

DISCOVER THE OCEAN. UNDERSTAND THE PLANET.

OCEAN
NETWORKS
CANADA
INNOVATION

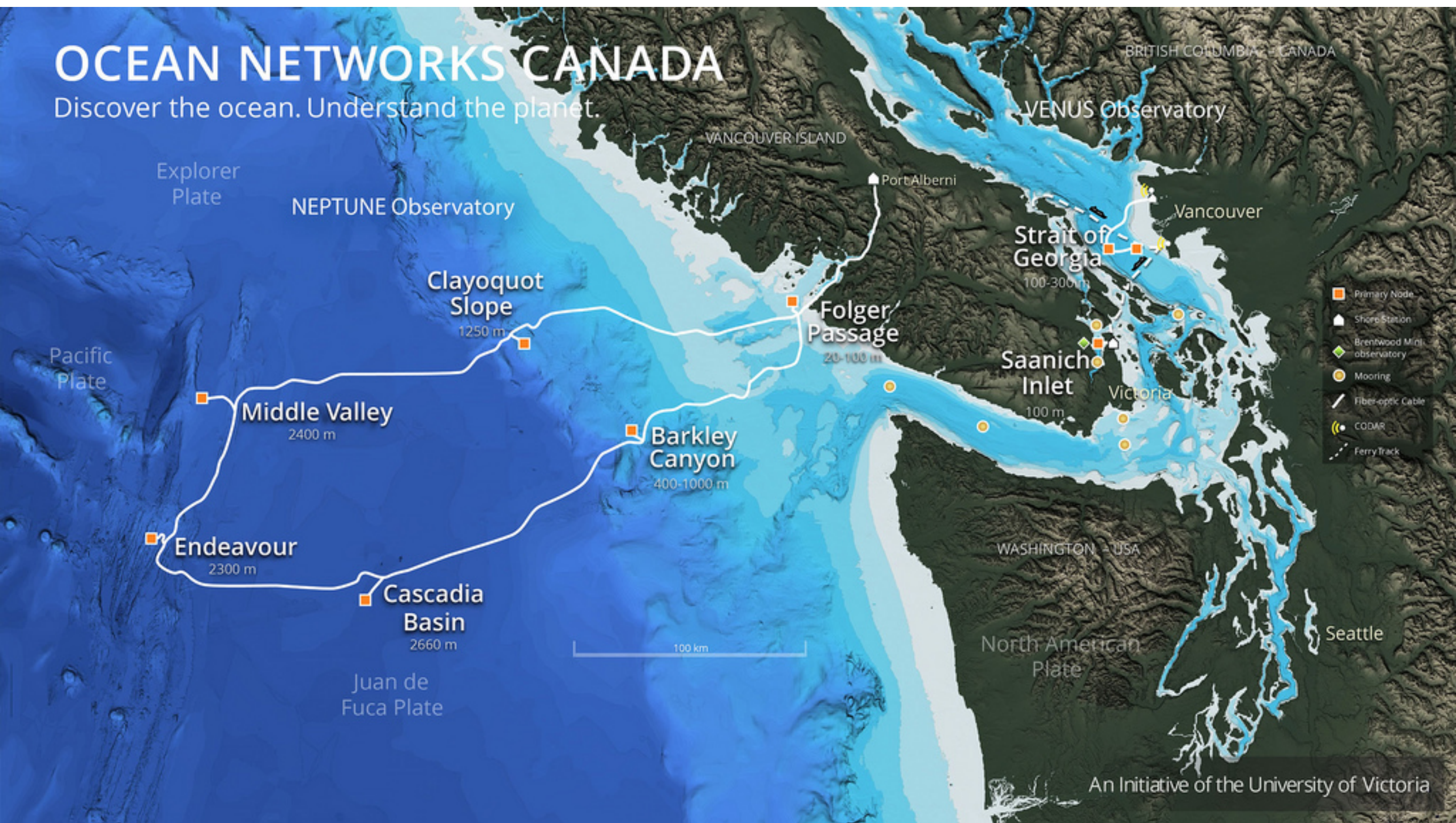
Data Stewardship for Mobile Platforms at Ocean Networks Canada

Schmidt Ocean Institute
2015 Research Planning Workshop
August 27, 2015
Reyna Jenkyns

AN INITIATIVE OF  University
of Victoria

Ocean Networks Canada

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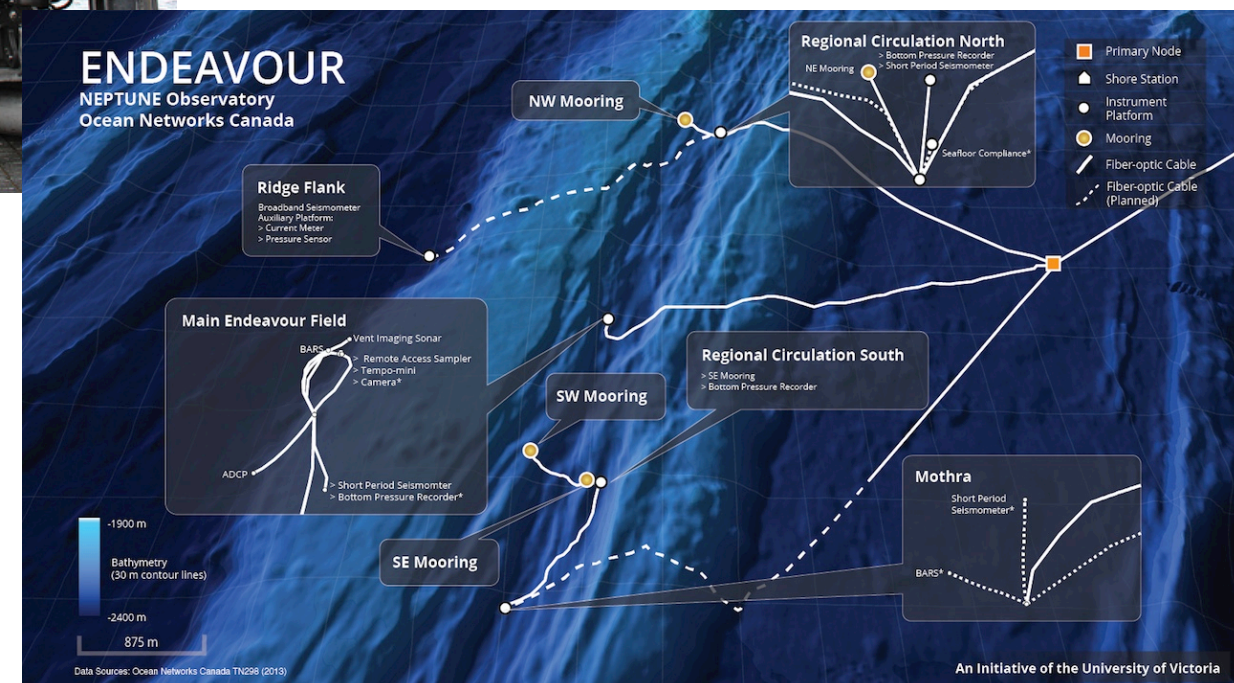
Maintenance Expeditions

Carefully
planned ROV
dives to ensure
expedition
objectives
achieved

10+ ships

5+ ROVs

NEPTUNE/VENUS maintenance
expeditions



Maintenance Expeditions

Ocean Networks Canada Device Workflow Admin Logged in as Reyna Jenkyns | [Profile](#) | [Help](#) | [Logout](#)

Oceans 2.0

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Process Groups

- Juan de Fuca Moorings 2015-04-09 Strickland
- Juan de Fuca Moorings 2015-09 Nautilus
- Metlakatla 2015-08/09
- Mill Bay 2013-06
- Mill Bay 2014-06
- Mill Bay 2014-10
- Mill Bay 2015-06
- NEPTUNE 2013-05 JOIDES
- NEPTUNE 2013-05 Tully
- NEPTUNE 2013-06 Thompson
- NEPTUNE 2014-05 Tully
- NEPTUNE 2015-01 Wave Venture
- NEPTUNE 2015-05 Wave Venture, Dorado Disc
- NEPTUNE 2015-08/09**
- NEPTUNE CORK/BHT 2014-08 RV Atlantis AT2
- NEPTUNE Folger Pinnacle 2013-05
- NEPTUNE Folger Pinnacle 2013-07
- NEPTUNE Folger Pinnacle 2013-10-23
- NEPTUNE Folger Pinnacle 2014-07
- NEPTUNE Folger Pinnacle 2014-10
- NEPTUNE Folger Pinnacle 2015-07
- ONC 2013 AIS Receiver Deployments
- ONC 2013-08 Falkor Leg 1
- ONC 2013-09 Falkor Leg 2
- ONC Gliders 2013 Fall
- ONC Gliders 2014
- ONC Gliders 2015
- ONC IC 2013 Spring
- ONC IC OTTB 2013-11
- ONC IC OTTB 2014-01
- ONC IC OTTB 2014-03
- ONC IC OTTB 2014-04
- ONC IC OTTB 2014-07 OAP Test at MTC
- OTTB Camera Test 2014
- Pacific Salmon Foundation 2014-02
- Port Alberni - 2015-03
- Smart Ocean - Mexico/Chase 2015

Process Group Name:

Process Group Id:


<input type="checkbox"/>	Device Id	Device Name	Process	Last Completed Phase
<input type="checkbox"/>	23610	Aanderaa Optode 3830 (S/N 871)	Autonomous Cruise Device	
<input type="checkbox"/>	12110	Aanderaa Optode 3830 (S/N 910)	Serial Device Recovery	
<input type="checkbox"/>	20116	Aanderaa Optode 3830 (S/N 911)	Serial Device Maintenance	
<input type="checkbox"/>	23572	Aanderaa Optode 4831 (S/N 471)	Autonomous Cruise Device	
<input type="checkbox"/>	11002	ADM CTD 105 on Crawler	Serial Device Recovery	
<input type="checkbox"/>	23174	Allied Prosilica GC1290C 02-2186A-17670 Camera	Camera Recovery	
<input type="checkbox"/>	23530	Argus ROV Navigation 01	Autonomous Cruise Device	
<input type="checkbox"/>	23280	ASL AZFP Echosounder 55016	Ethernet Device Recovery	
<input type="checkbox"/>	23299	Autonomous Temperature Array 02	Autonomous Recovery	
<input type="checkbox"/>	23300	Autonomous Temperature Logger Chains 05	Autonomous Recovery	
<input type="checkbox"/>	12170	Barkley Colour Axis-Video [Axis P1347]	Camera Recovery	
<input type="checkbox"/>	10011	BC Pod #1 Axis JB-02	JB/SIIM Recovery	
<input type="checkbox"/>	10018	BC Pod #2 JB-03	JB/SIIM Recovery	
<input type="checkbox"/>	10012	BC Pod #3 JB-04	JB/SIIM Recovery	
<input type="checkbox"/>	10013	BC Pod #4 JB-05	JB/SIIM Recovery	
<input type="checkbox"/>	20020	BioSonics DT-Xu Scientific Echosounder	Ethernet Device Recovery	
<input type="checkbox"/>	21301	CORK P (1026B)	Autonomous Maintenance	
<input type="checkbox"/>	23181	CORK P (1364A)	Autonomous Maintenance	
<input type="checkbox"/>	19003	COVIS Multibeam Sonar 001	Ethernet Device Recovery	
<input type="checkbox"/>	22668	Crawler IA 2(switch)	Ethernet Device Recovery	
<input type="checkbox"/>	23311	Crawler Port Manager 2	Serial Device Recovery	
<input type="checkbox"/>	12113	Crossbow NAV 440 (Gyro)	Serial Device Recovery	
<input type="checkbox"/>	23152	DragonFish Camera SUBC13112	Camera Recovery	

Remove Device Set Process

[+ Add Device...](#)

Create Process Group Save Delete Cancel

Maintenance Expeditions


Ocean Networks Canada

Device Details
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Device Id: **10610** Device Name: **Sea-Bird SeaCAT SBE19plus V2 6316**

[General](#) | [Sensor](#) | [Ip](#) | [Electrical Rating](#) | [Data Rating](#) | [Nameplate](#) | [Port](#) | [Physical Characteristics](#) | [Device Action](#) | [Event](#) | [Site](#) | [Procurement](#) | [Additional Attributes](#) | [Workflow](#) | [SeaScript](#)

ONC 2013-09 Falkor Leg 2: Autonomous Cruise Device (Process Group)

Autonomous Cruise Device On-Shore Development Complete: 7/7

Task	Area of Responsibility	Status	Comment	JIRA	Last Modified (UTC)	Modified By
Device - create	Data Stewardship	Complete			16-Oct-2013 00:08:32	Reyna Jenkyns
Sensors - create	Data Stewardship	Complete			23-Apr-2014 21:36:07	Reyna Jenkyns
Ports - create	Data Stewardship	Complete			23-Apr-2014 21:36:07	Reyna Jenkyns
Calibrations - update	Data Stewardship	Complete	calibration sheets received	NEPDATA-1878	20-Jun-2014 15:06:10	Reyna Jenkyns
Conversion routine - prepare	Data Stewardship	Complete			20-Jun-2014 01:48:50	Reyna Jenkyns
Parser - develop	Software Development/Testing	Complete			20-Jun-2014 01:41:40	Reyna Jenkyns
Data Products - develop	Data Team	Complete	log files are sufficient for now		20-Jun-2014 01:42:18	Reyna Jenkyns

Edit

Autonomous Cruise Device Field Procedure Complete: 8/9

Task	Area of Responsibility	Status	Comment	JIRA	Last Modified (UTC)	Modified By
Instrument Documentation - collect	Data Stewardship	Complete	scanned calibration sheets obtained by Karen		16-Oct-2013 00:09:37	Reyna Jenkyns
Power supply - verify	Engineering	Complete			16-Oct-2013 00:09:37	Reyna Jenkyns
Autonomous Data Storage - verify	Data Stewardship	Complete			16-Oct-2013 00:09:37	Reyna Jenkyns
Instrument - prepare	Engineering	Complete			16-Oct-2013 00:09:37	Reyna Jenkyns
Instrument Clock - synchronize	Engineering	Incomplete			18-Sep-2013 23:07:15	Reyna Jenkyns
Autonomous data - download	Engineering	Complete			16-Oct-2013 00:09:37	Reyna Jenkyns
Data Stream - verify	Systems	Complete			16-Oct-2013 00:09:37	Reyna Jenkyns
Instrument - configure	Engineering	Complete			16-Oct-2013 00:09:37	Reyna Jenkyns
Deployments - document	Data Stewardship	Complete	via ROV dive logs, topology, sitedevices and device actions		21-Jul-2014 22:52:45	Meghan Tomlin

Edit

SeaScribe: Dive Logging

Cruises

- Cruise Name
- Ship Name
- Duration
- Description

Dives

- Description
- Location
- Duration
- Dive Chief
- Dive Reference ID

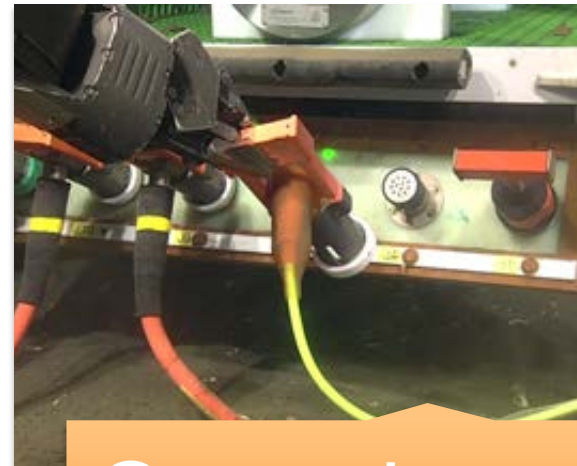
Observations

- Comment
- Timestamp
- Logger
- Tag

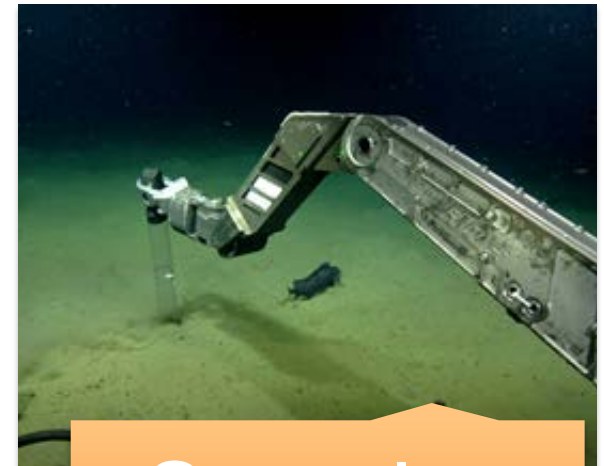


SeaScribe: Dive Logging

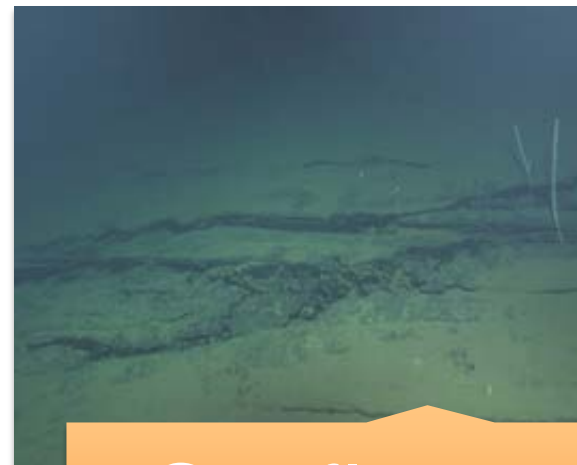
- Records maintenance, survey, and sampling activities
- Documents scientific observations of seafloor substrate and biology
- Increases searchability and usability of dive video
- Supports derivative applications, such as comparison or training automated classifiers and generation of geodatabase layers



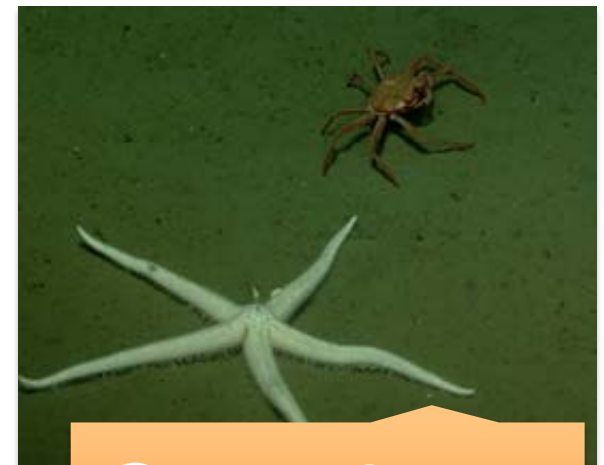
Operations



Samples




Seafloor



Organisms

SeaScribe: Dive Logging



Ocean Networks Canada Dive Listing
Oceans 2.0

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NEPTUNE/VENUS Falkor Leg 2 2013-09

Dive Id	Current	Area	ROV Dive Id	Date From	Date To	Dive Comment
308	N	Saanich Inlet	R1645	07-Sep-2013 13:14:02	07-Sep-2013 18:45:05	1- Transect of Patricia Bay 2- Net samples of flatfish at deeper end of transect
309	N	Saanich Inlet	R1646	07-Sep-2013 20:44:31	08-Sep-2013 01:36:01	1-Cliff climbs at McMurdy Point and Elbow Point. 2- Collect samples
310	N	Saanich Inlet	R1647	08-Sep-2013 04:51:58	08-Sep-2013 13:41:13	1- Connect BPS, 2- Samples at Venus DISCO camera location: Close up imagery, suction sample, 3 - Push cores and Niskins at "P"
311	N	Strait of Georgia	R1648			
312	N	Clayoquot Slope	R1649			
313	N	Barkley Canyon	R1650			
314	N	Barkley Canyon	R1651			
315	N	Barkley Canyon	R1652			
316	N	Barkley Canyon	R1653			
317	N	Barkley Canyon	R1654			
318	N	Barkley Canyon	R1655			
319	N	Barkley Canyon	R1656			
320	N	Barkley Canyon	R1657			
321	N	Barkley Canyon	R1658			
322	N	Tully Canyon	R1659			
323	N	Tully Canyon	R1660			


Ocean Networks Canada Dive
Oceans 2.0


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Dive: R1650 | **Observations**

Observation Filter:

Observation Id	Time (UTC)	Description
90814	10-Sep-2013 15:46:24	Chordate
90815	10-Sep-2013 15:47:01	HIGHLIGHT : Chordate: small deep-sea fish. Very good v
90816	10-Sep-2013 15:49:34	CNIDARIAN: Siphonophore
90817	10-Sep-2013 15:52:01	Cnidarian, aeginura sp. or Voragonema sp.
90818	10-Sep-2013 16:01:23	ROV ON BOTTOM
90819	10-Sep-2013 16:03:00	Camera of POD1
90820	10-Sep-2013 16:08:33	IN POSITION, DEVICEID: 23034 (CTD on POD1), SITEID: 4.579
90821	10-Sep-2013 16:19:20	Transit to POD3 to deploy sediment enrichment experime
90822	10-Sep-2013 16:28:01	CNIDARIANS: Poralia rufescens
90823	10-Sep-2013 16:33:18	HIGHLIGHT, CHORDATES: unidentified (deep sea with t
90824	10-Sep-2013 16:38:21	CNIDARIAN: Sea anemone DSC: Please add comment [
90825	10-Sep-2013 16:38:49	CNIDARIAN: Sea anemone DSC: Please add comment [
90826	10-Sep-2013 16:39:29	ECHINODERM: Sea star and CNIDARIAN: Sea anemone Equivalent=1600]
90827	10-Sep-2013 16:39:37	CNIDARIAN: Sea anemone DSC: Please add comment [
90828	10-Sep-2013 16:39:46	ECHINODERMS DSC: Please add comment [Focal Leng
90829	10-Sep-2013 16:40:26	SPONGE: boot sponge; ARTHROPODS: Grooved tanne


Ocean Networks Canada Observation
Oceans 2.0

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Dive Id:
 Observation Id:
 Resource Id:
 Time (UTC):
 Dive Date From (UTC):
 Dive Date To (UTC):
 Tags:
 Description:

Deck Operations | Operations | **Organisms** | Other | Sampling | Seafloor

Annelid
 Arthropod
 Chaetognatha
 Chordate
 Cnidarian
 Ctenophore
 Echinoderm
 Mollusc
 Sponge
 Undetermined

Save Cancel

SeaTube

NEPTUNE Canada SeaTube Pro Oceans 2.0 Logged in as [user] | [Profile](#) | [Help](#) | [Logout](#)

[Data Search](#) [Code Runner](#) [Plotting Utility](#) [SeaTube](#) [Digital Fishers](#) [Cameras](#) [Projects](#) [More](#) [Tools](#)

Videos Playlists Available Resolutions: Low Search All Videos

Cruises

- NEPTUNE Maintenance Cruise June 2013
 - M0019 - 2013-Jun-24 17:57:16 - Clayo
 - M0018 - 2013-Jun-24 11:28:04
 - M0017 - 2013-Jun-23 13:31:57 - Endeavour
 - M0016 - 2013-Jun-22 17:59:49 - Endeavour
 - M0015 - 2013-Jun-22 07:12:18 - Endeavour
 - M0014 - 2013-Jun-21 14:17:29 - Endeavour
 - M0012 - 2013-Jun-20 23:47:02 - Endeavour
 - M0011 - 2013-Jun-18 06:26:10 - Main Endeavour Field**
 - M0010 - 2013-Jun-17 02:55:53 - Endeavour
 - M0009 - 2013-Jun-16 14:11:19 - Endeavour
 - M0008 - 2013-Jun-16 01:22:36 - Endeavour
 - M0007 - 2013-Jun-15 17:34:57 - Endeavour
 - M0006 - 2013-Jun-15 07:52:37 - Endeavour
 - M0005 - 2013-Jun-14 13:51:52 - Endeavour
 - M0004 - 2013-Jun-13 20:16:10 - Endeavour
 - M0003 - 2013-Jun-13 16:09:02 - Endeavour
 - M0002 - 2013-Jun-13 07:33:33 - Endeavour
 - M0001 - 2013-Jun-13 02:07:53 - Endeavour
- NEPTUNE Maintenance Cruise May 2013
- NEPTUNE Spring 2012 (May 2012)
- NEPTUNE Maintenance Cruise Sept 2011
- NEPTUNE Maintenance Cruise July 2011
- NEPTUNE Canada maintenance cruise, (May 2010)
- NEPTUNE Maintenance cruise, May 2010
- NEPTUNE Instrument Installation 2009 (April 2009)
- NEPTUNE ALCATEL (Jul 2009)
- Benthos 2008 (Jun 2008)
- Route Survey 2006 Barkley, 889, Folger (April 2006)

Locations

- Port Alberni
- Endeavour
- Marine Technology Centre
- Barkley Canyon
- Folger Passage

Map Profile Detail

Dive: M0011
 PI: Kulin, Ian
 Area: Main Endeavour Field
 Start Date: 18-Jun-2013 06:26:10
 End Date: 20-Jun-2013 18:07:08
 Dive Plan: Objectives: Visual IP inspection - Deploy RDI ADCP (DeviceID:23063) -Deploy BARS (DecideID:1502) - 2X gas tights, 2X Majors -North Tower

Display of dive metadata

Search Comments Find

4756.9551N, 12905.9012W, 2196
 2013-06-20 03:37:47, Hdg: 303
 (C) 2013, ONC M0011

02:45 04:59

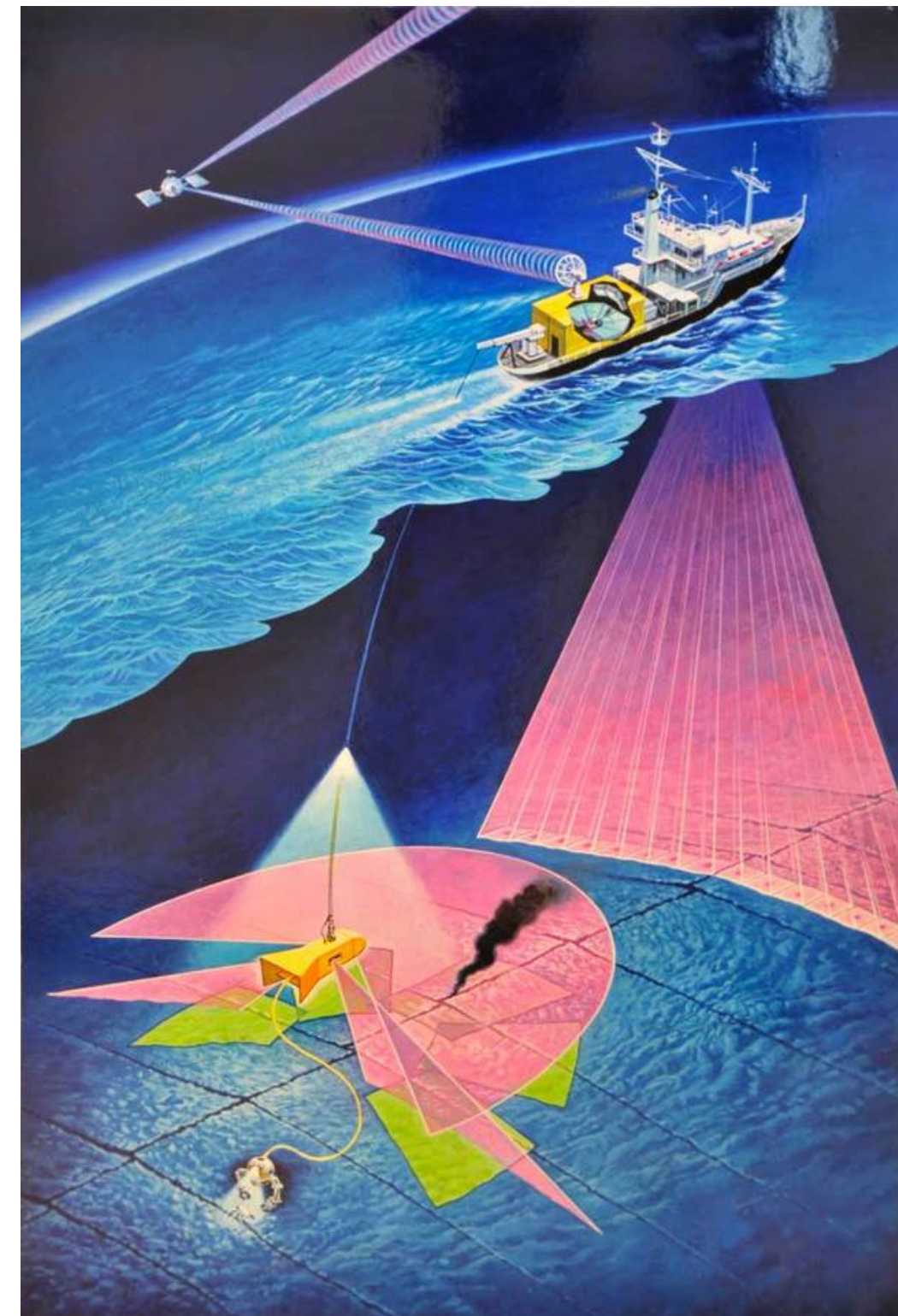
Dive Log Entries My Annotations

Start Date (UTC)	End Date (UTC)	Comment	Img	Latitude	Longitude	Depth	Origin	Action
20-Jun-2013 03:35:23	20-Jun-2013 03:35:23	MOLLUSC snails Buccinum thermophilum						
20-Jun-2013 03:35:38	20-Jun-2013 03:35:38	3 of the temperature sensors are in the white hotter section						
20-Jun-2013 03:39:08	20-Jun-2013 03:39:08	Surveying TEMPO-Mini in its final configuration						
20-Jun-2013 03:43:11	20-Jun-2013 03:43:11	HIGHLIGHT: good video panning around TEMPO-Mini fully deployed with ROV lights on, then off.						
20-Jun-2013 03:46:17	20-Jun-2013 03:46:17	IN POSITION, DEVICEID: 22792 TEMPO-Mini, SITEID: 100283, LAT: 47 56.9580, LONG: 129 05.8994,		0	0	0	IRLS	

Annotations from dive logging utility integrated with video.
Highlighting denotes entry matching video segment
Logs are combined with additional data like navigation, still images, and origin for a richer experience.

Telepresence

- SeaScribe dive logging supports up to 10 server instances (including from shore), mutually synced as communications permit
- Ship-based data acquisition that transmits data to shore and automatically integrates into Oceans 2.0
- Video streams shown live on cruise website and recorded for viewing in Oceans 2.0
- Intercom system connected to shore
- Substantial shore support operations
- Remote scientist participation to direct ROV dives
- Teachers on-board and remote classroom participation



Wiring The Abyss

The screenshot shows the Ocean Networks Canada website interface. At the top left is the logo. A navigation bar contains links for Exploration Vessel, Research Vessel, Updates, Photos, Videos, and People. The main banner features the title 'EXPEDITION 2015 WIRING THE ABYSS' and a call to action: 'Join the Expedition!! Explore the ocean depths and engage with scientists and explorers in realtime. It's your turn to experience the mystery, power, and beauty of the deepsea.' To the right is a video player titled 'Introducing Wiring the Abyss 2015' showing a ship. Below the banner are two colored boxes: a purple one for the 'EXPLORATION VESSEL: NAUTILUS' and a green one for the 'RESEARCH VESSEL: THOMPSON', each with a 'WATCH LIVE' button. The bottom of the page shows a satellite map of the North Atlantic.

OCEAN NETWORKS CANADA

EXPLORATION VESSEL RESEARCH VESSEL UPDATES PHOTOS VIDEOS PEOPLE

EXPEDITION 2015 WIRING THE ABYSS

Join the Expedition!! Explore the ocean depths and engage with scientists and explorers in realtime. It's your turn to experience the mystery, power, and beauty of the deepsea.

Introducing Wiring the Abyss 2015

EXPLORATION VESSEL: NAUTILUS

WATCH LIVE

RESEARCH VESSEL: THOMPSON

WATCH LIVE

2013 Falkor Expedition available: <http://www.oceannetworks.ca/cruise13/>

Data Ingestion

Falkor Datasets:

- **Shipboard Systems:** multibeam sonars, 75 kHz ADCP, flow-through sensors
- **ROPOS ROV:** video, digital stills, navigation, CTD/O2, physical samples
- **Profiling platforms:** CTD Rosette, Moving Vessel Profiler

Falkor Seawater System

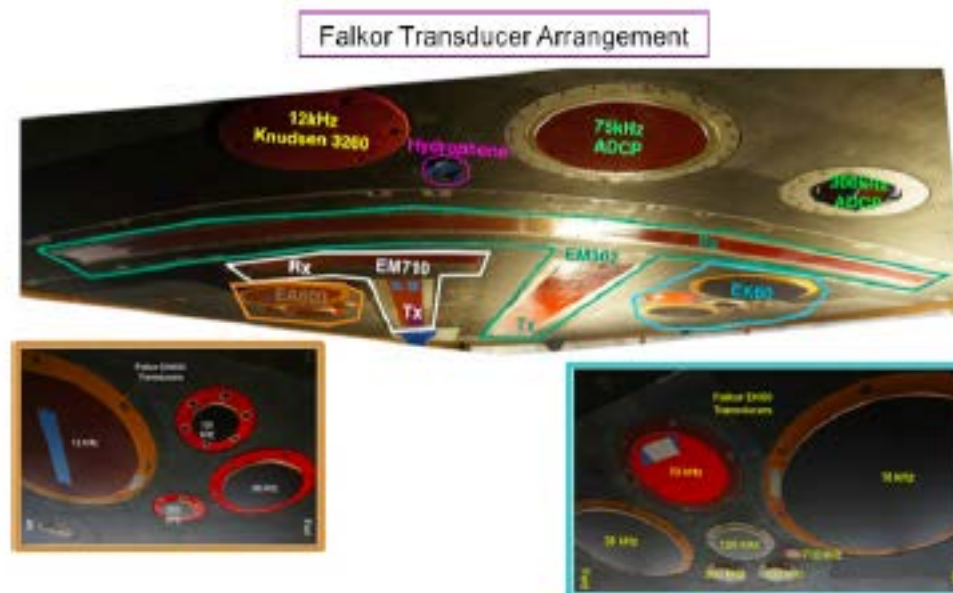
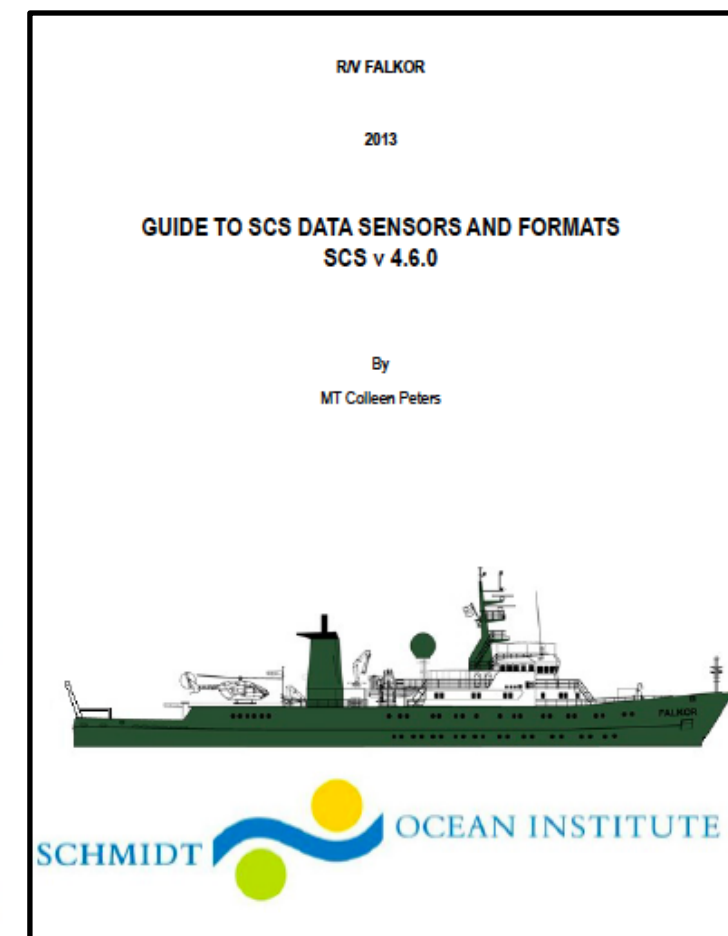
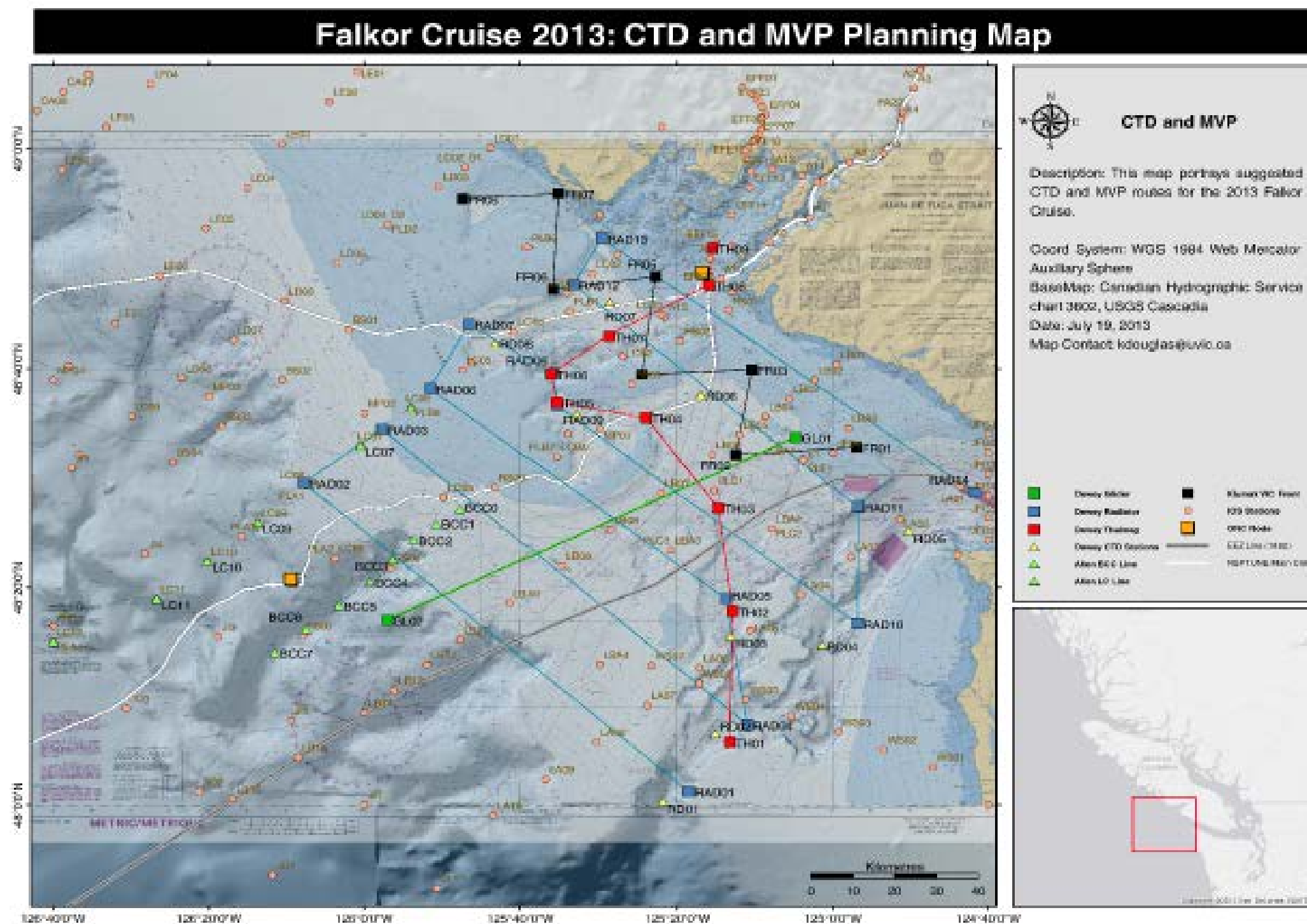


Figure 28: A view of the Falkor Transducers from below the Gondola looking forward.

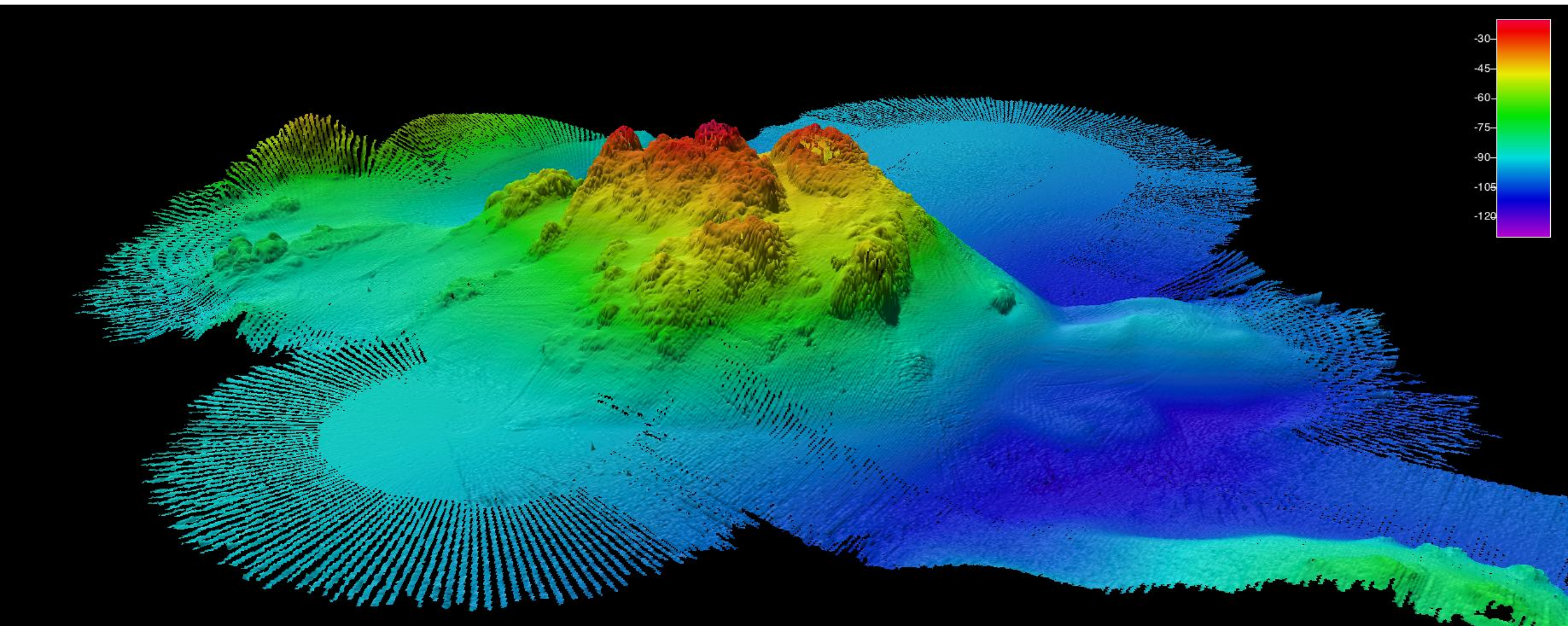


Data Ingestion



Data Ingestion

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Bathymetric data at Folger Pinnacle

Data Ingestion

General Process

- Establish data agreement
- Collect and organize instrument inventory, metadata and documentation
- Review, rename and archive data files – ***reliable timestamps critical!***
- Develop parser or other post-processing algorithms for data format
- Setup automated QAQC tests
- Process data files and enable access

```
08/21/2013,01:12:00.135,t1= 16.1393, c1= 4.06533, s= 32.0044, sv=1505.218, t2= 15.6423
08/21/2013,01:12:01.571,t1= 16.1398, c1= 4.06529, s= 32.0036, sv=1505.218, t2= 15.6424
08/21/2013,01:12:01.571,t1= 16.1400, c1= 4.06523, s= 32.0030, sv=1505.217, t2= 15.6425
08/21/2013,01:12:03.213,t1= 16.1397, c1= 4.06523, s= 32.0032, sv=1505.218, t2= 15.6427
```

Since the instrument takes a reading roughly every second, we can maybe assume that the duplicated timestamp should be at 08/21/2013,01:12:02. instead of 01:12:01..

Data Stewardship & Sharing

SOI Strategic Focus Area #5: Open Sharing of Information, Data, and Research Outcomes

Schmidt Ocean Institute supports open sharing of information about the ocean to stimulate the growth of its applications and user community, and amplify further exploration, discovery, and deeper understanding of our environment. These efforts are supported through partnerships with data management experts in the oceanographic community to enable standards-compliant sharing of scientific information and data collected during research cruises.



World Data System (WDS)

- Membership based on criteria such as access to high quality data, data stewardship, and participation in broad harmonization and interoperability efforts
- Working groups: Publish Data, Knowledge Network, Certification
- ONC became a member in July 2014

Data Access

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Ocean Networks Canada Data Search
Oceans 2.0

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Data Search

Ocean Networks Canada Plotting Utility
Oceans 2.0

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Step 1. Choose

Sort by: Instruments by Location

Filter on: No Filter

Ocean Networks Canada

- Arctic
- Atlantic
- Pacific

- Northeast Pacific

- ROV Data

- Salish Sea

- Ship Data

- CCGS John P.

- M/V Dorado Discovery

- R/V Falkor

- EM 302

- EM 710

- ADCP 75 kl

- Echosounder

- Fluorometer

- Moving Vessel

- Navigation

- Oxygen Sensor

- Sound Speed

- Sub-bottom

- Temperature

- Thermosalinograph

- R/V Thomas G.

- Vancouver Island

- ISDM

- PANGAEA

Instruments

Saved Plots

Help

Sort by: Instruments by Location

Filter on: No Filter

Ocean Networks Canada

- Arctic

- Atlantic

- Pacific

- Northeast Pacific Ocean

- ROV Data

- Salish Sea

- Ship Data

- CCGS John P. Tully

- M/V Dorado Discovery

- R/V Falkor

- Fluorometer

- Chlorophyll

- Navigation

- Oxygen Sensor

- Oxygen Concentration Uncorrected

- Oxygen Saturation

- Temperature

- Sound Speed Sensor

- Temperature Sensor

- Thermosalinograph

- Conductivity

- Practical Salinity

- Sound Speed

- Temperature

- R/V Thomas G. Thompson

- Vancouver Island

Time Period Selection

Time Presets

Refresh Plot(s)

Time Range History

Date From (UTC): 18-Aug-2013 08:38:06

Date To (UTC): 19-Sep-2013 15:19:03

Custom

Plot

Reset Time Fields

Auto Refresh: inactive

<< Previous UTC Time Period

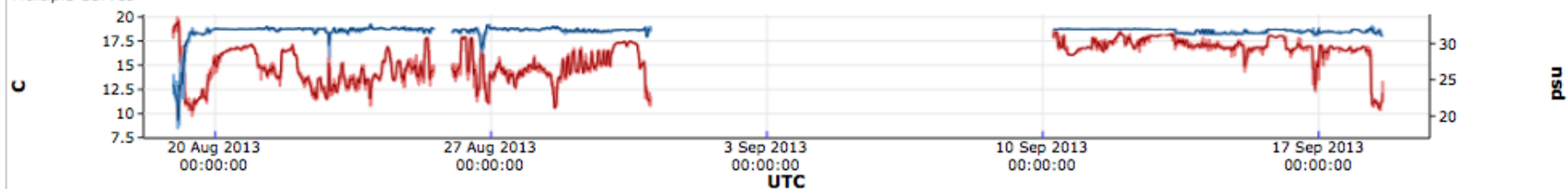
Next UTC Time Period >>

Clear All

Save Plot(s)...

Plot 1

Multiple Curves



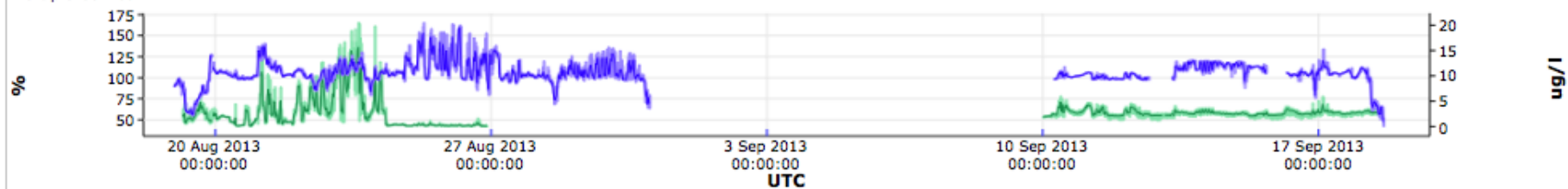
Pacific - Ship Data - R/V Falkor - Thermosalinograph (Details|Docs) - Temperature (13123) - Clean - MinMax - Downsampled - Download Data

Pacific - Ship Data - R/V Falkor - Thermosalinograph (Details|Docs) - Temperature (13123) - Clean - Avg - Downsampled - Download Data

Pacific - Ship Data - R/V Falkor - Thermosalinograph (Details|Docs) - Practical Salinity (13125) - Clean - MinMax - Downsampled - Download Data

Plot 2

Multiple Curves



Pacific - Ship Data - R/V Falkor - Fluorometer (Details|Docs) - Chlorophyll (9890) - Clean - MinMax - Downsampled - Download Data

Pacific - Ship Data - R/V Falkor - Fluorometer (Details|Docs) - Chlorophyll (9890) - Clean - Avg - Downsampled - Download Data

Pacific - Ship Data - R/V Falkor - Oxygen Sensor (Details|Docs) - Oxygen Saturation (12000) - Clean - MinMax - Downsampled - Download Data

EarthCube iSamples RCN

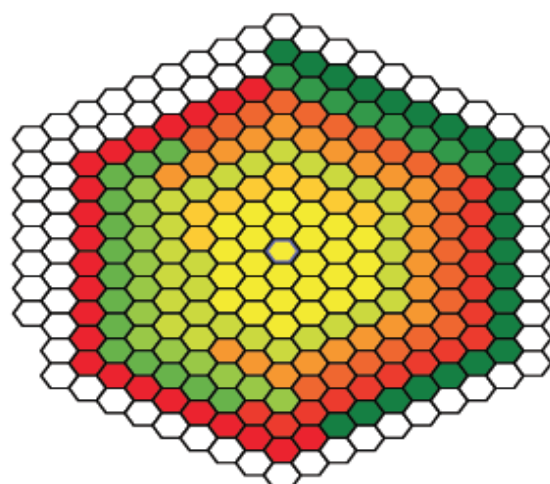
Seeks to advance the use of innovative cyberinfrastructure to connect physical samples and sample collections across the Earth Sciences with digital data infrastructures to revolutionize their utility for science. The ultimate goal of this RCN is to dramatically improve the **discovery, access, sharing, analysis, and curation of physical samples** and the data generated by their study for the benefit of science and society. *PI: Kerstin Lehnert, Lamont-Doherty*

Working Groups

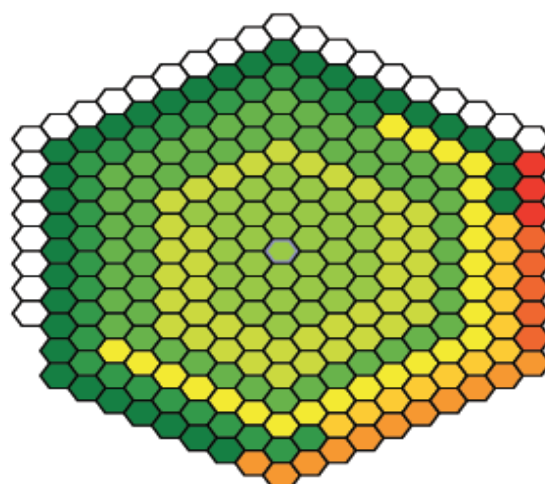
1. Identifiers & Metadata
2. User Stories & Science Requirements
3. Communication, Training & Education
4. Architecture & Workflows
5. Physical Infrastructure, Digitizing, Cataloguing & Sample Rescue



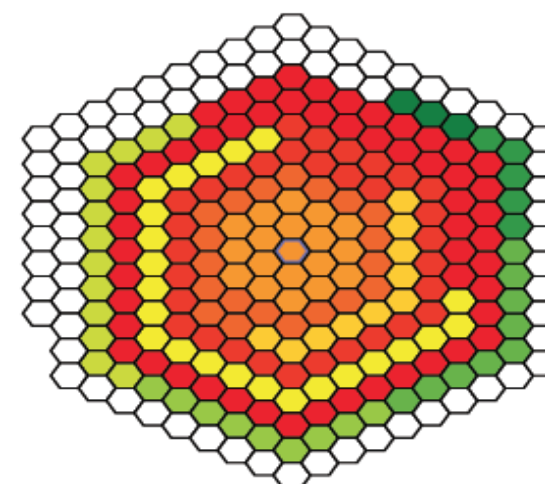
EarthCube iSample Survey Result



$\alpha: 0.32$ $\bar{x}: 0.48$ $n: 268$



$\alpha: 0.22$ $\bar{x}: 0.70$ $n: 268$



$\alpha: 0.28$ $\bar{x}: 0.29$ $n: 268$

My **employer/organization** values and rewards **sharing physical samples or digital data about physical samples.**

.48 (.32)

Colleagues in my field/discipline recognize and value **sharing physical samples or digital data about physical samples.**

.70 (.22)

The **tenure and/or promotion process in my organization** recognizes and Values sharing physical samples or digital data about physical samples.

.29 (.28)

Ongoing Efforts

- Dive logging: guidelines, vocabularies, syntax, interface, training (especially surveys, sampling and substrate)
- Video workflow: streamlined transcodes, repeatable recording process, manipulation features in Oceans 2.0
- Data acquisition: increased use of ship-to-shore acquisition system, better documented data ingestion processes and tools
- Digital stills: better systems for capture, downloading, archiving and distribution
- Rosette: better data model for cast data



Further Info & Current Expeditions

Email: reyna@uvic.ca

Website: <http://www.oceannetworks.ca/>

Oceans 2.0: <http://dmas.uvic.ca>

Find me after for a live demo of any of our tools.

Maintenance Expeditions Underway

Cambridge Bay maintenance with divers

VENUS, NEPTUNE and moorings with E/V Nautilus & Hercules ROV

NEPTUNE with R/V Thompson & Jason ROV starts Sept 2

<http://www.oceannetworks.ca/expeditions/2015/august/>