



Three-dimensional numerical modeling of extensional basin formation

V. Allken, R.S. Huismans, and C. Thieulot

Bergen University, Earth Sciences, Bergen, Norway (Ritske.Huismans@geo.uib.no)

We use new state of the art computational modeling techniques to model crust and lithosphere deformation in 3D. We use large deformation 3D forward modeling techniques to study controls on the geometry and spacing of three-dimensional frictional-plastic shear zones in simple one and two-layer models. Specific focus of the 3D models are factors controlling rift propagation and rift obliquity for varying weak seed extent and obliquity with respect to far-field extensional boundary conditions. The models indicate that the style of rift linkage in 3D is controlled by the efficiency of material strain-weakening, by brittle ductile coupling, and by the amount of offset between pre-existing weakness zones.