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Advances in the global ocean observing system

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Central to describing, understanding, and predicting the Earth's climate system is observation. The NOAA Climate Observation Program supports oceanic and marine meteorology projects designed to contribute to the implementation of a global climate observing system that is needed to satisfy the long-term requirements of operational forecast centers, international research programs, and the major scientific assessments, and to effectively plan for and manage responses to climate change. NOAA has worked with national and international partners to begin building a sustained global ocean system for climate, focusing first on the Pacific Ocean, expanding to the Atlantic, and promoting future research in the Indian Ocean. Sponsored projects are primarily U.S. contributions to global networks coordinated through international science and implementation panels, and managed in cooperation with the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology. The Climate Observation Program seeks maximum efficiency by promoting the utilization of platform and data infrastructure for several objectives, including understanding the Earth's climate system, and the global carbon and water cycles. Although the focus of the Climate Observation Program is to support projects that deploy autonomous *in situ* platforms, the underlying objective is to foster a "system" approach to effective international organization of complementary *in situ*, satellite, data, and modeling components of climate observation. This poster provides a view of advances made in the last two decades in the global ocean observing system and the predicted evolution of the system in the near future to develop a more robust understanding of sea level, carbon, heat, salinity, and air-sea exchange parameters. With the initial system design nearly 40% complete, the Climate Observation Program's goal includes enhancing each of the eleven complementary *in situ*, space based, data and assimilation subsystems including addition of new tide gauges, Argo profilers, drifting buoys, moored buoys, expendable bathythermographs, ocean reference stations, and ocean carbon measurements.