

## The destruction and growth of lower continental crust along a Paleozoic active margin: An example from Chiapas, Mexico.

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Isolated inliers of granulite facies basement in Mexico are interpreted in terms of remnants from a Grenvillian orogenic belt underlying most of Central and Southern Mexico, including part of the Maya Block close to the southern North American Plate boundary [1]. The Chiapas Massif Complex (CMC) in the S Maya Block is mainly composed of Permian batholithic granitoids related to subduction along the western margin of Pangaea [2]. New geologic mapping in the CMC discovered (1) partial fusion of mainly mafic metamorphic basement and (2) occurrence of massif-type anorthosite. U-Pb zircon geochronology revealed Late Ordovician (~450 Ma) metamorphism and anatexis of amphibolite facies basement and contemporaneous intrusion of a gabbroic to granitic suite. Felsic orthogneiss, without any signs of anatexis, developed competent boudins hosted in strongly deformed and folded amphibolite. U-Pb zircon dates from felsic orthogneiss yield crystallization ages of ~1.0 Ga, indicating that dry granitic (charnockite) protoliths represent remnants of the Grenvillian basement. Whereas the mafic host rocks have ~450 Ma metamorphic or igneous zircon and only minor ~1.0 Ga inherited cores, the felsic orthogneiss displays no Ordovician zircon growth. Hafnium and Nd isotope ratios further suggest that the deformed metamorphic basement, including the anorthosite series rocks, represent Mesoproterozoic crust that was locally affected by basaltic underplating. Hydration by an external fluid, Barrovian metamorphism, and partial melting is interpreted in terms of a convergent margin setting during the Ordovician. The results place the S Maya Block along with similar Northern Andes terranes on the NW Gondwanan margin that evolved during the closure of the Iapetus Ocean [3] and not the opening of the Rheic Ocean [4].

[1] Keppie & Ortega-Gutiérrez (2010) *J South Am Earth Sci*, **29**, 21-27. [2] Weber et al. (2007) *Int J Earth Sci* **96**, 253–269. [3] Van der Lelij et al. (2015) *Gondwana Res.* doi: 10.1016/j.gr.2015.01.011. [4] Estrada-Carmona et al. (2012) *Int. Geol. Rev.* **54**, 1918-1943.