R2R Shipboard Sampling Event Logger Introduction

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Discussion Topics

■ Cruise Sampling Event Log
(device deployment metadata for science)

➢ history
➢ what it isn't
➢ what it is
➢ why

R2R and the scientific sampling event log (history)

- NSF and other US federal agency program managers are under increasing pressure to ensure access to data from publicly funded research.

- NSF funded R2R as a small pilot study in Fall 2008

- The event log was identified as one of 4 initial products of an R2R enabled cruise.

- A group at WHOI began development of a prototype event logger system in Fall 2008, building on experience gained during US JGOFS and US GLOBEC programs and in continuing use in BCO-DMO.

  - Alex Dorsk, WHOI shipboard technician, volunteered to develop and field test the prototype system

R2R Event Logger System is <u>not</u> . . .

- Mandatory
- A data logging system
- A replacement for existing event loggers
- Complete (November 2009 version is an early prototype)

- If the R2R event logging system is deployed on a vessel, it is the responsibility of the science party and not the shipboard technician to enter information in the event log during the cruise.

Why do we need an event log?

- Research vessels are an essential part of the global observing system
- *in situ* data can be collected only once (in space and time)
- oceanographic data are expensive to collect
  - Fuel costs
  - Specialized equipment
  - Highly trained people

- Recognition of these facts led to the R2R initiative of which the event log is one part.

Who wants an event log?

- ➤ Oceanographers and Data Managers
- ➤ The R2R event logger system will help researchers log their sampling events during a cruise.

- ➤ Unique event IDs help community members integrate discrete data sets after the cruise.

The event log is an important part of the cruise report

- **basic cruise metadata**
  - Cruise ID - a way to identify the cruise
    - KN195-08   (ship, voyage and leg)
    - KM0908   (ship, 2 digit year and sequential voyage for year)
  - dates and ports
- **personnel manifest**
  - list of everyone on board and contact information
  - their role during the cruise
- **data inventory**
  - list of who is expecting to collect what data during cruise
- **event log**
  - list of every device deployment during a cruise

. . . and becomes a data set in the research database.

Why? Research cruises are more complex (trend continuing)

VERTIGO project KM0414 ALOHA cruise sampling event matrix

R/V Kilo Moana (University of Hawaii Marine Center)

July 9th final summary of cruise activities

file VERTIGO final cruise activities.xls

Julian Day	172_173	173_174	174_175 particle collections	175_176 day 0	176_177 day 1	177_178 day 2	178_179 day 3	179_180 day 4	180_181 day 5
ship plans- June 2004	20-Jun	21-Jun	22-Jun	23-Jun	24-Jun	25-Jun	26-Jun	27-Jun	28-Jun
hours	day 1	2	3	4	5	6	7	8	9
0		SS#1 CTD 2-18	SS#1 CTD 2-18	Trull trap in- 300	Survey CTD #24 & drifters	MOCNESS	MULVFS	NBST 300 out	MOCNESS
2		SS#1 CTD 2-18	SS#1 CTD 2-18	Launch Clap 150	Survey CTD #25 & drifters	SS	MULVFS	NBST 300 out	NBST 500 out
4		SS#1 CTD 2-18	recover 12hr NBST	STD bio cast- CTD #19 & Th CTD20	1000m CTD #26	CTD biocast #27 (shallow)	MULVFS	CTD #32	NBST 500 out
6	depart 0800	SS#1 CTD 2-18	SS#1 CTD 2-18	Launch Clap 300	Launch-optical trap	CTD biocast #28 (deep)	MULVFS	STD bio cast- CTD#33	NBST 500 out
8		SS#1 CTD 2-18	SS#1 CTD 2-18	Launch Clap 500	Launch-optical trap	MULVFS		NBST 150 out	Clap 300 out	Clap 500 out
10		recover 12 hr NBST	plankton net test- Silver/Tanner	Launch NBST 150	MOCNESS	MULVFS	NBST 150 out	CTD # 34-39	MOCNESS
12			MOCNESS test	Launch NBST 300	MOCNESS	MULVFS	NBST 150 out	CTD # 34-39	MOCNESS
14		SS#1 CTD 2-18	MULVFS test	Launch NBST 500	Launch respirometer	MULVFS	Clap 150 out	CTD # 34-39	CTD # 40-44
16		deploy 12hr NBST test	MULVFS test	Survey CTD #21 & drifters	Go-Flo casts	Deep CTD 29- 3000m Ba/Th	Clap 150 out	CTD # 34-39	CTD # 40-44
18		SS#1 CTD 2-18	SS#1 CTD 2-18	Survey & drifters	Go-Flo casts	Deep CTD 29- 3000m Ba/Th	CTD #30 & 31	CTD # 34-39	CTD # 40-44
20	deploy 12hr NBST test	optical trap test	Launch 1 Siegel drifter	Survey CTD #22 & drifters	Launch C explorer	MULVFS	optical trap out	CTD # 34-39	CTD # 40-44
22	SS#1 CTD 2-18	SS#1 CTD 2-18	Trull trap in- 300	Survey CTD #23 & drifters	MOCNESS	MULVFS	bio cast-tow	MOCNESS	CTD # 40-44

MO WHOI

Data Inventory (list of expected measurements)

Instrument	Measurement	PI_name	co-PI_name
TMR	Bottle O2	Casciotti	Frame;Sieracki
TMR	Nitrate isotopes	Casciotti	nd
TMR	Uptake Expts-Fe Cd Zn Hg Ni	Cox	Saito
CTD	Productivities; selected stations	DiTullio	nd
CTD	Pigments	DiTullio	nd
CTD	Uptake Expts-carbon C14	Ditullio	Riseman
ON_DECK_PUMP	Incubation Expts-Iron;DMSP effects	DiTullio	nd
TMR	N2O	Frame	Casciotti
TMR	Methyl Mercury	Hammerschmidt	nd
CTD	nifH gene expression	Hilton	Zehr;Webb
TMR	FeL	Lam	Buck
MCLANE	Fe-Metal Particulates	Lam	nd
MCLANE	POC	Lam	nd
nd	Aerosol metals	Lamborg	nd
nd	Sediment trap fluxes including metals	Lamborg	nd
TMR	Total Dissolved Mercury	Lamborg	nd
TMR	DOC	Morris	Carlson
CTD	Heterotrophic bacterial counts-act	Morris	nd
CTD	Proteomics	Morris	Rocap
CTD	Pro and Syn phylogeny-ecotype	Rocap	Webb
ON_DECK_PUMP	Incubation Expts-Phosphate	Rocap	nd
LAB	Sampling Event Log	Saito	nd

Why now?   (challenge and opportunity)

- What if we could all agree on some common approaches that would facilitate integration of results from all vessels in the research fleet?

Atlantic Explorer

Atlantis ⭐

Blue Heron

Cape Hatteras

Clifford A. Barnes ⭐

Corwith Cramer

Endeavor

F.G. Walton Smith

Healy ⭐

Hugh R. Sharp ⭐

Ka'imikai-O-Kanaloa ⭐

Kilo Moana ⭐

C. Chandler   R2R   BCO-DMO WHOI

Why now?   (challenge and opportunity)

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Knorr ⭐   Laurence M. Gould   Marcus G. Langseth ⭐   Maurice Ewing ⭐

Melville ⭐   Moana Wave ⭐   Nathaniel B. Palmer   New Horizon ⭐

Why now?   (challenge and opportunity)

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Oceanus ⭐

Pelican

Point Sur

Polar Sea

Polar Star

Robert C. Seamans

Robert Gordon Sproul

Roger Revelle ⭐

Savannah

Seward Johnson

Thomas G. Thompson ⭐

Wecoma

shipboard sampling event log (from 2003)

generated automatically using some algorithm

controlled vocabulary

date, time and position from shipboard system

event	date	time	time_L	sta	lon	lat	ev_type	person	activity
0212208	20020121	2208	1108	TEST	-175.220	-53.572	CTD001	nd	CTD001
0230442	20020123	0442	1742	0	-171.480	-55.398	CTD002	Wang	CTD002
0231556	20020123	1556	0456	0	-171.583	-55.407	ZooTow	Landry	ZooplankTow
0232351	20020123	2351	1351	1	-171.521	-55.334	CTD003	nd	CTD003
0240153	20020124	0153	1453	1	-171.490	-55.329	TM001	Wang	TM001
0240356	20020124	0356	1656	1	-171.336	-55.314	CTD004	Bailey	CTD004
0240745	20020124	0745	2045	1	-171.408	-55.335	Pump_Cast	Andrews	PumpCast01
0241133	20020124	1133	0033	1	-171.405	-55.324	TM002	Wang	TM002
0241319	20020124	1319	0219	1	-171.384	-55.333	CTD005	Timothy	CTD005
0241435	20020124	1435	0335	1	-171.385	-56.333	HPT	Tanner	HandPlankTow
0241520	20020124	1520	0420	1	-171.383	-55.337	TM003	Landry	TM003

Final Event Log

- should be an electronic file in plain text (TSV or CSV)

- many researchers record events on paper logs in the main lab, and then enter the records into Excel

- a digital event logging application would simplify the process and reduce errors

- R2R will work with RVTEC to define a common event log format specification

- The prototype application is a start, but we need help from RVTEC during the next design phase . . . this week !

Questions?

thank you