

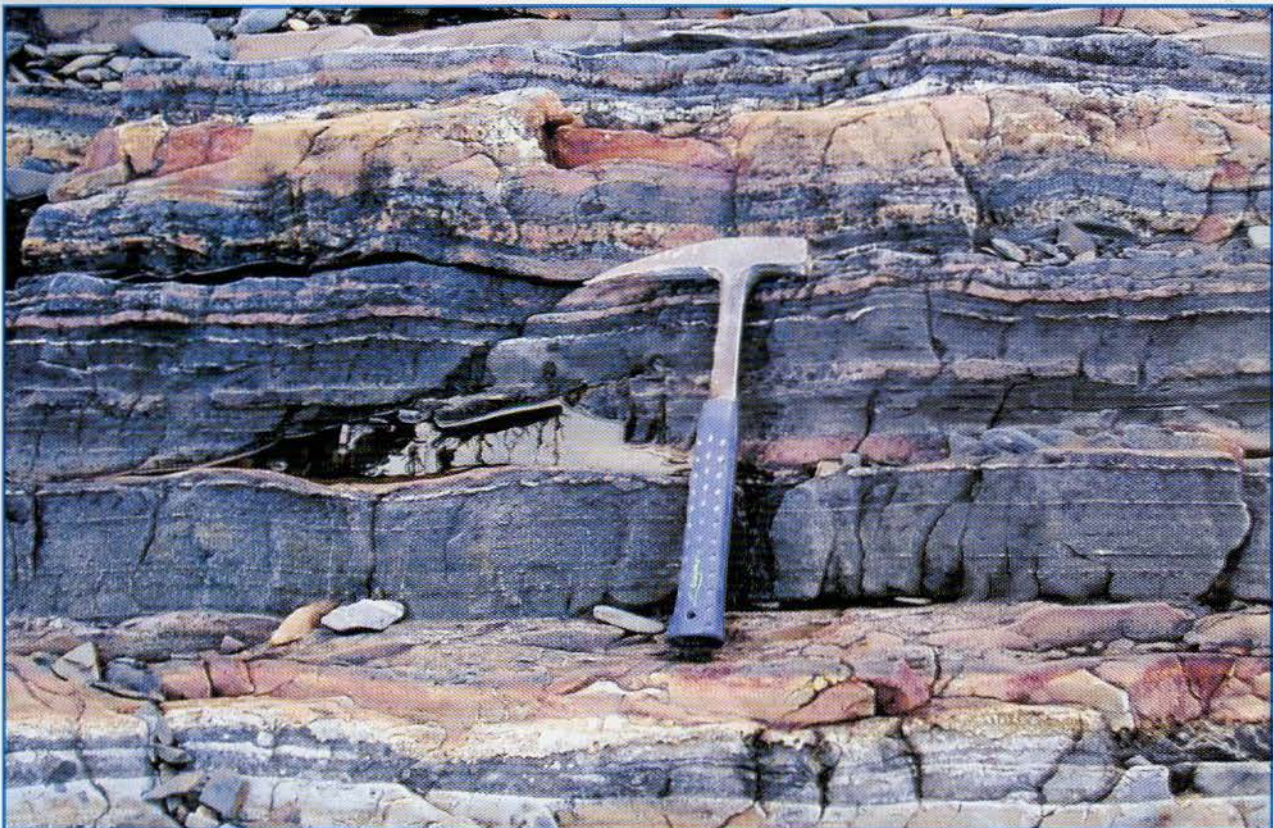
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A-Type granitoids in the eastern Sierras Pampeanas (Argentina): evidence for early Carboniferous aborted rifting?

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Sims *et al.* (1998) claimed that the voluminous Devonian plutonism in the Sierras de Córdoba and the eastern Sierras de San Luis, along with a significant thrusting activity of Devonian age too were evidence for a distinct orogenic event, *i.e.*, the Achalian orogeny (AO). In a recent contribution, Dahlquist *et al.* (2006) included all the Devonian and Carboniferous (368–330 Ma) granitoids within the term Achalian granites. In this definition, Carboniferous granites are the youngest representatives of the AO. Moreover they brought to an end the Paleozoic magmatic evolution in the Sierras Pampeanas. However, new geochemical evidence suggests that the allocation of Carboniferous granitoids to the AO is inadequate. Rather, these granitoids are indicative of a new distinct tectonothermal event that we recognize here for the first time. Carboniferous granitoids are A-type within-plate granites derived from partial melting of a meta-igneous continental source (see Dahlquist *et al.* this volume) tonalitic to granodioritic in composition according to the classic model invoked for A-type granitoids (see Abdel-Rahman 2006, and references therein). From Y-Nb-Ce or Y-Nb-3Ga plots (Dahlquist *et al.* this volume) these granitoids can be assigned to the A₂-type of Eby (1992), *i.e.*, parental A-type magmas derived from a continental crustal source. Moreover, A-type granitoids are indicative of an extensional within-plate setting (*e.g.* Abdel-Rahman 2006) and not of a compressive one as is probably the case for the Devonian granitoids. However, the source of the heat that caused the melting of the polyorogenic and dry continental crust remains unknown. Asthenospheric uprise was probably favoured by within-plate extension (rifting). This interpretation is compatible with present petrogenetic models for A-type granitoids according to which high geothermal gradients required for partial melting of a tonalitic to granodioritic source resulted from crustal underplating by mantle-derived magmas (see Abdel-Rahman 2006, and references therein). In conclusion, we propose that Early Carboniferous A-type granitoids in the Eastern Sierras Pampeanas are indicative of a new distinct tectonothermal event, *i.e.*, the A-type event of the Eastern Sierras Pampeanas (ATEESP) which was coeval with northward subduction along the SW margin of North Patagonian massif during early stages of the Gondwanian orogeny (Pankhurst *et al.*, 2006).

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