Ocean Biogeochemistry and Climate Feedbacks
The Ocean is a key player in the climate system, buffering changes in the atmospheric composition. Changes in the ocean ... Our research line focuses on ocean biogeochemical processes and the effects on the climate system of their alteration.

Summary

Atmospheric levels of CO$_2$ and other greenhouse gases (CH$_4$ and N$_2$O) have increased substantially above preindustrial levels due to human activities. Carbon dioxide is continuously removed from the atmosphere by natural sinks. The oceans are the most important sink of atmospheric CO$_2$.

Changes in CO$_2$ solubility:

Changes in the ocean stratification:

Changes in the marine productivity:

Changes in the ocean circulation:

On centennial time scales the ocean carbon sink may also be affected by climate-driven changes in the ocean circulation such as the slowing down of the Thermohaline Circulation.

Using state of the art earth system model (EC-Earth) and the experience on climate prediction gained in the Climate ... and climate feedbacks research line is to study the response of the ocean in a changing climate and their feedbacks.

Objectives

To study the ocean biogeochemical impacts due to climate change and climate variability
To quantify feedbacks between ocean biogeochemistry in the climate system
To understand the impacts on the marine ecosystem due the changes of the main ocean biogeochemical cycles in a changing climate

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