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Toward a satellite-based upwelling index for the West African Upwelling: a preliminary study

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Upwelling areas are the most productive regions of the World oceans and the part of the wealth of adjacent countries rely on the resulting intense fishery activity. The inter-annual variability of the biological productivity is significant and affects countries. To understand the mechanisms ruling this variability is thus important. In addition fish recruitment typically follows the phytoplankton bloom induced by the wind-driven upwelling by a few months. Near real time monitoring of the upwelling intensity is therefore of interest for a cost-effective planning of the fishery-related activity.

At present standard upwelling indexes for the monitoring of coastal upwelling are based on estimate of the wind intensity or wind stress intensity (Ekman transport) along the coast. More complex indexes include the estimate of the Sea Surface Temperature (SST) and/or the wind-driven vertical turbulence. Among the several satellite-based remote sensing of the ocean circulation, altimetric and infrared data are the most suitable to monitor the variability of the surface circulation. In particular for the upwelling phenomenology, (wind-induced) geostrophic coastal currents could be a priori monitored. The availability of satellite estimates of the Chl content can be used for testing the effectiveness of using altimetry data with respect to wind and SST anomalies.

Here we propose investigate the possibility of improving our monitoring capability of the upwelling intensity combining different satellite-based informations and modelling data. Focus on the relationship existing between the oceanic response and the

wind intensity also from remote locations.

The study is done in the context of the CNES-NASA ANETUS Project and EU AMMA Project.