

Preliminary Study on the Precipitation Chemistry about Oxygen,
Hydrogen and Sulfur isotopes in two Urban Sites of Korea.

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Seasonal variations of the oxygen, hydrogen and sulfur isotopes in snow and rain from metropolitan areas were measured in Korea. Precipitation samples were collected from Seoul, capital city, and Busan, large port city, Korea, for 13 months. The $\delta^{18}\text{O}$ and δD values of samples widely ranged from -15.9‰ to -2.2‰ and from -127‰ to +7‰, respectively. The isotopic compositions of oxygen and hydrogen in samples show a little effect of temperature and latitude where depends on sampling areas. Therefore, d-parameter (deuterium excess values) appears distinctly seasonal cyclic pattern suggesting seasonally different formation of air mass. Most of the sulfur isotopic data were plotted in artificial source range in two sampling areas. Although the sulfur isotopic values of both sites dominantly indicate the anthropogenic source, samples from Seoul show more effect of anthropogenic source than those from Busan. The sulfur isotopic values do not seem to show any distinct seasonal variations in two urban sites, while oxygen and hydrogen isotopes indicate seasonally distinct air mass of different isotopic composition. It is suggested that these air masses with water vapor migrated to urban areas (from northeast part of the continent in winter and from southwest of the Korean peninsular in summer) and

atmospheric pollutants of local aerosols such as sulfate and sulfur dioxides were incorporated with water drops in precipitation.

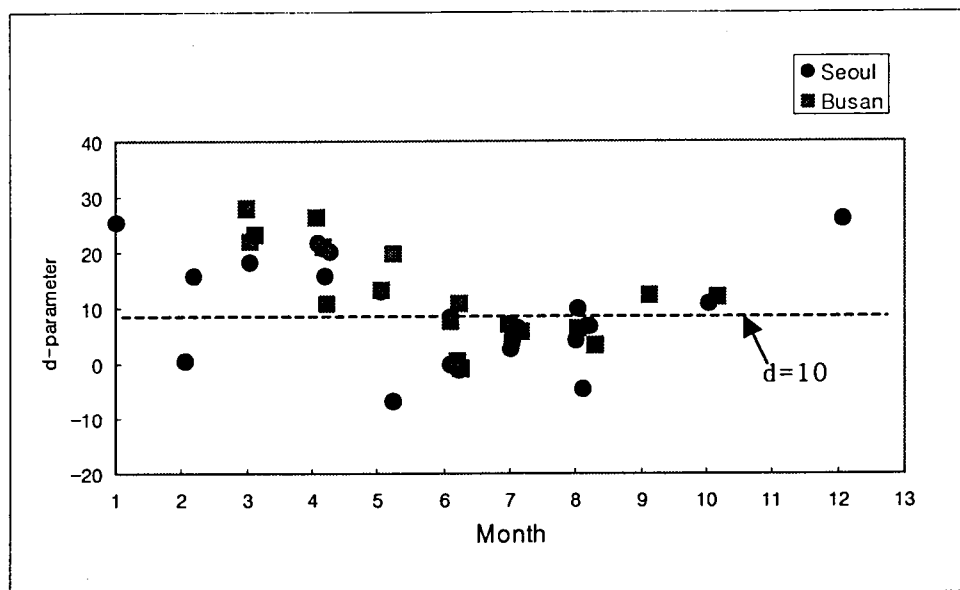


Figure 1. Variation of d-parameter during observation (2002-2003).