



## **The Hadley Centre global subsurface ocean analysis (HadGOA)**

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We report on preliminary results of the HadGOA project, which aims to develop ocean subsurface analyses and climatology products, using the quality-controlled temperature and salinity observations from ENACT (Enhanced Ocean Data Assimilation and Climate Prediction). The derived products, which will be completely independent of general circulation models, are designed for model validation, evaluation of historical ocean variability and climate monitoring. On completion of the project we aim to have data updates in near real-time to enable the monitoring of subsurface climate indices, such as the 20C isotherm depth in the Tropical Pacific Ocean.

One of the primary goals of HadGOA is evaluation of historical ocean heat content (OHC) and the associated uncertainty. We have adopted the novel approach of investigating OHC in an isothermal framework, in an attempt to remove some of the influence of changes in ocean dynamics on OHC estimates. Using this framework we present changes in isotherm depth and mean temperature for the global ocean. Time series of isotherm depth anomalies show a net deepening of a number of isotherms in all ocean basins over the last 40 years. The signal is largest in the North Atlantic. Changes in OHC are also examined, using an expression for the minimum change in OHC that has occurred over a given time interval based on changes in volume and mean temperature of the region bounded by an isotherm.