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## 低纬度磁异常化极的伪倾角方法改进

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The modified pseudo inclination method for magnetic reduction to the pole at low latitudes

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摘要

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**摘要** 基于改造化极因子的低磁纬度频率域化极方法具有计算速度快、控制参数少、操作简单、化极稳定等优点. 本文分析压制因子法和伪倾角法的化极因子特征及其控制参数的影响, 在此基础上改进伪倾角法的化极因子, 即在磁偏角垂直方向及附近采用伪倾角法化极因子, 而在其他方向采用常规频率域化极因子. 改进后的伪倾角法既能有效压制磁偏角垂直方向及附近化极因子的放大作用, 使得化极稳定, 又能减少其他方向有效信号的化极特征的损失, 提高化极精度. 理论模型数据试验表明本文改进方法有效. 利用本文改进方法对南海海域磁总场异常数据进行了变磁倾角化极, 得到南海海域化极磁异常, 这为研究南海大地构造特征和岩浆活动提供重要的参考资料.

**关键词** 磁总场异常, 化极, 低纬度, 伪倾角, 南海

**Abstract:** In this paper, we studied the method of magnetic reduction to the pole (RTP) at low latitudes based on modifying the RTP operator in frequency domain, which has great advantages of fast computation, few control parameters, easy operation and stable reduction. We firstly analyzed the RTP operators of the suppression filtering (SF) method and the pseudo inclination (PI) method, and then analyzed the impacts of their control parameters on the RTP operators. Then we modified the RTP operator of the PI method by using the RTP operator of the PI method only along and near the direction vertical to the magnetic declination while using the routine RTP operator for the rest directions. Comparing to the routine PI method, the modified pseudo inclination (MPI) method not only makes the RTP at low latitudes stable but also increases the RTP accuracy. The test with synthetic data proved the effectiveness and reliability of the MPI method. Finally we applied the MPI method with varying magnetic inclinations to the magnetic total field anomaly in the South China Sea, and got the RTP magnetic anomaly, which will help the study of the tectonics and magmatic activities in the South China Sea.

**Keywords** Magnetic total field anomaly, Reduction to the pole, Low latitude, Pseudo inclination, South China Sea

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