
Tectonic significance of a mafic *mélange* in the Pangean suture zone, southwestern Iberia

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Pangea formed in the Late Paleozoic by the closure of the Rheic Ocean, which resulted in the collision between Gondwana and Laurussia and is expressed by the Alleghanian (North America) and Variscan (western Europe) orogenies. The Pangean suture is exposed in southwestern Iberia, where the South Portuguese Zone, a fragment of Laurussia, is spatially juxtaposed against para-autochthonous Gondwana. The suture zone is characterized by fault-bounded units of oceanic meta-sedimentary rocks, *mélanges*, and mafic complexes. Despite the tectonostratigraphic sequence being well known, there exist a number of key units whose origin and evolution remains poorly understood, including the Peramora *mélange*, the deepest structural unit exposed in the core of a regional anticline.

Detailed geological mapping of the Peramora *mélange* (exposed in southwestern Spain) reveals a complex pattern of imbricated tectonic and sedimentary *mélanges*. Petrographic examinations show muscovite, actinolite, and minor biotite (greenschist facies) aligned with the tectonic fabric, S-C fabrics, and crenulation cleavage, indicative of multi-phase deformation. These tectonic fabrics are likely related to the Late Paleozoic oblique collision between the South Portuguese Zone and the Gondwanan margin. Geochemical signatures of the sedimentary rocks display a range in TiO_2 and $\text{Fe}_2\text{O}_3 + \text{MgO}$, and are consistent with derivation from both continental and oceanic arcs. Detrital zircon analyses of key samples will constrain the age of deposition of the sedimentary-derived matrix of the *mélange*. $^{40}\text{Ar}/^{39}\text{Ar}$ dating of micas that define the tectonic foliation, and of amphibole in post-tectonic igneous dykes, will further constrain the timing of deformation events. These data will help to determine the age, origin, evolution, and provenance of the Peramora *mélange* within the Pangean suture zone and contribute to a better understanding of the processes involved in the formation of Pangea.