

R2R Update

R.Arko+S.Carbotte (LDEO), C.Chandler (WHOI), S.Smith (FSU), K.Stocks (SIO)



Overview

Mission:

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

Support:

NSF +NOAA, ONR, SOI

Services:

- Publish master cruise catalog
- Organize, archive, and disseminate original field data+documents
- Assess data quality
- Create post-field data products
- Support at-sea event logging



 <i>Alpha Helix (retired)</i>	 <i>Atlantic Explorer</i>	 <i>Atlantis</i>	 <i>Blue Heron</i>
 <i>Cape Hatteras (retired)</i>	 <i>Clifford A. Barnes</i>	 <i>Corwith Cramer</i>	 <i>Endeavor</i>
 <i>Eltanin (retired)</i>	 <i>F.G. Walton Smith</i>	 <i>Falkor</i>	 <i>Healy</i>
 <i>Hugh R. Sharp</i>	 <i>Ka'imikai-O-Kanaloa</i>	 <i>Kilo Moana</i>	 <i>Knorr (retired)</i>
 <i>Laurence M. Gould</i>	 <i>Marcus G. Langseth</i>	 <i>Maurice Ewing (retired)</i>	 <i>Melville (retired)</i>
 <i>Nathaniel B. Palmer</i>	 <i>Neil Armstrong</i>	 <i>New Horizon (retired)</i>	 <i>Oceanus</i>
 <i>Okeanos Explorer</i>	 <i>Pelican</i>	 <i>Point Sur</i>	 <i>Polar Sea</i>
 <i>Robert C. Seamans</i>	 <i>Robert D. Conrad (retired)</i>	 <i>Robert Gordon Sproul</i>	 <i>Roger Revelle</i>
 <i>Ronald H. Brown</i>	 <i>Sally Ride</i>	 <i>Savannah</i>	 <i>Sikuliaq</i>
 <i>Thomas G. Thompson</i>	 <i>Vema (retired)</i>	 <i>Thomas Washington (retired)</i>	 <i>Wecoma (retired)</i>

2016 Notes

New R/Vs joined

- *Neil Armstrong*
- *Sally Ride*



Sally Ride

Data rescue

New 1-year project for ~500 older cruises from 5 vessels, based on external requests

Advisory Panel

@SIO

April 5-6, 2016

Infrastructure

Major storage /network upgrades +begin strategic move to commercial Cloud



Quality Assessment

- GNSS/INS
- METOC
- Multibeam
- Gravity
- Magnetics
- Subbottom *New*
- CTD *New*
- ADCP *New*
- Flowthru *(2017)*



Advisory Panel

April 5-6, 2016 @SIO

Bill Drennan, Miami

Joaquim Goes, LDEO

Trish Gregg, UIUC

Matt Howard, TAMU

Jules Hummon, Hawaii

Jenn Jencks, NCEI

Gabi Laske, SIO

Craig Nosse, Hawaii

Chris Paver, NCEI

Janet Sprintall, SIO

Masako Tominaga, TAMU

Ben Van Mooy, WHOI

Mike Vardaro, Rutgers

Jim Holik, NSF

Alice Doyle, UNOLS



Advisory Panel *(cont.)*

Feedback - Highlights

- Change license on datasets to CC0 (public domain)
- Review new Web Search page
- Develop guidance to PIs on where to deposit post-cruise data, and how to use “Cruise DOIs”
<http://www.rvdata.us/repositories>
- Identify target for Quality Assessment of flow-thru data
- Promote Event Logger
- Strengthen Cruise Summary Reports submitted to POGO, esp. specialized instruments and sampling program
- Meet longer and/or more often



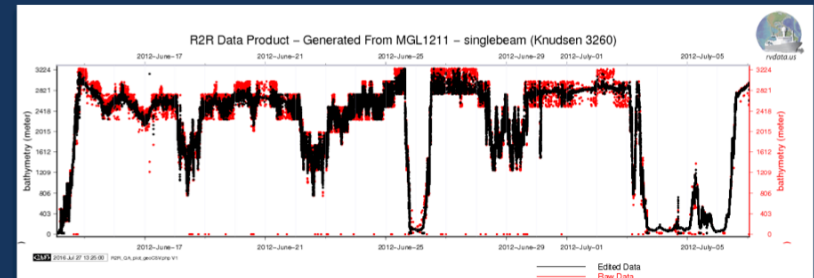
New!

Quality Assessment: Subbottom

Only original KEB files evaluated

Typical Tests:

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



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



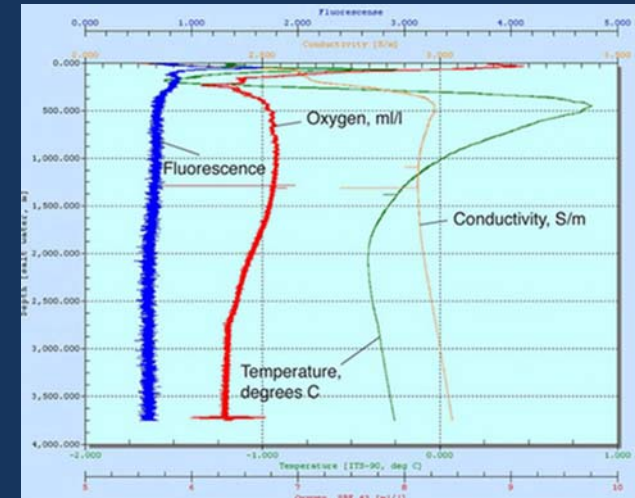
New

Quality Assessment: CTD

Only original HEX/DAT, CON, HDR files evaluated

Typical Tests:

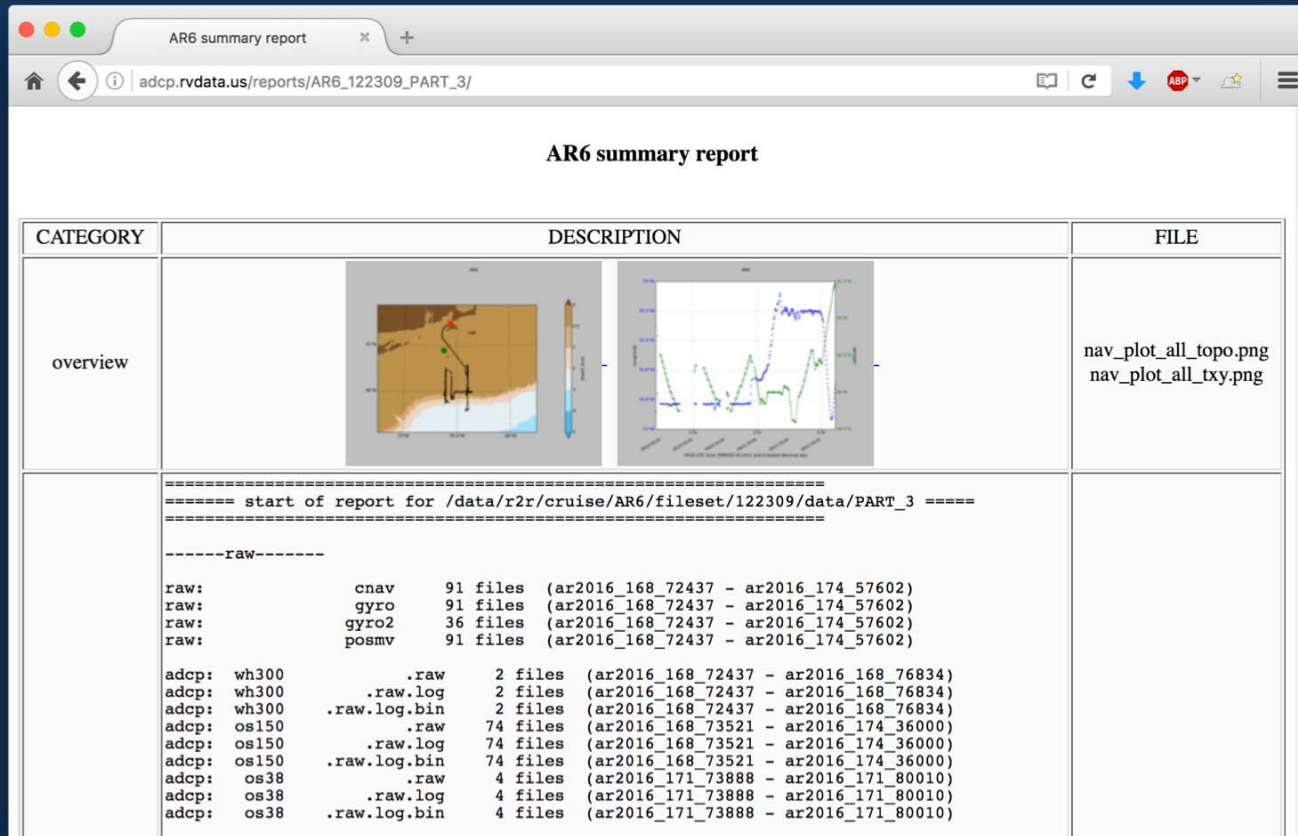
- All Files present for Cast
- Has Lat+Lon
- Min Cast Depth
- Min/Max Sensor Values (per Vendor Spec)
- Gaps
- Spikes
- Constant Values
- Gradients
- Outliers
- Dual Sensor Presence (T+C)
- Dual Sensor Diff (T+C)

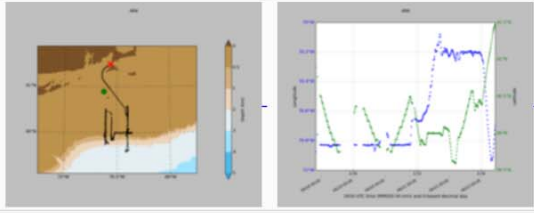


New

Quality Assessment: ADCP

Use UHDAS/CODAS to generate standard summary report +thumbnail plots.



CATEGORY	DESCRIPTION	FILE
overview		nav_plot_all_topo.png nav_plot_all_txy.png
	<pre>===== start of report for /data/r2r/cruise/AR6/fileset/122309/data/PART_3 ===== -----raw----- raw: cnav 91 files (ar2016_168_72437 - ar2016_174_57602) raw: gyro 91 files (ar2016_168_72437 - ar2016_174_57602) raw: gyro2 36 files (ar2016_168_72437 - ar2016_174_57602) raw: posmv 91 files (ar2016_168_72437 - ar2016_174_57602) adcp: wh300 .raw 2 files (ar2016_168_72437 - ar2016_168_76834) adcp: wh300 .raw.log 2 files (ar2016_168_72437 - ar2016_168_76834) adcp: wh300 .raw.log.bin 2 files (ar2016_168_72437 - ar2016_168_76834) adcp: os150 .raw 74 files (ar2016_168_73521 - ar2016_174_36000) adcp: os150 .raw.log 74 files (ar2016_168_73521 - ar2016_174_36000) adcp: os150 .raw.log.bin 74 files (ar2016_168_73521 - ar2016_174_36000) adcp: os38 .raw 4 files (ar2016_171_73888 - ar2016_171_80010) adcp: os38 .raw.log 4 files (ar2016_171_73888 - ar2016_171_80010) adcp: os38 .raw.log.bin 4 files (ar2016_171_73888 - ar2016_171_80010)</pre>	

<http://adcp.rvdata.us/reports/>



Quality Assessment: Flow-thru

2017 start developing QA process for

- Real-time sea temperature, salinity, and one additional parameter
- Post-cruise fluorometry



www.rvdata.us/catalog/EN537

Supported by: NSF | NOAA | ONR | SOI

Rolling Deck to Repository (R2R)

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

Details

Project: Eastern North American Margin (ENAM) Community Seismic Experiment (Info)

SCIENCE PARTY

FILE MANIFEST

UNDERWAY DATA SETS (ORIG FIELD DATA)

Device Type	Make-Model [Location]	Files	Archive Status
adcp	Hawaii UHDAS	List	R2R Download
ctd	Sea-Bird SBE-911plus	List	R2R Download
fluorometer	Turner 10-AU	List	R2R Download
gnss	Furuno GP-90D	List	R2R Download
gnss	Northstar 952	List	R2R Download
gnss	Trimble NT-300D	List	R2R Download
gyrocompass	Sperry MK-37 [2]	List	R2R Download
gyrocompass	Sperry MK-37 [1]	List	R2R Download
speedlog	EDO MRQ-401SD	List	R2R Download
tsg	Sea-Bird SBE-21	List	R2R Download

R2R PRODUCTS (POST-FIELD PROCESSED)

RELATED CRUISES

EN546

MGL1408

FUNDING AWARDS

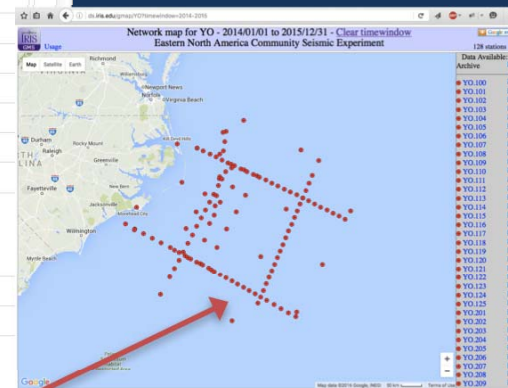
RELATED DATA

IRIS Data Management Center (Info)

Data (OBS)

Cruise Catalog

- Vessel ID
- Cruise ID+Title
- Trackmap
- Program,Campaign *New*
- Dates+Ports
- Science Party
- File Manifest
- Instruments and Datasets
- Standard Products
- Funding
- Related Cruises *New*
- Related Data



Cruise Search

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

The screenshot displays the rvdata.us search interface. The top section, titled 'Cruise Search', contains a form with the following fields: 'Vessel' (set to '(ANY)'), 'Cruise' (set to '(ANY)'), 'Dates' (From 1950-01-01 to 2020-12-31), 'Program' (set to 'Cascadia'), 'Campaign' (set to '(ANY)'), and 'Location' (a map of the Pacific Northwest). The 'Search' button is highlighted with a red circle. Below the search form, a 'Search Result' page is shown, displaying a table of 25 cruises. A red arrow points from the 'Cascadia' selection in the search form to the 'Query = Cascadia Initiative (Cascadia)' text on the results page.

Search Result

Query = Cascadia Initiative (Cascadia)
Number of Cruises = 25

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>



NavManager Tool

Open-source software package:

- 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>

Questions: cjolson@ucsd.edu



Vessel Profiler

Web-based tool to view+edit instrument list and data directory mapping

Linked to
UNOLS
Inventory

Vessel Device List

 [Sikuliag](#)
Status: **Active**
R2R code: **SKQ**
Operator id: **edu.uaf**
Call sign: **WDG7520**

Admin Set a Vessel Date:
20160923

R2R ID	Device Type	Make/Model	Fileset count	Tools
100580	acqsys	Hawaii UHDAS	23	Edit Unlink
100581	 adcp parent device:100580	- RDI OS-150	-	Edit Unlink
100582	 adcp parent device:100580	- RDI OS-75	-	Edit Unlink
100605	anemometer	Gill WindObserver 75	44	Edit Unlink
100586	ctd	Sea-Bird SBE-911plus	14	Edit Unlink
100578	expendableprobe	Sippican MK21	7	Edit Unlink
100582	flowmeter	Optiflux 5000	22	Edit Unlink
100593	flowmeter	Omega FP-2541	20	Edit Unlink
100594	fluorometer	Turner Cyclops-7	20	Edit Unlink
100595	gnss	C&C C-Nav 3050	25	Edit Unlink
100579	gravimeter	Bell BGM-3	25	Edit Unlink
100596	gyrocompass	Sperry NAVIGAT 2100 (primary)	25	Edit Unlink
100597	gyrocompass	Sperry NAVIGAT 2100 (secondary)	25	Edit Unlink
100591	ins Primary Navigation	Kongsberg Seapath 320+	25	Edit Unlink
100598	metstation	Vaisala WXT520	25	Edit Unlink
100584	multibeam	Kongsberg EM710	18	Edit Unlink
100583	multibeam	Kongsberg EM302	23	Edit Unlink
100600	radiometer	Biospherical QSR-2150	24	Edit Unlink
100599	radiometer	RMR Co. PRP	24	Edit Unlink
100588	raingauge	OSI ORG-815 (across)	11	Edit Unlink
100587	raingauge	RM Young 50202	21	Edit Unlink
100590	raingauge	OSI ORG-815 (forward)	15	Edit Unlink
100603	sensor:soundspeed	AML SVXchange	13	Edit Unlink
100602	singlebeam	ELAC Nautik LAZ 5100	23	Edit Unlink
100585	singlebeam	Knudsen 3260	3	Edit Unlink
100601	singlebeam	Kongsberg TOPAS PS-18	24	Edit Unlink
100606	tempprobe_water	Heitronics CT15.10	24	Edit Unlink
100589	transmissometer	WET Labs C-Star	1	Edit Unlink
100604	tsg	Sea-Bird SBE-45	22	Edit Unlink

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



Event Logger

Recent deployments
Jun. 2015-May 2016:



(DreamPlug™)

<i>Armstrong</i>	AR1-01	Shakedown
	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	Appelgate
	RR1603	McDonald
	RR1604	Barbero
<i>Sikuliaq</i>	SKQ201512S	Thompson
<i>Thompson</i>	TN326	Kelley
	TN342	Fram



NG Microserver



Test unit deployed to *Langseth* for Tréhu cruise 2016.

Goals:

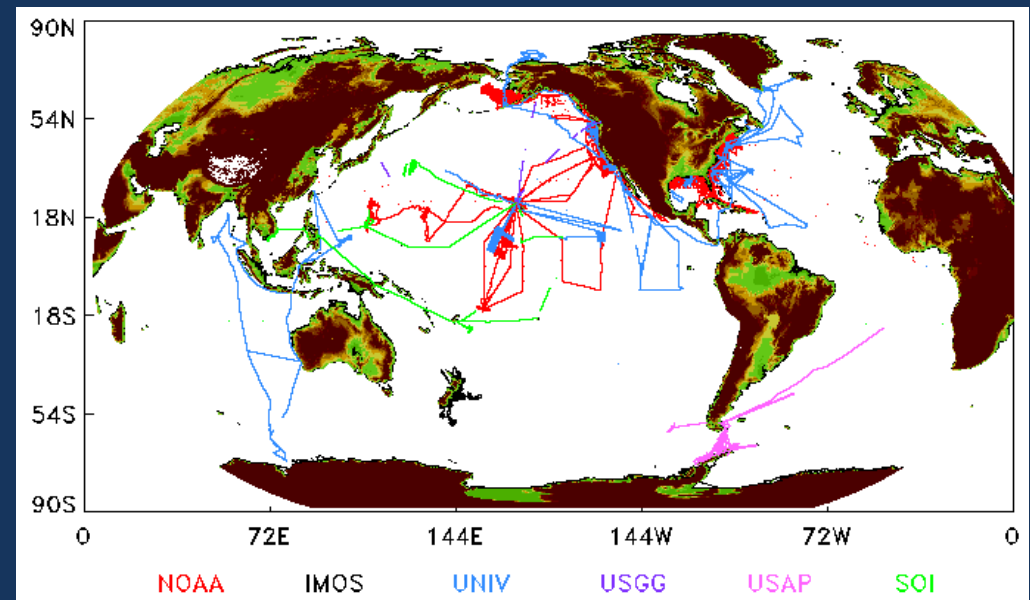
- Support both R2R Event Logger and science apps eg. GeoMapApp (demand from science parties)
- Inexpensive, easy to maintain
- Able to swap portable data drives from shore





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

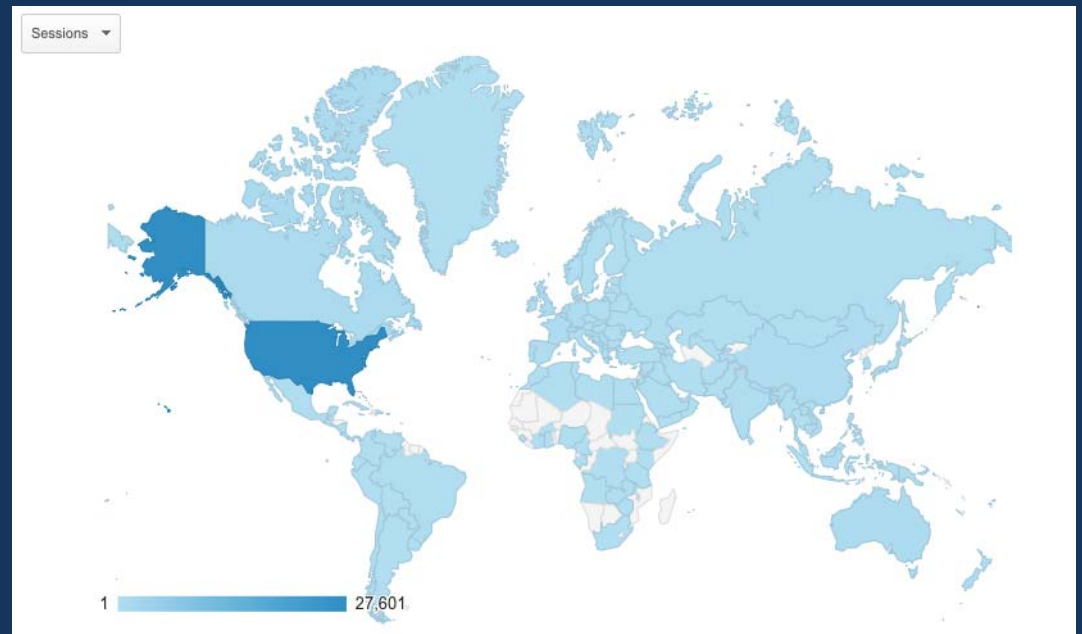
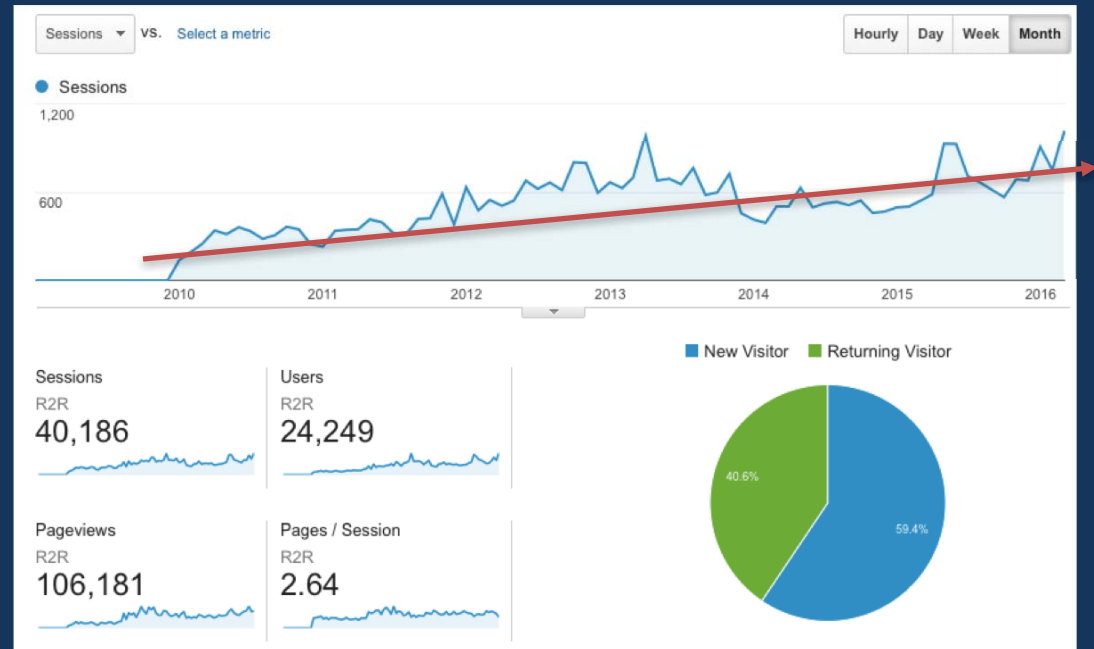


(SAMOS data coverage: Oct 1, 2015 - Sep 30, 2016)

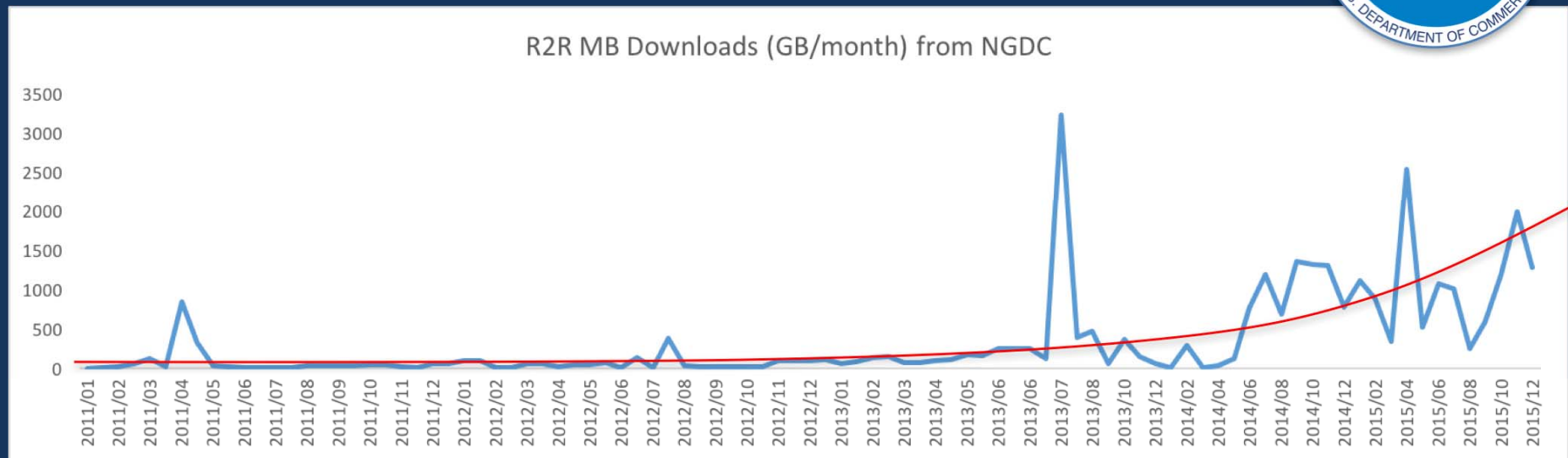


Web Traffic

- Trending upward since R2R site launch
- Averaging ~1,000 sessions/month
- 40% of visitors return at least once



Data Downloads



- Currently averaging ~1.5 TB/month of multibeam file downloads
(Note, filtered for crawlers.)



Partnerships

*Growing number of
DataONE nodes
that hold marine data:*



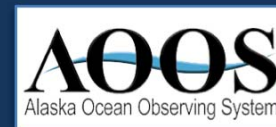
*NSF - Supported
Federation of
Data Repositories*



NCEI



LTER Sites



R2R

:



(cont.)

Partnerships



EarthCube

SeaView project: Create thematic data collections , organized+formatted.

Collaborators

CCHDO

BCO-DMO

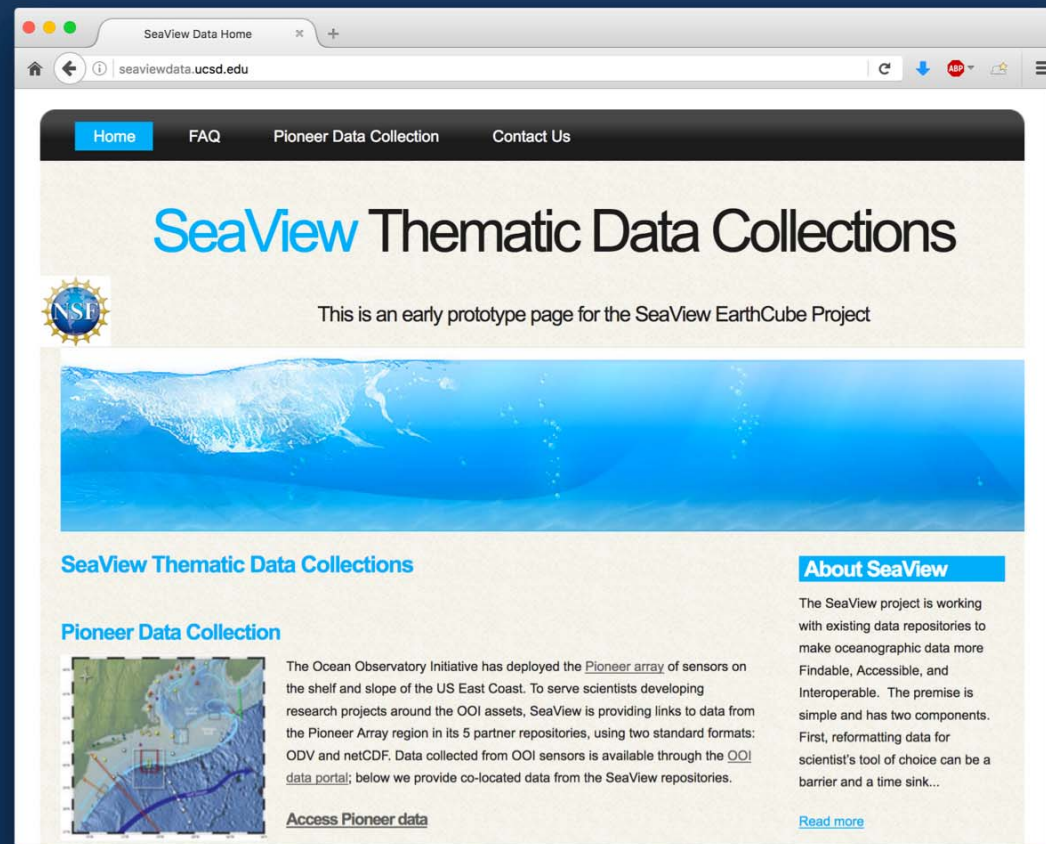
* R2R

OOI

OBIS

K.Stocks @SIO

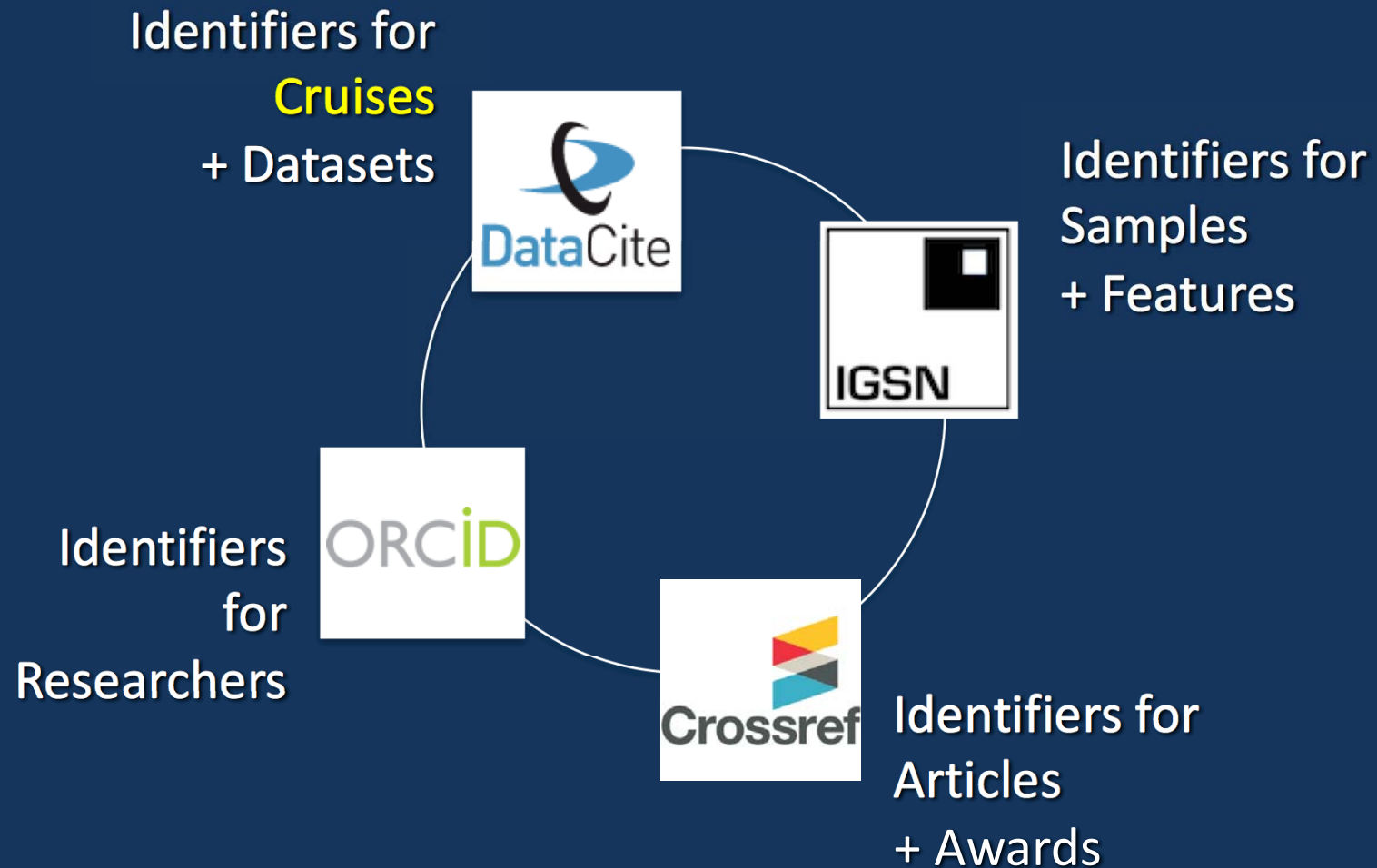
Lead



<http://seaviewdata.ucsd.edu/>



Data Citation



Data Citation (cont.)

ORCID

Cruise @R2R

Award @NSF

Paper

ORCID iD: orcid.org/0000-0002-6440-1140

Other IDs
Loop profile: 30680
ResearcherID: I-3554-2012

Education (4)
H Sort

Max-Planck-Institute for Marine Microbiology: Bremen, Bremen, Germany
2000-01 to 2003-09-30 (Biogeochemistry)

Report

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

Hans Rey^{1,*}, Jens Kallmeyer², Rishi Ram Adhikari², Robert Pockalny³, Bo Barker Jørgensen¹, Steven D'Hondt¹

¹ 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

Rolling Deck to Repository (R2R)

Supported by: NSF | NOAA | ONR | DOI

Home About R2R Cruise Catalog QA Dashboard News Contact Us Internal

g Status
(In Service) Vessels: 20
Charters: 0117
Vired Files: 22917251
June 23, 2018

Cruise Catalog: KN195-03

Operator: Woods Hole Oceanographic Institution
Vessel (retired): Knorr

Cruise DOI: 10.7284/...

National Science Foundation
WHERE DISCOVERIES BEGIN

FUNDING AWARDS DISCOVERIES NEWS PUBLICATIONS STATISTICS ABOUT NSF FASTLANE

Awards

Search Awards
Recent Awards
Presidential and Honorary Awards
About Awards

NSF Org: OCE Division Of Ocean Sciences

Award Abstract #0752336
Oceanographic control and global distributions of subsurface microbial life and activity

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
GEO Directorate For Geosciences

Start Date: September 1, 2008
End Date: August 31, 2013 (Estimated)

EarthChem

HOME ABOUT CONTRIBUTE DATA RESOURCES ACCESS DATA HELP CONTACT US

Library Menu
Library Home
Browse
Search
Submit
Data Templates
My EarthChem Library

EarthChem Library Record

Dataset Information

Dataset Title: Dissolved inorganic carbon measurements of marine sediment from Long Core Expedition KN195-03

Author(s): Savage, Justine; D'Hondt, Steven; Pockalny, Robert

Dataset DOI: doi:10.1594/IEDA/100562

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 January-February 2009 and had as primary objective to test and refine quantitative models for the magnitude and geographic distribution of subsurface biomass and organic-fueled subsurface respiration. Sediment cores were taken at thirteen sites across the equatorial Pacific and the North Pacific Gyre. Knowledge of the chemical composition of the porewater throughout the collected cores is fundamental to answer the driving research questions of this scientific expedition. The shipboard geochemistry laboratory generated interstitial waters by squeezing 997 individual samples, and by extracting an additional 153 solutions by Ritten sampling. Due to the time needed to analyze this very high number of samples, not all were analyzed for each dissolved constituent. We present here the shipboard porewater dissolved inorganic carbon concentration dataset measured by Marianda AIRC's "trained" system.

Citation: Savage, 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/10.1594/IEDA/100562>

SESAR

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

My Account Logout

Sample Search

Samples Found: 795

Index	Sample Name	Object Type	Material Classification	Latitude	Longitude	Location
view 82230002	KN195_S1_MC1	Cone	Sediment	1.803485	-86.189645	
view 82230002	KN195_S1_GC1	Cone	Sediment	1.803485	-86.189645	
view 82230002	KN195_S1_LC1	Cone	Sediment	1.803485	-86.189645	
view 82230002	KN195_S1_LC2	Cone	Sediment	1.803485	-86.189645	
view 82230002	KN195_S2_MC7	Cone	Sediment	-4.239001333333	-92.968245	
view 82230002	KN195_S2_GC1	Cone	Sediment	-4.239001333333	-92.968245	
view 82230002	KN195_S2_GC2	Cone	Sediment	-4.239001333333	-92.968245	
view 82230002	KN195_S3A_GC1	Cone	Sediment	-0.0110916666666667	-104.352478333333	
view 82230002	KN195_S3A_MC1	Cone	Sediment	-0.044835	-105.423105	
view 82230002	KN195_S3A_GC1	Cone	Sediment	-0.044835	-105.423105	
view 82230002	KN195_S3A_LC1	Cone	Sediment	-0.044835	-105.423105	
view 82230002	KN195_S3A_LC2	Cone	Sediment	-0.044835	-105.423105	

Dataset @ECL

Samples @SESAR

Dataset @BCO-DMO



Cruise DOIs



- Best practices for using DOIs in journal articles are still evolving.

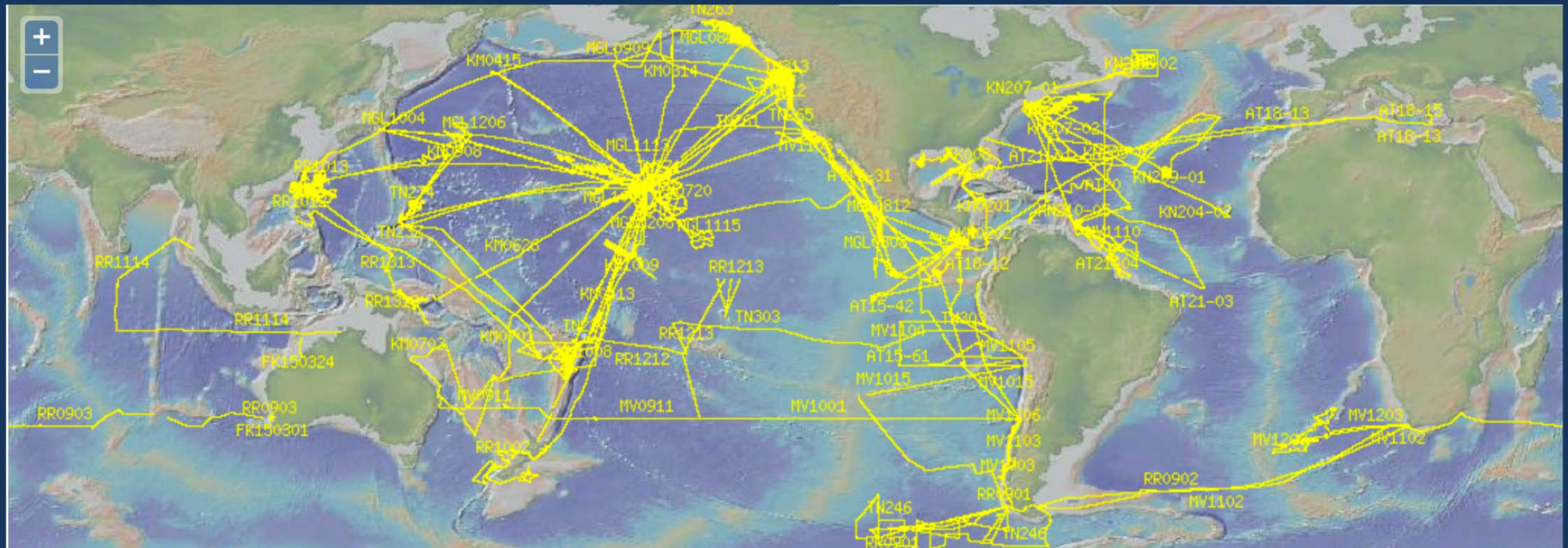
Current R2R Guidance:

- We are working with other facilities (eg. OOI) to ensure they use our Cruise DOIs.
- We are working with other facilities to ensure their Datasets are linked to our Cruise DOIs.
- Include your Cruise DOI in your NSF Final Report.
- **Get a ORCID (Researcher ID).**
- We do not recommend that Cruise DOIs be cited directly in journal articles.
- R2R continues to participate in RDA/WDS, Scholix, COPDESS, etc.



Data Syntheses

Global Multi-Resolution Topography (GMRT) Synthesis



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



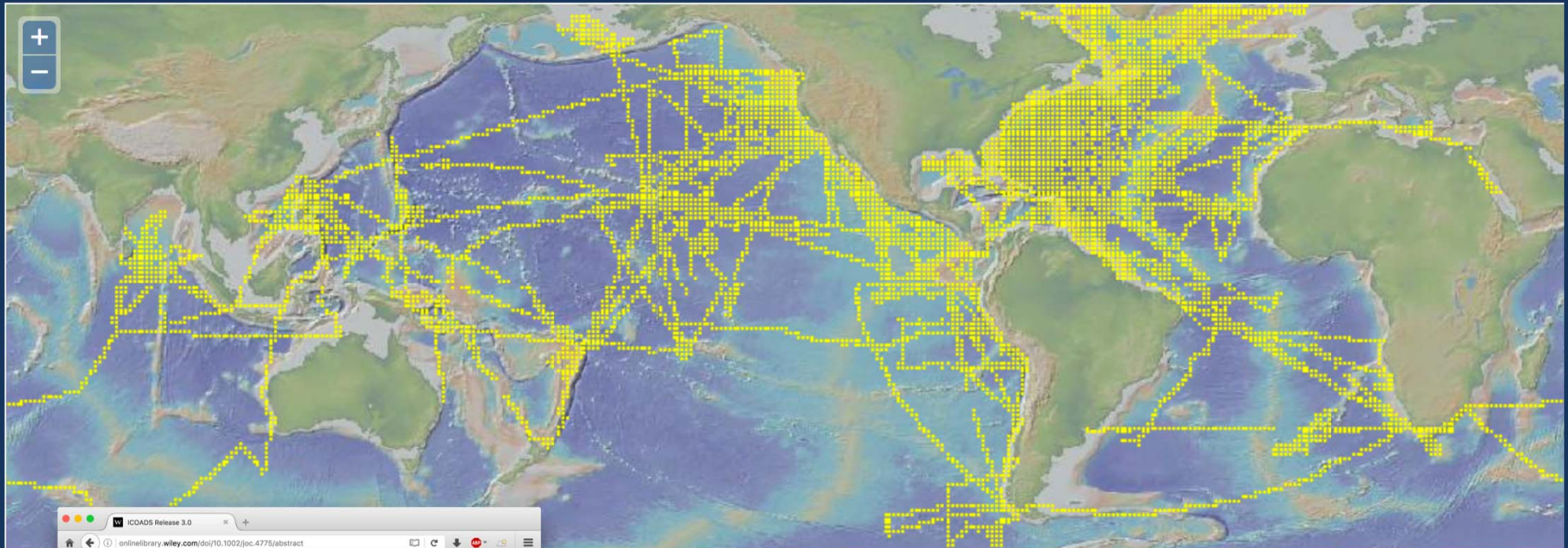
*GMRT produced by the
Interdisciplinary
Earth Data Alliance
(IEDA)*



(cont.)

Data Syntheses

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)*



(cont.)

Data Syntheses

Next target: Contribute processed CTD to World Ocean Database.





[*info@rvdata.us*](mailto:info@rvdata.us)

