



Upward Continuation Apply Newly to Process Gravity Anomaly Data in the East China Sea

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The research area lies in the East China Sea and its adjacent area and the concrete is between 120-130 degree of east longitude and 20-30 degree of north latitude and it also lies between Eurasian Plate and Pacific Plate. The structures of the area transform differently and they are namely Uplifted Zone of Zhejiang-Fujian, East China Sea Shelf Basin, Okinawa Trough Back-arc Basin, Ryukyu Arc, Ryukyu trench and Philippine Sea from west to east. Bouguer gravity anomaly can reflect deep structure characters and it is help to judge deep structures. The bouguer gravity anomalies of the area change differently from west to east. The anomalies increase gradually from land to the middle of Okinawa trough and near land anomaly contour strike accords with coastline and the middle of Okinawa trough reflect the highest anomalies in this area. Gravity anomalies re-increase from Ryukyu fore-arc basin to trench and Ryukyu island arc appears the low anomalies. Philippine Sea appears high gravity anomalies background.

Upward continuation method has been used to process original gravity anomaly as a common method and its destination is to weaken local anomaly and at last strengthen deep anomaly and it's important to deep structure study. Upward 5 km, 10 km and 20 km have been used to process data and the results been compared. However, the research area is very large and the deep structure is complex, it isn't suitable to use single height to upward continuation processing bouguer gravity anomaly. Then we propose multiple upward heights continuation to process gravity data respectively in different area. We use upward 20km to process data in the area from land to the slope and upward 10km from Okinawa trough to Ryukyu island arc and upward 5km from Ryukyu trench to Philippine Sea. At last we obtain multiple upward height result and the calculated result confirms that it is fit to use this method. Gravity anomalies contours become smoother than before and the deep structures become clearer with the increased height of continuation. It is more meaningful for studying the crust and geologic structure of the East China Sea.

Index Terms: East China Sea, gravity anomaly, upward continuation