

Geochemical Study of the Atmosphere and Ocean in 1995 and 1996

Foreword

Contribution to society and science through geochemical study by clarifying the earth's changing climate and environment is the most important objective of the Geochemical Research Department (GRD) of the Meteorological Research Institute (MRI). Most recent environmental problems have occurred in connection with chemical substance cycling, and science's most important task is to clarify the mechanism of substance cycling.

The earth's chemical environment has changed rapidly in the last decades, due to the massive introduction of anthropogenic substances caused by the abrupt expansion of human activities, such as increasing atmospheric trace gases leading to global warming and climate change, the wide-ranging expansion of acid rain, heavy metals, and radioactive substances. This change has brought serious effects on society and economics. It is also scientifically important to meet the needs of society to understand the change precisely and comprehensively, temporally and spatially, and to clarify mechanisms to predict consequences.

To meet these scientific and social needs, scientists in the GRD have promoted the development of new methods for analyzing chemical substances in the atmosphere, ocean, and earth's crust, and the study of geochemical cycle processes of substances in the environment and exchange processes between environments. Our recent studies focus on the behavior of atmospheric trace components including greenhouse gases, gas and particle air/sea exchange processes, biogeochemical processes in the ocean, and in connection with these geochemical studies, behavior of artificial radioactive nuclides in the ocean and atmosphere.

These studies are expected to be useful for promoting and improving Japan Meteorological Agency (JMA) business in the fields of climate and environmental observation and monitoring and to contribute to international scientific studies such as the World Climate Research Program (WCRP) and International Geosphere-Biosphere Program (IGBP).

Our results are submitted to and published in numerous scientific papers and administrative documents. Annual English-language summaries remain to be published yet, however. Such summaries would, I believe, be very useful in providing a bird's-eye view of our studies in 1995 and 1996, and to make known our scientific prospects.

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