



Models for resurrected Neotethyan slabs allow reconstruction of the history of Cenozoic subduction beneath Iran

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Subduction on the Eurasian margin during the closure of Neotethys was long-lasting, and several slab tearing events have been inferred from surface magmatism. These are compatible with the record of complex slab deformation that can be reconstructed using the evidence for subducted material visible in P-wave tomographic velocity model UU-P07. A 3D slab model was constructed using eQuakes and SKUA-GOCAD and restored to the planet surface using the Pplates program. The resurrected shape represents a minimum pre-subduction slab surface area, thus allowing forward modelling of the progress of subduction beneath Iran. The resurrected slab morphology can be incorporated into a 2D+time tectonic reconstruction, which constrains how the subducted material and the surface geology were able to interact. Significant correlation exists between slab model morphological features and the timing of magmatic events. The tectonic reconstruction allows for additional constraints to be placed on the timing of events during the Zagros orogeny and the progress of the Arabia-Eurasia continental collision.