

Title: Interannual variation in phytoplankton concentration and community in the Pacific Ocean

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Climate events such as El Niño have been shown to have an effect on the biology of our ocean. Because of the lack of data, we still have very little knowledge about the spatial and temporal effect these climate events may have on biological marine systems. In this study, we used the NASA Ocean Biogeochemical Model (NOBM) to assess the interannual variability in phytoplankton community in the Pacific Ocean between 1998 and 2005. In the North Central and Equatorial Pacific Ocean, changes in the Multivariate El Niño Index were associated with changes in phytoplankton composition. The model identified an increase in diatoms of ~33 % in the equatorial Pacific in 1999 during a La Niña event. This increase in diatoms coincided with a decrease of ~11 % in cyanobacteria concentration. The inverse relationship between cyanobacteria and diatoms concentration was significant ($p < 0.05$) throughout the period of study. The use of a numerical model allows us to assess the impact climate variability has on key phytoplankton groups known to lead to contrasting food chain at a spatial and temporal resolution unachievable when relying solely on *in-situ* observations.

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