

Indices of dissolved organic materials in description of fluvial discharge of rare earth elements

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Dissolved organic materials (DOM) in river water have been long considered an important element in fluvial transport of toxic heavy metals and organic chemicals. With an aim to serve better understanding of actinides in the aquatic environment, we performed field observation of discharge of rare earth elements (REE) as analogue to actinides in the spring of 2008. The major finding from the observation is aquatic humic substances play a dominant role in that discharge. In this JPGU meeting, we report indices of dissolved organic materials that can describe fluvial discharge of rare earth elements appropriately. Tested indices were: i) the concentration of dissolved organic carbon (DOC), ii) the specific ultraviolet absorption (SUVA)¹, and the fluorescence index (F.I.)². As a result, we found that F.I. and especially SUVA can be good indices to explain characteristic increase of concentration of REE in river water in a rainfall event. Because both SUVA and F.I. have been reported to be correlated with aromaticity of humic substances (HS), this result indicates that aromaticity of dissolved HS can be a key aspect in REE discharge with DOM.

1. Weishaar et al. (2003) Environ. Sci. Technol., 37,4702-4708.
2. McKnight et al. (2001) Limnol. Oceanogr., 46,38-48.

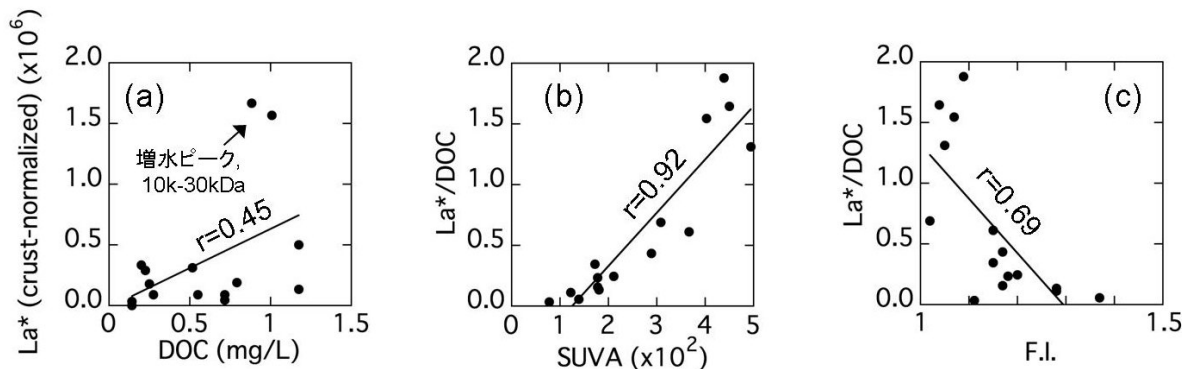


図1 河川水中の溶存La濃度と有機物指標の相関性