

屋久島におけるPM中鉛同位体比の季節変動 Seasonal variation of Pb stable isotope ratio in PM observed in Yakushima Is.

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A total of 36 sets of PM10 and PM2.5 aerosol particles collected from Yakushima Island during a period from January to June 2013 were determined for atmospheric Pb concentrations. Among these samples, 36 sets of samples representing two seasons, winter and spring, were selected for measuring Pb isotopic compositions to determine the relative contributions of various pollution sources. Results reveal an evident seasonality of high spring and comparatively low winter Pb concentrations, resembling those observed in Beijing, China as well as many East Asian countries. Together with synoptic atmospheric conditions analysis, the seasonal pattern is attributable to the impact of long-range transport of Pb-rich anthropogenic aerosols from the Chinese pollution outflows in the northeast monsoon. Results of $^{206}\text{Pb}/^{207}\text{Pb}$ and $^{208}\text{Pb}/^{207}\text{Pb}$ isotope ratios show a minimum at February, thereafter increasing progressively to March and reaching a maximum at April. From January to June, Pb isotope ratios are quite comparable with those measured in China, especially Dalian and Tianjin. Again this demonstrates Yakushima Island has already been affected by continental pollution of long-range transport during the northeast monsoon season beginning in winter and ending in late spring.