

URI oceanographer to lead return visit to least inhabited place on Earth

October 1 2010

(PhysOrg.com) -- Four University of Rhode Island oceanographers depart next week for an international research expedition to the middle of the South Pacific Gyre - an area that is as far from any continent as is possible to go on Earth's surface - to look for evidence of life far beneath the seafloor.

The expedition is a follow-up to a 2006/2007 visit to the same sites where the scientists found so few organisms living in the shallow sediment that this region may be the least inhabited marine sediment ever explored. This year's nine-week expedition seeks to look for evidence of life in the older, deeper sediment and "the basaltic basement."

"We'll be drilling holes in the South Pacific [seafloor](#) through the entire sediment column and into the basaltic basement to look for evidence of life and habitability in one of the most energetically challenging environments on Earth," said Steven D'Hondt, a URI oceanography professor who will lead the expedition.

"We found very little evidence of life in the near-surface sediment, so now we're going to drill deep to see what communities are like in even older sediment and rock that's even lower in food," he added.

The team will depart from Tahiti on Oct. 9 aboard the 469-foot JOIDES Resolution, a drilling ship owned by the Integrated [Ocean Drilling Program](#). The [sediment cores](#) they recover will then be analyzed for their

chemistry and [microbial communities](#) to detect evidence of life.

“Since we found very little evidence of life in the surface sediments, there will probably be even less below,” D’Hondt said.

The research team includes 100 scientists, technicians and crew from a dozen countries around the world. In addition to D’Hondt, other scientists participating from the URI Graduate School of Oceanography include David Smith, Arthur Spivack and Dennis Graham.

Gyres are semi-still areas in the middle of the oceans where there is little wind, little current, and very little upwelling of deep water, so the water is clear and contains few nutrients. The South Pacific Gyre is the largest of Earth’s gyres, encompassing an area twice the size of North America. D’Hondt describes its center as “the deadest spot in the ocean.”

Because the region is so far from terrestrial sources of sediment and so few organisms live in its water, its sediment accumulates extraordinarily slowly - as few as 8 centimeters per million years. D’Hondt said that the burial rate of organic matter was so low in the sediment that the principal food source for the microorganisms living there may be hydrogen released by the radioactive splitting of water due to the natural decay of elements in the sediment.

A main objective of the expedition is to test whether microbial communities can be sustained by this process.

“We don’t know anything about life there in this deepest, oldest [sediment](#),” said D’Hondt. “It could tell us about the possibility of life elsewhere. If organisms can survive there, then perhaps they can be supported by the same processes on Mars or Jupiter.”

It is also possible that some of the microbes they find may have

applications that could ultimately benefit humans.

Provided by University of Rhode Island

Citation: URI oceanographer to lead return visit to least inhabited place on Earth (2010, October 1) retrieved 23 April 2024 from

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