

Short Abstract Template

Global Land Survey Activities and Land Cover Analysis from Landsat

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Changes in land cover represent a direct link between human activities and the global environment. Economic development and population growth have triggered rapid changes to Earth's land cover over the last two centuries, and there is every indication that the pace of these changes will accelerate in the future. Thus, characterizing land cover change has become a major goal for Earth observation science. Although the Landsat satellite system has been operating for 38 years, there has never been a systematic effort to map global land cover change from the record. Historically this reflected both technical limitations as well as high data costs. However, several new initiatives are changing this situation.

First, since the 1990s, NASA and USGS have supported development of the Global Land Survey (GLS) data sets. The GLS provides global, orthorectified, mostly cloud-free Landsat imagery centered on the years 1975, 1990, 2000, 2005, and 2010. These data sets provide a consistent set of observations to assess land-cover changes at a decadal scale, and are freely available via the Internet from the USGS Center for Earth Resources Observation and Science (EROS) website. GLS provides an important supporting element for the TREES-3 project (a component of the FAO Forest Resources Assessment), and is providing the base data for producing the first comprehensive, moderate-resolution map of global forest cover change.

Second, the opening of the US Landsat Archive for free distribution has led to a new era in the application of these data. The use of dense (annual or seasonal) image time series has become a powerful tool for understanding trends in land cover and ecology. A number of researchers are beginning to fuse Landsat observations with other sources of data (e.g. MODIS, CBERS, Resourcesat) in order to provide a more seamless radiometric record. This talk will review these developments, which are paving the way for routine, global monitoring of Earth's land cover.