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The distribution of dissolved iron in rivers in japan and its geographical factors

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It is believed that forests are the source of dissolved iron because humic substance, which complexes with iron, are rich in this ecosystem. However, few previous studies have explained that dissolved iron concentration is high in stream or river water in forest ecosystem. In this study, we analyzed the data of dissolved iron concentration in 45 first-grade rivers provided in the "Elemental Concentrations in Japanese Rivers" (2002-2006, published by National Institute of Radiological Sciences), in addition, we measured dissolved iron and dissolved organic carbon (DOC) concentration in a number of rivers (mainly in Hokkaido) by the field investigation. We analyzed geographical (land use type and land slope) information of river basin to find any relationship between the concentration of dissolved iron and geographic factors.

As a result, we found that the concentrations of dissolved iron and DOC in down river are higher than in upper stream. The downstream areas with gentle topography may be the source of dissolved iron and DOC. There is a high relationship between the concentrations of dissolved iron and the plain land area ratio in river basin. It is likely that the gentleness of land surface is an important factor in the point of dissolved iron export. On the other hand, there is no high relationship between the concentrations of dissolved iron and the plain land area ratio in river basin. It is likely that all of forest ecosystem plays a source of dissolved iron. However, the swamp forest near the stream channel may be the important source area of iron. With the data "Elemental Concentrations in Japanese Rivers", we found the variability of the concentration of dissolved iron among rivers in Japan.