

Three Dimensional Vegetation Structure Map using LIDAR Survey Data

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The authors produced various types of landscape-ecological maps of Natural Heritage Area of Japan, such as Shirakami Mountain. Basic legend of landscape-ecological maps consists of the combination of vegetation classification and landform classification. In this paper, the authors introduce the trial produce of landscape-ecological map of Shiretoko Peninsula, where is other Natural Heritage Area of Japan, Hokkaido Island.

By the airborne laser survey (LIDAR Survey) in summer and autumn, the authors got 0.5m grid DSM and DEM in summer and 2m grid DSM and DEM in autumn. LIDAR data is useful for detection of micro landform under forest area to use last pulse data in autumn season. Vegetation classification was done using three dimensional vegetation structure detected by DSM data in summer and autumn.

Algorithm of producing vegetation map is as follows. This method is successful for producing LIDAR vegetation map of Shinjuku Gyoen, where is typical city park in Tokyo Metropolitan area. For vegetation classification, the authors used three vegetation structures such as vegetation height, thickness of crown, and the difference of single layer deciduous forests, double layers deciduous forest and evergreen forest. Using these vegetation structures, it is possible to classify vegetation map with nineteen categories.

Landform classification was done by two methods. One is automatic landform classification using 2m grid DEM, combined three categories, such as slope degree, texture and convexity. Another is interpretation of 2m interval counter line produced by 2m grid DEM. The authors produced landscape-ecological map combined with three dimensional vegetation structure and landform classification. In this presentation, the authors introduce the utilization method of landscape-ecological map for the evaluation of biodiversity in Natural Heritage Area.