

## *Climate change and fire danger*

Fires that are lit on high fire danger days are larger, more intense and more difficult to control than on other days. Although there is little conclusive evidence that arsonists specifically target high fire danger days (see Bushfire arson bulletin no. 39), deliberate bushfires which are lit on these days are potentially more dangerous and, as they require more effort and resources to suppress, they impact on the ability of fire services to fight other fires. One possible consequence of climate change is an increase in the number of high fire danger days which is likely to increase the number, size and intensity of bushfires.

High fire danger days are indicated by the level of the Forest Fire Danger Index (FFDI) which was defined in the late 1960s to quantify the risk of bushfires. It takes into account temperature, relative humidity, wind speed and an estimate of fuel state, which is determined by daily rainfall and the time elapsed since the last rain. The fire danger rating of very high is applied when the FFDI is over 25 and extreme when it exceeds 50.

A recently published report looked at the potential effects of climate change on high fire danger weather in southeast Australia (Lucas et al 2007). The report modelled future fire danger using global warming estimates sourced from the Intergovernmental Panel on Climate Change (IPCC). The IPCC estimated global average temperature increases of 0.4 – 1.0°C by 2020 and 0.7 – 2.9°C by 2050. Relative to 1990, the predicted increased risk of very high or extreme fire danger days by 2020 was estimated at between 2 and 25 percent for low global warming, and 10 to 65 percent for high global warming. By 2050 the increased risks were predicted to be between 5 and 50 percent for low global warming and 20 to 300 percent for high global warming (see Table 1).

**Table 1: Percent changes in the number of days with very high and extreme fire weather – 2020 and 2050, relative to 1990**

	2020		2050	
	Low global warming (0.4°C)	High global warming (1.0°C)	Low global warming (0.7°C)	High global warming (2.9°C)
Very high	+2 – 13%	+10 – 30%	+5 – 23%	+20 – 100%
Extreme	+5 – 25%	+15 – 65%	+10 – 50%	+100 – 300%

Source: Lucas et al 2007: 3

In addition, due to the increase in accumulated fire risk over the years, these changes will result in fire seasons starting earlier and ending later. Longer seasons and more high fire danger days will result in fewer opportunities for prescribed burning and will require more resources to be devoted to bushfire suppression and control. Combined with the likelihood of increased water shortages, efforts to understand and prevent deliberate bushfires will become an increasingly important component of Australia's fire management strategy.

### **Reference**

Lucas C et al. 2007. *Bushfire weather in southeastern Australia: recent trends and projected climate change impacts*. <http://www.climateinstitute.org.au/images/stories/bushfire/fullreport.pdf>