

Validation of the ocean mass variations from GRACE by Tsunami gauges

Hiroshi Munekane[1]

[1] GSI

We validated the GRACE-derived ocean mass variations from the period 2003.1-2005.8 with those measured by the Tsunami gauges operated under the Deep-ocean Assessment and Reporting of Tsunamis (DART) project by NOAA. Prior to the comparison, the degree-one Stokes' coefficients are estimated to minimize the GRACE-derived and GPS-measured loading deformations in the least-squares sense. After making corrections for the degree-one Stokes' coefficients, we compared the ocean mass variations at four DART sites which are far enough from the mainland to avoid the effect of land water-mass in the GRACE-measured mass variations, and also to avoid the effect of the strong boundary current. We find that the ocean mass variations from GRACE correlate significantly with those measured by Tsunami gauges. The correlation coefficient between them is 0.39 and the admittance between them is 0.79. This result confirms the validity of the GRACE-derived ocean mass variations, and also shows the possibility of using Tsunami gauges as a mean to calibrate the GRACE-derived mass variations if one selects sites appropriately.