ABM LAB

Agent based
modelling

ABM Lab offers **unique integration of agent based modelling** with classical water quality and hydrodynamic modelling. It is possible to address questions **beyond the scope of more traditional water quality and ecological models**. ABM Lab is a **flexible numerical laboratory** used to define agents, their behaviour and states.

APPLICATIONS

ABM Lab is a flexible numerical laboratory where the user can define agents, their behaviour and states. It integrates with our hydrodynamic models in two and three dimensions (MIKE 21 and MIKE 3).

The Lagrangian ABM Lab can work with the hydrodynamics alone, or it can be combined with the Eulerian MIKE ECO Lab in order to make the agents react to water quality parameters.

TYPICAL APPLICATIONS

ABM Lab is the ideal software for:

- Numerical modelling of the impacts of dredging plumes on coral spawning and recruitment
- Modelling eelgrass succession patterns and determining the recolonisation of eelgrass
- Modelling the migration of salmonid fish larvae through different wetland construction designs
- Modelling of bull shark migration patterns in a semi-enclosed ecosystem

FEATURES

ABM Lab is a general tool which permits you to define agents, including their internal state and processes, movement, interaction with the environment as well as interaction with other agents of the same or different types.

With ABM Lab, you can model:

- **Movement,** which can be passive (drift) or active (depending on other model parameters). The resulting movement can be the sum of several independent movement vectors
- **Sensing**, where the individual's sensing of the environment and of other agents is done through 'Restricted Area Search Functions'
- **Interaction** with other elements, including functions such as create, split, remove, eliminate and transfer

The use of these functions permits modelling of complicated behaviours such as:

- Complicated horizontal and vertical movement
- Migration and swarming
- Foraging and breeding
- Growth, death and predator-prey relations

BENEFITS

Combined with the hydrodynamic MIKE models and MIKE ECO Lab, ABM Lab is unique for undertaking agent based modelling.

It is possible to establish a user-friendly tool that makes it feasible to apply this type of technique in the context of real engineering projects.

MIKE C-MAP and MIKE ANIMATOR PLUS

MIKE C-Map offers model bathymetries generated fast and easy from an electronic chart database. MIKE ANIMATOR PLUS turns model results into amazing 3D video presentations. Both applications are free and available if you hold a valid Service and Maintenance Agreement (SMA) for Professional License.

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The expert in **WATER ENVIRONMENTS**

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