P-168

LANDSCAPE-ECOLOGICAL MAPS FOR BIODIVERSITY EVALUATION USING LIDAR DATA

KOARAI M.(1), NAKANO T.(1), OTOI K.(1), SATO H.P.(1), YOSHIDA T.(2), YAMASHITA A.(2), NAGASAWA R.(3), HIOKI Y.(3)

(1) Geospatial Information Authority of Japan, TSUKUBA, IBARAKI, JAPAN ; (2) Rakuno Gakuen University, EBETSU, HOKKAIDO, JAPAN ; (3) Tottori University, TOTTORI, JAPAN

The authors try to produce landscape-ecological map for estimation of biodiversity using the airborne laser survey (LIDAR Survey) data. Studied areas are Siretoko Peninsula, Hokkaido Island for World Natural Heritage Area of Japan and Chugoku Mountain area for Satoyama Region. Basic legend of landscape-ecological map consists of ecotypes which are the combination of vegetation classification and landform classification. Vegetation classification is three dimensional vegetation structure classification using high density random points data, detailed DSM (Digital Surface Model) and detailed DEM (Digital Elevation Model) by LIDAR data. Landform classification is micro landform classification using detailed DEM (Digital Elevation Model) by LIDAR data. Using LIDAR Survey data in summer and autumn seasons, the authors got 0.5m grid DSM and DEM in summer and 1 or 2m grid DSM and DEM in autumn. LIDER data is useful for detection of micro landform under forest area to use last pulse data in autumn season. Vegetation classification has been down using three dimensional vegetation structure detected by the difference between LIDAR data in two seasons. The legend of three dimensional vegetation structure vegetation maps consists of the combination of vegetation height, thickness of crown and difference in two seasons (deciduous dingle layer tree, deciduous multi layer tree and evergreen tree). Landform classification has been done by automatic landform classification method (Iwahashi and Pike, 2008) combined three categories, such as slope degree, texture (roughness) and convexity of autumn DEM. The results of overlay analysis between vegetation classification and landform classification are as follows: On Shiretoko Peninsula, three dimensional vegetation structures are dominated by site elevation compared with micro landform classification. On Chugoku Mountains, some early deciduous high think crown trees (a kind of nut) are located in historical mining sites (Kanna-Nagashi) with following micro landform categories such as gentle slope, concave and rough texture. Now, the authors are considering legend of landscape-ecological map of both areas, using relationships between three dimensional vegetation structures and automated micro landform classification. The landscape-ecological maps will be printed on January, 2011. In Poster presentation of ICC 2010, the authors will introduce landscape-ecological maps of Shiretoko Peninsula and Chugoku Mountains, and the utilization method of landscape-ecological map for natural environment conservation planning. This research is supported by Environmental Research and Technology Development Fund by Ministry of Environment.