Analysis of Chemical Components in Rain and Snow in the Circum-pan-Japan Sea Area

1989 Fiscal Year Final Research Report Summary

Analysis of Chemical Components in Rain and Snow in the Circum-pan-Japan Sea Area

Research Project

Project/Area Number

01044060

Research Category

Grant-in-Aid for international Scientific Research

Allocation Type

Single-year Grants

Section

Joint Research

Research Institution

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Circum-pan-Japan Sea Area / Acid Rain and Snow / Long Range Transport of Airborne Impuriteis / Joint Research between Japan and Korea / 日韓共同研究

Research Abstract

Compared to the Pacific side of Japan, the Japan Sea side of Japan receives a relatively high amount of precipitation; especially in winter heavy snow fall is recorded. While rain on the Japan Sea side of Japan is initiated by various weather patterns, most of the snow fall results from one prevailing seasonal weather situation. This typical winter pattern has continental air masses flow in from the northwest, west, and southwest; the air masses pick up much moisture over the ocean which falls as snow as the air is forced to ascend over the coast of central Japan. This weather pattern suggests that the air masses carry impurities originating from the Japan Sea and from the Asian continent. In order to investigate the acid rain and snow phenomena in the circum-pan-Japan Sea area, the joint research were commenced between Japan and Korea.
Japanese members present an analysis method to organize sequential data and to examine the simultaneous changes in the concentrations of multiple anions and the related changes in pH in rainwater during individual rainfall events. The analysis gave the background values during the prevailing winter which were higher than other weather patterns. Chemical components in the ice core sample obtained at Mizuho Station, in the Antarctica were analyzed by the ion chromatograph with a concentrator column. The results suggested the background values in the atmosphere as the ice core was made in the absence of an anthropogenic pollution source. Korean members investigated the results of acid rain monitoring in Korea. The use of tellurium as a tracer of coal combustion effluent was investigated in comparison of behaviors and concentration levels of selenium in the atmospheric samples.

Research Products (16 results)

All | Other

All | Publications (16 results)

[Publications] M.Miyazaki: "Analysis and correlation of inorganic components in rain and snow collected in Ishikawa Prefecture" 衛生化学. 35. p-37 (1989)

[Publications] F.-J.Ecker: "The release of heavy metals from snowpacks along the Japan Sea side of Japan" Environmental Pollution. (1990)

[Publications] F.-J.Ecker: "Airborne trace metals in snow on the Japan Sea side of Japan" Atmospheric Environment. (1990)

[Publications] 平井英二: "酸性雨に関する研究(第1報) 降雨中無機成分相互の関係による降雨特性の解析" 衛生化学.

[Publications] E.Hirai: "Acidity in wintertime deposition on Japan Sea side of Japan" Environmental Technology Letters.

[Publications] E.Hirai: "An estimation of the contribution of sulfate ion to rain-water acidity" Environmental Technology Letters.

[Publications] T.Chohji: "Chemical characteristics of snowmelt water in the Tedori River basin" Water Science and Technology.

[Publications] 平井英二: "国際学術研究研究成果報告集「環日本海域における降雨・雪中の化学成分の解析」" 国際学術研究平井班, 89 (1990)

[Publications] M. Miyazaki: "Analysis and correlation of inorganic cmponents in rain and snow collected in Ishikawa Prefecture" Eisei Kagaku. 35. 37 (1989)

[Publications] F.-J. Ecker: "The release of heavy metals from snowpacks along the Japan Sea side of Japan" Environmental Pollution. (1990)

[Publications] F.-J. Ecker: "Airborne trace metals in snow on the Japan Sea side of Japan" Atmospheric Envirionment. (1990)

[Publications] E. Hirai: "Studies on acid rain and snow, I, Analysis of rainwater chemistry by interrelationship of inorganic components" Eisei Kagaku.

[Publications] E. Hirai: "Acidity in wintertime deposition on Japan Sea side of Japan" Environmental Technology Letters.

[Publications] E. Hirai: "An estimation of the contribution of sulfate ion to rain-water acidity" Environmental Technology Letters.

[Publications] T. Chohji: "Chemical characteristics of snowmelt water in the Tedori River basin" Water Science and Technology.

[Publications] E. Hirai: Analysis of Chemical Components in Rain and Snow in the Circum-pan-Japan Sea Area. HIRAI GROUP OF INTERNATIONAL SCIENTIFIC RESEARCH PROGRAM, 89 (1990)

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