Trace element composition of the metamorphic sole in Wadi Tayin, Oman

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Major and trace element compositions were determined for the metamorphic sole in Wadi Tayin, Oman. The samples analyzed are metabasite and metachert, metamorphic facies of which ranges from granulite to greenschist dependent on the distance from the overlying ophiolitic peridotite. The fluid-immobile element compositions of the metabasites show MORB-like characteristics, indicating that they were originated from MORB-like tholeiite and its differentiates. The concentrations of some of fluid-mobile elements such as B, Rb, K and Ba in the metabasites dramatically increase with decreasing the distance from the peridotite, although those of fluid-immobile elements are essentially constant throughout the whole distance. This suggests that the metabasites in the vicinity of the peridotite were equilibrated with the aqueous fluid which had high levels of fluid-mobile elements and migrated through the peridotite-metamorphic sole boundary. If this is the case, the trace element spectra of the metabasites may provide a key to understanding the nature of the fluid liberated from the basaltic layer of the slab in predominantly amphibolite facies.