

# Provenance of the metasedimentary basement of Oman

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## **PROVENANCE OF THE METASEDIMENTARY BASEMENT OF OMAN**

### **ABSTRACT**

Jebal Ja'alan in Oman is one of several locations where the Proterozoic basement outcrops. U-Pb and Hf isotopic analyses of metasedimentary samples provide new provenance information as to the age of rocks in the source region for the original sedimentary protoliths. The metasedimentary samples (Hassan schist) predominantly record Tonian ages (ca. 876 Ma to ca. 928 Ma) with smaller detrital zircon populations ranging from Stenian to Calymmian. A wide range of epsilon Hf values suggest a source from largely Neoproterozoic igneous rocks that incorporated variable amounts of older Proterozoic crust in their parent magmas. The crystallisation age of the older of the two igneous formations (Ali Gneiss) has been dated to being within error of the Tonian detrital zircon population found within the metasediments and could represent a likely source. A younger igneous intrusion (Kamil Granodiorite) has been dated at late Tonian, which was found between the two older formations. Both the igneous rocks yield epsilon Hf values that suggest juvenile depleted mantle dominated melts. These zircon signatures are similar to Proterozoic basement found in several locations throughout the Arabian-Nubian Shield. Further comparisons can be interpreted between the outcropping basement at Jebal Ja'alan with terranes described in both India and Africa.

### **KEYWORDS**

East Oman Neoproterozoic Basement, Jebal Ja'alan, Geochronology, Hf

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