# Zircon megacryst from a Neoproterozoic eclogite of Central Hoggar (Algeria): U-Pb, trace elements and oxygen isotopes data

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The Egéré/Aleksod Terrane in Central Hoggar contains high-pressure metasediments closely associated with garnet amphibolites and eclogites. According to thermodynamic calculations, peak condition of the eclogitic stage is ~800°C, 15-17 kbar followed by retrogression at ~830°C, 13 kbar and cooling to ~525°C, 8 kbar. The investigated sample, a coarse-grained leucocratic rock interlayered within kyanite-garnet metapelites, is a high-pressure aluminous leucosome. It contains an euhedral zircon megacryst of *c*. 3mm long, included in K-feldspar and in contact with primary white mica on one side. The megacryst shows oscillatory zoning, and a HREE-enriched pattern characterized by a positive Ce anomaly and no negative Eu anomaly. These features are consistent with crystallisation from a melt. The low Th/U ratio (Th/U< 0.003) is best explained by coeval crystallisation of minerals which partition Th against U (e.g. apatite) in a small melt volume. Ti-in-Zrn thermometry indicates that the center of the megacryst crystallised at 811±15°C whereas a thin (<50μm) rim displays a lower temperature of 717°C in agreement with results from Zr-in-Rt thermometry which yields a temperature of 702±24°C for the crystallisation of rutile. LA-ICP-MS U-Pb geochronology of the center of the grain provides an age of 654 ± 5 Ma, which indicates that the megacryst grew either at the peak of eclogitic metamorphism or during the first stages of retrograde metamorphism and decompression. This age is significantly older than exhumation of the Western Hoggar eclogites (623±2 Ma after Berger *et al*, 2014) or than the age of subduction of the eastern passive margin of the West African Craton (620-615 Ma after Jahn *et al*, 2001). This suggests a westward younging of high-pressure events which is consistent with a serie of successive collisional events affecting the various terranes of the Tuareg Shield following eastward directed subductions.