

Global Tropical Moored Buoy Array

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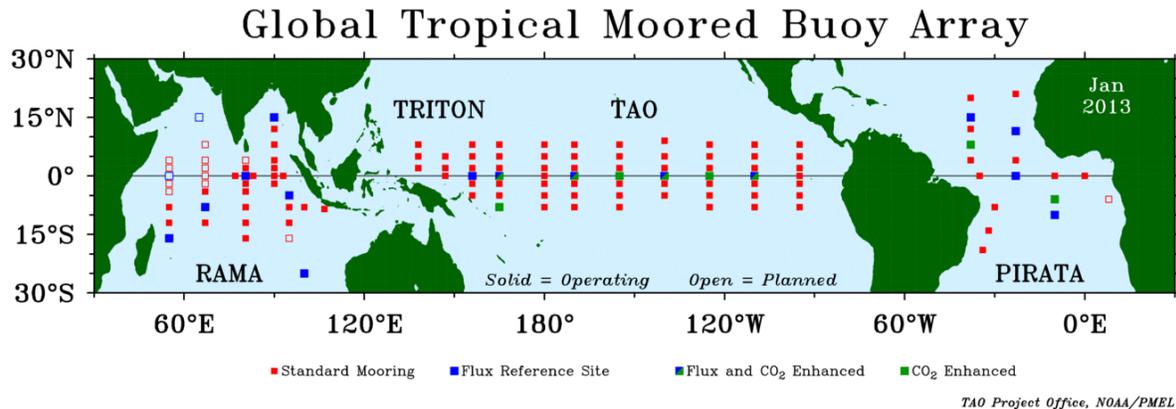
Project Summary

The Global Tropical Moored Buoy Array program (GT MBA) provides high quality moored time series and related data throughout the global tropics for improved description, understanding and prediction of seasonal to decadal time scale climate variability. The tropics are a key region of the Earth's climate system affecting the entire globe. Solar irradiance is maximum in the tropics, from which heat is exported poleward to moderate climate at higher latitudes. Sea surface temperatures are the highest in the world ocean in the tropics, engendering vigorous ocean-atmosphere interactions that give rise to phenomena such as the El Niño/Southern Oscillation (ENSO), the seasonal monsoons, the Indian Ocean Dipole, and tropical Atlantic climate variability. These phenomena affect patterns of weather variability most immediately in nations within the tropical belt, but their impacts are also felt worldwide through oceanic and atmospheric teleconnections to higher latitudes. Heat waves, droughts, heavy rains, tropical storms and other extreme weather events that result from tropical ocean-atmosphere interactions have significant socio-economic impacts, as well as major impacts on terrestrial and marine ecosystems and fisheries. These impacts warrant sustained ocean observations as the foundation for development and improvement of climate analysis and forecasting tools that can be used for advance warnings of impending climate hazards.

The GT MBA supports NOAA's strategic plan goal to "Understand Climate Variability and Change to Enhance Society's Ability to Plan and Respond." It also provides key observational underpinning for the international Climate Variability and Predictability (CLIVAR) program's research efforts on climate variability and change. Management of the tropical moored buoy array program is consistent with the "Ten Climate Monitoring Principles". Program oversight at the international level is through CLIVAR basin panels and the Tropical Moored Buoy Implementation Panel (TIP), which is sponsored by CLIVAR and the Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM). A web site containing comprehensive information on the program can be found at <http://www.pmel.noaa.gov/tao/global/global.html>.

The Office of Climate Observations and Monitoring (COM) provides support for four major elements of the Global Tropical Moored Buoy Array program. These are the Prediction and Research Moored Array in the Tropical Atlantic (PIRATA), the Research moored Array for African-Asian-Australian Monsoon Analysis and prediction (RAMA), Flux Reference Stations, and Tropical Salinity. The Tropical Atmosphere Ocean (TAO) array in the Pacific, also part of the GT MBA program, is managed by NOAA's National Data Buoy Center (NDBC). PMEL continues to provide instrumentation and mooring hardware for TAO under contract to NDBC, which is funded by the National Weather Service. The Japan Agency for Marine-Earth Science and Technology ([JAMSTEC](http://www.jamstec.go.jp)) operates the Triangle Trans-Ocean Buoy Network (TRITON) of

buoys in the western Pacific, which is an integral component of the combined TAO/TRITON array. GMTBA data are available in near-real-time to operational centers worldwide on the Global Telecommunications System (GTS) and publically available on PMEL's Display and Delivery pages, <http://www.pmel.noaa.gov/tao/disdeld/disdeld.html> . The program is a NOAA contribution to the Global Ocean Observing System (GOOS), the Global Climate Observing System (GCOS), and the Global Earth Observing System of Systems (GEOSS).



The present status of the GTMBA is shown on the map above and the table below. Some sites are occupied by both a surface and subsurface mooring. Open symbols indicate sites that are planned but not yet operating. NOAA provides the majority of moorings. Non-U.S. mooring contributions are from Japan (TAO/TRITON and RAMA), France and Brazil (PIRATA), India and China (RAMA). Percent Complete is based on the number of moorings. Ship time is provided by the US, Japan, France, Brazil, Indonesia, India, South Africa, and Australia.

	TAO/TRITON	PIRATA	RAMA	GTMBA
Sites Planned	67	18	42	127
Sites Implemented	67	17	28	112
Moorings Planned	72	19	46	137
NOAA Moorings Implemented	59	17	22	98
Foreign Moorings Implemented	13	1	9	23
Total Moorings Implemented	72	18	31	121
Percent Complete	100%	95%	67%	88%