



Sharing Ship Based Ocean Research Through Innovative Technology and Hands-On Experiences



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R/V *Falkor*...a 3 Year Review



- * 26 missions
- * 480 science days
- * 70,466 miles
- * 19 countries
- * 294 scientists
- * 84 institutions
- * 120 students



Focus on Innovation and Sharing



Our program is structured around the following 5 areas:

1. Commitment to excellence in oceanographic research operations
2. Infrastructure, platform, and technology development for marine sciences
3. Collaborative scientific research aboard *Falkor*
- 4. Communications, Education and Outreach**
5. Open Sharing of Information, Data and Research Outcomes





Perth Canyon, Western Australia



Tasman Sea, Tasmania



Hagnata, Guam



Timor Sea, Australia



**Falkor
in
2015**



Singapore, Singapore



Honolulu, Hawaii



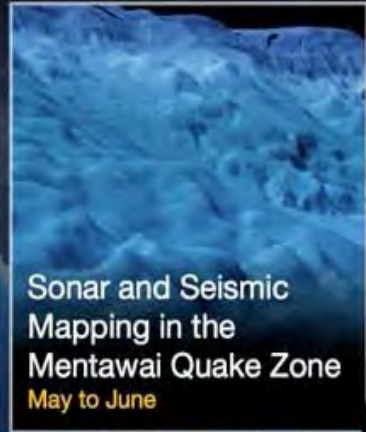
Padang, Indonesia



Majuro, Marshall Islands

Where We've Been

2015



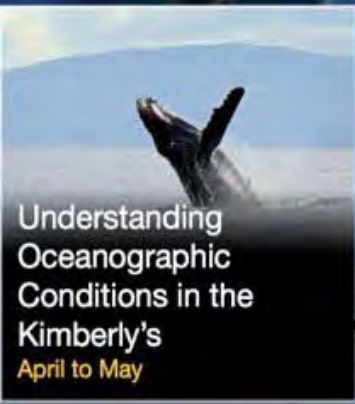
Sonar and Seismic Mapping in the Mentawai Quake Zone
May to June



Hydrothermal Hunt with Robotic Vehicles in the World's Deepest Trench
November to December



Understanding the World's Largest Volcano with Bathymetric Mapping
September to October



Understanding Oceanographic Conditions in the Kimberly's
April to May



Improving Climate Models with Current Profilers in the Tropical Pacific
July to August



Perth Canyon: First Deep Exploration
March



Coordinated Robotics on Australia's West Coast
March to April



Tracking the Tasman Sea's Hidden Tide
January to February



How do you reach audiences when you are in the middle of the Ocean?

Evaluation & Planning



Communications Audit & Strategic Planning helped us :

- provide rationale for existing programs, and how they further SOI's broader goals
- implement new program activities and materials to increase SOI newsworthiness
- identify and engage target audiences and expand to new groups
- obtain measurable results and gauge progress over time

Communications Audit

- What do we need to know?
- Identify sources: messages, mediums, feedback
- Collect & analyze data

Develop communication tools

- Design measurable goals
- Communicate science results
- Systematic evaluation and reporting

Cruise Outreach Planning



Preliminary meeting with
Principal Investigators



Assignment of multimedia
journalist, outreach planning
& student recruitment



Pre-cruise community
engagement & ship tours



Science communications
training for science party



Ship-to-shore
communication via blogs,
social media, telepresence



Post-cruise press &
community engagement

Cruise Outreach Components



1

Pre-cruise
outreach
planning

2

Advance
selection of
target groups
(*e.g. schools,
community,
aquariums*)

3

Media
coverage/ press
(*e.g.
conferences,
releases, etc.*)

4

Web presence
(*e.g. blogs, web
events, radio
podcasts*)

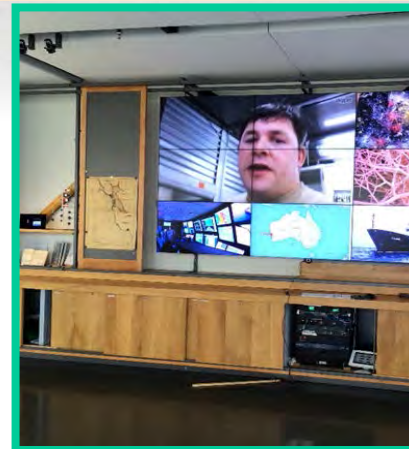
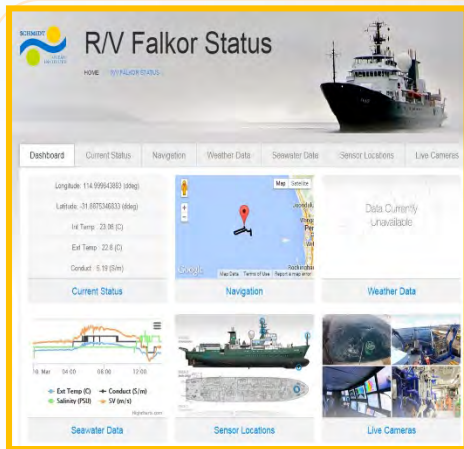
5

Daily social
media plans,
draw to blogs,
events, etc.

6

Communication
& media
training for
science party

Cruise Outreach Components



Web Presence & Media

- SOI Website
- Status Page
- Blogs
- Social Media
- Press

Data Sharing

- Real-Time Data
- Annual Report
- Conferences / Workshop

Telepresence

- Live-streaming footage
- Ship-to-shore connections
- Robot tracker

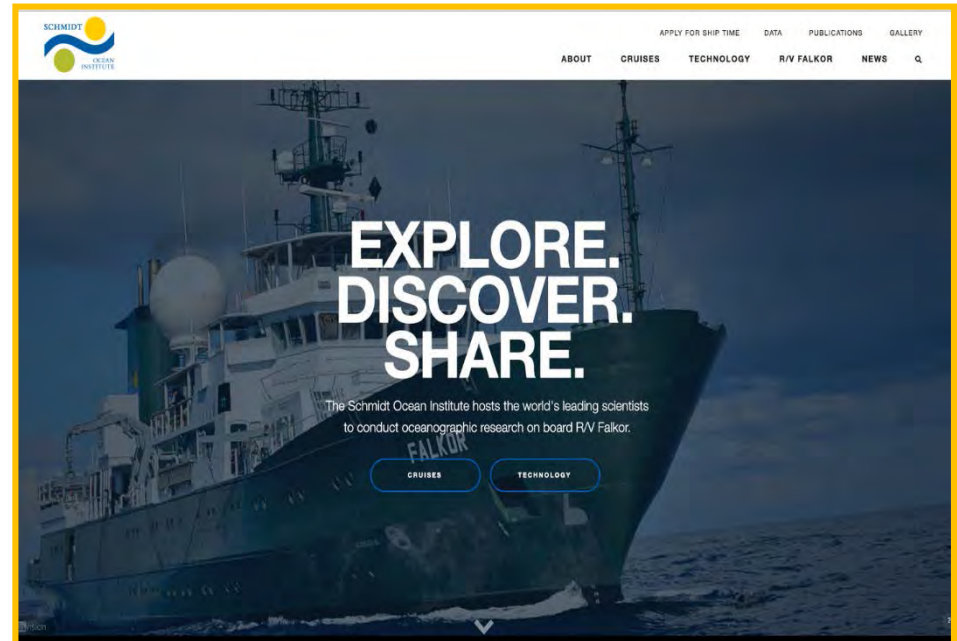
Students & Community

- Student Opportunities
- Ship Tours
- Citizen Science
- Community Presentations

Web Presence & Media: Website Redesign & Status Page



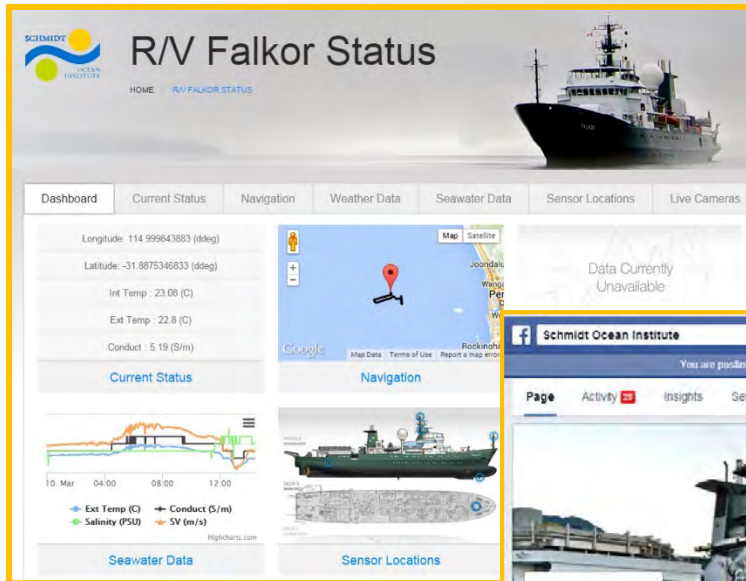
- Website focus group & usability tests
- Language selection
- Multimedia gallery
- Cruise & publication search features
- Real-time data via *Falkor* status



Web Presence & Media: Online Engagement



- Daily blogs during cruises: over 300 blogs viewed from over 200 countries
- Dedicated multimedia journalist
- Growing social media



R/V Falkor Status

HOME | R/V FALKOR STATUS

Dashboard | Current Status | Navigation | Weather Data | Seawater Data | Sensor Locations | Live Cameras

Longitude: 114.999643883 (dddeg)
Latitude: -31.8875346833 (dddeg)
Int Temp: 23.06 (C)
Ext Temp: 22.8 (C)
Conduct: 5.19 (S/m)

Current Status

Navigation

Seawater Data

Sensor Locations

Data Currently Unavailable

Ext Temp (C) Conduct (S/m)
Salinity (PSU) SV (m/s)



Schmidt Ocean Institute

You are posting, commenting, and liking as Schmidt Ocean Institute — Change to Carlie Sandra Wiener

Page | Activity | Insights | Settings

Build Audience | Help

THIS WEEK

10 Page Likes
661 Post Reach
UNREAD

Schmidt Ocean Institute Ocean

Timeline | About | Photos | Reviews | More

PEOPLE

Mildred invited you to like this Page

Accept your friend's invite to get updates from this Page.

1,584 likes
5 photos

Mateusz Wróblewski, Nathan Cunningham and 8 others like this

Status | Photo / Video | Offer, Event

What have you been up to?

Promote Your Page

Reach up to 390,000 people near Palo Alto

Schmidt Ocean Institute

Posted by Carlie Sandra Wiener 171 · August 24 · 🌐

Check out our awesome Falkor crew installing the new POS!



Schmidt Ocean Institute

1,135 Tweets | 500 Photos | 2,023 Followers | 401 Favorites

Tweets | Tweets & replies | Photos & videos

Schmidt Ocean Institute

Advancing understanding of the world's oceans through innovative technologies, multidisciplinary, and open sharing of information.

For those interested in software and how multibeam bathymetry is processed, SOI has been featured by GPS: you.gd/1W3...

Schmidt Ocean Institute

Check out the @jbrunson podcast about the recent findings on the Topical Pacific cruise starts at 21:17: goo.gl/YUOU...

Schmidt Ocean Institute

Today on @brunson's talk with @SchmidtOcean on their latest expedition & El Niño's effects. @jbrunson 5 PM on HPR2

Schmidt Ocean Institute

Only one week left to make for the East Fall

Who to follow

106,663 connections on Google+

Web Presence & Media: Press



- Since 2014 we have conducted 8 live radio broadcasts from RV *Falkor* for the *All Things Marine Radio Show*.
- Over 250 articles from science cruises in 2014 and over 100 in 2015.
- Appeared in international and national television, radio, print, and web outlets.



Web Presence & Media: Press

MTR 100

Editor's Choice

Five Stand-Outs

MTR's roving correspondent Kira Coley was tasked to identify and deliver five innovative companies worthy of inclusion in the 10th Annual MTR100.

Deep Trekker Inc.

Deep Trekker Inc. was founded in 2010 with a mission to bring a fully capable yet portable and accessible remotely operated vehicle to market. Over the last 5 years, Deep Trekkers ROVs have quickly been adopted around the world as the go to underwater observation tool. Based on clean-sheet, innovative engineering, Deep Trekker offers a new breed of submersibles. Deep Trekker products are used across the world for applications including aquaculture, commercial diving, salvage, military, oil & gas, marine survey, research and recreation.

As the World's first fully Portable Vectored ROV, Deep Trekker's DTX2 patented pitching system is combined with powerful vectored thrusters for unprecedented flexibility and movement in the water. Forward, reverse, up, down, and lateral movements are available in 360 degrees vertical and horizontal planes using only 4 thrusters. Vertical movements are

accomplished using the main thrusters instead of relying on substandard vertical thrusters, providing unmatched speed & maneuverability. The DTX2 comes with many options for sophisticated add-ons such as single and multi-beam sonar, USBL positioning, Cutter Attachments, Cygnus Thickness Gauge, tether lengths up to 300 M. Intelligent features come as standard with the DTX2 ROV System, allowing users to work in higher currents and maintain stability.

Taking its cues from larger ROVs, the DTX2 brings all of the functionality required for difficult jobs, but without the usual complexity. Building on the proven DTG2 platform, Deep Trekker offers unparalleled ease of use and simplistic sophistication.

Schmidt Ocean Institute

Established in 2009, the Schmidt Ocean Institute strives to advance the frontiers of ocean research and exploration through novel technologies, intelligent observation and analysis. The last year has seen their involvement in many ground-breaking projects, pushing the boundaries of innovation and marine research. Schmidt Ocean Institute approaches oceanographic re-



search from the technological, operational, and informational perspectives. The Institute maintains and operates R/V Falkor as a technologically advanced scientific platform suitable to support multidisciplinary oceanographic research and technology development. Collaborators get free access to R/V Falkor with her on-board research facilities and expert technical support in exchange for a commitment to openly share and communicate the outcomes of their research.

In March 2015, the Schmidt Ocean Institute worked with the University of Sydney, MIT, as well as other institutions on the "Coordinated Robotics" project, which was also featured in June 2015 issue. The goal was to expand techniques for efficiently coordinating deployments of multiple exploratory underwater vehicles by advancing algorithms and their autonomous capabilities. The success of the project has brought engineers even closer to leaving groups of vehicles unattended for long periods for a variety of underwater observation and data collection missions.

The "Perth Canyon: First Deep Exploration" was another project based in one of Australia's proposed national reserves. Despite being just 50 kilometers or so from Western Australia's capital of Perth, the canyon's deeper reaches remained poorly known and largely unexplored until 2015, when scientists from the University of Western Australia onboard Schmidt Ocean Institute's Research Vessel Falkor explored the region, along with a deep-diving remotely operated vehicle.

www.marinetechologynews.com

Xeos Technologies

With decades of manufacturing experience, Xeos Technologies have successfully designed market leading wireless telemetry products for use in the world's harshest environments. Products range from deep sea alarm beacons to surface oil spill tracking systems to land based perimeter surveillance systems. Xeos is an Iridium Value Added Reseller and provides contract engineering services in addition to its standard product line. All these qualities have brought them success in their four divisions: Communications, Oceanographic Asset Recovery, Remote Monitoring and Security.

The Apollo is an independently powered, self-contained mooring beacon with the power of an ultra-bright LED Flasher combined with satellite communications. Users receive notification of the Apollo's arrival at the surface from anywhere on earth via the Iridium Low Earth Orbit satellite communications system. This beacon provides unparalleled visibility, even in the worst conditions.

Apollo is fully submersible and has been rated to 11,000 ft (3,689 ft) below sea level. In addition, the solid state surface sensor provides a measure of reliability unavailable in mechanical methods. The new APOLLO unit combines all the best features of Iridium communication beacons and LED Flashers along with up to 10 years deployment on alkaline batteries.

With older style VHF beacons, a handheld direction finder would need to be used to locate equipment, sometimes in ver-

Marine Technology Reporter 5



50 MTR

July/August 2015

Schmidt Ocean Institute was selected as the Editor's Choice top Five Stand-Outs in the *Marine Technology Reporter's* annual **Top 100** innovators in the maritime industry.



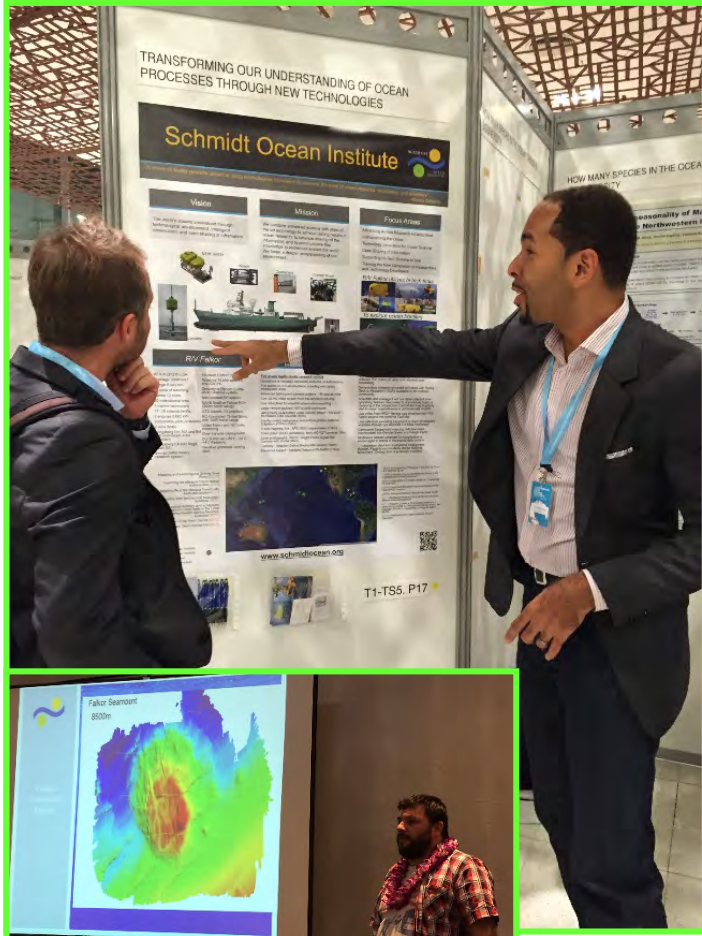
MARINE
TECHNOLOGY
REPORTER

July/August 2015 www.marinetechologynews.com

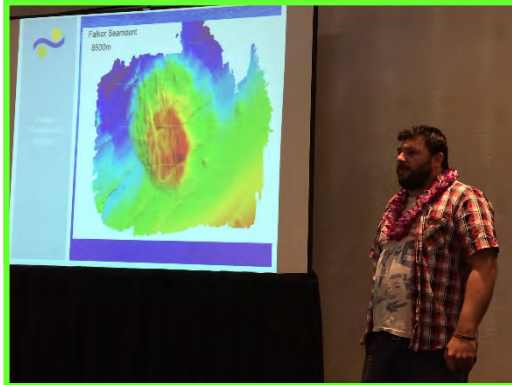
10th Annual



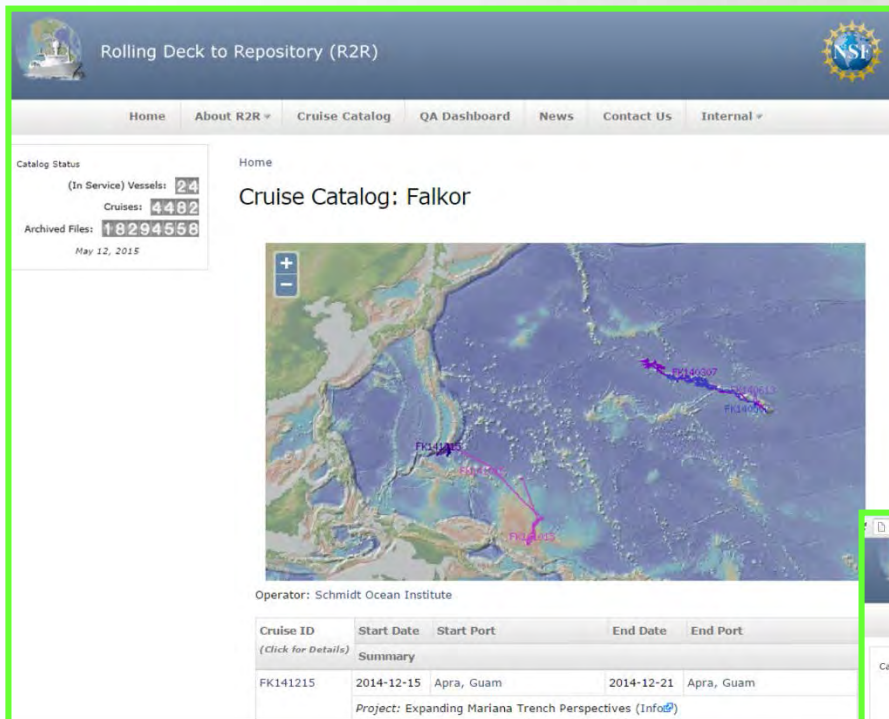
Data Sharing: Conferences / Workshops



- Annual research planning workshop.
- Targeted conference presentations and booth displays both at the national and international level.
- 2,000 people already reached in 2015 through conference presentations



Data Sharing: Real Time Data

Rolling Deck to Repository (R2R)

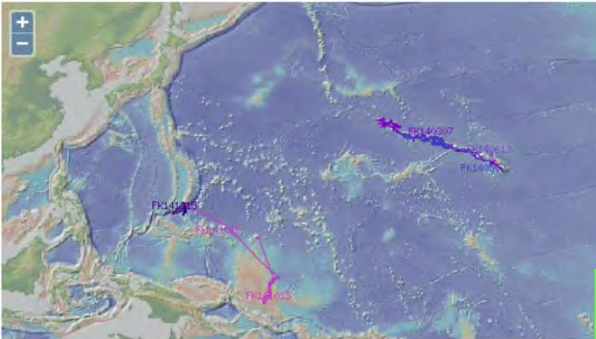
Home About R2R Cruise Catalog QA Dashboard News Contact Us Internal

Catalog Status

(In Service) Vessels: 24
Cruises: 4482
Archived Files: 18294568
May 12, 2015

Home

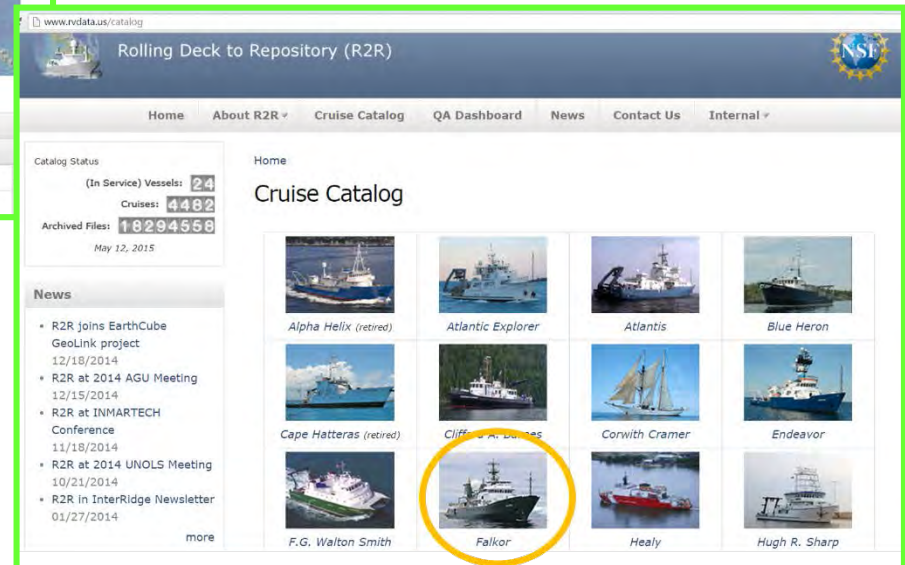
Cruise Catalog: Falkor



Operator: Schmidt Ocean Institute

Cruise ID	Start Date	Start Port	End Date	End Port
Summary				
FK141215	2014-12-15	Apra, Guam	2014-12-21	Apra, Guam
Project: Expanding Mariana Trench Perspectives (Info)				

- 45 academic publications/presentations in 2014.
- All shipboard data shared through Rolling Deck to Repository (R2R)
- Bathymetric dataset from multibeam mapping sent to National Geoscience Data Center (NGDC)



www.rvdata.us/catalog

Rolling Deck to Repository (R2R)













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Cruise Catalog

 Alpha Helix (retired)	 Atlantic Explorer	 Atlantis	 Blue Heron
 Cape Hatteras (retired)	 Clifford A. Barnes	 Corwith Cramer	 Endeavor
 F.G. Walton Smith	 Falkor	 Healy	 Hugh R. Sharp

News

- R2R joins EarthCube GeoLink project 12/18/2014
- R2R at 2014 AGU Meeting 12/15/2014
- R2R at INMARTECH Conference 11/18/2014
- R2R at 2014 UNOLS Meeting 10/21/2014
- R2R in InterRidge Newsletter 01/27/2014

more

Data Sharing: Robot Tracking



+ -9.14549 : 106.83105

30 Likes

Share

Welcome to the Realtime Robot Tracker!

This page allows you to check out underwater robots in action collecting seafloor images! We are currently at Scott Reef in the Timor Sea. We will be here up until 6 APRIL. Click [here](#) to help label the images that are collected! Click [here](#) to find out more about the current expedition.

Layers

Info

Twitter

WaveGlider WGM Offline (4)

PFloat USBL LASTUPD: 799451 S
Lat: -16.25628018
Lon: 121.32764876

Slocum Offline (4)

Sirius USBL LASTUPD: 799452 S
Lat: -16.25628018
Lon: 121.32764876

Sirius LASTUPD: 799451 S

Falkor (ship) LASTUPD: 799452 S
Heading: 180.36
Lat: -16.25628018
Lon: 121.32764876
Pitch: 0.4
Roll: -1.51
Speed: 1

WaveGlider

WGMS

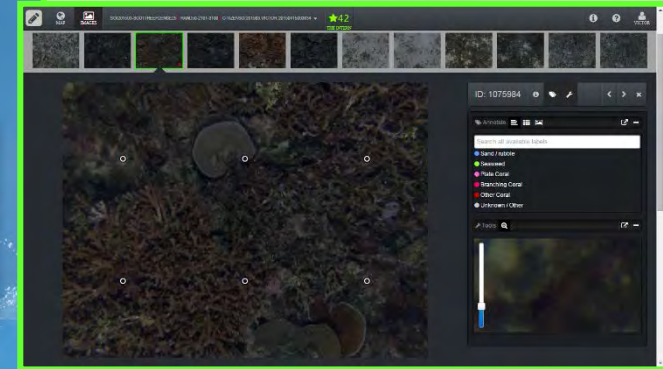
Battery: 0%

Austral

tracker.marine.acfr.usyd.edu.au/#

Leaflet | Basemap from data by Esri | Made by Ariell Friedman

Data Sharing: HPC & Citizen Science



479 labels

Have been tagged so far, thanks to citizen scientists like YOU! We still need many more. Click "Get Started" to help out...

project#: citizenSOI201503

squidle

explore • annotate • interpret • marine imagery

About the Project

What is this all about? Who is involved? Why should you care?

Click for more

How to...

Tutorials and videos that provide useful tips on how to use the system.

Click for more

Diving Deeper

Check out more details about the project and for more info about automated tools designed to make life easier.

Click for more

Get started!

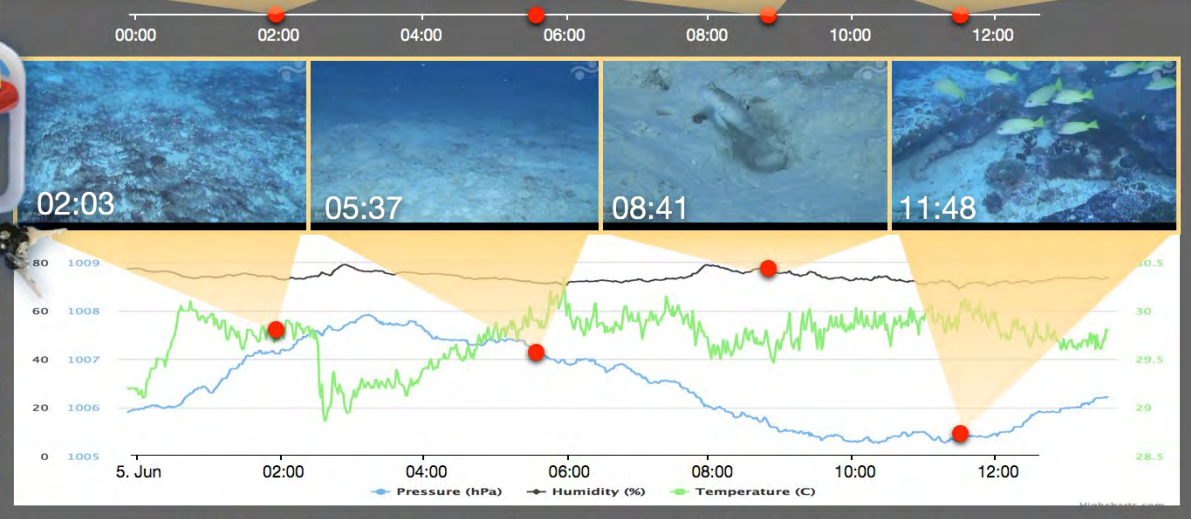
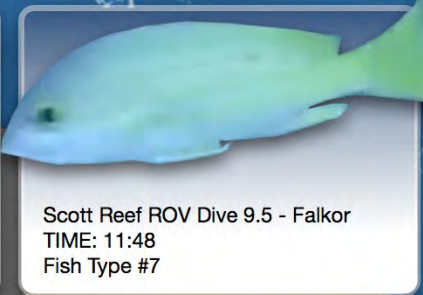
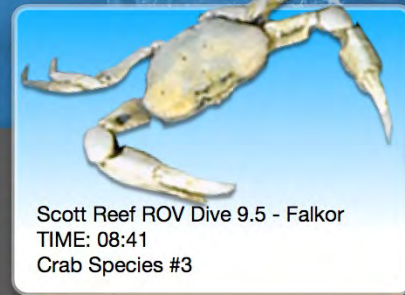
Welcome back (thegateway)! Jump straight to working with the data using the annotation interface.

Click to start



YouTube

Data Sharing
Live Video



Telepresence: Live-streaming



Telepresence: Ship-to-Shore



- 25 live ship-to-shore chats this year in 5 different countries.
- Live connections with middle and high school classrooms, museums, universities, and aquariums.



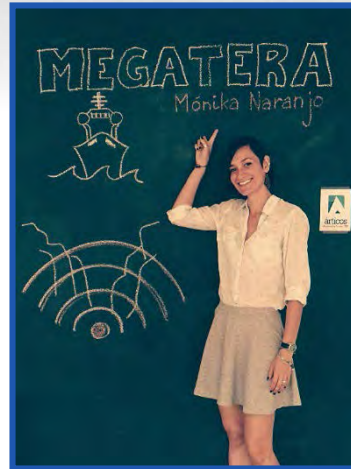
Students & Community: Classroom Connections



- 1,969 students through ship-to-shore connections from *Falkor* so far this year.
- Inspiring the next generation of marine scientists at both the high school and college / university level.
- Connecting with teachers and students internationally with telepresence and in-person classroom visits.



Students & Community: Community Presentations



Students & Community: Ship Tours



- This year we hosted 826 people in eight different ports in six countries on *Falkor* ship tours.



Students & Community: Student Opportunities Program



The Program Upcoming Opportunities **Application Process** Previous Opportunities

Students must fill an application and submit all supplemental information indicated below. In addition to application approval, successful applicants will be required to complete a medical questionnaire and have a passport valid for at least 6 months past the start of the cruise. Depending on the student's nationality a visa may be required.



Schmidt Ocean Institute does not provide financial support or cover travel expenses for students taking part in these opportunities. **Equipment** may be available from the suite of scientific systems aboard Falkor based on the current research plans and interest of each student.

Student applicants must fill out an online application and provide the following supplemental information:

1. Two signed letters of recommendation, including one from the student's major professor (or professional equivalent); if no major professor exists, a faculty person academically knowing the applicant best may be substituted.
2. Personal and academic curriculum vitae or resume (not to exceed two pages).
3. Copy of undergraduate/graduate student transcripts.

All supplemental information should be submitted as one PDF file and include your name and the cruise number that is being sought. Application forms and supplemental information must be received by midnight of the deadline date indicated for each cruise opportunity. Supplemental information can be emailed to student@schmidtocean.org.

APPLY NOW

What's Next?

- * Artist at Sea
- * New website launch
December 2015
- * AV/IT upgrades
including live
presentation center on
Falkor
- * Expanding global
engagement



Thank You

