



Universität
Basel

Research Project

Rheology of Fault Rocks

Third-party funded project

Project title Rheology of Fault Rocks

Principal Investigator(s) [Heilbronner, Renée](#) ;

Project Members [Marti, Sina](#) ;

Organisation / Research unit

Departement Umweltwissenschaften / Rock deformation (Heilbronner)

Department

Project start 01.04.2013

Probable end 31.03.2017

Status Completed

We propose to explore the processes associated with the brittle-viscous transition of deformation in polyphase rocks of mafic composition, i.e. focussing on the oceanic crust and lithosphere. While a large number of experimental studies has concentrated on the brittle (frictional) deformation at atmospheric or low confining pressures and low temperatures, most earthquakes occur at greater crustal depths (e.g. Tohoku, March 11, 2011, 35 km) where creep processes are operative. Our experiments are to be conducted at such mid crustal conditions because the interplay of frictional and viscous behavior of fault rocks has far-reaching consequences concerning the weakening of faults and the generation of instabilities in the seismic zones in the oceanic crust of subducting slabs (where 90% of the seismic energy of all earthquakes is dissipated).

Keywords Earthquakes, Brittle-Ductile Transition, Experimental Rock Deformation, Microstructures, Deformation Processes, Grainsize Reduction, Amorphisation

Financed by

Swiss National Science Foundation (SNSF)

Add publication

Add documents

Specify cooperation partners