

Cation transport processes along a side slope in a granitic headwater catchment

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To confirm cation transport processes in a headwater area soil water and spring water were monitored with hydrological observations and dissolution rate of elements in soil layers and a catchment were calculated in a forested granitic catchment, western Japan. The dissolution rate of Ca^{2+} was extremely high at surface soil layer, whereas the dissolution rates of Na^+ and SiO_2 by chemical weathering were high at deeper soil layer. During base flow periods, dissolution rate of Na^+ and SiO_2 take high values, but dissolution rate of Ca^{2+} takes negative value in the catchment. Weathered granite has high adsorbed Ca^{2+} saturation as well as surface soil. These results suggest the adsorption of Ca^{2+} in deeper soil layer after weathering. During rainfall events dissolution rate of Ca^{2+} in the catchment became bigger with decreasing of pH. This flush loss of Ca^{2+} indicated the contribution of shallow subsurface flow through surface soil layer with higher Ca^{2+} concentration.