Geochemistry in soil and humus, central Norway

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A low-density (1/36 km^2) study of mineral soil and humus was conducted in Central Norway to study the geochemical expression of underlying bedrock and mineral potential, to delineate regional anomalies and study the differences in the two materials. 752 samples were analysed for 53 elements in an aqua regia extraction. The four mined metal deposits in the area (Fosdalen, Skorovas, Gjersvik and Joma) were detected as the most prominent geochemical anomalies in both soil materials as well as a number of new anomalies. The results do not reveal anthropogenic contamination sources. The input of marine aerosols along the coast are clearly visible in the humus layer for Na, Se and B. The study shows that biogenic processes result in chemical differences between the two materials. Cd, Ag, S, Hg and Sb are greatly enriched in the humus layer, while Li, Th and V are 10-fold enriched in the mineral soil. Many elements, for example many major plant nutrients, show a narrow concentration range in the humus layer, which indicates a strongly regulated uptake by the plants that ultimately make up the humus layer. Some geographical differences in humus concentration can be explained by different climatic factors and thus vegetation types.

References:

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