Toward a Determination of the Extent of Lightning-ignited Forest Fires in the Caribbean

Authors

Dr. Andre Coy - Univesity of

Ms. Cherri-Ann Farquharson - University of th

Prof. Michael Taylor - University of the West Indies, Mona

Dr. Tannecia Stephenson - University of the West Indies, Mona

Ms. Candice Charlton - University of the West Indies, Mona

Abstract

Forests are estimated to cover more than 7 million hectares of the Caribbean region, which is approximately 30% of the total land area. The role of forests varies in each country of the region – they account for different land areas and have different ecological and economic values. These resources contribute to the livelihood of many, often poor people from rural communities, in the region. Beside the extractive functions, Caribbean forest ecosystems support several ecological services, such as watershed and soil protection, erosion control, landscape beauty, disaster risk reduction, carbon sequestration and climate regulation. Forests are critical to the provision of water in the region, which is used for a number of purposes, including, domestic, industrial, agricultural and recreational. The region's forested areas contribute to shaping national identity and national heritage, in fact many of these areas are UNESCO World Heritage Sites.

There are many natural and man-made threats to forests; fire accounts for the largest proportion of natural threats. Globally, it has been estimated that only 4% of forest fires are started by lightning or other natural phenomena. This low number, however, masks the wide variability that exists due to climatic and geographic factors. For instance, lightning accounts for only 7% of forest fires in Russia, however, in the sparsely populated regions of the north, up to 70% of the forest fires ae caused by lightning. Thus, it is important not to assume that the threat is low, based on global estimates, but determine locally, the extent to which lightning causes forest fires. Generally, lightning-initiated fires destroy more vegetation than human-caused fires, because they often occur in remote areas and are not detected quickly, so are left to burn for longer. Lightning caused fires also occur in inaccessible and often inhospitable places, where firefighters and their equipment cannot reach.

Information about the location and extent of lightning-ignited fires is required by the authorities to make informed decisions about where to deploy resources and for efficient forest management. This paper represents the first Caribbean-wide study of lightning-ignited forest fires. Using the Vaisala GLD360 lightning data set, and MODIS and VIIS satellite data for the years 2014-2018, the study will examine the temporal and geographical variations of these fires across the region.

Topic Areas

Applications of Lightning Data: Insurance Claims, Fire Risk, Mining, Wind Farms, etc.

Submission Format

Oral