PhD Scholarship: Structure and tectonics of a plate boundary basin

Closing Date for Applications: 25th May 2015
University: Department of Geological Sciences, University of Canterbury, Christchurch, New Zealand
Stipend: $NZ21,000 p.a. plus fees (presently ~$NZ7,200)
Post Duration: 3 years starting 2015
Supervision: Andy Nicol (Principal Supervisor, UoC), Jarg Pettinga (co-supervisor, UoC) and Tusar Sahoo (co-supervisor, GNS Science).

Project Summary

This project will investigate the structure and tectonics of the Canterbury Basin in offshore New Zealand. The study will constrain the evolution of Late Cretaceous faulting associated with Gondwana breakup, fault growth models and Cenozoic far-field uplift during formation of the present obliquely-convergent plate boundary through New Zealand.

The structure and tectonics of the Canterbury Basin will be analysed mainly using open-file 2D and 3D seismic reflection lines tied to multiple wells. Existing seismic interpretations are to be augmented by detailed fault mapping and infill horizons for key time intervals. Techniques such as displacement back-stripping will be employed to determine fault system evolution, while mapping of paleo-channels, porosity analysis and geohistory plots from wells and outcrop will be used to characterise the history of basin subsidence and uplift.

Key Duties and Responsibilities

- To undertake research on normal faulting and subsequent convergent plate boundary deformation processes.
- To work closely with Canterbury University and GNS Science staff. Interaction with petroleum industry companies presently exploring in the basin would also be desirable.
- To actively engage in the dissemination of the research results (in particular the preparation and submission of research papers to high impact international journals) as directed by the supervisors.
- To help maintain seismic reflection datasets within Kingdom interpretation software.

Candidate Requirements

- BSc (Hons) or MSc with First Class Honours or with equivalent high GPA in geology or related discipline.
- Training desirable in structural geology, faulting and deformation processes, seismic and interpretation using industry software (e.g., Kingdom and Traptester).
- A high standard of written and spoken English. Applicants for whom English is not their first language, or who have not undertaken their degree studies with English as the language of instruction, must attain a satisfactory English language test score (TOEFL or IELTS) before they will be able to meet enrolment requirements at the University of Canterbury.

Applications for this PhD Scholarship:

Interested applicants should submit a detailed CV, including an academic transcript, a letter detailing their interest and suitability for this project, and the names and contact details of two academic referees. For more information on the department see www.geol.canterbury.ac.nz. All applications and further enquiries regarding this project should be directed to the senior research supervisor Professor Andy Nicol (andy.nicol@canterbury.ac.nz); or postal address: Department of Geological Sciences, University of Canterbury, Private Bag 4800, Christchurch, New Zealand.

The application deadline is 25 May 2015. The successful applicant may commence the project immediately following this, subject to study visa requirements.