MIT vane measurements from R/V Oceanus cruise OC449-03 in the Coastal transect between Cape Verde and Mauritanian coast in 2008 (SIRENA project)

Website: https://www.bco-dmo.org/dataset/3479
Version: 11 May 2011
Version Date: 2011-05-11

Project
» Sources of Iron to the EasterN tropical Atlantic (SIRENA)

Program
» Ocean Carbon and Biogeochemistry (OCB)

Contributors	Affiliation	Role
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Dataset Description

MIT Vane Sample Log
Note: These data collected only on cruise OC449-03

Data Processing Description

BCO-DMO Processing Notes
Generated from original spreadsheet file: "MITVane_OC449-3_samplelog.xls" contributed by Phoebe Lam
BCO-DMO Edits
- Parameter names modified to conform to BCO-DMO convention
- cruise_ids added to the data
- date reformatted to date as YYYYMMDD
- time reformatted to time as HHMM
- Lat/Lon inserted from station log

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Data Files

File
MIT_Vane.csv (Comma Separated Values (.csv), 1.27 KB) MD5:05c0ffb3c0a3dbb038adf1310e0188bb Primary data file for dataset ID 3479

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Parameters

Parameter	Description	Units
cruise_id	SERENA Cruise Id	text
station	Station Number	integer
cast	Cast Number	integer
date	Station Date	YYYYMMDD
time	Station Time	HHMM
lat	Station Latitude (South is negative)	decimal degrees
lon	Station Longitude (West is negative)	decimal degrees
Vane	Vane Number	integer
goal_depth	Goal depth	meters
wire_out	Wire out	meters
actual_depth	Actual depth determined using Vemco pressure sensor (usually on Vane 1)	meters

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Instruments

Dataset-specific Instrument Name	MIT Vane
Generic Instrument Name	MIT Vane

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Deployments

OC449-03

Website	https://www.bco-dmo.org/deployment/58663
Platform	R/V Oceanus
Start Date	2008-09-08
End Date	2008-09-18
Description	R/V Oceanus Voyage #449, Leg III was a Coastal transect between Cape Verde and the Mauritanian coast (17N/24.5W to 20N/17.3W). The main scientific objective was to test the hypothesis that the continental margin of northwest Africa provides a significant subsurface supply of iron to the open eastern tropical Atlantic. The planned scientific activities include CTD casts, In Situ Water Pump casts for large volume water collection, Gravity Coring, and Aerosol sampling. Scientific personnel: Dr. Phoebe Lam, Chief Scientist, Woods Hole Oceanographic Institution Dr. Henrieta Dulaiova, Woods Hole Oceanographic Institution Mr. Steven Pike, Woods Hole Oceanographic Institution Mr. James Saenz, Woods Hole Oceanographic Institution Dr. Aron Stubbins, Old Dominion University Ms. Hongmei Chen, Old Dominion University Dr. Edward Michael Perdue, Georgia Institute of Technology Mr. Nelson Green, Georgia Institute of Technology Mr. Péricles Silva, Instituto Nacional de Desenvolvimento das Pescas (INDP) Dr. Anibal Medina, Instituto Nacional de Desenvolvimento das Pescas (INDP) Mr. Alexander Dorsk, Woods Hole Oceanographic Institution WHOI cruise planning synopsis> Cruise information and original data are available from the NSF R2R data catalog.

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Project Information

Sources of Iron to the EasterN tropical Atlantic (SIRENA)

Website: http://www.whoi.edu/sbl/liteSite.do?litesiteid=24492

Coverage: Tropical North Atlantic, focusing on a Cape Verde to Mauritanian Coast transect

We will test the hypothesis that the continental margin of northwest Africa provides a significant subsurface supply of iron to the open eastern tropical Atlantic that supplements dust.

We will test our continental margin hypothesis with a wintertime visit to the new Tropical Eastern North Atlantic Time-Series Observatory (TENATSO) near Cape Verde, located in the eastern tropical Atlantic about 850 km downstream of Mauritanian coastal upwelling, and a summertime cross-shelf transect from the Mauritanian coast to TENATSO with Ed Boyle, who is already funded to study iron in the tropical Atlantic. Our cross-shelf transect will closely examine the potential lateral source of Fe, and evaluate it against an atmospheric source of Fe. Our proposal takes advantage of a novel combination of measurements to uniquely determine the importance of lateral transport vs. dust inputs and subsurface remineralization as Fe sources to the surface ocean. These measurements include:

1) synchrotron x-ray analysis of particulate iron "hotspots": micron-size particles of iron detected with a synchrotron x-ray fluorescence microprobe have been previously shown to exhibit maxima at depths of continental margin input in two ocean basins. Further, the Ti:Fe ratios and the mineralogy of these particles of iron can distinguish dust-derived vs. continental margin iron. This is a qualitative tracer for a dust vs continental margin source of Fe.

2) radium isotopes: the major source of 228Ra into the study area is by diffusion from 232Th-bearing near shore and continental shelf sediments. An open-ocean to coastal transect of 228Ra activities will allow us to determine horizontal mass transfer. 228Ra will be used to quantify the lateral flux of iron from the shelf.

3) 234Th profiles: high vertical resolution 234Th profiles can be used to determine the depth of particle remineralization. This will be used to determine whether or not putative subsurface Fe maxima are from

remineralization of Fe-bearing particles.

TENATSO (Tropical Eastern North Atlantic Time-Series Observatory) time series station
16°N, 24°W, North-east of Mindelo, Sao Vicente, Cape Verde

TENATSO Home

TENATSO/SIRENA at Cafe Thorium/WHOI

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Program Information

Ocean Carbon and Biogeochemistry (OCB)

Website: http://us-ocb.org/

Coverage: Global

The Ocean Carbon and Biogeochemistry (OCB) program focuses on the ocean's role as a component of the global Earth system, bringing together research in geochemistry, ocean physics, and ecology that inform on and advance our understanding of ocean biogeochemistry. The overall program goals are to promote, plan, and coordinate collaborative, multidisciplinary research opportunities within the U.S. research community and with international partners. Important OCB-related activities currently include: the Ocean Carbon and Climate Change (OCCC) and the North American Carbon Program (NACP); U.S. contributions to IMBER, SOLAS, CARBOOCEAN; and numerous U.S. single-investigator and medium-size research projects funded by U.S. federal agencies including NASA, NOAA, and NSF.

The scientific mission of OCB is to study the evolving role of the ocean in the global carbon cycle, in the face of environmental variability and change through studies of marine biogeochemical cycles and associated ecosystems.

The overarching OCB science themes include improved understanding and prediction of: 1) oceanic uptake and release of atmospheric CO2 and other greenhouse gases and 2) environmental sensitivities of biogeochemical cycles, marine ecosystems, and interactions between the two.

The OCB Research Priorities (updated January 2012) include: ocean acidification; terrestrial/coastal carbon fluxes and exchanges; climate sensitivities of and change in ecosystem structure and associated impacts on biogeochemical cycles; mesopelagic ecological and biogeochemical interactions; benthic-pelagic feedbacks on biogeochemical cycles; ocean carbon uptake and storage; and expanding low-oxygen conditions in the coastal and open oceans.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0726367

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