Research Centre:	**The Water Institute, Dublin City University**
Post title:	**Research Fellow - Environment Monitoring and Sensing Infrastructure**
Level on Framework:	**Level 2**
Post duration:	**Fixed Term Contract up to 24 Months**

Research Career framework

As part of this role the researcher will be required to participate in the DCU Research Career Framework. This framework is designed to provide significant professional development opportunities to researchers and offer the best opportunities in terms of a wider career path. DCU has a strong track record in attracting both Irish and European Union research funding under Horizon 2020 (and all previous Framework Programmes), Marie Curie Actions and Erasmus. We offer a dynamic and internationally-focused environment in which to advance your academic career.

Background & Role Profile

Now, more than ever, we need high-quality, timely information about our farms, forests, natural wetlands and cities in order to better understand the interdependencies and interactions between the human activities and natural processes that create these complex environments.

This SFI funded project in the area of climate action will tackle this challenge through the innovative fusion of multi-thematic data-sources captured from spaceborne satellites, aerial/drone platforms, in-field instruments, in-situ sensor networks and mobile devices with existing databases, on land use and population, using highly automated machine learning workflows to extract terrestrial features, patterns and processes – essential to understanding and managing these environments. Integrated land-surface models, capable of handling uncertainty, will utilise these AI outputs together with land-cover type, biomass and environmental variables to produce improved estimates of carbon stocks and exchanges.

We are seeking candidates with skills in environmental sensing to work on this project. The post will involve site selection, optimisation of siting sensors, network design for sensor deployment and maintenance of equipment.

The objective of this research is to develop a digital data platform capable of integrating, analysing and visualising large volumes of Earth observation data, including from satellites, drones and on-site measurements. As part of this broader vision, the Research Fellow will be required to deliver on a body of work relating to **_Instrumentation & Surveys_** on sensor selection of sites, network design, deployment, and maintenance of sensors. Knowledge of a broad range of sensor platforms and a hierarchy of survey technologies and sensors will be required. The fellow will feed into work packages on soils and anomaly detection & scenario analysis in relation to data from existing and new sensors and other platforms. A broad set of skills are required with adequate field experience. Specifically, sensor engineering and integration: performance, sensor design and communications, transduction methods, sensor data validation for environmental parameters.

Duties and Responsibilities

Reporting to the Principal Investigator the Postdoctoral Researcher will perform research principally based in DCU on a project co-funded by a major multinational industrial company. The main duties and responsibilities include:

- Conduct research in the area of environmental monitoring and sensing.
- Identify study sites and plan surveys
- Network design and implementation
- Engage in cross cutting activities with other work packages
- Liaison with strategic partners to deliver project deliverables and milestones.
- Reporting and communicating research outcomes within the wider team
- Disseminate research results and activities through papers, tutorials, and seminars where appropriate.
- Engage in the wider research and scholarly activities.

Qualifications and Experience:

Applicants should have a PhD in environmental monitoring, optical sensing, sensor engineering and deployment, environmental engineering, or related area. Applicants should also have a minimum of 4 years relevant postdoctoral/industry-related research experience or equivalent at post-doctoral researcher level.

In addition, it is desirable that the candidate has a subset of the following skills:

- Knowledge of sensor design, integration, transduction.
- Ability to work in a team-based environment and with stakeholders/partners.
- Ability to conduct multi-disciplinary research and understanding of various domains particularly terrestrial and climate related challenges
- Motivated and proactive attitude, willing to take ownership and initiative in all work assignments.
- Excellent Investigative and problem-solving skills.
- Excellent communication skills, verbal and written (English).
- Creative Thinking.
- Evidence of leadership within a group
- Evidence of funding success and publishing record

The ideal candidate will also have:
- Experience in research collaborations with industry.
- Field work experience
- Sensor deployment and maintenance experience
- Test and demonstration of sensors
- Site assessment in preparation for deployments
- Knowledge of data management platforms - excel, R and data manipulation
- Knowledge of satellite and aerial platform technologies and their integration into a monitoring system.

Mandatory Training

Post holders will be required to undertake the following mandatory training: Orientation, Intellectual Property Procedures, GDPR, and Compliance. Other training may need to be undertaken when required.

Candidates will be assessed on the following competencies:

Discipline knowledge and Research skills – Demonstrates the ability to design and implement part of a programme of research (for example by using critical thinking and the application of relevant research methodologies).

Understanding the Research Environment – Demonstrates a thorough understanding of the research environment both nationally and internationally and the ability to contribute substantially to grant applications.

Communicating Research – Demonstrates the ability to communicate their research effectively to the research community and wider society (for example by publishing their research in high quality peer reviewed journals) and the ability to teach and tutor students.

Managing & Leadership skills - Successfully manages research projects including the management and supervision of postgraduates and/or junior research staff.