

LICANCABUR, AN ANDESITIC VOLCANO OF THE SOUTH-CENTRAL ANDES

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INTRODUCTION

Licancabur volcano (22°56' S, 67°53' W) is located in the Central Volcanic Zone (CVZ) of the Andes, on the Chilean-Bolivian boundary (fig. 1). It looks like a 1500 m high almost perfect cone, 9 km base diameter, and a constant slope of 30°. The total volume of the cone is 35 Km³. Due to its location on the border of the Altiplano which dips in Chile towards the Salar de Atacama pull-apart basin, the western flank is better developed than the eastern one. Although this volcano is one of the most famous in Chile and Bolivia, it has not been yet the object of a detailed geological study (Déruelle, 1979; Marinovic and Lahsen, 1984; De Silva and Francis, 1991).

GEOLOGY

A sketched geological map (fig. 2) based on field work and photo interpretation has been established. Licancabur is built upon Chaxas and La Pacana ignimbrite formations (Gardeweg and Ramirez, 1987). No historical activity has been recorded. Nevertheless all the lava flows are well-preserved and were not affected by glaciations. Some of them present pristine levees and ridges. The oldest lava flows (OLF) occur West and North and are partially covered by the lava flows that built up the cone (CLF). Some OLF are underbedded with pre-caldera Sairecabur lava flows. Avalanche deposits occur west of the cone. Numerous N130° faults, parallel to the Calama–Olacapato–El Toro lineament, affect the Licancabur and Sairecabur basement.

PETROGRAPHY

The most common phenocryst phase is plagioclase. Orthopyroxene phenocrysts predominate over clinopyroxene ones. Scarce subhedral olivine phenocrysts and/or amphibole, with some Fe-Ti oxides are also present. The basaltic andesite contains olivine phenocrysts (up to 6 mm) which are generally rimmed by orthopyroxene. No biotite has been found at Licancabur.

MINERALOGY

Olivine phenocrysts generally present normal zoning, with Fo 82 cores and Fo 69 rims. Orthopyroxene phenocrysts are also zoned with En 78 cores and En 70 rims. Clinopyroxene phenocrysts

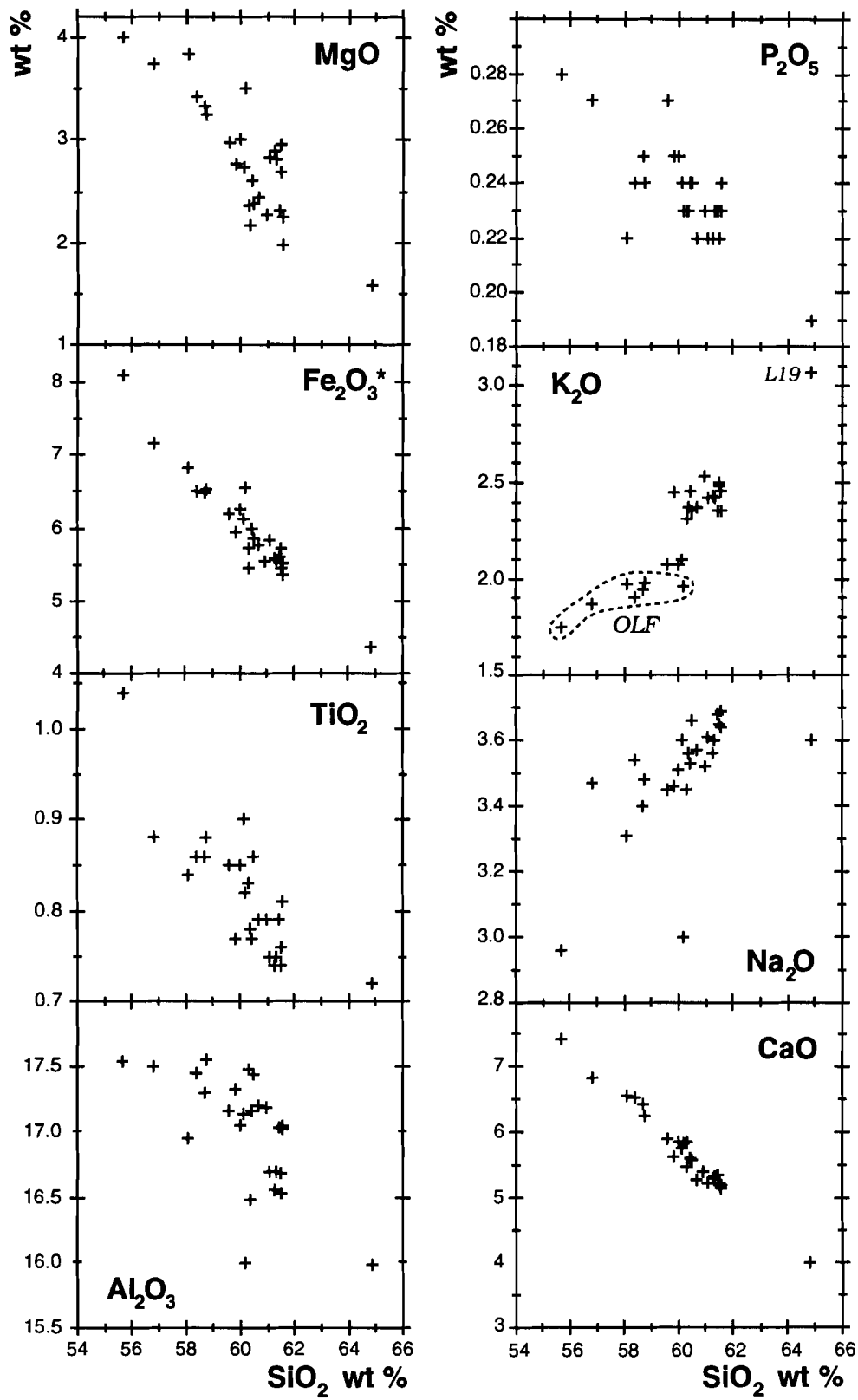


Fig. 3. Harker diagram for Licancabur lavas.

