Mutlu Ozdogan
University of Wisconsin

Land-Use And Land-Cover Changes In Temperate Forests Of European Russia: The Past, The Current, And The Future

Our objective is to better understand the past, current, and future land-use and land-cover change (LCLUC) in the temperate forest zone of European Russia by integrating remotely sensed observations with social, economic, and environmental data within a well calibrated econometric model. The rationale for focusing on European Russia's temperate forests (including the temperate deciduous, coniferous and mixed forest zones in Russia, Belorussia, the Baltics, and the northern Ukraine) is twofold. First, LCLUC in this region is rapid. The breakdown of the Soviet Union and the subsequent socioeconomic changes weakened forest management and increased forest harvesting, as well as widespread agricultural abandonment, urban sprawl, and increasing forest fires. Unlike Russia's boreal forest, its temperate forests have received little attention by LCLUC science. This is unfortunate as temperate forests have much higher productivity and are under greater human pressure. Second, the Russian forest sector is changing rapidly, with increasing investments from foreign timber companies and changes in forest laws that shift control from the state to the regions. The Baltics experienced even more drastic changes when many forests reverted from public to private land ownership. What is unknown is how these changes in the forest sector have and will influence forest patterns and timber resource availability in our study area. We propose to fill this gap with a multi-part study including: i) Landsat TM/ETM+ based quantification of changes in forest cover during the transition period from the Soviet Union to today [1985-'90-'95-'00-'05]; ii) development of an econometric land-use/land-cover change model to relate past and current changes in forest cover to socioeconomic and environmental conditions; and iii) projections of amounts and patterns of changes in forest cover up to 2050 using the econometric model. The proposed research will also evaluate MDGLS Landsat and similar medium resolution datasets for temperate forest change monitoring. The principal contribution from the proposed investigation will be a comprehensive understanding of temperate forest dynamics in the European part of the former Soviet Union from 1985 to 2005, their socioeconomic causes, and projected future changes. As such, our proposal pertains mainly to the "Projections" component of the NRA. This research will provide an important regional assessment, and improve our understanding of coupled human-natural systems within three (GOFC-GOLD, IGBP/IHDP-GLP, and NEESPI) major international programs supported by the LCLUC Program. The project also pertains strongly to "management and protection of terrestrial ecosystems", "monitoring and conserving biodiversity", "management of energy resources", and to "supporting sustainable agriculture" of the GEOSS societal needs while contributing strongly to LCLUC Goals and Key Science Questions.