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## 优化滤波方法及其在中国大陆布格重力异常数据处理中的应用

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### Preferential filtering method and its application to Bouguer gravity anomaly of Chinese continent

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摘要

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#### 摘要

在优选延拓法的理论上, 研究提出基于格林等效层概念和维纳滤波器的优化滤波法, 用于对重力异常数据进行去噪和分离. 与传统向上延拓法和优选延拓法相比, 优化滤波法分离异常与延拓高度无关, 不需要已知延拓高度, 具有一定的优势. 理论重力模型数据的去噪和异常分离试验表明优化滤波法有效, 异常分离效果优于传统向上延拓法和带通滤波法. 利用优化滤波法对中国大陆重力异常数据去噪和异常分离, 得到有效的布格重力异常和区域重力异常. 以中国大陆深地震探测推断的莫霍面深度信息为约束, 对区域重力异常数据进行密度界面约束反演, 得到中国大陆莫霍面深度分布. 本文方法为中国大陆深部探测和区域构造研究提供一定的技术支持.

关键词 优化滤波, 去噪, 异常分离, 中国大陆, 重力异常

#### Abstract:

We presented the preferential filtering method for denoising and anomaly separation of gravity data based on Green's equivalent-layer concept and Wiener filter. Compared to the conventional upward continuation and the preferential continuation, the preferential filtering method has the advantage of no requirement of continuation height. The data test on the synthetic gravity data showed that the preferential filtering method produced better separation of gravity anomaly than both the band-pass filtering and the conventional upward continuation. We then used the preferential filtering method to suppress the noise in the Bouguer gravity anomaly data of Chinese continent and separate the regional gravity anomaly. Then with constraints of the scattered Moho depth information deduced from the deep seismic detection, the regional gravity anomaly was inverted to obtain the Moho depth distribution of the whole Chinese continent. The preferential filtering method provides technique support for the deep detection and tectonic study of Chinese continent.

Keywords Preferential filtering, Denoising, Anomaly separation, Chinese continent, Gravity anomaly

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