Predicting soil moisture on newly established forests within the dry douglas-fir ecosystems of BC's Southern interior

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Physical and chemical soil properties influence plant-available soil moisture, which ultimately limits seedling survival following clearcut harvesting in the dry Biogeoclimatic Subzones of the southern interior of BC. It is well-documented that specific soil characteristics strongly control soil water dynamics, however the spatial distribution, and the degree of soil variability within a site is still relatively unknown throughout these ecosystems. As logging operations in British Columbia begin to shift from beetle infected, pine-dominated stands, into the dry forested regions of the Interior Douglas Fir (IDF) zone, management practices and site prescription methods should be altered accordingly based on dissimilar soil and site characteristics in different climatic subzones. If harvested sites within the dry IDF are to be replaced by conventional planting procedures, then competition for moisture by seedlings and understory vegetation will be of critical concern. One approach to better understanding root zone parameters across a landscape is to measure the variability of soil physical and chemical properties at known sampled locations, and interpolate them to predict values in unsampled locations to gather a description of the entire study site. Knowledge of the variability in soil physical and chemical properties can ultimately be used to predict available soil moisture, which will have a major effect on the survival rate of newly planted seedlings following clearcut disturbances in dry, Douglas-fir dominated forests. With uncertainties in the contribution of logging to BC's economy into future generations, it becomes increasingly important for forest managers to gain a substantial understanding of the landscapes in which they will be accessing next. My research is aimed at providing a set of tools to assist forest managers in gaining a full understanding of root zone parameters both pre and post harvest, and to understand how different landscape features influence different soil variables and moisture availability so that regeneration strategies can be optimized for lower mortality rates and shorter harvest rotations.