SURFACE CHLOROPHYLL AND ROSSBY WAVES IN THE SOUTH ATLANTIC OCEAN

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Enhancement of surface chlorophyll-a by Rossby waves has been recently detected by several authors in ocean color data. The present study focuses on the South Atlantic ocean at mid-latitudes to detect such Rossby waves in satellite data (ocean color and altimetric data).The weekly SeaWIFS data and combined TOPEX/ERS data sets over the 3 years 1998-1999-2000 are used. With a wavelet method, wavelengths (around 500 km) associated to Rossby waves are extracted both in chlorophyll and sea level anomaly data. The observed chlorophyll anomaly can originate from different processes such as for instance : injection of nutrients into the euphotic zone and/or shoaling of a deep chlorophyll maximum (DCM) by the baroclinic disturbances.

Using in situ chlorophyll profiles representative of the studied area, the absorption and scattering coefficients are computed for the water column and used in a model simulating the radiative transfer equation. The reflectance spectra obtained in the surface layer is used to compute chlorophyll concentration through the standard remote sensing algorithm OC4. Different scenarios are tested by artificially shifting the DCM and remotely-sensed chlorophylls are computed in each case. The vertical shift of DCM by Rossby waves in this area can be detected by SeaWIFS and could potentially explained the observed satellite chlorophyll enhancement at wavelength around 500 km.