

**PRELIMINARY STRUCTURAL RESULTS
ON THE NORTH PATAGONIAN BATHOLITH
(CHILE, AYSÉN, 44°-45°30' S)**

Anne NEDELEC ⁽¹⁾ and Alejandro SANHUEZA ⁽²⁾

(1) Pétrophysique, UMR 5563 CNRS, Univ. P. Sabatier, 38 rue des 36-ponts, 31400 Toulouse, France
(2) Departamento de Geología, Universidad de Chile, plaza Ercilla 803, Santiago, Chile

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INTRODUCTION

The southern Andes are characterised by a huge calc-alkaline batholith whose northern part between 39 and 47° S is called the North Patagonian Batholith (NPB). A roughly north-south lineament system, the Liquine-Ofqui Fault Zone (LOFZ), extends along the axial part of the NPB. It is regarded as a dextral strike-slip fault zone related to the oblique convergence of the Nazca and South America plates in this area (Dewey & Lamb, 1992). The youngest plutonic activity (Miocene) occurred near the LOFZ, whereas the rest of the batholith yielded mainly Cretaceous ages (Pankhurst & Hervé, 1994). Despite the difficult field conditions, structural mapping has been attempted between 44 and 45°30 S (Fig. 1a) by systematic anisotropy of magnetic susceptibility (AMS) measurements from orientated sampling in Aysén region between 44 and 45 ° 30 S (Fig. 1a).

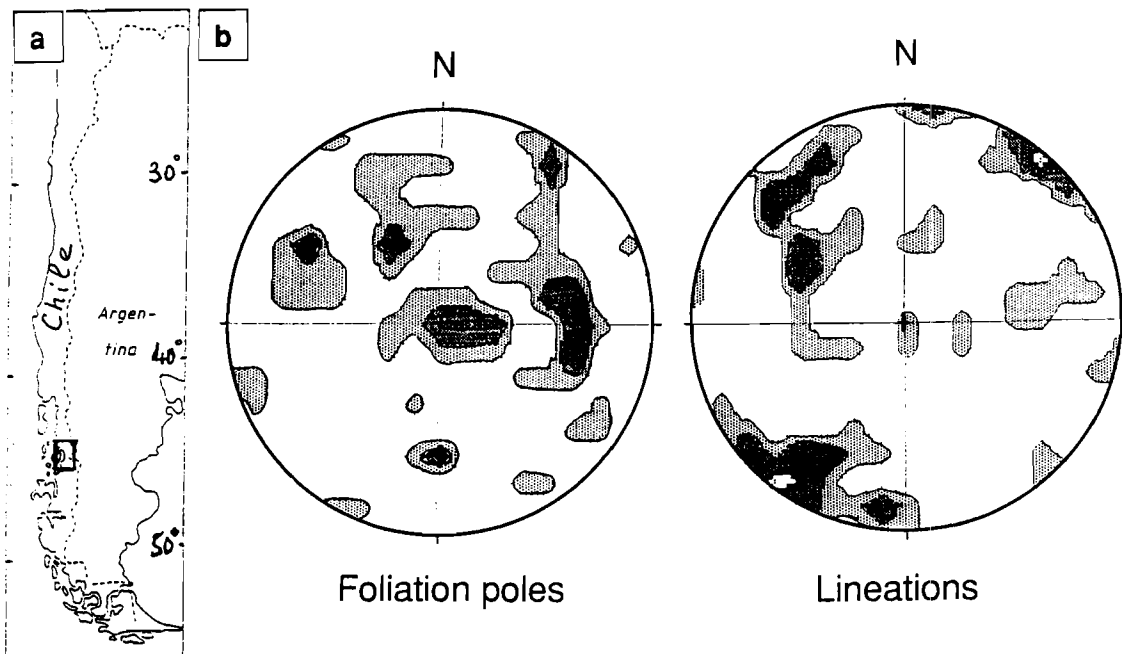


Fig. 1. a. Location of the studied area. b. Orientation diagrams of magnetic structures (equal area; lower hemisphere; $n = 32$; contour interval = 2%).

PETROSTRUCTURAL DATA

The continental part of the NPB in Aysén is mainly made of tonalites with abundant mafic bodies along the coast and dominant granodioritic rocks towards the east. They are separated by granitic units roughly aligned along a north-south trend. Samples were picked out from all these domains. All samples display magmatic textures in thin sections, with the sole exception of the peraluminous granite east of Puerto Cisnes (see below). The high level emplacement conditions of the eastern granodiorites are deduced from the common occurrence of microgranular and granophyric facies.

Magnetic susceptibility intensities range from 7 to 11058×10^{-5} SI. Most values are typical of ferromagnetic rocks. Magnetic structures (Fig. 1b) mostly represent magmatic fabrics. Foliations are subhorizontal or variously dipping, often towards the west. There are two main lineation orientations: subhorizontal lineations with a N40 strike and lineations plunging toward the north-west at a low to moderate angle.

The peraluminous granite east of Puerto Cisnes (Fig. 2) yielded a Rb-Sr whole rock isochron age of 10 Ma (Hervé et al., 1993). It deserves special attention owing to its uncommon mineralogy (garnet - aluminosilicates - muscovite) and to its texture typical of incipient to pronounced solid-state deformation. The highly foliated samples display shear planes characterized by quartz ribbons, sillimanite and late muscovite, together with submagmatic fractures in feldspars. Magnetic foliations are roughly north-south and steeply dipping to the west. Lineations plunge at a very low angle to the south. These features suggest syntectonic emplacement along a north-south strike-slip shear zone, very likely the LOFZ.

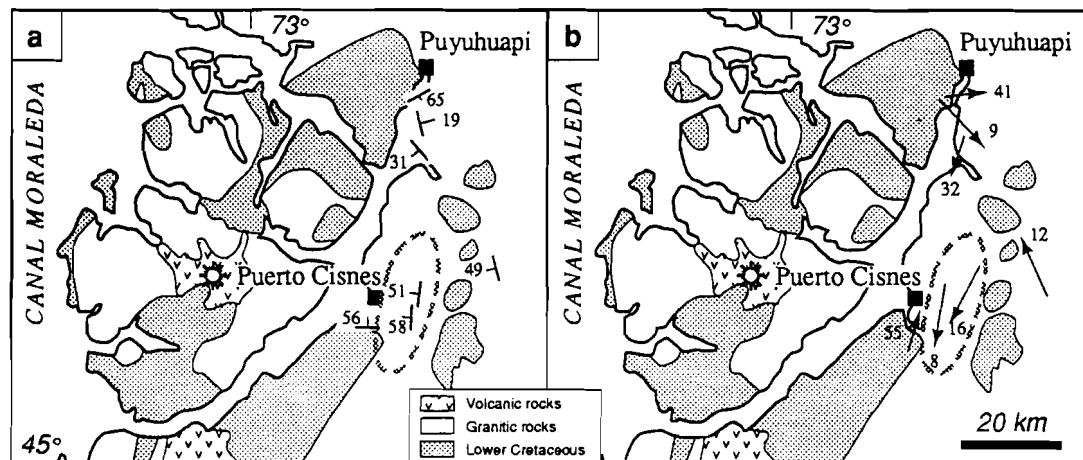


Fig. 2. Detailed foliation (a) and lineation (b) maps with 10 Ma-old syntectonic granite (dashed contour).

CONCLUSIONS

Most plutonic rocks of the NPB display magmatic textures, with the exception of an Upper Miocene peraluminous granite that was syntectonically emplaced in a strike-slip regime related to the LOFZ. Work in progress will unravel the P-T conditions along this fault and propose a tectonic interpretation for the structures of the other plutonic units.

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