Event log for GEOTRACES Southwestern Atlantic Transect cruise RSS/James Cook JC057 leg 3, March 2011 (GEOTRACES-SWAT project)

Website: https://www.bco-dmo.org/dataset/672511
Data Type: Cruise Results
Version: 1
Version Date: 2017-01-05

Project
» A Critical Test of the Nd Paleocirculation Proxy (Nd Paleocirculation Proxy)

Contributors	Affiliation	Role
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Abstract
Event log for GEOTRACES Southwestern Atlantic Transect cruise RSS/James Cook JC057 leg 3, March 2011 (GEOTRACES-SWAT project).

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Coverage

Spatial Extent: **N**:-2.6385 **E**:-27.9988 **S**:-49.5475 **W**:-52.6885
Temporal Extent: 2011-03-05 - 2011-03-26

Dataset Description

This dataset was created by extracting the event log from the JC057 cruise report.

Processing Description

BCO-DMO Processing notes:
- extracted from Cruisereport_Geotraces_leg3_250511.pdf
- added conventional header with dataset name, PI name, version date
- modified parameter names to conform with BCO-DMO naming conventions
- changed date format from dd-Mon-yyyy to yyyy-mm-dd

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Parameters

Parameter	Description	Units
cruise_id	cruise identifier	unitless
station	consecutive station number	unitless
cast	cast number	unitless
instrument	type of instrument used for event: UCC = Ultra Clean Cast; CTD25L = high volme 25 liter CTD; ISP = in situ pump	unitless
action	start or end of event	unitless
date	date formatted as yyyy-mm-dd	unitless
time	time of day formatted as HH:MM	unitless
lat	latitude; north is positive	decimal degrees
lon	longitude; east is positive	decimal degrees

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Deployments

JC057

Website	https://www.bco-dmo.org/deployment/672215
Platform	RRS James Cook
Report	http://dmoserv3.bco-dmo.org/data_docs/GEOTRACES/SWAT/JC057_eventlog/Cruisereport_Geotraces_leg3_250511.pdf
Start Date	2011-02-03
End Date	2011-06-03

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Project Information

A Critical Test of the Nd Paleocirculation Proxy (Nd Paleocirculation Proxy)

Coverage: SW Atlantic Ocean

Extracted from the NSF award abstract: Neodymium (Nd) isotopes are increasingly used in paleoceanographic studies as "quasi-conservative" water mass tracers. However, the limitations of this proxy are not yet fully understood. The proposed work aims to address this uncertainty by critically evaluating the behavior of Nd isotopes as tracers of water mass mixing. The project, led by researchers at Columbia University's Lamont-Doherty Earth Observatory, will analyze in-hand seawater and surface sediment samples collected along a meridional transect in the southwest Atlantic (0 to 50 degrees S) during a GEOTRACES cruise. The sample suite will be used to test 1) whether Nd isotope ratios deviate from expected values for mixing along circulation transport paths, 2) whether Nd isotopes behave quasi-conservatively away from continental margins, 3) whether seafloor features (e.g., continental shelf, volcanic seamounts) add significant external Nd to the system, and 4) whether the Southern Hemisphere wind zones impact Nd isotope values through aeolian deposition. The relationship between Nd isotopes in authigenic surface sediments and those in the overlying seawater will be calibrated for the first time. By testing an emerging tool in the study of past ocean dynamics, this research will enable a more accurate understanding of changes in the ocean-climate system. The project will support an early-career researcher and a graduate student. Undergraduate students will be involved through an NSF-supported summer internship program at LDEO.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1260514

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