# Preliminary case for PANCARDI mantle extrusion

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Dispersed volcanic centers appeared over much of Eurasia, including central and eastern Europe, following the closure of Neotethys (65–45 Ma). Although widespread, this activity is distinct from that producing continental flood basalts or other large igneous provinces — exhibiting significantly lower rates of eruption and melt production, dispersal of eruptive centers, and an apparent lack of deep-rooted plumes. It is also associated with transtensional lithosphere structures (rifts and conjugate strike-slip components) interpreted as extrusion effects of continental plate collisions.

Europe, Asia Minor, and the east Asia-western Pacific region appear to share several common features, e.g. massive tectonic extrusion due to (respectively) African, Arabian, and Indian collisions, basalt magmatism associated with extrusion lobes and east-directed slab rollback, high-K shoshonites erupted at transtensional, extinct or near-extinct subduction zones, isotopic mixing patterns suggesting asthenospheric entrainment of delaminated or convection-cycled lithosphere, and melt volumes and asthenospheric potential temperatures exceeding those expected during cold lithosphere extension. Less well-defined are shallow mantle thermal anomalies that appear to match magmatic and isotopic provinciality, e.g. beneath Europe and the Mediterranean, eastern Anatolia, and southeast Asia and west Pacific back-arc basins.

Together, these characteristics pose fundamental questions concerning the behaviour of Tethyan asthenosphere. Is the latter mobilized by colliding continents and if so, to what extent are more distal plate and subduction system topologies coupled to the asthenosphere motion? Collision-induced asthenosphere extrusion could explain anomalous magmatism and slab rollback, and allow for chemical and thermal interaction with thickened lithospheric substrate. A preliminary attempt to address these questions is made by comparison of magmatism and lithosphere kinematics between PANCARDI and southeast Asia extrusion lobes.