

# Advanced remote sensing methods for monitoring of peat bog vegetation in the Krkonoše Mountains

## Abstract

The goal of the thesis was to create maps of vegetation cover for three peat bogs in Krkonoše National Park (KRNAP, Krkonoše NP) and to propose a method for further efficient mapping of peat bogs in the Krkonoše Mountains in collaboration with Krkonoše NP. The research utilized UAV image data and field botanical data measured by GPS. UAV images were preprocessed using Pix4D Mapper software and features such as canopy height and textures derived from GLCM were added to the resulting orthomosaics. Testing confirmed their usefulness in increasing classification accuracy. A separability analysis was performed, and an algorithm was designed to detect errors in the field data. During the analysis, two classification methods, Random Forest and Support Vector Machine (SVM), were compared. The SVM method achieved the most precise results at Kyselé kouty, where average F-1 score reached 0.957, while the F-1 scores for Hraniční louka and Pančavská louka reached only 0.899 and 0.832 respectively. The overlay analysis demonstrated that the results of the individual methods are consistent, and for Pančavská louka, combining classifiers yielded better accuracy than the individual models. The methods which led to the best accuracies in this thesis were recommended in the proposed approach for further mapping of Krkonoše peat bogs.