EARTH OBSERVATION SYMPOSIUM (B1)
Earth Observation Data Management Systems (4)

Author: Mr. Casey Calamaio
University of Alabama in Huntsville, United States

Mr. Robert Griffin
United States
Prof. Sundar Christopher
University of Alabama in Huntsville, United States

GEOSPATIALLY DETECTING SACCHARUM SPONTANEUM: AN INVASION OF THE PANAMA CANAL WATERSHED

Abstract

The first report of the invasive species *S. spontaneum*, Paja Canalera or Canal Grass, in Panamà was in the late 1930's (Cerezo et al 2008). Since then the grass has claimed an astonishing prominence in the Panamà Canal Watershed in areas of low density, native tropical forest cover. Regions within the watershed most affected by this species are areas of urban and agricultural development, deforested plots of land, and sparsely vegetated fields in the vicinity of roads and power lines. *S. spontaneum* poses a threat to the biological diversity of Panamà by competing with the native tropical vegetation. During the dry season *S. spontaneum* poses a second more devastating threat by being very prone to fire, thus leading to increased forest fires separate from the natural regeneration of the rainforest. Out-of-date maps of the extent of the invasion reflect the need for a method to remotely sense *S. spontaneum* in the watershed. The methodology for this project consisted of first visiting numerous training sites with prominent *S. spontaneum* presence and mapping out regions of interest (ROI) with global positioning system (GPS) waypoints. Individual pixels containing the spectral value of *S. spontaneum* were then identified and through the use of ENVI Image Processing software and geographical information systems (GIS), the spectral signature of *S. spontaneum* was determined in multispectral and RADAR datasets then catalogued in a spectral library. The same methodology was applied to collect the spectral signature of *S. officinarum*, or sugarcane, which shares many physical and biological characteristics with S. spontaneum. The compilation of a spectral library in multispectral and RADAR datasets for both *S. spontaneum* and *S. officinarum* and the accompanying spectral profiles illustrates the ability to differentiate between two similar grass species in a tropical rainforest environment while providing the methodology to establish a comprehensive vegetation index of the Panamà Canal Watershed.