Integrating telepresence technologies with AUV operations for exploration of cold seep communities in the vicinity of Blake Ridge and Cape Fear Diapirs in the Western Atlantic

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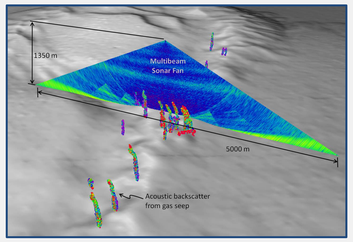


The Right Tools for the Job

- Complementary ship & AUV capabilities to prospect for cold seep environments
- Integrated datasets provide baseline data enabling more effective and efficient future sampling operations

The EX1205L1 Blake Ridge Exploration shipboard (right) and shore-based (below) team pose with the Sentry AUV.

Credit (above, right): Alex DeCiccio, Inner Space Center

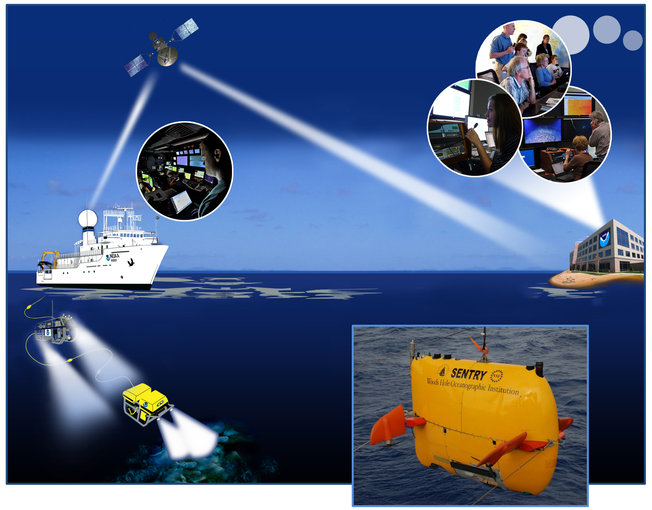
Expedition science leads, students and operations personnel go over recently collected data from NOAA Ship *Okeanos Explorer*.

Strength of an Expanded Shore-based Team

- Expanded labor force increases daily man hours
- Additional multidisciplinary skill sets
- Greater intellectual capital
- Higher level of data processing and analysis between ship and shore leads to more efficient use of AUV bottom time

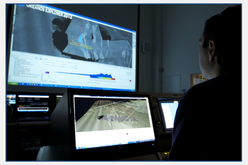
Cruise Objectives: Test and assess the integration of an AUV into telepresence-enabled operations on NOAA Ship *Okeanos Explorer*, with the core science team based on shore at the highly functional URI Inner Space Center

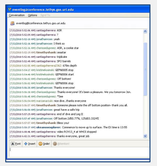
- Survey the Blake Ridge and Cape Fear Diapir areas for cold seep communities, to support a 2013 NSF-funded cruise
- Conduct a series of engineering tests and trials with the Sentry AUV, including remote operations



Telepresence Opportunities

- Ability to expand capabilities through direct access to expertise and skill sets of shore-based participants
- Training the next generation of scientists, engineers, educators and technicians from a highly functional shore-based facility
- Additional AUV testing opportunities: remote start-up and launch, diagnostic tests, operating with a key team member ashore
- Opportunity to engage the general public through live streaming video on commodity Internet and through a variety of education and outreach efforts

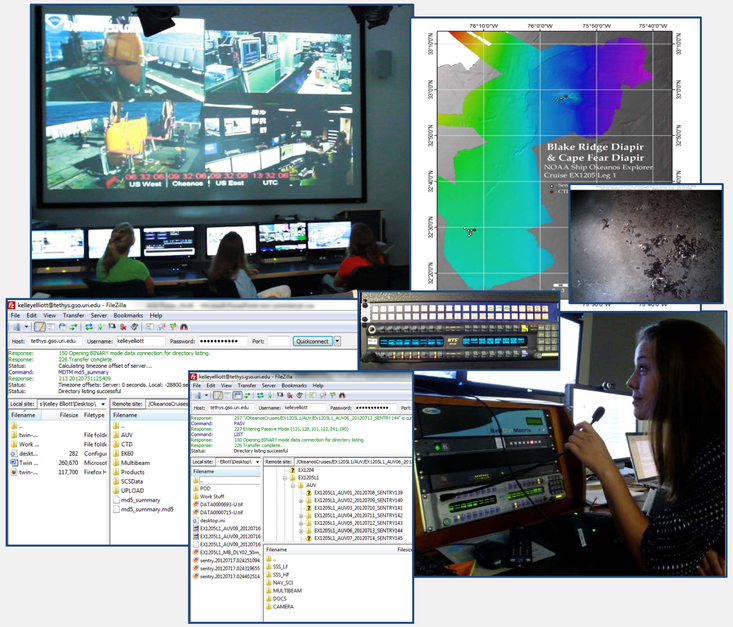




Credit: Alex DeCiccio, Inner Space Center

Keeping Everyone "in the know"

- Real-time video and data feeds to shore
- Daily products and communications provide situational awareness
- Regular ship/shore data transfers



Ship-to-Shore Operations, Planning & Workflow

- Mission critical scientists and technicians onboard, principal investigator and core science team onshore
- Daily ship-to-shore science meetings & communications enables shore-based team to guide day-to-day at-sea operations
- Internet-based communications and collaboration tools
- Developed standardized products and workflow
- Daily schedule

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