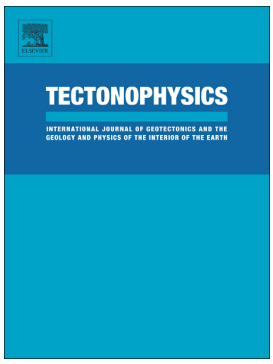

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Crustal Structure of the Dabie Orogenic Belt (eastern China) Inferred from Gravity and Magnetic Data

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ABSTRACT: In order to better characterize the crustal structure of the Dabie orogen and its tectonic history, we present a crustal structure along a 500km long profile across the Dabie orogenic belt using various data processing and interpretation of the gravity and magnetic data. Source depth estimations from the spectral analysis by continuous wavelet transform (CWT) provide better constraints for constructing the initial density model. The calculated gravity effects from the initial model show great discrepancy with the observed data, especially at the center of the profile. More practical factors are therefore incorporated into the gravity modeling process. First, we add a high density body right beneath the HPM and UHPM belt considering the exposed HPM and UHPM rocks in the mid of our profile. Then, the anomalous bodies A, B, and C inferred from the CWT-based spectral analysis results are fixed in the model geometry. Two anomalous bodies *B* and *C* with high density and low magnetization in the final crustal density structure could possibly be attributed to metasomatised mantle materials by SiO_2-rich melt derived from the foundering subducted mafic lower crust. Under the extensional environment in the early Cretaceous, the upwelling metasomatised mantle was partially melted to produce the parental magma of the post-collisional mafic-ultramafic intrusive rocks. As for the low density body *A* with strong magnetization located in the lower crust right beneath the HP and UHP metamorphic belt, it is more likely to be composed of serpentinized mantle peridotite