UNIVERSITY OF Southampton
School of Ocean and Earth Science

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SOES News

Welcome to SOES News - the School of Ocean and Earth Science (SOES) magazine for current and prospective students, alumni and friends. We look forward to sharing exciting updates on our world-renowned scientists, features on cutting-edge research, profiles on talented alumni, and fun stories on our students. Enjoy!

National Oceanography Centre, Southampton
UNIVERSITY OF SOUTHAMPTON AND NATURAL ENVIRONMENT RESEARCH COUNCIL

Recognition for top class research at the National Oceanography Centre, Southampton

The National Oceanography Centre, Southampton, (NOCS) home of the University of Southampton's School of Ocean and Earth Science, has been ranked in the top ten of the world's research institutions in geoscience, and first among those with a specific remit in oceanography.

The ranking, published in the *Times Higher Education Supplement*, reveals "'heavy hitters' based on paper influence, not mere output."

In welcoming the results of the analysis, Director of the National Oceanography Centre, Professor Ed Hill, said:

"I am proud and delighted by these results, which rank the National Oceanography Centre, Southampton as the world's number one oceanographic institution. If it wasn't obvious before, this analysis demonstrates that Southampton really is the place to be!"

Professor Don Nutbeam, Vice-Chancellor of the University of Southampton went on to say:

"This result confirms our status as the world's leading institution devoted to research, teaching and technology development in ocean and Earth science. It confirms Southampton's position as a world leading centre in the Maritime knowledge economy."

For more information, see the *Times Higher Education* issue of 19 November 2009.

Front page photo:
HyBis vehicle recovery from RRS *James Cook*

Events at NOCS

March is always a busy month at the National Oceanography Centre, Southampton and this year was no exception.

On 4th March, over 200 students and guests participated in the 2nd Annual SOES Alumni Life After Graduation Careers Event. The questions on most students' minds these days are "what do employers want?" "will I like my job?" "what modules make the difference?" and "what will I earn?" This year students heard directly from recent graduates and industry representatives about how to succeed in their career search. The feedback from students has been positive and while the free networking lunch is always a winner, students also liked the candid feedback from panellists, the opportunity to network and tips for applying for jobs "without the jargon." This event is one of the most successful careers events at the University.

If you would like to participate in a future careers event, please contact: **alumni@noc.soton.ac.uk**

Ocean and Earth Day

On 20th March, over 2500 members of the public attended the annual Ocean and Earth Day at the National Oceanography Centre, Southampton. The popular event attracts kids and adults and offers interactive exhibits, hands-on displays and the opportunity to tour one of the world's best centres for ocean and Earth science.

This year, the Alumni stand featured memorabilia donated by former students, archival photographs and a new exhibit, the hugely popular "head in hole" boards. The boards were painted by students at the Winchester School of Art and encouraged children to think about a future in ocean and Earth science.

Life in the abyss.

Exploring volcanic vents on the ocean floor

Scientific expedition team: L-R: Paul Tyler, Bramley Murton, Doug Connelly, Kate Stansfield and Jon Copley

This Spring, a British scientific expedition discovered the world's deepest undersea volcanic vents, known as 'black smokers', 3.1 miles (5000 metres) down in the Cayman Trough in the Caribbean. Using a deep-diving vehicle remotely controlled from the Royal Research Ship *James Cook*, the scientists found slender spires made of copper and iron ores on the seafloor and erupting water hot enough to melt lead, nearly half a mile deeper than anyone has seen before.

Deep-sea vents are undersea springs where superheated water erupts from the ocean floor. They were first seen in the Pacific three decades ago, but most are found between one and two miles deep.

Scientists are fascinated by deep-sea vents because the scalding water that gushes from them nourishes lush colonies of deep-sea creatures, which has forced scientists to rewrite the rules of biology. Studying the life-forms that thrive in such unlikely havens is providing insights into patterns of marine life around the world, the possibility of life on other planets, and even how life on Earth began.

"Seeing the world's deepest black-smoker vents looming out of the darkness was awe-inspiring," says Dr Jon Copley, a marine biologist with SOES, an alumnus and the leader of the overall research programme. "Superheated water was gushing out of their two-storey high mineral spires, more than three miles deep beneath the waves." He added: "We are proud to show what British underwater technology can achieve in exploring this frontier - the UK subsea technology sector is worth £4 billion per year and employs 40,000 people, which puts it on a par with our space industry."

The team posted daily updates on their progress on an interactive expedition website, which received more than 50,000 visitors from at least 89 countries. Their online video revealing the first glimpse of the world's deepest black smoker vents was also the 38th most viewed channel on YouTube during the week of the discovery. Meanwhile news of their discovery was reported in more than 500 media articles worldwide, from the BBC and CNN to the Times and National Geographic. "I was amazed at public enthusiasm for our expedition," said Jon. "It shows just how fascinated people are by marine science and deep-sea exploration."

The Cayman Trough is the world's deepest undersea volcanic rift, running across the seafloor of the Caribbean. The pressure three miles deep at the bottom of the Trough is equivalent to the weight of a large family car pushing down on every square inch of the creatures that live there.

"It was like wandering across the surface of another world," says geologist Dr Bramley Murton, "The rainbow hues of the mineral spires and the fluorescent blues of the microbial mats covering them were like nothing I had ever seen before."

Photo: Universität Bremen

Fieldwork through the years

SOES graduates often reminisce about their experiences on field courses. At reunions, on Facebook, at events, in pictures and through personal anecdotes—it is evident that while an essential part of our students' training, fieldwork is perhaps the most rewarding and enjoyable part of the University degree programme. We asked Valerie Scott (nee Widdowson) a 1956 geology graduate and current BSc Geology student Peter McLeod to share some of their fieldwork memories.

Valerie Scott: The greatest difference between the 1950s and the present time for Southampton students must be the size of the university. Undergraduates then totalled about 1000 and after the first term one recognised most people by sight around the original Highfield campus. Geology was one of the smallest departments and on fieldwork trips, we all fitted into a 12 seater minibus, driven by a lecturer.

We took occasional day trips to sites near Southampton but my first long trip was to Dorset. Our group stayed at a very upmarket hotel overlooking Weymouth Bay, where they used us as willing "guinea pigs," to test out their menus for the coming summer visitors. Food rationing had barely finished and the boys, especially, enjoyed the vast amounts of posh food like turbot, halibut or kedgeree (as well as the normal bacon and eggs) for breakfast and the exotic 4-course dinners.

A new lecturer, Dai Jones joined the staff in my second year and drove us to South Wales, where we trekked along the beautiful beaches of the Mumbles and studied the older Silurian, Devonian and Carboniferous rocks. Dai came from Glyneath and was able to arrange a visit to a coalmine, the highlight of the week. We were kitted out in navy boiler suits and hard hats with lamps on the front and white headscarves underneath for the female students. I believe Dai had worked down a mine in earlier years. We went deep down by cage, walking over a mile, often bent double, under the overhanging rocks to the coalface with no fixed lighting except from our own headlamps. Suddenly we came upon a group of miners, stripped to the waist, their paper-white backs streaming with sweat, hacking away at the coalface with pickaxes, while others shovelled the coal into a mine dolly. It was like a scene from Hades. I've had the greatest respect and admiration for miners and their dangerous work ever since.

My own Finals project entailed mapping two "6 inches to 1 mile" maps (34 S.E. / 35 S.W) in Derbyshire. This was near my home. I travelled to the Peaks by bus or train accompanied by our Staffordshire bull terrier (for protection!). However, next holidays, my then boyfriend, Cas Scott (Chemistry, 1952/ 55) to whom I have now been married for 52 years, stayed with us and accompanied me on the fieldwork. My Dad trusted me with his car and we were able to access difficult sites much more easily. I still have the colour washed maps I drew and they look surprisingly neat and tidy. Their accuracy was assessed by Dai Jones who had to trek up from S. Wales, just for me. Dai's main complaint was that his guest house was, unfortunately, strictly vegetarian and worse, filled with "spinster ladies of a certain age" --- not much fun for a lively, young, Welsh man!

1955 coalmine at Glyneath, South Wales

1955 Valerie, classmates, lecturers and mine officials

Personally I remember all of my geology studies, and especially fieldwork, as thoroughly enjoyable and a time of great fun and comradeship.

Peter McLeod: During the summer break between 2nd and 3rd year all geology students undertake an independent Mapping Project where they spend a minimum of 30 days in the field, mapping the geology of an area, usually abroad. This is then written up during the first semester of the 3rd year and the digital interpretive map and field report are produced. This is an opportunity for all geology students to work independently and show all the skills learned during their degree course.

On a practical level, mapping is a skill invaluable to industry tasked with finding oil and minerals needed to drive the world economy, but it is more than that. By understanding geological processes observed in the rocks you understand what happened in the past and from that understanding you can then predict with reasonable accuracy what will happen in the future. This is important to comprehending the environment and possible effects of climate change, as well as understanding risks from geo-hazards such as earthquakes and volcanoes.

There were a number of locations to choose from for my mapping project. I choose to go to Santorini – a volcanic island in the Aegean Sea. My base for five weeks was a backpacking haunt in Perissa called *Katrina and John's*. It was basic, but clean.

L & R : Images from Santorini, Peter McLeod

I was on a tight schedule so apart from a couple of scheduled rest days it was full-on mapping every day. My mapping area was approximately 13 Km^2. The area encompassed the mountains of Profitis Ilias and Mesa Vouno, between Perissa and Kamari and stretched North West to the caldera wall of the volcano, between Cape Athinios and Cape Plaka. The first few days were spent in reconnaissance and then systematic mapping began in earnest.

Field equipment is fairly simple – notebook, field slips, compass clinometer, pen knife, bottle of hydrochloric acid, pencils, colour pencils, camera, walkers map, GPS, ruler, hard hat, weather writer and a field handbook. Things I needed I carried in the pockets of a fly fishers vest, the rest including water, food and first aid kit in a rucksack. I got to love my walking boots!

A typical day would begin with a bus ride to a point close to the area I wanted to map. Later I hired a quad bike to get around more freely. Once in the field area I would take a good look around a specific feature I had observed. I would then plot the location in my notebook and on my field slips, take measurements, make an annotated sketch and describe the feature in my notebook as well as take photographs. On a good day I would record approximately 7 or 8 locations following this procedure.

I would return back about five – after a swim and something to eat, I settled down to the geologists' ritual of inking in my field slips – a process called green lining, where you mark exposures observed with a green circle. Data such as dips and strikes was inked in black and faults in red. Each formation was given a colour to identify it and was coloured in on the map and a daily summary recorded in my notebook. I would also read from papers and literature I had brought out with me. Gradually as days went by a picture was built up of the geology and slowly Santorini revealed her secrets.

Being a geologist is much like being a detective. You have to unravel clues to build up the bigger picture of what is happening. It does not happen straight away, but slowly and with close study you build up a picture and then suddenly the story of the Earth's past is unveiled to you, and that is exciting!

It was not all work and no play though. Santorini nights beckoned! Thanks to the efforts of my fellow students, whom had been earlier in the summer, the good reputation of the University of Southampton was well established so my three fellow geologists and I were ensured of a warm welcome. The base of all entertainment was a place called the Soul Bar where there were people from around the world whom we got to know.

I have had so many opportunities made available to me since I came to the University of Southampton and I hope I may soon embark on a new and exciting career. I was recently made a conditional offer to go to Keele University after graduation to do my PGCE in science with a geology specialism after which I hope to enter teaching.

SOES provides rigorous and comprehensive fieldwork opportunities for all of our students. As a result of this commitment and investment in our students, SOES graduates are seen as having a greater degree of independence and self-reliance than many comparable graduates and have been lauded by industry for being among the most well-trained and independent in the UK.

If you have a personal story to share about your time at SOES, please drop us a line at: **alumni@noc.soton.ac.uk**

Revealing our marine world

Alex Mustard might have your typical 'dream job.' Since 2004, Alex has built up a reputation as one of the world's most talented underwater photographers. As one of a handful of marine photographers worldwide, his work is helping to create a picture about our oceans and it all began in Southampton.

Photo: Alax Mustard. Alex and a Leafy Dragon or *Phycodurus eques*

"If you'd asked me when I first began at Southampton what I would be doing, I never seriously considered an underwater photography career. I was interested in photography but my focus was always on the science" said Alex. Alex first came to Southampton because the staff was friendly and enthusiastic. "It was a big deal for me to go to University and when I visited the staff made an impression on me. They had a genuine interest in me and you tend to remember those things."

While pursuing an Oceanography with Marine Biology degree, Alex's interests focused on marine ecology and the interaction between animals and their environment. As Alex spent an increasing amount of time photographing marine life, the crossover with the classroom was certainly a benefit. "I did well at University because I was interested in my studies and motivated to succeed—it didn't feel like work."

After graduation Alex decided to pursue a PhD and chose to stay at Southampton. "People who are interested in the oceans know about NOCS and its reputation definitely influenced my decision to stay."

Alex's photography hobby was never far-behind and throughout his PhD studies, several research cruises and later work as a Post-Doc at NOCS, he began to win awards for his underwater photography. He was getting more photography work than he could handle and with one year left on his post-doc contract made the difficult decision to leave. "I wasn't sure that professional underwater photography could work, but it has, and I can't imagine my life had I not taken this chance."

Although success has come quickly to him as a photographer, Alex built his imaging knowledge slowly and the fact that he was self-taught has influenced his individualistic style. Alex credits his photographic style to his passion for the oceans and the time spent at Southampton and his grounding in science. "I often record animals with complicated behaviour which have not been documented scientifically. If I can surprise people with visual stories from the marine environment and enthuse people about the oceans then I feel I have been successful."

Alex offers some advice for students who may be considering their careers. "I would suggest that students don't come with too many preconceived ideas. Your opinions will change as you learn more about the oceans and you need to be open to it. If you are fascinated by the subject you are studying, it will always be useful, no matter what you do."

"I wouldn't be the photographer I am today without my time at Southampton."

You can see more of Alex's work at **www.amustard.com**

Improving the academic experience

Each year SOES alumni donate to the School during the University's Annual Telefund Appeal. Alumni make donations to support the School's priority projects. In addition to providing funds to refurbish the NOCS Sports Hall floor last Autumn, alumni donations are supporting the purchase of undergraduate resources in the National Oceanographic Library (NOL). The Library is purchasing a wide range of books to support the undergraduate curriculum across our degree programmes.

Chris Smith is studying for a Master of Geology degree at NOCS and said "The NOL has been a fantastic resource; invaluable for completing my degree course, especially in my current year working with up-to-date research material. For the three years of my undergraduate course, I was able to loan out the more expensive text books for extended periods of time which was exceedingly useful during fieldwork and for completing coursework over weekends."

Jane Stephenson, Head of Library and Information Services said, "The Library welcomes these generous donations to support undergraduate learning. The number of students using the Library has increased by a third and students value library resources. These donations will provide extra copies of essential texts which will give students improved access to the resources."

We extend our thanks to SOES alumni and friends for their generous support!

Photo: Barry Marsh

SOES students benefit from your support

Create opportunity. Make a lasting difference to your School

As a SOES alumnus and friend, you will have experienced firsthand the School's commitment to innovative excellence in teaching and research. The goal of our undergraduate programmes is to produce the best and brightest graduates who are well equipped to enter the world of employment in a range of ocean and Earth sciences professions and in other spheres. Our programmes are constructed around this goal, with emphasis being given both to academic merit and the skills and qualities sought out by employers.

In order to create these opportunities and inspire ambition in our students we need to provide specialist equipment, first rate facilities and top class fieldwork opportunities. As an alumnus you can play a role in providing our students with the opportunity to make a lasting global impact on the world around them by joining our community of donors.

Photo: Cathy Lucas

A gift of any size makes an instant and lasting difference at SOES, and you can be reassured that you are helping to transform lives and investing in the next generation of great thinkers. Your gift will be matched under the Government's matched funding scheme and can also be gift aided to make your support go further than ever before.

Please consider making a gift to SOES today.

Awards and accolades

Congratulations to the following NOCS staff and students for their recent achievements:

- Director of NOC, Professor Anthony Edward (Ed) Hill was awarded the OBE in the New Year Honours in recognition of his contribution to environmental sciences.
- Professor Harry Bryden FRS has been elected a fellow of the AGU as well as being awarded the 2009 Prince Albert I Medal in recognition of his contributions to understanding the ocean's role in the global climate system.
- Geology student Ed Fleming, is the 3rd SOES winner in 10 years of the Undergraduate Mapping Prize from the Geology Society of London.
- PhD graduate, Dr Iain Pitcairn, was awarded the Society of Economic Geologists' 2009 Waldemar Lindgren Award following a nomination by international colleagues from both academia and industry. The record of previous recipients of this award is a veritable who's who of influential scientists in economic geology and mineralisation.
- SOES Undergraduate students were awarded the silver medal at the 2010 American Association of Petroleum Geologists' (AAPG) Imperial Barrel Award in Prague (26-27 March 2010). The 2nd prize was an excellent result, especially as this was only the second time that a team from the University of Southampton had entered the competition.
- Scientists at NOCS were awarded the prestigious Denny Medal by the Institute of Marine Engineering, Science & Technology (IMarEST) for the most worthy paper published in its technical proceedings. The winning paper was written by Dr Margaret Yelland, Robin Pascal, Dr Peter Taylor and Dr Ben Moat of NOCS.
- 4th year Master of Marine Biology student Alastair Brown has received the 2009-2010 IMarEST Undergraduate Scholarship.


Silver medalists in Prague, 2010

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If you would like to make a regular gift to SOES please contact: **annualgiving@soton.ac.uk**

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You may also give on-line at: ***http://www.soton.ac.uk/supportus/donatenow*** *and your gift will have immediate impact.*

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