Multitemporal assessment of fires in South Florida using MODIS data

Douglas O. Fuller

Fire is a frequent occurrence during the winter months (December - March) in South Florida. At times, smoke from these fires has disrupted local transportation and degraded air quality in the coastal cities of Miami, Ft. Lauderdale, and Palm Beach. To assess the dynamics of recent fire events, MODIS thermal anomalies derived from the Terra satellite were used to analyze inter- and intra-annual dynamics of fires in south Florida from 2001-2004. A land-cover map derived from Landsat 4 and 5 imagery was used to understand fire distribution by land-use and land-cover category. Over 2,300 active fires were detected by the MODIS fire algorithm since 2001 in the area south of Lake Okeechobee. About 50 percent of all fires occurred in agricultural areas (mainly sugar cane), while the remainder were found in areas dominated by saw-grass (Cladium jamaicense) or fire-tolerant invasive species such as melaleuca (Melaleuca quinquenervia). 2004 was an especially active year with many wildfires (n = 296) observed in non-agricultural areas at the end of the dry season. Smoke from these fires forced the closure of the Florida Turnpike on two occasions. As the spread of invasive plant increases in south Florida, it is likely that such fires will become more intense and remain problematic until improved fuel management strategies are implemented.