



## **3D numerical modeling of the Alpine collision**

Arthur Bauville (1), Boris Kaus (1), and Mark Handy (2)

(1) University of Mainz, Germany, (2) Freie Universität Berlin, Germany

We present preliminary results of three-dimensional forward numerical models for the evolution of the Alpine orogen from late Cretaceous to present day. We investigated the control of (1) lithosphere and mantle rheology and (2) Europe and Adria margins initial geometry on the kinematics of the collision chain. The initial configuration of the model was based on the paleo-geographic reconstruction and cross-sections from Handy et al. (2010). In a first step we used linear viscous rheology and temperature was neglected. In a second step we refined the model to include viscoelastoplastic rheology. The validity of the model is assessed using available tectonic maps of the Alps and present-day tomographic data.

Handy, M. R., M Schmid, S., Bousquet, R., Kissling, E., & Bernoulli, D. (2010). Reconciling plate-tectonic reconstructions of Alpine Tethys with the geological–geophysical record of spreading and subduction in the Alps. *Earth-Science Reviews*, 102(3), 121-158.