



Call for Applications Posts of Full-Time Research Support Officer II & IV

MARCAN PROJECT – Horizon 2020: European Research Council
“Topographically-driven meteoric groundwater – An important geomorphic agent”

**And Any Other Projects Undertaken by the
Marine Geology and Seafloor Surveying group,
Department of Geosciences, Faculty of Science**

1. Applications are invited for Research Support Officers to work on the “Topographically-driven meteoric groundwater – An important geomorphic agent” (MARCAN), a project financed by Horizon 2020: European Research Council. The Research Support Officers may be required to work on any other projects undertaken by the Marine Geology and Seafloor Surveying group within the Department of Geosciences.
2. Applicants must be in possession of the following:
 - (i) **Research Support Officer IV (Post-Doctoral Research Associate)** - a doctorate degree in geophysics. The Research Support Officer IV should also:
 - have participated in oceanographic and terrestrial expeditions acquiring geophysical data;
 - be experienced in the processing, visualisation and interpretation of single- and multi-channel seismic reflection profiles using industry-standard software packages (in particular SeismicUnix, Promax, Kingdom, Petrel);
 - have research experience in inverting seismic reflection data to infer sub-surface geological properties;
 - be familiar with the processing and interpretation of geophysical data acquired using controlled-source electromagnetics and ground penetrating radar;
 - be experienced in the use of GIS software (especially ArcGIS);
 - have basic knowledge of programming (Python, C);
 - have experience in communicating science via publication in peer-reviewed scientific journals and international conferences;
 - be able to work under minimum supervision.
 - (ii) **Research Support Officer II** - MSc degree in geology, engineering geology, or hydrogeology. The Research Support Officer II should also:
 - have research experience in the laboratory measurement of geologic, geotechnical and hydraulic properties of rock and sediment samples;
 - be familiar with geochemical analytical techniques of water samples;
 - be experienced in the use of GIS software (especially ArcGIS);
 - be able to work under minimum supervision.

The University of Malta is an Equal Opportunity employer.

3. The posts are for a period of 12 months starting in April/May 2017 and carry the following initial remuneration:
Research Support Officer IV - €41,600 per annum.

Research Support Officer II - €24,960 per annum.

4. Candidates should submit their letter of application, a copy of their curriculum vitae and copies of their certificates. Applications may be sent by e-mail to projects.hrmd@um.edu.mt.

Applications should be received by not later than **Friday 30th December 2016**.

Late applications will not be considered.

5. Further information may be obtained from the website: <http://www.um.edu.mt/hrmd/vacancies>.

Office of the University,
Msida, 23rd October 2016



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Posts of Full-Time Research Support Officer II & IV**

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MARCAN – “Topographically-driven meteoric groundwater – An important geomorphic agent”

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Further Information

1. The Research Support Officers 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 the Department of Geosciences is the coordinator.

Project Description:

Topographically-driven meteoric (TDM) recharge is a key driver of offshore groundwater systems because sea level has been lower than at present for 80% of the last 2.6 million years. Groundwater has been implicated as an important agent in the geomorphic evolution of passive continental margins and the canyons that incise them. However, the geomorphic efficacy of groundwater remains dubious, and a diagnostic link between landscape form and groundwater processes remains poorly quantified, especially for bedrock and cohesive sediments. Obstacles that prevent going beyond the current state-of-knowledge include: (i) a focus on terrestrial contexts and a lack of mechanistic understanding of groundwater erosion/weathering; (ii) limited information on offshore groundwater architecture, history and dynamics. By addressing the role of TDM offshore groundwater in the geomorphic evolution of the most prevalent types of continental margins, MARCAN is expected to open new scientific horizons in continental margin research and bring about a step-change in our understanding of some of the most widespread and significant landforms on Earth. The project's methodology is rooted in an innovative, multi-scale and multidisciplinary approach that incorporates: (i) the most detailed 3D characterisation of TDM offshore groundwater systems and their evolution during an integral glacial cycle, based on state-of-the-art marine data and hydrogeologic models, and (ii) the development of a comprehensive continental margin geomorphic evolution model, based on realistic laboratory simulations, accurate field measurements and advanced numerical solutions. By placing better constraints on past fluid migration histories, MARCAN will also have strong applied relevance, primarily by improving assessment and exploitation of offshore freshwater as a source of drinking water.

The Research Support Officers may be required to work on any other projects undertaken by the Marine Geology and Seafloor Surveying group within the Department of Geosciences.

2. The main duties and responsibilities of the appointees are as follows:

Research Support Officer IV (Post-Doctoral Research Associate):

- a. Participate in oceanographic expeditions and terrestrial fieldwork surveys to acquire geophysical data;
- b. Process and interpret 2D single- and multi-channel seismic reflection data;
- c. Invert seismic reflection data to estimate sub-seafloor pore pressures;
- d. Participate in the interpretation of controlled-source electromagnetic and ground penetrating radar data;
- e. Compile and maintain a geographic information system of recently acquired and published geophysical data;
- f. Generate a 3D model of stratigraphy and structure of a continental margin;
- g. Produce deliverables and related reports within the stipulated time frames as specified in the project description;
- h. Generate technical and scientific conference/journal papers;
- i. Travel and attend meetings/conferences/cruises as the need arises;
- j. Keep detailed progress reports and abide to all the conditions imposed by the project;
- k. Perform any other project related task as instructed by the Project Coordinator.

Research Support Officer II:

- a. Measure geologic properties (mineralogy, grain size distribution, bulk density, shear strength) of terrestrial and sub-seafloor rock and sediment samples using XRF analyses, sieve analysis and laser diffraction, optical microscopy, triaxial testing and Hoek's cell;
- b. Measure hydraulic properties (porosity, permeability, specific storage co-efficient, compressibility, hydraulic conductivity, solute diffusivity) of terrestrial and sub-seafloor rock and sediment samples using constant-rate-of-strain consolidation, gas permeameter, uniaxial pore volume compressibility testing, falling head method, mercury intrusion porosimetry, and radial diffusion cell experiments;
- c. Extract pore water samples from cores and Niskin bottles, and analyse their chemistry (total dissolved solids and pH using conductivity and pH meters; anions and cations using ion chromatography);
- d. Compile and maintain a geographic information system of recently acquired and published seafloor and terrestrial data;
- e. Contribute to the generation of a 3D model of geological/hydraulic properties of a continental margin;
- f. Participate in oceanographic expeditions and terrestrial fieldwork surveys to acquire rock/sediment samples;
- g. Produce deliverables and related reports within the stipulated time frames as specified in the project description;
- h. Keep detailed progress reports and abide to all the conditions imposed by the project;
- i. Perform any other project related task as instructed by the Project Coordinator.

3. The appointees are expected to work at such places and during such hours as may be determined by the University authorities.
4. The selection procedure will involve:
 - a. scrutiny of qualifications and experience claimed and supported by testimonials and/or certificates (copies to be included with the application); and
 - b. an interview and / or extended interview.
5. The posts are for a period of 12 months, which will be subject to a probationary period and to the provisions of the Statutes, Regulations and Bye-Laws of the University of Malta which are now or which may hereafter be in force.