

Automated Assessment of Forest Cover Change

Rich amounts of data from remotely sensed images are available for detecting changes in forest cover. However, in spite of the importance of this problem and the considerable advances made over the last few years in high-resolution satellite data, data mining, and online mapping tools and services, end users still lack practical tools to help them manage and transform this data into actionable knowledge of changes in forest ecosystems that can be used for decision making and policy planning purposes. For instance, the contribution of greenhouse gases from deforestation is one of the most uncertain elements of the global carbon cycle. Without information about global deforestation patterns and fluxes, it is difficult to balance the present-day carbon budget and predict the effects of climate change. Recent research suggests that the role forests play in regulating global climate is larger than previously thought and will likely become even more important as alternative carbon sinks become saturated while forests continue to act as sinks throughout a century of climate change. Thus, for carbon management and many other tasks, the need to assess the state of forest ecosystems and how they are changing has become increasingly urgent. Our goal is to provide a technological solution which dramatically advances the state-of-the-art in this area. This proposal describes a system based on satellite data, new statistical approaches for improving the quality of satellite data, and innovative data mining algorithms that can use this data to provide timely and accessible information on global forest cover change.