
MR03–K01 Cruise Summary



This cruise was conducted chiefly to study the global biogeochemical cycle, to make a database for detecting an environmental change, and to understand a formation and transport process of aerosol over the North Pacific. We collected water samples to measure chemical properties related with global climate change at 28 stations along 155°E and 4 time-series stations in the northern North Pacific.

Aerosol and chemical properties were also observed continuously along cruise track and at 13 stations using the mooring balloon, Kytoon, to study the role of aerosol and some gases in the atmosphere.

Eight institutions (JAMSTEC, Hokkaido Univ., Tokyo Univ., Tokyo Metropolitan Univ., Science Univ. of Tokyo, Kyoto Univ., NIES and NASDA) participated in this cruise.

We conducted several observations and analysis in this cruise as follows.

1) Hydrocasting

Water samples at 28 stations from 17°N to 44°N along 155°E and 4 time-series stations were collected with CWS (Carousel Water Sampler) attached CTD (SBE 9 plus) for the detection of the seasonal variation of materials related the climate change in the western North Pacific. Salinity, dissolved oxygen gas, nutrients, carbonate species, some trace metal, CFCs, and others were determined. We also collected water samples for measurement of Th isotopes and collected particles using the in-site pumping system at 5 stations related time-series.

2) Underway measurements

Temperature, salinity, nutrients, pCO₂ and TCO₂ in surface seawater were measured continuously along this cruise track. Surface current of seawater was also measured using ADCP attached with R/V Mirai. Samples for POPs measurement in surface water were collected during cruise.

3) Aerosol and atmospheric components

Aerosol and atmospheric components were measured continuously along cruise track. At some stations those vertical profiles were obtained from sea surface to about 1000m heights using the Kytoon at 13 stations in the North Pacific.

Profiles of aerosol in the upper atmosphere were also measured using the Lidar and the Sky Radiometer.

4) Others

The observations related with atmospheric science, geology and others were also conducted in this cruise.