

NEW GEOCHRONOLOGICAL DATA OF CARAPÉ COMPLEX GRANITOIDS, URUGUAY

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Cañada de Los Sauces Granite (Sample N° 579).

INTRODUCTION

The Carapé Complex granitoids are part of the African-Brazilian Belt (AFB) formed in the Late Proterozoic (around 600 Ma). The Complex is limited to the west by the Lavalleja Group, while to the east by the Sierra Ballena shear zone. In the area under study a certain number of granitic bodies of varied dimensions and geometry were identified. They are emplaced in the micaschists, amphybolites and marbles of the Lavalleja Group and in the gneisses, protomylonites and mylonites of the Campanero Unit. (Figure N° 1).

The rocks analyzed during the present research come from an area of well known geology (Preciozzi *et al.*, 1989; Sánchez Bettucci, 1998), and belong to granitic bodies with different sizes from few meters to 160 km²; some of them form lenses of 0.5 to 1.5 km concordant with the wall rock foliation, while others of ellipsoidal form are discordant with it. They are pink to gray coloured rocks with grainy to granoblastic textures.

The field relationships, petrography and geochemistry of these rocks point out to a post-orogenic or anorogenic affinities for these intrusions.

The aim of this paper is to present new petrological and geochronological data from five granites outcropping in the area studied.

PETROGRAPHY

The petrography of the five radiometric analyzed samples, are described in the following paragraphs.

The Cañada de Los Sauces Granite is a small, discordant, intrusive body of pink color, located near the Eden del Mataojo town. It has a medium grained, hypidiomorphic texture and is composed by plagioclase with albite twins and K-feldspars, both in the same proportions, alkaline amphibole and quartz (< 5 %). The accessory minerals are titanite and epidote. On the basis of mineral composition and tecture, the rock is classified as a monzonite,

Cuchillita Granite (Sample N° M20c)

Three kilometers to the north of Cerro Mateo, outcrops a fine grained granite with allotriomorphic texture, constituted by andesine, perthitic plagioclase, K-feldspars, biotite and alkaline amphibole. In some samples the biotite is altered to chlorite, the plagioclases present flexured twins and the quartz show triple point and mosaic texture. The accessory minerals are apatite, epidote, zircon and opaque minerals.

Campanero Granite (Sample N° 767)

This is a stock of near 40 km², located 10 km to the SW of Minas. It has a fine grained, hypidiomorphic to granolepidoblastic texture. It is composed of orthoclase phenocrystals, quartz and plagioclase. The accessory minerals are chlorite, apatite, zircon and secondary apatite and titanite. Protomylonitic and cataclastic textures are present in some places, and also shows variation in its mineralogical composition, including the appearance

of microcline, orthoclase, quartz, amphibole, muscovite, zircon and clinozoisite.

Aguila Granite (Sample N° 517)

It is located to the north and east of the Sierra de Las Animas, intruding the trachytes of the Sierra de las Animas Complex and the quartzites and marbles of the Lavalleja Group. It is a medium to coarse grained rock, composed of quartz with mosaic texture, plagioclase of albite composition with antiperthite, alkaline feldspar, and scarce biotite and alkaline amphibole. The accessory are zircon, apatite and opaque minerals. Its composition and texture let us to classified as a monzonite.

Perdido Chico Granite (Sample N° 749)

This body outcrops to the northwest of Minas intruding the Lavalleja Group and the Penitente Granite. It has a coarse grained granodioritic composition with alkaline amphibole, plagioclase, alkali feldspars and quartz and does not present evidences of deformation. The rock in some places show the existence of xenoliths of varied forms and composition.

AGE DETERMINATIONS

One sample of each of the five granitic bodies described were analyzed by the potassium-argon method. The leucocratic characteristics of them do not permit us to obtain mineral concentrates in enough quantity, so they were analyzed as a whole rock. From each sample two argon extractions were made, and the results presented in Table N° 1 correspond to a mean value of the obtained data.

Table N° 1. K-Ar ages for the Carapé Complex granitoids

Sample	Unit	K %	$^{40}\text{Ar}_R$ 10^{-10} m7g	$^{40}\text{Ar}_A$ %	Age Ma
579	Cda. de .Los Sauces	2.42	24.076	14.2	498 ± 37
M20c	Cuchillita	3.56	41.503	18.1	571±100
767	Campanero	4.22	49.278	5.7	572 ± 30.
517	Aguila	3.20	37.366	9.4	572 ± 30
749	Pérdido Chico	1.78	22.367	8.8	609 ± 25

DISCUSSION

The Brazilian granitic magmatism is not well known in the Uruguay from the geochemical and geochronology point of view. The geochronological data presented in this paper correspond to a small portion of the larger group of granitic bodies that belongs to the African-Brazilian Belt.

The radiometric studies made until the present, although scarce, allow the separation of different magmatic events in this area, and the granitic rocks of the Carapé Complex are correlated with those outcropping in the south of Brazil that were included by Fragozo Cesar (1980) in the so called Dom Feliciano Belt.

The ages known for the Carapé Complex granitoids could be divided in three groups. The first one with values between 500-540 Ma, the second range from 540-600 Ma and the third one with results from 750 to 850 Ma. The geochronological data from Brazil presented by Soliani (1986), Nardi and Bitencourt (1989), Tommasi and Fernandes (1990), Basei *et al.* (1997), etc., corroborate these three stages.

The results presented confirm the previous geochronological data and suggest a rapid cooling for the Carapé Complex Granitoids.

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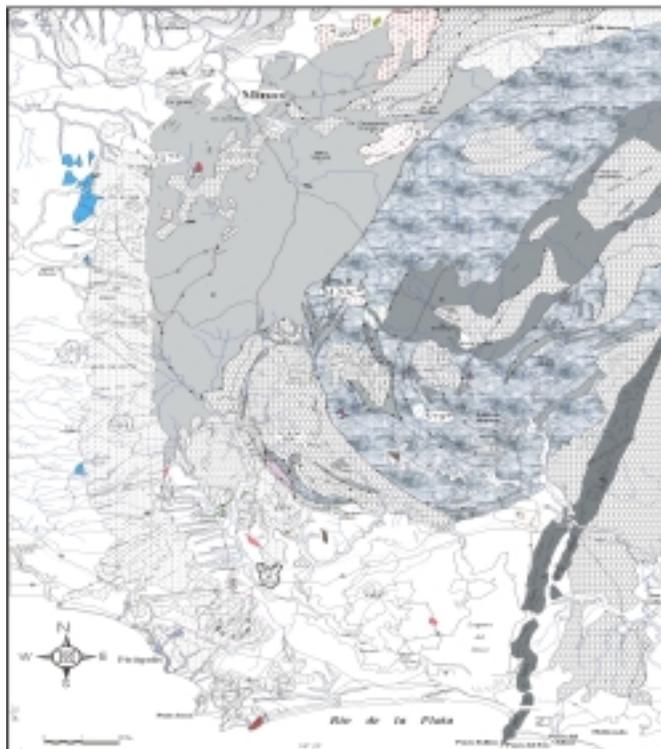


Figure N° 1