

Hoggar geochronology: A historical review of published isotopic data

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A dataset of more than 400 isotopic ages on the Hoggar Shield, published from 1963 to 2017, was obtained by increasingly precise isotopic dating techniques and low-temperature thermochronology. Data were arranged by eras and terranes and classified in two categories "before 1980" and "after 1980". They illustrate the protracted geological history of the Hoggar Shield. The first continental *nuclei* were formed 3.5-2.5 Ga ago during the Archean, with high-grade metamorphic and associated magmatic episodes. A second group of continental terranes was created 2.40-1.75 Ga ago during the Paleoproterozoic, with Eburnean orogenic episodes marked by reworking of older Archean terranes associated with juvenile terranes. After the 1.80-0.90 Ga long period of quiescence, the 870-540 Ma Neoproterozoic times were characterized by Pan-African episodes, with early overthrusting of eclogitic nappes and late strike-slip movements along north-south trending shear zones, high-grade metamorphism and anatexis, emplacement of large granitoid batholiths followed by complexes of the Taourirt igneous suite. Cambrian hydrothermal activity evidences either a slow cooling process, or more likely discrete thermal pulses. After scarce Carboniferous mafic magmatism, the Mesozoic and the beginning of the Cenozoic constituted a period of quiescence marked by subsidence and burial after the Early Cretaceous. Low-temperature chronology records episodes of alternating subsidence and exhumation. Widespread Eocene exhumation predated volcanic activity beginning in the Late Eocene and continuing until recent times, in association with Africa – Europe convergence processes.

Keywords. Archean, Paleoproterozoic, Neoproterozoic, Paleozoic, Mesozoic, Cenozoic eras; high-grade, high-pressure, high-temperature metamorphisms; granitoid batholiths, Taourirt igneous suite, volcanic activity.