

# PhD Research Studentship University of Dublin, Trinity College



**Title:** 3D Numerical Modelling of Crustal Flow beneath Iceland

**Supervisors:** Dr SM Jones and Dr N Ribe (Institute de Physique du Globe de Paris)

**Research Area** Crustal flow has been invoked to explain continental phenomena including exhumation of metamorphic core complexes and associated development of low-angle detachment faults within extensional terrains (e.g. Basin and Range Province, USA) and sharp-edged plateau topography in major collisional belts (e.g. Himalaya and Zagros). However, it is easier to investigate crustal flow in the oceanic realm because oceanic plates are young, structurally simple and their generation and subsequent evolution are well understood. This project will concentrate on Iceland, where clear evidence of crustal flow has been recorded.

**Project Scope** This project will develop a numerical model to predict the 3D crustal flow field beneath Iceland. The new model will be based on an existing thin-layer fluid flow model that calculates the 3D structure of a mantle plume head spreading beneath a plate. Predictions of the new crustal flow model will be compared with observed crustal thickness variations across Iceland. In particular, the new model will be used to investigate the role of crustal flow in the rift relocation process at Iceland. In situations where off-axis crust is thicker than axial crust, flow of crust towards the axis may inhibit plate spreading, causing the established axis to lock and a new axis to form.

**Requirements and Training** The ideal candidate is either a physicist or a geophysicist interested in computer coding. He/she will be based in Dublin but will make frequent visits to IPG Paris. He/she will also have the opportunity to participate in a geochemical sampling program in Iceland as part of parallel project. The studentship is fully funded for candidates from EU countries; other candidates will require top-up fees.

**Contact:** [stephen.jones@tcd.ie](mailto:stephen.jones@tcd.ie)