

Australian climate scientist discusses global warming impact on Victorian fires

Frank Gaglioti
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One aspect of the February 7 Victorian bushfire disaster—the worst in Australian history—that has received scant attention in the corporate media has been the contribution of global warming to the tinderbox conditions in southern Australian forests and the unprecedented ferocity of the Black Saturday fires.

Over the past 20 years, climate scientists in Australia and internationally have consistently warned that global warming would have a serious impact on the local environment and lead to a rise in the number of fires. Even prior to the February 7 inferno, Victoria was recognised as one of the areas in the world most prone to bush fires.

Climate scientist Professor David Karoly recently spoke with World Socialist Web Site reporters about the long-term changes in the global climate that contributed to the severity of the Black Saturday fires.

Karoly is a professor of meteorology in the School of Earth Sciences and holds an ARC Federation Fellowship at the University of Melbourne. He was a lead author and review editor on the latest assessment report of the Intergovernmental Panel on Climate Change (IPCC) published in 2007. The IPCC was established by the United Nations to assess scientific aspects of climate change.

Frank Gaglioti: You have previously noted that while climate change did not cause the fires on Black Saturday, it did contribute to increased average temperatures and reduction of moisture. Could you elaborate?

David Karoly: Linking climate change to individual extreme events is difficult. We have had bush fires in Victoria and south-east Australia in the past, but it is very difficult to say that climate change has specifically caused an individual event, even though some of the conditions associated with the horrendous bush fires on 7 February were unprecedented.

It's easier if you have conditions that are outside the range of recorded temperatures. We have 150 years of high-quality weather observations for Victoria and the events that occurred on 7 February—for temperatures, relative humidity and low rainfall—haven't occurred in the past 150 years of observations. So something unusual was happening.

It's still within the realm of possibility that the extreme

conditions could have happened by chance but to assess that we have to look at what sorts of variation we've had in the last 150 years and what we saw on the specific day.

What we saw on 7 February were higher maximum temperatures than have ever been recorded before in Victoria—3 degrees [centigrade] hotter than the previous record highest temperature in February. It's an unbelievable increase to break the record by that amount.

We had the lowest ever humidity, which is the amount of moisture in the air, very typical of desert conditions. We also had the lowest rainfall at the start of a year ever and have had an unprecedented 12-year long dry period in Melbourne and much of south-east Australia. It is difficult to say that low rainfall is necessarily due to climate change but it is remarkably consistent with the climate model projections.

With temperature, we can look at the amount of warming expected from greenhouse gas increases, which is about 6 to 8 tenths of a degree over the last 50 years. The previous record for the hottest day in Melbourne was set on Black Friday for the bushfires in 1939 and it was 8 tenths of a degree cooler than the record set on 7 February 2009, which is exactly the amount attributable to warming expected from greenhouse gasses.

So although it's hard to attribute to an individual event, everything we are seeing is exactly consistent with the changes expected from increased greenhouse gases.

Rainfall conditions, low humidity and extreme high temperatures are combined together in what is called the Forest Fire Danger Index (FFDI). A FFDI of 50 is used to declare a Total Fire Ban day in Victoria. The Black Friday bushfires in 1939 were used to set a base line of 100, which is a fire danger twice as extreme than the standard total fire ban day. On Ash Wednesday [in 1983], we had values around 120.

For the fire on 7 February, we had unprecedented high values throughout many sites in Victoria—never recorded before—of between 150 and 190. Some people say they were higher than that.

The catastrophic fire category was introduced for bushfire

conditions greater than 100. The Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Bureau of Meteorology did some analysis on how the FFDI had increased during the 2000s compared with an earlier period, and it showed that there were large observed increases. They also did analysis of climate model changes associated with increased greenhouse gases and, in fact, predicted a marked increase in these catastrophic fire danger episodes in simulations—exactly what we experienced on 7 February. These sorts of events may occur twice as frequently over the next 25 years.

FG: Many climate scientists have consistently warned of increased fire risk and much more severe fires for the reasons you've just outlined. Could you comment on how these warnings have been received by government?

DK: I haven't directly reported this information to individual members of parliament but there have been a number of overall assessments of the impact of climate change in Australia and the increased risk of extreme fire danger days. Increased intensity of fires has been reported for at least a decade or more as part of many research reports.

I was involved in research on climate change impacts associated with bush fires in Australia a decade ago. That work was reported in each of the IPCC assessment reports looking at Australia and New Zealand, not only in the most recent report in 2007 but also in the 2001 report on Australia, and in reports to the state government for more than a decade. So the information of the increased frequency and intensity of fires is not new to the government.

FG: And the government response?

DK: In some ways, they've responded to the adverse impacts of climate change. They've read them, put them into a bundle and said this is a problem and unfortunately then merely paid lip-service to the actions required either to rapidly adapt to the impacts of climate change or reduce emissions and slow down global warming.

Both of these approaches to climate change require significant research and investment of funds. There's been a substantial amount of discussion, web sites, reports and even investment in adaptive strategies through advertising campaigns on reducing emissions but relatively little substantive action.

The vulnerability of communities impacted by these fires indicates that not enough is being done to reduce vulnerability or the impacts of these events. This is also indicated in the response, or lack of response, to the flooding [during February] in north Queensland. So it's not just fires—there are many adverse impacts.

The simple response from government appears to be talk about it, produce reports, and encourage the community to do something, but then put it into the too-hard basket to deal with later on.

FG: Could you comment on Victorian Premier John Brumby's statement that the fires were a "monster that couldn't be controlled".

DK: My understanding of these fires and other fires is if the fire danger index gets above 100—remember we've had incidences of 150 to 190—it's effectively impossible to control the fires. Brumby's comments are exactly consistent with that.

It's remarkable that the fire danger threat was very well forecast by the Bureau of Meteorology and the Country Fire Authority (CFA) a day in advance and even three days in advance.

FG: What sort of things could have been done under these conditions?

DK: In some instances it may be that evacuation—leaving the areas—was the least risky solution.

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