

PALEOBIOGEOGRAPHICAL RELATIONS BETWEEN SOUTH AMERICA AND THE NORTH GONDWANAN BIOGEOGRAPHIC DOMAIN DURING THE ORDOVICIAN

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The study of FADs of benthic organisms along the peri-Gondwanan margin of South America, Africa and southern Europe, allows us to determine Ordovician biodiversification centers and migration routes among these areas, with regard to common taxa displayed at generic and even specific levels. The most significant patterns were identified among taxa recorded from the latest Cambrian to mid Arenig of Argentina and Bolivia, whose FAD in proto-Avalonia, North Africa and Western Europe Gondwanan areas took place in the Middle Ordovician or in the early Caradoc. This is exemplified by some echinoderms, brachiopods and trilobites, indicating that a one-way migration route was established from west to east, extending as far as Bohemia. The presence of eastward marine currents along the South American margin of Gondwana by the Early Arenig is supported by the arrival of warm water trilobites, such as *Carolinites genacinaca* (an epipelagic and paleoequatorial species), as far south as Bolivia. The simultaneous record of an eocrinoid and a bellerophonitiform mollusc in two areas lying originally about 8000 km apart also show the lack of barriers to migration of epiplanktic shelly faunas across perigondwanan platforms during the Arenig.

The drifting of Avalonia from Gondwana, and the impending closure of the Iapetus, promoted an anti-clockwise gyre on the marine currents during the Upper Ordovician, preventing the direct arrival of more South American immigrants to Gondwanan Europe. The *Neseuretus* fauna survived in South America during the Caradoc, and few north-Gondwanan emigrants reached South America during these age, such as some draboviid and heterorthid brachiopods, and the lyrodesmatid bivalves. An active faunal exchange started again by Hirnantian time, at a subprovincial biogeographic level.