

## Climate Science

*To study the coupled ocean-ice-atmosphere system and its importance for the global climate*



Halo above Arctic sea ice.

Studies in the Climate Science department of the Alfred Wegener Institute for Polar and Marine Research (AWI) focus on the coupled ocean-ice-atmosphere system and its importance for the global climate. AWI researchers conduct field measurements and numerical simulations related to oceanic circulation, transport of substances and energy in polar seas and the polar atmosphere, as well as related to the influence of these processes on the global climate system.

Oceanographic studies concentrate on the modification of water masses in the Weddell and North Polar Seas and on the spreading of

deep and bottom waters into the world ocean. Atmospheric studies focus on the investigation of climate relevant processes on different scales in space and time. In addition, variations in the concentration of climate-forcing trace gases and aerosols and their impact on the Earth's radiation balance are investigated. Although most studies are regionally confined, collaboration with scientists around the globe under the umbrella of international programmes, e.g. the International Polar Year, allow to interpret our results in a global context.

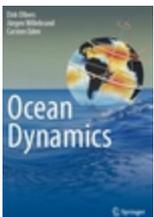
A more recent focus lies on the analysis of long-term climate oscillations as well as their interpretation with the aid of numerical models. Analysis of palaeoclimate variations shall broaden our view on the climate system and restructure our approach, in order to obtain a more complex theory on climate.

## The Polar Perspective



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## NEW: Standard work in ocean dynamics



Dirk Olbers', Jürgen Willebrand's and Carsten Eden's new title "[Ocean Dynamics](#)" is available now.

### Abstract/Description

Ocean Dynamics is an introduction to the fundamentals of fluid mechanics, non-equilibrium thermodynamics and the common approximations for geophysical fluid dynamics and presents a comprehensive approach to large-scale ocean circulation theory. The book contains five sections: fundamental laws, common approximations, ocean waves, oceanic turbulence and eddies, and selected aspects of ocean circulation theory. [download contents](#)