

Sr and Nd isotope compositions of the aeolian dust in rainwater fallen on the summit of Mt. Sefuri, north Kyushu, southwest Japan

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Sr and Nd isotope ratios were analyzed for aeolian dusts in rainwater collected on the summit of Mt. Sefuri of North Kyushu, at southwest Japan, to detect seasonal and yearly variation of atmospheric circulation on eastern Asia. The findings would be expected to decoding ancient climate variability from sediments effectively.

Precipitation of aeolian dust is increased from December to May in a year. Sr isotope ratios of aeolian dusts are high in the season. Their Rb-Sr isotopic compositions aligned on the Rb-Sr isochron diagram. The slope of alignment shows ca. 250 Ma, which probably shows the original age of protoliths of aeolian dust. Sr and Nd isotope compositions of the aeolian dust are similar to those of desert sand and loess around Beijing, north China, which are originated in the Gobi and Takla Makan deserts of north China and Loess Plateau. In June to September, aeolian dust is less than other season, and shows lower Sr isotope ratios. Their Rb-Sr isotope compositions are plotted below an alignment defined from those of winter and spring on the isochron diagram, though their Sr-Nd isotopic composition is almost similar to the ratios of other season. Volcanic ash is one of other source of aeolian dust. The Sakurajima, south Kyushu, sometimes belches out volcanic ash to the sky. The ash shows low Sr isotope ratio. Aeolian dust fallen on Mt. Sefuri is composed of not only sand and loess transferred from North China but also volcanic ash from Mt. Sakurajima.

Aeolian dusts in the spring of 2006 were 7 to 10 times as heavy as those of other years. This rising is probably caused of blowing up of fine and dry soil particles by desert storm on the source area with no snow cover. On the other hand, yearly variation of isotope composition is not found for the aeolian dust.