



Rolling Deck to Repository (R2R) Program

UNOLS Annual Meeting 2012



R2R Mission

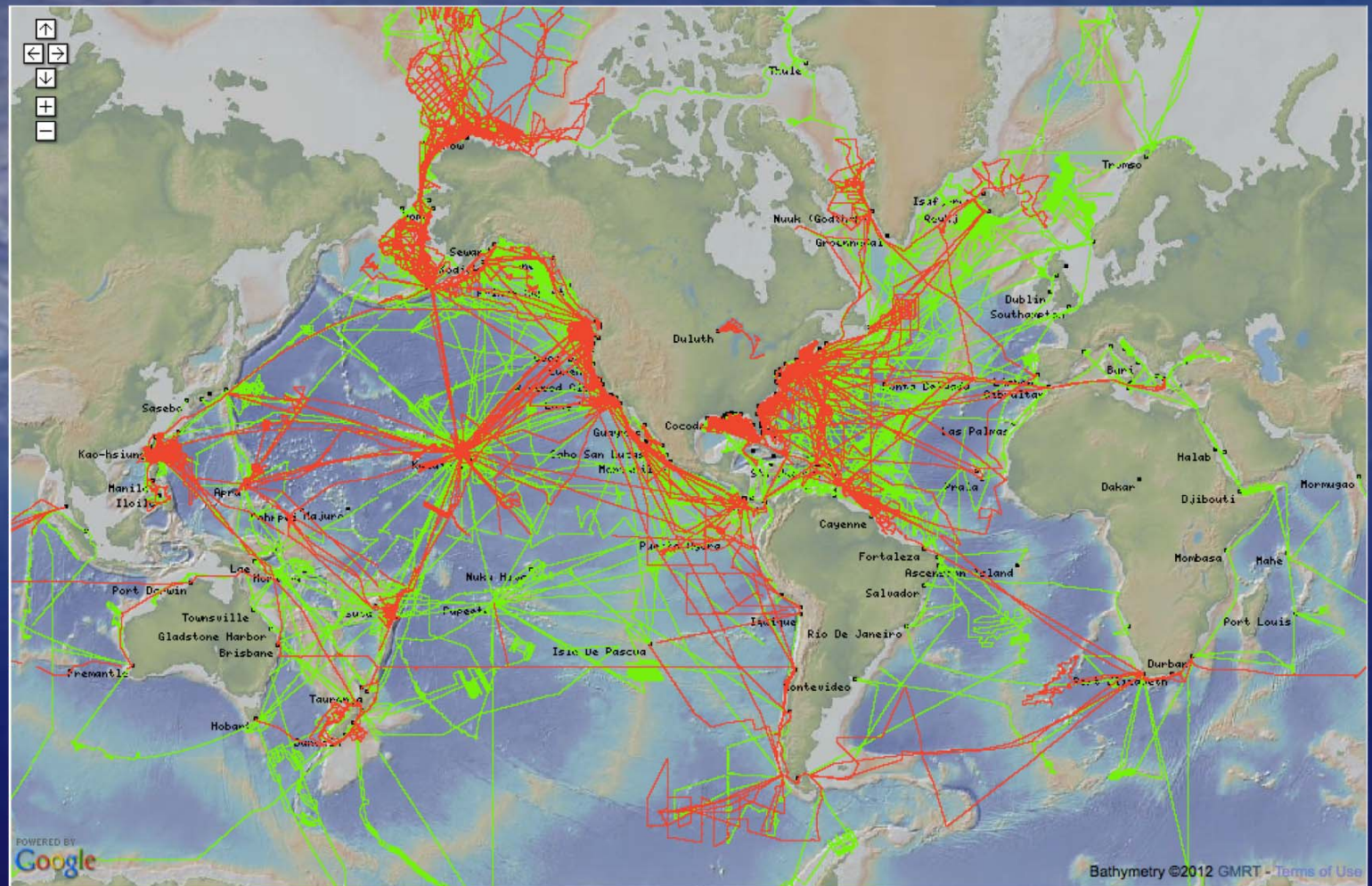


For the U.S. Academic Fleet:

- Migrate all routine “underway” data to long-term repositories
- Create catalog of cruises and standard products
- Assess data quality and provide timely feedback to operators



Cruise Catalog



As of October 2012:

25 Vessels (active service)

410 Sensors/Systems

2,771 Cruises

12M+ Files (data/docs)

— 1,346 New cruises since Jan. 2009 (R2R Pilot)

— 1,425 Additional/older cruises submitted by operators or cross-decked from other databases (LDEO, SIO, WHOI)

2,771 Total

Long-Term Archiving



Example: Multibeam



Data Releases

As of October 2012:

597 Cruises released

97%+ respond

“release everything immediately”

Underway Data Release Form | Rolling Deck to Repository (R2R)

www.rvdata.us/status/release/TN280/2d0f98b24d089c0cf46b288949bb36d2

Underway Data Release Form

Cruise	Vessel	Chief Scientist	Date start	Date end	Release Status
TN280	Thomas G. Thompson	Armbrust, Elizabeth	2012-05-16	2012-05-22	

As chief scientist of TN280
your response is requested at this time. Please choose Option 1, 2, or 3 below, enter your name for verification, then click Submit.

Underway data types: adcp, ctd, echosounder/subbottom, expendable probe, gravimeter, magnetometer, metstation, multibeam and tsg.

NSF Division of Ocean Sciences Sample and Data Policy 2011

Option 1: Release all routine underway data now.

Option 2: Release all routine underway data on [YYYY-MM-DD]

Option 3: Release individual datasets as stated below.
Please list the device and release date below along with any other instructions.

Your Name:

Note:

1. Navigation/Operations data including GNSS, gyrocompass, and winch are always released immediately.
2. As a service to the community, R2R is developing a workflow to routinely process the trackline geophysical data (gravity, magnetics, singlebeam bathymetry) for residual anomalies and corrected depths. These products will be archived and published online with the rest of the underway data.



Web Site Traffic



of Monthly Visits
with robots, crawlers, etc (and R2R team users) removed

<http://www.rvdata.us/>

Standard Products

As of October 2012:

- Clean track Navigation (full-resolution, 1-minute, control points) published for 832 Cruises.
- 1.8+ million MET/TSG data reports transmitted to SAMOS from 9 academic vessels in FY12. Now serving QA products for 430 Cruises.
- R2R Event Logs now arriving with standard end-of-Cruise data packages eg.

AT18-06	EN494	KN200-02	OC467	TN283
AT18-12		KN203-04	OC468-02	
AT18-13		KN205	OC471-04	
AT18-14		KN207-01	OC473	
AT18-18		KN207-02	OC475	
AT19		KN207-03	OC476-01	

Data Quality Assessment

- In production for navigation, multibeam (550+ Cruises), gravity, magnetics, real-time met/tsg.
- In development for singlebeam, ctd, adcp.
- Web “QA Dashboard” will be reviewed at RVTEC 2012.

The screenshot displays the R2R QA Info web application. The main dashboard shows the title "Rolling Deck to Repository (R2R)" and navigation links: Home, About R2R, Cruise Catalog, News, Contact Us, and Internal. The "R2R QA Dashboard" section is titled "All Filesets for RR0901" and lists the cruise title "Diapycnal and Isopycnal Mixing Experiment in the Southern Ocean (DIMES)", vessel "Roger Revelle", and "Raw Filesets: 3". A table lists the filesets:

Rating	Device	Cruise	Vessel	QA Summary	QA Configuration	File Manifest
Green	gravimeter Bell BGM-3	RR0901	Roger Revelle	QA Summary	QA Configuration	File Manifest
Green	multibeam Kongsberg EM120	RR0901	Roger Revelle	QA Summary	QA Configuration	File Manifest

A red circle highlights the "QA Summary" button for the multibeam fileset, with a red arrow pointing to a detailed "RR0901 QA Info" window. This window displays the following QA metrics:

- Percent files all valid sonar draft: 100.00
minimum: 0 m
maximum: 20 m
percentage: 80
- Percent files all valid swath width: 99.94
minimum: 0 m
maximum: 30000 m
percentage: 80
- Percent files all valid time range: 100.00
minimum: 2009-01-10T00:00:00Z
maximum: 2009-02-24T23:59:59Z
percentage: 80
- Percent files with amplitude: 99.83
percentage: 80

(Dashboard example.)

Data Citation

- Oct. 2012 contract with California Digital Library (CDL) “EZID” system, to publish permanent data/set identifiers.
- R2R will publish
 1. Digital Object Identifier (DOI) for each dataset submitted to a long-term archive.
 2. Archival Resource Key (ARK) for each data file, per science community demand for selected types.



http://wiki.esipfed.org/index.php/Interagency_Data_Stewardship/Principles



Data Citation :Example

3. Journal article [doi:10.1016/j.dsr2.2008.01.009](https://doi.org/10.1016/j.dsr2.2008.01.009)

CTD data from Cruise
OC404-01
(EDDIES, 2004 Survey 1)

Deep Sea Research Part II: Topical Studies in Oceanography
Volume 55, Issues 10-13, May-June 2008, Pages 1291-1299
Mesoscale Physical-Biological-Biochemical Linkages in the Open Ocean: Results from the E-FLUX and EDDIES Programs

Nutrient distributions in baroclinic eddies of the oligotrophic North Atlantic and inferred impacts on biology
Qian P. Li^{a, b}, Dennis A. Hansell^a
^a RSMAS, University of Miami, Miami, FL 33149, USA
^b Scripps Institution of Oceanography, UCSD, La Jolla, CA 92093, USA
<http://dx.doi.org/10.1016/j.dsr2.2008.01.009>, How to Cite or Link Using DOI
Permissions & Reprints

Abstract
High-sensitivity (nanomolar) techniques for nitrate and phosphate were applied to study nutrient patterns in the euphotic zone of mesoscale eddies in the Sargasso Sea during the EDDIES project. Surface concentrations of nitrate plus nitrite (DNN) and phosphate (DIP) were found in the range of 1–20 nM with substantial spatial variability in the eddies, with resulting mean N:P molar ratios of 2.1. Chlorophyll biomass was well correlated with DNN but not DIP in the upper euphotic zone, suggesting N-limitation of marine phytoplankton at this time of year. Within the upper 140 m, the water column experienced a transition from a P-enriched (relative to Redfield ratio) shallow layer to a N-enriched deep layer, which may suggest downward transport and subsequent remineralization of high N/P biogenic products presumably originating from N₂ fixation. Chlorophyll biomass in the deep chlorophyll maximum of eddies was found to be tightly related to eddy-induced variability in major nutrients (N, P, Si) and nutrient stoichiometry, suggesting that the impact of eddies on biology is through control of nutrient availability. Because the eddies were likely to be in various phases of development (different degrees of both biological and physical maturity), full interpretation of eddy data and dynamics will require better coverage of a full eddy life cycle.

Keywords
Mesoscale eddies; Nitrate; Phosphate; Silicate; Diatom; North Atlantic Subtropical Gyre

1. Original Data (R2R)
[doi:10.7284/X](https://doi.org/10.7284/X)

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

Project: Eddies Dynamics, Mixing, Export, and Species (EDDIES), 2004 Survey 1

SCIENCE PARTY
FILE MANIFEST
FILE SETS

Device Type	Make-Model [Location]	Files	Archive Status
CTD	Sea-Bird SBE-912plus	LIST	

RELATED DATA
Biological and Chemical Oceanography Data Management Office (Info) Data

WHOAS: Woods Hole Open Access Server
a repository for the Woods Hole scientific community

Disolved Organic Matter, nutrients and CTD data collected from the R/V Oceanus cruise OC404-01 and R/V Weatherbird II cruise WB0409 from the Sargasso Sea from June 11, 2004 to July 01, 2004 (EDDIES project)

Title: Disolved Organic Matter, nutrients and CTD data collected from the R/V Oceanus cruise OC404-01 and R/V Weatherbird II cruise WB0409 from the Sargasso Sea from June 11, 2004 to July 01, 2004 (EDDIES project)
Author: Hansell, Dennis A.
Description: For observations and measurements reported in the dataset, see the Field Names document.
Citable URI: <http://hdl.handle.net/1912/4847>
Date: 2011-10-12
Created: 2007-05-24
Location: Sargasso Sea westlimit: -68.7028; southlimit: 29.777524; eastlimit: -58.754; northlimit: 37.935
Related Material/Data: <http://hdl.handle.net/1912/4848>

Files	Size	Format	View	Description
DOC_DON_DOP_OC404-1.csv	126.9Kb	CSV file	View/ Open	OC404-01 data
DOC_DON_DOP_WB0409.csv	31.00Kb	CSV file	View/ Open	WB0409 data
Field_names.doc	46.59Kb	Microsoft Word	View/ Open	Additional file information: Field names
Field_names.pdf	27.29Kb	PDF	View/ Open	Additional file information: Field names
OC40401_DOC_DON_DOP.kmz	48.69Kb	application/vnd.google-earth	View/ Open	OC404-01 data (zip-compressed KML files to be viewed in Google Earth)
WB0409_DOC_DON_DOP.kmz	18.80Kb	application/vnd.google-earth	View/ Open	WB0409 data (zip-compressed KML files to be viewed in Google Earth)

2. Final Data
[doi:10.1575/1912/4847](https://doi.org/10.1575/1912/4847)

Biological and Chemical Oceanography Data Management Office

Dataset: DOC_DON_DOP
View data: to access data, check the deployments below.

Project: Eddies Dynamics, Mixing, Export, and Species composition
Validated: yes
Data version: 24 May 2007
Version date: May 24, 2007
Dataset handle ID (e.g. DOI or other persistent identifier): <http://dx.doi.org/10.1575/1912/4847>

Current state: Final no updates expected
Description: Dissolved Organic Matter, nutrients and CTD data are reported by Dennis Hansell of the Rosenstiel School of Marine & Atmospheric Science (RSMAS), University of Miami.
Methodology: none provided with data; see Li and Hansell (2008)

DMO note: the original data file included Type B (B indicates bottle sample) and bottom depth reported as 700 meters for all stations (the target depth of the casts); depth_n added to enable merge with bottle data. Parameter quality flags are integer values ranging from 0 through 8: 0 is very good; 1 is OK; 4 is questionable; 8 is bad.

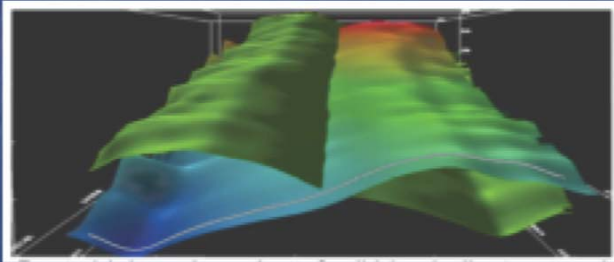
Publication: Qian P. Li and Dennis A. Hansell. 2008. Nutrient distributions in baroclinic eddies of the oligotrophic North Atlantic and inferred impacts on biology, Deep Sea Research Part II: Topical Studies in Oceanography, Volume 55, Issues 10-13, Mesoscale Physical-Biological-Biochemical Linkages in the Open Ocean: Results from the E-FLUX and EDDIES Programs, May-June 2008, Pages 1291-1299, ISSN 0967-0645, DOI: 10.1016/j.dsr2.2008.01.009 (<http://dx.doi.org/10.1016/j.dsr2.2008.01.009>)

Acquisition description:
Processing description:



Data Citation :Example

Multibeam data from
Cruise KM0911
(*Kilo Moana* transit)



1. Original Data (Single Granule)

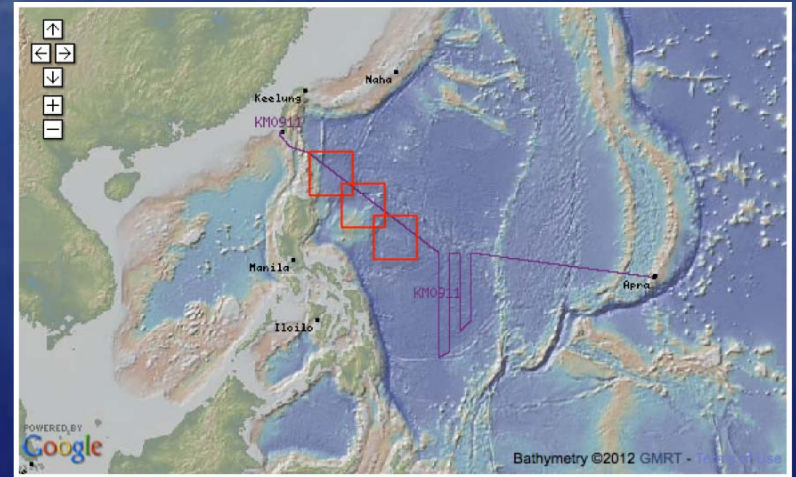
`/km0911_multibeam/em120/jd139/raw/
em120-139-211729-0267.mb56`

published by R2R as

[ark:/87284/X](https://doi.org/10.7927/X)

2. Clean/Final Swath from NSF IEDA Facility

`/KiloMoana/KM0911/GMRT/
em120-139-211729-0267.mb56p.mb57`



3. GMRT Synthesis (Grid Cells)

Int'l Collaboration



Ocean Data Interoperability Platform (ODIP)

- EU-US-AU partnership hosted by IODE
- Goal to identify, publish, and compare existing meta/data formats, vocabularies, quality flags, Web services, software tools, and policies
- Series of technical workshops 2012-2014



Advisory Panel

December 17-18, 2012 at LDEO

Goals: Review developments to date and provide guidance on science user priorities and future needs

Members

- Jonathan Beaudoin, UNH
- Mike Chandler, SOEST
- Will Drennan, RSMAS
- Helen Glaves, BGS (UK)
- Joaquim Goes, LDEO
- Matt Howard, TAMU
- Gabi Laske, SIO
- Gareth Lawson, WHOI
- Dave Sandwell, SIO
- Daryl Swensen, OSU
- Masako Tominaga, MSU

+ NOAA Data Center reps



AGU Session

“Science at Sea: Innovative Results From the Oceanographic Research Fleet”

Friday December 7, 2012

8:00 AM - 12:20 PM Posters (OS51E)

1:40 PM - 3:40 PM Orals (OS53E)

- highlighting RVs as versatile, innovative, productive scientific platforms
- highlighting the preservation, integration, and reuse of research cruise data

(30+ abstracts!)



2012 Fall Meeting





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