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# MR02–K06 Leg 3–4 Cruise Summary

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## Cruise title

Primary productivity in the equatorial Pacific (Biogeochemical and optical research)  
MR02–K06 (Leg 3–4)

## Objectives and Overview

The equatorial Pacific has distinguished into distinct two regions: the western warm pool or the oligotrophic waters and the equatorial upwelling or the high nutrient low chlorophyll waters. The western warm pool, where nitrate is depleted and formed deep chlorophyll maximum in the vicinity of nitracline. The equatorial upwelling, where nutrients are sufficient and chlorophyll a concentrations are higher in surface water. However, the concentrations were not as high as expected from nutrients concentration. Phytoplankton species, biomass and vertical distributions are different in two regions. Primary productivity is small in the warm pool and higher in the upwelling region.

Two regions area are shifted with ENSO event, phytoplankton distribution and primary productivity are affected by seasonal and interannual fluctuations associated with ENSO event.

Japan Marine Science and Technology Center (JAMSTEC) conducted MR02–K06 leg–3 cruise along the equator between 160° E and 160° W. The western warm pool extended to the east, the sea surface temperature was higher than 28° C in all observation area, since this year corresponds to El Nino conditions.

Furthermore, we conducted MR02–K06 leg–4 cruise from Honolulu to Sekinehama to clarify the subduction process in the mid–latitude.

We conducted the following special observations in this cruise.

- hydrocasting with CTD/RMS for physical, chemical and biological parameters
- optical property
- primary productivity
- plankton net
- *in situ* filtration
- sediment trap recovery
- deployment of XCTD and ARGO float
- underway measurements
- atmospheric and geological measurements
- etc.

## Period

Jan. 13, 2003 – Jan. 31, 2003 (Leg 3: Chuuk – Honolulu)

Feb. 1, 2003 – Feb. 14, 2003 (Leg 4: Honolulu – Sekinehama)

## Ports of call

1. Chuuk, F.S.M
2. Honolulu, U.S.A
3. Hachinohe, Japan
4. Sekinehama, Japan