



Aluminium and sulphates transport within the catchment in the Jizera Mountains

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Soil acidification (due to acid deposition, acid parent rocks, high precipitation, and specific vegetation) presents a serious problem mainly in forest soils. It can result in a release of potentially toxic aluminium forms. To predict potential aluminium and sulphates leakage into the groundwater, soil water regime and substances transport may be simulated using the numerical models. Typical acid soil profiles (Podzols, Cambisols) present in the Jizera Mountains under various plant cover (spruce forest, beech forest, grass) were chosen to assess potential groundwater contamination in this area. Soil hydraulic properties and properties affecting dissolved substances transport of all diagnostic horizons were studied in the laboratory. The numerical model HYDRUS-1D was applied to simulate water, aluminium and sulphates transport within the soil profiles. Soil water regime, aluminium and sulphate transport reflected various retention ability and different sorption properties of studied soils, which were significantly affected by organic matter origin (plant cover). Simulated trends of dissolved substances fluxes at the bottoms of soil profiles corresponded with the trends of dissolved substances observed in the mountain streams.