Tracing Sources of Sulfate Particules in Chengdu Using Sulfur and Oxygn Isotopes

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Sulphate particles in the atmosphere are the important factors that exert profound impacts on human and ecosystem health, weather, and climate (Wang et al., 2016). Sulphate particles can generated by rock weathering, soil, and volcanic eruptions, etc, that can also be formed secondarily through the oxidation of sulfur gases. The IPCC (2007) report indicates that about 72% of sulphate particles come from fossil fuel combustion.

Chengdu is the capital city of Sichuan province as well as one of the largest cities in China, it is located in the middle of the Sichuan Basin, which is a heavy pollution region of sulphate aerosols in China (Wu et al., 2011). According to the Chinese Statistical Yearbook in 2013, there were only 126 days in which the air quality in Chengdu reached the national environmental standard of 50 $\mu g/m^3$ (24 h average) for SO_2, which is easy to form sulfate aerosols while hard to disperse because of the typical geographic basin feature.

In this study, we will adopt a combined method that of sulfur-oxygen stable isotope in sulphate, as well as micromorphology and chemical composition of sulphate particles to tracer the source of sulfur, and quantitative the contribution rate of different sources. The SEM-EDX, IC, ICP-OES, ICP-MS a MAT-253 isotope mass spectrometry analytical technology will be used.

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