SERPENT scene
www.serpentproject.com
issue 13: april 2008

Editorial

Welcome to the latest issue of your SERPENT Scene! The newsletter has seen a quiet few months due to personnel changes, so there is no December or March issue. We will be going back to a quarterly format starting with this issue. Next issue will be in June.
SERPENT now has a new line-up consisting of Dr Dan Jones who is now the project coordinator. We are now joined by Dr Andrew Gates who has taken over from Janne Kaariainen as StatoilHydro research fellow and Rob Curry who takes over from Lis Maclaren as SERPENT outreach coordinator.
Dr Ben Wigham at Newcastle University continues to be closely involved in the North Sea SERPENT work. SEA SERPENT remains coordinated by Dr Adele Pile at the University of Sydney, Australia, and Dr Mark Benfield continues to carry out mid-water research in the Gulf of Mexico. These strong alliances allow us to carry out as full a research programme as possible, exploring new techniques with a global coverage. A host of new collaborations came to fruition in 2007, and we hope for more over the next year. The more global the reach of deep-sea research the more power we have to try to ensure we protect these vital and unique ecosystems. Once again, we would like to thank everyone involved in the project, your input and support is extremely valued.

Latest news from SEA SERPENT, Australia

Updating our report in the September issue of SERPENT Scene, two SEA SERPENT postgraduate scholarship holders, David Cummings from the University of Sydney and Ashley Fowler from the University of Technology, Sydney, were going offshore with both Santos and Chevron in Carnarvon Bay.

David reports: “I will be investigating nutritional resources in deep-water organisms. The abundant deep-water urchin Diadema sp. has been chosen for investigation because of its important role in the deep water systems. My research is being carried out in Carnarvon Bay with Santos, it continues from the work of Gareth Andrews and will investigate the ecological processes that lead to selective nutrition in deep-water echinoderms.

Ashley explains: “I have been working with Dr Dave Booth on this project to investigate the role of offshore installations in connecting deep-water reef fish populations. We have been developing light traps using power-efficient leds capable of being programmed to emit a range of frequencies and levels of brightness instead of the conventional analogue fluorescent tube. to capture reef fish that have settled around the offshore installations, we are using these samples to investigate the biodiversity of deep-water reef fish, the connectivity between populations and the role of the structures in fish aggregation.”

One of a pair of Dusky Flatheads Platycephalus fuscus captured by the new light trap

Send us more . . . !

Do you have any questions, interesting stories, images or videos? Share them with us! Email r.curry@noc.soton.ac.uk

Norway

A night at the Opera

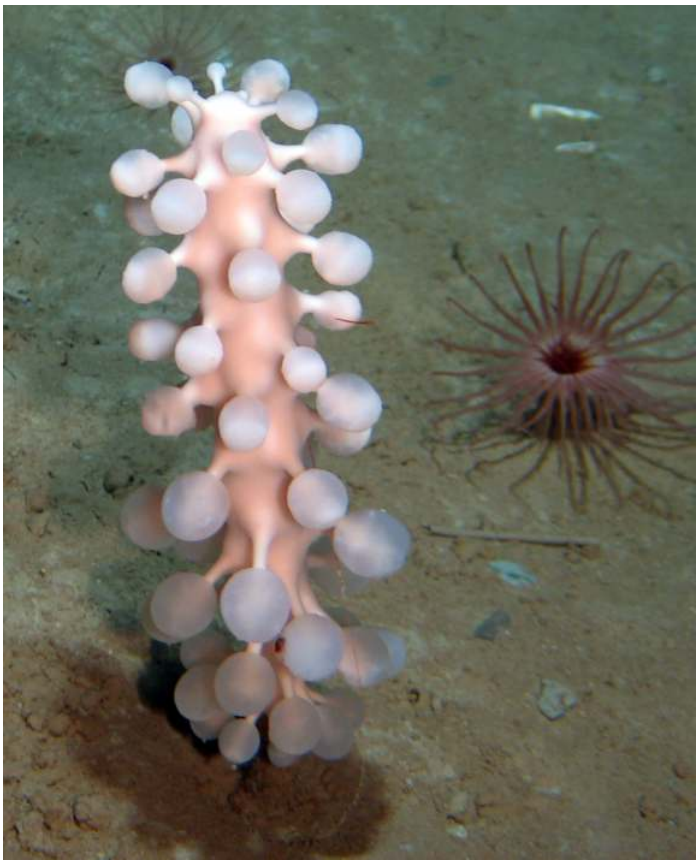
Some of the most dramatic SERPENT Project images have recently been taken in both deep and shallow water sites during Andrew Gates' visit to Norway

Appearing as though on stage, this group of Basket stars (*Gorgonocephalus sp.*) are displaying typical behaviour in finding a raised section of the sea floor to catch as much passing food as possible

Midnattsol

Mission Partners:
StatoilHydro, Transocean, Oceaneering
At the Midnattsol well,
130 km west of Kristiansund,

Dr. Andrew Gates visited the Transocean Leader before and after drilling to assess the effects of the disturbance on the seabed environment. Working with the Oceaneering ROV team a range of methods were used, including video transects to quantify the abundance of the larger animals around the well, push core sampling to determine the chemical make-up of the sea bed as well as experimental approaches to study important processes involved in the functioning of deep sea ecosystems.
Life was abundant at this site despite the kilometer of water depth and seabed temperature of -1°C. The seafloor was characterized by a vast numbers of sabellid polychaete worms, removing suspended food particles from the water column and providing SERPENT scientists with a useful indication of the extent of the drill cuttings pile. However the most spectacular organisms were the basket stars (*Gorgonocephalus sp.*), with their highly branched arms extended to catch food particles from the water flow and the impressive *Umbellula sp*., a two metre high, Cnidarian common in the area.



Ragnarokk

Mission Partners: StatoilHydro, Seadrill, Oceaneering
The Ragnarokk well, at 110m water depth was shallower than typical sites for SERPENT operations. It was located southwest of Stavanger in the North Sea. SERPENT made two visits to the jack-up rig, West Epsilon at the site in the summer of 2007. Early in the summer Andrew Gates worked with the Oceaneering ROV team to conduct the pre-drilling survey, which included video transects and sediment sampling. During this visit it was noted that there was a high abundance of Echinus acutus sea urchins living on the seabed. This is valuable information for SERPENT scientists and along with the shallow water enabling much reduced ROV transit time between the rig and the sea-bed, provided the opportunity to plan detailed experimental work for the follow-up, post-drilling visit.

Daniel Jones returned to the West Epsilon towards the end of the well for the post-drilling visit. In addition to repeating the sediment sampling and video transects he also used the precise capabilities of the ROV manipulator arms to carry out a series of experiments to assess the impact of drill spoil accumulation on the dominant organisms in the area. Specimens of the abundant sea urchins were subjected to a series of manipulations involving placing them under piles of sediment. Behavioural responses were observed and tissue samples were taken to test molecular indicators of the stress response.

Such experimentation is important in gaining a more complete understanding of how the accumulation of drill spoil impacts the sea floor environment around drilling operations.

For more information, check out the SERPENT website.

Left: A giant club sponge Chondrocladia gigantea found living on soft sediment at depths of 240 - 1600m with a nearby Cerianthid anemone.

Outreach events

Two recent events gave SERPENT the opportunity to reach out to families in a big way

Rob Curry, new SERPENT outreach coordinator had something of a baptism of fire when a couple of major events came along recently.

On Saturday 15 March , the annual Oceans and Earth day run by the National Oceanography Centre got under way with a full programme of activities. This was the first opportunity for Rob to try out some of his outreach materials to a live audience. Building on activities on offer last year such as creating undersea scenes and a “spot the difference” competition, there was also a very popular simple origami challenge as well as the new “Make your own ROV” sheets which proved very popular (see below). Congratulations to Aimee Penley-Martin who won a copy of "Deeper than Light" in the "Spot the Difference" challenge!

With more than 2,000 visitors this year, the SERPENT stand entertained and educated about 200 children along with their parents. There was a great deal of general interest in the SERPENT video which acted as a backdrop to the stand with many opportunities to spread the message about the project to a wide audience.

The weekend of 26 - 27 March saw another opportunity when the Royal Carribean Lines ship the Independence of the Seas came to Southampton. The City Council celebrated the event with a lively Caribbean festival at Mayflower park with music, food and activities with a Caribbean flavour. The SERPENT stand showed recent footage from the Gulf of Mexico and had a constant flow of interest from the 35,000 members of public who attended the show. A wide range of children and parents were introduced to the message of SERPENT with video, puzzles, games and other activities on offer.

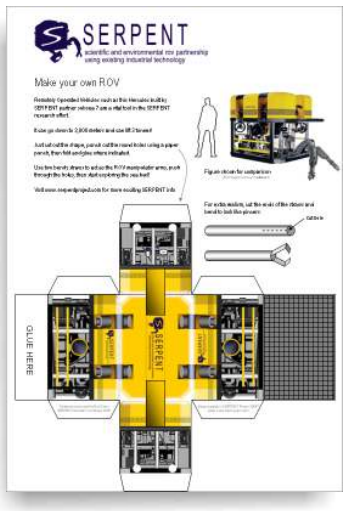
You can download the make your own ROV sheet by visiting the web site.

Gulf of Mexico first!

SERPENT scientist Mark Benfield of Gulf Serpent was very excited to capture nearly 6 minutes of video footage of this magnificent manefish (*Caristuus sp.*) observer beneath the Ocean Confidence in the Gulf of Mexico (GoM). Normally manefish are found in a relatively narrow band above the 66th parallel and generally in temperate waters. This footage is the first observation of a live manefish in the GoM and the best underwater footage of one seen anywhere.

Mark’s first trip of 2008 was to the Thunder Horse rig where he was able to familiarise the two Sapiem-American ROV teams on SERPENT survey techniques. Thunder Horse is in close proximity to another SERPENT site - the Discoverer Enterprise. Two SERPENT sites so close together will allow us to build up a very complete picture of the marine life in this area.

Mark documented five different organisms during one 2 h dive. These included a heteropod (another first for Gulf SERPENT); a large (~6 foot) apolemiid physonect siphonophore; a small lobate ctenophore; a planktonic shrimp; and the amphipod Phronima which finds and kills a jelly-like animal called a salp, lays its eggs in the still living shell of the salp and moves inside. By beating its back legs it creates a current that turns the hollowed-out salp into a waterjet-propelled transparent barrel. It
swims around within the salp while its young hatch out and slowly eat the remains of the salp.



Left: the “Make your own ROV” sheet available for download on the SERPENT web site.

Above: An assembled version of the ROV complete with gripping manipulators

Right: Visitors enjoying the SERPENT stand on a sunny Saturday afternoon.