

VERY LOW-GRADE METAMORPHISM AND ITS GEODYNAMICAL SIGNIFICANCE OF TRIASSIC STRATA WITHIN THE YOUJIANG RIVER BASIN, CHINA

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The Youjiang River Mesozoic Basin is located in the vicinity of junctural zone between the Tethyan and near-Pacific tectonic realms, in which thick turbidity current deposits are widely distributed and have a complicated deformation style and history. Geological evidence shows that the Triassic basin facies deposits underwent a regional very low-grade metamorphism. Illite crystallinity (IC) measurements on a regional scale establish metamorphic framework for the tectonic belt, which is subdivided into five subzones including the lower diagenetic zone, upper diagenetic zone, lower anchizone, upper anchizone and epizone. Metamorphic P-T conditions were determined by a combination of illite crystallinity, b_0 parameters, chlorite-mica stacks and index clay minerals. The results indicate that the metamorphic temperatures range from 150°C to 350°C, and the metamorphism is of a low-pressure type characterized by high geothermal gradients or high heat flow in the Youjiang River Basin.

Variations in metamorphic grade in the Triassic strata can be correlated largely with the stratigraphic age or position in the stratigraphic column and there do not appear to be a consistent relationship between the degree of deformation or cleavage in intensity and the grade of metamorphism. The regional deformation resulted in modification of chlorite-mica stacks during cleavage development in the mudstone. It is shown that the very low-grade metamorphic event represents an early feature in the Indosinian-Yanshanian tectonic cycle and the pre-regional deformation, indicating a sedimentary-burial depth-related metamorphism developed in the Youjiang River Mesozoic continental marginal-type basin under an extensional tectonic setting.