

水質調査から示される丘陵地の溶存鉄供給に対する機能

Gentle landform like hilly area is the spot to produce dissolved Fe

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[Introduction]

Iron is an essential element for plants, and is also a factor limiting primary productivity in some oceanic area. Moreover, Fe can be too short for phytoplankton's growth in some coastal zone (e.g. Hutchin et al., 1994). River is thought to be a main source of Fe to ocean, but there are few researches studying where dissolved Fe is produced in a river basin. The present research aims to examine geographic factors that control the concentration of dissolved Fe in stream with a special focus on reductive environments in a river basin.

[Methods]

Streams from various landform types including steep mountain and gentle hill were studied, which were located in Hachiouzi-city, Akiruno-city, and Oume-city, Tokyo. In the research here, regions higher than 200m ASL were regarded as mountain and at lower than 200m as hill. Dissolved Fe and dissolved Mn were measured with ICP-AES (Thermo-Fisher iCAP6000). NO_3^- and SO_4^{2-} were measured with ion chromatography (DIONEX DX-120). To examine the influence of geographic factor in catchment area for the dFe concentration, mean inclination of the valley from the sampling spot to 200m upper was calculated with GIS software named QGIS.

[Results and Discussions]

Most of dissolved iron (dFe) concentrations sampled from mountainous area were below 100 $\mu\text{g/L}$. On the other hand those from hilly area were comparatively higher; 200 $\mu\text{g/L}$ and more. Considering the relationship between the mean inclination and dFe concentrations, dFe concentrations tended to be higher with the decrease in the inclination of valley. dMn concentrations also tended to increase in hilly area. NO_3^- concentrations and SO_4^{2-} concentrations were lower at the site high dFe concentrations suggesting denitrification and sulphate reduction in reductive conditions. In short, gentle landform like hilly area creates the reductive environment with a function of producing dFe.

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