

Analysis of forest canopy density based on textural features of high resolution imagery and airborne laser scanning data

Abstract

The objective of this thesis is to assess the forest canopy density in the Šumava Mountains, Czech Republic. The spruce forests in this area have been suffering from the bark beetle outbreak for almost 20 years resulting in a mixture of dead and young trees, mature forest stands and peat bogs. The canopy density was evaluated using a very high spatial resolution panchromatic imagery and low point density LiDAR, combined with an object oriented approach. The classification based on three GLCM texture measures (contrast, entropy and correlation), which were derived from the image objects, resulted in a kappa index of accuracy of 0.45. Adding the information from the LiDAR data, the accuracy of the classification improved up to 0.95.