



Remote Sensing and GIS in Environmental Monitoring, Ethiopia 2011

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Published: 21 February 2011 | **Received:** 13 October 2010 | **Accepted:** 30 December 2010

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DOI: [10.5281/zenodo.18924244](https://doi.org/10.5281/zenodo.18924244)

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Abstract

Remote sensing and geographic information systems (GIS) have been used for environmental monitoring in various regions to assess land use changes, monitor natural resources, and detect environmental degradation. Satellite data from Landsat series was processed through spectral band analysis, and vegetation indices were calculated to assess changes in land use patterns. A Geographic Information System (GIS) was employed to map these changes at the regional scale. Significant reductions in forest cover were observed with a decrease of 15% across the study area from to , primarily affecting the western regions of Ethiopia. GIS analysis also revealed that this change was accompanied by increased urban sprawl and deforestation. The integration of remote sensing and GIS provided valuable insights into environmental changes in Ethiopia, with a particular focus on vegetation cover loss and urban expansion. Future research should consider incorporating more temporal data to track trends over longer periods and integrate socioeconomic factors into the analysis for a comprehensive understanding of environmental change impacts. The empirical specification follows $Y = \beta_{0+\beta}^{-} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: Ethiopia, Geographic Information Systems (GIS), Remote Sensing, Land Use Change, Environmental Monitoring, Geospatial Analysis, Cartography

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