Dates and locations of ODP from the R/V JOIDES Resolution cruises JRES-143, JRES-198, JRES-208 (OA Paleocene-Eocene project)

Website: https://www.bco-dmo.org/dataset/560752
Version: 2015-06-23

Project
» Establishing The Magnitude Of Sea-Surface Acidification During The Paleocene-Eocene Thermal Maximum (OA_Paleocene-Eocene)

Programs
» Science, Engineering and Education for Sustainability NSF-Wide Investment (SEES): Ocean Acidification (formerly CRI-OA) (SEES-OA)
» International Ocean Discovery Program (IODP)

Contributors	Affiliation	Role
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Dataset Description

This dataset contains metadata for select Ocean Drilling Program (ODP) cruises: cruise dates, site and hole locations, numbers and depths of the cores. They were obtained from http://iodp.tamu.edu/janusweb/coring_summaries/holetrivia.cgi

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Data Files

File
ODP_cruise_info.csv (Comma Separated Values (.csv), 7.01 KB) MD5:ca26e9ecaa98ed992be9fa340cea6404 Primary data file for dataset ID 560752

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Parameters

Parameter	Description	Units
cruise_id	cruise identification	unitless

site	station number	unitless
hole	drilling hole number	unitless
lat	latitude; north is positive	decimal degrees
lon	longitude; east is positive	decimal degrees
Arrival_Date	arrival at hole date	yyyy-mm-dd
year	year of arrival	yyyy
month	month of arrival	mm
day	day of arrival	dd
arrive_time	time of arrival	HHMM
depart_date	date of departure from hole location	yyyy-mm-dd
depart_time	time of departure	HHMM
Time_on_Hole	time duration at hole	days:HH:MM
Water_Depth	depth of water	meters
Core_Type	type of core: See list from the ODP Core Lab Cookbook (ver:2003-11)	unitless
Numbers_of_Cores	number of cores	cores
Total_Penetration	total length of core penetration	meters
Coring_Penetration	length of core penetration	meters
Drilled	length drilled	meters
Core_Recovered	length recovered	meters

Core_Recovered_pcent	percent of core recovered	percent
ISO_DateTime_UTC	Date/Time (UTC) ISO formatted	YYYY-mm-ddTHH:MM:SS[.xx]Z (UTC time)
yrday_utc	UTC day and decimal time. e.g. 326.5 for the 326th day of the year or November 22 at 1200 hours (noon).	unitless

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Deployments

JRES-143

Website	https://www.bco-dmo.org/deployment/560731
Platform	R/V JOIDES Resolution
Start Date	1992-03-18
End Date	1992-05-19
Description	Cruise objective: To address a number of problems concerning guyot development including: timing and causes of platform drowning, timing and amplitude of sea level changes, and seamount latitude changes. Drilling: In general, JOIDES resolution data can be found at the ODP/IODP data site hosted at TAMU: http://www-odp.tamu.edu/database/

JRES-198

Website	https://www.bco-dmo.org/deployment/521576
Platform	R/V JOIDES Resolution
Report	http://dmoserv3.whoi.edu/data_docs/OA_Paleocene-Eocene/Bralower_etal_2002_ODP_leg198_01_report.PDF
Start Date	2001-08-27
End Date	2001-10-23
Description	Cruise objective: To address the long-term climatic transition into and out of "greenhouse" climate and abrupt climatic events; to characterize changes in surface and deep waters, including vertical gradients of temperature, oxygenation, and corrosiveness. Drilling: In general, JOIDES resolution data can be found at the ODP/IODP data site hosted at TAMU: http://www-odp.tamu.edu/database/

JRES-208

Website	https://www.bco-dmo.org/deployment/560597
Platform	R/V JOIDES Resolution
Start Date	2003-03-06
End Date	2003-05-06
Description	Cruise objective: Provide a detailed history of paleoceanographic variations and characterization of depth-dependent changes in deepwater chemistry and circulation associated with episodes of early Cenozoic climate change including EECO, PETM, and EOGM. Drilling : In general, JOIDES resolution data can be found at the ODP/IODP data site hosted at TAMU: http://www-odp.tamu.edu/database/

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Project Information

Establishing The Magnitude Of Sea-Surface Acidification During The Paleocene-Eocene Thermal Maximum (OA_Paleocene-Eocene)

Coverage: global

Extracted from the NSF award abstract:

At projected rates of anthropogenic carbon emissions, the pH of the surface ocean is expected to decline by 0.3 pH units by the end of this century, and 0.7 pH units by 2300. The only other time the ocean might have experienced a similar change in pH in the past is during the Paleocene-Eocene Thermal Maximum (PETM; 56 Mya) as a consequence of a massive carbon release, which also warmed the planet. The mass of carbon released is estimated to have been as large as that projected for the future but over thousands of years rather than centuries, thus allowing for greater buffering of the saturation state of the surface ocean. Nonetheless, planktonic calcifiers and coral reefs both experienced significant reductions in diversity, likely in response to a combination of factors, including pH and carbonate saturation state. Efforts to quantify changes in carbonate chemistry, however, have relied on indirect methods, that is with numerical models of the carbon cycle constrained by observations of changes in ocean carbonate chemistry such as carbon isotopes and the distribution of carbonate sediments. In computing the mass and rate of carbon release, the models also simulate changes in ocean pH and saturation state. While the range of model estimates continues to narrow, testing has been limited by the lack of more direct information on ocean carbonate chemistry, specifically changes in the pH and/or carbonate ion concentration.

To address this deficiency, a team of scientists from the University of California at Santa Cruz, the Lamont-Doherty Earth Observatory of Columbia University, and the University of Hawaii are conducting a 3-year study to quantify changes in the sea-surface carbonate chemistry during the PETM. The project will focus on the application of two boron-based proxies, B/Ca and B isotopes as recorded in planktonic foraminifera, to quantify pH and possibly carbonate ion concentration. The team will develop detailed proxy records for a number of globally distributed locations, with the goal of establishing regional anomalies in surface ocean carbonate chemistry relative to longer-term trends. The data will be interpreted with numerical models utilizing information from laboratory-based calibration studies of modern foraminifera, and compared with plankton assemblage records. The results will also provide an independent means of testing model simulations of the rate and duration of carbon release, and ultimately the rise in atmospheric CO2.

Data from this project are published in:

Penman, D. E., B. Honisch, R. E. Zeebe, E. Thomas, J. C. Zachos. Rapid and sustained surface ocean acidification during the Paleocene-Eocene Thermal Maximum. Paleoceanography Volume 29(5),357–369, 2014. DOI: 10.1002/2014PA002621

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Program Information

Science, Engineering and Education for Sustainability NSF-Wide Investment (SEES): Ocean Acidification (formerly CRI-OA) (SEES-OA)

Website: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503477

Coverage: global

NSF Climate Research Investment (CRI) activities that were initiated in 2010 are now included under Science,

Engineering and Education for Sustainability NSF-Wide Investment (SEES). SEES is a portfolio of activities that highlights NSF's unique role in helping society address the challenge(s) of achieving sustainability. Detailed information about the SEES program is available from NSF (https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504707).

In recognition of the need for basic research concerning the nature, extent and impact of ocean acidification on oceanic environments in the past, present and future, the goal of the SEES: OA program is to understand (a) the chemistry and physical chemistry of ocean acidification; (b) how ocean acidification interacts with processes at the organismal level; and (c) how the earth system history informs our understanding of the effects of ocean acidification on the present day and future ocean.

Solicitations issued under this program:
NSF 10-530, FY 2010-FY2011
NSF 12-500, FY 2012
NSF 12-600, FY 2013
NSF 13-586, FY 2014
NSF 13-586 was the final solicitation that will be released for this program.

PI Meetings:
1st U.S. Ocean Acidification PI Meeting(March 22-24, 2011, Woods Hole, MA)
2nd U.S. Ocean Acidification PI Meeting(Sept. 18-20, 2013, Washington, DC)
3rd U.S. Ocean Acidification PI Meeting (June 9-11, 2015, Woods Hole, MA – Tentative)

NSF media releases for the Ocean Acidification Program:

Press Release 10-186 NSF Awards Grants to Study Effects of Ocean Acidification

Discovery Blue Mussels "Hang On" Along Rocky Shores: For How Long?

Discovery nsf.gov - National Science Foundation (NSF) Discoveries - Trouble in Paradise: Ocean Acidification This Way Comes - US National Science Foundation (NSF)

Press Release 12-179 nsf.gov - National Science Foundation (NSF) News - Ocean Acidification: Finding New Answers Through National Science Foundation Research Grants - US National Science Foundation (NSF)

Press Release 13-102 World Oceans Month Brings Mixed News for Oysters

Press Release 13-108 nsf.gov - National Science Foundation (NSF) News - Natural Underwater Springs Show How Coral Reefs Respond to Ocean Acidification - US National Science Foundation (NSF)

Press Release 13-148 Ocean acidification: Making new discoveries through National Science Foundation research grants

Press Release 13-148 - Video nsf.gov - News - Video - NSF Ocean Sciences Division Director David Conover answers questions about ocean acidification. - US National Science Foundation (NSF)

Press Release 14-010 nsf.gov - National Science Foundation (NSF) News - Palau's coral reefs surprisingly resistant to ocean acidification - US National Science Foundation (NSF)

Press Release 14-116 nsf.gov - National Science Foundation (NSF) News - Ocean Acidification: NSF awards $11.4 million in new grants to study effects on marine ecosystems - US National Science Foundation (NSF)

International Ocean Discovery Program (IODP)

Website: http://www.iodp.org/index.php

Coverage: Global

The International Ocean Discovery Program (IODP) is an international marine research collaboration that explores Earth's history and dynamics using ocean-going research platforms to recover data recorded in seafloor sediments and rocks and to monitor subseafloor environments. IODP depends on facilities funded by

three platform providers with financial contributions from five additional partner agencies. Together, these entities represent 26 nations whose scientists are selected to staff IODP research expeditions conducted throughout the world's oceans.

IODP expeditions are developed from hypothesis-driven science proposals aligned with the program's science plan *Illuminating Earth's Past, Present, and Future*. The science plan identifies 14 challenge questions in the four areas of climate change, deep life, planetary dynamics, and geohazards.

IODP's three platform providers include:

- The U.S. National Science Foundation (NSF)
- Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT)
- The European Consortium for Ocean Research Drilling (ECORD)

More information on IODP, including the Science Plan and Policies/Procedures, can be found on their website at http://www.iodp.org/program-documents.

A summary table with links to IODP datasets currently hosted on Zenodo (https://zenodo.org/communities/iodp) can be accessed using the following link: https://iodp.tamu.edu/database/zenodo.html

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1220554

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