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Oceanography of West Madagascar

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During six week survey (August – October 2009) in Western and Northern coast of Madagascar, the R/V 'Dr. Fridtjof Nansen' has carried out a study of the pelagic ecosystem. In collaboration with Agulhas & Somali Current Large Marine Ecosystems project (ASCLME) and South West Indian Ocean Fisheries Project (SWIOFP), the aim of the survey was to establish the physical, chemical and biological characteristics of the Western Madagascar shelf region as a whole.

Along selected hydrographical transects, a total of 182 CTD stations were conducted and ranged to a maximum of 3000 m depth. Water samples were also collected with Niskin bottles at predefined depths. A Seabird 911plus CTD was used to obtain vertical profiles of temperature, salinity and oxygen.
As results, along the west and south coast of Madagascar, the shelf is narrow and widen slightly along the north-west coast. In all ten transects the isotherms showed stratified waters from the coast to offshore. A maximum salinity layer was observed at subsurface in all transects. Dissolved oxygen had a maximum at around 500 m depth in all transects. Low fluorescence values were observed in the upper 150-200 m, with maximum values in the range of 0.14-0.22 μg/l at intermediate layers. The conditions were consistent along and between the transects, with more variation observed at transect 9. No upwelling was observed along the western coast.
The surface temperature (5 m depth) increased from 22˚C in the south to 26˚C in the north. The horizontal distribution of surface salinities showed homogenous conditions with values between 35.4psu (south) and 35.0 psu (north). Also starting from the coast to offshore, both the surface temperatures and surface salinities showed homogenous patterns.