

New U-Pb zircon dating of Late Neoproterozoic magmatism in Western Meseta (Morocco)

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We present new U-Pb zircon ages from magmatic rocks of the Western Meseta, part of the Moroccan Variscan belt. The Neoproterozoic–Cambrian stratigraphy in the region of Goäida (Aguelmous massif, SE of Moroccan Central Massif) consists of limestones with conglomeratic and felsic volcanoclastic levels, pelites and mafic volcanic rocks assigned to the Cambrian which unconformably overlie rhyolites, andesites and rhyodacites and felsic tuffs associated with the Aguelmous granite of probable Neoproterozoic age. The Neoproterozoic–Cambrian stratigraphy of the region of Sidi Ali is roughly similar and also includes a volcanic-sedimentary complex with limestones, arkoses rhyolites and conglomerates. These conglomerates contain pebbles of granite and rhyolite, whose source may be the Neoproterozoic basement. In order to constrain the age of the Precambrian felsic magmatism we sampled and dated zircons (LA-ICPMS) from the Goäida granite and a pebble of granite included in the conglomeratic levels of the volcanic-sedimentary complex at Sidi Ali dome (central Rehamna massif). In the Goäida granite, zircon ages are Ediacaran ranging between ~ 610 Ma and ~ 540 Ma, with a discordia upper intercept age of 598 ± 32 Ma (MSWD=0.04) that could be interpreted as the age of intrusion. However, if we consider only the two youngest ages we obtain a Concordia age of 590 ± 3 Ma (MSWD=0.34). In the Sidi Ali pebble sample the majority of zircon ages are Cryogenian–Ediacaran in the range ~ 640 – 600 Ma, with the youngest yielding a Concordia age of 609 ± 2 Ma (MSWD=0.04), indicating the intrusion age of the granite from which the pebble derived. These results support the existence of Cadomian/Pan-African magmatism in the Western Meseta of Morocco, characterized by the intrusion of granites at ~ 609 Ma and ~ 590 Ma. This result is important for studies of sedimentary provenance and to improve paleogeographic reconstructions of the northern margin of Gondwana during the Neoproterozoic.