

引用本文(Citation):

鞠晓蕾, 沈云中, 张子占. 基于GRACE卫星RL05数据的南极冰盖质量变化分析. 地球物理学报, 2013,56(9): 2918-2927,doi: 10.6038/cjg20130906

JU Xiao-Lei, SHEN Yun-Zhong, ZHANG Zi-Zhan. Antarctic ice mass change analysis based on GRACE RL05 data. Chinese Journal Geophysics, 2013 (9): 2918-2927, doi: 10.6038/cjg20130906

基于GRACE卫星RL05数据的南极冰盖质量变化分析

鞠晓蕾^{1,2}, 沈云中^{1,2}, 张子占^{3*}

1. 同济大学测绘与地理信息学院, 上海 200092;
2. 同济大学空间信息科学及可持续发展应用中心, 上海 200092;
3. 中国科学院测量与地球物理研究所大地测量与地球动力学国家重点实验室, 武汉 430077

Antarctic ice mass change analysis based on GRACE RL05 data

JU Xiao-Lei^{1,2}, SHEN Yun-Zhong^{1,2}, ZHANG Zi-Zhan^{3*}

1. College of Surveying and Geo-Informatics Engineering, Tongji University, Shanghai 200092, China;
2. Center for Spatial Information Science and Sustainable Development, Tongji University, Shanghai 200092, China;
3. State Key Laboratory of Geodesy and Earth's Dynamics, Institute of Geodesy and Geophysics, Chinese Academy of Sciences, Wuhan 430077 China

摘要

参考文献

相关文章

Download: [PDF](#) (6096 KB) [HTML](#) (1 KB) Export: [BibTeX](#) or [EndNote](#) (RIS) [Supporting Info](#)

摘要

CSR(Centre for Space Research)最近发布了RL05数据,其空间分辨率、精度和周期变化特性等都优于RL04数据.本文采用300 km的扇形滤波及P5M11去相关滤波削弱南北条带等重力场模型误差,并采用Paulson2007模型进行冰川均衡模型改正,利用CSR RL05与RL04数据计算分析了南极2002年到2012年的质量变化序列及其变化趋势的空间分布特性,并选取8个特征点进一步分析了其质量变化序列.同时,对CSR、JPL(Jet Propulsion Laboratory)、GFZ (GeoForschungsZentrum)三个机构发布的RL05数据采用相同的滤波方法进行计算,得到整个南极的质量变化分别为 -195.7 ± 20.5 Gt/a、 -203.8 ± 23.1 Gt/a、 -133.2 ± 29.9 Gt/a,对全球海平面变化的影响分别为 0.54 ± 0.06 mm/a、 0.56 ± 0.06 mm/a、 0.37 ± 0.09 mm/a.

关键词 南极质量变化, GRACE卫星, 扇形滤波, 去相关滤波

Abstract:

The spatial resolution, accuracy and periodical characteristics of the latest release RL05 data by CSR (Centre for Space Research) are all superior to RL04 data. In this paper, the north-south stripe errors and other model errors of RL05 and RL04 data are reduced by using Fan filtering of 300 km radius and P5M11 decorrelated filtering, and the Paulson2007 model is used for the GIA (Glacial Isostatic Adjustment) correction. Both RL05 and RL04 data are used to analyze the Antarctic mass change series and the spatial distribution characteristics from 2002 to 2012. Meanwhile the mass change series of 8 characteristic points are further analyzed. Moreover the Antarctic mass changes are also processed and analyzed using the RL05 data of JPL (Jet Propulsion Laboratory) and GFZ (GeoForschungsZentrum). The Antarctic mass change rates derived from the RL05 data of CSR, JPL and GFZ are -195.7 ± 20.5 Gt/a, -203.8 ± 23.1 Gt/a, and -133.2 ± 29.9 Gt/a, the correspondent sea rising rates are 0.54 ± 0.06 mm/a, 0.56 ± 0.06 mm/a, and 0.37 ± 0.09 mm/a, respectively.

Keywords Antarctic mass change, GRACE, Fan filter, Decorrelated filter

Received 2012-11-14;

Fund:

Service

[把本文推荐给朋友](#)

[加入我的书架](#)

[加入引用管理器](#)

[Email Alert](#)

[RSS](#)

作者相关文章

[鞠晓蕾](#)

[沈云中](#)

[张子占](#)