MR06-01 Cruise Summary

1. Introduction

The purpose of this cruise is to observe the ocean and atmosphere in the western tropical Pacific Ocean for better understanding of climate variability involving the ENSO (El Nino/Southern Oscillation) phenomena. Particularly, warm water pool (WWP) in the western tropical Pacific is characterized by the highest sea surface temperature in the world, and plays a major role in driving global atmospheric circulation. Zonal migration of the WWP is associated with El Nino and La Nina which causes drastic climate changes in the world such as 1997-98 El Nino and 1999 La Nina. However, this atmospheric and oceanic system is so complicated that we still do not have enough knowledge about it.

In order to understand the mechanism of the atmospheric and oceanic system, its high quality data for long period is needed. Considering this background, we developed the TRITON (TRIangle Trans-Ocean buoy Network) buoys and have deployed them in the western equatorial Pacific and Indian Ocean since 1998 cooperating with USA, Indonesia, and India. The major mission of this cruise is to maintain the network of TRITON buoys along 147E and 156E lines in the western equatorial Pacific. Additionally, subsurface Acoustic Doppler Current Profiler (ADCP) buoys at the equator are maintained to obtain time-series data of equatorial ocean current.

We conducted ocean observations using CTD/XCTDs, Caroucel water sampler, shipboard ADCP, Argo profiling floats in the western tropical Pacific not only for the above purpose but also for research of exchange of greenhouse gasses between ocean and atmosphere. Atmospheric observations were also conducted using meteorological observational instruments of the R/V Mirai (ceilometer, lider system, sky radiometer, and so on) at the same time.

2. Summary

1. Cruise Code: MR06-01
2. Project Name: Tropical Ocean Climate Study
3. Ship: R/V Mirai
4. Chief Scientist: Yuji Kashino (IORGC, JAMSTEC)
5. Period: February 5, 2006 - March 18, 2006 (42 days)
6. Ports call: Sekinehama (Feb.5) - Hachinohe (Feb.6) - Sekinehama (Mar.18)

3. Observations

1. TRITON mooring deployment and recovery : 9 sites
   (8N156E, 5N156E, 2N156E, 0N156E, 2S156E, 5S156E, 0N147E, 5N147E and 2N147E)
2. ADCP mooring deployment and recovery :
   Deployment: 2 sites (0N156E and 0N147E)
   Recovery: 3 sites (0N156E, 0N147E and 2.5S142E)
3. CTD and water sampling : 9 casts at 10 sites
   Conducted at TRITON buoy and Argo float sites.
4. Argo profiling float launching : 3 floats

Launched at 8N156E, 5N147E and 18N150E.

5. XCTD : 30 casts
   Along 156E and 147E lines
6. Continuous observations :
   Surface meteorological observations (aerosol, radiation, etc.)
   Current observations by shipboard ADCP measurements:
   Surface temperature and salinity measurements by intake method
   Geophysical measurements