Utrecht University, Faculty of Science

The Faculty of Science consists of six departments: Biology, Pharmaceutical Sciences, Information and Computing Sciences, Physics and Astronomy, Chemistry and Mathematics. The faculty is home to 3500 students and nearly 2000 staff and is internationally renowned for the quality of its research. The Faculty’s academic programmes reflect developments in today's society.

Department of Biology, Biomarine Sciences group

The Institute of Environmental Biology (IEB) is a major research institute within the Biology Department of the Faculty of Science at Utrecht University. It forms an international centre of excellence on functional plant studies in relation to biodiversity and global change by performing biological research of high quality at various levels of integration and at a large variety of spatial and temporal scales. The IEB’s aim is to understand the interaction between plants and their biotic and abiotic environment, and to identify and assess the effects and consequences of environmental change on biodiversity and ecosystem functioning.

The oceans have played and still have a dominant role in the evolution of life, biogeochemical cycling, and global climates. Marine (micro-) organisms mediate many processes in the ocean, including carbon and nutrient cycling. Biological oceanography thus plays an essential role in the integrated study of the biogeochemical systems of the Earth. Sediments deposited on the ocean floor form the most complete and accurate archive to study past climate change, under various natural states. The study of the past and present oceans and its biota is thus of prime importance for predicting future global change. The Biomarine Sciences (BMS) group of the IEB studies the present and past oceans in all aspects, particularly focusing on coastal and pelagic ecosystems.

Currently, we are looking to fill one PhD position within the Biomarine Sciences group.

PhD Researcher within the Biomarine Sciences group (1,0 fte)

Job description

Project title: "Double trouble: Consequences of Ocean Acidification - Past, Present and Future: Dinoflagellate Component"

Along with climate warming, anthropogenic CO$_2$ is currently causing a significant increase in ocean acidity: Double Trouble! The effects of ocean acidification on marine calcifying organisms and plankton, as well as the marine carbon cycle are still poorly understood. The present research program constitutes an integrated multidisciplinary approach, combining (1) laboratory experiments using organisms grown under CO$_2$ controlled conditions (2) reconstructions of ocean acidification in the geological past, and (3) studies of the impact of ocean acidification on the marine carbon cycle. Together this will quantify the impact of ocean acidification on calcification and feedbacks on atmospheric CO$_2$ levels. The impact of past ocean acidification on evolution and extinction will provide important constraints on the adaptation potential of marine calcifying organisms and non-calcifying plankton. Furthermore, results will allow for determining the consequences for the marine carbon cycle. The project, which involves 3 PhD students and one Postdoctoral researcher, is a collaborative project of the Biology and Earth Sciences departments at Utrecht University, the
Netherlands Institute for Sea Research (NIOZ), and the Alfred-Wegener Institute for polar and marine research (AWI) in Bremerhaven, Germany. The project is sponsored by the Darwin Center for Biogeology.

Dinoflagellates are protists and are ubiquitous in all aquatic environments. They comprise a vital component of the total eukaryotic primary production in the oceans. Approximately 15% of the dinoflagellates exhibit a complex life cycle that includes the formation of an organic cyst. These cysts preserve well in sediments deposited under relatively low oxygen conditions (their fossil record goes back to the Late Triassic, ~215 million years ago), and have been widely applied in biostratigraphic and paleoenvironmental studies. Here we initiate a novel avenue in dinoflagellate research involving their stable isotope chemistry. Pilot studies have indicated that the differential incorporation of the stable isotopes 12C and 13C into dinoflagellates and their cysts is related to the CO2 concentration, and as such pH, of seawater. We aim to develop this relation into a new proxy for surface ocean carbon speciation using culturing experiments and test the relation using the past 150 years. The study will involve culturing of several dinoflagellate species with a long fossil range under various CO2 and pH conditions. Both the motile and cyst stages will be analyzed for stable isotope and associated biochemistry. Fossil cysts will be analyzed for their chemistry for the reconstruction of past ocean acidification events, such as the Paleocene/Eocene boundary (PETM, ~55 million years ago).

The primary place of work is Utrecht, The Netherlands. Components of the research will be carried out at the AWI, where the candidate will spend several stays of several months.

Qualifications

We seek a highly motivated candidate with excellent communication skills with experience in Biology or Biogeology, an MSc in an appropriate field and interest in experimental research (including culturing experiments) on the boundary between Biology and Earth Sciences. Candidates are expected to communicate easily in English, both verbally and in writing.

Terms of employment

The successful candidate will be offered a full-time PhD position for a period of four years. The salary starts with €2,042.- gross per month in the first year and increases to €2,612.- gross per month in the fourth year of employment, based on full-time employment. The salary is supplemented with a holiday bonus of 8% and an end-of-year bonus of 8.3% per year. In addition we offer: a pension scheme, a partially paid parental leave, flexible employment conditions. Conditions are based on the Collective Labour Agreement Dutch Universities. The research group will provide the candidate with necessary support on all aspects of the project. More information on conditions is available here.

Further details

Additional information about the vacancy can be obtained from: Dr Appy Sluijs, email: A.Sluijs@uu.nl. As part of the selection procedure, the candidate is expected to give an outline of his/her research plans in a written report and an oral presentation. You may also wish to visit the websites of Utrecht University, the Department of Biology, the Institute of Environmental Biology, the Biomarine Sciences group, the Alfred Wegener Institute and the Darwin Center for Biogeosciences.

How to apply

Please send your application (including a letter of motivation, curriculum vitae and contact details of at least two references) before September 20th, 2010 to email: Science.PenO@uu.nl. Please mention vacancy number 66009.