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LATE DEVONIAN HIGH-GRADE METAMORPHISM AND MIGMATISATION IN PATAGONIA, ARGENTINA

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The Pacific margin of South America represents an excellent example to study crustal growth, since it was an active margin throughout the Late Neoproterozoic and Phanerozoic times, involving different crustal addition mechanisms. The Paleozoic evolution of southernmost South America is dominated by the accretionary Terra Australis Orogen. Here, Patagonia has been considered as an accreted terrane, exotic to the Gondwanan margin. However, this area remains largely unexplored, and the timing and metamorphic conditions of these crustal blocks potentially involved in the building of Patagonia is not fully understood.

Here, we study a Middle-Late Paleozoic basement block located in the central part of Patagonia called Taquetren Range. This block is part of a hundred of kilometers-long orogeny that is thought to represent an accretionary margin. It is built up by medium-to high-grade metamorphic rocks, where migmatites are common as well as both syntectonic and post-tectonic plutonic bodies. Metapelite units are characterized by bt-gt-plg-qz-ilm±sill paragneisses and migmatites. Our new U-Pb zircon data yield a ~360 Ma crystallization age for syntectonic granitoids, which are peraluminous and form part of a migmatized metapelite sequence. Metamorphic ages in U-Th-Pb monazite range from 379-323 Ma. Our data place, thus, the crustal melting process into the Late Devonian, a time of protracted high-grade metamorphism for a wide area of central Patagonia. P-T determinations using metamorphic assemblage diagrams yield 7.5-8.5 Kb and 710-750°C. The high-grade metamorphic conditions are compatible with the accretion of a previously proposed oceanic-arc and with the closure of an associated back-arc basin. Additional information comes from detrital zircon studies which indicate several important episodes of crustal addition: Meso- to Neoproterozoic, late Cambrian-early Ordovician, Silurian, and late Devonian times.

Session No. 186

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