



Transient subduction rollback as a mechanism for blueschists exhumation

L. Husson (1), J-P. Brun (1), C. Faccenna (2), F. Gueydan (1), L. Royden (3)

(1) Géosciences Rennes, CNRS, Univ. Rennes-1, Rennes, France, (2) Dip. Sc. Geologiche, Univ. Roma-3, Rome, Italy, (3) EAPS, MIT, Cambridge, MA, USA

The entrance of a lithosphere with variable buoyancy into the subduction zone leads to transient rates of subduction and slab geometries. Episodes of slab rollback, correlated with the subduction of negatively buoyant lithospheres, follow trench steadiness that correlates with episodes of subduction of positively buoyant lithospheres such as continental blocks. From a semi-analytical model, we show that subducted continental blocks are brought to high pressure before they detach and are exhumed during the following rollback event that accompanies the subduction of denser units. Alternatively, we model the episodic detachment of continental units and unloading of a uniform lithosphere and show that it induces a transient subduction regime that may suffice for the exhumation of high pressure rocks.