High Nb Basalt like signatures from SW Japan volcanics

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High Nb basalts reported from central and western American and the Philippines [1] are very similar in character to arc and back arc related basalts from Kyushu, south west Japan. These basalts which are related to the subduction of the Philippine Sea plate, show high abundance of Nb (e. g. >20 ppm) and other High Field Strength Elements (HFSE), hence their name. The basalts from Kyushu have been described as a result of mixing with OIB type mantle source [2][3][4] and/or component from subducted altered oceanic crust and dehydrated sediments [5]. Adakites are reported from volcanoes in the same setting (i.e. Abu, Yufu-Tsurumi, Himeshima etc [6]) which suggest that contribution from the slab derived material may be responsible for this type of signature. Recent influx from the lower mantle is unlikely due to the presence of the stagnant pacific slab at the lower mantle- upper mantle boundary. However, it is likely that some lower mantle derived component may be present from before the subduction of Pacific plate. Analysis of data gathered from published geochemical works show temporal and spatial variation among the kyushu basalt samples in HFSE abundance and intra-HFSE ratios (i.e. Nb/Hf, Nb/Zr etc.). This along with isotopic data from Sr-Nd-Pb isotopes suggest some degree of mixing with subducted sediments and altered oceanic crust. No significant contribution from non-MORB type OIB component (i.e. EMI, EMII, HIMU) is likely.

[1] Castillo *et al*. (2008) *Bull. GSA* **120,** 451-462. [2] Nakamura *et al.* (1985) *Nature* **316**, 55-58. [3] Sakuyama *et al.* (2014) *J. Petrology* **55**, 1083-1128. [4] Kuritani *et al.* (2017) *Lithos* **282-283**, 98-110. [5] Kuritani *et al*. (2011) *Nature Geoscience* **4**, 713-716. [6] Shibata *et al*. (2014) *Geol. Soc. London Sp. Pub.* **385.1**, 15-29.