

EXTENSIONAL TECTONIC FRAMEWORK AND ITS DYNAMIC SIGNIFICANCE IN DABIE-SULU UHP AND HP METAMORPHIC BELTS, CENTRAL CHINA

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The Dabie-Sulu region has been recognized as the largest UHP (peak $P > 27$ Kbar) and HP metamorphic belts in the world. The age of UHP and HP metamorphism has been determined at 210 to 240 Ma by several chronological methods, which reflect the Triassic collision between the Sino-Korean and Yangtze cratons. However, several lines of evidences indicate that the present-day observed regional tectonic framework of the UHP and HP metamorphic belts in the Dabie-Sulu region was mainly formed by extensional processes that postdate the Triassic collision and the peak UHP and HP metamorphism (200-170 Ma). The tectonic pattern formed under the extensional regime is similar to metamorphic core complexes and is characterized by the development of multi-layered flat-lying extensional detachment zones on a crustal scale. Geometrically, it displays features of a large-scale dome in the Dabie massif or small-scale domes in the Su-Lu region, respectively. This tectonic configuration overprinting structures related to the contraction controls the present spatial distribution of the UHP and HP metamorphic rocks. The data strongly demonstrate that the large-scale subhorizontal ductile extensional flow took place under amphibolite-facies conditions ($p = 6-8$ kbar, $T = 470-570$ °C) when the UHP and HP metamorphic rocks were returned into lower-middle crustal levels. Extensive decompression partial melting in the UHP and HP metamorphic units reflecting the crust-mantle dynamical processes and change of thermal structure of the crust has important consequences for the tectonic inversion from contraction to extension. It is suggested that the exhumation of the UHP and HP metamorphic rocks from the mantle depth to the surface was at least in part due to the crustal stretching and thinning, contemporaneous with a thermal weakening of deep crustal levels.