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Coordination and dissemination of XBT bias information;

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Abstract::The ocean is a major heat sink for the global climate system. As such, measuring global ocean heat content changes over time is imperative to understanding the earth's heat budget. From the introduction of the expendable bathythermograph (XBT) in 1966 through the establishment of the full array of Argo profiling floats in the mid-2000s, the XBT has been the most numerous source of subsurface ocean temperature data from which ocean heat content can be calculated. As such, it is a necessary data source for historic calculations of ocean heat content, and is still a significant component of calculations for recent years. Recently, a time-varying, depth-varying warm bias in XBT temperature measurements has been documented, along with the effects of the bias on ocean heat calculations. A number of recently published works have proposed corrections to the biased XBT data, both by temperature correction and by correction of the depth of measurements. Research is ongoing and there is, as of yet, no consensus on which set of corrections is the most effective in recreating the true depth and/or temperatures measured by the XBT. In order to bring some clarity to research on XBT bias, the U.S. National Oceanographic Data Center (NODC) is proposing to make available datasets of XBT temperature profiles corrected as per published correction methods. Funds are requested to hire a post-doctoral fellow to construct the datasets in conjunction with the authors of the published corrections to preclude mistakes in application and made publicly available for researchers to download to make comparisons or to perform ocean heat content or other calculations. Further, the post-doc will continue to update and maintain a webpage which describes each published algorithm, provides tables of corrections, provides all publications relevant to research into the XBT, and where possible will provide the data used in the publications, most often where side-by-side texts of XBTs with other instrumentation (usually conductivity-temperature-depth (CTD) instruments). These test data can assist researchers in comparing correction methods and in better understanding the problems with XBTs.