

The effect of climatic warming on the frequency of volcanic eruptions in Iceland

Project Description

Climate warming and glacial unloading may lead to an increase in the frequency of volcanic eruptions in places such as Iceland. This project will investigate the frequency of Icelandic volcanic eruptions using layers of volcanic ash (tephra) preserved in peat. Traditional tephra picking will be combined with an innovative approach for identifying altered tephra horizons and volcanic aerosols in peat archives and will thus provide a comprehensive record of past volcanism. This data will be used in conjunction with published tephra records to estimate the frequency of Icelandic eruptions under current climatic conditions (last ~7000 years) and under conditions of climatic warming and deglaciation (7,000-10,000 years).

Field work will comprise collection of fresh peat cores in Ireland, Faroe and the UK. Laboratory work will include separation of tephra followed by major element analysis by SED-EDX lab in the iCRAG@TCD laboratory and LA-ICP-MS at Trinity College Dublin. In addition, bulk peat will be analysed by solution ICP-MS and ETV-ICP-MS at Trinity College Dublin. Peat chronology will be established using radiocarbon dating and tephrochronology. The ultimate goal of this project is to better constrain the frequency of basaltic eruptions, which are currently under-represented in the Icelandic tephra record.

Person Specification

The ideal candidate is a numerate and meticulous Geology or Earth Science graduate with some experience in geochemical analysis and/or tephra separation.

Trinity College Dublin

The Department of Geology is hosted within the School of Natural Sciences at Trinity College Dublin (TCD). The School of Natural Sciences has a track record producing world-class research, securing research funding in excess of €4 million and publishing an average of 150 peer-reviewed publications per annum. The Geology Department is home to 24 postgraduate students and 4 postdoctoral researchers from a range of countries and provides a welcoming and nurturing research environment. Individuals are supported by colleagues within the Department, within the School and within the wider iCRAG network.

The Department of Geology has excellent analytical facilities. Relevant to this project are the ultra-clean preparation laboratory, the Thermo iCAP quadrupole ICP-MS with a MicroFast sample introduction system (essential for analysis of low volume samples), the Spectro ETV 4000c, the new TESCAN TIGER field emission gun SEM and the state-of-the-art laser-ablation quadrupole-ICP-MS. Each of these facilities is supported by a dedicated laboratory technician and widely used by

members of the department. In addition, the department houses a dedicated tephra picking laboratory and polishing facilities.

Contact information

Informal queries are welcome.

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