

EL SIGNIFICADO DE NUEVAS EDADES Rb-Sr DE ROCAS IGNEAS DE PATAGONIA SEPTENTRIONAL.

THE SIGNIFICANCE OF NEW Rb-Sr AGES OF IGNEOUS ROCKS FROM NORTHERN PATAGONIA.

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Radiometric age dating available until 1984 pointed out that the Gondwanic magmatic cycle in Northern Patagonia, extended from Early Carboniferous to Middle Jurassic times. Moreover, according to these data the plutonic activity consisted of two main episodes of different ages: the oldest one took place about 330 Ma (Early to Middle Carboniferous) and the youngest between 270 and 200 Ma (Early Permian to Early Triassic). These episodes are correlatives of similar plutonic events registered in the pre-Jurassic basement of the Andean Cordillera. The volcanic activity was restricted to the Early Permian-Middle Jurassic times. As Llambías et al. (1984) pointed out, the magmatic rocks of Northern Patagonia are in geographical continuity and show strong petrological similarities to its correlatives of Cordillera Frontal and Bloque de San Rafael-La Pampa areas.

As preliminary results of a major geochronological survey, two new isotopic ages were recently obtained by Rb-Sr whole rock isochrons for stocks exposed at the eastern part of the North Patagonian Massif, 50 km to the west of Valcheta, Río Negro province, approx. 40° 38' S lat. and 66° 45' W long. The analyzed rocks were obtained from the Navarrete Granodiorite and the Flores Granite; their isotopic ages are 332 ± 15 Ma and 320 ± 2 Ma.

With the exposed values, we can consider the two diagrams (fig 1) as isochrons, and we must mention the very low MSWD values, particularly for Flores Granite isochron.

The significance of these new Rb-Sr ages may be summarized as follows:

- The existence of a plutonic event occurring at about 330 Ma, as some former K-Ar dating had previously indicated, is confirmed.
- Since previous dating of the Navarrete Granodiorite and the Flores Granite by the K-Ar method had yielded ages of 233 and 200 Ma respectively, an evaluation of the validity of some of the Permian or Triassic K-Ar ages obtained in Northern Patagonia during the last two decades is recommended. It seems possible that a Carboniferous age could be extended to other plutons with apparent Permian or Triassic K-Ar ages.
- Field observations in the studied area (Caminos, 1983; Llambías et al., 1984) show that silicic volcanic rocks unconformably overlie the Navarrete Granodiorite (332 Ma) and are intruded by the satellite bodies of the Flores Granite (320 Ma). Therefore the existence of a volcanic episode of Early to Middle Carboniferous age is strongly suggested, disregarding the previous supposed Permian ages for these rocks.
- Similar relationships between plutonic and volcanic rocks and equivalent Rb-Sr

ages, 332 Ma for a granodiorite and 317 Ma for a granite recently obtained 140 km toward the WNW, in La Esperanza area (see Llambías, Rapela and Parica, this volume) support the above suggestions.

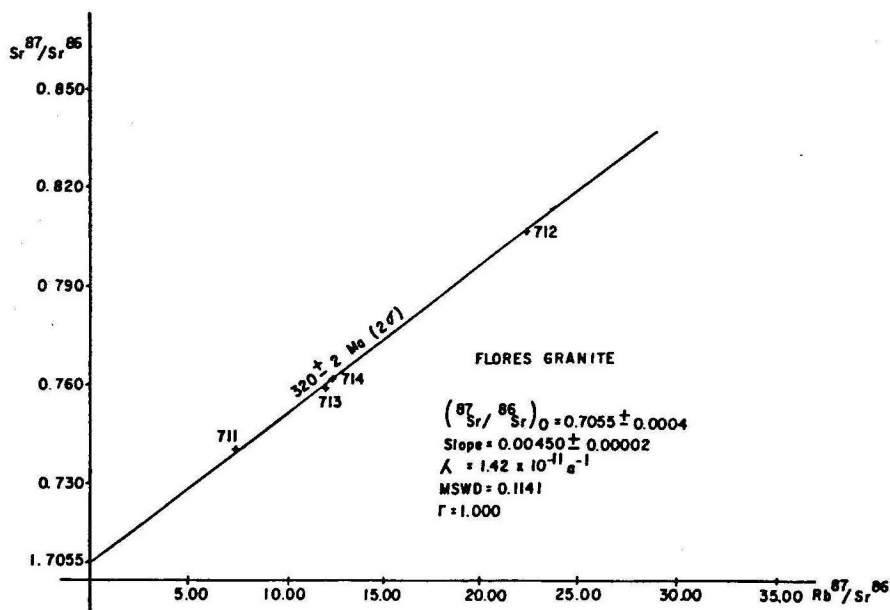
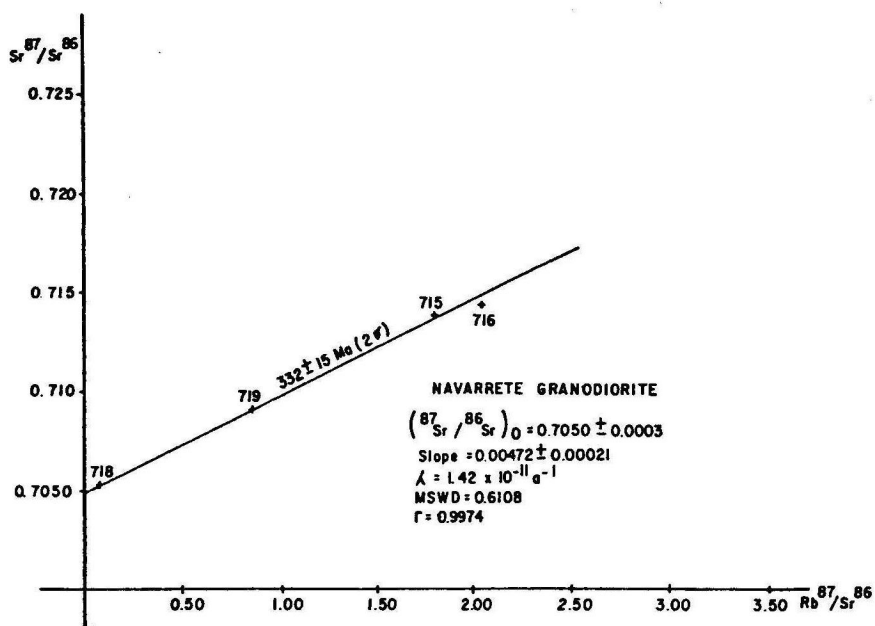


Fig. 1. Whole rock Rb-Sr isochrons of the Navarrete and Flores granitoids.

Fig. 1. Isochronas Rb-Sr en roca total de los granitoides Navarrete y Flores.

TABLA 1

DATOS Rb-Sr PARA MUESTRAS DE ROCA TOTAL DE LA GRANODIORITA
 NAVARRETE Y EL GRANITO FLORES
 Rb-Sr DATA FOR WHOLE ROCK SAMPLES FROM NAVARRETE
 GRANODIORITE AND FLORES GRANITE

Ingeis N° Arb	Unit	Rb ppm	Sr ppm	$^{87}\text{Rb}/^{86}\text{Sr}$ $\pm 2\%$	$^{87}\text{Sr}/^{86}\text{Sr}$ $\pm 4 \times 10^{-4}$
711	FG	284	67	11.97	0.7596
712	FG	300	114	7.5	0.7400
713	FG	294	67	12.39	0.7619
714	FG	309	39	22.38	0.8075
715	NG	205	321	1.8	0.7139
716	NG	337	467	2.05	0.7144
718	NG	381	1236	0.87	0.7091
719	NG	38	1281	0.08	0.7054

FG: Flores Granite

NG: Navarrete Granodiorite

Therefore, the preliminary results presented here, point out that in Northern Patagonia, the Early to Middle Carboniferous plutonic episode had a volcanic counterpart not registered by former research. Volcanic rocks of this age are nor yet recorded on the eastern slope of the Andean Chain, buy they have been recently recognized by chilean geologists on the western side of the Andes.

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