

# Rolling Deck to Repository (R2R): Lessons Learned

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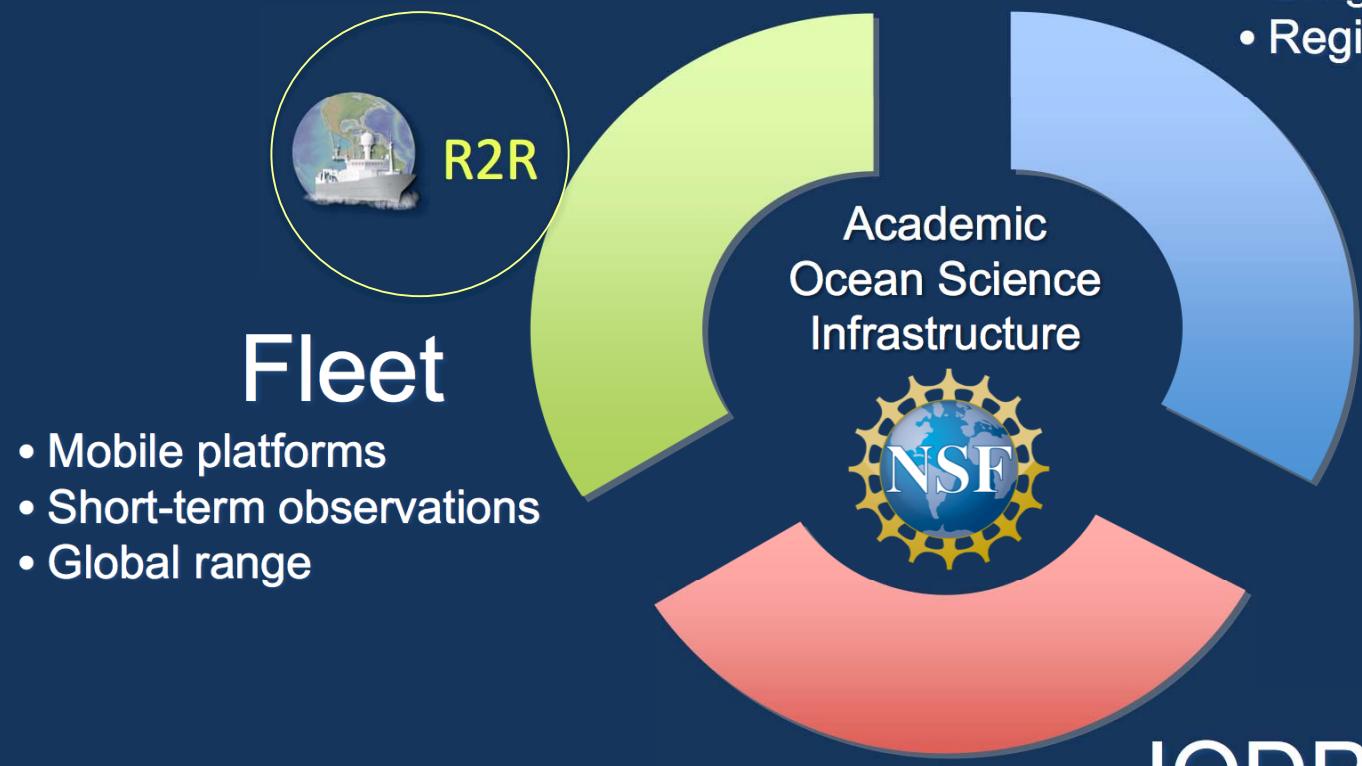
<sup>1</sup>LDEO <sup>2</sup>WHOI <sup>3</sup>FSU <sup>4</sup>SIO



## Part#1: Overview



# Context



- Mobile platforms
- Short-term observations
- Global range

- ~Stationary platforms
- Long-term observations
- Regional/Local range

IODP

- Sampling/Logging
- Deep time
- Global range



# Overview

## Mission:

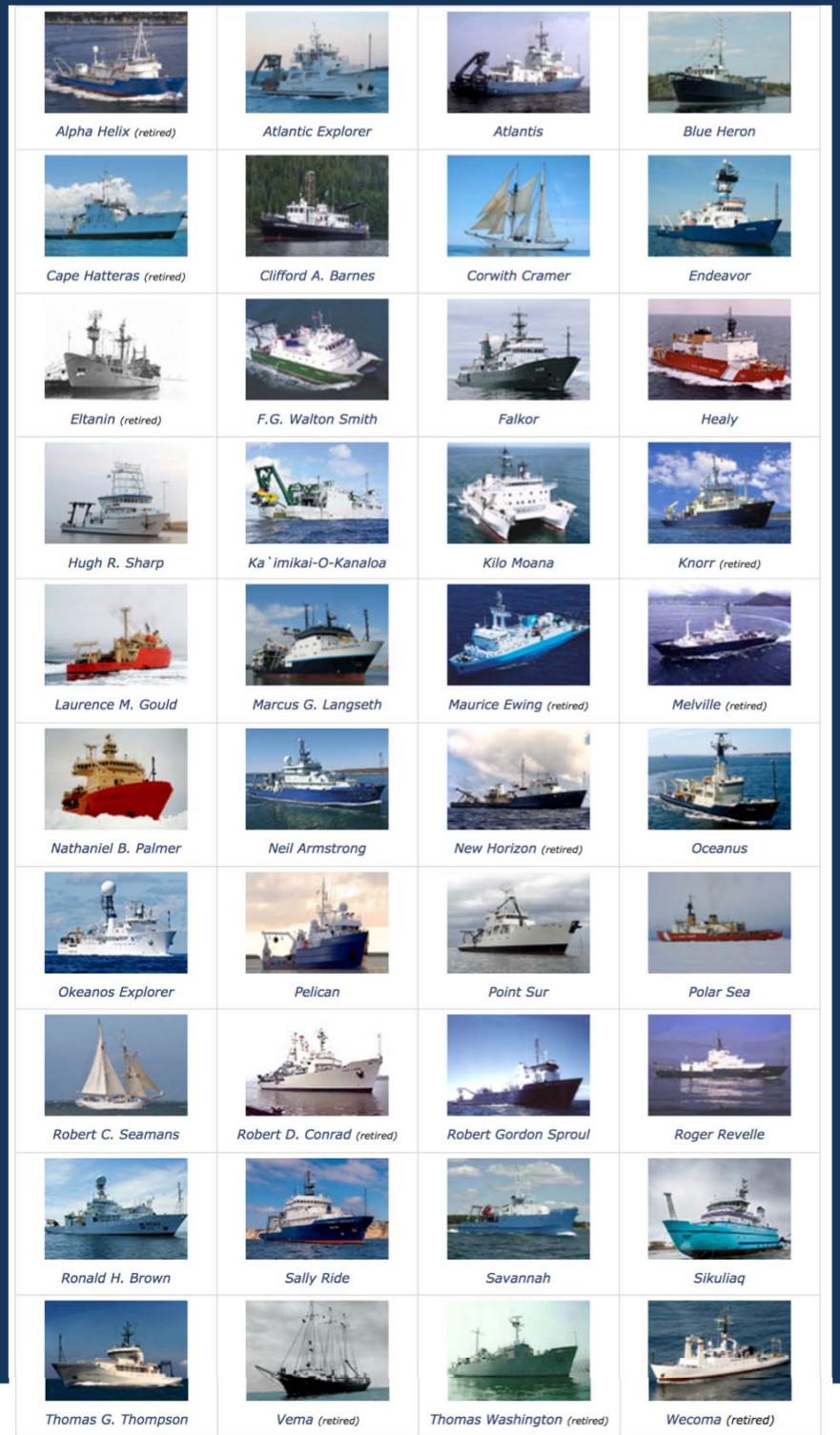
Stewardship of environmental sensor data routinely acquired by U.S. academic research vessels

## Services:

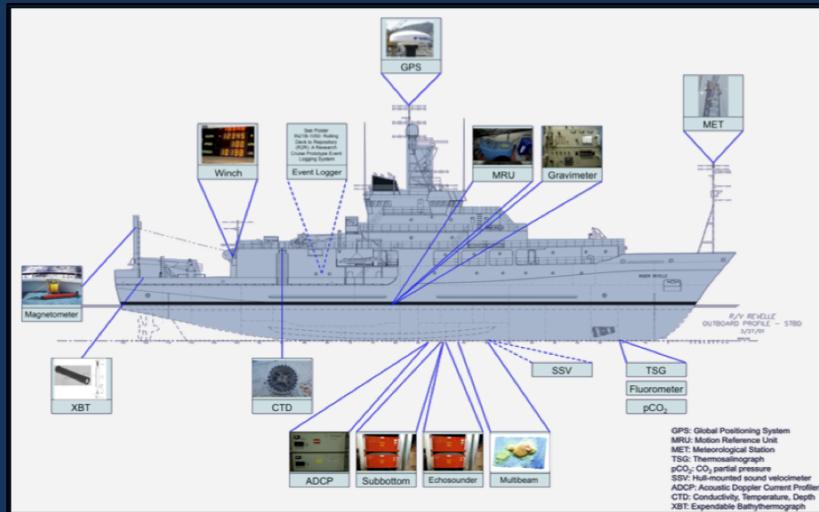
- Publish master cruise catalog
- Document, preserve, disseminate original field datasets
- Assess quality of selected data types
- Create post-field data products
- Support at-sea event logging

## Support:

NSF, ONR, NOAA, SOI, UNOLS



# Sensor Types



## Geophysics:

Echosounder

Gravimeter

Magnetometer

Multibeam

:

Nutrients

Oxygen

pCO<sub>2</sub>

pH

Temperature

Transmissometer

TSG

Wave Radar

XBT/XCTD

## Meteorology:

Anemometer

Barometer

Hygrometer

Radiometer

Rain Gauge

Temperature

## Navigation:

Camera

GNSS/INS

Gyrocompass

Speedlog

## Oceanography:

ADCP

CTD

Fluorometer

:



# Cruise Catalog

- Vessel ID
- Cruise ID +Title
- Trackmap
- Program,Campaign
- Dates/Ports
- Science Party
- File Manifest
- Datasets
- Standard Products
- Funding
- Related:

Cruises  
Datasets  
Articles

Rolling Deck to Repository (R2R)

Supported by: NSF | NOAA | OER | SOI

Home About R2R Cruise Catalog QA Dashboard News Contact Us Internal

Catalog Status  
(In Service) Vessels: 22  
Cruises: 6045  
Archived Files: 22216407  
April 4, 2016

Home Cruise Catalog: EN537

Operator: University of Rhode Island  
Vessel: Endeavor  
Cruise DOI: 10.7284/904058

Cruise ID	Start Date	Start Port	End Date	End Port
EN537	2014-04-01	Narragansett, Rhode Island	2014-04-16	Narragansett, Rhode Island

Project: Eastern North American Margin (ENAM) Community Seismic Experiment (Info [link](#))

SCIENCE PARTY  
 FILE MANIFEST  
 UNDERWAY DATA SETS (ORIG FIELD DATA)

Device Type	Make-Model [Location]	Files	Archive Status
adcp	Hawall UHDAS	List	R2R Download <a href="#">link</a>
ctd	Sea-Bird SBE-911plus	List	R2R Download <a href="#">link</a>
fluorometer	Turner 10-AU	List	R2R Download <a href="#">link</a>
gnss	Furuno GP-90D	List	R2R Download <a href="#">link</a>
gnss	Northstar 952	List	R2R Download <a href="#">link</a>
gnss	Trimble NT-300D	List	R2R Download <a href="#">link</a>
gyrocompass	Sperry MK-37 [2]	List	R2R Download <a href="#">link</a>
gyrocompass	Sperry MK-37 [1]	List	R2R Download <a href="#">link</a>
speedlog	EDO MRQ-4015D	List	R2R Download <a href="#">link</a>
tsg	Sea-Bird SBE-21	List	R2R Download <a href="#">link</a>

R2R PRODUCTS (POST-FIELD PROCESSED)  
 RELATED CRUISES  
EN546  
MGL1408  
 FUNDING AWARDS  
 RELATED DATA

IRIS Data Management Center (Info [link](#))

Data (OBS) [link](#)

# Cruise Search

- Vessel
- Cruise ID
- Dates
- Program
- Campaign
- WESN
- Institution
- Person

The screenshot shows two windows of the RVData.us search interface. The left window is titled 'Cruise Search' and contains search parameters: Vessel (ANY), Cruise (ANY), Dates (1950-01-01 to 2020-12-31), Program (Cascadia, circled in red), and Location (N: 88, W: -180, E: 180, S: -76). The right window is titled 'Search Result' and displays a table of cruise records for the query 'Cascadia Initiative (Cascadia)'. The table has columns: Cruise ID, DOI, Vessel, Depart Date, Port, Arrive Date, and Port. There are 25 entries listed.

Cruise ID	DOI	Vessel	Depart Date	Port	Arrive Date	Port
TN331	10.7284/906264	Thompson	2015-10-01	Newport	2015-10-15	Newport
OC1508B	10.7284/906267	Oceanus	2015-08-26	Port Hueneme	2015-09-02	Newport
OC1409A	10.7284/900721	Oceanus	2014-09-07	Newport	2014-09-26	Newport
OC1408A	10.7284/900719	Oceanus	2014-08-09	Newport	2014-08-13	Newport
OC1407B	10.7284/900718	Oceanus	2014-07-24	Newport	2014-08-06	Newport
OC1407A	10.7284/900717	Oceanus	2014-07-10	Newport	2014-07-19	Newport
TN312	10.7284/900991	Thompson	2014-06-22	Newport	2014-07-06	Seattle
OC1405B	10.7284/900714	Oceanus	2014-05-28	Newport	2014-06-02	Newport
OC1405A	10.7284/900713	Oceanus	2014-05-13	Newport	2014-05-23	Newport
OC1308B	10.7284/900694	Oceanus	2013-08-29	Newport	2013-09-06	Newport
OC1308A	10.7284/900693	Oceanus	2013-08-18	Newport	2013-08-22	Newport
OC1307C	10.7284/901918	Oceanus	2013-08-01	Newport	2013-08-10	Newport
AT26-02	10.7284/900486	Atlantis	2013-06-25	Astoria	2013-07-09	Astoria
OC1306A	10.7284/901805	Oceanus	2013-06-17	Newport	2013-06-22	Newport
OC1305C	10.7284/901804	Oceanus	2013-06-03	Newport	2013-06-14	Newport
OC1209A	10.7284/900969	Oceanus	2012-09-10	Newport	2012-09-20	Newport
OC1208B	10.7284/900683	Oceanus	2012-08-31	Newport	2012-09-07	Newport
OC1208A	10.7284/902582	Oceanus	2012-08-23	Newport	2012-08-30	Newport

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



# Shiptrack Navigation

R2R has developed open-source software package to:

- Convert original GNSS/INS data to a common format
- Perform quality assessment
- Produce suite of down-sampled quality-controlled files

*<http://github.com/rvdata/NavManager>*

Process:

Product:

Assess Quality

QA Report

Flag Bad Points

Best-Res

Downsample

1-Minute

Abstract Track

Control/Map



# Quality Assessment

- GNSS/INS (navigation)
- METOC (marine meteorology)
- Multibeam
- Gravity
- Magnetics
- Subbottom *New*
- CTD *New* (water column profiles)
- ADCP *(2017)* (ocean currents)
- Flowthru *(2017)*



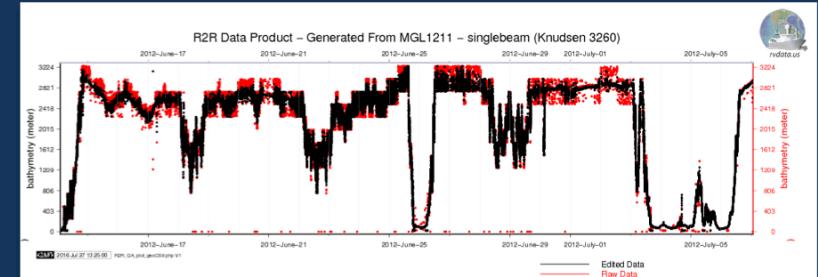
(cont.)

# Quality Assessment

Example: Echosounder data

Typical Tests:

- % NonZeroLengthFiles
- % ValidFormatFiles
- % RecordsWithoutErrorCode
- % RecordsWithValidDepth
- % RecordsWithValidTime
- % RecordsWithValidPosition
- % RecordsWithValidPositionFormatFlag
- % RecordsWithoutOutliers
- % FilesWithSoundVelocity
- % FilesWithSubbottom
- HasRequiredMetadata



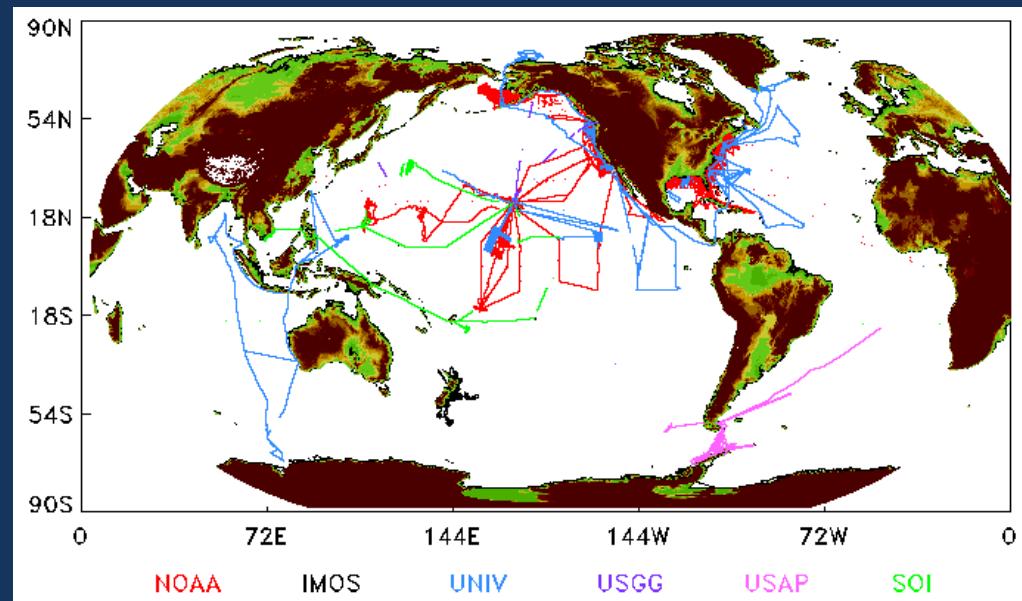
*Edited bathy profile created where possible.  
(Example: MGL1211)*





# SAMOS Data Assembly Center

- Produce quality-controlled METOC data in near-real-time
- 31 research vessels participating in FY2016
- ~30-40K 1-min. observations per month per vessel

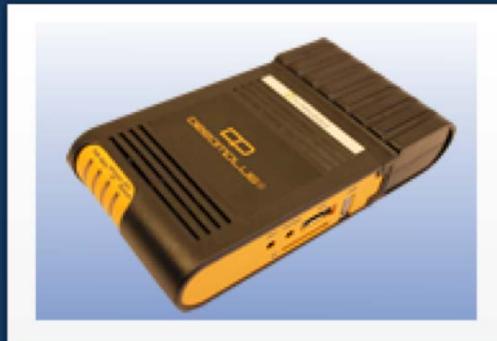


(SAMOS data coverage: Oct 1, 2015 - Sep 30, 2016)



# Event Logger

Recent deployments  
Jun. 2015-May 2016:



(DreamPlug™)

<i>Armstrong</i>	AR1-01	Trials
	AR1-03	Trials
	AR1-06	Corbett
	AR1-07	Lin
	AR3	Shank
	AR4B,C	Plueddemann
<i>Atlantis</i>	AT31	Plueddemann
	AT31B,C	Plueddemann
	AT32	Behrenfeld
	AT33-02	Equip. Test
	AT33-03	Kurz
	AT34	Behrenfeld
<i>Revelle</i>	RR1508	Harris
	RR1601	Applegate
	RR1603	McDonald
	RR1604	Barbero
<i>Sikuliaq</i>	SKQ201512S	Thompson
<i>Thompson</i>	TN326	Kelley
	TN342	Fram



## Part#2: Lessons



# #1. Motivation

The 3 “R”’s

- Reproducibility (what journals wants)
- Reuse (what funders want)
- Recognition (what scientists want)



# #1. Motivation

(cont.)

ORCID

Jens Kallmeyer  
ORCID ID  
@orcid.org/0000-0002-6440-1140  
Other IDs  
ORCID ID: 0000-0002-6440-1140  
Loop profile: 30680  
ResearcherID: I-3554-2012  
Education (4)  
Max-Planck-Institute for Marine Microbiology, Bremen, Bremen, Germany  
2000-02 to 2009-09-30 (Biogeochemistry)

Paper

Science Home News Journals Topics Careers  
Institution: NATL CTR ATMOSPHERIC RES Log in • My account • Contact Us  
Subscribe Renew my subscription • Sign up for alerts

Report  
**Aerobic Microbial Respiration in 86-Million-Year-Old Deep-Sea Red Clay**

Hans Rey<sup>1,\*</sup>, Jens Kallmeyer<sup>2</sup>, Rishi Ram Adhikari<sup>2</sup>, Robert Pockalny<sup>3</sup>, Bo Barker Jørgensen<sup>1</sup>, Steven D'Hondt<sup>2</sup>  
+ Author Affiliations  
\* To whom correspondence should be addressed. E-mail: hans.rey@biology.au.dk  
Science 18 May 2012; Vol. 336, Issue 6083, pp. 922–925  
DOI: 10.1126/science.1219424

Article  
Figures & Data

Vol. 336, Issue 6083  
18 May 2012  
Table of Contents  
Print Table of Contents  
Advertising (PDF)  
Classified (PDF)  
Masthead (PDF)

BCO-DMO Biological & Chemical Oceanography Data Management Office  
DATA RESOURCES ABOUT US Enter search terms

Dataset: Subseafloor Microbial Cell Counts  
Deployment: KN195-03  
Microbial cell counts in sediment cores collected during KN195-03.

Principal Investigator: Dr Steven L. D'Hondt (University of Rhode Island, URI-GSO)  
Co-Principal Investigator: Dr Robert Pockalny (University of Rhode Island, URI-GSO)  
Dr David C. Smith (University of Rhode Island, URI-GSO)  
Dr Arthur J. Spivack (University of Rhode Island, URI-GSO)

Contact: Dr Jens Kallmeyer (Helmholtz Centre Potsdam, GFZ)  
BCO-DMO Data Manager: Shannon Rauch (Woods Hole Oceanographic Institution, WHOI BCO-DMO)  
Project: Oceanographic control and global distributions of subseafloor microbial life and activity (Subseafloor Microbial Life)

Programs 36 Projects 687 Deployments 2357 Datasets 8062 Instruments 408 Parameters 1372 People 2093 Affiliations 485 Funding 63 Awards 1363 GEOSPATIAL ACCESS

Dataset @BCO-DMO

Rolling Deck to Repository (R2R)  
Cruise Catalog: KN195-03  
Home About R2R+ Cruise Catalog QA Dashboard News Contact Us Internal+  
Status (In Service) Vessels: 240 Cruises: 6,117 Used Filters: 2,291,725+ June 23, 2016

Operator: Woods Hole Oceanographic Institution Vessel (retired): Knorr Cruise DOI: 10.7284/5011-126

A map showing the route of the KN195-03 cruise across the equatorial Pacific.

Cruise @R2R

National Science Foundation WHERE DISCOVERIES BEGIN  
FUNDING AWARDS DISCOVERIES NEWS PUBLICATIONS STATISTICS ABOUT NSF FASTLANE  
Awards  
Award Abstract #0752336  
Oceanographic control and global distributions of subseafloor microbial life and activity  
NSF Org: OCE Division of Ocean Sciences  
Initial Amendment Date: March 21, 2008  
Latest Amendment Date: March 21, 2008  
Award Number: 0752336  
Award Instrument: Standard Grant  
Program Manager: David L. Garrison OCE Division of Ocean Sciences GCOE Directorate for Geosciences  
Start Date: September 1, 2008  
End Date: August 31, 2013 (Estimated)

Award @NSF

EarthChem Library Record  
Dataset Information  
Basic Information  
Dataset Title: Dissolved inorganic carbon measurements of marine sediment from Long Core Expedition KN195-03  
Author(s): Sauvage, Justine; D'Hondt, Steven; Pockalny, Robert  
Dataset DOI: doi:10.1194/EDDA/10056  
Date Released/Published: 10/15/2015  
Abstract or Description: The KN195-03 research cruise on board the R/V Knorr (Chief scientist Steven D'Hondt) took place in February 2009 and its main objective was to test and refine quantitative models for the magnitude and geographic distribution of subseafloor biomass and organic-fueled subseafloor respiration. Sediment cores were taken at thirteen sites across the equatorial Pacific and the North Atlantic. The analysis of the stable isotopes of carbon and nitrogen in the organic matter in the collected cores is fundamental to answer the driving research questions of this scientific expedition. The shipboard geochemistry laboratory generated interstitial waters by squeezing 59 individual sediment cores. This required a significant amount of time and effort. Due to the time needed to analyze this very high number of samples, not all were analyzed for the dissolved constituent. We present here the shipboard porewater dissolved inorganic carbon concentration datasets for the first time in a digital system.  
Citation: Sauvage, Justine; D'Hondt, Steven; Pockalny, Robert (2015): Dissolved inorganic carbon measurements of marine sediment from Long Core Expedition KN195-03. EarthChem Library. http://dx.doi.org/10.1194/EDDA/10056

Dataset @ECL

SESAR  
Back to SESAR Home My Home My Samples My Groups Sample Registration Transfer Ownership Search  
My Account Logout

Sample Search  
Samples Found: 795

View	ID#	Sample Name	Object Type	Material Classification	Latitude	Longitude	Location
view	IE22300Z	KN195_51_MCI	Core	Sediment	1.803485	-86.189645	
view	IE22300Z	KN195_51_GCI	Core	Sediment	1.803485	-86.189645	
view	IE22300Z	KN195_51_LCI	Core	Sediment	1.803485	-86.189645	
view	IE22300Z	KN195_51_C2	Core	Sediment	-4.239033333333	-92.968245	
view	IE22300Z	KN195_52_MCI	Core	Sediment	-4.239033333333	-92.968245	
view	IE22300Z	KN195_52_GCI	Core	Sediment	-4.239033333333	-92.968245	
view	IE22300Z	KN195_52_LCI	Core	Sediment	-0.01091666666667	-104.3524783333	
view	IE22300Z	KN195_53_MCI	Core	Sediment	-0.044835	-105.425105	
view	IE22300Z	KN195_53_GCI	Core	Sediment	-0.044835	-105.425105	
view	IE22300Z	KN195_53_LCI	Core	Sediment	-0.044835	-105.425105	
view	IE22300Z	KN195_53_C2	Core	Sediment	-0.044835	-105.425105	

Samples @SESAR

# #2. Federation

R2R joined DataONE to:

- Make content more discoverable
- Find collaborators
- Access user-facing apps eg. Investigator Toolkit



Growing number of  
DataONE nodes  
that hold marine data:



*NCEI*



*LTER Sites*



*R2R*

:



# #3. Information model

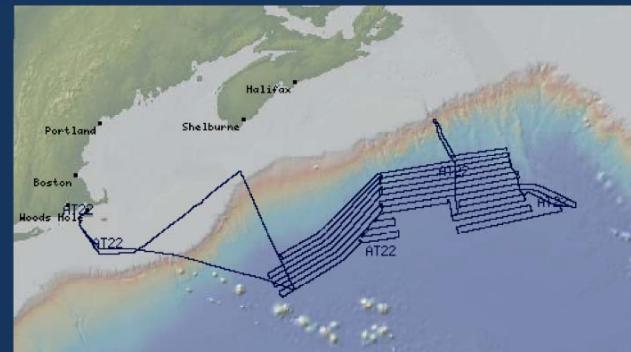
In R2R, a “Cruise” is ..

- ... a deployment of a known research platform
- ... starting and stopping at named locations (port calls)
- ... where position is continuously recorded
- ... with scientists and/or technicians onboard
- ... whose purpose is one of

Research (funded mission to collect data +samples)

Transit

Maintenance



*R/V Atlantis cruise  
AT22 (Scotian Shelf  
Survey, 2012)*



# #3. Information model

(cont.)

In R2R, a “Dataset” is ..

- ... a collection of digital objects
- ... produced by a single instrument system (type/make/model)
- ... in a known file format
- ... recorded by an acquisition system on a defined interface
- ... during a single Cruise



# #3. Information model

(cont.)

In R2R, a Dataset may have relationships with other Datasets:

1. Dataset Y IsNewVersionOf Dataset X  
if Y is a corrected version of X that replaces missing or corrupt files.
  
2. Dataset Y IsIdenticalTo Dataset X  
if Y is an exact copy of X that was published by another repository.
  
3. Dataset Y IsDerivedFrom Dataset X  
if Y is a new set of files that was created by processing or editing X.

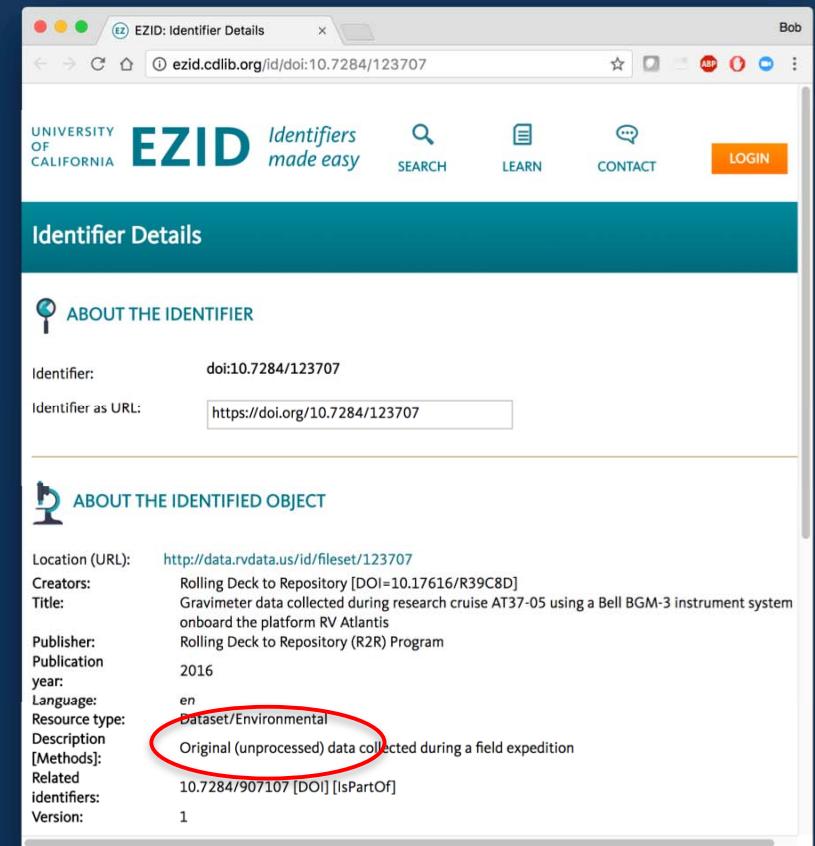


# #4. Citation

R2R publishes a DOI for every Dataset as soon as it is released and published online ie. downloadable.

DOI metadata record describes the Dataset quality.

Quality should not be “inferred” from the absence/presence of a DOI.



The screenshot shows a web browser displaying the EZID Identifier Details page for a dataset. The URL in the address bar is [ezid.cdlib.org/id/doi:10.7284/123707](http://ezid.cdlib.org/id/doi:10.7284/123707). The page header includes the University of California logo, the EZID logo, and links for SEARCH, LEARN, CONTACT, and LOGIN. The main content area is titled "Identifier Details". It contains two sections: "ABOUT THE IDENTIFIER" and "ABOUT THE IDENTIFIED OBJECT".

**ABOUT THE IDENTIFIER**

Identifier:	doi:10.7284/123707
Identifier as URL:	<a href="https://doi.org/10.7284/123707">https://doi.org/10.7284/123707</a>

**ABOUT THE IDENTIFIED OBJECT**

Location (URL):	<a href="http://data.rvdata.us/id/fileset/123707">http://data.rvdata.us/id/fileset/123707</a>
Creators:	Rolling Deck to Repository [DOI=10.17616/R39C8D]
Title:	Gravimeter data collected during research cruise AT37-05 using a Bell BGM-3 instrument system onboard the platform RV Atlantis
Publisher:	Rolling Deck to Repository (R2R) Program
Publication year:	2016
Language:	en
Resource type:	Dataset/Environmental
Description [Methods]:	Original (unprocessed) data collected during a field expedition
Related identifiers:	10.7284/907107 [DOI] [IsPartOf]
Version:	1



# #5. Vocabularies

A vocabulary qualifies for reuse if ...

- ... it is published on the Web
- ... with URIs that can be dereferenced
- ... that return RDF (Resource Description Framework) format

eg. SKOS or OWL

- ... every term has a definition
- ... and it has community governance

R2R reuses existing vocabularies for both

Classes (Types)

eg. "Research Vessels"

and

Instances

eg. "*R/V Hugh R. Sharp*"



(cont.)

# #5. Vocabularies

R2R uses terms from the NERC Vocabulary Server:

## Classes

- L06 Platform Types
- L05 Instrument Types
- L22 Instrument SubTypes (Make/Model)
- C77 Shipboard Activity Types
- P02 Data Types
- P06 Unit Types

## Instances

- C17 Platforms
- C19 Waterbodies
- C32 Countries
- C38 Ports

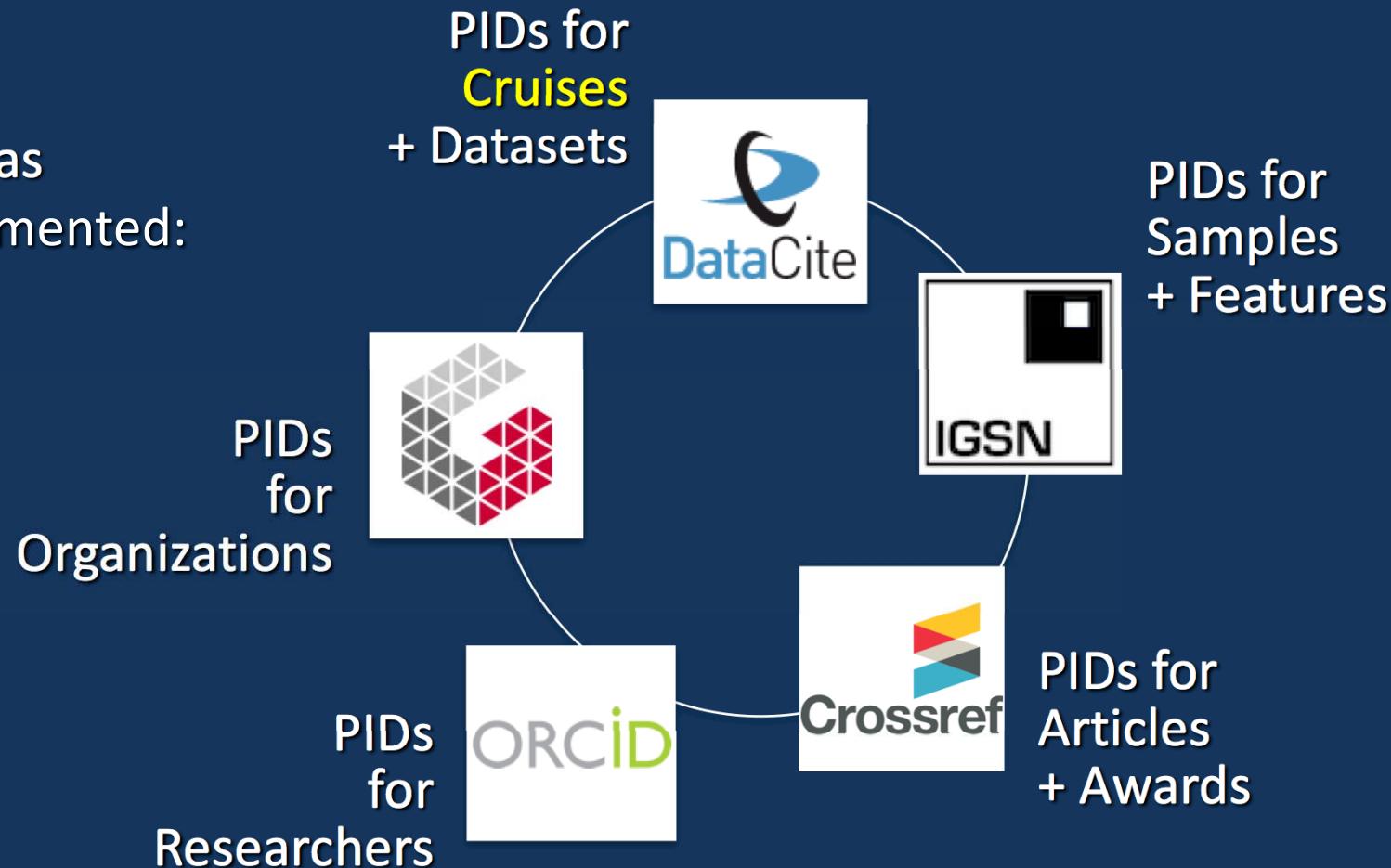


<http://vocab.nerc.ac.uk/>



# #6. Persistent Identifiers

R2R has implemented:



After: Hanson, B. (2016), AGU opens its journals to author identifiers,  
Eos 97, doi:10.1029/2016EO043183.



(cont.)

## #6. Persistent Identifiers

Challenges with adopting persistent identifiers:

- Community has not reached consensus on all identifier types eg. Instruments, Projects, Organizations.
- Significant backfill mapping required.
- Identifier systems are not perfect, eg. a person can have more than one ORCID.



# #7. Partnerships

R2R has “reciprocal linking” arrangements with other repositories eg.

- Biological and Chemical Oceanography Data Management Office (BCO-DMO)
- CLIVAR and Carbon Hydrographic Data Office (CCHDO)
- Interdisciplinary Earth Data Alliance (IEDA)
- Index to Marine and Lacustrine Geological Samples (IMLGS)
- Incorporated Research Institutions for Seismology (IRIS/OBSIP)
- Shipboard Automated Meteorological and Oceanographic System (SAMOS)
- System for Earth Sample Registration (SESAR)

The image displays two side-by-side screenshots of cruise catalog websites. The top screenshot is from the BCO-DMO website (www.bco-dmo.org), showing the 'Deployment: KN195-03' page. It includes a sidebar with database statistics (Programs: 39, Projects: 788, Deployments: 2547, Datasets: 8609, Instruments: 440, Parameters: 1390, People: 2273, Affiliations: 521, Funding: 83, Awards: 1511) and a main content area with deployment details (Deployment: KN195-03, Chief Scientist: Dr Steven L. D'Hondt, Equatorial Pacific, RV Knorr, vessel, Start Date: 2009-01-12, End Date: 2009-02-23, Location: Pacific Ocean). A red circle highlights a link in the 'Description' section: 'Cruise information and original data are available from the NSF R2R data catalog'. The bottom screenshot is from the RvData.us website (www.rvdata.us/catalog/KN195-03), showing the 'Cruise Catalog: KN195-03' page. It features a map of the cruise route in the Pacific Ocean. Below the map, it says 'Operator: Woods Hole Oceanographic Institution' and 'Vessel (retired): Knorr'. A red circle highlights the 'Cruise DOI: 10.7284/900496' link. The page also lists the cruise ID, start date, start port, end date, and end port. On the right, there are sections for 'SCIENCE PARTY', 'FILE MANIFEST', 'UNDERWAY DATA SETS (ORIGINAL FIELD DATA)', 'R2R PRODUCTS (POST-FIELD PROCESSED)', 'FUNDING AWARDS', 'PUBLICATIONS', and 'RELATED DATA'. At the bottom, links are provided to the Biological and Chemical Oceanography Data Management Office, Bio+Chem Data, Samples, and Geochim Dataset #899.



(cont.)

## #7. Partnerships



R2R collaborates in cross-cutting EarthCube projects eg.

SeaView - integrating data from multiple repositories to create regional/thematic collections

X-DOMES - working with vendors to create standard instrument descriptions

GeoLink - publishing resources on the Web as Linked Data and developing shared semantics



# #8. Reliability

Partner repositories rely on R2R's  
Cruise Catalog. Consequences:

- Cruise IDs, once published, cannot be deleted (but can be deprecated).
- Mappings of eg. researchers to ORCIDs must be verified.
- R2R services should be online 24/7 and reasonably performant.
  - Linked Data collection
  - SPARQL (RDF Query Language) endpoint
  - OGC CSW (Catalog Service) endpoint

The screenshot shows a web browser window with the title "Start Page | Rolling Deck to Repository (R2R) Linked Open Data" and the URL "http://data.rvdata.us". The page content includes:

- Navigation links: Home, Award, Campaign, Cruise, CruiseType, Device, DeviceType, Document, DocumentType, Event, Fileset, Format, Geometry, Model, Organization, Participant, Person, Port, Product, Program, Track, Vessel.
- A message: "This knowledge base is published with D2R Server. It can be accessed from:
  1. Any old web browser,
  2. Semantic Web browsers, and
  3. SPARQL clients.
- Section 1. HTML View: "You can use the navigation links at the top of this page to explore the knowledge base."
- Section 2. RDF View: "You can also explore this knowledge base with Semantic Web browsers like Marbles. To start browsing, open this entry point URL in your Semantic Web browser:  
<http://data.rvdata.us/all>
- Section 3. SPARQL Endpoint: "Clients can query the knowledge base at this SPARQL endpoint:  
<http://data.rvdata.us/sparql>  
The endpoint can be explored in a [Snorql](#) interface from any Web browser."

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



# #9. Improve Iteratively

R2R started by characterizing every Instrument with minimum required metadata

- Device Type
- Parent Vessel
- Make
- Model
- File Format

... then circling back selectively over time to add

- Child Devices (subcomponents of complex packages)
  - Location (on Vessel)
  - Type-specific details (eg. Multibeam array configuration)
- etc.



# #10. Metrics

R2R develops statistics to demonstrate impact.

Input side

- # of cruises cataloged
- # of datasets preserved and disseminated
- # of QA reports published
- # of products created

Output side

- # of datasets+products downloaded
- # of website visits
- # of datasets contributed to global syntheses \*
- # of links to related resources \*

Derived datasets

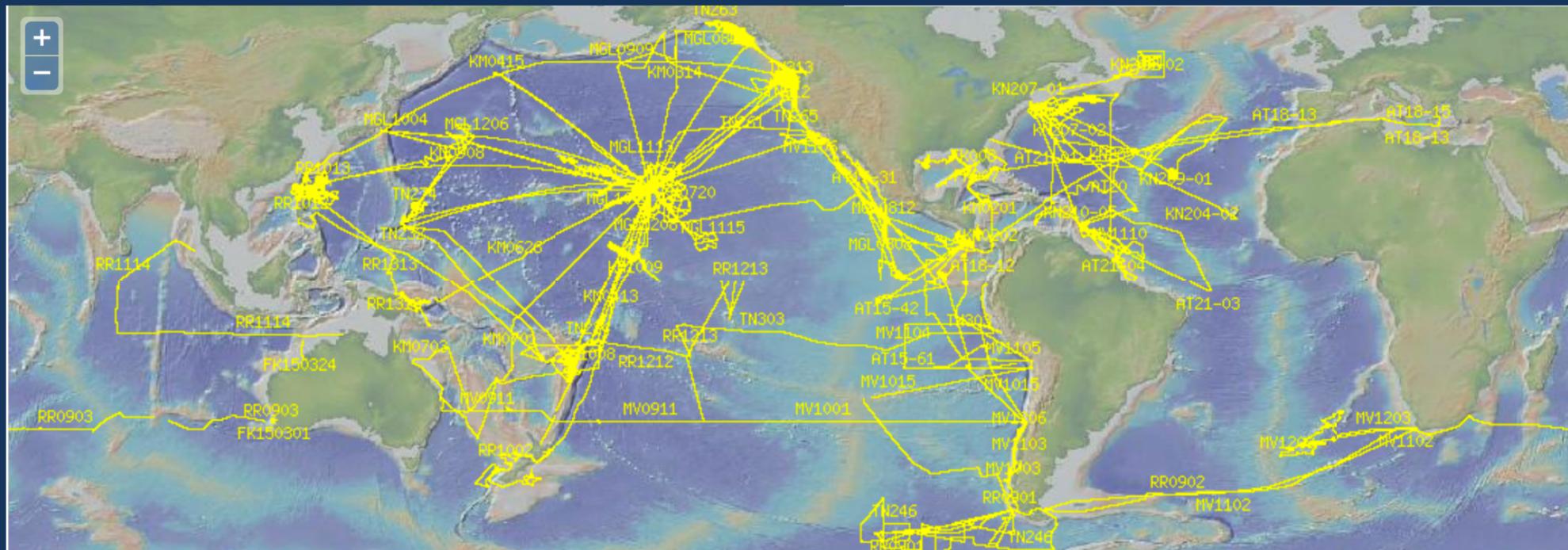
Samples

Journal articles



# #10. Metrics (cont.)

R2R contributes to  
Global Multi-Resolution Topography (GMRT) Synthesis



Above: Shiptracks for Multibeam datasets contributed by R2R (202 cruises as of June 2016).

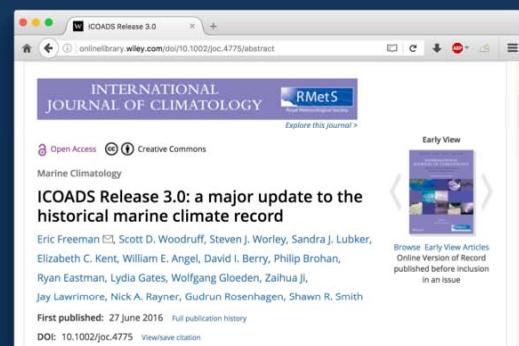
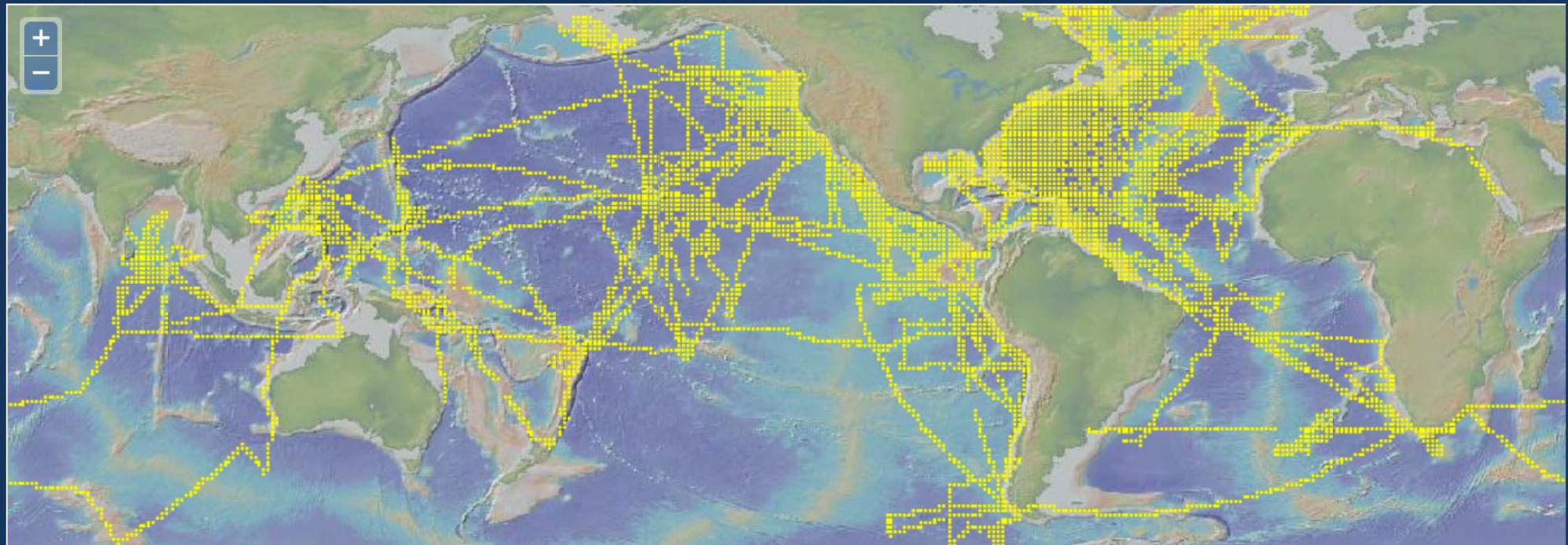


GMRT produced by the  
Interdisciplinary  
Earth Data Alliance  
(IEDA)



# #10. Metrics (cont.)

R2R contributes to  
International Comprehensive Ocean-Atmosphere Data Set (ICOADS)



*Above: METOC data contributed by SAMOS in partnership with R2R (as of ICOADS v 3.0).*

# UNOLS Ships: 10  
# SAMOS Records: 278,1014  
# Ship Days: 11,792



*Shipboard Automated Meteorological and Oceanographic System (SAMOS)*



# #11. Open Data

Cruises on US research vessels are funded by many different agencies, with different data release policies.

R2R original policy assumed default 2-year proprietary hold on data, following NSF OCE policy.

- New NSF policy in 2011 changed to “Underway data should be released in 60 days unless PI requests a hold”.

New R2R policy is to seek immediate release on every cruise, but with explicit confirmation from Chief Sci.



# #12. Licenses

R2R original policy asserted CC-BY-NC-SA (3.0) license on every Dataset that requires Attribution, Non-Commercial, and Sharealike.

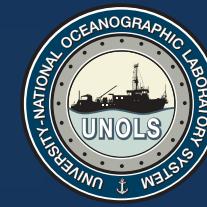
New policy changes to CC0 and will include statement with every Dataset that provides:

- Public Domain (CC0) statement
- DOI
- “Please cite as”



Thank you.





*info@rvdata.us*

