

# SAFNet

Southern African Fire Network

## **INTERNATIONAL WILDLAND FIRE SUMMIT SYDNEY, AUSTRALIA, 8 October 2003**

### **STATEMENT BY THE SOUTHERN AFRICAN FIRE NETWORK (SAFNet) ON THE USE AND CONTROL OF FIRE IN AFRICA**

The Southern African Fire Network (SAFNET) is an open network of southern Africa fire scientists, managers and communicators that has functioned over the past four years. It currently comprises over 40 members drawn from nine countries of the Southern African Development Community (Angola, Botswana, Democratic Republic of Congo, Malawi, Mozambique, South Africa, Tanzania, Zambia, Zimbabwe), together with international partners, principally from the United States of America. The network was originally formed to contribute regionally to the development and validation of a burned-scar algorithm for use with remotely-sensed data from the MODIS sensor on the NASA-Terra satellite. Currently its members work in fields as diverse as: acquisition and provision of remotely-sensed data and information products; capacity building and training in remote sensing and the use of geographic information systems; community-based fire management and livelihoods; institutional arrangements and policy with respect to fire; measurement of emissions, both nationally and regionally; operational fire monitoring and management; and the provision of national fire statistics, including assessments of how much land is burned annually. SAFNet supports the efforts of the Regional Sub Sahara Africa Wildland Fire Network ("Afrifirenet"), set up under the auspices of the UN-ISDR Inter-Agency Task Force for Disaster Reduction, Working Group on Wildland Fire (WG-4), and coordinated by the Global Fire Monitoring Center, to assist in capacity building in wildland fire management and develop early-warning systems for wildland fire, fire monitoring and impact assessment in Sub-Saharan Africa. Together with Afrifirenet, SAFNET is willing and able to work with the international community on global fire monitoring, and in developing and implementing rational and workable solutions to the problems of establishing more controlled and responsible uses of fire in the continent.

Wildfires are common and widespread throughout Africa. On average, an estimated 1.7 million km<sup>2</sup> (17 % of the land area) burns annually south of the equator. Most of these fires are started by people, both to modify their environment, for a variety of reasons related to land-use, and to facilitate harvesting of natural resources. Some are started by lightning. Fires are a source of greenhouse gases that contribute to changes in atmospheric chemistry and, potentially, to global climate change, an issue of increasing international concern. At a regional level, wildfires, together with other sources of biomass burning (e.g. domestic hearth fires using wood fuel), contribute to the regional aerosol load, which in turn can affect energy balance and hydrology at a sub-continental scale.

The use of fire as a land- and resource-management tool is deeply embedded in the culture and traditions of many societies in Africa. It is generally cheaper and easier to use than any other means of clearing land. Fire is widely used by farmers to remove unwanted biomass from land being opened up for cultivation, or to fertilise nutrient-deficient soils by releasing nutrients sequestered in plant biomass. Pastoralists set fires in the late dry season, both to induce a flush of protein-rich grass on which their livestock can graze and to control bush encroachment. Wildlife

agencies use fires to manage vegetation structure and reduce fuel loads. Hunters used to apply fire to drive animals or to attract them later to the re-growth on the burned areas; some still do. People also use fire to create firebreaks around their homesteads or to improve visibility and enhance security against predators or other dangerous animals, especially along paths between villages. Some wildfires undoubtedly start through carelessness or inadequate control while people are cooking, smoking out beehives, making charcoal, or trying to keep warm while waiting at the roadside for transport. Others are started by individuals playing with fire recreationally or using fire with malicious intent.

These uses of fire have both advantages and disadvantages. People clearly benefit from using fire. Fires are also integral to the functioning of many African ecosystems. They affect organic matter and nutrient dynamics, maintain habitat for species that have evolved with and are adapted to fire, and act as natural disturbances that alter the composition of plant communities and the age and size structure of their constituent species. As such, fires at appropriate frequencies and intensities are crucial in maintaining the diversity and productivity of many African ecosystems. Fine smoke particles can serve as cloud condensation nuclei, potentially enhancing rainfall locally. Depending on where in the atmosphere these clouds form, they can either reflect incoming radiation, resulting in atmospheric cooling, or trap outgoing longwave radiation, thereby promoting the greenhouse effect.

Some fires clearly endanger lives and property, and can cause substantial losses of timber, grazing and other valuable natural resources. This is particularly true for the more economically developed parts of the region where annual damage runs to tens of millions of US dollars. For other areas, however, the cost of damage is not known but must also be considerable. For individuals and communities without insurance or savings, such fires can be devastating. Repeated burning can also damage vegetation and, more generally, habitat for plants and animals, thereby potentially threatening some elements of biodiversity. Frequent late dry season fires transform African woodlands into open grassy savannas with only isolated fire-tolerant canopy trees and scattered understorey trees and shrubs, though usually in concert with initial opening up of the canopy of these woodlands by people or elephants. Such fires suppress the re-growth of woody plants, preventing their recruitment to the canopy. In contrast, complete protection from fire, and to a lesser extent early dry season burning, favours both the recruitment and growth of woody plants. Excluding fire in the long term in such a fire-prone region is impractical for all but small areas, however. Too frequent burning almost certainly has associated impacts on the fauna, though these have been less widely studied. The accumulation of smoke, haze and atmospheric pollutants causes an obvious deterioration in air quality over the subcontinent during the dry season, with accompanying risks to human health.

The negative impacts of fire tend to dominate urban public perceptions; the positive effects are often overlooked or not fully understood. They are nevertheless important to put across if only because any assessment of the costs and benefits of burning and its control must take into account both sets of impacts, in particular, within an African context, on people's livelihoods. Poverty is widespread in Africa, especially in rural areas. More than 40 million people in southern Africa are classified as living in extreme poverty. Most depend on the use of natural resources to sustain their livelihoods, with fire being important as a tool in the extraction of some resources and as a destroyer of others. Any attempt to reduce the incidence of fire in this region will need to be broad-based and will have to address the reasons why people use fire; what they seek to gain through its use; and what the various consequences might be of changing the pattern of use. In short, a strategy for more restrained burning will have to be developed within broader land-use and resource-management programmes.

Social, economic and environmental conditions are changing rapidly in Africa. Increases in land-use intensity and changes in land-management practices are likely to affect fire regimes directly, through alterations in the ways fire is used, and indirectly, through modifications to fuel loads and environmental conditions. Just how these factors are changing, and with what local, regional and global consequences needs to be monitored and understood. SAFNET believes that integrated and systematic ground- and satellite-based observations of these changes and their implications for fire management are required. One of the advantages of satellite-based observations is their temporal resolution capabilities, which is essential in monitoring hazardous fire events and the conditions giving rise to them. To the fullest possible extent, members of the network intend to work with their regional and international partners to provide such information to fire protection associations and management agencies. Beyond this, information about the incidence, extent and impacts of wildfires is needed for a variety of other purposes by assorted organisations and interest groups, ranging from people living on communal land to commercial land users and government agencies with statutory responsibilities for protected areas. Needs differ depending on the problem being addressed and the kinds of response planned, but primarily they relate to concerns about global and regional impacts of excessive and uncontrolled burning, broad-scale trends over time, and the options for instituting protocols that will lead to greater control but without sacrificing the benefits that can come from using fire responsibly. Although the information required at the level of policy and decision making is more general, it cannot be wholly separated from that needed at more operational levels of management, since policies must be practical and achievable.

Where central governments in Africa have attempted to regulate the amount of burning, this has been done largely through laws designed to prevent uncontrolled fires by making it illegal to burn vegetation without authority. Given the ease with which fire can be started, and the enormous area of fire-prone vegetation across Africa, it is patently impossible for central governments to exercise such control. That control, if at all possible, can only be achieved with the consent and co-operation of those using fire on a daily basis. In view of the many benefits that people receive from using fire, it is not surprising that attempts to prevent or restrict burning generally fail. Perversely, they may even increase the incidence of uncontrolled burning by discouraging people who light a fire, for whatever reason, or who might come across one burning uncontrolled, from attempting to control it, for fear of being identified as the person who started the fire. And where does the responsibility lie in the case of a land manager who does not put in a fuel-reduction burn, despite this being the wisest course of action, thereby resulting in a build-up of fuel and a subsequent damaging wildfire? Such a person may decide not to burn simply for fear of being held to account, whereas if a wildfire happens, due to the resulting fuel build-up, he or she generally will not be blamed. This imbalance of responsibility needs to be corrected, to protect farmers and other land managers who take overall well-thought out pre-emptive actions, as sanctioned by local values. The emergent South African Fire Protection associations, to which responsibility for fire management locally has been devolved, are perhaps a model in this regard.

A policy of controlled burning – planned, coordinated and carried out at a local level and aimed at influencing people to use fire more carefully – therefore seems to be the only viable option to the present largely unrestrained use of fire. Over much of Africa, where communal land tenure is the tradition, this requires giving local communities much greater responsibility for controlling how and when fire is used. By seeking to institutionalise responsibility for burning within communities, more restrained and accountable patterns of use should emerge. Communities need to be encouraged to draw up fire management plans for their areas and be given the authority to

implement them. Governments therefore should be encouraged to devolve appropriate authority for fire control to local institutions, where these exist. Where they do not, or are non-functional, they will need to be established or revitalised and the capacity of communities to make their own decisions strengthened. External assistance is likely to be crucial in facilitating this process, both in helping develop the required managerial capacity and in providing the technical information and resources needed to implement the decisions taken.

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