



Change in Ocean Heat Content

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Ocean temperature and heat content have been derived from profilers and buoys for decades and the climatology over global ocean is available. However, even with the deployment of Argo global array of free-drifting profiling floats, the spatial and temporal resolution and coverage are not sufficient to understand many ocean processes, and observations from the vantage of space are needed. The sea level change measured by space-borne radar altimeter is the sum of the steric change and bottom pressure (mass change). Ocean heat content could be derived from the steric changes. By removing the mass change measured by Gravity Recovery and Climate Experiment (GRACE) from the sea levels measured by radar altimeter, we should be able to retrieve the steric change and heat content. In practice, unknown bias and trend exist between the heat content derived from JASON-GRACE data and from in situ measurement. A statistical model has been built to derive heat content from the spacebased data. Application of the time-varying ocean heat content with ocean surface heat flux to derive meridional heat transport in the Atlantic has been attempted.