

# Multibeam Data Processing

Christian dos Santos Ferreira,  
Dr. Evgenia Bazhenova  
*MARUM – Center for Marine Environmental Sciences*



28 November 2025

09.00 – 17.00 hrs.

MARUM I, room "Mediterranean Sea"

## Objectives

Multibeam echosounders (MBES) are among the most widely used tools for mapping the seafloor, producing detailed bathymetric data and backscatter information that support research in oceanography, geology, biology, hydrography, and offshore engineering. However, the raw measurements collected by these instruments require careful processing to remove errors, apply corrections, and generate reliable data products.

This course provides a comprehensive introduction to the principles and practice of multibeam data processing. Participants will develop an understanding of the different stages involved in transforming raw MBES soundings into high-quality bathymetric grids and seafloor visualisations.

## Topics

- Fundamentals of MBES acquisition and data structure
- Error sources and correction methods (e.g., sound velocity, motion, tides)
- Approaches to data cleaning and quality control
- Processing workflows using standard software environments
- Techniques for producing bathymetric grids, digital terrain models, and seafloor imagery

## Learning outcomes

By the end of the course, participants will be able to:

- Explain the principles underlying MBES data acquisition and processing
- Apply standard workflows for cleaning and correcting MBES datasets
- Generate bathymetric products suitable for research and applied use
- Critically evaluate data quality and processing decisions

## Target group

Everyone interested

## Requirements

Please bring a laptop to the course

## The trainers



Christian dos Santos Ferreira is an Oceanographer based at MARUM. He works in sea-floor mapping, takes part in research cruises and is responsible for processing the ship/AUV MBES bathymetry data. He is also one of the official developers of the MB-System software since the mid-2010s when he started contributing code and documentation to project. He acts as scientific inspector for the German research fleet and has joined several Sea Acceptance Tests (calibration and patch test) onboard the large German research vessels (“Meteor”, “Merian” and “Sonne”).



Evgenia Bazhenova obtained a PhD while working at the Alfred Wegener Institute for Polar and Marine Research. In 2016, she completed a postgraduate training in ocean mapping at the University of New Hampshire. Since then, she has participated in a number of international projects focused on bathymetric surveys, which included survey planning, data acquisition and processing, and data visualisation. Since April 2023, she has been part of the sea-floor exploration group at MARUM.

## Registration

To register for this course, please visit

<https://www.marum.de/en/research-academy/2025/2025-11-27.html>

Please note that your registration will be binding.

If we don't receive a critical number of registrations by **19 November 2025**, the course will have to be cancelled.

Please direct any enquiries about this event to [research-academy@marum.de](mailto:research-academy@marum.de).