

MR07-03 Cruise Summary

1. Introduction

The warm water pool located at the western equatorial Pacific and eastern Indian Ocean has the highest sea surface temperature in the ocean all over the world. Therefore interaction between the ocean and atmosphere in that region becomes important for climate change such as ENSO (El Nino/Southern Oscillation) in the Pacific Ocean and Dipole mode in the Indian Ocean. This cruise is conducted for understanding the process of warm water convergence and divergence, and interaction processes in that region. For that purpose, we carried out deployment and recovery of the TRITON (TRIangle Trans Ocean buoy Network) buoys as the main mission. The TRITON buoys have advantage of analysis for long-term variability in the warm water pool. We also carried out other observations, such as ADCP moorings, CTD measurements and meteorological observation, for understanding the Ocean and atmospheric conditions.

We also carried out emergency recovery of drifting TRITON buoys moored at EQ 156E and 2N 130E in this cruise.

2. Overview

2.1 Ship

R/V MIRAI
Captain Masaharu Akamine

2.2 Cruise code

MR07-03

2.3 Project name

Tropical Ocean Climate Study

2.4 Undertaking institution

Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
2-15, Natsushima-cho, Yokosuka 237-0061, Japan

2.5 Chief Scientist

Iwao Ueki (JAMSTEC)

2.6 Period

June 1st, 2004 (Sekinehama) – July 14, 2007 (Sekinehama)

2.7 Research Participants

Total 22 scientists and technical staffs participated from 6 different institutions and companies.

3. Observation summary

TRITON buoy deployment :	9 sites.
TRITON buoy recovery :	10 sites
ADCP buoy deployment :	2 sites
ADCP buoy recovery :	2 sites
ADV-ADCP buoy deployment :	1 site
ADV-ADCP buoy recovery :	1 site
CTD including water sampling :	18 casts
XCTD :	19 launches
Surface meteorology :	continuous
Shipboard ADCP measurement :	continuous
Geophysics measurement :	continuous
Surface temperature and salinity measurements by intake method :	continuous
pCO ₂ measurements :	continuous

*** Other specially designed observations have been carried out successfully.

Observed oceanic and atmospheric conditions

Oceanic and atmospheric conditions in the tropical Pacific region showed developing stage of La Nina. The TAO (Tropical Atmosphere/Ocean)/TRITON array data showed slightly warmer sea surface temperature in the warm pool region. According to this high sea surface temperature distribution easterly winds dominate eastern end of the warm pool in the Pacific Ocean during June. Whereas, there was westerly winds domination at the same region during July. An OLR (Outgoing Long-wave Radiation) analysis by NOAA(National Oceanic and Atmospheric Administration)/CPC(Climatic Prediction Center) suggests that this winds shift is caused by eastward propagating MJO (Madden-Julian Oscillation).