

## Cruise Summary

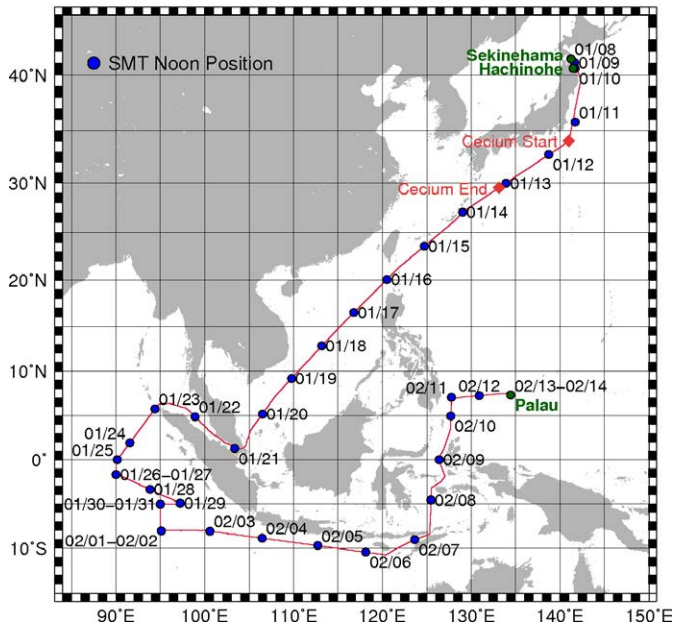
### 1. Cruise Information

- 1) Cruise ID MR14-01
- 2) Name of vessel R/V Mirai
- 3) Title of the cruise Tropical Ocean Climate Study/Operation of TRITON Buoy
- 4) Chief scientist Iwao Ueki (RIGC/JAMSTEC)
- 5) Representative of the Science Party  
Kentarō Ando (RIGC/JAMSTEC)  
Yasuhisa Ishihara (MARITEC/JAMSTEC)
- 6) Research Themes of Sub-missions and Principal Investigators (PIs)
  - (1) Study on ocean general circulation and heat/freshwater transport and their variability in the western North Pacific Ocean using Argo floats  
(PI: Toshio Suga, RIGC, JAMSTEC)
  - (2) Temporal and spatial distribution of optical characteristics of clouds and aerosols on oceans (PI: Nobuo Sugimoto, National Institute for Environmental Studies)
  - (3) Tropospheric aerosol and gas observations (PI: Yugo Kanaya, RIGC/JAMSTEC)
  - (4) Variability of oceanic carbon cycle on IOD events (PI: Akihiko Murata, RIGC/JAMSTEC)
  - (5) Observations of CO<sub>2</sub> column averaged volume mixing ratios over the Indian Ocean and the tropical Pacific Ocean using a ship-borne compact system for a simple estimation of the carbon flux with GOSAT data  
(PI: Kei, Shiomi, JAXA EORC)
  - (6) Optical characteristics of aerosols on oceans observed by shipboard skyradiometer (PI: Kazuma Aoki, Toyama University)
  - (7) Standardization of geophysical data and application to ocean floor dynamics (PI: Takeshi Matsumoto, Ryukyu University)
- 7) Cruise period 09 January 2014 – 13 February 2014
- 8) Ports of call  
Sekinehama, Japan (Departure: 09th January 2014)  
Hachinohe, Japan (Arrival: 10th January 2014)  
Hachinohe, Japan (Departure: 10th January 2014)  
Koror, Republic of Palau (Arrival: 13th February 2014)

9) Research area Tropical Eastern Indian Ocean

10) Research map

MR14-01 Cruise Track



## 2. Overview of the Observation

1) Overview

The warm water pool located at the eastern Indian Ocean and the western equatorial Pacific 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 variability such as Dipole mode in the Indian Ocean and ENSO (El Niño/Southern Oscillation) in the Pacific Ocean. This cruise is conducted for understanding the process of warm water convergence and divergence, and interaction processes in the eastern tropical Indian Ocean. 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 tried to conduct emergency recovery of an ADCP mooring in the Philippine Sea (7°N 127° 46' E) with a towed sweep-line. Although a part of mooring was tangled with the towed sweep-line, we could not recover the mooring because of high tension on the line. Note that there is no observation except the activities for the emergency recovery of the ADCP mooring within the Republic of the Philippines' EEZ.

Oceanic and atmospheric conditions in the tropical Indian and Pacific Ocean showed almost same as climatological mean state. All of indices associated with ENSO and IOD indicate a normal condition. MJO

(Madden-Julian Oscillation) index also indicates there is no MJO signal in Indian Ocean.

Major Climate forecasts, such as JAMSTEC, JMA, NOAA and so on, says El Niño will start evolving in late boreal spring and reach its height in the latter half of 2014.

## 2) Observation summary

m-TRITON buoy deployment:	3 sites.
m-TRITON buoy recovery:	4 sites
ADCP buoy deployment:	1 sites
ADCP buoy recovery:	2 sites
CTD including water sampling:	8 casts
UnderwayCTD:	18 casts
XCTD:	3 launches
Surface meteorology:	continuous
Shipboard ADCP measurement:	continuous
Geophysics measurement:	continuous
Surface temperature and salinity measurements by intake method	continuous
pCO <sub>2</sub> measurements	continuous

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