

# SERPENT scene

www.serpentproject.com  
issue 10: march 2007

## ➔ SERPENT goes Polar



At the end of January this year, the SERPENT Project paid another visit to the Transocean rig Polar Pioneer, currently operating in the Barents Sea. This was the third time that we have gained access to work in this remote area and our efforts are starting to bear fruit. We are building a good knowledge base of the biological communities in this area through visual surveys, targeted specimen capture and collection of biological sediment samples. The subsequent sample processing is now ongoing and we are hoping to publish some of these results soon. The latest visit took place at the Nucula well operated by Hydro in collaboration with our existing project partners Transocean and Oceaneering.

## ➔ SERPENT at the Royal Society

The SERPENT project is extremely proud and privileged to have been selected for an exhibit at the prestigious annual Royal Society Summer Science Exhibitions, to be held at the beginning of July in London. The event offers a fantastic opportunity to discover the best of the UK's science and technology research - our project was one of 22 exhibits chosen from 111 proposals. With exhibitors from all over the UK, visitors will get the chance to meet and talk to the researchers themselves who are behind the work on show. The exhibition has traditionally received extensive media coverage and attracts over 4000 visitors each year, and post-16 students are particularly encouraged to attend.

The exhibition will be open to the public for several sessions, and we will post more information about the event later in the year on our website and in this newsletter.



## ➔ National Science and Engineering Week



March 17th will see Ocean and Earth Day hosted at NOC,S in the UK again this year. The day is part of a UK-wide initiative to engage people of all ages in science and engineering, encouraging scientists to talk to school and educational groups, hold open days and come up with activities that enthuse visitors about their research. Last year we saw nearly 2,500 school children pass through the doors at NOC,S and we are expecting similar numbers this year - energy tablets at the ready! If you want to find out more about the initiative and what may be going on in your local area, visit <http://www.the-ba.net/the-ba/>

## ➔ New SERPENT database

Over the last few months, we have been busy gathering all our images and video clips, with their associated data, into a large media database. The database will be open to the public and will include nearly 1,500 records at the current count, a figure that will continue to expand as we receive more images and video. It will be accessible via the SERPENT website, and will be fully searchable by parameters ranging from rig name, depth, substrate, partner name to species information and behaviours.

We will announce the launch of the database via the website and other routes in March, so watch this space!



Send us more...!



Do you have any questions, interesting stories, images or videos? Share them with us! Email [lkm@noc.soton.ac.uk](mailto:lkm@noc.soton.ac.uk)

# Diving into *Deep-Sea Biodiversity*

Dr Mark C. Benfield,  
Louisiana State University  
Department of Oceanography & Coastal Sciences

The oceans are vast. One hears statements such as this so often that it's hard to put them into any perspective. The oceans are indeed the largest component of our planet's surface. Perhaps a useful question to ask is this: given their enormous volume, how much of the oceans can we explore with ROVs?

To answer this, we need to know how much water occupies the depths to which work-class ROVs can descend.

One way of classifying the ocean is by depth. Water from the surface down to 200m is called the epipelagic zone. The epipelagic roughly corresponds to the zone which is illuminated by the sun. This surface zone contains a little less than 5% of all the water in the ocean. Below the epipelagic lies the mesopelagic zone. This region extends down to 1000m. There is dim light in the upper mesopelagic but the lower part is in perpetual darkness illuminated only by the lights of marine organisms and occasionally by your ROVs. The mesopelagic contains about 17% of the water in the oceans. Below the mesopelagic from 1000 – 4000m lies the bathypelagic zone. The bathypelagic zone contains about 59% of all water in the oceans.

So how much of the oceans do ROVs have the potential to explore? The maximum depth range for ROV systems varies depending upon the type. The Oceaneering Hydra Magnum ROV can operate down to 3000m. That means that a Magnum ROV has the capability of exploring the full depth of the epipelagic,

the mesopelagic and 75% of the bathypelagic zones – about 66% of the volume of the oceans!

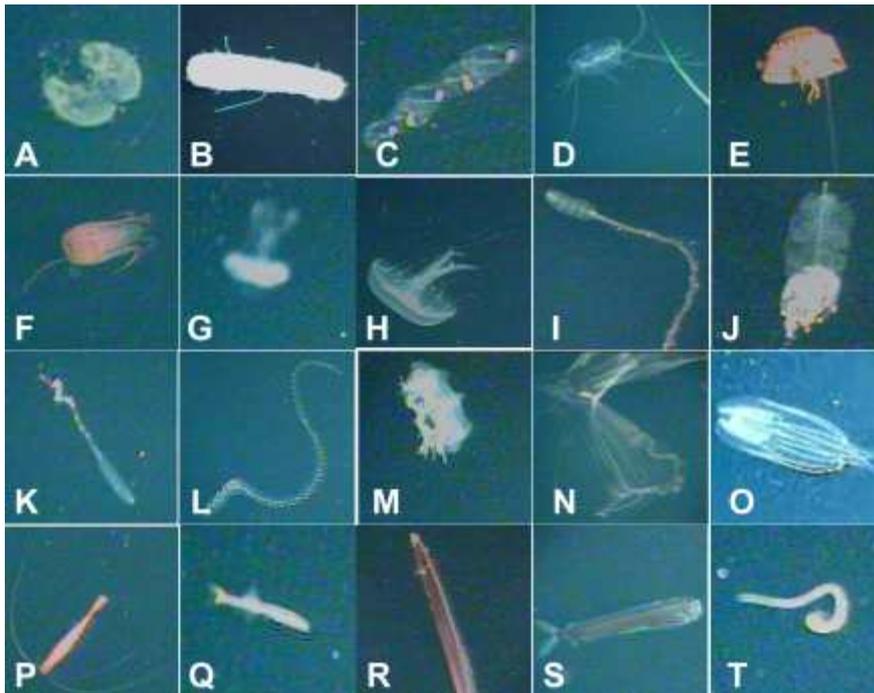
Access to two-thirds of the ocean volume represents an incredible opportunity to learn about life in the deep-sea. Oceanographers seldom have

a chance to routinely study life in the mesopelagic and bathypelagic zones. When they do, scientific expeditions to these regions almost always find remarkable new species that have never been documented before. We do know that the mesopelagic and bathypelagic zones are rich in biodiversity – they contain vast numbers of species, each adapted to surviving in the dark and cold depths.

The Louisiana State University SERPENT project is designed to study the animals that float, drift, and swim through the

epipelagic, mesopelagic and bathypelagic zones. Over the past summer, we've been working with BP and Oceaneering to explore the deep waters of the Gulf of Mexico. Each time that an ROV records marine life for our project, we learn something new about biodiversity in the Gulf of Mexico.

ROVs are confirming the high biodiversity of life in the deep Gulf. To illustrate how, I have summarized the organisms found on just one dive beneath Transocean's Marianas rig by an Oceaneering Millennium class ROV under contract to BP. In less than seven hours, we recorded 24 different species of marine life and in many cases, we found numerous individuals of each species.



Some of the organisms that we observed during our dive beneath Transocean's Marianas on July 1, 2006. A: Larvacean house; B: Pyrosome (*Pyrosoma atlantica*); C: Salps (*Salpa fusiformis*); D: Narcomedusa (*Solmissus*); E: Scyphomedusa (*Atolla*); F: Scyphomedusa (*Periphylla periphylla*); G: Unidentified scyphomedusa; H: Scyphomedusa (*Pelagia*); I: Siphonophore (*Halistemma* or *Lynchagalma*); J: Siphonophore (*Foskalia*); K: Siphonophore (*Nanomia*); L: Siphonophore (*Stephanomia*); M: Trachymedusa (*Halicreas*); N: Ctenophore (*Bathocyroe*); O: Ctenophore (*Eurhamphaea*); P: Unidentified shrimp; Q: Bristlemouth Fish (*Cyclothone*); R: Fish (family Trichiuridae); S: Viperfish (*Chauliodus sloani*); T: Unidentified (possible nemertean worm)