Geophysical Research Abstracts
Vol. 12, EGU2010-8948-1, 2010
EGU General Assembly 2010

The strength of faults in a convergent margin, determined by neotectonic computer simulations

Christoph Moder and Sara Carena
LMU Munich, Geophysics, Munich, Germany (moder@geophysik.uni-muenchen.de)

In order to better understand the fault strength in convergent tectonic settings, we investigated the behavior of faults in the Taiwan region using a modified version of the neotectonic finite element code SHELLS. We generated a finite element grid that contains topography, surface heat flow, and a realistic 3D geometry of active faults. The lithosphere is assumed to be in isostatic equilibrium and rigid plate velocities serve as driving forces. By varying the fault properties (fault friction coefficient in the upper brittle crust, and dislocation creep activation energy in the lower ductile crust), we were able to reproduce a realistic fault behavior in terms of fault types, slip rates, overall velocity field, depth to the brittle-ductile transition, and principal horizontal compressive stress directions. Our preliminary results for the region around Taiwan indicate that the effective fault friction coefficient ($\mu^* \approx 0.1$) is similar to the one we previously determined for the transpressional regime of California, indicating that faults in both tectonic settings are similarly weak.