

Press Release



06/2015 | **Please note the embargo until 23 February 2015, 3 pm Eastern Time**

Via Laser into the Past of the Oceans

GEOMAR researchers reconstruct pH values for the past 120 years in the North Pacific

23 February 2015/Kiel. **Using cutting edge technologies experts of the GEOMAR Helmholtz Centre for Ocean Research Kiel together with colleagues from the UK, Canada and the United States were able to reconstruct pH values of the Northern Pacific with a high resolution since the end of the 19th century. The study, which has been published in the current issue of the international journal Proceedings of the National Academy of Sciences (PNAS), reveals a clear acidification trend, but also strong seasonal fluctuations.**

Next to global warming, ocean acidification is currently considered as the second major carbon dioxide problem. With the increase of carbon dioxide (CO₂) in the atmosphere larger quantities of the gas are getting into the seawater, too. There it forms carbonic acid, which lowers the pH value of the oceans. The long-term effects of this process on marine ecosystems are still unknown. Research is facing a fundamental problem: Measurements of pH values in the oceans have started only a few decades ago, in some areas only a few years ago. What were the pH values organisms coped with 100, 200 or 1000 years ago?

Scientists from the GEOMAR Helmholtz Centre for Ocean Research Kiel (Germany) have now succeeded together with partners from the Universities of Bristol (UK), the University of Toronto (Canada) and the University of Maine (USA) in reconstructing the pH values of the northern Pacific ocean over the past 120 years with a monthly resolution. They analyzed samples of a coralline alga with an innovative combination of laser technology and isotope analytics. "There have not been such reconstructions from the high northern latitudes until now. The new data are important in order to assess the potential impacts of ocean acidification. The technique we used opens up new possibilities for environmental reconstruction," says Dr. Jan Fietzke from GEOMAR. He is the lead author of the study, which has been published in the current issue of the international journal Proceedings of the National Academy of Sciences (PNAS).

For their study, which was partly funded by the German joint project "Biological Impact of Ocean Acidification" (BIOACID), the international research team used samples from specimen of the algae *Clathromorphum nereostratum*. These algae create massive reefs in the northern Pacific Ocean and in the Bering Sea on the ocean floor, where they form solid calcium carbonate

