

andesitic ash tuffs with intercalations of volcanoclastic rocks, corresponding to proximal lacustrine facies. Unit III (664 m thick) consists of basic lava flows with intercalations of volcanic breccias (lahars, detrital flows and pyroclastic deposits) and volcanoclastic rocks. Unit IV (340 m thick) is composed by andesitic fall tuffs and lacustrine volcanoclastic rocks with intercalations of volcanoclastic breccias (pyroclastic flows) and basic lava flows. All rocks have been affected by a very low-grade non-deformative metamorphism in the prehnite-pumpellyite facies.

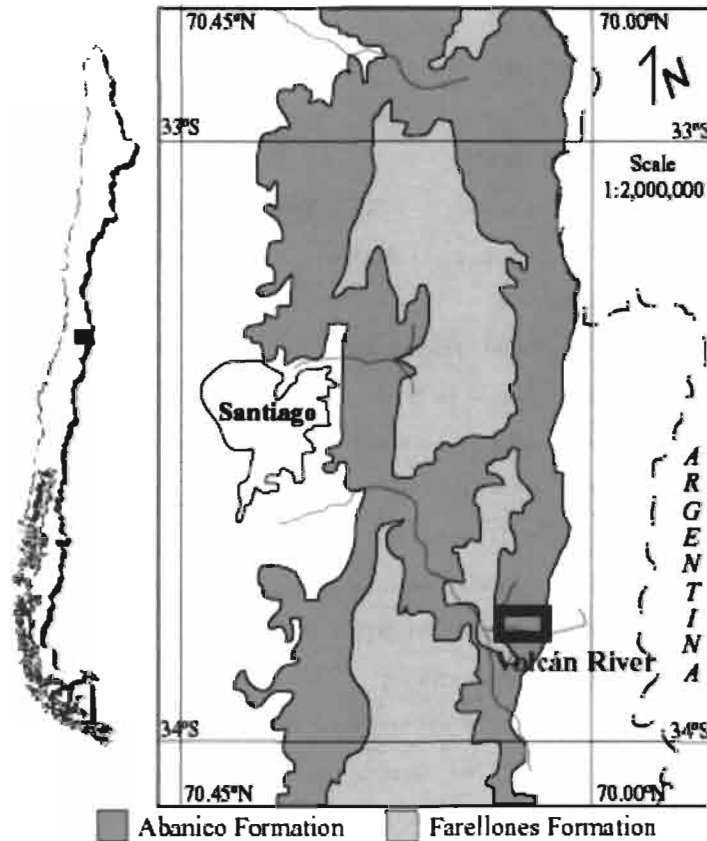


Figure 1. Location map of the studied area (black rectangle) and distribution of Cenozoic units in central Chile.

PETROGRAPHY AND MINERALOGY

The AEF is composed of three main lithologic types: basaltic-basaltic andesite lava flows, andesite-dacite flows, and volcanoclastic rocks. The first type contains phenocrysts of plagioclase, clinopyroxene, olivine pseudomorphs and Fe-Ti oxides, in a groundmass with similar mineralogy. Plagioclase phenocrysts are labradorite ($An_{70-50}Ab_{30-48}Or_{0-2}$) and clinopyroxene phenocrysts are augite and diopside ($En_{24-48}Wo_{31-47}Fs_{7-29}$). The low Ti in clinopyroxene (< 0.07 apfu) is characteristic of sub-alkaline rocks and the igneous paragenesis olivine-plagioclase-clinopyroxene-Fe-Ti oxides suggests low pressures of crystallization in basaltic magmas. Andesites and dacites are porphyritic and contain phenocrysts of plagioclase and microphenocrysts of clinopyroxene in a groundmass composed by microlites of plagioclase and Fe-Ti oxides. The sills and dikes are mainly andesites with phenocrysts of plagioclase, clinopyroxene and amphibole (pargasite).

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