**Crown Volume Estimation for Individual Conifer Trees Using Airborne Laser Scanning Data**

Tree crown volume is an important tree characteristic. An accurate estimate of a tree's crown volume, which includes all its branches and leaves, is essential as it is highly correlated with other attributes such as biomass, volume, and carbon stocks. Collecting data to accurately estimate crown volume through field measurement is tedious and costly. With the availability of computing power and cutting-edge remote sensing technology that captures high density 3D imagery and point clouds, we hypothesized that there is a possibility of developing routines to estimate crown volume of an individual tree. In this project, we have evaluated concave hull method to calculate the crown slice area of individual conifer trees from the airborne laser scanning (ALS) data and an adaptive slicing method which considers the rate of change in area with tree height. We aimed to evaluate the prediction accuracy of the tree crown volume with direct measurement from the temporary field inventory plots. Once the tree crown volume is estimated accurately, then it can be used to input as a predictor variable for total tree volumes or biomass and carbon stocks, which then can be estimated for all trees across the study area. The model structured under this project can change our approach to model and make prediction of stand level forest attributes across the forest landscape. It will not only help to plan a continuous supply of traditional forest products, but also helps to provide inputs to strategic and tactical planning process of the concerned stakeholders.