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Resolving the paradigm of the late Paleozoic–Triassic Chilean magmatism: Isotopic approach

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Abstract

The Andean orogenic cycle and its subduction-related magmatism along the southwestern margin of South America began during the early Jurassic after an accretionary history throughout Paleozoic times. The Chilean and Argentinian Frontal Andes batholiths, together with the Coastal Batholith, represent most of the pre-Andean orogenic cycle plutonism. However, how late Paleozoic-Triassic magmatism occurred along this margin and its transition to the Andean orogenic cycle still remains unclear. Here we present a geodynamic model using all the available published Lu-Hf and oxygen isotopic data ranging from latitudes 28° to 40°S, together with 5 new Hf-O data and U-Pb zircon ages from the Chilean Frontal Andes. Data indicate that subduction began at least in the latest early Carboniferous and was continuous throughout the late Paleozoic – Triassic period. Isotopic and geochronological results show a continuous