



Case study 5: Ocean Model Circulation Operational Validation



Summary

Operations such as seismic surveys require good knowledge of local currents, especially off the Northern coast of Brazil, where the North Brazil current system wreaks havoc. In this case study, an ocean general circulation model velocity field is validated on a daily basis through the use of satellite-based ocean color data.

Issues and Needs

Marine operations such as drilling or seismic surveying require a good knowledge of local currents, especially for planning deep-water interventions or flume deployment.

A 2D/3D vision is necessary when a synoptic understanding of the dynamics is required. This can only be provided by models. However, the quality of models needs to be controlled by EO data.

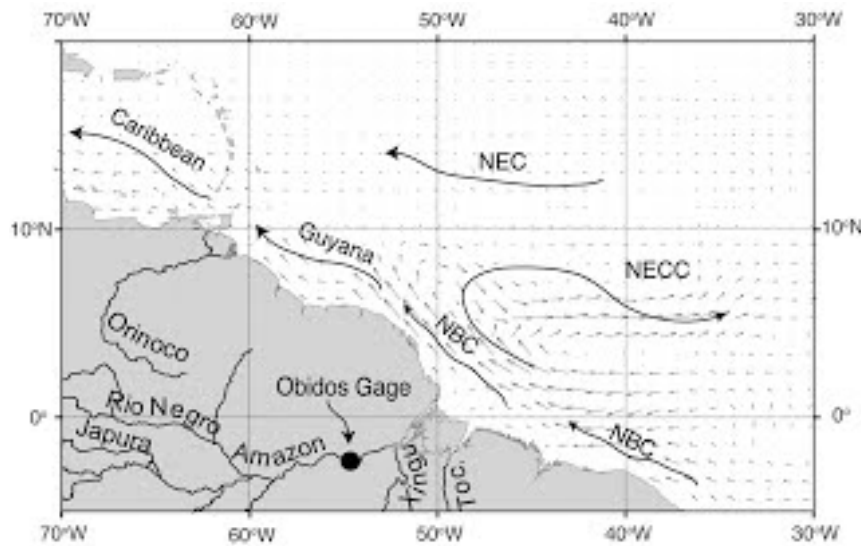


Figure 1: North Brazil Current System



Solution

EO ocean color data is to a certain extent a passive tracer. The qualitative information contained in the data allows CLS to trace the principle dynamic features in some region of the world where the open ocean productivity is low. This is the case in the North Brazil current system, where primary productivity is predominantly coastal.

CLS superimposes EO data with model streamlines to see if the large scale circulation within the model is in keeping with the dynamic observed.

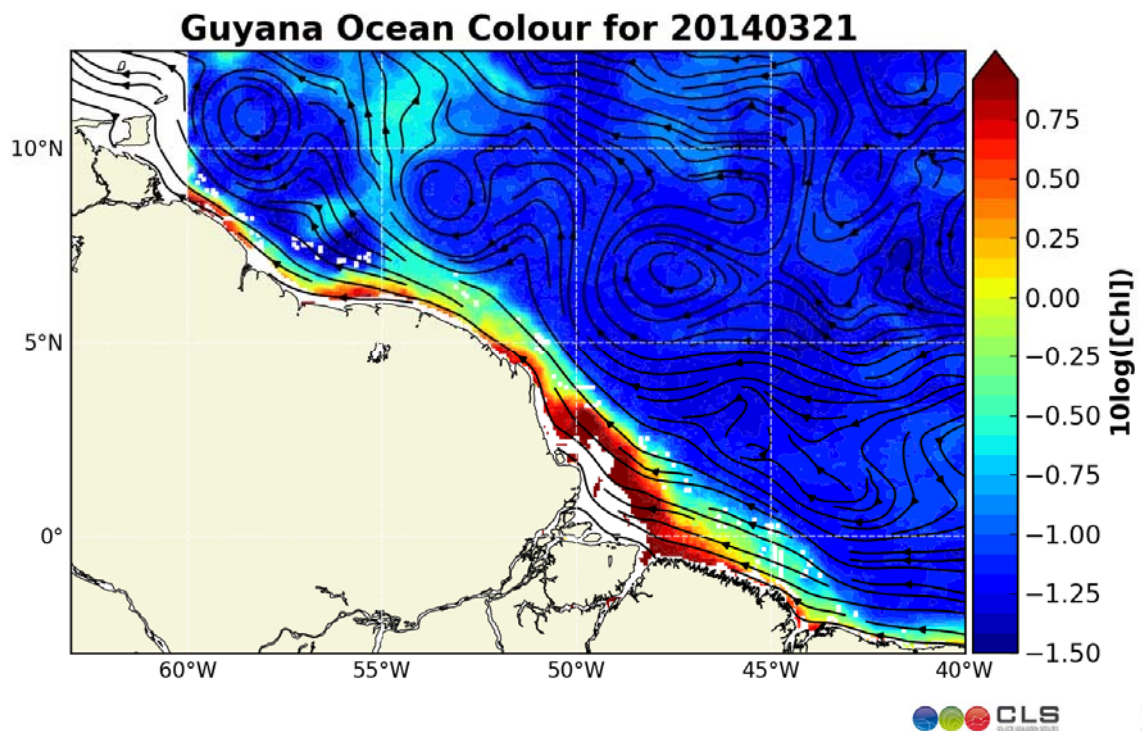


Figure 2: Ocean model current streamlines overlaid on EO ocean colour data

Results and perspectives

CLS produces maps on a daily basis allowing operation manager to quickly gauge the quality of the model currents.

These show whether or not the export of coastally produced Chlorophyll match the flow fields calculated from model data.



With at least a year worth of data, operations managers have an indication of the seasonal variability in the model quality.

Related Info

CLS has over 25 years of experience in delivering data and services to customers all over the world. With a staff of 470, in France and abroad, CLS offers services in environmental monitoring, maritime security, and management of marine resources to a broad range of professionals including government, industry and the scientific community, and maintains an operational center with expert support 24/7. Since 2001, CLS has developed services for the oil & gas industry based on its built-in expertise on data collection, radar imagery or numerical modelling. For the EO4OG Project, CLS leads a consortium composed of METEO GROUP and NERSC. Tullow Oil kindly supports the team as a consultant.

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