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Evaluating Spatial Pattern of Changes Trend of Landuse/landcover with use of Transformation Techniques
(Case Study: Dareshar Catchment, Ilam Province)

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Abstract

Change detection is a basic requirement in management and evaluation of natural resources. Landuse change map which is the result of land change processes can be obtained from multi-temporal images.Various techniques have been presented for landuse/lancover change detection. In this study, images of landsat TM) 1988 and landsat (ETM+) 2001 were analyzed using 4 change detection techniques in 80470 hectares in Daresher region, Ilam Province. Change detection techniques considered were standardized and non-standardized principal component analysis (PCA) differencing, applying Canonical component analysis (CCA) differencing and Tasselled Cap (KT) differencing that all are in transformation group. Since these methods require determining threshold, therefor, statistical methods for determining the threshold level was used being achieved from the change threshold. In this study, threshold level was set at ±1 standard deviation from the mean. After determing optimal threshold, areas having decreasing change increasing change and no change were determined. Based on

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ground data and field work, aerial photo of 1:20000 and Google Earth, accuracy assessment of change detection techniques was carried out using overall accuracy and Kappa coefficient. According to the results, PC1difference image of CCA transform with overall accuracy of 98 and Kappa coefficient of 0.97 showed the largest accuracy among applied change detetion techniques in the Daresher region.

Keywords: Change detection, Principal Component Analysis (PCA), Canonical Component Analysis (CCA), Tasselled Cap (KT).