UC San Diego
UC San Diego News Center

By Mario Aguilera Apr 17, 2012

Scripps-developed Landers Provide New View of Ocean Floor

with Scripps alumna Christina Massel

One of the challenges James Cameron faces in exploring the Mariana Trench is that no light is able to penetrate its extreme depths. That's where the engineering know-how of Kevin Hardy and other Scripps researchers comes into play. Hardy, a Scripps research engineer, has developed telephone-booth-size landers that are dropped to the seafloor. The landers, technically know as Deep Ocean Vehicles (DOVs), are equipped with an acoustic beacon on top that Cameron can use to help navigate the ocean depths. The landers also provide a good sonar target.

Hardy has also armed the landers with equipment that Scripps scientists can use to collect and analyze deep-sea animals, sediment cores and seawater. These samples will enable scientists to identify new life forms. Scripps microbiologists will investigate the DNA of the samples to help understand how life evolves and adapts in the punishing extremes of the deep, as well as ascertain whether such microbes could be sources of novel natural products with potential biomedical value.

Sensors onboard the DOVs are equipped to collect pressure, temperature, salinity, and other physical and chemical measurements. They can operate as seafloor factories, filtering water for microbes, or incubating bacterial cultures. DOVs also act as valuable testing platforms to qualify new technologies and investigate new scientific questions, carrying assorted payloads—including cameras and data loggers—quickly, inexpensively, and reliably to any place within the ocean's great volume.

A version of a DOV lander is now on display in a new exhibit, "Creatures of Light: Nature's Bioluminescence," at the American Museum of Natural History in New York City. Another is scheduled for display in the Monaco Pavilion at the upcoming Expo 2012 Yeosu Korea international exposition.