CHLOROPHYLL CONCENTRATIONS IN RESPONSE TO MONSOONAL CHANGES WEST COAST OF LUZON, PHILIPPINES

KARL HEINZ SZEKIELDA
Hunter College
and
Graduate Center Earth and Environmental Sciences, City University of New York

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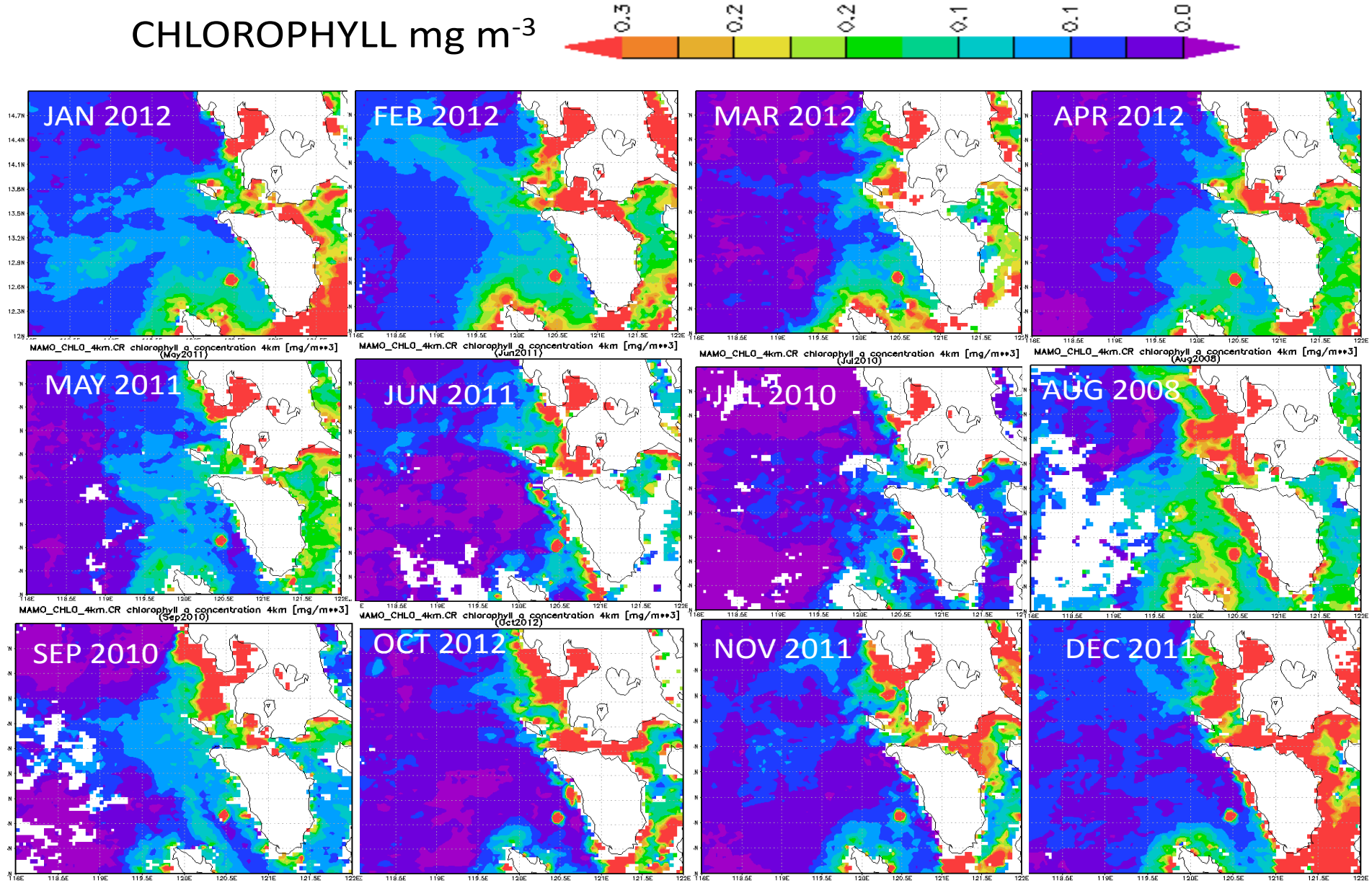
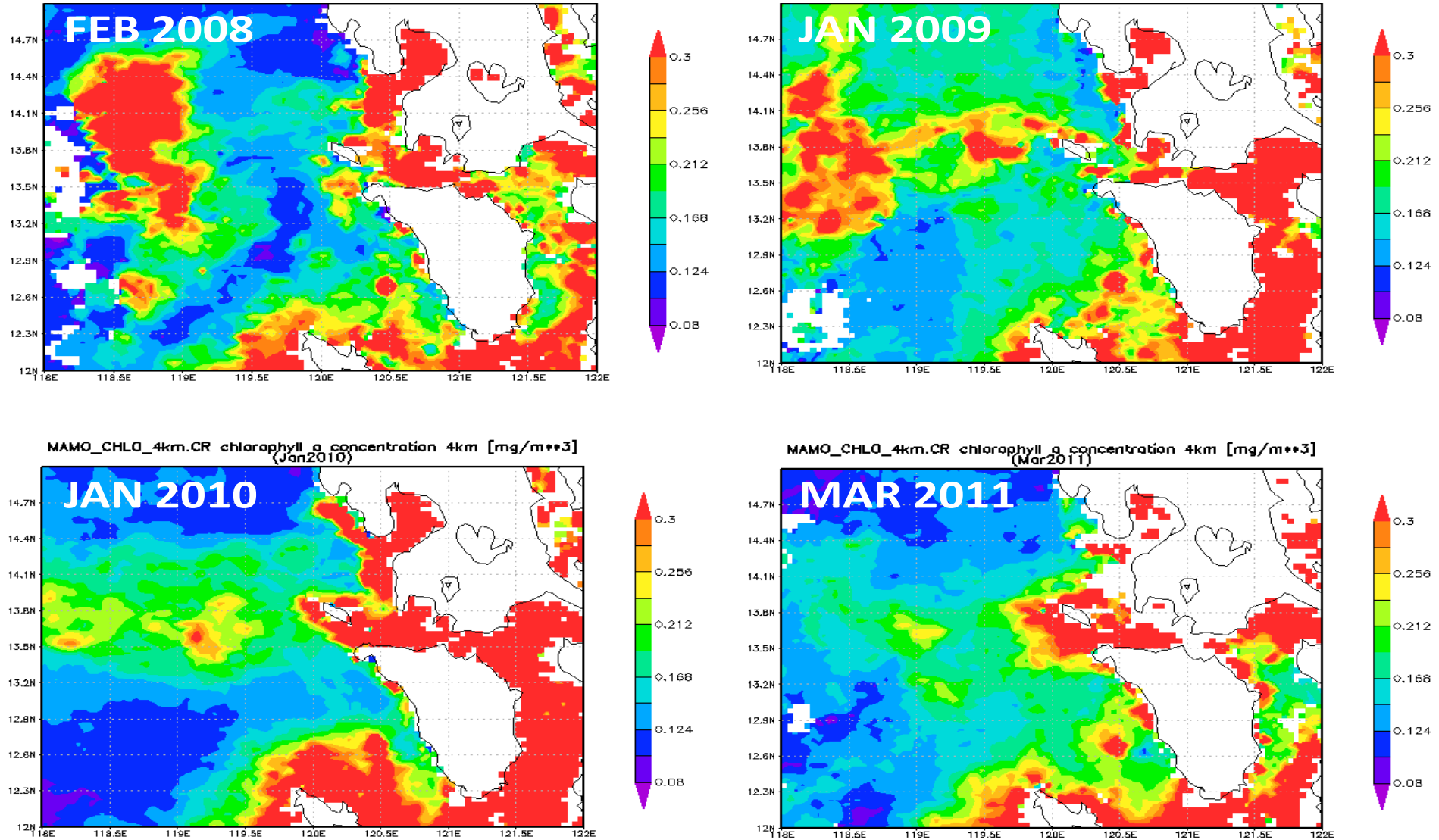
OUTLINE

This study investigated monthly fluctuations of satellite derived chlorophyll concentrations in relation to ocean surface currents that were retrieved from the Ocean Surface Current Analyses Real Time (OSCAR) System in the region off the island of Luzon. An objective was to detect changes in chlorophyll patchiness in response to surface flow The distribution of chlorophyll suggests that part of the enhanced chlorophyll concentration was a result of advected water from Manila Bay and the transport of water through the Verde Island Passage. The circulation at around 150 N was rather weak in December but in January a strong west component developed. The evolution of flow reversal was evident during the investigated period that eventually led to an anticyclonic water movement in March 2010. The corresponding chlorophyll distribution and its patchiness are interpreted in connection with the changes in the circulation due to episodic wind surges that might be responsible for offshore transport of water masses with high chlorophyll values, and a fast response of the biological system to the reversal of flow.

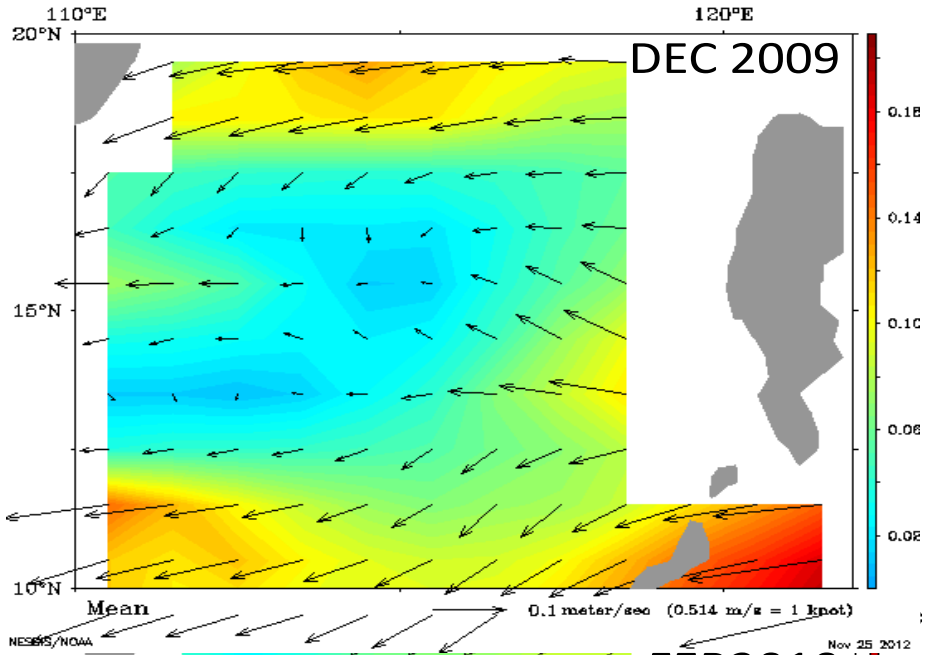


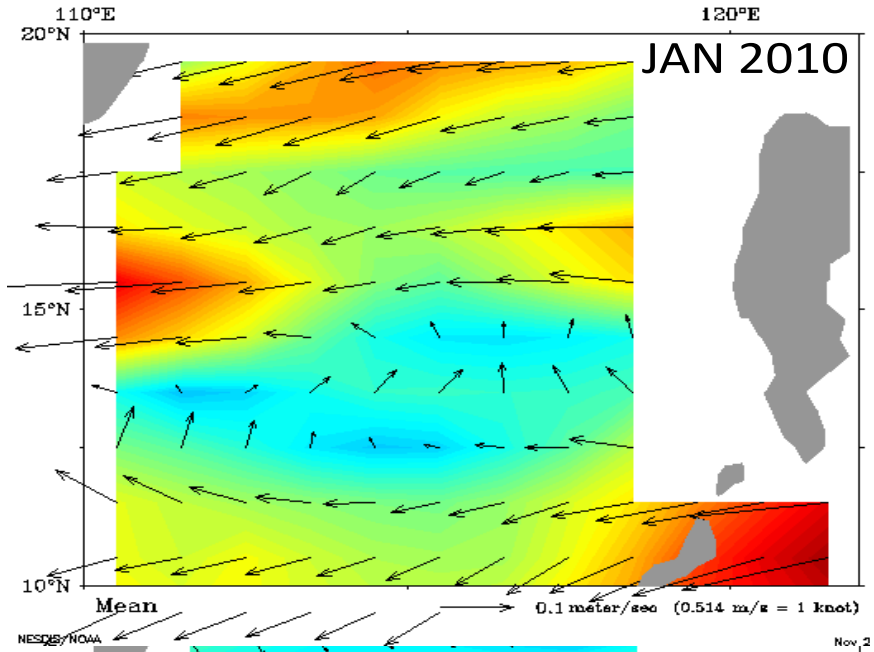
MONTHLY CHLOROPHYLL CONCENTRATIONS IN THE PHILIPPINE SEA

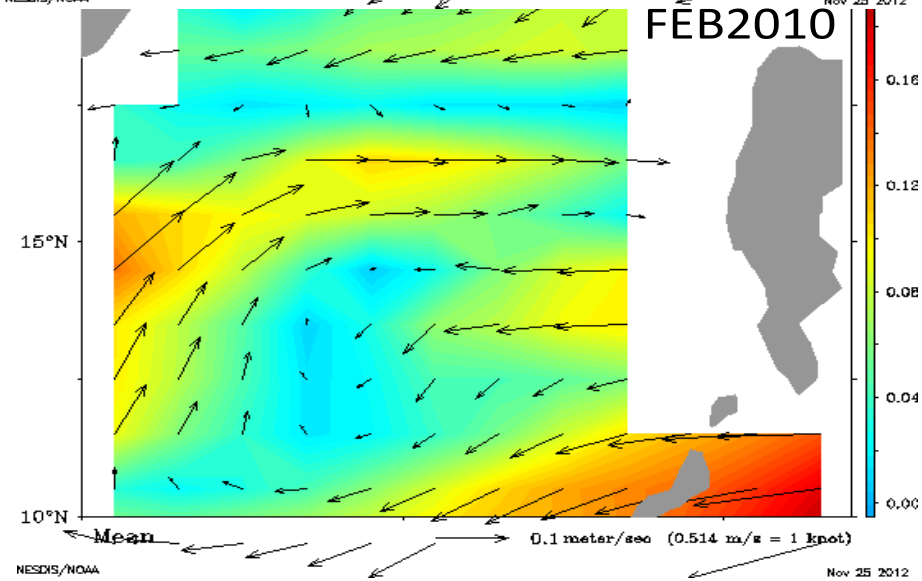
The color bar has a threshold level at 0.3 mg m-^{3}. Manila Bay has close to 30 mg m-^{3}.

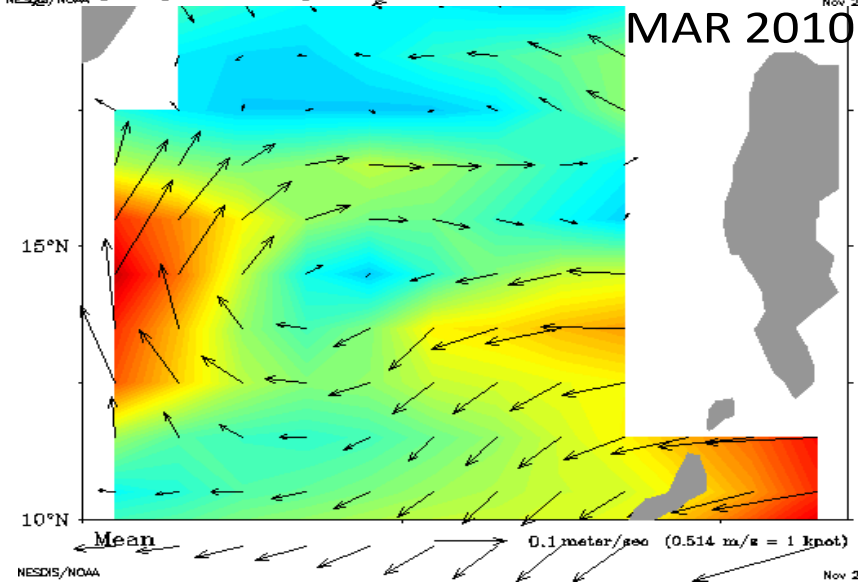


OFFSHORE CHLOROPHYLL PATCHINESS









MONTHLY MEAN CURRENTS BASED ON OSCAR FROM DECEMBER 2009 TO MARCH 2010

CONCLUSIONS

- In December 2009, the circulation at around 150N was rather weak but in January a strong west-component was recognizable. The evolution of flow reversal was evident in March that eventually led to an anticyclonic circulation;
- The impact of flow direction on the biological system, as described in terms of chlorophyll, is interpreted in connection with the changes in circulation;
- The December and January currents signify westward transport away from the regions around the western coasts of Mindoro and Luzon and transport of water through the Verde Island Passage;
- Reversal in circulation explains rather low concentration of chlorophyll in the offshore region and is a result of eastward transport of water from the South China Sea that can be regarded as low in nutrients as well as in biomass;
- The circulation reverses rapidly and the biological system responds accordingly quickly to the changes.