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Riverscape classification by using machine learning in combination with satellite and UAV images

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This presentation examined a new method for classifying riverine land covers by using the machine learning technique applied to both the satellite and UAV (Unmanned Aerial Vehicle) images in a Kurobe River channel. The method used Random Forests (RF) for the classification with RGBs and NDVIs (Normalized Difference Vegetation Index) of the images in combination. In the process, the high-resolution UAV images made it possible to create accurate training data for the land cover classification of the low-resolution satellite images. The results indicated that the combination of the high- and low-resolution images in the machine learning could effectively detect waters, gravel/sand beds, trees, and grasses from the satellite images with a certain degree of accuracy. In contrast, the usage of only low-resolution satellite images failed to detect the vegetation difference between trees and grasses. These results could actively support the effectiveness of the present machine learning method in the combination of satellite and UAV images to grasp the most critical areas in riparian vegetation management.