C-CORE 2.10 Monitoring of chlorophyll-a, productivity and harmful algal blooms (HAB)

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Challenge

Challenge ID	C-CORE_OFF2.10
Title	**Monitoring of chlorophyll-a , p roductivity and harmful algal blooms (HAB)**
Challenge originator:	
General Description	
What data/products do you use?	Ship-based sampling (plankton tows), MODIS and SeaWifs ocean colour Ship-based measurements; satellite images
When do you use this kind of dataset?	To determine timing and magnitude of productivity and HABs in the area - would help with assessing change in ocean climate on a regional basis that would be reflected in environmental effects monitoring (EEM) data around the operation without causal linkage
What are your actual limitations and do you have a work around?	EEM data is generally collected around production platforms without a broader spatial or temporal environmental context. If changes in productivity or biota are detected around the site, it may not be clear whether it is a human induced effect or if it reflects an independent regional shift in ocean conditions. Data is sparse and SeaWifs is offline. To collect all these environmental data would require extensive ship surveys which are time consuming and expensive
Needs and expectations on EO data	Ocean colour imagery Satellite imagery to detect features such a productivity (colour), SSH, temperature, winds, waves, fronts, etc.
Challenge classification	
Pre license	3
Exp.	3
Dev.	3
Prod.	3
Decom.	3
Geographic context/ restrictions	– Falkland Islands, South China Sea, Myanmar, Morocco / Western Sahara
Topographic classification / Offshore classification	Ocean
Activity impacted /concerned	Possible reduction of environmental liability
Technology Urgency	Immediately (0-2 years)
Information requirements	
Update frequency	Daily-weekly Daily-seasonal (Morocco / Western Sahara)

Temporal resolution	Daily-weekly Daily-seasonal (Morocco / Western Sahara)
Spatial resolution	100m 1-100m (Morocco / Western Sahara)
Data quality	Medium to high
Data Coverage and extent	Regional
Example format	Ocean colour imagery
Timeliness	Within a month As close to real-time as possible
Existing standards	RPS Energy. 2009. *Environmental Impact Assessment for Offshore Drilling The Falkland Islands.* Report prepared for Rockhopper Exploration PLC. DanLing Tang, Hiroshi Kawamura, Tran Van Dien, MingAn Lee. 2004. *Offsho re phytoplankton biomass increase and its oceanographic causes in the South China Sea.* Marine Ecology Progress Series. Vol. 268: 31-41. Jing Yu, Dan-Ling Tang, Im-Sang Oh, and Li-Jun Yao. 2007. *Response of Harmful Algal Blooms to Environmental Changes in Daya Bay, China* . Terr. Atmos. Ocean. Sci., Vol. 18, No. 5, 1011-1027. Patidar, B. 2006. *Application of remote sensing and GIS in the analysis of environment of Bay of Bengal* . MSc., Dissertation, Barkatullah University, Bhopal(MP)- National Institute of Oceanography, Goa, India Pelegrí, J.L. et al. 2005. *Coupling between the open ocean and the coastal upwelling region off northwest Africa: water recirculation and offshore pumping of organic matter* . Journal of Marine Systems, Volume 54, Issues 1–4, February 2005, Pp. 3-37 Available online at: http://www.sciencedirect.com /science/article/pii/S0924796304002027

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