

Geochemical changes in the soil profile due to deforestation

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It is generally known that deforestation can lead to increased concentrations of K, Al and H^+ , in near surface drainage water. Chemical and physical processes governing the formation of soil profiles and the mechanisms that may give rise to fluxes of these elements in the surface water as a result of deforestation are studied here. Soil profiles were studied for a natural growth and a two-year-old clear-cut forest near Lake George, New Brunswick. These two sites are on the same till unit and have a similar magnitude and direction of slope. Samples were taken from discrete soil

horizons within the unsaturated portion of the vadose zone. The water table depth varied within 1 to 2 m of the surface. Quantitative estimates of fluxes of Fe, Ca, K, Si, Al, Mn, Mg, Na, Ti, Rb, Sr, Y, Zr, Nb, which occur throughout the profiles, were determined independently of apparent mass changes caused by mass, concomitant volume, and density changes. Results of the mass-balance calculations show differences in soil chemistry between the two profiles as a result of deforestation.