



Numerical modelling of an ocean/continent subduction and comparison with Variscan orogeny real data

Anna Maria Marotta (1), Alessandro Regorda (1), M. Iole Spalla (2), Manuel Roda (3), and Gisella Rebay (4)

(1) University of Milan, Department Earth Sciences - Geophysics, Milano, Italy (anna.maria.marotta@unimi.it), (2) University of Milan, Department of Earth Sciences - Geology, Milano, Italy (iole.spalla@unimi.it), (3) Universiteit Utrecht, Fac. of Geosciences, Utrecht, The Netherlands (m.roda@uu.nl), (4) University of Pavia, Department of Earth Science and Environment, Pavia, Italy (gisella.rebay@unipv.it)

The effects of the viscous heating and the hydration of the mantle wedge on the continental crust recycling during the evolution of an ocean/continent subduction system are analysed by using a 2D finite element thermo-mechanical model. The dehydration of the oceanic slab, and the consequent hydration of the mantle wedge, is accomplished by lawsonite breakdown (Roda et al., 2010; Roda et al., 2011). The model shows the activation of convective cells in the mantle wedge that determine the recycling of subducted continental crust. Moreover, with respect to Marotta and Spalla (2007), in which the hydration of the mantle wedge was not taken into account, much more correspondences between P-T predictions and the natural P-T estimates of the Alpine Variscan metamorphism are obtained.