

Possibility of base cation depletion in nitrogen saturated forest

KOSHIKAWA, Masami K.^{1*} ; WATANABE, Mirai¹ ; MURATA, Tomoyoshi¹ ; HAYASHI, Seiji¹

¹National Institute for Environmental Studies

In our previous study, we found that acidic deposition in Japan has already resulted in elevated concentrations of acid anions (nitrate ion and sulfate ion) in stream waters, and a high level of Ca (instead of Al) is serving as a major counterion for acid anions (Koshikawa et al., *Appl Geochem*, 22, 1209-1216, (2007)). However, an additional loading of acidic deposition may result in shortage of Ca (essential element for plants) and mobilization of Al (toxic element for plants and fishes). Mt. Tsukuba is known as a system under "nitrogen saturation", where high concentration of nitrate ion in stream water has been observed since more than 25 years ago (Muraoka and Hirata, *J Hydrol*, 102, 235-253, (1988)). Bedrock of some catchments in Mt. Tsukuba is granite. Capacity of granite to supply Ca and other base cations is relatively low. Therefore, we have launched studies on Ca budget and source analysis of Ca, concerning possibility of Ca depletion in some granitic catchments in Mt. Tsukuba.

Keywords: Ca, nitrate ion, Sr isotope, stream water, soil solution