PhD Program between the Freie Universität Berlin (FUB) and the China Scholarship Council (CSC)

Open PhD Position at Freie Universität Berlin, offered only to Chinese CSC scholarship candidates 2020

Please Note: this PhD position is only offered to Chinese PhD candidates for the application in the framework of the FUB-CSC PhD Program.

Department/Institute: Geological Sciences
Subject area: Tectonics
Name of Supervisor: Prof. Frederik Tilmann
Number of open PhD positions: 1
Type of the PhD Study: Fulltime
Project title: Deep structure and geodynamic evolution of the South China Sea

PhD Project description:

Continental rifts and rifted margins harbour a large variety of georesources, but they also suffer from geohazards like earthquakes, volcanoes, and submarine landslides. The South China Sea continental margins have been widely surveyed through seismic, sedimentological, and petrological studies, but a quantitative characterisation of the geodynamic evolution of its sedimentary basins and the transition to sea floor spreading remains challenging.

This project will address major geodynamic questions related to South China Sea evolution from early Cenozoic inception of rifting to present-day:

1) What is the impact of tectonic inheritance on the 3D thermo-structural evolution of back-arc basins like the South China Sea?
2) Can we reconstruct the basin-wide syn-rift temperature evolution by 3D numerical forward models constrained by satellite gravity measurements?
3) Which processes controlled the final break-up of the South China Sea and the transition to sea-floor spreading?

The project will profit from recent advances in state-of-the-art numerical modelling tools such as the finite element software ASPECT, which links lithospheric structure, rheology, and fundamental physical principles within an advanced 3D modelling framework. Model runs will be motivated and constrained by multidisciplinary observational data sets. These include dated magmatic rocks, thermal maturity data and pTt paths from latest IODP expeditions 349 and 367/368, seismic profiles at key sites from CNOOC, and recently published basin-wide gravity-constrained 3D crustal structures.
Language requirements:
IELTS: 6.5 or TOEFL: 95 ibt

Academic requirements:
• MSC in Geosciences
• Experience in seismic/seismological data analysis
• Experience in structural analysis of sedimentary basins
• Strong motivation to learn numerical modeling tools and their application to interpret multidisciplinary data sets

Information of the professor or research group leader (website, awards etc.):
This project will be jointly supervised by Prof Frederik Tilmann (FUB/GFZ) and Dr habil Sascha Brune (GFZ).

Frederik Tilmann (https://www.gfz-potsdam.de/en/staff/frederik-tilmann/) focuses on the analysis of seismic recordings from earthquakes and man-made sources in order to better understand geodynamic and tectonic processes. Since 2010 he has been University Professor at the Freie Universität Berlin and Head of the Seismology Section at the German Research Center for Geosciences.

Sascha Brune (https://www.gfz-potsdam.de/en/staff/sascha-brune/) uses numerical modeling tools to understand the interaction between mantle geodynamics, lithosphere deformation and surface processes. He is leading the Helmholtz Young Investigators Group CRYSTALS that investigates continental rift dynamics across the scales.

Please Note: In a first step, the complete application should be submitted to csc@international.fu-berlin.de for evaluation by January 4th, 2020. Please do not contact the professor before. He/she will get in contact with you after having received the complete application via the International Office of Freie Universität Berlin in January.