



On ocean density variations as observed by altimetry and GRACE

S.-E. Brunnabend (1), C. Boening (1), R. Rietbroek (2), C. Dahle (2), J. Kusche (2), F. Flechter (2), R. Savchenko (3), W. Bosch (3), R. Timmermann (1), and J. Schroeter (1)

(1) Alfred Wegener Institute, Bremerhaven, Germany (jens.schroeter@awi.de, +49-(0)471-48311797), (2)
Geoforschungszentrum Potsdam, Germany, (3) Deutsches Geodaetisches Forschungsinstitut

Ocean density (i.e. steric) variations are estimated by combining volume change observed by satellite altimetry and mass change (i.e. bottom pressure) derived from the satellite gravity mission GRACE. Ocean surface topography is calculated by analyzing multi mission altimetry via a cross over adjustment. In order to consider the lowest order terms of geoid change we determine ocean bottom pressure via an inverse solution based on GRACE gravity, modelled ocean bottom pressure and earth deformation as observed by GPS (see related presentations).

Ocean density change is then calculated from the difference of observed volume change and the volume change associated with mass change for the period of one year. Consistent with the low resolution of our bottom pressure anomalies only the largest space and longest time scales are analyzed. The results are used for comparison with a global ocean general circulation model.