MARIE-THARP LECTURE SERIES
FOR OCEAN RESEARCH

GEOMAR

Prof. Dr. Ulrike Lohmann

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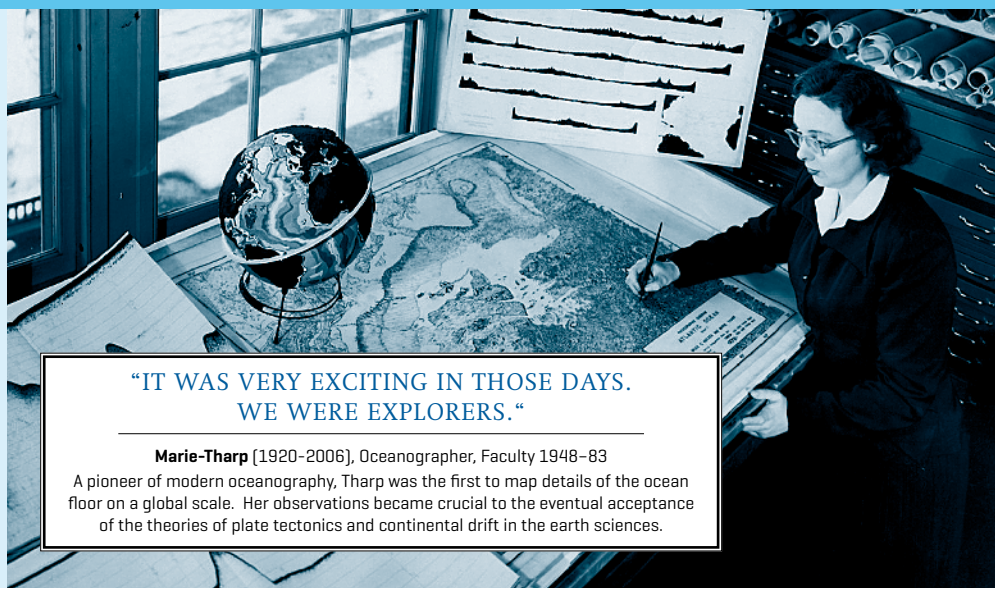
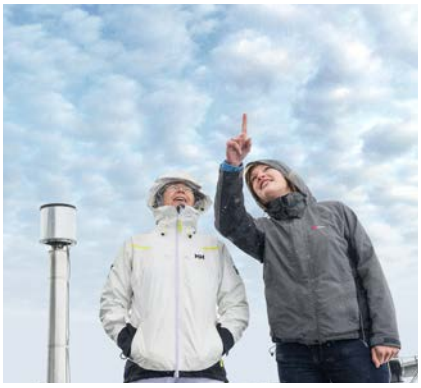


Tuesday, 3rd February 2015, 11:00 a.m.

GEOMAR Lecture Hall West (R.B54) | Düsternbrooker Weg 20, 24105 Kiel

Uncertainties in Climate Prediction:
The Influence of Clouds and Aerosols on Climate



Clouds are not only fascinating to watch for their myriad of shapes, but are also scientifically challenging because their formation requires both knowledge about the large-scale meteorological environment as well as knowledge about the details of cloud droplet and ice crystal formation on the micro-scale. The ice phase in cloud remains enigmatic because ice crystal number concentrations can exceed the number concentrations of those aerosol particles acting as centers for ice crystals (so-called ice nuclei) by orders of magnitude. To date, measurement devices for ice nuclei are rare and custom-made. In this work, I present the significant progress that has been made in the ice nucleation community in identifying which aerosol particles may act as ice nuclei and why. As pointed out in the fifth assessment report of the Intergovernmental Panel on Climate Change, the radiative forcing due to aerosol-cloud interactions remains the largest uncertainty of the anthropogenic forcings. On the other hand, how clouds change in a warmer climate is the largest of uncertainties in terms of the expected warming at a point of doubling of carbon dioxide.

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