FÖRSLAG TILL EXAMNESARBETE I MILJÖ- OCH VATTENTEKNIK

VERIFICATION OF A WAVE MODEL (WAM) OVER THE BALTIC SEA

Handledare:

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Background:

The wave model WAM (WAm Model) has recently been set up in the department.

The WAM is a spectral wave prediction model, developed by the Wave Model Development and Implementation (WAMDI) group (WAMDI group, 1988). It is a third generation wave model, meaning that it resolves the (energy) action balance equation (Koman et.al, 1994) with no previous assumptions on the spectral shape. The model output is a two dimension wave spectrum (for each grid point or selected spectral points). From these spectra most wave parameter can be derived, such as: significant wave height, peak period (frequency), mean wave direction, stokes drift, etc. The model is forced by a wind field at 10 meters height.

We are in the process of coupling the wave model to an atmospheric climate model. Along with the coupling we need to verify the hindcasting and forecasting capabilities of the wave model over the Baltic Sea, and investigate the optimal model set up.

Studies:

The results of several wave hindcasts for selected periods will be compared with measured buoy data from SMHI and FIMR at several locations over the Baltic Sea.

Different model setups (integration time step, model resolution, ice and shallow water modules, etc.) will be tested on the hindcast runs and assessed against the buoy measured data.

Basic statistical tests will be performed over the model's output in order to verify the model skill scores.

References:

WAMDI Group, 1988. “The WAM Model - A Third Generation Ocean Wave Prediction Model,” J. Phys. Oceanogr. **18**, 1775-1810.

Komen, G. J., Cavaleri, L., Donelan, M., Hasselmann, K., Hasselmann, S. and P. A. E. M. Janssen, 1994, “Dynamics and Modelling of Ocean Waves”, Cambridge University Press, 532 p.

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