

应用地球物理学

综合地球物理方法在华南桂中海相残留盆地沉积相预测中的应用

李淑玲^{1, 2}, 孟小红^{1, 2}, 付立新³, 姚长利^{1, 2}, 郭良辉^{1, 2}, 陈召曦^{1, 2}, 石磊^{1, 2}

1 地下信息探测技术与仪器教育部重点实验室(中国地质大学, 北京), 北京 100083

2 中国地质大学(北京)地球物理与信息技术学院, 北京 100083

3 中国石油大港油田公司, 天津 300280

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摘要 沉积相研究是盆地隐蔽油气藏勘探中重要的研究内容之一, 综合利用地球物理方法有效识别构造、岩性或沉积相差异是盆地隐蔽油气藏勘探的前提. 本文基于重力、航磁、地震等综合地球物理资料, 通过重磁异常正演剥离和剖面正反演拟合技术研究了华南桂中地区海相地层的密度分布特征, 预测了岩相、沉积相的变化规律. 研究发现, 本区中、下泥盆统海相地层存在横向的岩性、岩相变化, 研究区西北、东南部的台地相区重力异常高、岩石拟合密度值高; 中部“X”型台地边缘相区重力异常杂乱、岩石拟合密度变化范围大; 东部台沟相区重力异常低、岩石拟合密度值低. 利用综合地球物理方法预测沉积相为盆地岩性圈闭油气藏和生物礁油气藏勘探提供了新的研究思路, 研究成果已得到初步检验, 但还有待进一步完善与实践.

关键词 [残留盆地](#) [沉积相](#) [地球物理方法](#) [位场异常分离](#) [正反演拟合技术](#) [岩性圈闭](#) [生物礁](#)

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Application of integrative geophysical methods to predicting sedimentary facies of marine residual basins in middle Guangxi province, China

LI Shu-Ling^{1,2}, MENG Xiao-Hong^{1,2}, FU Li-Xin³, YAO Chang-Li^{1,2}, GUO Liang-Hui^{1,2}, CHEN Zhao-Xi^{1,2}, SHI Lei^{1, 2}

1 Key Laboratory of Geo-detection (China University of Geosciences, Beijing), Ministry of Education, Beijing 100083, China

2 School of Geophysics and Information Technology, China University of Geosciences, Beijing 100083, China

3 Dagang Oil Field Company, CNPC, Tianjin 300280, China

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Abstract The sedimentary facies study is one of the key procedures in exploration of subtle reservoirs in basins, of which a prerequisite is effective identification of its structural, lithologic or lithofacies differences through integrated usage of geophysical methods. Based on geophysical data, including gravity, aeromagnetic and seismic data, this paper describes the density distribution characteristics of marine strata in middle Guangxi province, south China, and predicts the regularities of lithofacies and sedimentary facies changes in terms of potential field forward stripping and profile forward/inverse fitting. It is revealed that transversal lithologic and lithofacies changes exist in the marine strata of mid- and lower-Devonian series of the area. The platform zones in northwest and southeast of the area have high gravity anomalies and high fitting rock density. The "X"-shaped platform-marginal facies zone in the middle is characterized by irregular gravity anomalies and a large variation range of fitted rock density. And the platform-trough facies zone in the east exhibits low gravity anomalies as well as low fitted rock density. Predicting sedimentary facies through integrative geophysical methods offers a new approach for exploration of lithologic trap reservoirs and bioherm reservoirs in basins. This method has been preliminarily proved, and needs further improvements and applications.

Key words [Residual basin](#); [Sedimentary facies](#); [Geophysical methods](#); [Potential field anomaly forward stripping](#); [Forward/Inverse fitting technique](#); [Lithologic trap](#); [Bioherm](#)

通讯作者:

李淑玲 lisl@cugb.edu.cn

作者个人主页: 李淑玲^{1,2}; 孟小红^{1,2}; 付立新³; 姚长利^{1,2}; 郭良辉^{1,2}; 陈召曦^{1,2}; 石磊^{1,2}

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