Ediacaran to Cambrian granite pebbles in the Lower Devonian conglomerate of Imouzzer Kandar (northwestern Middle Atlas, Morocco): new U-Pb ages and geochemistry

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Devonian conglomerate of Imouzzer Kandar, about 100 m thick, is generally polygenic, in spite of a microconglomeratic tendency towards the top where the pudding is impoverished in cobbles and passes to coarse microconglomeratic and grauwacky sandstones. The cement is of lithic grauwacky type with microconglomerate. We may distinguish mainly pebbles of sedimentary rocks and pebbles of volcano-clastites and magmatic rocks (Charrière, 1991). They include quartzite, sandstone and microconglomerate pebbles, schist pebbles, sometimes with cleavage or low schistosity, argillites and black siliceous rocks, reminiscent of Silurian rocks, ignimbrite pebbles, volcanic tuffs, and granitoid pebbles. These last pebbles have been subject to isotopic and geochemical analyses in this work.

Petrographic and geochemical studies of granitic pebbles in the Devonian poudingue of Imouzzer Kandar inlier allow classifying these rocks as peraluminous and highly potassic calc-alkaline. They also show many similarities with active margin rocks. They are rich in high field strength elements and display anomalies in Ta-Nb.

Zircon data gave Ediacaran (558±10 Ma) to Cambrian (502±4 Ma; 500±6 Ma; 489±5 Ma) U-Pb ages for some granite pebbles.

The unknown, not cropping, undeformed granitoid massif which is not so far away considering the rounded pebbles of the puddingstone, probably completely eroded and related with Upper Neoproterozoic/Lower Paleozoic Iberian and/or Avalonian (NE Canada) granitoid terranes is proposed as the initial region of the granites and the pebbles derived from them. Indeed, no granitoid massif of these Cambrian ages is known at the outcrop in this NW African (Western Moroccan Meseta) part of Gondwana.

Reference

Charrière, A., 1990. Héritage Hercynien et évolution géodynamique alpine d'une chaine intracontinentale: le Moyen-Atlas au S.E. de Fès (Maroc). *Doctorat es Sci. Nat.*, Univ. Toulouse III, France.