Ensemble-based Landscape Change Maps for the United States

Sean Healey, Warren Cohen, Zhiqiang Yang, Evan Brooks, Matthew Hansen , Alexander Hernandez, Chengquan Huang, Joe Hughes, Robert Kennedy, Thomas Loveland, Kevin Megown, Gretchen Moisen, Todd Schroeder, Brian Schwind, Stephen Stehman, Daniel Steinwand, James Vogelmann, , Curtis Woodcock, Limin Yang, Zhe Zhu

Landscape change maps based on Landsat time series have numerous applications related to forests, including: updating resource maps; assessing effects of natural disturbance; and tracking trends in deforestation. Several forest change detection algorithms exist, and while they generally track the same thing, loss or gain of canopy, each is parameterized slightly differently and provides unique information. The Landscape Change Monitoring System (LCMS), a collaborative initiative among several universities and US government agencies, is designed to integrate individual change maps as "base learners" in an empirical modeling framework targeting forest changes of interest. Pilot studies over 6 Landsat scenes distributed across the US show significant reductions in commission and omission error when maps are combined in this fashion. LCMS is entering a production phase which will eventually produce change maps using every available TM and ETM+ image from across the country. LCMS pilot study results will be presented, and processing details will be discussed.