



Subducted seamounts in an eclogite-facies ophiolite sequence: slab dismembering due to local stress amplification?

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The metamorphic Raspas Complex of southwest Ecuador comprises blueschists, eclogites, and high-pressure ultramafic and sedimentary rocks. The Lu-Hf garnet-whole rock ages of a blueschist, a metapelite, and an eclogite cluster at ca. 130 Ma. Peak metamorphic conditions of the high-pressure rocks occurred at 1.8 GPa and 600 °C, which corresponds to a maximum burial depth of about 60 km. According to their geochemical signatures, the eclogites formed from typical mid-ocean ridge basalts (MORB), whereas the blueschists had seamount-like protoliths and the eclogite-facies peridotites apparently stem from depleted, MORB-source mantle. These rocks were contemporaneously subjected to similar peak PT conditions, suggesting that they were subducted together as a coherent section within the downgoing slab. We hypothesize that this section became dismembered from the slab during burial at great depth as the seamounts were being scraped off. The spatially close association of MORB-type eclogite, seamount-type blueschist, serpentized peridotite, and metasediments is suggestive of an exhumed high-pressure ophiolite sequence.