

Climate Prediction Center Analyses and Monitoring in Support of the Ocean Observing System for Climate

Arun Kumar, Yan Xue, Pingping Xie
Climate Prediction Center
College Park, MD

Project Summary

Ocean plays a crucial role in controlling the global climate variability influencing various facets of society. Ocean's control on atmosphere extends from weather to climate on seasonal, decadal and centennial time-scale. Oceans are also an important source of societal well-being, e.g., food security, transportation, prediction of droughts and floods etc. Due to their large thermal inertia, and a spatial coverage of ~70% of the globe, ocean monitoring is also key to understanding, and anticipating the potential influence of human induced change in the Earth System, and is the place where such influences would be first detected with confidence.

Given the importance of ocean climate variability, the fundamental outcome of this project - *disseminating a synthesis of the state of the global oceans* – is to deliver information and data sets to the user community with goals to (a) provide a scientific basis to make informed decisions to either mitigate or to take advantage of the consequences resulting from the ocean climate variability [e.g., El Niño-Southern Oscillation (ENSO)], (b) enable science and improve understanding of ocean climate variability and its causes, and (c) keep a pulse of slowly evolving changes in the ocean. The importance of this project is underpinned by the fact that raw ocean observations do not provide a synthesis view of the state of the ocean, and it is the process of converting individual observations into a form that could be easily understood is required for an end-to-end ocean climate information system.

This project is an ongoing partnership between the Climate Observations Division (COD) of the Climate Program Office (CPO) and the Climate Prediction Center (CPC) with a focus on the development and dissemination of *real-time ocean monitoring products* to the user community. The real-time ocean products developed by CPC rely critically on the ocean climate observing system supported and maintained by the COD, and provide a *synthesis of the state of the global oceans, together with real-time monitoring of ocean climate variability on different time-scales*. The outcomes of the project are crucial for an end-to-end ocean climate delivery information system that connects gathering of the ocean observations (supported by the COD) to the dissemination of readily usable ocean products to global user community in real-time. Users of this effort, among others, include (a) research community with interest in ocean climate variability and its influence on climate; (b) resource managers with interest in mitigating and anticipating atmospheric influence of oceanic variability (e.g., ENSO); (c) validation of in situ data sets, e.g., ocean reference sites against ocean analysis based products.