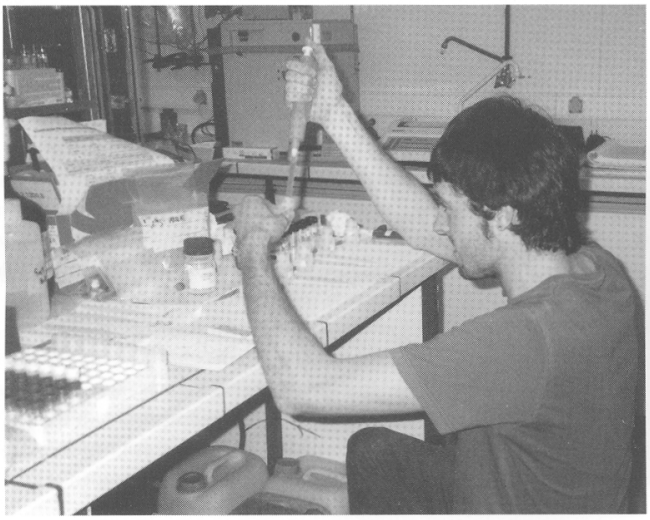
TOM JILBERT

Maiden Voyage

Aspiring oceanographer Tom Jilbert had an exciting start for his Ph.D in the Geochemistry department of our faculty. Last October he spent the first three weeks of his contract at sea. He packed his bags for a cruise on the 'Aegaeo' research vessel, sailing from the Greek port of Pireus. For Questa, he reports on his field trip.

In at the deep end! I did have to learn fast. My previous studies had given me the chance to do some hands-on marine science, but only ever as day trips, bringing samples back to a lab on solid ground. In my time on the Aegaeo, I assisted in the subsampling of over forty gravity cores, a handful of box cores and 2 CTD rosettes. I was also able to observe the work of other scientists and engineers, and experience the 'lifestyle' of being at sea.

Onboard, I was working together with Anke Dählmann, a postdoc in the geochemistry department. Her research centres around two fascinating but as yet poorly understood phenomena- namely mud volcanoes on the Eastern Mediterranean seabed, and the occurrence of gas hydrate crystals in the associated sediments. Our cruise recovered gas hydrates which were stable for thorough shipboard analyses. This was thanks to a state of the art pressurized coring device from the Technical University of Berlin. The system was able to seal itself after entering the sediment, thereby maintaining the seabed pressure during recovery of the device. Hydrates recovered in conventional gravity cores usually dissociate on the way up, or soon after arrival on deck.



Our days began early and ended late. Breakfast was on the table at 7, and on one occasion we were up at 5 because the ship had reached the location of our first CTD drop, and no time could be wasted getting started! Through the day we would take samples from a stream of gravity cores as they arrived on deck. Each sample had to be carefully labelled and stored before the next core arrived and we were back out on deck (often on hands and knees) tackling the next round of 'monsters'. If we managed to keep pace with the core sampling, in the evening we would perform analyses of the gases dissolved in our seawater samples using a gas

chromatograph. Also we had to divide each sediment porewater sample into a number of separate vials for analysis back home. This could keep us awake until midnight, if the small number of biertjes we had to drink did not send us to sleep first!

But despite the long hours, it was not all sweat and grind. While the ship was in transit between stations, we often sat on the upper decks reading our books under the Mediterranean sun. Then as the sun began to set we all reached for our cameras to capture the pinks and blues as they shifted across the sky in the west. And on our last day we were surrounded by a school of over twenty dolphins, jumping from the water as they circled the ship. At these times I felt quite lucky to be where I was, especially as I knew the November cold would be starting to grip northern Europe during our time away.

As we sailed back from our study locations just south of the Turkish coast, the weather began to change even for us. Storms over the Aegean Sea tossed the boat so hard on our last night that stacks of plates fell and smashed in the kitchen, and all our equipment had to be tightly bound to the deck. A night of little sleep was had by several seasick members of the team, and even for those of us who managed to 'keep our dinners down' it was a long night. The captain altered our course on several occasions to use the shelter of the Greek islands and keep us heading into, but not across, the strong winds.

Thus it was with some relief that we arrived back in Pireus, and luckily we had another day to explore nearby Athens before flying back to Amsterdam. Hence another bonus of participating in cruises- they often take you to interesting places on land as well as at sea.

The experience I had on the Aegaeo will be vital for my ongoing studies and my career. The cruise gave me the chance to see how marine research operates, and when I go back to the Mediterranean later this year to collect some samples for my own project, I will feel better prepared. And my fascination with the oceans is stronger than ever.

In layman's terms

As not all geoscientists will immediately be able to understand all that Tom did, he explains his research in layman's terms: 'Gravity' and 'box' cores are two methods of retrieving sediment from the seabed onto the deck of a research vessel. The gravity core is essentially a 3m x 10cm cylinder of steel, with a streamlined weight above, giving it the appearance of a torpedo. This is lowered directly into the sediment, and it is sealed by a 'core catcher' device which can open to allow sediment into the core but not back out again. The box core is a roughly 1m (tall) x 30cm x 30cm (plan view) steel box, open at top and bottom. After landing in the sediment, a spring-loaded 'foot' swings underneath the box to seal it. Once on deck, both types of core can be stored, or as in our case, opened for samples to be taken. The chemistry of the sediment itself, the 'porewaters' between the particles, and the gases dissolved in those porewaters, are all of interest. 'Subsampling' refers to the division of an individual sample into several smaller samples for detailed analyses. A CTD (conductivity, temperature, density) rosette comprises 1. an instrument which measures these parameters in the water column as it descends and 2. a ring of open bottles which can be programmed to close at different depths to take samples.

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