Cities on Volcanoes 9
November 20-25, 2016
Puerto Varas, Chile
'Understanding volcanoes and society: the key for risk mitigation'

Calc-alkaline magmatism of El Aguajito Caldera, Baja California Sur, México.

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Keywords: El Aguajito, subduction, extension, chemistry, calc-alkaline.

El Aguajito is a Pleistocene caldera (~1 My) located in Baja California Sur México at 35 km to the NW of the town of Santa Rosalía. El Aguajito is surrounded by the Reforma caldera (~1.5 My) and the Tres Vírgenes Volcanic Complex (<0.3 My), all of them are transected by the NE-SW and NW-SE faults. About 12 Ma ago, western Mexico shift from a convergent margin to an extension regime when the East Pacific Rise intercepted the trench. This tectonic process produced new rocks with diverse compositions as adakites, magnesian andesites, Nb-basalts and calc-alkaline rocks commonly known as "bajaites". Due to all these peculiar characteristics, several models have been proposed to explain the origin of these rocks (e.g. slab tearing, subduction of an active ridge or the breakoff of the subducted slab). Because subduction ceased around 11 My the subsequent generation of calc-alkaline magmas remains unclear. Syn-caldera magmatism of El Aguajito rocks contain plagioclase and pyroxenes with silica concentrations of 70.5-74.64 wt. %. Post-caldera volcanism erupted as silicic domes (~0.5 My) contain plagioclase, pyroxenes and amphibole with variable silica concentrations (59.1-74.8 wt. %). These magmas are calc-alkaline rhyolites with medium to high-K contents. The caldera rocks are enriched in LREE with respect to HREE and have an Eu anomaly. The rocks normalized against primitive mantle are enriched in Rb, K, Ba, Pb, and depleted in Nb, Ta and Ti. All these patterns point to magmas derived from a subduction related magmatism. However, in the AFM diagram, samples plot on the left corner due their low Mg contents that are typical of alkaline rocks suggesting that magmas may be derived from superimposed environments that need to be studied in further detail.