

## Early Career Researcher Support Programme

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### Specific Knowledge Course

#### Stable Isotopes in Ecology

Dr. Marcus Elvert, Dr. Hannah Marchant

*MARUM – Center for Marine Environmental Sciences, University of Bremen*

**4 – 7 April 2022**

09.00 – 13.00 hrs.

#### Objectives

Stable isotope analyses of carbon and nitrogen (i.e.  $^{13}\text{C}$  and  $^{15}\text{N}$ ) are a critical tool used to further our understanding of processes such as nitrogen loss, nitrogen fixation, carbon fixation and methane cycling in marine environments. They enable us to gain insights into which organisms are important players in biogeochemical cycles and allow us to construct reliable nutrient budgets, reaction networks and models. Furthermore, stable isotope information can be retrieved from sedimentary archives through geological time. As such, there are myriad applications of stable isotopes, which are often hard to navigate when trying to decide how best to address scientific questions. Most specifically, this course will introduce the hands-on application of  $^{13}\text{C}$  and  $^{15}\text{N}$  stable isotope probing (SIP).

#### Topics

- Quantifying carbon fixation in sunlit ocean waters and dark marine sediments
- $^{15}\text{N}$  – a simple tool to answer complex biogeochemical questions
- Natural C isotopes as tracers of food and substrate use
- $^{13}\text{C}$ -SIP of molecular organic compounds to reveal the activity and function of distinct microbial groups in the marine environment

#### Methods

The course will consist of lectures and practical exercises discussing the typical application of stable isotopes to disentangle the distribution and rates of processes within the water column/sediments, touching on how to sample and set up experiments in the field and examples of the kind of data that can be obtained.

#### Target group

Everyone who is interested in the topic; previous knowledge would be good but is not mandatory.

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### Format and Schedule

4 – 7 April 2022	09.00 – 13.00 hrs.	MARUM I, room 2070
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### Registration

To register for this course, please visit the course web page:  
<https://www.marum.de/en/education-career/2022-04-04.html>

*Please note that your registration will be binding.*

The registration deadline for this course is **30 March 2022**.

Any enquiries regarding the course should be addressed to [early-career@marum.de](mailto:early-career@marum.de).