GSA Data Repository 2018145

Parolari et al., 2018, A balancing act of crust creation and destruction along the western Mexican convergent margin: Geology, https://doi.org/10.1130/G39972.1.

2018145_Tables DR1-DR4.xls

Supporting Figures.

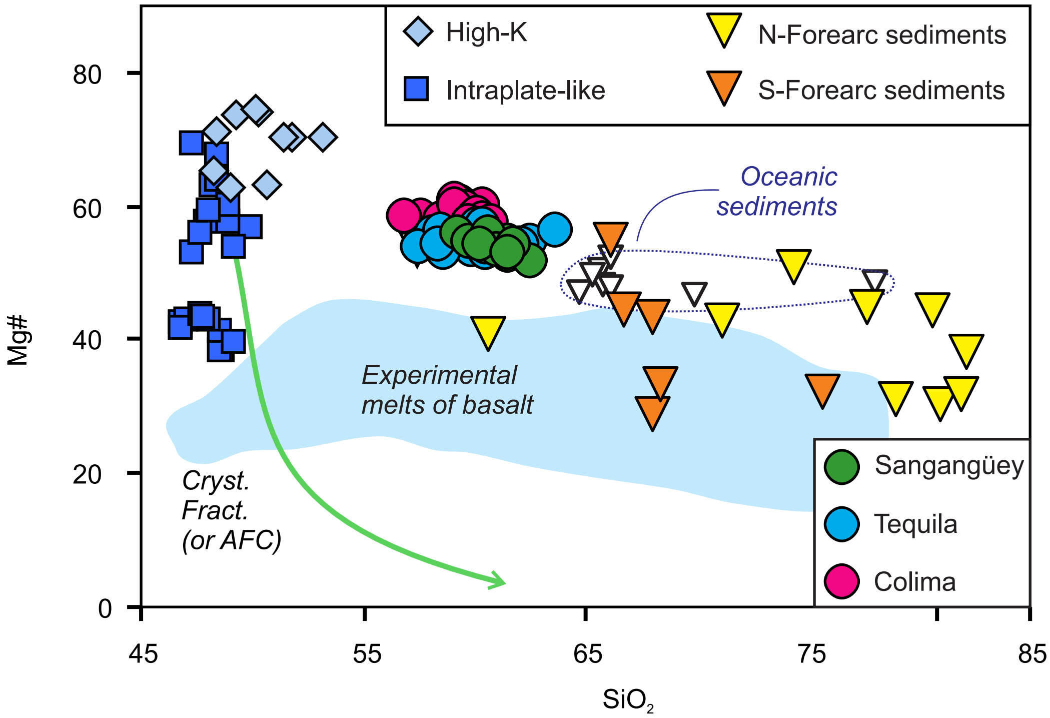

Fig. DR1: Mg# versus SiO_2 diagram of the studied volcanoes compared to primitive magmas from the W-TMVB (see Gómez-Tuena et al., 2016). Green arrow suggests a potential crystallization pathway of a parental basalt emphasizing the rapid drop of Mg# due to fractionation of olivine and pyroxene. Light blue field field shows the compositions of experimental melts of hydrous basalts at 1–4 GPa (Sen & Dunn 1994; Rapp 1995; Rapp & Watson 1995; Rapp et al. 1999). The high-Mg# displayed by these arc andesites cannot be explained by melting, crystal fractionation or contamination from a parental basaltic liquid.

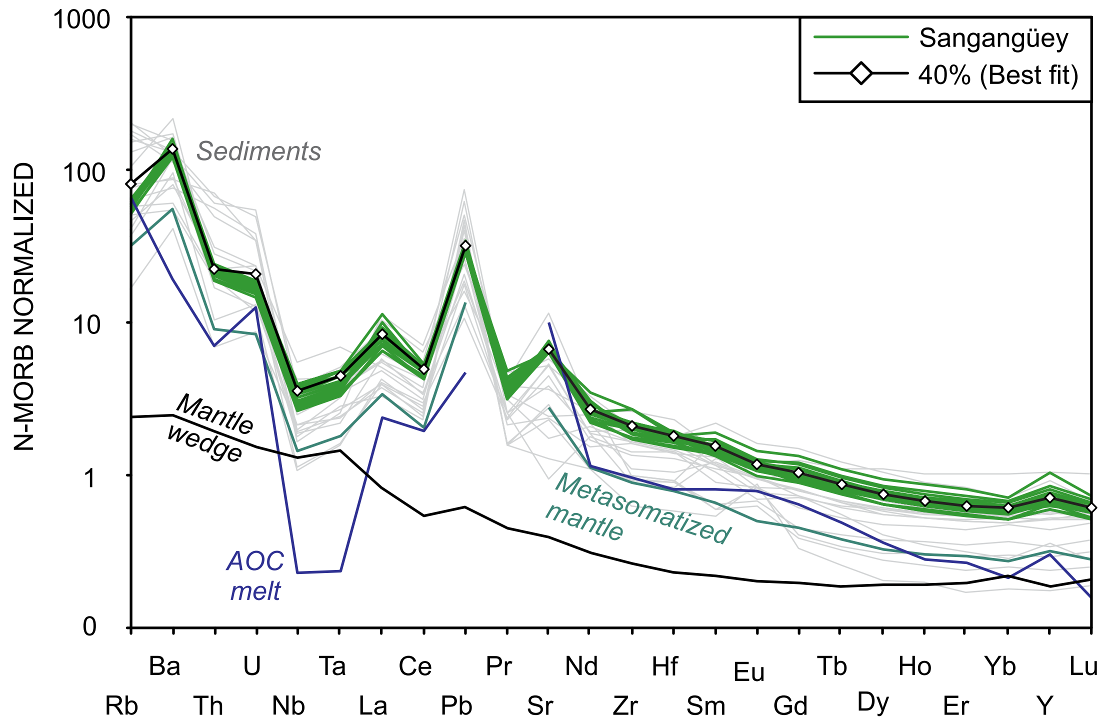

Fig. DR2: Trace element pattern of Sangangüey volcano and a batch melting (F=40%) model of a mantle source that has been metasomatized by an AOC melt:Sediment mixture. See DR3 for modeling details.

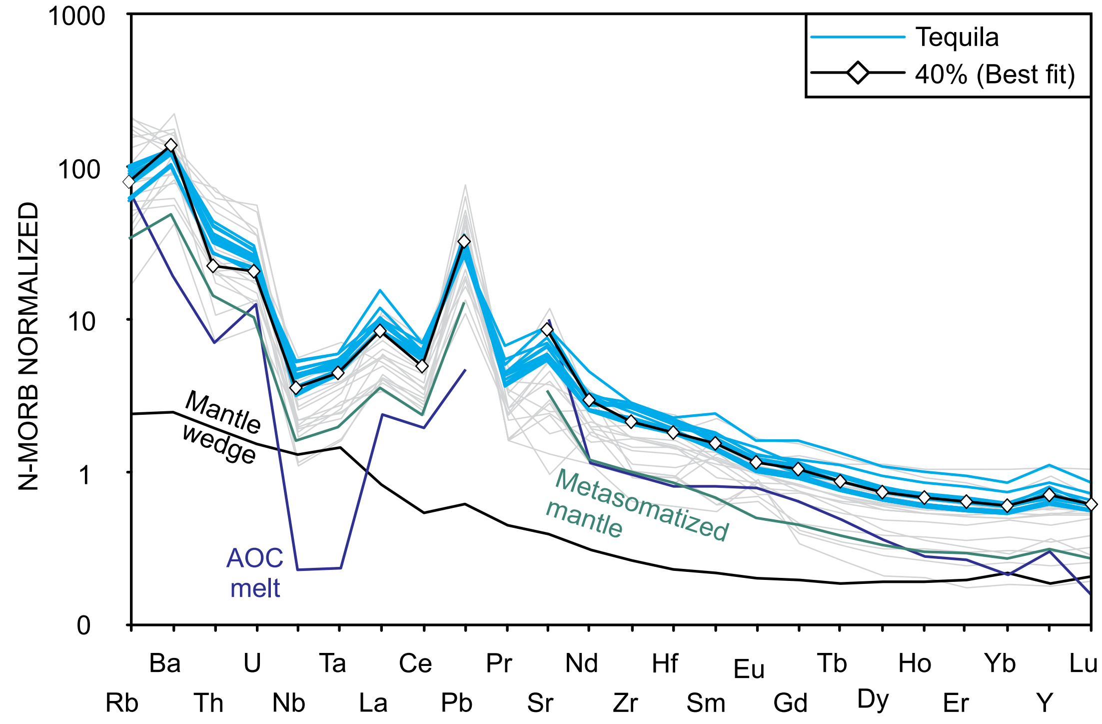

Fig. DR3 : Trace element pattern of Tequila volcano and a batch melting (F=40%) model of a mantle source that has been metasomatized by an AOC melt:Sediment mixture. See DR3 for modeling details.

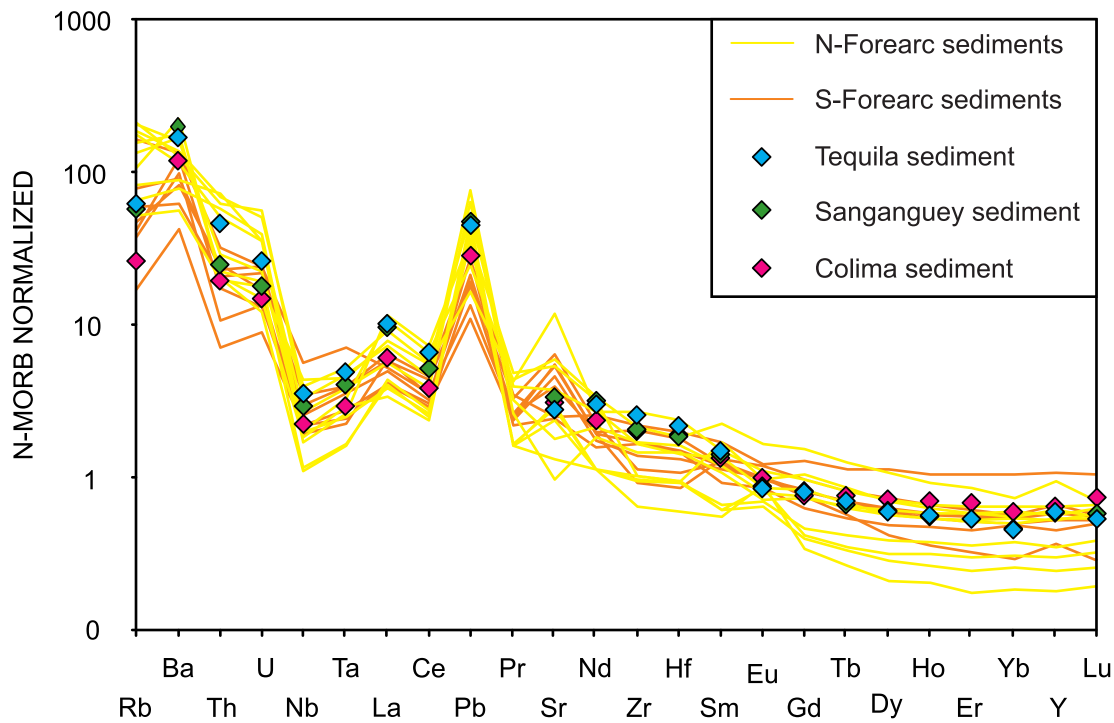

Fig. DR4: Trace element patterns of all sampled riverine forearc/sediments (data in DR1). Geographic division as in Figure.1. Also shown are the compositions of best fit sediments used to model andesitic volcanoes. The composition of Colima sediment has been calculated using only riverine sediments sampled south of latitud 19°N. Sanganguey sediment was calculated using riverine samples to the north of Latitud 19° N. Tequila forearc/sediment considers all measured riverine samples (see DR3).

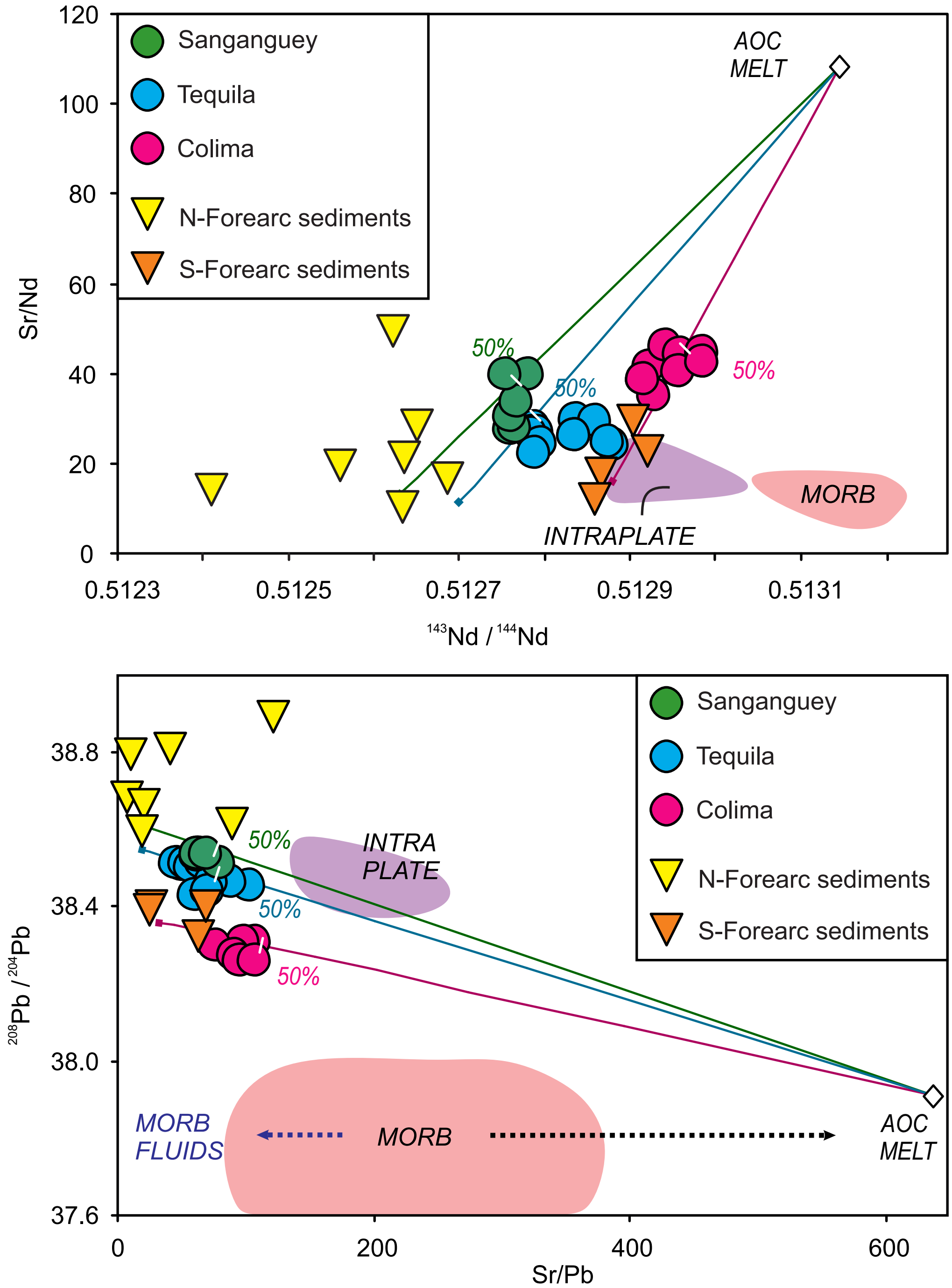

Fig. DR5. The Sr/Nd vs $^{143}Nd/^{144}Nd$ and Sr/Pb vs $^{208}Pb/^{204}Pb$ variations of the studied volcanoes indicate the participation of an isotopically depleted component with higher Sr contents than a typical MORB. Since Pb is more incompatible than Sr during fluid extraction and both elements become similarly incompatible during melting (Kessel et al., 2005), the isotopically depleted component is interpreted to be a melt coming from the Altered Oceanic Crust (AOC). See DR3 for modeling details.

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ORIGINAL SOURCES FOR VOLCANO DATA PLOTTED IN FIGURES 1, 2 AND DR5

Tequila and Sangangüey volcanoes

Gómez-Tuena, A., Díaz-Bravo, B., Vázquez-Duarte, A., Pérez-Arvizu, O., and Mori, L., 2014, Andesite petrogenesis by slab-derived plume pollution of a continental rift: Geological Society, London, Special Publications, v. 385, p. 65–101, doi: 10.1144/SP385.4.

Intraplate-like basalts

Díaz-Bravo, B.A., Gómez-Tuena, A., Ortega-Obregón, C., and Pérez-Arvizu, O., 2014, The origin of intraplate magmatism in the western Trans-Mexican Volcanic Belt: Geosphere, v. 10, p. GES00976.1, doi: 10.1130/GES00976.1.

Gómez-Tuena, A., Díaz-Bravo, B., Vázquez-Duarte, A., Pérez-Arvizu, O., and Mori, L., 2014, Andesite petrogenesis by slab-derived plume pollution of a continental rift: Geological Society, London, Special Publications, v. 385, p. 65–101, doi: 10.1144/SP385.4.

Colima volcano

Hochstaedter, A.G., Ryan, F., Luhr, J.F., and Hasenaka, T., 1996, On B/Be ratios in the Mexican Volcanic Belt: Geochimica et Cosmochimica Acta, v. 60, p. 613–618.

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