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LIBRO DE RESÚMENES

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SHEETED INTRUSION OF GRANITIC MAGMAS IN THE UPPER CRUST – EMPLACEMENT AND THERMAL EVOLUTION OF THE GUANDACOLINOS PLUTON, NW ARGENTINA

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The Lower Carboniferous Guandacolinos pluton of northwestern Argentina (Western Sierras Pampeanas) preserves field, structural, and petrological evidence of sheet-like transport and assembly of granitic magmas in the upper crust. The pluton is a relatively small (~24 km^2) subduction-related granitic body, elongated in map view, and hosted in Neoproterozoic metamorphic rocks. Exceptional exposure records a subparallel array of steep NNE-SSW trending structures, including steep contacts partly concordant with host rock structure, numerous sheets of granite separated by host rock rafts, abundant xenoliths, and magmatic and solid-state foliations. Along the eastern half of the pluton, the granite is massive and host rock inclusions are less abundant. Regional markers of the host rock are deflected along a concordant bulged contact in the northeastern region of the pluton. Field relations indicate emplacement by multiple material transfer processes including fracture propagation, magma wedging, stoping, and lateral shortening. Contrasting mechanisms imply a changing mechanical response of host rock and multiple stages of intrusion. Emplacement began with dominant brittle fracturing and intrusion of sheets influenced by host rock anisotropies, followed by a viscoelastic phase were larger batches of magma caused downward transfer of stoped blocks, lateral expansion, and minor ductile deformation of the host rock. Thermal modelling indicates that the construction of the pluton required lateral accretion rates in the order of dm/years and less than a few tens of thousands of years to form. This case study documents the ability of incrementally assembled sheeted intrusions to efficiently heat rocks of the upper crust and trigger conditions favourable for transfer and storage of magma.

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