**Modeling marine ecosystems**

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Mathematical models are appropriate tools to investigate the complex interactions between physical environments, biogeochemical fluxes and live. Models can improve the understanding of complex relationships, highlight gaps in knowledge, or support predictions and allow for evaluation of different scenarios.

The lecture will comprise a brief introduction into physical processes controlling primary production in the ocean. Concepts for mathematical description of biogeochemical processes will be discussed. Based on this background simple biogeochemical models will be formulated. The power of such models can be demonstrated with applications for the Baltic Sea. Students will discuss different aspects of conceptual models and will get the opportunity to analyze output from model simulations. Lectures and exercises are structured as follows:

1. Introduction

Background, general terms

1. Physical controls

Physical processes controlling primary production

1. Biogeochemical models

Basic concepts, uptake kinetic, simple conceptual models

1. Applications

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1. Exercises

Discussion of conceptual biogeochemical models, analysis of model output