

Thanks!



NSF: INSPIRE Track 1  
(OCE, E&HR, CISE)

**Transforming Remotely-Conducted Research  
through  
Ethnography, Education & Rapidly Evolving Technologies**

Chris German, WHOI

## **Prior Experience:**

To-date Telepresence was mostly optimized for outreach...

...but what was achieved for research showed a lot of promise...

...and authentic engagement in research is invaluable for UG students.

## The Premise:

There should be potential to optimize how we use Telepresence for both deep ocean research AND undergraduate education.

Only NSF has access to the breadth of expertise required (Ocean Sciences, Social Sciences, Educational Research) to make significant inroads into this field of endeavor.

## Why Should DESSC care?

- As we move to smaller ships, it makes more sense to migrate scientists ashore rather than reduce vehicle capabilities by cutting ops team bunks.
- Increasing engagement with students aids recruitment into our field (long term) and increases GPAs (immediate).
  - Being able to provide real-time outreach is a good thing (Deep Submergence: poster child for all Ocean Sciences) .
- Since the 2013 feasibility study (Jason on Atlantic) showed the data pipeline works, it is timely to help DESSC scientists learn best-practice skills on how to use this new capability.

## **PI Team:**

Chris German (WHOI)  
Katy Croff Bell (Ocean Exploration Trust)  
Amy Pallant (Concord Consortium)  
Sheila Jasanoff (Harvard Kennedy School)  
Kanna Rajan (Ex-MBARI)

## **Secret Weapon:**

Zara Mirmalek (Harvard Kennedy School)

## The Plan:

Run a research cruise that relies mostly on *in situ* sensing, not sampling (hence, optimized for success via telepresence).

Offer the cruise as an “opportunity” to Early Career Scientists, known via DESSC, including both:

- (a) Early Career Scientists at non-traditional labs for OCE
- &
- (b) tenure-track scientists involved in undergraduate education.

## **Nested research:**

Engage suitably motivated mentors (senior scientists) with relevant telepresence experience to help oversee the cruise and guarantee the success of the oceanographic research for the Early Career Scientists.

Use how we conduct our oceanographic research as a field program for the social scientists and educational research teams (who also promise to intervene as required) = Oceanographers as Lab-Rats!



## Early Career Scientists:

Eric Mittelstadt	(U. Idaho)	+ 2 students
Masako Tominaga	(Michigan State University)	+ 4 students
Chris Roman	(U. Rhode Island)	
Anna Michel & Scott Wankel	(WHOI)	
Pete Girguis	(Harvard University)	+ 2 students

## Mentors:

Steve Carey	(U. Rhode Island)
Cindy Van Dover	(DUML)

Note: All of the above are participating on a “volunteer” basis, not funded by this grant:  
(NSF-INSPIRE pays travel & per diem costs for cruise participation, only)

## **Y1: Preparation**

Engage with a team of DESSC Early Career Scientists.

Teach a college-credit course via telepresence to the students they recruit.

## **Year 2: Implementation**

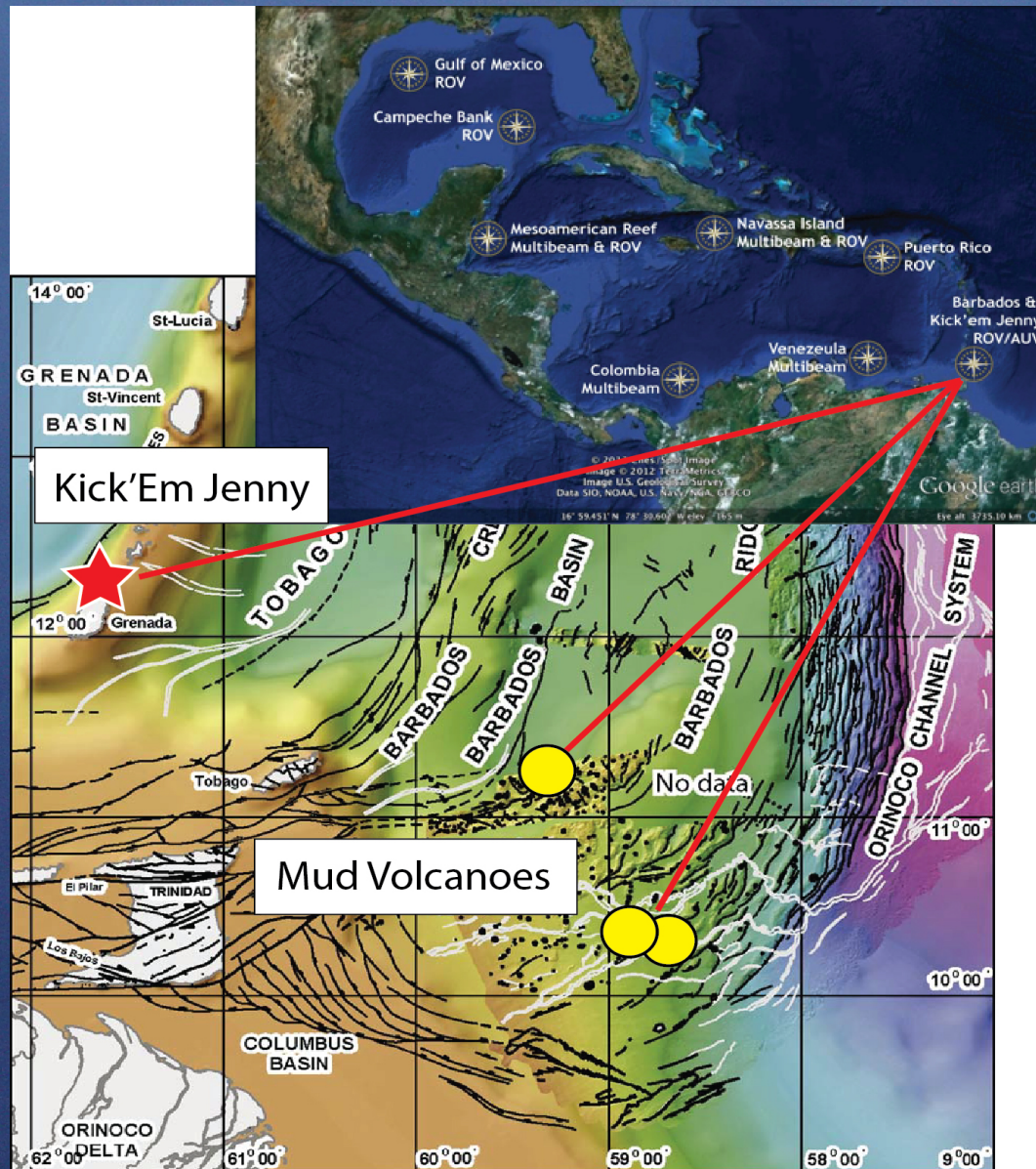
Run a field program with (all) PIs and students based on-shore.

Run a second college-credit course, via Telepresence again, in which the students work up data and present results together with their ECS PIs.

ECS PIs & Students write up ocean & earth science papers

TREET PI's write up ethnography & educational research papers

# Field Program: Courtesy of *Ocean Exploration Trust*



## Activities to-date: 12 week Seminar Series (Jan-Apr 2014)

- Wk 1: Introduction to the Project as a Whole
- Wk 2: Introduction to the EV Nautilus & 2014 Field Areas
- Wk 3-7: Science Objectives of the Early Career Scientist PIs
- Wk 8: Spring Break (Alvin SVC Cruise)
- Wk 9: Student Project Planning & Drop-In Center (Alvin SVC Cruise)
- Wk 10,11: Student Project Presentations & Expert Critiques
- Wk 12: Toward a coherent, equitable cruise plan

## What's Next?

TREET Cruise; Sept 25 – Oct 8<sup>th</sup> ([www.explorationnow.org](http://www.explorationnow.org))



Phase 1: All PIs & students at Inner Space Center (24h ops)

Phase 2: One sub-team (PI + students) relocates to WHOI  
{Close enough to revert to ISC if things don't go well}

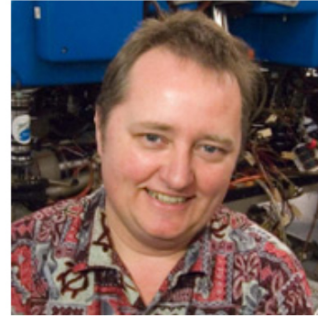
## To be continued...



Dr. Katy Croff Bell



Steve Carey



Dr. Chris German



Peter Girguis



Cynthia McIntyre



Anna Michel



Zara Mirmalek



Eric Mittelstaedt



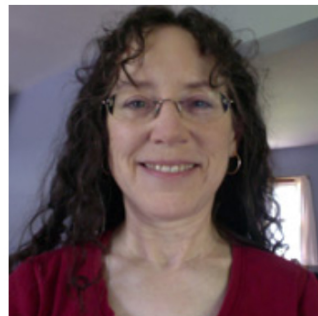
Amy Pallant



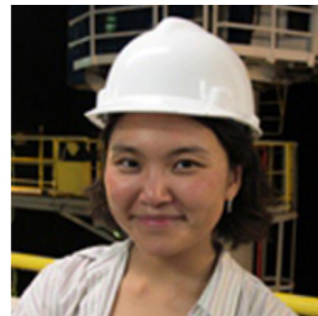
Kanna Rajan



Chris Roman



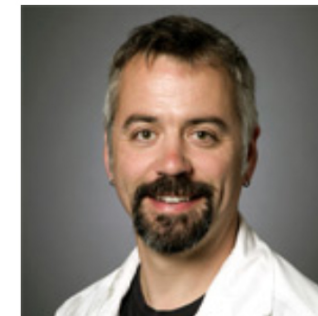
Lynn Stephens



Masako Tominaga



Dr. Cindy Lee Van Dover



Scott Wankel

Further updates ready by Fall AGU