

Rolling Deck to Repository (R2R) *Overview*

*“Transforming the fleet into an integrated global
observing system”*

Vicki Ferrini

and the R2R Team

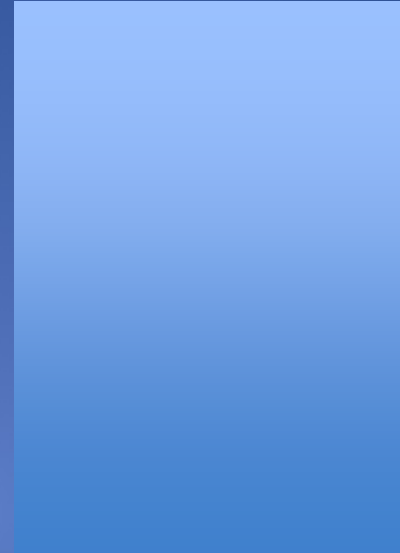


<http://www.rvdata.us>

Infrastructure for ocean science

UNOLS Fleet

- Mobile platforms
- Short term obs
- Global range
- Ocean exploration



OOI

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



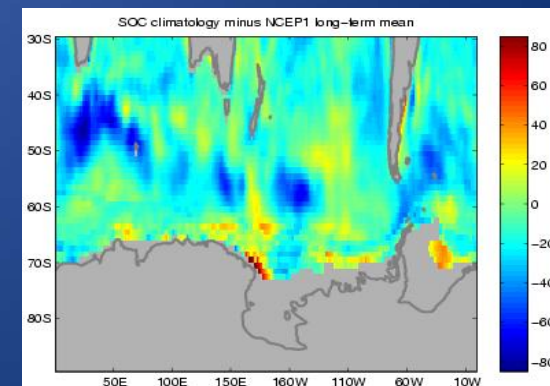
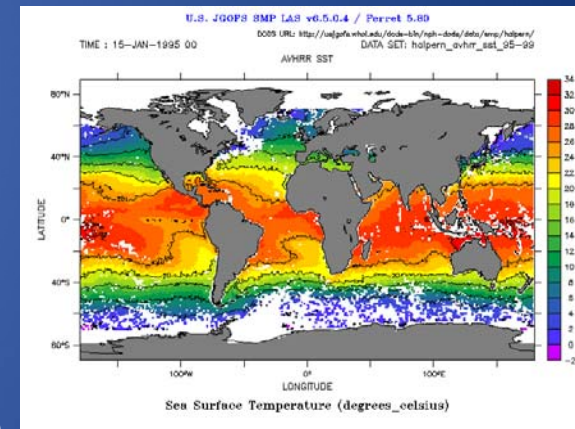
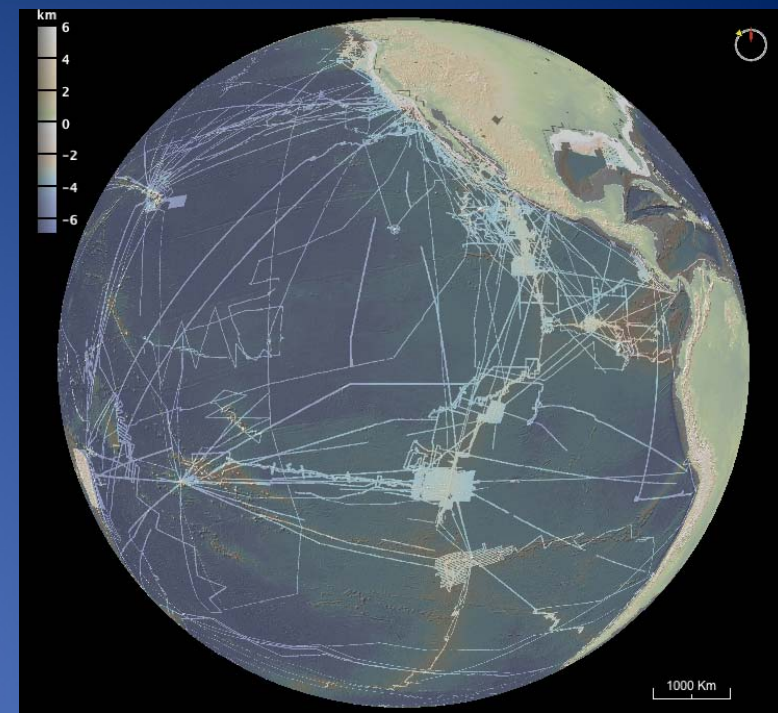
IODP

- Sampling
- Deep time

The Objective:

Well-documented high-quality publicly available data

- Support the published literature
- Enable global syntheses
- Provide ground-truth for a variety of scientific applications
- Enable data reuse and new discovery
- Make publicly-funded data available to the public
- Enable informed policy decision making

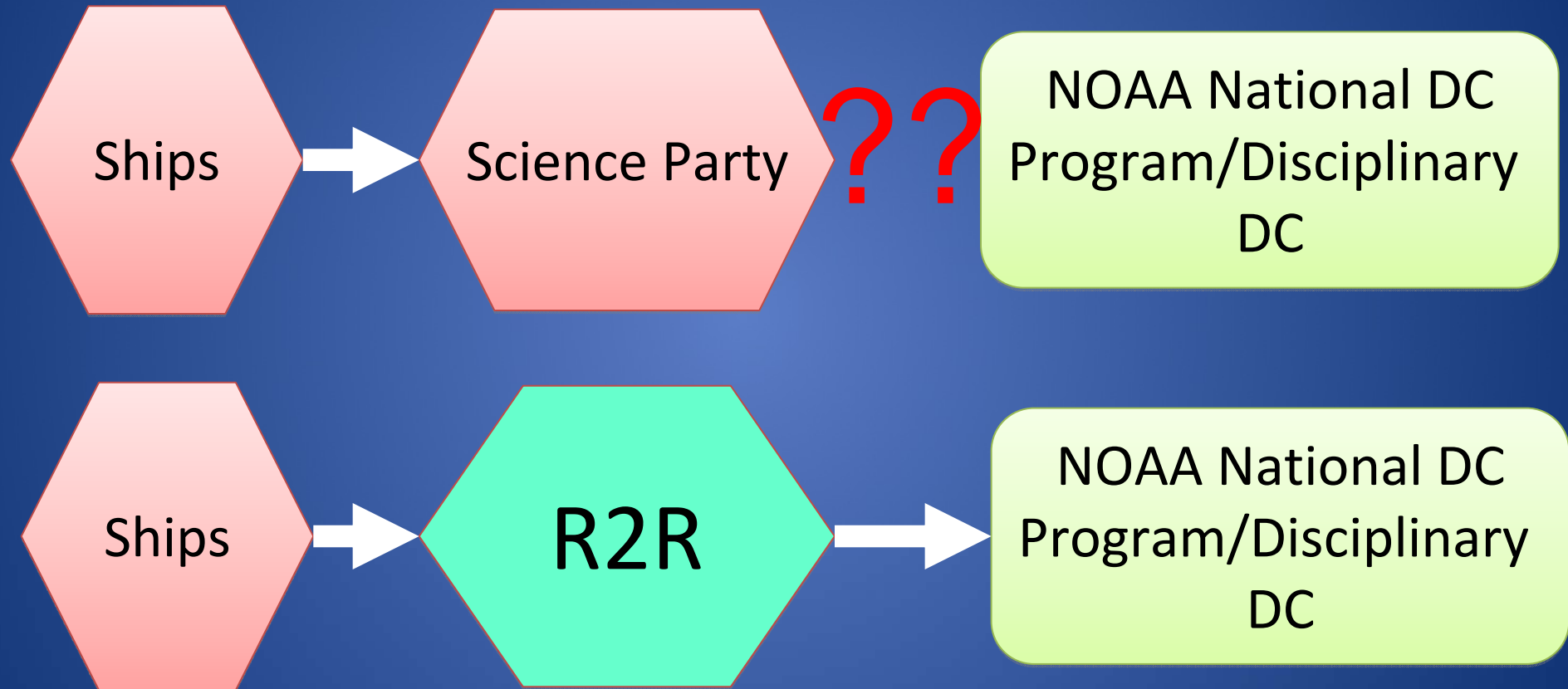


The Challenge

- All underway data are of high value for preservation
- Research cruises are staffed by multiple investigators and yield heterogeneous data sets
- Data documentation difficult and/or sparse
- Little routine QA/QC is routinely conducted and has varied historically depending on operator priorities/capability
- Data are not systematically archived at National Data Centers



R2R Gateway for Underway Data



Shipboard Data

Research expeditions involve a variety of data collection activities:

- Operational/Underway (e.g. bathymetry, MET, ADCP, subbottom etc)
- National Facility (e.g. NDSF, Seismic, OBSIP)
- Science party instrumentation (e.g. current meter, sediment traps, chemical/physical probes etc)

Key Components of the R2R Data Stewardship Plan

- Community Engagement (Operators, Scientists)
- Accommodate full range of vessels and classes
- Data documentation
- Data quality
- Data preservation and dissemination
- Centralized fleet data gateway
- Maximize efficiency (~500 cruises/year)
- Interoperability (NDCs, DACs)

R2R Deliverables & Services

- *Basic Cruise Metadata*

- Projects, ports, personnel, dates
- Scientific Sampling Event Log (extensible)
- Quality Controlled Ship Track (downloadable files and Web Services)
- Data Catalog (dataset, and file level metadata)
- Operations Report (formatted document with standard products + appendices)

- *Data Documentation and Delivery*

- Realtime Quality Controlled MET and TSG data
- Routine and consistent data delivery to NDCs
- Routine and consistent data accessibility to DACs
- Quality Assessment
 - feedback to Operators
 - accompany data delivered to NDCs

Additional R2R Services

- *Training Guides* – publish community best practices for data acquisition/reduction
- *Data Recovery* – original field data distribution
- *Clearance* – support preparation of data to foreign nations

R2R Community Engagement

- Operator Community
 - Surveys
 - Feedback from Operators
 - QA Feedback to Operators
 - Meetings (e.g. RVTEC)
 - Ship Visits
 - Operator Login – Verification Process
- Science Community
 - Chief Scientist Login – Verification Process
 - Development of QA Tools and Procedures

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

Pilot Project Progress

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

Cruise Catalog | Rolling Deck to Repository (R2R)

http://www.rvdata.us/catalog

Home About R2R Cruise Catalog References Contact Us Internal

Data Inventory

Ships: 14
Cruises: 807
Files: 2921158
October 4, 2009

Search

Home

Cruise Catalog

Atlantic Explorer Atlantis* Blue Heron Cape Hatteras
Clifford A. Barnes Corwith Cramer Endeavor F.G. Walton Smith
Healy* Hugh R. Sharp* Ka'imikeli-O-Kanaloa* Kilo Moana*
Knorr* Laurence M. Gould Marcus G. Langseth* Maurice Ewing*
Melville* Moana Wave* Nathaniel B. Palmer New Horizon*
Oceanus* Pelican Point Sur Polar Sea
Polar Star Robert C. Seamans Robert Gordon Sproul Roger Revelle*
Savannah Seward Johnson Thomas G. Thompson* Wecoma

Click here for vessel details. * (data online)

Home

Cruise Catalog: Kilo Moana

Cruise: KM0514 Inventory
Chief Scientist: Armstrong, Andrew (CCOM)
Project: U.S. Law of the Sea Mapping-Gulf of Alaska
Start Date/Port: 2005-06-24 Honolulu
End Date/Port: 2005-09-01 Honolulu

Cruise ID	Start Date	Start Port	End Date	End Port
Details				
KM0517 Inventory	2005-10-06	Honolulu	2005-10-11	Honolulu
Project: Hawaii Ocean Timeseries (HOT-174) Chief: Gregory, Thomas (UH)				
KM0516 Inventory	2005-09-15	Honolulu	2005-10-02	Honolulu
Project: MAKAI'05 - Pacific Missile Range Facility (PMRF) Chief: Porter, Michael (ONR)				
KM0515 Inventory	2005-09-08	Honolulu	2005-09-12	Honolulu
Project: Hawaii Ocean Timeseries (HOT-173) Chief: Santiago-Mandujano, Fernando (UH)				
KM0514 Inventory	2005-06-24	Honolulu	2005-09-01	Honolulu
Project: U.S. Law of the Sea Mapping-Gulf of Alaska Chief: Armstrong, Andrew (CCOM)				
KM0513 Inventory	2005-06-13	Honolulu	2005-06-17	Honolulu
Project: Hawaii Ocean Timeseries (HOT-170) Chief: Santiago-Mandujano, Fernando (UH)				
KM0512	2005-06-02	Honolulu	2005-06-10	Honolulu
(159 cruises)				

14 ships, 831 cruises
(as of 10/12/09)

Operator Survey conducted during Pilot Project

Instrument System	Data - Description	# Systems (by RV Class)			
		Global/Ocean (10)	Inter/Regional (8)	Coastal/Local (7)	TOTAL
“Navigation”	<i>(date/time, position, motion – GPS-INS, compass, speed log, etc.)</i>	51	41	23	= 115
Gravimeter		9	1	0	= 10
Magnetometer		8	1	0	= 9
Echosounder	<i>(high/fixed freq. single/split beam)</i>	7	5	6	= 18
Multibeam	<i>(hull-mounted swath + sea surface sound velocimeter)</i>	11	0	2	= 13
Subbottom	<i>(low/swept freq. – profile images)</i>	12	10	5	= 27
ADCP	<i>(Acoustic Doppler Current Profiler)</i>	16	13	9	= 38
Met. Station	<i>(temperature, pressure, humidity, wind speed/direction, precipitation, radiation, etc.)</i>	10	8	7	= 25
CTD	<i>(towed/lowered – temperature, salinity, depth, dissolved oxygen, pH, PAR, transmissivity, etc.)</i>	11	9	8	= 28
TSG	<i>(surface – temperature, salinity)</i>	8	3	5	= 16
Fluorometer	<i>(fluorescence, turbidity, absorbance)</i>	6	4	2	= 12
pCO2	<i>(partial pressure of CO2)</i>	4	0	0	= 4
Exp. Probe	<i>(temperature, salinity, depth, sound speed – XBT, XCTD, XSV, etc.)</i>	10	4	2	= 16
Winch/Wire	<i>(tension, speed, payout, etc.)</i>	10	8	7	= 25

Event Logger: Development & Testing

- Prototype Application

- Community Input (*Operators, Scientists, Data Managers*)

- Tested on several cruises

- Implementation plan

- operator installs application onboard
- science party maintains log underway
- results loaded in *rvdata.us* database for dissemination

The screenshot displays the Event Logger application interface. It features a table of event logs with columns for Event ID, Datetime (GMT), Latitude (dd), Longitude (dd), Station, and Cast. The first entry is OC525_0007, dated 2008-11-12 06:18:03, at latitude 20.13638 and longitude 043.45721. Below the table, there is a section for 'Make a new entry:' with buttons for CTD, General, Gravity Core, Hobo Cast, and MOCNESS. A 'Make new template...' button is also present. On the right side, there is a search bar labeled 'Search the log' and a section for 'Search results' with the text 'search results will appear here'. An 'Actions' dropdown menu is located at the bottom right.

Event ID	Datetime (GMT)	Latitude (dd)	Longitude (dd)	Station	Cast
OC525_0007	2008-11-12 06:18:03	20.13638	043.45721		
Investigator	Initials	Notes			
	DDD	Look. More dolphins.			
Locked. Someone else is editing this entry.					
Event ID	Datetime (GMT)	Latitude (dd)	Longitude (dd)	Station	Cast
OC525_0008	2008-11-13 18:57:13	19.18234	042.42345	5	1
Event Type	Bottom Depth (m)	Core Length (m)	Finger?		
Gravity Core	2350	2.8	No		
Investigator	Initials	Notes			
Muddy Waters	WTS				
Event ID	Datetime (GMT)	Latitude (dd)	Longitude (dd)	Station	Cast
OC525_0009	2008-11-14 12:03:48	18.12341	042.00023		


Alex Dorsk (WHOI)

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

Data Delivered to National Data Centers

Cruise Catalog: Healy | Rolling Deck to Repository (R2R) Pilot Project

http://www.rvdata.us/catalog/Healy

Cruise ID	Date	Location	End Date	City
HLY05TE Inventory	2005-10-06	Tromso	2005-10-09	Dublin
Project: Transit				
DATA SETS				
HLY0503 Inventory	2005-08-05	Dutch Harbor	2005-09-30	Tromso
Project: Healy-Oden Trans-Arctic Expedition 2005 (HOTRAX'05), Leg 2				
Chief: Darby, Dennis (ODU)				
DATA SETS				
HLY05TD Inventory	2005-07-26	Barrow	2005-07-31	Dutch Harbor
Project: Transit				
DATA SETS				
HLY0502 Inventory	2005-06-27	Barrow	2005-07-26	Barrow
Project: The Hidden Ocean - Arctic 2005				
Chief: Gradinger, Rolf (UAF)				
DATA SETS				
System	Vendor-Model	Repository		
Multibeam	L-3/SeaBeam 2112	NGDC	Download 	
HLY0501 Inventory	2005-06-12	Barrow	2005-06-26	Barrow
Project: Healy-Oden Trans-Arctic Expedition 2005 (HOTRAX'05), Leg 1				
Chief: Darby, Dennis (ODU)				
DATA SETS				
HLY05TC Inventory	2005-06-01	Seattle	2005-06-11	Barrow
Project: Transit				
DATA SETS				

Cruise File List

http://www.ngdc.noaa.gov/nndc/struts/results?op_0=I&v_0=NEW889&t=101378

NOAA > NESDIS > NGDC > MGG > Multibeam Bathymetry

National Geophysical Data Center (NGDC)
NOAA Satellite and Information Service

Multibeam Bathymetric Data

HLY0502 Data File List

These data are not to be used for navigation.

Downloads may take a long time, depending on file size and data transfer rates.

[Download All Files](#) | <---Click here to package and download all files listed below

File Name (click to view/download)	File Size	Description
Multibeam Files --- MBSYSTEM Cruise Summary		
Version 1 Full Resolution----		
sb20051762200.mb41	0.1 MB	SeaBeam 2100 series vender format
sb20051771400.mb41	15.7 MB	SeaBeam 2100 series vender format
sb20051771500.mb41	21.6 MB	SeaBeam 2100 series vender format
sb20051771600.mb41	21.9 MB	SeaBeam 2100 series vender format
sb20051771700.mb41	21.9 MB	SeaBeam 2100 series vender format
sb20051771800.mb41	22.1 MB	SeaBeam 2100 series vender format
sb20051771900.mb41	22.1 MB	SeaBeam 2100 series vender format
sb20051772000.mb41	21.3 MB	SeaBeam 2100 series vender format
sb20051772100.mb41	22.0 MB	SeaBeam 2100 series vender format
sb20051772200.mb41	22.3 MB	SeaBeam 2100 series vender format
sb20051772300.mb41	22.6 MB	SeaBeam 2100 series vender format
sb20051780000.mb41	22.4 MB	SeaBeam 2100 series vender format
sb20051780100.mb41	22.4 MB	SeaBeam 2100 series vender format
sb20051780200.mb41	22.4 MB	SeaBeam 2100 series vender format
sb20051780300.mb41	22.0 MB	SeaBeam 2100 series vender format
sb20051780400.mb41	22.0 MB	SeaBeam 2100 series vender format
sb20051780500.mb41	22.1 MB	SeaBeam 2100 series vender format
sb20051780600.mb41	22.5 MB	SeaBeam 2100 series vender format
sb20051780700.mb41	22.3 MB	SeaBeam 2100 series vender format
sb20051780800.mb41	22.1 MB	SeaBeam 2100 series vender format
sb20051780900.mb41	21.6 MB	SeaBeam 2100 series vender format
sb20051781000.mb41	21.5 MB	SeaBeam 2100 series vender format

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

Next Steps...

- Expand Community Engagement
 - Invite the Fleet to join R2R by routinely submitting data
 - Presentations at AGU & Ocean Sciences
 - Operator community input for implementation
 - Science community for development of QA protocols
 - Operator/Chief Scientist Login
 - Mail list & RSS Feeds
- Continue Developing Technical Infrastructure
 - Real-time data transmission (MET/TSG)
 - Data set documentation
 - Data delivery to NDCs
 - Event Logger
 - Automated QA procedures

