

“MODELING OF NATURAL FAULT SYSTEMS AT VARIOUS SCALES”

Applications are invited from geoscientists with a strong background in structural geology for two PhD positions at the Structural Processes Group, Department of Geodynamics and Sedimentology, University of Vienna.

Both positions are part of the research project “*Modeling of natural fault systems at various scales*”, led by Ulrike Exner. This will investigate the geometry and mechanics of fault-systems and the associated host-rock deformation at hand-specimen, outcrop and sedimentary basin scales, using natural datasets. The overall aim of the project is to identify scale-dependent and -independent parameters and understand their influence on the geometry of fault drag. This will serve as a tool to constrain the mechanical properties of fault surfaces and interactions between fault segments from geometrical parameters.

The PhD projects are fully funded for 3 years by the Austrian Science Fund (FWF), with pre-tax annual salaries of € 30,860 and will be supervised by U. Exner and B. Grasemann.

PhD project I will focus on seismic interpretation and 3D structural modeling, undertaking detailed 3D mapping and geometrical analysis of natural datasets from the Vienna Basin. Special expertise on reflection seismic data will be available through collaboration with M. Waggreich (at the department), as well as with M. Behm (Technical University, Vienna) on ground penetrating radar data acquisition and interpretation.

PhD project II will use the commercial software Poly3D for numerical modeling of fault drag to identifying the key parameters which influence the finite geometries of natural examples. Support during model construction and programming of special requirements will be provided by the Poly3D developers at IGEOSS, Montpellier (F. Maerten). Additional benchmarking of the model results will be conducted in collaboration with D. Schmid at PGP, Oslo.

In an advanced stage, the students will collaborate on interrelating the geometrical models with mechanical forward models to reconstruct the boundary conditions of the natural structures. This will also involve collaborative field work for data acquisition and comparative structural data collection.

Both applicants must have completed a degree/diploma (or suitable equivalent) in the geosciences, with a strong grounding in structural geology and a good understanding of mathematics. They are expected to show enthusiasm for conducting their studies and to be self-motivated and self-organized, collaborating on a high scientific level in an international team. Good English language skills are essential, understanding of German is an advantage, but not required. Previous knowledge of programming skills (Matlab, C), and/or experience with seismic interpretation are an asset.

Applications for either studentship position, including a CV, statement of individual research interests, and names of up to three potential referees should be sent to: ulrike.exner@univie.ac.at. Evaluation of applications will start at the end of the application deadline on 1st August, 2007.

Information about the Structural Processes Group Vienna can be found on www.univie.ac.at/Geologie/strucproc.