



Interpretation of aeromagnetic anomalies of the Sulu ultrahigh-pressure (UHP) metamorphic belt, eastern China

N. Qiu and Q. S. Liu

Department of Geophysics, China University of Geosciences, Wuhan, China (QiuNing@cug.edu.cn, +86-27-67883251)

The Sulu ultra-high pressure (UHP) metamorphic belt in eastern China is well known as the eastern extension of the Qingling-Dabie orogenic belt formed by subduction and collision between the Sino-Korean and Yangtze cratons. The main hole of the Chinese Continental Scientific Drilling (CCSD) project is located at the southern segment of the Sulu UHP metamorphic belt (34°25'N/118°40'E), about 17 km southwest of Donghai county. Integrated geophysical investigations using gravity, magnetic, deep seismic reflection, magnetotelluric, and geothermal observations were carried out for area around the CCSD main hole, drawing more attention for interpretation lithospheric structures in the Dabie-Sulu terranes over the last decade.

However, less effort have been so far fulfilled for interpretation and research of aeromagnetic data in this study area. Lately, the aeromagnetic survey acquired with line spacing of 500m, allows us to distinguish key geological structural style within upper crust and probe relationships between magnetic structure and deep geodynamics in Sulu UHP metamorphic belt. This paper proposed results for geological interpretation of aeromagnetic anomalies to reveal crustal magnetic structure in this study area.

The inversion of aeromagnetic data using Euler deconvolution technique based on differential similarity transformation, combined with regional geological background and borehole magnetic data, shows that magnetic sources are appeared mainly NNE-SW trending corresponding to granite diorite, retrogressed eclogites and acid and basic granulite-facies rocks around Tanlu fault with different depths, magnetization directions and structural indices in crust. The northward dipping to the surface of the shallow magnetic sources reveals that they may have been resulted from the subduction of Yangtze carton and returned along the original path in Triassic period. This subduction resulted in part of the continental crust subsiding into the upper mantle. The deep intracontinental subduction maybe continuous converge between the Sino-Korean and the Yangtze cratons. Therefore, there is still required further research evidence to illustrate by what means of thinning, intrusion and rifting the lithosphere in the eastern China during the Cretaceous and Eogene.