GEOMAR
Helmholtz-Zentrum für Ozeanforschung Kiel

GEOMAR Helmholtz Centre for Ocean Research Kiel is a foundation of public law jointly financed by the Federal Republic of Germany (90 %) and the state of Schleswig-Holstein (10 %) and is one of the internationally leading institutions in the field of marine sciences. Currently GEOMAR disposes over an annual budget of approx. 80 million Euro and has approx. 1000 employees.

The research unit Marine Geodynamics of the research division Dynamics of the Ocean Floor is offering a

Postdoctoral Research Associate – Numerical modeller

starting on September 1st at the latest.

Job Description / Project Description

The Postdoctoral Research Associate will be responsible for the execution of a number of tasks related to MARCAN, a project financed by Horizon 2020: European Research Council, in which GEOMAR is the co-ordinator. MARCAN focuses on the role of offshore groundwater in shaping seafloor landscapes.

The key research question that the Postdoctoral Research Associate will be exploring is if, and under which geologic and hydrogeologic conditions, topographically-driven meteoric groundwater can be a significant landscape denudation process, both onshore and offshore. The study areas for this project include the eastern coast of the South Island of New Zealand, and the north-western coast of the Maltese Islands.

The main tasks of the Postdoctoral Research Associate will involve the following:
- Develop an advanced 3D continental margin geomorphic evolution model that accounts for both surface and sub-surface flows. The model should integrate the following components, among others:
  - MARSSIM landscape evolution model;
  - Recently published geomorphic laws for canyon network growth by groundwater erosion and weathering;
  - Geomorphic rate laws and models for groundwater erosion and weathering at the micro-scale derived from simulation experiments (generated by another MARCAN team member);
  - Slope stability limit equilibrium models (generated by another MARCAN team member);
  - Hydrogeological models derived from PGEOFE[3,4] (generated by another MARCAN team member);
  - Models of submarine canyon erosion by turbidity currents.
- Taking into consideration the geologic and hydrogeologic frameworks of the two study areas, as well as known changes in sedimentation, eustatic sea level and regional uplift/subsidence from published literature, run model for last glacial cycle, and repeat for Quaternary, using a supercomputing cluster.
- Statistically compare modelled canyon morphometry and evolution with that recorded in the field.
- Identify topographic signatures of canyon formation by groundwater in different settings.
- Quantify hydrogeologic conditions required for canyon erosion and determine when these are satisfied during a glacial cycle.

- Spend 3 months at ICTJA-CSIC in Barcelona on a research visit working with Dr Daniel Garcia-Castellanos.
- Produce a minimum of three articles, for submission to international scientific journals, by the end of the project.
- Travel and participate in meetings/conferences/fieldwork/cruises as the need arises.
- Keep detailed progress reports and abide to all the conditions imposed by the project;
- Perform any other project related task as instructed by the Project Coordinator.

Qualification
- Possession of a PhD degree in numerical geology, computational geosciences, or a related field of research
- Be experienced in landscape evolution modelling
- Be proficient in one or more programming languages (especially Fortran, C, shell scripting and linux environments)
- Have a high level of proficiency in English

Desirable are also the following criteria:
- Have a working knowledge of GIS software (especially ArcGIS)
- Be able to work independently and under minimum supervision

The position is available for a funding period until August 2021. The salary depends on qualification and could be up to the class 13 TVöD-Bund of the German tariff for public employees. This is a full-time position. The position can be split.

GEOMAR Helmholtz Centre for Ocean Research Kiel seeks to increase the proportion of female scientists and explicitly encourages qualified female academics to apply. GEOMAR is an equal opportunity employer and encourages scientists with disabilities to apply. Qualified disabled applicants will receive preference in the application process.

Please send your application for this post via email **in a <u>single</u> pdf-file** mentioning the keyword **"Numerical Modeller"** in the subject line. Please send your application not later than **June 16th, 2019** to the following email address:

bewerbung@geomar.de
As soon as the selection procedure has finished, all your application data will be removed according to data protection regulation.

For further information regarding the position and research unit please contact Aaron Micallef (E-Mail: amicallef@geomar.de) or visit this website: http://www.um.edu.mt/hrmd/vacancies.

Please do not contact us by phone about the present state of procedures. However, we will answer all your questions if you send us an e-mail to bewerbung@geomar.de. In doing so, please refer to the keyword.

GEOMAR is a member of the Helmholtz Association and the German Marine Research Consortium (KDM). For further information please visit www.geomar.de or www.helmholtz.de

GEOMAR is committed to a non-discriminatory personnel selection. Our job advertisements address all people.

The TOTAL E-QUALITY award is presented to GEOMAR for efforts in terms of human resource management aimed at providing equal opportunity.