

The evaluation of engineering and hydrogeological in relation to the different log stratigraphic sequences.

characteristics based on geophysical logs are discussed

Paper 3.6

Changes in vegetation reflection coefficient caused by changes in geochemistry - first results

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The object of this study is to locate and analyse anomalies in soil geochemistry by detecting changes in the physiological state of vegetation which is growing on top of the anomaly. Such anomalies can be caused by mineral occurrences, environmental pollution or other similar factors. Vegetation samples from spruce stands in Finland were collected and their reflectance coefficients in the wavelength range 300–3000 nm were measured as continuous spectra with bandwidths between 2 and 6 nm. The measurements were made in artificial light with a portable field spectrometer.

The spruce twigs were collected from four separate profiles in different parts of Finland during the summer of 1994. All profiles cross known soil geochemical gradients: one crosses a calcite occurrence, another crosses a metal occurrence, a third the boundary of a large, regional geochemical metal anomaly in the soil, and the last an area where surface waters flow from a waste area of an abandoned mine. The length of the profiles was 1000–8000 m, with a point separation of

200 m for the profile across the regional geochemical anomaly, and 20 m for the rest of the profiles.

Several measurements were made from each sample and in the corrected data these are averaged together. Corrections were also made to correct the effects of the drying of the needles which occurred during the transportation of the twigs and during measurement under a warm light source.

Visual inspection of the corrected data shows no evident changes of reflectance levels along one specific profile, but statistical analysis at the 5% level of significance reveals significant changes in the reflectance values along a specific profile at several wavelength ranges. Typical changes of percent reflectance levels are less than 1.

The exact causes of these changes and the mechanisms of them are not yet clear. Information concerning selected trees, the geochemical composition of the soil under the trees and other data has been collected and will be included in the analysis in the future.

Paper 3.7

The distribution of radioactive fallout in Nord-Trøndelag from detailed airborne and ground gamma-ray spectrometer surveying

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