



## UFZ-Seminar „Wasser und Umwelt“

25. April 2012, 15.00Uhr

Saal, Brückstr. 3a, Magdeburg



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spricht zum Thema:

## What can limnologists learn from ocean modellers (and vice versa)?

Traditionally, numerical models for lakes applied a horizontally integrated approach such that models were one-dimensional in space (dependence on vertical coordinate only). With this simplification, dynamic effects of a number of physical processes had to be parameterised such as internal seiches, upwelling, river and ground water inflow, bottom friction, basin-wide mixing, etc., just to name a few. The reason for the rare use of three-dimensional models for lakes is the high computational cost of such models. Due to the typically relatively steep bottom slopes, lake models need a high horizontal resolution (to resolve processes along slopes), requiring a huge number of grid points and short time steps. However, the steady increase of computer resources allows nowadays realistic applications of three-dimensional models to lakes at sufficiently high accuracy. Existing coastal ocean models with bottom-following coordinates offer therefore a great potential for lake modelling. On the other hand, due to the special requirements of the hydrodynamics in lakes, ocean models are substantially challenged by lake applications.

In this presentation, the coastal ocean model GETM ([www.getm.eu](http://www.getm.eu)) and its performance for reproducing transport and mixing in stratified basins will be presented. GETM has been applied for several studies of the hydrodynamics of the Baltic Sea with focus on basin-wide transports and vertical mixing. The Baltic Sea has a number of features which are similar to lakes, such as strong stratification, internal seiches, intense upwelling, etc. Several applications of GETM to lakes will be presented as well, clearly showing the advantage over one-dimensional models in resolving processes relevant to limnic ecosystems. Some perspectives of coupling biogeochemical models to GETM will also be given.

**Falls Sie eine Videoübertragung nach Halle oder Leipzig gewünscht wird, bitte ich um eine E-Mail an [hella.nietsch@ufz.de](mailto:hella.nietsch@ufz.de) bis spätestens Dienstag (24.04.), 12:00Uhr.**