

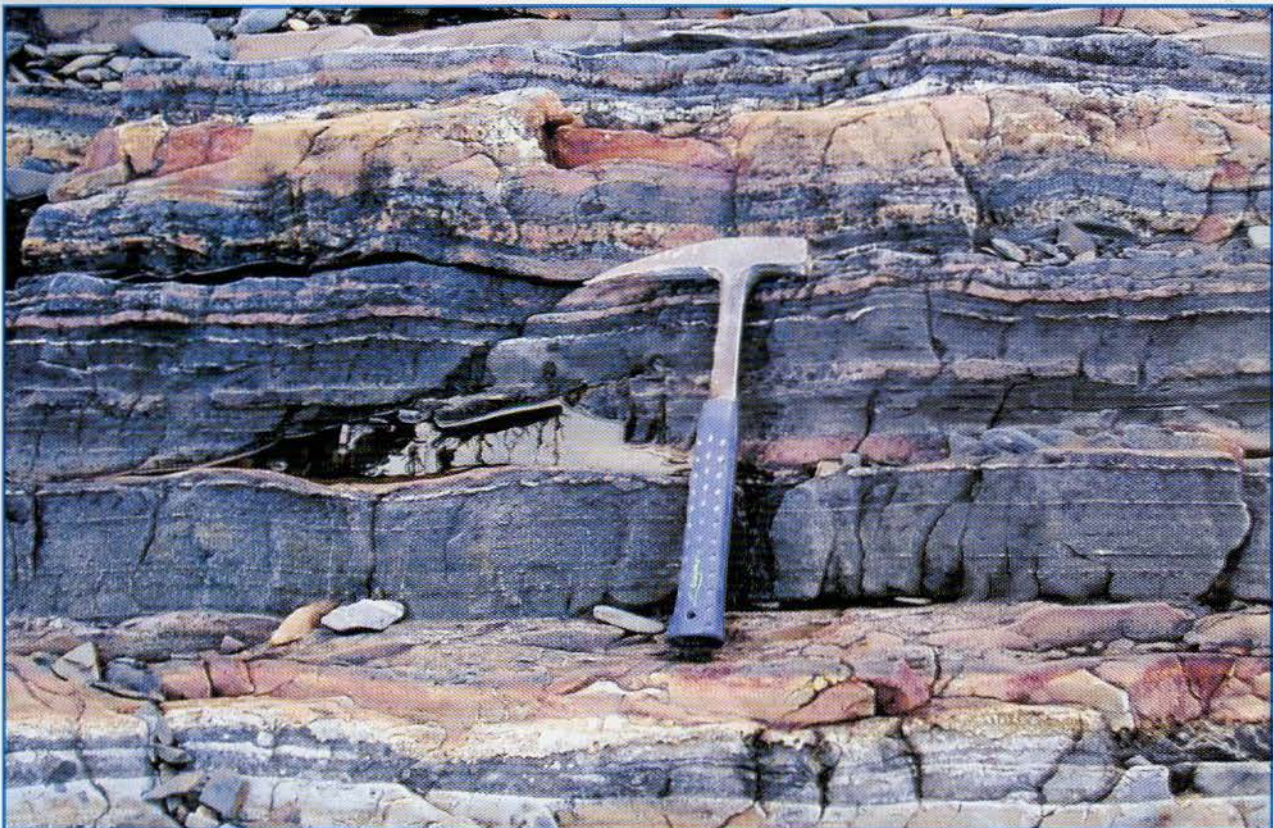
# Geosur 2007

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## Libro de Resúmenes

Editores : A. Demant, F. Hervé, M. Menichetti and A. Tassone



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## The A-Type event in the eastern Sierras Pampeanas, La Rioja and Catamarca Provinces (Argentina): geochronological and isotopic considerations

Dahlquist J. \*<sup>1</sup>, Alasino P.<sup>2</sup>, Galindo C.<sup>3</sup>, Casquet C.<sup>3</sup>, Grant C.<sup>4</sup> and Medina C.<sup>4</sup>

<sup>(1)</sup> UNC-CONICET, Av. Vélez Sársfield 1611. Pabellón Geol., X5016CGA-Argentina.

<sup>(2)</sup> CRLAR-CONICET. Entre Ríos y Mendoza. (5301). Anillaco, La Rioja, Argentina.

<sup>(3)</sup> Dpto. de Petrología y Geoquímica, UCM, 28040 Madrid, España.

<sup>(4)</sup> YAMIRI Ruta 5, km 5, Parque Industrial, La Rioja.

\* Presenting author email: [jdahlquist@efn.uncor.edu](mailto:jdahlquist@efn.uncor.edu)

Initial  $^{87}\text{Sr}/^{86}\text{Sr}$  ratios of ca. 0.7088 (for a U-Pb SHRIMP zircon crystallization age of  $340 \pm 3$  Ma) were reported by Dahlquist *et al.* (2006) for the San Blas A-type granitic pluton (Sierra de Velasco; La Rioja). Remarkably, this isotopic ratio is indistinguishable from the initial  $^{87}\text{Sr}/^{86}\text{Sr}$  ratio (0.7086) of the Capilla del Monte granite in the Sierra de Córdoba, which is also Early Carboniferous (ca. 337 Ma) and A-type too. This coincidence points toward an isotopically similar magma source with a significant continental crust component for the A-type event of Eastern Sierras Pampeanas (ATEESP). The term ATEESP is used here to embrace A-type magmatism and related tectonics of Early Carboniferous age in the Eastern Sierras Pampeanas (Dahlquist *et al.*, this volume). Consistently, multielement diagrams for different ATEESP plutons such as the Zapata and Huaco granitic complexes (Sierras de Zapata in Catamarca, and Sierra de Velasco in La Rioja, respectively) also attest to a significant continental crust component (unpublished data). The main zircon crystallization phase in the Huaco granitic complex was dated by Söllner *et al.* (2007) at  $354 \pm 3.9$  Ma (LA-ICP-MS, U-Pb zircon dating). This age is close to that of the San Blas pluton. New whole rock Rb-Sr isotope data for the Zapata and Huaco granitic complexes however, yielded errochrons ( $284.7 \pm 9.9$  Ma;  $^{87}\text{Sr}/^{86}\text{Sr}_{\text{initial}} = 0.7217$ , MSWD = 11.6, and  $308 \pm 17$  Ma;  $^{87}\text{Sr}/^{86}\text{Sr}_{\text{initial}} = 0.7166$ ; MSWD = 3.9, respectively), which suggests that some post-crystallization alteration took probably place sometime between the Late Carboniferous and the Early Permian, that incompletely reset the Rb/Sr system. Söllner *et al.* (2007) also recognized in the Huaco granite an alteration event at  $315 \pm 42$  Ma, which is within error of the errochrone age shown above.

In conclusion, U-Pb zircon ages along with Rb-Sr isotope data, reveal an history of Early Carboniferous A-type magmatism in the Eastern Sierras Pampeanas (ca. 340-350 Ma) that was overprinted by hydrothermal alteration (probably much time later), suggesting that the crust remained hot during a long time. The hydrothermal event although of uncertain age could be correlated with foreland fracturing and accompanying pervasive hot water flow during collision of the Deseado terrane (Patagonia) to SW Gondwana in the Middle Carboniferous (Pankhurst *et al.* 2006).

### References

- Dahlquist J.A., Pankhurst R.J., Rapela C.W., Casquet C., Fanning C.M., Alasino P.H. and Baez M., 2006. *Journal of South American Earth Sciences* **20**, 341-350.
- Pankhurst R.J., Rapela C.W., Fanning C.M. and Márquez M. 2006. *Earth-Science Reviews* **76**, 235-257.
- Söllner F., Gerdes A., Grosse P. and Toselli A., 2007. 20<sup>th</sup> Colloquium on Latin American Earth Sciences 57-58. Kiel, Germany.