



Metamorphic evolution of the Qazaz metamorphic complex, Saudi Arabia

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Precambrian accretionary orogens largely contributed to continental growth, owing to their high production rates of juvenile crust compared to Phanerozoic accretionary orogens. The Pan-African orogeny is responsible for the evolution and growth of the Arabian-Nubian Shield. The Qazaz metamorphic complex in Saudi Arabia is one of the metamorphic complexes that were exhumed due to the activity of the largest Proterozoic shear zone system on the Earth – the Najd Fault System. The Qazaz complex is an example of an unusual new type of core-complex associated with crustal scale strike-slip faulting. Petrography and thermodynamic modelling were used to study the metamorphic evolution of the complex. The core of the complex records peak metamorphic conditions of 560 – 640 °C and 7-8 kbar. The bounding strike-slip shear zones operated at a temperature range of 400-600 °C while the pressure range varied from 5 to 0.5 kbar over a very short distance within the shear zone. The complex shows exhumation of about 25 km due to the activity of the Najd Fault System.