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## Geodynamic Setting of the Xigaze Ophiolite in Yarlung-Zangbu Suture Zone, South Tibet

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### Abstract

The geodynamic setting of the Xigaze ophiolite has long been debated. Structural and geochemical evidence suggest the Xigaze ophiolite was formed at a slow-spreading ridge (Nicolas et al., 1981; Liu et al., 2016). Based on incompatible element concentrations, the Xigaze ophiolite volcanics are consistent with the ubiquitous subduction signature in suprasubduction zone (Bedard et al., 2009; Hebert et al., 2012; Dai et al., 2013). It is noteworthy that the Xigaze ophiolite is different from the Geotimes and Lasail and Velly units from Oman ophiolite, respectively. The mafic rocks of the Xigaze ophiolite generally resemble typical N-MORB and Geotimes volcanics in composition except for slight depletions of Th and Nb (Fig.1a). Although the Xigaze rocks have similar Th and Nb concentrations to Lasail and Velly rocks, most incompatible elements in the Xigaze rocks are comparable to N-MORB. Petrography in gabbro of Xigaze ophiolite shows that euhedral plagioclases are enclosed by clinopyroxenes suggesting that these minerals have crystallized from an anhydrous magma (Sisson and Grove, 1993). Although the Xigaze volcanic rocks are slightly depleted in Th and Nb, they have MORB-like trace element characteristics implying that they are derived from an anhydrous MORB magma at spreading centre. Godard et al. (2006) suggested that the mantle source of the Oman ophiolite have element and isotopic characteristics similar to Indian Ocean MORB, where the mantle preserved some older slab materials. A negative Nb anomaly of Oman Geotimes volcanic rocks may be resulted from contamination of the slab materials via decompression melting of the convecting mantle. Moreover, the Xigaze rocks have 1.27-3.18 of  $(\text{Th}/\text{Nb})_N$  ratios similar with those of Geotimes volcanics ( $(\text{Th}/\text{Nb})_N=0.51-2.77$ ) and lower

than those of Lasail and Velly units ( $(\text{Th}/\text{Nb})_N=2.12-6.35$ ). These features suggest that the Xigaze ophiolite may have formed at the spreading centre.

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