



A Satellite Remote Sensing Evaluation of Urban Land Cover Changes and Its Associated Impacts on Water Resources in Karachi, Pakistan

Author(s): **Asif Ahmed Shaikh and Keinosuke Gotoh**

Volume: **V**

No: **2**

Pages: **41-55**

Date: **December 2008**

Abstract:

Metropolitan cities grow beyond imaginable proportions, particularly in the developing world. Urban issues therefore warrant – and receive – increasing attention. This paper summarizes the general pattern of urban land-cover changes in Karachi, Pakistan between the years 1992 and 2003 and explores the impacts of these urban land cover changes on water resources in the study area. Subsets of two Landsat TM images acquired in March 1992 and May 1998 and a subset of Landsat ETM + image acquired in March 2003 were used for mapping land cover changes. An unsupervised classification approach, which uses a minimum spectral distance to assign pixels to clusters, was used with the overall accuracy ranging from 89 percent to 91 percent. Land cover statistics quantify that substantial land cover changes have taken place in Karachi metropolis and that the urban land has expanded by 203.1 km² while barren and vegetated lands have decreased by 191.9 km² and 13.5km², respectively over the study period (1992-2003). The results demonstrate that land cover changes due to urbanization has not only contaminated the water quality but also aggravated the water shortfall in the study area, making difficulties in equal distribution of supply of water to all the areas of large city.

For full paper, contact:

Prof Muhammad Masood Rafi

Editor, NED University Journal of Research

Ph: +92 (21) 9261261-8 Ext:2277; Fax: +92 (21) 9261255

Email: NED-Journal@neduet.edu.pk

Website: <http://www.neduet.edu.pk/NED-Journal>