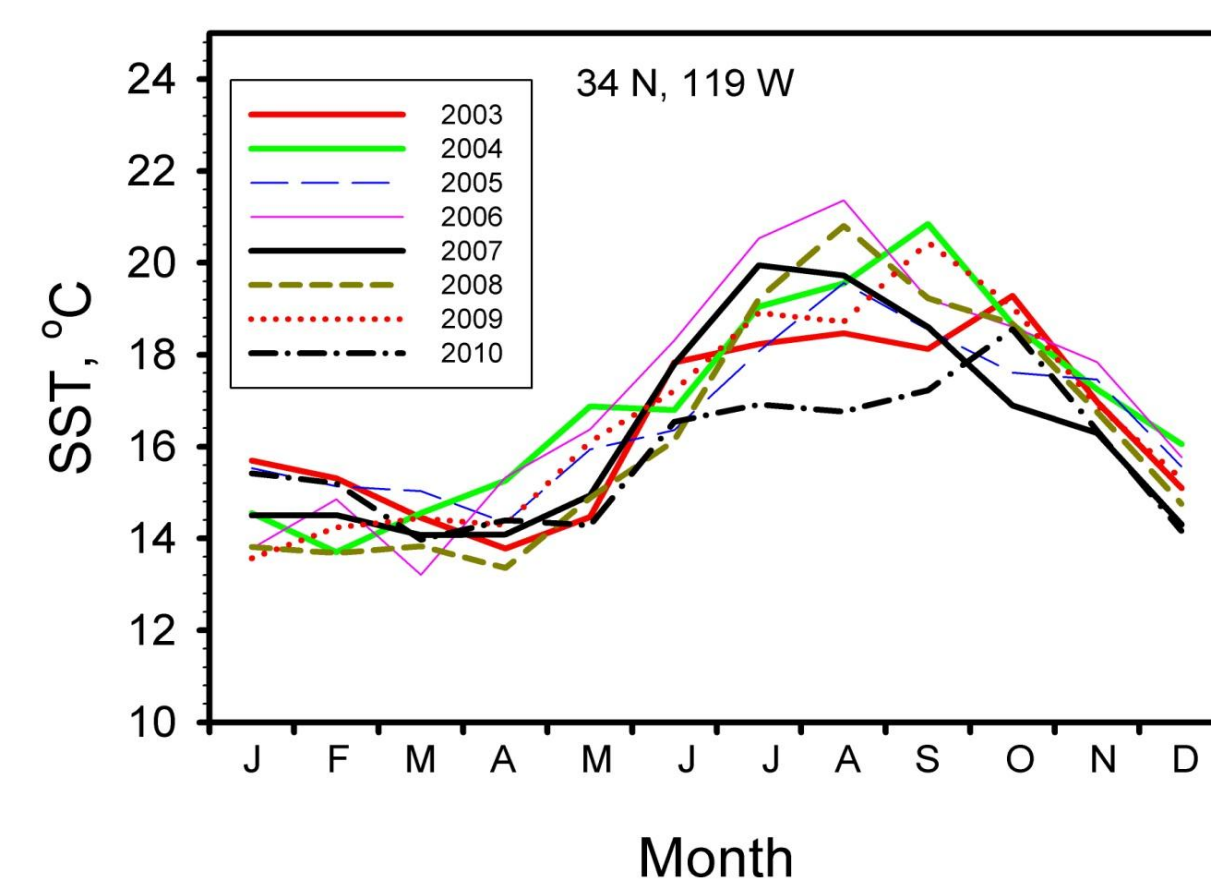
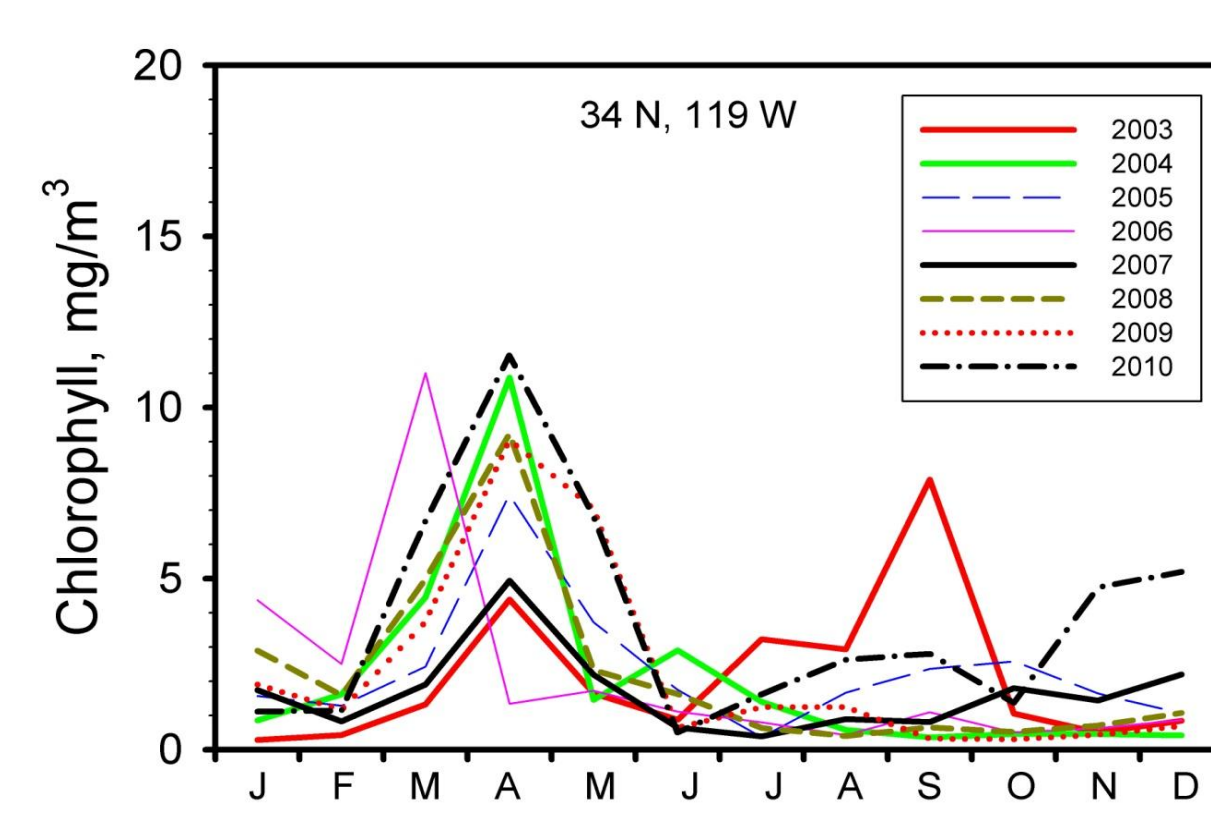


Figure 5. The fall /winter Chl average is dominated by events in 2003 and 2010.

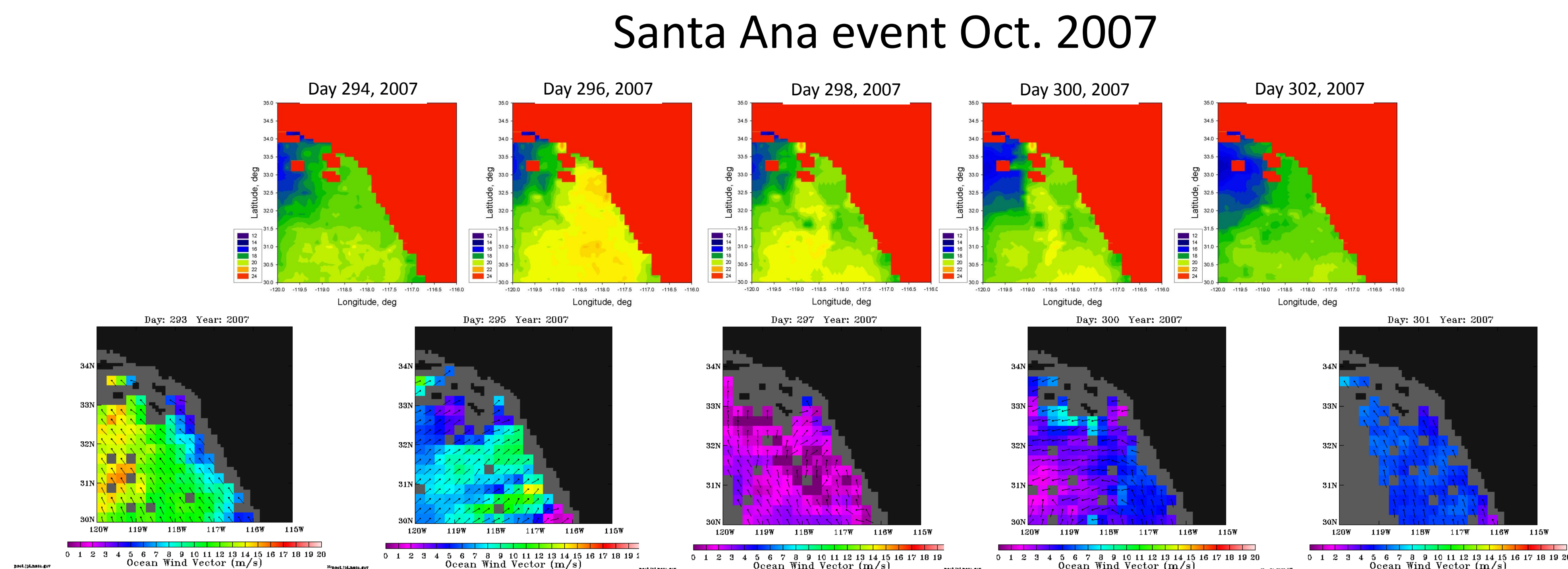


Figure 7. AVHRR SST (top row), satellite-derived surface wind (middle) and 8-day, 4-km Chl sampling (bottom) during time of strong Santa Ana winds. Signal associated with winds is seen in SST at Malibu. No significant Chl event is detected.

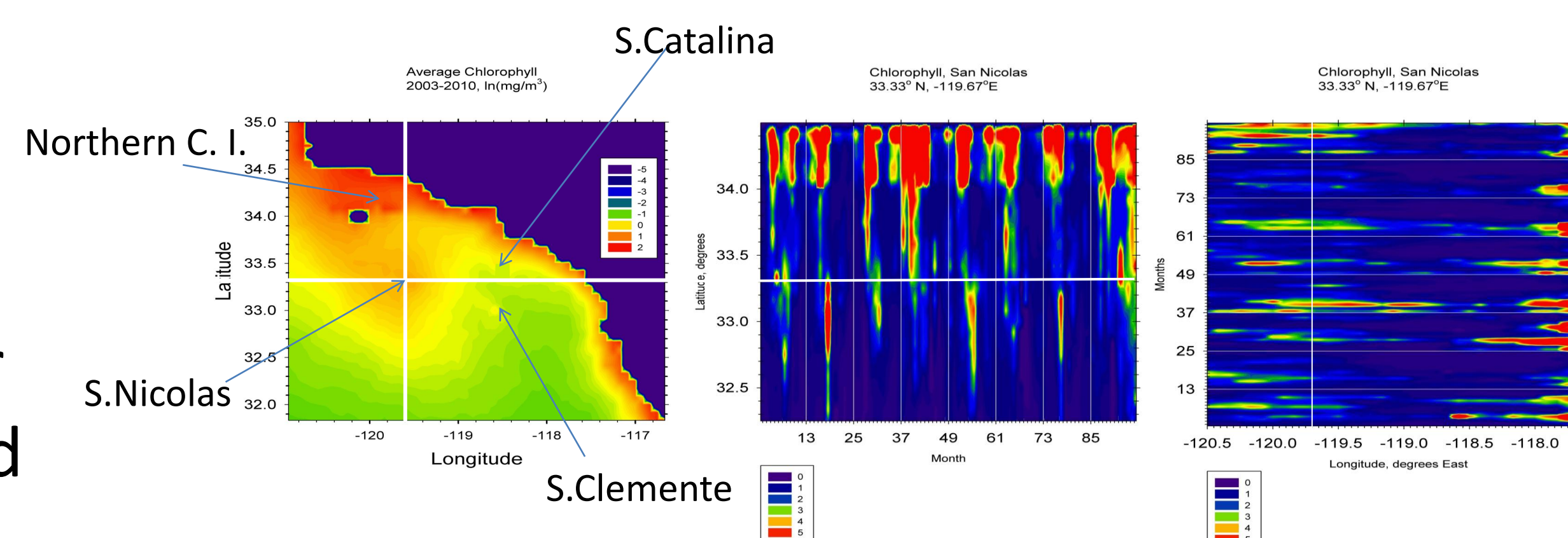


Figure 8. Latitude and longitude chlorophyll profiles through San Nicolas versus time.

## Summary

1. Major chlorophyll events in the Fall appear to originate in the Santa Barbara Channel.
2. Chlorophyll events associated with Santa Ana winds are insignificant.
3. Many Channel islands are associated with chlorophyll signatures.