

The new tectonic division of basin in Eastern Shandong and its adjacent South Yellow Sea, China

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The new discovered Offshore rift basin in Eastern Shandong according to the field investigation is one of Mesozoic and Cenozoic rift basin in Eastern North China, which break traditional view for tectonic framework of basin in Eastern Shandong and its adjacent South Yellow Sea. Therefore, the tectonic framework and units of basin in the study area were redivided through the method of wavelet multi-scale decomposition of gravity anomaly, which has important meaning for the study of Mesozoic basin evolution in Eastern North China. In this paper, the method of wavelet multi-scale decomposition is used to separate bouguer gravity anomaly data, extracting first to forth order wavelet transform detail, which reflects gravity anomalies produced by anomalous density bodies varying from surface to Moho. The results showed that the faults in the study area developed, with different tendencies intermeshed and crossed mutually, indicating that there was multi-stage tectonic activity. The distribution of deep faults has a significant effect on the positive and negative gravity anomaly zones corresponding the uplift and depression. With obvious division characteristics of gravity field, the study area is divided into four subregions under boundary of the Tanlu fault zone, Wulian-Qingdao fault and Jimo-Muping fault zone, Qianliyan fault, the southern margin fault of Qianliyan uplift, from north to south, which is Jiaolai Basin, Offshore rift basin, Qianliyan uplift and South yellow sea basin, respectively. Combined with the seismic data, the tectonic units in Offshore rift basin is mostly analyzed. It is a NE-SW trending strip-shaped feature, with alternative depression and uplift. And for the first time, the subsidence center of Offshore rift basin is discovered.

Keywords: framework, Gravity Anomaly, Wavelet Multi-Scale Decomposition, Eastern Shandong

