



## **Land waters contribution from GRACE to annual mean sea level**

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We have analysed GRACE geoid data provided by Biancale et al. (2005) at 10-day interval from mid-2002 to mid-2005, to estimate the land water contribution to the annual mean sea level. The GRACE 10-day geoids have been inverted using the generalized least-squares inverse method developed by Ramillien et al. (2004) to provide water mass solutions with a spatial resolution of 400 km. Over continental areas, these solutions represent the total land water storage (underground waters, surface waters, snow and ice sheets mass). However the inverse method also allows the separation between liquid waters, snow and ice. The annual mean sea level observed by Topex/Poseidon satellite altimetry has been corrected for steric (i.e., thermal expansion) effects, as well as for atmospheric water vapour effects. These residuals (observed annual mean sea level corrected for thermal expansion plus atmospheric water vapour) have been further compared to the total land water mass contribution determined by GRACE. Next we analysed separately the contributions of snow, underground waters, surface waters and ice mass variations over Greenland and Antarctica. Finally we also estimated individual contributions of large hydrographic basins and found some cancellation between different basins.