

## Secrets of the Gulf Expedition via Internet 2

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National Geographic explorer-in-residence Dr. Robert Ballard led a team of scientists to explore the “twilight zone” near 100m depth around the Flower Garden Banks (FGB) region in the Gulf of Mexico last week using the US Navy’s NR1 submarine and the Argos tow sled. Every cabin, van, and workspace on the support vessel SSV Caroline Chouest was wired for communication to the shore via dedicated satellite and microwave feeds. The entire Secrets of the Gulf (SOG) expedition was broadcast live over the web through an emerging exploration technology Dr. Ballard calls *telepresence*.



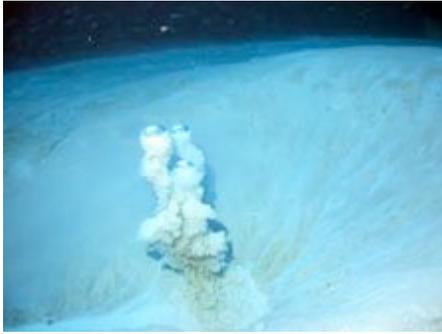
Ballard coined the term *telepresence* to describe part of his mission at the Institute for Exploration (IFE) in Mystic, CT. The Foundation's mission is to inspire people everywhere to care about and protect our oceans by exploring and sharing their biological, ecological and cultural treasures. Now the vision has become real. Last week was the first demonstration of the telepresence technology with Ballard participating from shore. Only five command centers in the US received enhanced live video feeds from this expedition, and Texas A&M University - Corpus Christi was one of them.



TAMUCC was lucky enough to participate in this unique expedition for four reasons: 1) FGB Marine Sanctuary staff invited us to participate; 2) I worked with FGB to develop the research design for biology; 3) the IT Department at Texas A&M had the will and capability to bring this to fruition; and 4) Harte Research Institute had the foresight to install Internet 2 in the building.

The biological transects performed during this expedition will add data to my dissertation work on deep gorgonians on the banks in the Gulf of Mexico. The Flower Gardens are some of the most intensely explored (and healthiest) coral reefs in the Western Atlantic, but we still know very little about deep water species in the sanctuary. I worked with Sanctuary staff to identify 20 deep octocoral species so far, and a few deep “hotspots” for gorgonians, but like most tropical reef systems around the world, everything deeper than 80 meters is still a mystery.





At least 30 people monitored this expedition through modified “command centers”. Many participated through true command centers at National Oceanic Atmospheric Administration (NOAA) headquarters in Silver Spring and Seattle, at IFE, and Univ. of Rhode Island. These folks watched streaming HDTV over Internet 2. Here at TAMUCC, the IT department commandeered a public auditorium equipped with Internet 2 to share streaming large format video with nearly 250 people, including local print and news media. People were up at all hours of the night

sending emails, tweaking knobs, and taking notes. It was hard to peel away, really. But when you did it was good. Like Ballard, I stepped out of the office to enjoy dinner at home with my wife and kids. Then I went back to work tracking the expedition.

The Secrets of the Gulf multicast was an important exercise for us here at HRI TAMUCC, because two new ocean going research vessels will be equipped with telepresence technology in coming years. This project was only a testbed. Having demonstrated the technology, and our ability to use it, TAMUCC is now invited to participate in the further development of the technology through operational input and advice. Future voyages on NOAA vessels may offer new opportunities for me, for HRI, and for TAMUCC graduate students and researchers anxious to participate in these exciting adventures in the deep and open ocean.

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The Secrets of the Gulf Project was funded in partnership with the [Mystic Aquarium & Institute for Exploration](#), [Immersion Presents](#), the [U.S. Navy](#), the [University of Rhode Island](#) and the [University of Connecticut](#). The National Oceanic and Atmospheric Administration [National Marine Sanctuary Program](#) utilized the technology of the [nuclear submarine NR-1](#) to research the [Flower Garden Banks National Marine Sanctuary](#) and its specific connectivity to the rest of the Gulf of Mexico.

The five participating command centers were as follows:

- Institute for Exploration, Mystic, CT
- University of Rhode Island, Providence, RI
- NOAA Headquarters, Silver Spring, MD
- NOAA Pacific Marine Environmental Laboratory, Seattle, WA
- Harte Research Institute, TAMU-Corpus Christi, Texas\*

\* a “modified” command center with reduced functionality (ie no HDTV, no audio control)