Using Scatterometer Winds to Predict Potential Productivity in Eastern Boundary Current Regions

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Abstracts

The coastal upwelling regions associated with the Eastern Boundary Currents (EBC) are characterized by very high primary productivity and contribute disproportionately for their small size to global carbon fluxes and fisheries. Various relationships between wind speed and ecosystem productivity have been proposed, ranging from linear increases of primary production and Ekman transport to optimal wind speeds for fish survival. Although intuitively valid, simple relationships tend to fail as more data become available. This is due in part to the role of mesoscale wind events and their timing. This study is part of an ongoing comparison of the four major coastal upwelling regions which utilizes satellite observations of wind and chlorophyll. Both the strength and the pattern (for example the number of calm periods) of wind forcing measured by NSCAT are compared with primary production estimated from chlorophyll concentrations measured by OCTS and contrasted with predictive relationships.