

## Whence come detrital zircons in Siluro-Devonian rocks from Iberia?

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Seven Silurian and Devonian samples from the Cantabrian and Central Iberian zones of the Variscan belt have been investigated for paleogeographic purposes using detrital zircon U-Pb ages. A total of 764 analyses were performed. All samples contain four main age populations in variable relative proportions: Ediacaran–Cryogenian (ca. 0.55–0.8 Ga), Tonian–Stenian (0.85–1.2 Ga), Paleoproterozoic (ca. 1.8–2.2 Ga) and Archean (ca. 2.5–3.3 Ga). The two first groups constitute ca. 60–80% of the total population in all samples. In addition, 5 samples contain very minor Paleozoic (Cambrian) zircons and 6 samples contain minor but significant zircons of Middle and Early Mesoproterozoic age (Ectasian–Calymmian). These data, used in conjunction with detrital zircon U-Pb data of underlying Ordovician and Ediacaran strata constrain the evolution of the northern margin of west Gondwana, highlighting the transition from an arc environment (Cadomian-Avalonian arc orogeny) to a stable platform following the opening of the Rheic Ocean and the drift of Avalonian terranes. Variations in detrital zircon populations in Middle–Late Devonian times reflect the onset of Variscan convergence between Laurussia and Gondwana. The abundance (up to ca. 50%) of zircons of Tonian–Stenian age in Devonian sedimentary rocks, that could not have been recycled from the underlying strata, may be interpreted in different ways:

- a) the existence of a large Tonian–Stenian arc terrane exposed in the NE African realm (in or around the Arabian-Nubian shield) that was progressively exhumed throughout the Paleozoic,
- b) the participation from Ordovician times onwards of a more easterly alongshore provenance of Tonian–Stenian zircons. In this scenario, the South China block could have furnished Tonian–Stenian zircons to the Ordovician and Siluro-Devonian basins of Iberia,
- c) increase in the relative proportion of Tonian–Stenian zircons with respect to the Ediacaran–Cryogenian population (arc-derived zircons) due to the drift of the Avalonian-Cadomian ribbon continent following the opening of the Rheic Ocean.