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P-T evolution of mica-schists close to the Sagaing fault, Myanmar - implications for the tectonic regime in SE Asia during collision of India and Asia

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Tertiary tectonic events in SE Asia are poorly known but important for the understanding of the orogenesis by the collision of India and Asia. The Sagaing fault is a dextral strike-slip fault resulting from this collision. Along this fault, which was active since the Eocene, serpentinites including jadeitite jade bodies occur in northern Myanmar. In addition, various medium-grade metamorphic rocks are exposed. The appearance of these lower crustal rocks and observed structural features gave rise to the assumption that lower crust was exhumed in a transtensional regime older than 10 Ma (Rangin et al., 2002). We have investigated such rocks, garnet-bearing mica-schists, with the electron microprobe (EMP) to constrain a P-T path using geothermobarometric methods. In addition, pseudosections for the chemical compositions of our rocks were calculated also using thermodynamic data for minerals. Our calculations confirm that the studied rocks, which have experienced a prograde metamorphic evolution to peak P-T conditions of 7-8 kbar and 550-600˚C, represent lower crust. Potassic white micas at these conditions are muscovites with 3.1 Si per formula unit (p.f.u.). These micas can be marginally replaced by phengites with Si contents up to 3.5 p.f.u. Calculated P-T conditions for this event, which did not result in deformation of the rocks, were 400-500˚C and 14-17 kbar. These conditions being compatible with the occurrence of jadeitites point to an anti-clockwise P-T loop. We conclude that the mica-schists were first involved in a subduction channel environment (see Stöckhert and Gerya, 2005). The subsequent exhumation of various lithologies, mantle and crustal rocks, from considerable depths could have taken place in a subduction-related extensional regime at the beginning of the India-Asia collision (Fournier et al., 2004).