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A new source location and attribute recognition method based on correlation analysis of gravity and magnetic anomaly

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The traditional gravity and magnetic correspondence analysis tends to have high correlation outside the field source area. In order to overcome the disadvantage, we propose a new method for identify the source position and attribute, which is based on similarity and vertical derivative of potential field. In this method, we put forward a new gravity and magnetic correlation parameter (GMCP), which can effectively reduce the range of potential field source and indicate the field intensity information. The distribution of the non-zero areas of GMCP reflects the size of the source. GMCP discriminant parameter values of positive and negative reflect the source attribute. When GMCP is greater than zero, it is a positive correlation indicating that there are high-density and high-magnetization or low-density and low-magnetization homologous bodies in this region; When GMCP is less than zero, it is negative correlation indicating that there are high-density and low-magnetic or low-density and high-magnetic density homologous bodies in this region. GMCP goes to zero, which means no gravity-magnetic homologous geological body. Complex models test results with different noise level and actual data processing of South China Sea Basin show the correctness and validity of identification of the proposed methods.