MEETING

Tropical Pacific Observing for the Next Decade

Tropical Pacific Observing System (TPOS) 2020 Workshop
La Jolla, California, 27–30 January 2014

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More than 60 scientists and program officials from 13 countries met at the Scripps Institution of Oceanography for the Tropical Pacific Observing System (TPOS) 2020 Workshop. The workshop, although motivated in part by the dramatic decline of NOAA's Tropical Atmosphere Ocean (TAO) buoy reporting from mid-2012 to early 2014 (see http://www.bloomberg.com/news/2014-03-07/aging-el-nino-buoys-getting-fixed-as-weather-forecasts-at-risk.html), evaluated the needs for tropical Pacific observing and initiated efforts to develop a more resilient and integrative observing system for the future.

Sustained tropical Pacific Ocean observations initiated during the Tropical Ocean Global Atmosphere Project (TOGA), including the TAO Triangle Trans-Ocean Buoy Network (TRITON) mooring array, have catalyzed remarkable advances in research, monitoring and prediction, and development of new weather, ocean, and climate services. Sustained tropical Pacific Ocean observations are now used in a broader range of studies of global and regional environmental change, including extreme events, carbon budgets and acidification, and biodiversity and food security. In addition, the observing system has evolved since TOGA, with routine sea surface temperature, ocean surface topography, and ocean surface wind vector observations from satellites and in situ Argo measurements of salinity and temperature throughout the upper 2000 meters. The role of emerging technologies, such as gliders, wave gliders, and new sensors, should be considered in the design of the TPOS 2020 observing system.

Workshop participants recommended building on the success of the current tropical Pacific observing system, which had evolved over the past 30 years, and creating the TPOS 2020 Project to achieve a more systematic and sustainable TPOS by 2020.

TPOS 2020 would address some ongoing and new objectives: monitor, observe, and define the state of El Niño–Southern Oscillation (ENSO) and advance scientific understanding of its causes; advance and refine the degree to which the tropical Pacific (physical and biogeochemical) and its climate impacts are predictable; determine the most efficient and effective method to support observation and prediction systems for ocean and weather and climate services of high societal and economic utility, including underpinning research; and determine how interannual to multidecadal variability and human activities impact the relation between marine biogeochemistry and biology to carbon budgets, food security, and biodiversity.

The TPOS 2020 Project would promote increased international participation and establish a governance structure, including a steering committee and a resource board to be established by the workshop sponsors and the Ocean Observations Panel for Climate (see http://www.ioc-goos.org/tpos2020).

Observational gaps and new requirements were identified, e.g., air-sea interface observations in off-equatorial regimes and eastern and western boundaries (to better monitor low-latitude western boundary currents). Continued foci include the evaluation and improvement of the broad-scale observing and the integration of biogeochemical, biological, and physical observations.

The TPOS 2020 Workshop laid the foundation for a new era of ocean observing in the tropical Pacific. Planning is under way to begin addressing workshop recommendations (a workshop report is available at http://www.ioc-goos.org/tpos2020).

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