

## **Paleogeography and significance of the Late Mesoproterozoic mountain glaciation within the Serra do Espinhaço, Minas Gerais, Brazil**

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The Serra do Espinhaço consists mostly of rocks from the Espinhaço Supergroup which represents a Midproterozoic orogen (ca. 1.5 - 1.3 Ga) extending over 1200 km in the N-S direction. It comprises an important mountain belt in the central-eastern part of the states of Minas Gerais and Bahia, Brazil. Glaciogenic rocks of the Macaúbas Group, exhibiting a pronounced erosive and angular unconformity with the underlying units of the Espinhaço Supergroup, outcrop along the margins of and areas adjacent to the orogenic belt. Remnants of glacial valleys are preserved, as well as vast deposits of subglacial, periglacial-lacustrine, and lacustrine environments, which often include varvites (sometimes with dropstones). Syn- to post-orogenic sedimentary deposits of the foredeep and foreland basins of the Espinhaço orogen suggest a scenario of reduced continental freeboard within the context of a continental crust with an elevated geothermal gradient. The steep gradient of glacial valleys and the progradation of glaciation out from the mountain area reveal change in crustal behavior, specifically a pronounced emergence of the continent during the late Mesoproterozoic. This glacial event, (the first after 2.3 Ga), may have been caused by a reduction in atmospheric CO<sub>2</sub> via increased silicate weathering due to a major continental emergence. In addition, paleomagnetic studies indicate that this region may have passed through high paleolatitudes (ca. 40° - 65° N) at about 1,050 Ma.