

The upper crustal magma plumbing system of the Pleistocene Apacheta-Aguilucho Volcanic Complex area (Altiplano-Puna, northern Chile) as inferred from the erupted lavas and their enclaves

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The evolution of the magma plumbing system of the Pleistocene Apacheta-Aguilucho Volcanic Complex area (Altiplano-Puna Volcanic Complex, northern Chile) was investigated through petrographic, geochemical and isotopic studies of representative lavas and related enclaves. Updated available dates of these products, both from the Apacheta and Aguilucho stratovolcanoes and nearby domes, allow us to define the activity during the last 1 Ma. This investigation shows that the andesitic magmas were affected by processes of Assimilation plus Fractional Crystallization (AFC, with a significant role played by amphibole fractionation) during their ascent through the upper crust, presumably by the interaction with the Altiplano-Puna Magma Body (15–20 km). These andesitic magmas were erupted with no or minor additional contamination at shallower levels, or experienced plagioclase-dominated Fractional Crystallization (FC) to dacite within shallower crustal magma chambers (4–8 km d