Job Description – Postdoctoral Research Associate: Aeolian landforms and processes at the ExoMars Rover landing site.

1 FTE
Fixed term: 3 year fixed term contract
AC2
Walton Hall, Milton Keynes-based, with some travel including field work overseas

The Role

The role-holder will be welcomed into an interdisciplinary research team investigating all aspects of planetary environment research. In their role, they will explore aeolian processes and landforms in the Oxia Planum region of Mars, the location that the ESA ExoMars Rosalind Franklin Rover will land in early 2021. The main aim of the project is to understand the environmental and erosional history of the Oxia Planum site, and the role-holder will perform both basic research and assist Rover operations as an associate member of the ExoMars Rover PanCam camera team.

Prior to landing, the role will include (i) terrestrial fieldwork with collaborators from Aberystwyth University and the University of Southampton using the PanCam emulator instrument “AUPE”, (ii) research using the latest NASA and ESA orbital remote sensing data that cover the landing site, (iii) working with project partners at the Open University and Ulster University to generate high resolution climate/atmospheric models of the landing site. After landing, the role will include (i) participating in PanCam surface operations planning and execution, and (ii) analysing data returned by the ExoMars Rover.

Key responsibilities

- To take a leading role in remote sensing and rover-based studies of aeolian bedforms and other landforms at the ExoMars landing site;
- To take a leading role in planning and implementing fieldwork;
- To assist and support internal and external collaborators within the project, especially in the area of climate/atmospheric models;
- To participate in ExoMars PanCam Surface Operations, and to undertake training necessary for this role;
- To document all aspects of the research, and to write manuscripts describing the research outcomes for publication in the peer-reviewed literature;
- To participate in conferences, seminars and workshops aimed at sharing research outcomes and fostering interdisciplinary collaborations;
- To have a strong commitment to the principles and practice of equality and diversity;
- To be an active member of the OU Planetary Environments Research Group, attending regular research group meetings and share knowledge with other members of the team;
- To proactively liaise with and report to the line manager;
• To carry out administrative tasks associated with this project, such as risk assessments, field work logistics, GIS-workstation administration etc., and to undertake other duties that are reasonable as directed by the line manager.

Person Specification

Skills, competencies, and experience

Essential:
• A PhD (or equivalent alternative experience) in planetary physics, geology, geomorphology, planetary science, or other relevant discipline;
• A thorough understanding of aeolian processes, landforms and landscapes, as might be applied both on Mars and on the Earth;
• A thorough understanding of Mars remote sensing and Rover-based data products and their interpretation;
• Experience of working with planetary data using GIS software;
• Fieldwork experience or equivalent (e.g., expedition leadership);
• A proven ability to communicate research outcomes via publication in the peer-reviewed literature, and via conference presentations, workshops or equivalent settings;
• Experience of analysing problems and working creatively to develop innovative and workable solutions;
• An ability to plan and prioritise own workload, and to work to agreed deadlines;
• Good oral and written communication in a variety of contexts, including the ability to offer and receive constructive criticism;
• A strong desire and commitment to working in the field of planetary science.

Desirable:
• Advanced numeracy and coding/scripting skills;
• Field experience in isolated, cold and/or hot environments, and an understanding of the risks and mitigations strategies involved in working in such environments;
• Off-road/unpaved road vehicle driving experience;
• Experience of working across discipline boundaries or in interdisciplinary teams;
• Enthusiasm for public engagement and/or impact-generating activities;
• Membership of mission operations teams or experience of simulated Rover activities or field trials
About the Planetary Environments Research Group

This project will be hosted in the Planetary Environments Group at OU, which currently has about 10 PhD students, five affiliated academic staff, and three postdocs. The goal of our group is to understand the atmospheres, surfaces, and near sub-surface environments of planets in the solar system, and to explore their origin, evolution, and habitability.

The research activities of the group slowly evolve as new space missions come online, but our activities are currently focussed on Mars atmosphere modelling, understanding the geology of Mercury, understanding the recent surface geology and geomorphology of Mars, and preparing for the ExoMars Rover mission. We work closely with the OU Astrobiology research group, which also has a strong interest in Mars research and exploration.

The group has access to a computer cluster that hosts the Mars General Circulation Model and has and high specification computer workstations with remote sensing, GIS and DEM-production software (ENVI, ISIS3, ArcGIS, SocetSet, AgiSoft PhotoScan etc.).

The group is part of the Planetary and Space Science discipline of the School of Physical Sciences (SPS) at OU, an internationally leading centre for Planetary Science with a reputation for surface/atmosphere research. SPS is committed to fostering equality and diversity in the academic workplace and has an Athena SWAN Silver award and Juno Champion status.

The Planetary Environments Group is committed to building an inclusive research environment. The Group supports flexible working arrangements, within the limits of the post, and particularly welcomes applications from groups traditionally under-represented in STEM.

About the Unit

Faculty of Science, Technology, Engineering & Mathematics

The Faculty of Science, Technology, Engineering and Mathematics (STEM) is comprised:

- School of Computing & Communications
- School of Environment, Earth & Ecosystem Sciences
- School of Engineering & Innovation
- School of Life, Health & Chemical Sciences
- School of Mathematics & Statistics
- School of Physical Sciences
- Knowledge Media Institute
- Deanery including teams supporting Curriculum, Research and Enterprise, Laboratory Infrastructure and Faculty Administration

“We aspire to be world leaders in inclusive, innovative and high impact STEM teaching and research, equipping learners, employers and society with the capabilities to meet tomorrow’s challenges”

The Faculty of STEM consists of 2500 staff including 1,800 Associate Lecturers. The Faculty delivers over 185 modules across undergraduate and postgraduate curriculum, supporting nearly 19,000 students (full time equivalents) which is 29% of the OU total.

The Faculty generates more research income (circa £17M) than any other Faculty in the University, supported by a comprehensive laboratory infrastructure.
We are proud of our distinctive values and capabilities underpinning our aspiration:

**We are inclusive:**
- We transform people’s lives, ensuring STEM education is openly accessible to many thousands of students from diverse backgrounds – our students express high satisfaction with their study experience.
- We engage the public in exciting citizen science and engineering, including through free open educational resources, multi-platform broadcasting, outreach to inspire the next generation and with programmes to encourage more women into STEM.

**We are highly innovative:**
- We are at the forefront of innovative developments in teaching practical science and engineering at a distance, through simulated and remote access laboratories and practical experimentation.
- Our high quality teaching and curriculum are informed by world-leading research, strong links with professional bodies and communities of practitioners, as well as by scholarship focused on continuously improving our STEM pedagogy.

**We deliver significant social and economic impact:**
- We provide STEM higher education at a scale and reach unsurpassed in the UK, with a sizeable international reach and further growth potential.
- We inject transferable STEM skills and knowledge direct into the workplace for immediate employee and employer benefit, as students combine study while working.
- The employability value of our courses is underpinned by accreditation from leading STEM Professional Bodies and Learned Societies, as well as partnerships and sponsorship with leading employers.
- Our high quality, applied and academically relevant teaching and research addresses real-world issues, delivering impact for industry and society, including addressing pressing STEM skill-shortages across the UK.