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# MR04-01 Cruise Summary

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## 1. Cruise Title

The Study of the Air-Sea Interaction in the Tropics  
Cruise code : MR04-01

## 2. Objectives and Overview

Air-sea interaction is a key factor to understand the atmospheric and oceanic phenomena over the tropical western Pacific Ocean where the warmest sea surface temperatures exist. In the current cruise, precipitation mechanism caused by the cloud clusters that are accompanied with MJO (Madden-Julian Oscillation) was the main target to be studied.

For the purpose above mentioned, stationary observation was carried out at (2N, 138.5E) from March 3 through 14, 2004 (refere to IOP; Intensive Observation Period). During the IOP, C-band Doppler weather radar, atmospheric sounding by radiosonde, surface meteorological measurement, CTD casting down to 500m, and ADCP current measurement were carried out as main missions. In addition, turbulent flux measurement, solar radiation measurement, aerosol observation by LIDAR, greenhouse gases measurement, and other many observations were intensively conducted.

According to the analysis done by National Oceanic and Atmospheric Administration / Climate Diagnostic Center (<http://www.cdc.noaa.gov>), the active phase of MJO reached over the observational area in the later period of IOP. Indeed, much convective systems with over 100 km scale were observed.

## 3. Period

Feb. 22, 2004 departed Fremantle, Australia

Mar. 22, 2004 arrived at Yokohama, Japan

\* Stationary observation at (2N, 138.5E) was conducted from Mar. 3 through 14

## 4. Chief Scientist

Kunio Yoneyama / JAMSTEC  
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## 5. Themes and Participants List

- Study of the air-sea interaction in the tropical western Pacific region.  
K. Yoneyama, M. Katsumata, K. Kobayashi, K. Mitoma (JAMSTEC)
- A study of convective systems and air-sea interaction in the western equatorial Pacific.  
H. Kubota (FORSGC)
- Study on the development processes of convective mixing layer and cumulus clouds over the tropical ocean.

T. Shinoda (HyARC, Nagoya Univ.)

- Studies of surface flux, greenhouse gas, solar radiation, and ocean color in the tropical western Pacific Ocean.  
M.Hayashi, T.Mori (Kobe Univ.), A.Sasaki, T.Fujii, T. Arita (Kobe U. of Mercantile Marine), S. Takahashi, N. Tahara, K. Matsuoka (Okayama Univ.), K. Kuroda (Osaka Pref. Univ.), A. Nishimori (Kinki Univ.)
- LIDAR observation of aerosols and clouds over the Pacific Ocean.  
Nobody on board (NIES)
- Observational study on the lower troposphere by SG-LTR  
H. Hashiguchi (RASC, Kyoto Univ.)
- Measurement of oceanic near-surface temperature profiles  
Y. Kawai (Tohoku Univ.), S. Tamba (Hiroasaki Univ.)
- Study of optical properties of atmospheric aerosol over ocean by sky radiometer  
Nobody was onboard (Tottori Kankyo Univ.)
- Study on particulate carbonaceous substances and ozone in the remote marine atmosphere  
Nobody was onboard (ORI, Univ. of Tokyo)
- Study on nonmethane hydrocarbon  
H. Nara (Tokyo Inst. of Tech.)
- Observation for validation of ADEOS-II/AMSR  
Nobody on board (JAXA)
- Study on primary production using satellite data.  
Nobody was onboard (JAMSTEC)
- Continuous geological survey  
Nobody was onboard (JAMSTEC)
- Technical Staff  
S. Sueyoshi, K. Maeno, N. Nagahama (GODI),  
H. Uno, K. Katayama, M. Moro, T. Miyashita, H. Kido, M. Kondo, T. Watanabe (MWJ)