ZMT LEIBNIZ-ZENTRUM für Marine Tropenforschung

The Leibniz Centre for Tropical Marine Research (ZMT) GmbH (www.leibniz-zmt.de) is an independent research and teaching institute that provides scientific knowledge for the protection and sustainable use of tropical coastal ecosystems. To this end, we work in an inter- and transdisciplinary manner with our partners in the tropics. The ZMT is a member of the Leibniz Association.

We seek to innovate on the latest methodologies to solve complex data problems when monitoring coastal ecosystems in the tropics. In this project we focus on describing mangrove forests with the highest level of detail possible using remote sensed data (imagery from Earth observation and airborne platforms). Using state-of-the-art machine learning and deep learning techniques we build data workflows that facilitate scalable mapping of large areas of these critically important ecosystems. This project will expand on previous work done in the group, by preparing an AI workflow to create inventories of mangrove trees and detect canopy gaps from satellite and airborne (drones) imagery. In-situ validation missions will be planned and executed using drones and other in-situ methods. The results of these mapping efforts will provide new insights into the stocks and health of mangrove stands, as well as the causes of gap formation in mangrove canopies on a global scale.

The working group Data Science & Technology is seeking to fill an opening for a doctoral candidate (subject to release of funds).

Doctoral candidate (gn)

(Reference: 33-DataScience)

Your tasks:

- Collect and preprocess large remote sensing datasets (Sentinel-1/2, Landsat-8, NICFI, drone data, etc.)
- Plan and execute field studies to collect ground truth data (species identification, morphology, GPS reference points) with the help of drones, multispectral cameras, and other innovative technologies.
- Develop, implement, execute, and test machine learning models in an HPC environment for: land cover classification, mangrove species differentiation, change detection (loss, degradation, regrowth), biomass/carbon stock estimation, canopy gap detection.
- Conduct a spatial-temporal analysis of changes in mangrove forests over decades and link the results obtained from AI with ecological processes (hydrology, species composition, disturbance regime).
- Communicate and disseminate research results: write chapters for the dissertation and articles for peer-reviewed journals or conferences; present results at conferences and workshops; create software visualizations: maps, dashboards, web apps, or interactive story maps.
- Work in a multidisciplinary and multicultural environment while managing data storage, project documentation, source code documentation, computing resources, and advanced version control.

Requirements:

- Master of Science with a focus on data science, computer science, environmental modeling, information technology, or a related field.
- Understanding of mangrove species distribution, structure, and ecological functions.
- Strong programming skills, preferrable in Python; knowledge of libraries such as PyTorch, Scikit-learn, NumPy, GDAL, Rasterio, Pandas, Xarray is a plus.
- Experience with convolutional neural networks (CNNs) for image classification and segmentation.
- Ability to build large data pipelines, automation scripts, and reproducible workflows.
- Good to have: advanced use of GIS tools: QGIS, ArcGIS, Google Earth Engine. Experience using Jupyter, Git/GitHub, and high-performance computing environments. Project management experience.

Further information:
For questions, please contact Dr. Daniel Schürholz, email: daniel.schuerholz@leibniz-zmt.de

Details of position:
Salary will be paid according to the German TV-L (EG 13). The position is available for part-time (2/3 of a full-time position) employment starting as soon as possible for 36 months. The fixed term is for academic qualification according to § 2 (1) WissZeitVG (Wissenschaftszeitvertragsgesetz). Accordingly, only applicants who still have the relevant qualification periods according to § 2 (1) WissZeitVG can be considered. The position is intended to provide further academic qualification with the aim of obtaining a doctorate.

ZMT is an equal opportunity employer. Applicants with a migration background are welcome. Persons with severe disabilities are given special consideration if they have the same professional and personal qualifications. The ZMT values its diverse workforce and pursues the goal of providing equal opportunity, which incorporates gender neutrality (gn). We will be happy to accept your documents without a photo.

We offer:

- A challenging and varied job in an international, dynamic and interdisciplinary research environment
- A motivated and committed team from different countries and cultures
- An open and cooperative working atmosphere
- Opportunities for personal and professional development
- Interesting, varied and challenging tasks and family-friendly working conditions
- Company pension plan (VBL)
- Company health promotion and the opportunity to participate in company fitness with EGYM Wellpass

Submission of application:
Please submit your complete application documents (cover letter, resume, references, job references, certificates and attestations) and a letter of motivation **by 21.01.2026 as a single pdf file** with the reference number "**33-DataScience**" to Ms. Lena de Carné-Oehlmann, email: bewerbung@leibniz-zmt.de.

Leibniz Centre for Tropical Marine Research, Fahrenheitstraße 6, D-28359 Bremen.

Leibniz Gemeinschaft

Zertifikat seit 2018
audit berufundfamilie