

# Press Release

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## **First successful use of new ocean observation technology – Investigation of ocean acidification in the Baltic Sea –**

**15 June 2009/Kiel/Waabs.** For the first time scientists and technicians from the Leibniz Institute of Marine Sciences (IFM-GEOMAR) in Kiel, Germany, successfully used an offshore observing system to study environmental changes in the oceans. The so-called mesocosms resemble oversized test tubes with a length of 20 metres. They are used to simulate the future ocean in situ, i.e. under realistic conditions. IFM-GEOMAR scientists used six of these mesocosms, each encompassing about 60,000 litres of sea water, at the observing station Booknis Eck in the Baltic Sea in order to study the effects of ocean acidification.

Above the sea surface they seem unimpressive: six vertical orange sticks connected by a transparent plastic roof. The dimension of these devices which were installed at Booknis Eck in the western Baltic Sea is revealed under water. A 20 metre long, flexible plastic tube is affixed on a rack that serves for buoyancy and stability of the system. In this tube scientists can isolate about 60 cube metres of seawater under natural conditions in terms of temperature, stratification and ecosystem. "So far we had studied the impact of changes such as the increase of fertilizers or of the carbon dioxide concentrations in small tanks in the laboratory. The new mesocosms enable us to study the developments under natural and controlled conditions. Thus, we can better estimate their impact on the ecosystem", states project leader Prof. Ulf Riebesell from IFM-GEOMAR.

The first mission of the mesocosms, a technology developed at IFM-GEOMAR, was dedicated to research on the impact of ocean acidification. "The ocean absorbs more than a third of the carbon dioxide produced by human beings. As a consequence the pH-value decreases and the ocean acidifies", says Prof. Riebesell. Many marine scientists regard this process as equally dangerous as the ocean warming. "Now we want to know how the impact of the acidification on the marine ecosystem looks like", Riebesell explains. A final assessment of the experiments at Booknis Eck cannot be given yet. But according to Riebesell the experiments were very successful since a large amount of data was generated.

The study was conducted together with partners of the Alfred Wegener Institute for Polar and Marine Research in Bremerhaven, the Leibniz Institute for Baltic Sea Research in Warnemünde, the Leibniz Institute of Freshwater Ecology and Inland Fisheries in Berlin and 19 students from Kiel. It is part of the joint project SOPRAN (Surface Ocean Processes in the Anthropocene) funded by the Federal Ministry of Education and Research that has also part-financed the development of the worldwide unique mesocosm systems. International parties from the USA and the UK have already expressed interest in the new technology.

The experiment in the Baltic Sea was a test for a large-scale project which will take place off the coast of Svalbard in spring 2010 under the leadership of IFM-GEOMAR with contributions of 15 other European partners in the context of the European project EPOCA (European Project on Ocean Acidification). The main focus will be again the ocean acidification.

A decision on proposals seeking for funding of additional mesocosm experiments in the context of SOPRAN is expected soon.

### **Links:**

***The Leibniz-Institute for Marine Sciences is member of the***

<http://sopran.pangaea.de> BMBF-Project SOPRAN  
[www.epoca-project.eu](http://www.epoca-project.eu) EU-Project EPOCA  
[www.ifm-geomar.de](http://www.ifm-geomar.de) Leibniz Institute of Marine Sciences

**Figures:**

At [www.ifm-geomar.de/presse](http://www.ifm-geomar.de/presse) pictures are available for download.

**Contact:**

Prof. Dr. Ulf Riebesell, Phone: +49 431 600-4444, [uriebesell@ifm-geomar.de](mailto:uriebesell@ifm-geomar.de)  
Jan Steffen (Public Relations), Phone: +49 431 600-2811, [jsteffen@ifm-geomar.de](mailto:jsteffen@ifm-geomar.de)