

FRAGMENTATION OF NEOPROTEROZOIC MAGMATIC ARCS ALONG THE NORTHERN GONDWANA MARGIN IN THE LATE EDIACARAN (SW IBERIA)

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This study presents new LA-ICP-MS U-Pb detrital zircon data from late Ediacaran Beiras Group greywackes of the SW Central Iberian Zone (CIZ). A comparison is made with U-Pb data from late Ediacaran greywackes (Série Negra – SN) and early Cambrian arkosic sandstones of the Ossa-Morena Zone (OMZ) in order to characterize potential sedimentary provenances, and improve paleogeographic reconstructions in the northern Gondwana active margin. The U-Pb data set for the Beiras Group (SW CIZ) indicates predominance of Neoproterozoic (75-78%; mainly Cryogenian and Ediacaran, and few Tonian), Mesoproterozoic (<7%), Paleoproterozoic and Archean (mainly Neoarchean). The Beiras Group present three major episodes of Neoproterozoic zircon crystallization in the source area during the Cryogenian and the Ediacaran at ca. 850-700 Ma (Pan-African suture), ca. 700-635 Ma (early Cadomian arc) and ca. 635-545 Ma (late Cadomian arc). However, two peaks stand out in the Cryogenian as the most significant, at ca. 840-750 Ma and at ca. 685-660 Ma. In the OMZ, the detrital zircons content from the early Cambrian arkosic sandstones overlap the ages of zircon from the late Ediacaran greywackes (Linnemann *et alii*, 2008). The U-Pb data set for those late Ediacaran-early Cambrian siliciclastic rocks show predominance of Neoproterozoic ages (mainly Ediacaran and Cryogenian), Paleoproterozoic and Archean. Major episodes of zircon-forming events in the source area, are distributed by uppermost Cryogenian and Ediacaran (late Cadomian arc): ca. 640-630 Ma, ca. 615-605 Ma, ca. 590-570 Ma and ca. 560-550 Ma, but locally, older Cryogenian ages also occur in the interval ca. 700-635 Ma (early Cadomian arc). The zircon ages of the SW CIZ and the OMZ basins allow to conclude: i) Late Ediacaran basins of SW Iberia were filled by detritus resulting from erosion of three sources: the West African craton, the Pan-African belt and the Cadomian belt; ii) The Neoproterozoic age clusters may reflect the existence of along-lived magmatic arc in the northern margin of Gondwana (Cadomian belt; Pereira *et alii*, 2011 & ref. therein); iii). The early Cadomian arc was the main source of the SW CIZ basin (Beiras Group) with a probable contribution of the Pan-African suture, whereas the OMZ basin (SN) had a greater input of the late Cadomian arc with additional contribution of the fragmented early Cadomian arc; iv) SW Iberia Ediacaran basins seem to represent back-arc basins in the northern Gondwana active margin, separated sufficiently to justify the differences in their detrital zircon content: the SW CIZ basin located close to the continent-ward passive margin with major contribution of the fragmented early Cadomian arc and the Pan-African suture, and the OMZ basin (SN) in the vicinity of the late Cadomian arc-ward margin characterized by more strongly stretched continental crust (including the fragmented early Cadomian arc) and the accumulation of predominantly arc-derived greywacke-mudstone turbidites.