

GeoMapApp and EarthChem applications for research and teaching.

Plagioclase Phenocryst interpretations of the Azufre-Planchon-Peteroa volcanic center, Chile; Implications on magmatic processes.

EarthChem is a science-driven effort to preserve, discover, and access the largest geochemical datasets. It is a portal to provide access to many different databases such as NAVDAT, GEOROC, SedPet, MetPet, and SESAR. Upon access to these datasets one can use them to conduct research, contribute published data, or simply to facilitate teaching the Geosciences. GeoMapApp is another program that can also be used as a teaching device. GeoMapApp can use output data from EarthChem to display spatial information on geochemical studies. These programs are essential for sharing, visualizing, interpreting, and teaching important aspects of Geochemistry.

Azufre-Planchon-Peteroa is a volcanic complex located in the Southern Volcanic Zone of southern Chile. This volcanic complex has erupted a large range of lithologies over the past half million years. Many of the rock samples from this volcanic complex contain plagioclase phenocrysts. These phenocrysts can be used to interpret magmatic processes that created this volcanic field. The optical texture of the plagioclase phenocrysts can show evidence of magma mixing, equilibrium or disequilibrium, and zoning patterns. Backscattered and cathodoluminescence images with major element chemical data from an Electron Probe Micro-Analyzer can show evidence of multiple inputs in a magma chamber as well as provide high resolution images displaying truncations and resorption zones. Line transects from core to the rim of the plagioclase phenocrysts on major elements and strontium isotopes can discern the main components of contributing to the erupting lava. All these efforts will ultimately help characterize and comprehend the complexity of the magmatic process in the Azufre-Planchon-Peteroa volcanic field.

