



Mantle conveyor beneath the Tethyan collisional belt

C. Faccenna (1) and T.W. Becker (2)

(1) Università, Dipartimento di Scienze Geologiche, Roma, Italy (faccenna@uniroma3.it), (2) Department of Earth Sciences, University of Southern California, Los Angeles, CA, USA

Collisional belts are generated by the arrival of continental lithosphere into a subduction zone. The Tethyan suture from the Bitlis to the Himalayas is a prime example where the Arabian and Indian plates collided with Eurasia during the Cenozoic. While the kinematics of this process are well established, its dynamics are more uncertain. India and Arabia intriguingly keep advancing, in spite of large collisional resisting forces, and in the absence of a substantial, upper mantle slab driving force at present-day. We perform global mantle circulation computations to test the role of deep mantle flow as a driving force for the kinematics of the Tethyan collisional belt, evaluating different boundary conditions and mantle density distributions as inferred from seismic tomography or slab models. Our results show that mantle drag exerted on the base of the lithosphere by a large-scale, convective “conveyor belt” with an active upwelling component is likely the main cause for the ongoing indentation of the Indian and Arabian plates into Eurasia