

# Wildfires in the Caribbean

Continuing this series which looks at wildfire risks, trends and management across the globe, **Marcos P Ramos** and **Raúl González** report on the current wildfire situation in the Caribbean, with a particular emphasis on Cuba



**THIS ARTICLE PROVIDES AN** overview of the wildfire situation in selected countries of the Caribbean, with some specific remarks on the authors' home country – Cuba.

According to the United Nations Food and Agriculture Organisation (FAO) global forest inventory in 2005, forests cover about 25 per cent of the region's terrestrial surface, totalling 5.87 million hectares (ha). This area represents only 0.1 per cent of the global forest cover. Nevertheless, these forest ecosystems are very important for ensuring water supply, biodiversity conservation, and the tourist economy in the region.

During the period 1995 to 2003 in the four countries of Cuba, Dominica, Dominican Republic, Trinidad and Tobago, a total of 7,727 forest fires were officially recorded. During this period in three of these countries (Cuba, Dominican Republic, Trinidad and Tobago) the area burned in wildland fires was about 150,000ha. The average area burned was

about 20ha per forest fire. If we consider that 4ha/fire is an indicator that a country or region's fire management system is working efficiently, we can conclude that this average regional figure is rather on the high side.

The causes of forest fires in the Caribbean region are similar to those in most other countries in the tropics and subtropics. The

**Natural factors that affect wildland fires include lightning or drought, and the increase of forest fuels after hurricanes**

uncontrolled use of fire to convert forests to agricultural and pasture land, and the wildfires that arise from these slash-and-burn blazes, which then burn out of control, are the major factors in land use change and deforestation.

It should be mentioned that the rural poor are the most vulnerable

*A satellite image of the Caribbean region; the red spots denote forest fires*

people to be affected by wildfires.

Statistics from Cuba, Dominican Republic, and Trinidad and Tobago for the period 1995 to 2004 show that the vast majority of wildfires are caused by human activity (around 95 per cent).

There are some aggravating natural factors affecting wildfire risk, intensity and severity in this region. Examples of these include lightning or extreme droughts and the increase of forest fuels as a consequence of hurricanes; some of these factors are related to the effects of climate change or climatic variability.

In addition to this situation, in the past few years the main species of woodland used in forest plantation are eucalyptus and pine species which, in general, have a high wildfire risk.

Responsibility for forest fire protection in the 12 Caribbean countries – Bahamas, Barbados, Cuba, Dominica, Grenada, Guadalupe, Jamaica, Puerto Rico, Dominican Republic, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago – is mainly shared by the fire services and forest



five years (2006–2011), in order to reduce the environmental, social and economic impacts caused by wildfires in the region.

The development of this pan-Caribbean strategy is one part of the efforts of the countries in the area – and the international community – to increase synergies in the region and link to the Global Wildland Fire Network (GWFN), established within the framework of the United Nations International Strategy for Disaster Reduction (UNISDR). GWFN represents the nexus and meeting platform for the international fire community and is a Thematic Platform within the Global Platform for Disaster Risk Reduction.

In Cuba the assessment of fire hazard and fire risk is based on fuel types and weather conditions. Four hazard classes are distinguished: Very dangerous; dangerous; medium; and low. The first class includes natural and planted pine forests (*Pinus sp*), Eucalyptus species, Casuarina species and young plantation of other species. The second class includes adult stands of these three aforementioned species. The third and fourth classes include other forest ecosystems with less risk of fire occurrence and propagation.

The fire weather conditions are determined by the Nesterov method, modified for the Forest Research Institute of Cuba in 1994. This method considers rainfall in the previous 24 hours, along with dry bulb temperature and dew point temperature at 13:00hrs. A typical fire danger warning sign (image above right) shows the actual fire weather risk index (no fire danger; low, moderate, high and extreme fire danger).

Between 1998 and 2007 more than 3,200 forest fires were recorded in Cuba and these blazes affected 110,000ha of land. Most of the fires occurred between March and May (70 per cent). In these months, the fires affected about 87 per cent of total area burned. About two thirds of the area burned was natural forest and subsequent fire investigations reveal that about 13 per cent of these fires were caused by arson, 53 per cent by negligence and 11 per cent by

departments, and these organisations are often supported by the armed forces.

Emphasis is put on wildfire prevention by raising public awareness and education through national programmes – mostly during the fire season. These educational missives are primarily conducted through messages via radio, television, and newspapers.

## FIRE MANAGEMENT

Within this region only Cuba and the Dominican Republic have developed national fire management strategies or programmes. However, in 2006 the Caribbean countries developed a *Strategy for Co-operation in Fire Management*, the aim of which is to strengthen the co-ordination and interchange of know-how and experience, along with both technical and human resources, between all countries in the region. This initiative will achieve its aim through a consolidated regional mechanism that will allow bilateral and multilateral fire management with an initial projection of

## WILDFIRE TRIGGERS

*Breakdown of the causes of wildland fires in Cuba, Dominican Republic, Trinidad and Tobago, from 1995 to 2004*

Unknown	36.25%
Arson	31.49%
Negligence	28.86%
Natural	5.4%



lightning; the remaining causes are unknown.

Since 2007, the fire management system structure has been co-ordinated by the National Headquarters of the Forest Guard (Jefatura Nacional del Cuerpo de Guardabosques), within the Ministry of Interior. The Fire Management Department provides services in four subdivisions: Fire prevention; fire detection and suppression; fire use; and fire management training and research. Fire management specialists in each provincial headquarters of the Forest Guard are subordinate to the Fire Management Department and are responsible for the protection of the territory.

More than 30 professional fire crews are stationed in the high-risk forests of Cuba and operate all year round. The personnel in these units are trained for and tasked with fire prevention and suppression and are equipped with communication, hand tools and fire trucks. Additionally, the forest enterprises have 60 specialised fire crews. There are more than 50 volunteer fire crews providing support at community level.

In the skies, PZL M-18 (Dromader) air tankers are used for aerial attack and AN-2 aircraft are used for aerial patrol.

One important element in fire prevention in Cuba is the regulation of fire use. Instead of prohibiting the use of fire and thus leading to conditions that could favour illegal and uncontrolled fires, it is possible to receive a burning permit on request. The authorisation would be granted only after taking into consideration the fire season and riskiest times of the day.

## AUTHORS

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