



## **Comparison of ocean mass content change from direct and inversion based approaches**

Bernd Uebbing, Jürgen Kusche, and Roelof Rietbroek

University of Bonn, Institute of Geodesy and Geoinformation, APMG, Bonn, Germany (uebbing@geod.uni-bonn.de)

The GRACE satellite mission provides an indispensable tool for measuring oceanic mass variations. Such time series are essential to separate global mean sea level rise in thermosteric and mass driven contributions, and thus to constrain ocean heat content and (deep) ocean warming when viewed together with altimetry and Argo data. However, published estimates over the GRACE era differ, not only depending on the time window considered. Here, we will look into sources of such differences with direct and inverse approaches.

Deriving ocean mass time series requires several processing steps; choosing a GRACE (and altimetry and Argo) product, data coverage, masks and filters to be applied in either spatial or spectral domain, corrections related to spatial leakage, GIA and geocenter motion need to be accounted for. In this study, we quantify the effects of individual processing choices and assumptions of the direct and inversion based approaches to derive ocean mass content change. Furthermore, we compile the different estimates from existing literature and sources, to highlight the differences.