

# Contents

Preface .....	v
Acknowledgements .....	xi

## A01: Dynamics of Atmospheric Composition

A Study on the Production and Emission of Marine-Derived Volatile Halocarbons Y. Yokouchi, A. Ooki, S. Hashimoto and N. Itoh .....	1
Measurements of Gaseous Peroxides in the Oceanic Lower Atmosphere S. Hatakeyama and T. Akatsuka .....	27
Phase Partitioning of NH <sub>3</sub> and Gas to Particle Conversion K. Osada .....	33
New Particle Formation of Marine Aerosols K. Miura, H. Furutani, Y. Iwamoto, K. Nagano, H. Kobayashi, M. Mochida, H. Mukai, S. Hashimoto, M. Takami and M. Uematsu .....	37
A Study of the Chemical Processes in Aerosols and Their Impacts on the Environment Using X-ray Absorption Fine Structure Spectroscopy Y. Takahashi, M. Higashi, T. Furukawa, T. Miyoshi, M. Fujiwara and M. Uematsu .....	43
Variability in Mineral Dust Deposition over the North Pacific and Its Potential Impact on the Ocean Productivity H. Fukushima .....	51
Atmosphere-Ocean Interaction through Atmospheric Aerosol Particles Observed in a Single Nanoparticle Aspect H. Furutani, J. Jinyoung and M. Uematsu .....	61
Simultaneous Measurements of Hygroscopic Property and Cloud Condensation Nucleus Activity of Aerosol Particles of Marine Biogenic Origin M. Mochida .....	71
Eruption of Mt. Kilauea Impacted Cloud Droplet and Radiation Budget over North Pa- cific I. Uno, K. Eguchi and K. Yumimoto .....	83

## A02: Variability of Gas Exchanges at the Air-Sea Interface

High-Resolution Measurement of Volatile Organic Compounds Dissolved in Seawater Using Equilibrator Inlet-Proton Transfer Reaction-Mass Spectrometry (EI-PTR-MS) H. Tanimoto, S. Kameyama, Y. Omori, S. Inomata and U. Tsunogai .....	89
--	----

Study of the Production Processes of Marine Biogenic Methane and Carbonyl Sulfide Using Stable Isotope Analysis S. Toyoda, K. Yamada, Y. Ueno, K. Koba and O. Yoshida .....	117
Long-Term Changes of Greenhouse Gases in the Ocean and Their Feedback Effects on the Climate Y. W. Watanabe, I. Yasuda and N. Tsurushima .....	123
Temporal and Spatial Variations in Carbonate System and Air-Sea CO <sub>2</sub> Flux in the Kuroshio and Kuroshio Extension H. Yoshikawa-Inoue, T. Midorikawa and T. R. Takamura .....	151

### A03: Dynamics of the Marine Ecosystem

Bioavailability and Biogeochemical Processes of Trace Metals in the Surface Ocean S. Takeda, H. Obata, A. Okubo, M. Sato and Y. Kondo .....	163
Detailed Variations in Bioactive Elements in the Surface Ocean and Their Interaction with Microbiological Processes H. Ogawa, K. Kogure, J. Kanda, F. Hashihama and M. Suzumura .....	177
Photoheterotrophic Process in Surface Seawater Environments K. Hamasaki, Y. Sato-Takabe, A. Taniguchi and Y. Tada .....	199
Ecological Study of Bacterial Populations Related to Biogenic Gas Transformation in Marine Environments K. Hamasaki, R. Kaneko, A. Mouri, Y. Tada, N. Kasamatsu-Takasawa and I. Nagao .....	203

### A04: Modelling of the Interaction between the Ocean and the Atmosphere

Modeling for Evaluation and Prediction of Effects of Short-Term Atmospheric Disturbance on Air-Sea Material Cycling M. Fujii and A. Tanaka .....	211
Relating Phytoplankton Physiology to North Pacific Biogeochemistry S. L. Smith, M. N. Aita, M. Shigemitsu and Y. Yamanaka .....	223
Coupling of Physical and Bio-Geochemical Process and Monitoring Ocean Circulation Using Data Assimilation System Y. Ishikawa, T. Awaji, M. Ikeda and T. Toyoda .....	237
Publications .....	243