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Patterns in forest soil microbial community composition across a range of regional climates in western Canada

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Soil microbial communities can be characterized by community structure and function (community composition) across a spectrum of spatial scales and variation in soil microbial composition has been associated with a number of environmental gradients. This study investigates the structure and function of soil microbial communities under mature undisturbed forested sites across a range of regional climates in British Columbia and Alberta and also examines the variation in community composition within sites. Phospho-lipid fatty acid analysis was used to investigate the structure of soil microbial communities and total soil microbial biomass at each site. Extra-cellular enzyme assays established the functional potential of the soil microbial community at each site. The range of substrates chosen for the assays enabled us to relate enzyme activity to carbon nitrogen phosphorous and sulfur cycling in the ecosystems studied. Multivariate analysis was used to examine the relationship between microbial community characteristics and regional climate variables such as annual precipitation and annual temperature along with endogenous site characteristics such as slope aspect and soil particle size. This study fits into a larger project which investigates the role of regional climate effects and stand characteristics on litter decomposition and nutrient cycling within British Columbia and Alberta.