Project Title: Monitoring and Evaluation of Temporal and Spatial Change of Land Degradation in the Sample Area of Torbali and Kemalpasa Districts of Izmir City with the Help of Remote Sensing and Geographical Information System Techniques

Research Area	Soil and Water Resources
Research Program	Conservation and Development of Soil and Water Resources for Watersheds
Executive Institute	International Agricultural Research and Training Center (IARTC)
Supporting Institute/s	Ege University Agricultural Faculty, Landscape Architecture
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Research Period	2005-2011

Project Summary: In the research, the vegetation index and the change in the use of land has been used as an indicator in order to monitor the temporal and spatial change of land degradation in the sample area which covers some of the villages of the districts of Kemalpaşa and Torbalı. In the second stage, the change in the agricultural land and forested land determined in the light of these data has been evaluated in terms of land degradation and a land degradation model has been built. Within this scope, RS (Remote Sensing) and GIS (Geographical Information System) technologies have been compared to up-to-date satellite images (2005) and to 20-year-old satellite images (1985). Supervised Classification have been performed on 721 composit images of Landsat 5 TM for those years using RS software and Maximum Likehood method, and land use pattern of the area has been obtained. Moreover, 453 composit images of Landsat 5 TM for those years have been analyzed in accordance with the Image Rationing Method, and land use change (LUC) layer has been obtained. NDVI (Normalized Difference Vegetation Index) maps for those years have been obtained as well. Vegetation Index Change (VIC) map has been obtained in accordance with the Image Rationing method. LUC layer and VIC layer and the other supplementary data layers have been investigated by Overlay and Visual Interpretation Techniques, and the Land Degradation (LD) map of the research area has been obtained. The Land Degradation determined on the research area has been put into four categories: Forest Degradation (FD), Industrial Degradation (ID), Losses of Industrial Settlement (LIS) and River Degradation (RD). On 3.5% (3642 da) of the Research Area (112544 da), Land Degradation has been determined. LD distribution on the research area is as follows: FD 83.39%, RD 13.94%, ID 1.24%, LIS 1.43%. The results of the research show that Land Use Change layer and Vegetation Index Change layer obtained by remote sensing are important indicators in terms of land degradation. However, it has to be assisted by supplementary data and land observation.