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Re-evaluation of the Saldania Belt in South Africa within the framework of SW-Gondwana amalgamation

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RESUMO: The Saldania Belt that stretches around the southern tip of Africa is one of the most poorly understood Pan-African tectonic belts, largely because of limited outcrop. Yet, it plays a pivotal role in the reconstruction of the amalgamation of SW-Gondwana and thus also in our understanding of potential lithospheric discontinuities that might have controlled the break-up of the South Atlantic and the separation of Southern Africa from southern South America south of the Walvis Ridge. We tested the existing terrane model for the Saldania Belt, using a lithogeochemical, petrological, isotopic and geochronological approach. Our new data, especially U-Pb age data on detrital zircon grains, require a thorough revision of the existing stratigraphic and tectonic scheme. In contrast to previous models, the main terrane boundary is not the Colenso Fault but the Piketberg-Wellington Fault that separates the Swartland Zone from the Boland Zone. The latter contains detritus of typical Kalahari provenance. The zircon provenance for both the Tygerberg and Swartland Zones/Terranes (separated by the Colenso Fault) is, however, completely different and dominated by Cryogenian to Ediacaran zircon ages for which there is no potential source anywhere on the Kalahari Craton. These two zones are now interpreted as representing a single terrane (the so-called Malmesbury Terrane). They represent the fill of a forearc or trench slope in a supra-subduction position or a back-arc basin with sediment supply mainly from the arc. Remnants of that arc are present in the Cuchilla Dionisio-Pelotas Arc in the Dom Feliciano Belt in southern Brazil and Uruguay. The Colenso Fault is then re-interpreted as a major Mesoproterozoic boundary in the underlying, unexposed basement, which became reactivated during the Pan-African orogeny, and it should have an equivalent in the basement units of the Cuchilla Dionisio Terrane in Uruguay.

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PALAVRAS CHAVE: Saldania Belt, Pan-African, provenance