MONITORING IMPERVIOUS SURFACE SPRAWL USING TASSELED CAP TRANSFORMATION OF LANDSAT DATA

Q. Zhang[*a] Y. Ban[a]

[a] Royal Institute of Technology-KTH, Sweden, Geoinformatics Division, Dept. of Urban Planning and Environment, Drottning Kristinas väg 30, 10044, Stockholm, Sweden

Technical Commission VII Symposium 2010

KEY WORDS: Urban, Change Detection, Monitoring, Transformation, Landsat

ABSTRACT:

Transformation from non-impervious surface to impervious surface changes the landscapes as well as the ecological and environmental conditions. Detecting impervious surface growth is vital to monitoring urban development and supporting sustainable city planning. The objective of this research is to conduct detection of impervious surface sprawl using tasseled cap transformation within the conceptual framework of Vegetation-Impervious surface-Soil (V-I-S) model. Landsat-3 MSS images on August 4, 1979 and Gap-filled Landsat-7 ETM+ images on May 22, 2009, covering the Greater Shanghai Area, were used in the case study. The results demonstrated that direct change detection using variables derived from tasseled cap transformation was effective for monitoring impervious surface sprawl. The variables derived from tasseled cap transformation have the potential to link to the components of the V-I-S model. The Greater Shanghai Area experienced high-speed impervious surface sprawl over the past 30 years at the average speed of 38.84km²/year.

TOPIC: Remote sensing applications
ALTERNATIVE TOPIC: Remote sensing applications

This document was generated automatically by the Technical Commission VII Symposium 2010 Abstract Submission System (2010-06-29 14:28:22)