

# -4H-Mesocosm



## REPRODUCEABLE NATURAL ENVIRONMENTAL CONDITIONS

*Create your own marine environments to acquire precise data for climate change models, coastal management and aquaculture production.*

-4H-JENA is a leading global expert on the development and operation of innovative habitat simulators that give operators and researchers complete control of a fully enclosed marine habitat.

-4H-JENA-Mesocosm habitat simulators enable scientists to evaluate the effect of Intergovernmental Panel on Climate Change (IPCC) future scenarios on marine biocenoses by providing an easy to manage closed system for the observation of e.g., reproduction behavior under defined conditions.

Experiment parameters like water temperature, tides, water flow, gas phase nutrients or salinity are completely configurable and fully monitored within the habitat simulator. Unlike typical laboratory experiments, the interactions between distinct species or larger groups of a single species can be observed when using -4H-JENA-Mesocosms.

### OPERATING PRINCIPLE

Every -4H-Mesocosm installation is different, with volume, size, material, number of water enclosures and measurement parameters configured according to the project challenges and goals. The pools can be filled with natural sea water and may accommodate various kinds of flora and fauna (e.g., algae, shells, macro plankton). The influence of changing environmental conditions on these species can provide valuable information on the impact of climate change.

### CUSTOM PROJECTS

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## APPLICATIONS

-4H-Mesocosms are used for research and commercial applications including:

- Data acquisition for climate change modelling
- Improving coastal management processes
- Improving conditions and the health of fish at aquaculture installations

## FEATURES

- Atmospherically closed tanks holding water organisms from microphytoplankton to macro-zooplankton and fish
- Control of currents and tides, with continuous water monitoring and management using flow-through adapted methods for e.g., temperature, salinity, dissolved oxygen, pH and pCO<sub>2</sub>
- User-friendly data management/storage with transmission via satellite, GPRS, UMTS or WiFi/LAN
- Flexibility to extend measurement parameters and integrate diverse external sensors into already configured systems



-4H-JENA engineering provides the software solution for control and configuration of the mesocosms and data acquisition

## PROVEN CONCEPT

Already a proven concept and the foundation for Europe's largest simulated marine environment at the Alfred-Wegener-Institute on the island of Sylt in the North Sea, -4H-Mesocosms have become essential for predicting how marine biocenoses are affected by e.g., climate change or ocean acidification.



-4H-Mesocosms installed at the Alfred-Wegener-Institute on the island of Sylt, Germany

## CONTACT -4H-JENA

Get in touch to find out how to create your own fully controllable marine habitat for scientific or commercial operations using -4H-Mesocosms.

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## CONTACT YOUR LOCAL REPRESENTATIVE

The -4H-Mesocosm enables climate researchers to contribute towards meeting the United Nations Sustainable Development Goals.

