Characteristics of water quality and Sr isotopic composition ($^{87}Sr/^{86}Sr$) in 27 rivers of Sado Island, Niigata Prefecture

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The interactions between water and rocks during chemical weathering processes release water-soluble substances and form secondary minerals (e.g., clay minerals) with consumption of atmospheric CO_2. The determination of dissolved chemical substances in rivers gives us important information regarding chemical weathering processes such as the weathering rate and amount of CO_2 consumption. Because the weathering processes is strongly associated with sediment disaster such as landslide and debris flow, it is important to investigate river water quality for better understanding the weathering processes in detail. On the other hand, the Sado Island of Niigata Prefecture has been developed with a gold mine during the Edo Period. Recently, Japanese crested ibis, a protected species, is steadily increasing by extensive breeding programs. The conservation of water environment in the island is most necessary to preserve natural animals and resources. As a result, we characterized the water quality and Sr isotopic composition ($^{87}Sr/^{86}Sr$) in 27 rivers of the Sado Island. The water quality showed Ca-HCO_3, Na-HCO_3, and Na-Cl types, suggesting the contamination by airborne sea salt from Japan Sea surrounding the island. The value of Sr isotopic composition ($^{87}Sr/^{86}Sr$) ranged from 0.70686 to 0.70852, and most of the element might be derived from rocks in rivers of the Sado island.

Keywords: Sado Island, 27 rivers, Water quality, Sr isotopic composition (87Sr/86Sr)

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