MR02-K06 Leg1 Cruise Summary

1. Cruise Title

The Study of the Air-Sea Interaction in the Tropics Cruise code : MR02-K06 (Leg-1)

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) for the period from November 22 through December 12, 2002. During the intensive observation period, 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 passed over the observational area in late November. However, we had no significant precipitation cloud systems during this period. It was apparent that this observational period corresponded to convectively suppressed period. Westerly wind dominated in the lower troposphere during the entire cruise period. Sea surface temperature decreased. Since this year corresponds to El Nino year, it is possible that the large-scale environment may result in this inactivity of clouds.

3. Period

Nov. 13, 2002 departed Sekinehama, Japan
Nov. 14, 2002 called at Hachinohe, Japan
Dec. 16, 2002 arrived at Guam, U.S.A.

* Stationary observation at (2N, 138.5E) was conducted from Nov. 22 through Dec. 12.

4. Chief Scientist

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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 (JAMSTEC)
- A study of convective systems and air-sea interaction in the western equatorial Pacific.
  T. Chuda (FORSGC), S. Takahashi (Okayama Univ.)

- Air-sea eddy flux measurements of energy and greenhouse gas over western tropical Pacific.
  E. Yamashita, T. Machida (Okayama Univ. of Sci.),
  T. Takemi, J. Inoue, M. Tanaka, T.Shibuya (Osaka Univ.),
  M.Hayashi (Maritime Univ. of Kobe),
  J.Takami, D. Taniguchi, K. Harada (Okayama Univ.)
- Observational research on the solar radiation and air-sea interaction in the western equatorial Pacific Ocean.
  M. Nakagawa, J. Miyake (Maritime Univ. of Kobe),
  T. Shiozaki (Osaka Pref. Univ.),
  R. Sanjiki (Kinki Univ.)
- LIDAR observation of aerosols and clouds over the Pacific Ocean.
  I. Matsui (NIES)
- Study on the development processes of convective mixing layer and cumulus clouds over the tropical ocean.
  T. Shinoda, C. Takahashi (Nagoya Univ.)
- Observation for validation of ADEOS-II/AMSR
  S. Takahashi (Okayama Univ.)
- A Study of carbon flux and primary production in sea surface layer.
  K. Goto (KEEC)
- ARGO float observation
  Nobody was onboard (FORSGC)
- Study of optical properties of atmospheric aerosol over ocean by sky radiometer.
  Nobody was onboard (Hokkaido University)
- Study on primary production using satellite data.
  Nobody was onboard (NASDA)
- Continuous geological survey
  Nobody was onboard (JAMSTEC)
- Technical Staff
  M. Hanyu, S. Sueyoshi, N. Nagahama (GODI),
  K. Sagishima, S. Ozawa, A. Inoue, N. Takahashi, T. Sugiyama, M. Moro, N. Umedu, Y. Hisatsune (MWJ)