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GRACE估算陆地水储量季节和年际变化

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Seasonal and inter-annual change in land water storage from GRACE

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摘要

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摘要 利用最新公布的GRACE GFZ RL04数据,分析了2003年1月~2007年12月全球27条流域和陆地水储量的季节性和年际变化.结果表明,相近流域季节性变化相位接近.2003年1月~2007年12月陆地水储量季节性变化为 1572.4 km^3 ,其中变化最大流域为亚马逊河,其次分别为鄂毕河、尼罗河和尼日尔河等流域.5年来 GRACE陆地水储量的年际变化为 $-75.4 \pm 40.3 \text{ km}^3/\text{a}$,其中亚马逊河、勒拿河和马更些河等流域的年际变化呈现正增长,而刚果河、密西西比河、恒河、育空河和雅鲁藏布江等流域则相反.GRACE与GLDAS数据均表明2006年后陆地水储量年际变化存在明显增加.

关键词 GRACE, 陆地水储量, GLDAS, 季节性变化, 年际变化

Abstract: Land water storage changes over 27 large river basins worldwide are calculated from updated monthly RL04 GRACE geoid solutions computed at GFZ from January 2003 to December 2007. Neighborhood basins show similar seasonal phase. The results indicate that the seasonal amplitude in land water storage is 1572.4 km^3 from January 2003 to December 2007. The largest annual water volume change is found in the Amazon basin, followed by the Ob, Nile and Niger. Over the 5-year time span, the inter-annual change is about $-75.4 \pm 40.3 \text{ km}^3/\text{a}$, while positive trends shown in the Amazon, Lena and Mckenzie basins, and negative in Congo, Mississippi, Yukon, Ganges and Yarlung Zangbo basins. The inter-annual change in land water storage has been increasing since 2006 from both GRACE and GLDAS.

Keywords GRACE, Land water storage, GLDAS, Seasonal change, Inter-annual change

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