



Dynamics of mountain building in the Eastern Ghats belt, India

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Ellis (1987)¹ argued that some granulites may reside at the base of the crust for a long time and their exhumation to the surface will require a second orogeny. Thermotectonic modeling of convergent orogens also suggest considerable delay between granulite formation (mountain building stage) and exhumation of the deep-seated granulites to the surface, a common feature (Bhattacharya and Sen, 2003)².

Based on the evidence of a NE-SW regional tectonic trend represented by S1 gneissosity, a steep axial planar foliation, and the common structural repetitions, the Eastern Ghats belt could be described as a collisional (convergent) orogen that evolved under a regional NW-SE directed compression and attendant homogeneous crustal shortening (Bhattacharya, 1997)³. Detailed fieldstudies in several sectors have revealed three phases of folding with development of pervasive foliations, often truncating and transposing earlier fabrics on different scales (Bhattacharya et al., 1994, Bhattacharya, 1997)^{4,3}. Granulite lithologies in the Eastern Ghats belt show only retrograde reactions attesting to cooling and decompression, but record only minor exhumation (Sen et al., 1995; Bhattacharya and Kar, 2002)^{5,6}. Coupled with this, the evidence of truncating and transposing foliations would suggest exhumation of these granulites in later orogeny, unrelated to the mountain building convergent orogeny. Also, significant age difference between granulite formation, a largely Grenvillian event (Mezger and Cosca, 1999)⁷ and exhumation during Pan-African reactivation (Crowe et al., 2001)⁸.

References:

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