

Preliminary study on chemical and Sr isotope characterization of precipitation in Seoul, Korea

YEONGMIN KIM¹, INSUNG LEE¹, JISUK KANG², IGOR M. VILLA^{2,3}

¹School of Earth and Environmental Sciences, Seoul National University, Seoul, 08826, South Korea
(galgari1@snu.ac.kr)

²Institute of Geological Sciences, University of Bern, Baltzerstrasse 3, CH-3012 Bern, Switzerland

³Centro Universitario Datazioni e Archeometria, Università di Milano Bicocca, 20126 Milano, Italy

Atmospheric Chemistry in Megacities

The Sr isotope ($^{87}\text{Sr}/^{86}\text{Sr}$) composition with the concentration of cations (Na^+ , Ca^{2+} , Mg^{2+} , K^+ , NH_4^+ , Sr^{2+} and Al^{3+}) and anions (SO_4^{2-} , NO_3^- and Cl^-) of precipitation samples collected in Seoul, Korea were measured over a period of 1 year. The analyzed $^{87}\text{Sr}/^{86}\text{Sr}$ ratios of all precipitation samples are higher than that of modern ocean ($^{87}\text{Sr}/^{86}\text{Sr} = 0.7092$), suggesting that sea salt spray is not significant controlling factor of $^{87}\text{Sr}/^{86}\text{Sr}$ ratio in the study area. The estimation of sea salt fraction from sodium ion (Na^+) concentration as an indicator of marine origin indicates the predominant non-sea-salt contribution to Sr isotope composition of the measured samples. The $^{87}\text{Sr}/^{86}\text{Sr}$ ratios were used to constrain the different sources in the study area. The potential sources include regional and/or remote soil dust from silicate weathering and anthropogenic emission from power plants and incinerators.