Estimation of chemical weathering rate in forest soil

Shuichiro Yoshinaga[1]; Tatsuya Tsurita[2]

[1] F.F.P.R.I.; [2] FFPRI

Chemical weathering occurs everywhere in geosphere, especially in soil environment. Chemical weathering rate in soil was estimated by the annual soil water flux by the porous-plate tension lysimeter and soil solution chemistry. The measurement has been done at a slope in a forested catchment covered with a thick soil derived from the volcanic ash deposits. Porous-plate tension lysimeters were installed in 30 and 90cm depth at the upper,

middle and lower slope. The soil water was corrected every week and was used for the analysis of solution chemistry. Chemical weathering rate of silicon, which is a major component of silicate minerals dominated in soil, were estimated 20, 43 and 37 kg ha-1y-1 in 90cm depth at the upper, middle and lower slope, respectively. These rates are agreed well with the rate estimated from the result of the catchment mass budget. This evidence indicates that leaching of silicon from the mineral is mainly occurred within the soil environment in the study site due to the existence of relatively well-soluble amorphous minerals such as volcanic glass.