

Wave Induced Turbulence Effect on Oceanic Biogeochemistry

Research Motivation

- ❖ Role of surface waves in the upper ocean layer mixing processes.
- ❖ Turbulent mixing effect of waves on nutrients upwelling and distribution, and how it affects the phytoplankton population.
- ❖ Non-inclusive of surface wave mixing in ocean climate models although its effect is substantial.

Research Objectives

- ❖ Analysis of global Chlorophyll (Chl-a) concentration trend from 1998-2018.
- ❖ Study the effect of wave induced turbulence on oceanic biogeochemistry using MOM5 coupled with Wave Watch III.
- ❖ Establish a correlation between changing wave climate and ocean color.

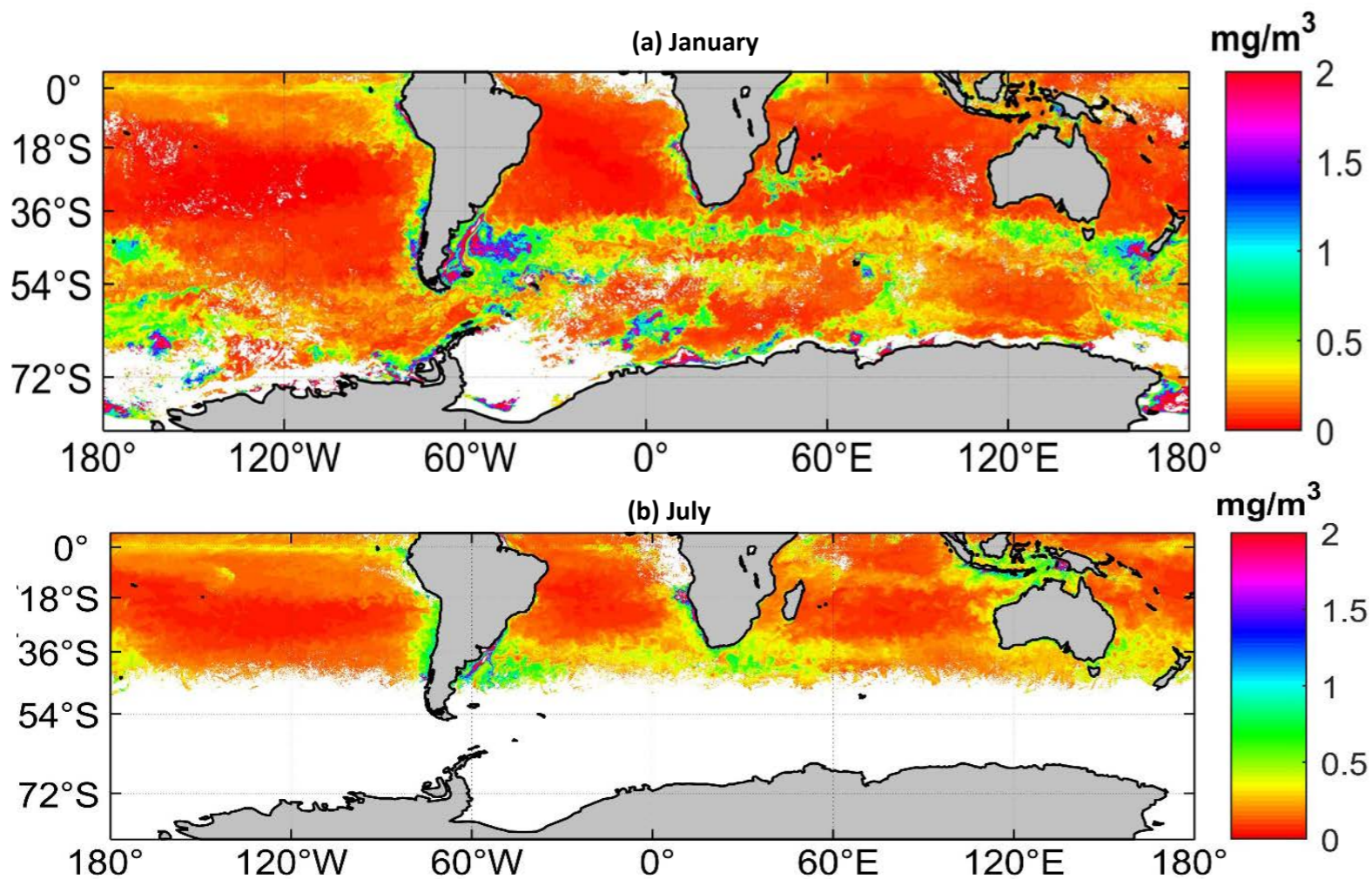


Fig.1: Monthly Chlorophyll-a concentration in the Southern Hemisphere (a) January, (b) July

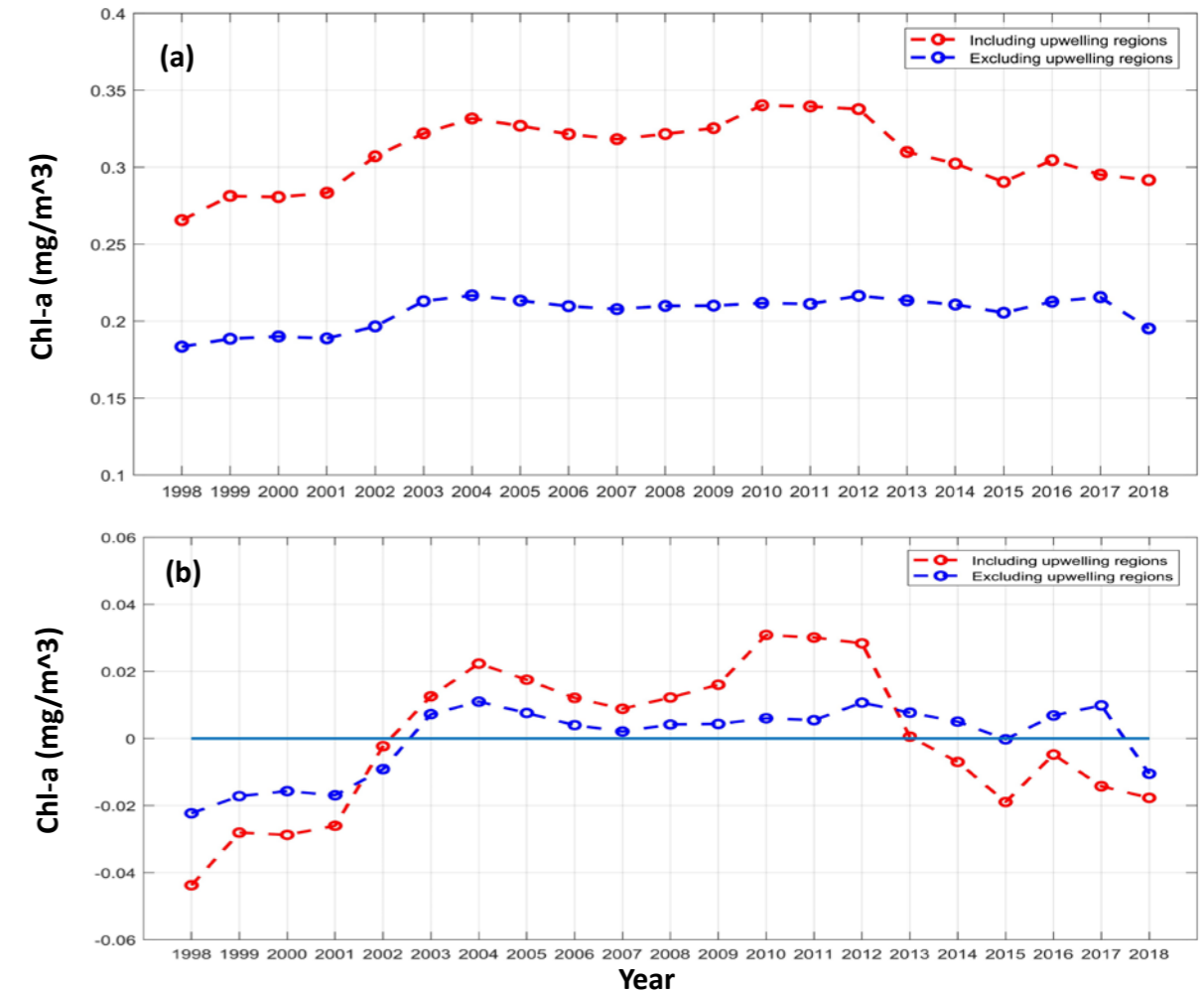


Fig.2: (a) Global Chl-a concentration trend (1998-2018), (b) Difference of yearly Chl-a values from mean Chl-a value averaged over 1998-2018.

Preliminary Results:

- ❖ The global Chl-a concentration trend from 1998 to 2018 is shown in Fig. 2(a) and difference of yearly Chl-a from mean Chl-a averaged over 1998-2018 is shown in Fig. 2(b). From the plot, we can observe decreasing trend of Chl-a calculated including upwelling regions (red dotted lines) from 2004 to 2018.

More Information

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