Evolving Outreach Program a New Approach to Connecting At-Sea Science & Scientists with the Shoreside World

The world's ocean understood through technological advancement, intelligent observation, and open sharing of information.

Vision & Mission

"Technology first: new technology should drive SOI science program".
– Eric Schmidt, July 29, 2014

Vision: The world's oceans understood through technological advancement, intelligent observation, and open sharing of information.

Mission: We combine advanced science with state-of-the-art technology

- to achieve lasting results in ocean research,
- to catalyze open sharing of the information,
- and to **communicate this knowledge to audiences around the world**.

Research Vessel Falkor

SINCE 2012

36

MISSIONS INCLUDING

727

SCIENCE DAYS

Advancing Frontiers of Exploratory Oceanography

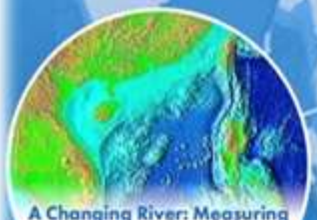
SCHMIDT OCEAN INSTITUTE

EXPEDITIONS 2016

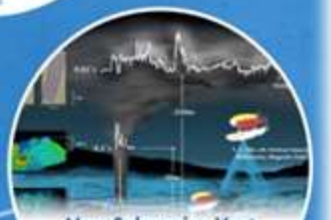
Searching for Life in Hydrothermal Mariana
November
Guam

Virtual Vents and 3D Hydrothermalism
March
North Fiji

Investigating Life Without Oxygen in the Tropical Pacific
January to February
Tahiti



A Changing River: Measuring Nutrient fluxes to the South China Sea
June & September
S. China Sea



New Submarine Vent Exploration in the Society Islands
February to March

Study of the Sea-Surface Microlayer and Air-Sea Boundary
October to November
Guam

4500m ROV Engineering Sea Trials and Science Verification Cruise
November
Guam

Ecosystem dynamics of Western Pacific hydrothermal vent communities
April to May
East Lau Basin

Focus on Innovation & Sharing

Schmidt Ocean Institute's program is structured around the following 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

Cruise Outreach Components

Web Presence & Media

- Website
- Falkor Status
- Cruise Blogs
- Social Media
- Press

Data Sharing

- Real-Time Data
- Annual Report
- Conferences & Workshops

Telepresence

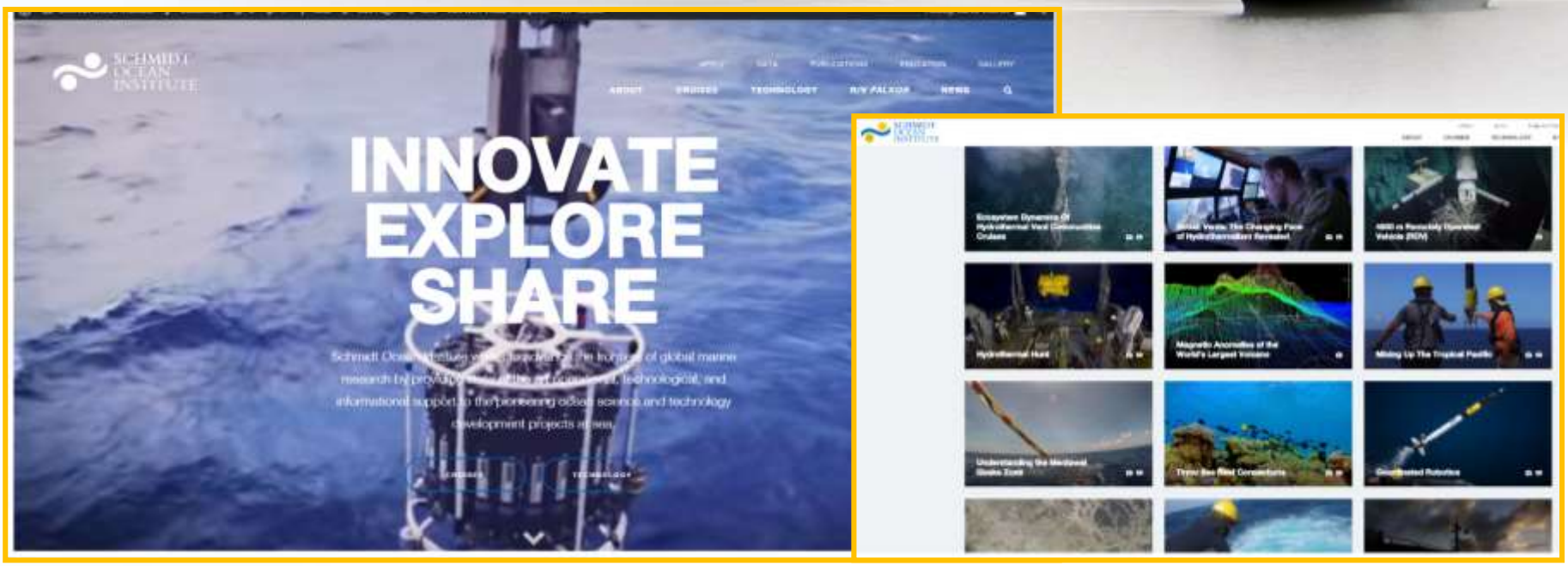
- Live streaming footage
- Ship-to-shore connections

Students & Community

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

Web Presence & Media

New Website



- Live ROV dive page & real-time data
- Multimedia gallery
- Cruise & publication search features
- +500 blogs & vlogs viewed in +200 countries
- Dedicated multimedia journalist on cruises

Web Presence & Media

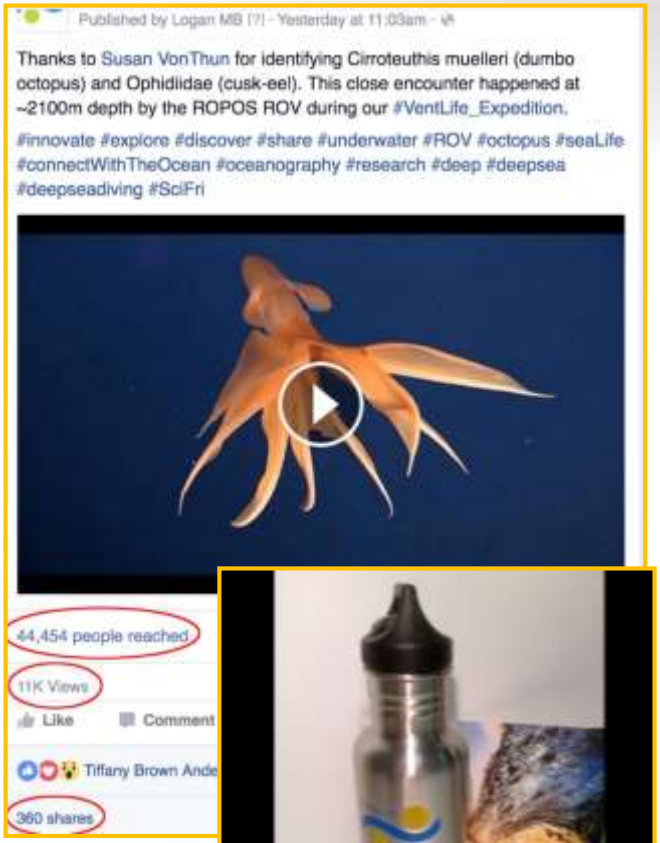
ROV SuBastian Video Series

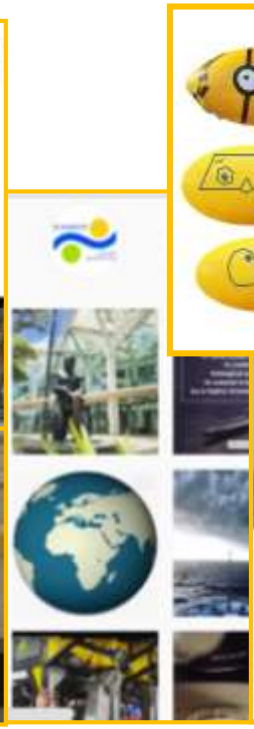
- 16 video series highlighting the build, mobilization, & sea trials
- 3-D walk through tour of ROV SuBastian
- Live Google Hangouts On Air & TechTuesday campaign

Web Presence & Media

Online Engagement

- Facebook, Twitter & now Instagram
- Theme days #Science-Art Friday; #TechTuesday
- Online engagement with videos, competitions
  (e.g. screen capture & Best-face-forward contest)



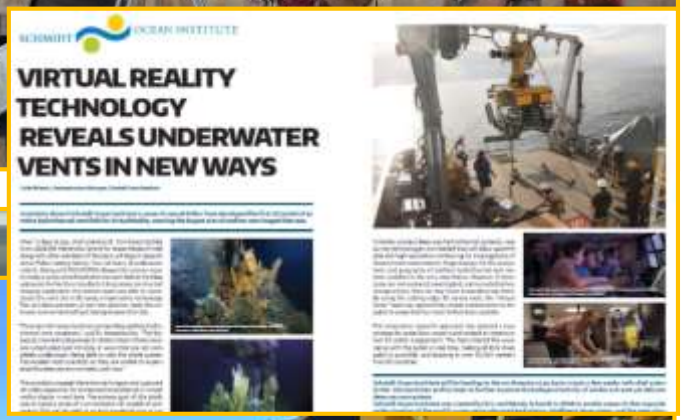


Web Presence & Media

2016 Press

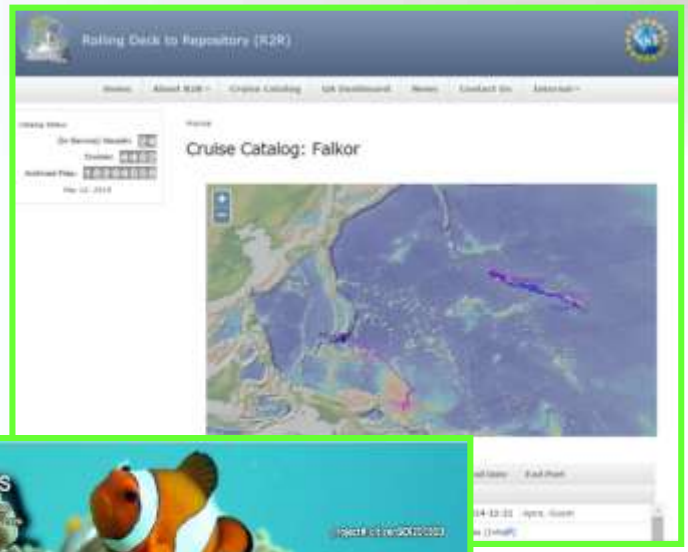
- +150 press articles in 2016 (8 months)
- Dedicated releases post-cruise
- International radio, television, and newspaper coverage
- Magazine coverage:

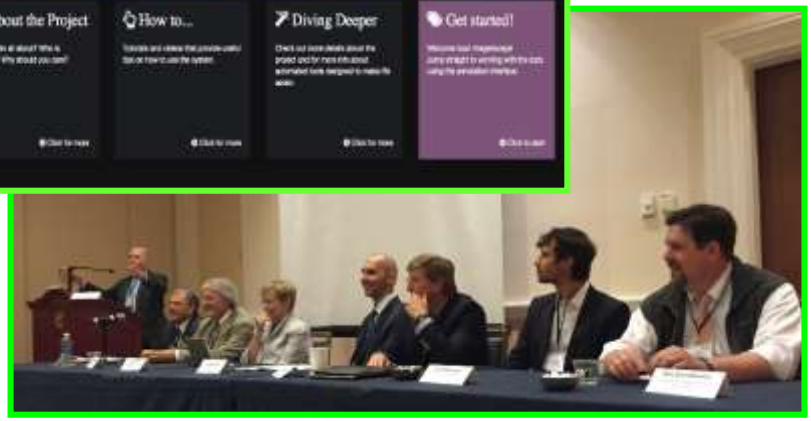
  Smithsonian, Inverse, Seven Seas, Wired Planet, R & R Magazine, Dive Photo Guide, Marine Technology Reporter



Scientific Data Sharing

Online & Conference Sharing



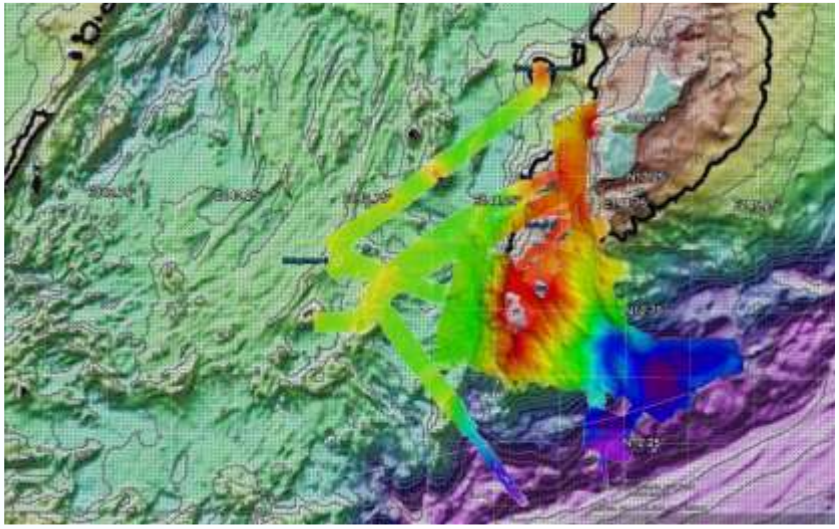


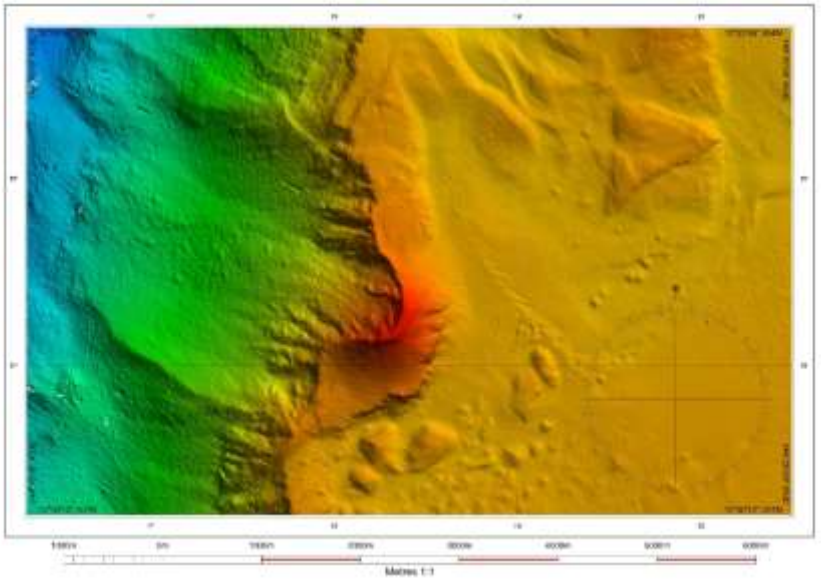
- Underway Environmental Sensor Data Archive: **Rolling Deck to Repository** R2R (*Falkor* currently only privately funded global ranging vessel participating in R2R)
- Marine Geoscience Data System
- Google **Earth**'s Explore the Ocean
- Image tagging (e.g. *Squidle* & *Ocean Video Lab*)
- Targeted conference presentations and booth displays
- +2,000 people reached in 2016 through conference presentations
- Booth displays at *Ocean Sciences*, *International Coral Reef Symposium*, *Oceans*, *AGU Fall Meeting*, & *MTS/IEEE OCEANS'16*

Scientific Data Sharing

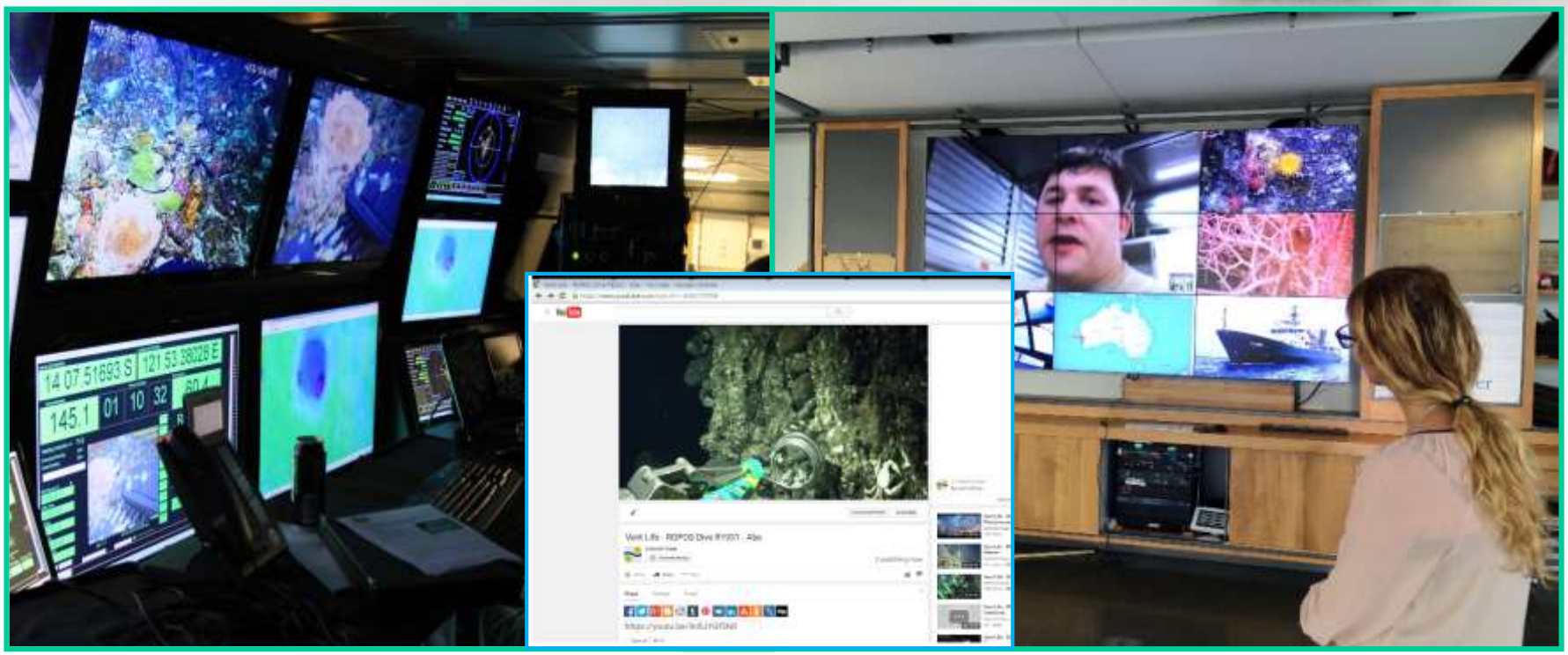
Map Sharing

- Submitted new seabed feature names, e.g. ***Falkor Deep***, to the IHO (this feature is believed to be the 13th deepest location in the Ocean).
- Schmidt Ocean Institute and NASA jointly produced a map of the 2015 newly formed Tongan volcanic island, *Hunga Tonga Hunga Ha'apai.*
- Collaborative mapping of a caldera in Guam by *Falkor* and NOAA's exploration ship *Okeanos Explorer*





Telepresence
Live Streaming



- All ROV dives shared on Google's **YouTube** in perpetuity (no cost)
- Live connections with school classrooms, museums, universities, and aquariums through SOI's **Ship-to-Shore Program**
- Live Google **Hangouts On Air** and **YouTube Live** (no cost)

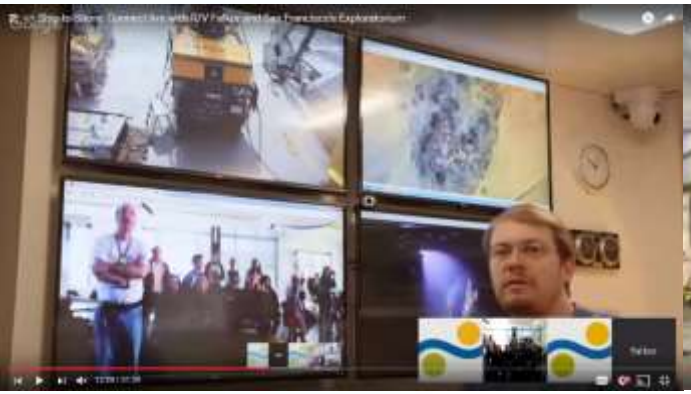
Telepresence

Live Global Connections

Munster Planetarium, Germany

GeoCenter, Canada

Earth Echo – 25 Classrooms



Exploratorium, USA

MATE ROV Participant, USA

Fish Eye / UBC, Canada

Telepresence

Dedicated Google **Hangouts**

ROV SuBastian engineering team **Hangouts**

Artists-at-Sea **Hangout**

Tri-Ship **Hangout** with NOAA's *Okeanos Explorer* & E/V *Nautilus*

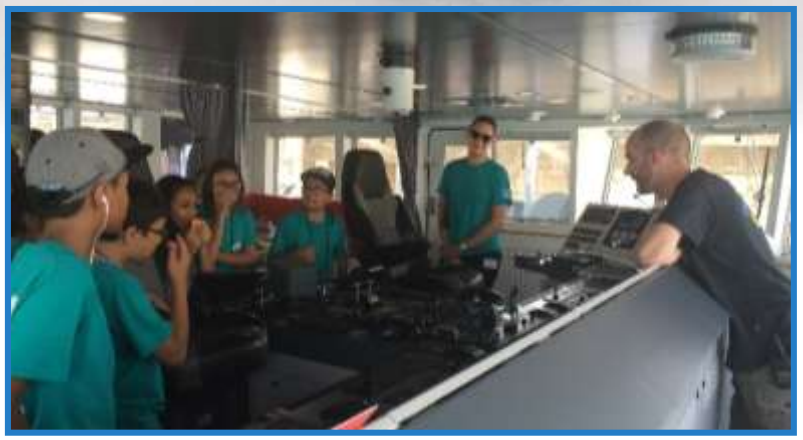
Telepresence

Ship-to-Shore

- Live ship-to-shore chats reaching more than 2,000 students so far in 2016
- Working with middle and high school classrooms, Universities, MATE ROV, Earth Echo, Fish Eye, Exploratorium, Florida Aquarium

Students & Community

Ship Tours



- Tours in every port
- +500 people
- Ship exchanges (*Hai Yang Liu Hao* & *Okeanos Explorer*)

Students & Community

Community Presentations

- +30 presentations reaching over +2,000 people
- Community presentations during & following research in locations where *Falkor* is working
- 2016 focused on Guam, Tonga & Fiji
- Founder Wendy Schmidt held **women-in-marine-science** discussion at University of Hawaii

Students & Community

Collaborations

- First **interConnect** between Schmidt Philanthropies
- MATE ROV judging & awards
- First *Falkor* Alumni Event at OSM 2016
- World Ocean Day Clean Up

Students & Community

Science Communications Training

- Bi-annual science communications training for all Chief Scientists sailing aboard *Falkor*
- Joint training partnership with grantees and sailing ambassadors at **11th Hour Racing**

Students & Community

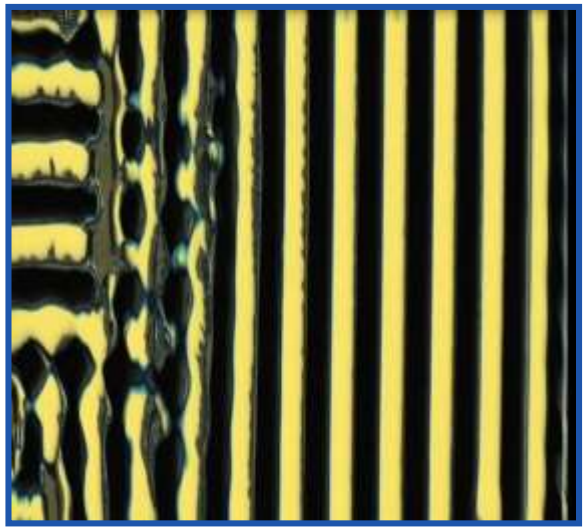
Student Opportunities Program

- Berths of opportunity for students with limited sailing and research experience – advertised on our website & social media
- Encouraging the next generation of ocean scientists
- 6 participants thus far, Caleb Hsu, our youngest participant (1st year at University of Hawaii)

Students & Community

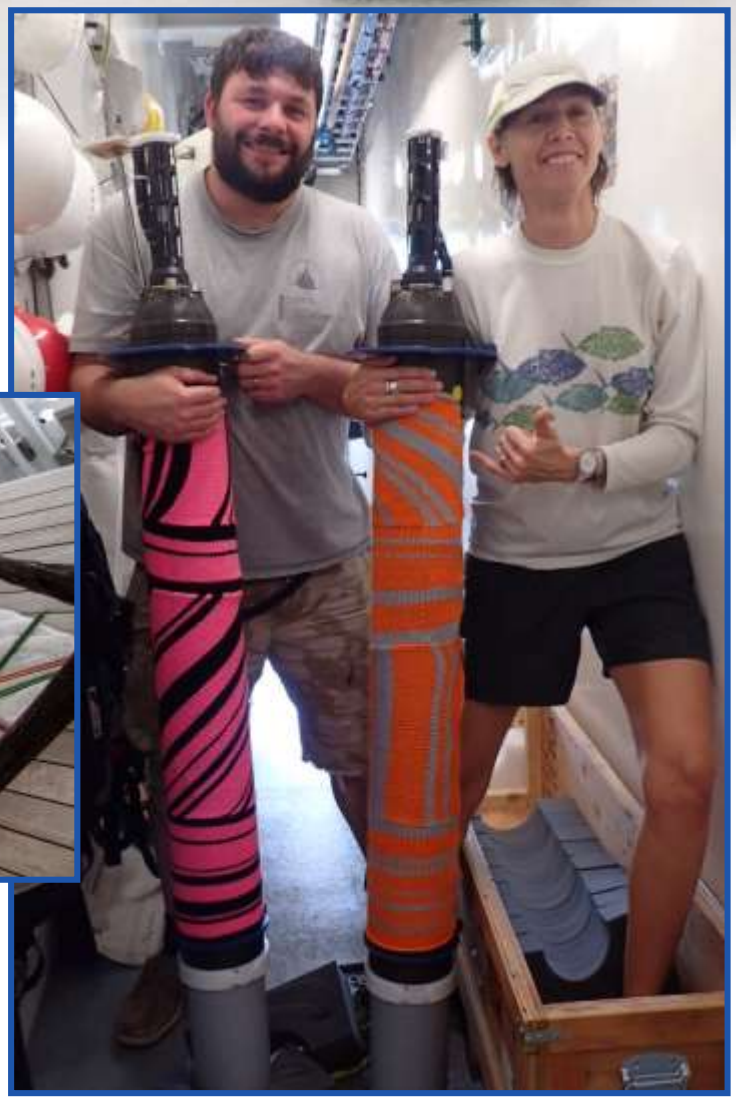
Artist-at-Sea Program

- Berths of opportunity for passionate & demonstrated artists – advertised on our website & social media
- 6 participants thus far in 2016
  - **David Fries** used computer algorithms to generate image patterns of pH data collected
  - **Leslie Reed** treated photographs with seawater along transit looking at the effect of pH on the images
    - Both used the newly installed **Wendy Schmidt Ocean Health XPRIZE** pH sensor



Students & Community

Artist-at-Sea Program



- **Michelle Schwengel-Regala**, Fiber Artist created the first knit CTD data set
  - Used dazzle camouflage on *Falkor*

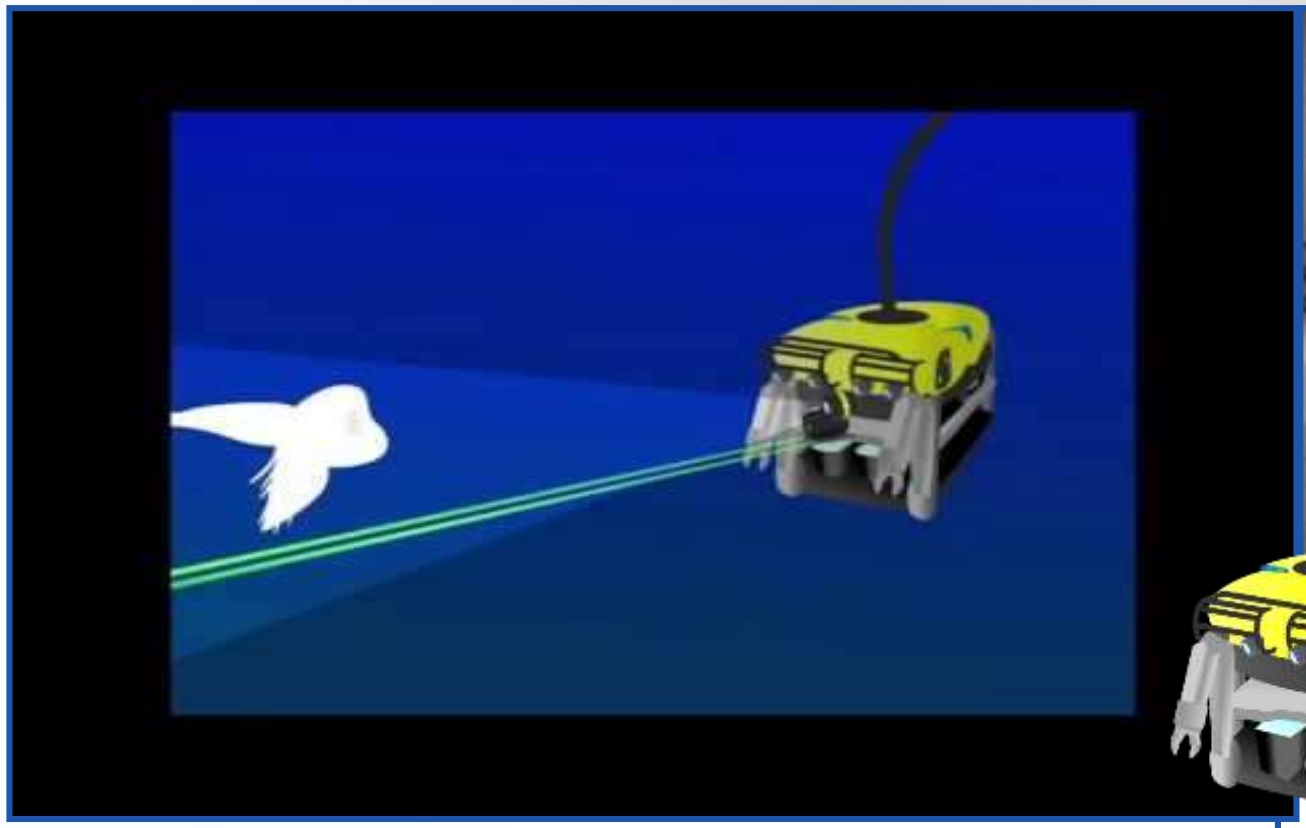
Students & Community

Artist-at-Sea Program

- **Rebecca Rutstein**, used multibeam mapping data from Vietnam and satellite images to create her abstract painting series

Students & Community

Artist-at-Sea Program



- **Baltazar (BJ) Bell**, digital artist in Guam joined Falkor for the integration and mobilization of ROV SuBastian to create an animated short about the vehicle

Next Steps

- Earth Echo
  Ship-to-Shore Series
- Two more artists in 2016
  Ben Cosgrove (composer)
  Lucy Bellwood (cartoonist)
- Artist-at-Sea
  Traveling art Exhibit In Honolulu (Jan ‘17)
- Development of ROV curriculum

Questions?