

Separation of sea level contributions by a joint inversion of GRACE gravimetry and Jason-1 Altimetry

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In the study of sea level rise, one of the most challenging tasks is the separation of the individual contributors. The melting of major ice sheets and land-glaciers cause changes in Ocean mass and the gravitational field of the Earth, resulting in non-uniform ocean responses. Furthermore, changes in salinity and temperature, caused by changes in freshwater inflow and global warming, will cause volumetric changes of the Ocean. On top of that, the response of the viscous Earth to past glacial ice loads, will need to be considered, when realistic estimates of Sea level changes are required. Here, we try to quantify the major contributors to sea level rise (ice sheets, glaciers, hydrology, steric changes, glacial isostatic adjustment), on the basis of a joint inversion of Jason1 altimetry and GRACE gravimetry. We apply a strategy, in which unknown scaling factors are linked to predefined patterns of sea level rise contributors. In this poster, we show a selection of results obtained from the least squares adjustment.