PHD OPPORTUNITY

Characterisation and monitoring of forest disturbance in Ireland from active microwave satellite observations

Background

Forest cover in Ireland has increased from less than 1% to almost 11% of the landscape over the last half of the 20th century and represents an important and manageable carbon sink. The United Nations Framework Convention on Climate Change (UNFCC) requires annex 1 countries to provide annual inventories of greenhouse gas (GHG) emissions and removals. CForRep is a new project funded by the Irish Department of Agriculture, Food and the Marine that will develop and refine the Irish national forest GHG reporting system, CARBWARE. A consortium of Irish Universities and semi-state agencies are involved in the project, led by Prof. Maarten Nieuwenhuis of University College Dublin (UCD).

Dr Fiona Cawkwell of University College Cork (UCC) is leading the earth observation work package, where the aim of this PhD position is the development of techniques to monitor areal changes associated with deforestation and disturbance in Ireland using radar satellite data. To date no active microwave image analysis has been undertaken for Irish forested areas. One of the first tasks therefore will be to establish the reliability of detecting facets of forested areas at microwave wavelengths. Imagery will be processed to generate maps of forest cover and change over time, with ground based inventories used to provide an indication of the accuracy with which change events can be detected. Different disturbance events will be manifest differently on the images, and techniques of developing an automated approach for characterising an event will be evaluated. Finally relationships between backscatter values, carbon density and total biomass will be constructed.

Requirements

Applicants should have a minimum of a 2:1 Honours undergraduate degree in a numerate discipline or an MSc in a relevant area and be familiar with the concepts of active microwave remote sensing. Experience in forestry, computational techniques and programming would be a distinct advantage. Candidates should also have strong communication (oral and written) and interpersonal skills, and the ability to work independently and as part of a team. Where relevant, candidates may need to show proven competency in the English language.

Award

The studentship comprises an annual stipend of €16,000 for three years, in addition to fees at the EU level (approximately €6000 per year). The student will be registered with the UCC Geography Department and will interact closely with researchers in UCC and the project partners in Dublin and Limerick. The successful candidate will start as soon as possible after 1st April 2013.

Application Procedure

Applicants should send a copy of their CV, with the names and addresses of 3 referees, plus a statement outlining their academic interests and their reasons for wishing to undertake this research project to Dr Fiona Cawkwell (f.cawkwell@ucc.ie).

Closing date

28th February 2013