Provenance analysis of Lower Paleozoic siliciclastic rocks of SW Iberia (Ossa-Morena Zone): distal shelf deposition in the North Gondwana passive margin

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U-Pb dating of detrital zircons from the Lower Paleozoic siliciclastic rocks of SW Iberia (Ossa-Morena Zone: Fatuquedo, Ossa, Colorada and Terena formations) showed that sedimentation during the Mid-Upper Cambrian-Lower Devonian was marked by slight variations in the source-areas, involving: i) the denudation of crustal blocks with similar zircon-forming events typical of North Gondwana and ii) the absence of volcanism younger than ca. 470 Ma. The potential source-areas of the Mid-Upper Cambrian-Lower Devonian basins of the OMZ could be: i) the Neoproterozoic basement of the OMZ (Serie Negra) intruded by plutonic rocks of Cambrian and Lower Ordovician age and ii) the Lower Paleozoic sedimentary sequences of the OMZ with Cambrian and Lower Ordovician volcanism. In the oldest siliciclastic rocks the most relevant populations of detrital zircons have Cryogenian and Ediacaran age (Ossa and Fatuquedo formations). In addition, in the youngest siliciclastic rocks, beyond Cryogenian and Ediacaran grains, relevant age clusters of Cambrian and Tonian ages (Colorada Formation) and of Cambrian and Ordovician ages (Terena Formation) also exist. No evidence was found from sources outside North Gondwana. The lack of zircon-forming events younger than ca. 470 Ma seems to indicate that the Mid-Upper Cambrian-Lower Devonian siliciclastic rocks of SW Iberia were deposited in a distal shelf of the North Gondwana passive margin related with the Rheic Ocean opening and in the absence of magmatic activity.

Keywords: U-Pb detrital zircon geochronology, Mid-Upper Cambrian, Ordovician, Lower Devonian, Rheic Ocean.