Provenance of Cambro-Ordovician siliciclastic rocks of the SW Iberia: insights to the evolution of North Gondwana margin

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This study makes a comparison between the populations of detrital zircon of the Cambrian sandstones from the Ossa-Morena Zone (OMZ) and the Ordovician quartzites from the southern domains of the Central Iberian Zone (S-CIZ) in order to identify the sources during development of North Gondwana basins (SW Iberia). The U-Pb results obtained for the Lower Cambrian sandstones of the OMZ show a remarkable similarity with the detrital zircon ages of greywackes from the underlying OMZ Ediacaran basement (Série Negra Succession). However, there is a greater proportion of the Cryogenian grains in the Cambrian rocks which main sources are: i) the Late Cadomian magmatic arcs (Ediacaran, ca. 635-545 Ma) which also contributed to infill the Late Ediacaran basins of the OMZ; and ii) the Early Cadomian arcs (Cryogenian, ca. 700-635 Ma). In the Lower Ordovician quartzites of the S-CIZ (Armorican and Sarnelha formations) the age distribution of detrital zircons overlaps the population of detrital zircons of the underlying S-CIZ Ediacaran basement (Beiras Group). Nevertheless, there are some differences in the Sarnelhas quartzites which have a population of detrital zircons similar to those of the Ediacaran greywackes and Cambrian sandstones of the OMZ. The Cambrian grains found in the Lower Ordovician quartzites fit the ages of magmatism representing the onset of rifting in North Gondwana that occurs in the OMZ and is absent in the S-CIZ. The Lower Ordovician grains are probably related to the magmatic event that preceded the passive margin stage of the Rheic Ocean, and exist in the CIZ and OMZ.

Keywords: SW Iberia, Cambro-Ordovician, rifting, zircon, provenance.