



INTEGRATING DATA: A CASE STUDY FROM THE BCO-DMO PROJECT

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NOAA 2012 EDMC, University of Maryland



A LITTLE HISTORY . . .

Series of ocean research programs:

- Warm Core Rings Program (early 1980's)
- US JGOFS, US GLOBEC, WOCE programs
(1990 – 2004; US GLOBEC nearing completion)
- Ocean Carbon & Biogeochemistry (OCB; 2006)

BCO-DMO (created Fall 2006)

EVOLVING EXPECTATIONS

1

- 1980 Experiment data

2

- 1990 Project data

3

- 2000 Program data

4

- 2010 Global data

THE CHALLENGE

Oceanography, the global scale interdisciplinary study of complex natural systems, necessitates an information management system capable of providing access to a broad range of resources. BCO-DMO aims to be part of that system in which all ocean data are accessible.

MAIN OBJECTIVE



The BCO-DMO mandate is to provide data management support throughout a research project for investigators funded by NSF OCE Biological and Chemical Oceanography Sections or NSF OPP ANT Organisms & Ecosystems Program, with the goal of improving access to NSF funded research data.

BCO-DMO STAFF WORK IN PARTNERSHIP WITH PIs

- to create well-documented data sets from research programs involving a wide variety of sampling gear



BCO-DMO ~ THE GOAL

Our goal is to be part of a distributed, loosely federated system-of-systems in support of ocean science that relies on local and global partnerships and teams of data scientists, information managers, and data originators.

These collaborative teams will develop and use standards-based infrastructures and an informatics approach designed to ensure effective access to and permanent archive of research data.



COMPLEMENTARY SYSTEMS

Exchange between trusted, authoritative sources with overlapping content ...
e.g. BCO-DMO, R2R, NODC for cruise data

Rolling Deck to Repository (R2R)

Home About R2R Cruise Catalog News Contact Us

Cruise Catalog: OC404-01

Operator: Woods Hole Oceanographic Institution
Vessel: Oceanus

Cruise ID	Start Date	Start Port	End Date	End Port
OC404-01	2004-06-11	Woods Hole	2004-07-03	St. George's

OC404-01

OC404-01

BCO-DMO
Biological and Chemical Oceanography Data Management Office

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Database

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Data Access

- Geospatial access

Deployment: OC404-01

Map It

Deployment: OC404-01
Deployment synonyms: EDDIES 2004 Survey 1, OC404-1, OC404_S1
Coordinated deployments: WB0409
Platform: R/V Oceanus
Platform type: vessel
Start date: 6/11/2004
End date: 7/3/2004
Location: Sargasso Sea

Deployment report: http://ocb.whoi.edu/EDDIES/CRUISES/2004/OC404-1_Draft_Cruise_Report.pdf

Description

EDDIES 2004 Survey 1 cruise
Funded by: NSF OCE-0241310

Original cruise data may be available from the [NSF R2R data catalog](#)

- Datasets associated with this deployment
- Geolocations associated with this deployment
- People associated with this deployment



NOAA

NATIONAL OCEANOGRAPHIC
DATA CENTER (NODC)
UNITED STATES DEPARTMENT OF COMMERCE

OC404-01 cruise data are
permanently archived
at NODC.

EFFECTIVE ACCESS TO DATA

Working in partnership with research investigators and NSF program managers

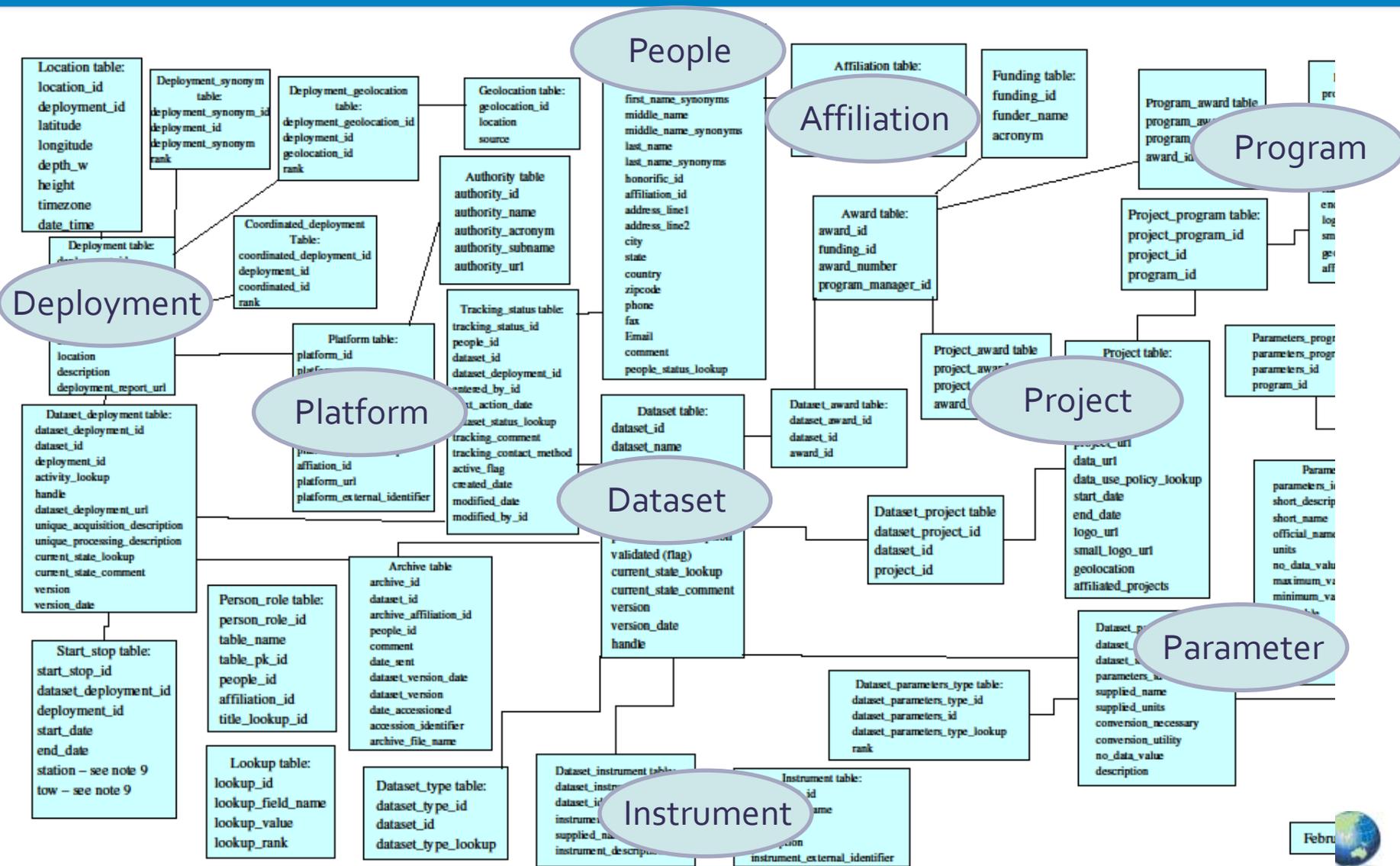
- to ensure that data from NSF OCE funded awards are freely available online
- the BCO-DMO data system and interfaces facilitate
 - data discovery
 - data access to assess fitness-for-purpose
 - data export and download
 - data preservation in a permanent archive (the National Oceanographic Data Center (NODC))

EFFECTIVE ACCESS TO DATA

- to data from legacy programs, e.g. from US JGOFS and US GLOBEC
- to intermediate size and large-scale research programs, and data from single investigator NSF awards



BCO-DMO METADATA



Database

- Welcome
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- Affiliations 251
- Funding 40
- Parameters 1174

Data Access

- **Geospatial access**

<http://bco-dmo.org/>
BCO-DMO
Text-based browse

Biological and Chemical Oceanography Database

The Biological and Chemical Oceanography Data Management Office (BCO-DMO) staff members work with investigators to publish data from research projects funded by the Biological and Chemical Oceanography Sections at the U.S. National Science Foundation. The data sets and supporting documentation from oceanographic research projects are freely available from this database. The data available here are intended solely for scholarly use by the academic and scientific community, with the express understanding that any such use will properly acknowledge the originating Investigator. Any wishing to use portions of this data collection in a presentation, report, thesis or publication should acknowledge the Investigator and BCO-DMO. Customary courtesies and privileges attached to data use will be strictly honored. Use or reproduction of any material herein for any commercial purpose is prohibited without prior written permission from the BCO-DMO. (see the complete citation, usage, and copyright information)

To locate data sets of interest use the navigation links in the column on the left or a link below if you are interested in results from a particular research project.

The data are available on a computer-readable format.

Programs and
Census of Marine

Census of Marine Zooplankton-2004-2010 (CMarZ_2004-2010)
International Indian Ocean Expedition (IIOE)
Nishida-Pacific-Oithona (Nishida-Oithona)
ORI-Historical (ORI_Historical)

Climate Research Investment - Ocean Acidification (CRI-OA)

Horizontal and Vertical Distribution of Thecosome Pteropods in Relation to Carbonate Chemistry in the Northwest Atlantic and Northeast Pacific (Ocean Acidification and Pteropods)

Comparative Analysis of Marine Ecosystem Organization (CAMEO)

An Integrative Approach to Managing the Dewatering of Estuaries (DewaterEst)

Building the Foundation in N. California Current Shelf-Slope-Oceanic Ecosystems (CalCurEco)

CAMEO: Building the Foundation: An End-to-End Modeling Workshop (CAMWkshp)

Comparative Dynamics of Ecosystem Components from the Northeast Atlantic Shelf and Pacific Coast: New

Approaches to Forecasting and Understanding Variability and Structure in Marine Ecosystems (EcoCompDyn)

BCO-DMO repository

[BROWSE map](#) [KEYWORD search](#) **[ADVANCED search](#)** [Start over](#) Quick find: enter a deployment name

Available programs

Name	#
ASCOS	1
CAMEO	0
CoML	100
CRI-OA	4
Dimensions of Biodiv...	0
ETBC	1
FeSynth	15
GoMX - DHOS	12

Select all

Deselect all

Available projects

Name	#
ACIDIC	3
AESOPS	16
Aleutian Archipelago -...	0
ALEX-GoME	38
AMT	0
ANACONDAS	1

Include projects not belonging to any programs?

Select all

Deselect all

Available deployments

Name
A16N (RB-03-04B)
A16N (RB-03-04C)
AB_63_1
AB_63_2
AB_63_3
AB_63_4A
AB_63_A
AB_64_5

Select all

Deselect all

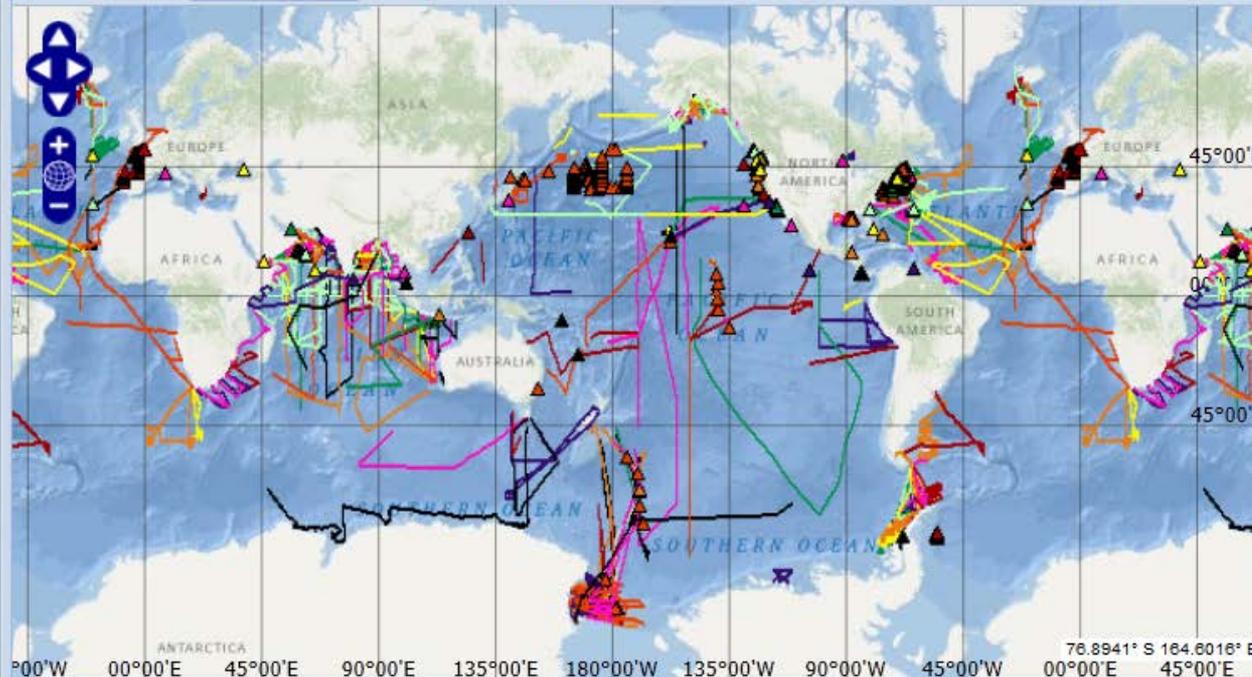
Visible deployments

- AB_63_1
- AB_63_2
- AB_63_3
- AB_63_4A
- AB_63_A
- AB_64_5
- AB_64_6
- AB_64_7
- AB_64_8
- ACIDIC-CMEN-GIFET

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Map

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Datasets

[Available datasets](#) [Mapped datasets](#)

Group by: deployment

Dataset

bco-dmo.org
-> Geospatial Access

EFFECTIVE ACCESS TO DATA

BC-DM MapServer Geospatial Interface (beta) Contact Help NSF Acknowledgment

Search

▼ People

- (2) Wells, Proctor
- (9) Werne, Josef
- (273) Wertheimer, Alex
- (1) Wethey, David
- (37) Wheeler, Patricia
- (2) White, Angelique
- (25) Whittedge, Terry
- (90) Wiebe, Peter

▼ Instrument Categories

- (4) radiometers
 - (4) Eppley Precision Infrared Radiometer Pyrgyometer
- (4) single-beam echosounders
- (4) fluorometers
- (4) anemometers
- (4) inverted echosounders
- (4) CTD

▼ Instruments

- (15) Bio-Optical Multi-frequency Acoustical and
- (4) CTD profiler

▼ Projects

- (5) U.S. GLOBEC Georges Bank
- (14) U.S. GLOBEC Southern Ocean

Results

Available datasets

Group by: deployment

Dataset	Deployment
Deployment: EN307	
<input type="checkbox"/> BMP2_ess	EN307
Deployment: EN330	
<input type="checkbox"/> BMP2_ess	EN330
Deployment: EN331	
<input type="checkbox"/> BMP2_ess	EN331
Deployment: NBP0103	
<input type="checkbox"/> acoustic backscatter - BIOMAPER-I	NBP0103
<input type="checkbox"/> acoustic backscatter120 kHz	NBP0103
<input type="checkbox"/> BMP2_ess	NBP0103

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Mapped datasets

- acoustic backscatter - BIOMAPER-II (24) NBP0103

Remove all

Visible deployments

- Clear selections
- NBP0103
- NBP0104
- NBP0202
- NBP0204

Map

Zoom in Pan Query map Clear query

Map options

60°00'S
65°00'S
70°00'S

110°00'W 105°00'W 100°00'W 95°00'W 90°00'W 85°00'W 80°00'W 75°00'W 70°00'W 65°00'W 60°00'W 55°00'W 50°00'W 45°00'W 40°00'W

58 7383' S 57 0425' W

THANK YOU

Questions?

