

Geochemical characteristics of river water of Taihei River, Akita City

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Abstract

The purpose of this study was to clarify the formation process of chemical composition of river water of Taihei River flowing through Akita Plain. Concentrations of major elements and heavy metal components in the water were measured using ion chromatography and the PIXE method. Concentrations of major elements and iron in the river water increase from the headwater to the lower reach of the river. As for the suspended materials over 0.45 μm of the river water form Si, Fe, Al, Ca, K, S and Ti, and the concentrations of Si, Fe and Al are $10\sim 10^2$ -time higher than those of other elements. The suspended materials in the river water are thought to be clay minerals or amorphous substances. The iron component of suspended materials in the river water is thought to be Fe colloid derived from the decomposition of pyrite in mudstone. Based on the results of principal component analysis for river water quality formation, component one (67%) is contribution of sea salt and sulfate in winter, and component two (26%) is contribution of sulfate in early spring of the middle ~ downstream region. Compared to the chemistry of river water of Asahi River, the influence of sulfate is large in early spring of the middle ~ downstream region of Taihei River.