# Cruise Summary of MR14-06 Leg3 Mirai cruise

**1) Ship**

R/V Mirai

**2) Cruise ID**

MR14-06-leg-3

**3) Main Title of the cruise**

**Main title:** Tropical Ocean Climate Study in the Indian and Pacific ocean/
Study of Structure and formation process of the Ontong Java Plateau/
Operation of TRITON Buoy

**4) Chief Scientist**

Iwao Ueki
Deputy Group Leader
Ocean-Atmosphere Interaction Research Group
Research and Development Center for Global Change ,
Japan Agency for Marine-Earth Science and Technology (JAMSTEC)

**5) Representatives of science party and thema**

5- 1) Kentaro Ando (JAMSTEC):
Tropical Ocean Climate Study

5- 2) Yasuhisa Ishihara (JAMSTEC):
Operation of TRITON buoys

5- 3) Akihiko Murata (JAMSTEC):
Temporal and spatial variations of marine carbon cycle related to the Indian Dipole

5- 4) Masaki Katsumata (JAMSTEC):
Applied research of MIRAI brand-new shipboard weather radar: Validation and utilization of dual-polarization information for global deployment

5- 5) Masaki Katsumata (JAMSTEC):
Global distribution of drop size distribution of precipitating particles over pure-oceanic background

5- 6) Kazuma Aoki (Univ. of Toyama):
Aerosol optical characteristics measured by Ship-borne sky radiometer

5- 7) Takeshi Matsumoto (Univ. of the Ryukyus):
Standardization of marine geophysical data and its application to geodynamics studies

5- 8) Yugo Kanaya (JAMSTEC)
Advanced continuous measurements of aerosols in the marine atmosphere: Elucidation of the roles in the Earth system

5- 9) Shuji Kawakami (JAXA)
Shipboard $CO_2$ observations over the tropical Indo-Pacific Ocean for a simple estimation of the carbon flux between the ocean and the atmosphere from GOSAT data

**6) Period**

January 22nd, 2015 - February 25th, 2015

**7) Ports of call**

Koror (Palau), January 22nd, 2015

Hachinohe (Japan), February 24th, 2015

Sekinehama (Japan), February 25th, 2015

**8) Observation area**

Eastern Tropical Indian Ocean

**9) Observation summary**

| | |
|---|---|
| m-TRITON mooring: | 3 moorings were deployed |
| | 3 moorings recovered |
| Sub-surface ADCP moorings: | 1 mooring was deployed and recovered |
| CTD with water sampling: | 9 casts |
| XCTD: | 1 cast |
| UCTD: | 22 casts |
| Current measurements by shipboard ADCP: | continuous |
| General Surface meteorology: | continuous |
| Lidar, rain sampling, turbulences, aerosol etc.: | continuous |
| Geophysical bottom survey: | continuous |

Ocean-Atmosphere interaction in the warm water pool located at the eastern Indian Ocean is crucial for climate variability such as the Indian Ocean Dipole event (IOD). To understand and monitor of the upper ocean condition, we conduct mini-TRIangle Trans Ocean buoy Network (m-TRITON) moorings in the Indian Ocean as part of Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction (RAMA). For that purpose, we carried out deployment and recovery of the m-TRITON moorings as the main mission. We also carried out other observations, such as ADCP moorings, CTD measurements with water sampling and meteorological observation, for understanding the Ocean and atmospheric conditions. In addition, we carried out several applied missions, which include $CO_2$, aerosols, and precipitation measurements

Oceanic and atmospheric conditions in the eastern tropical Indian 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.

**10) Cruise track**

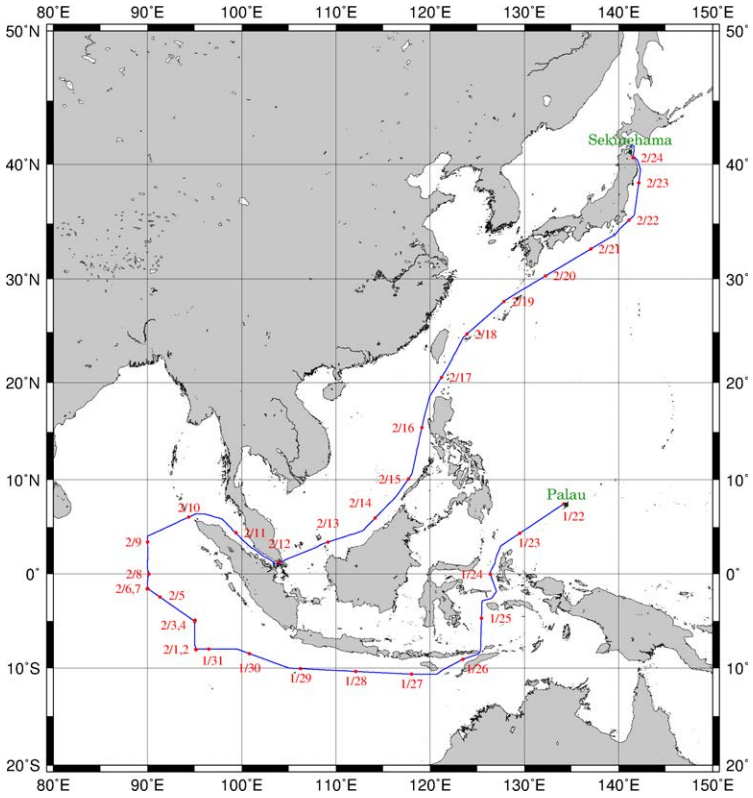


Fig 1. MR14-06 Leg 2 cruise track and noon positions from Palau to Sekinehama.