

Bushfire scientist warns that Australia's disaster is "a wake-up call"

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The *World Socialist Web Site* recently interviewed Dr Luba Volkova, a senior research fellow at the University of Melbourne, about Australia's bushfire crisis.

Volkova has analysed forest fires and emissions, and bushfire fuels, for the past 10 years. Among her many bushfire-related projects, she co-authored the revision of the Australian methodology for estimating forest fires emissions in reporting to the United Nations Framework Convention on Climate Change (UNFCCC).

Volkova was involved also in the development of the smoke dispersion model (updating bushfire fuel loads), which is now used in Victoria and has been proposed as the Australia-wide system. She is currently working with the Indonesian Ministry of Forestry and Environment to improve knowledge of peat-fire emissions.

In her written answers, Volkova inserted references to scientific publications.

Frank Gaglioti: Is climate change a significant factor in the lengthening and strengthening of the bush fire season? If so why?

Luba Volkova: Yes it is, for southern Australia, climate change has led to the increase in average temperatures and decrease in rainfall since the mid-1990, as well as the increase in fire danger days (i.e., windy, hot and dry days). Thus weather is becoming hotter and dryer for longer, leading to the lengthening bushfire season.

FG: What were climate scientists' warnings?

LV: Modelling indicated that weather in southern Australia will become more extreme with greater frequency of wildfires, shorter fire return intervals and more intense wildfires. See Table 1 from the report to the Bushfire CRC [Cooperative Research Centre] [1]. Now we are in the situation when the number of extreme fire weather days has increased by up to 65 percent. If no actions are taken to address climate change, by 2050 we may reach up to a 300 percent increase in extreme fire weather days.

This season, bushfire risk was exacerbated by record breaking drought, and the much earlier arrival of hot weather, which did not allow managers to conduct any (or very few) prescribed burns. Thus we had high loads of very dry fuels combined with record-breaking heat and prolonged drought.

FG: What do you think about the warnings being ignored?

LV: I think this wildfire season is a wakeup call and hopefully (and finally) something will be done to address the problem of global warming. I also believe that if nothing is done to address climate change this wildfire season will be a preview into our future.

FG: Could you compare this fire season to others in the past?

LV: This fire season is much more extreme than ever before. The closest in scale (and tragedy) was the 2009 Black Saturday fires, which burnt about 0.4 million hectares but claimed more lives (177). In this season, already more than 10 million hectares have been burnt and while 25 people died, this toll would have been much higher if the lessons from the Black Saturday fires were ignored. So well done to the Land Management Agencies for the great job and efforts in protecting our communities.

FG: Did you see the statement signed by 11,000 scientists and published in the journal *BioScience* in November. It said "planet Earth is facing a climate emergency." It noted that over the course of four decades of global climate negotiations, "with few exceptions, we have generally conducted business as usual and have largely failed to address this predicament..."

"The climate crisis has arrived and is accelerating faster than most scientists expected. It is more severe than anticipated, threatening natural ecosystems and the fate of humanity ... Especially worrisome, are potential irreversible climate tipping points and nature's

reinforcing feedbacks that could lead to a catastrophic ‘hothouse Earth,’ well beyond the control of humans. These climate chain reactions could cause significant disruptions to ecosystems, society, and economies, potentially making large areas of Earth uninhabitable.”

LV: Yes, I read the article, and I agree it is the climate crisis, and this bushfire season in Australia is the example (and just the beginning). But I also think that each of us should also take personal measures to reduce our individual emissions, not just waiting for the governments to come up with solutions and regulations. And this is very difficult!

FG: What is the importance of global warming and what has been governments’ reaction?

LV: An increase in average temperature by 1 degree C since 1800 causes disruption of air flow (hotter air at North and South poles leads to slower air flow). This leads to extreme weather events such as flooding, hurricanes, bushfires more often and more intense than ever before, etc. This leads to catastrophic loss of biodiversity, species extinction, human tragedies, etc.

Each government responds differently. Some countries have pledged to be carbon neutral by 2050 (e.g., New Zealand). In Australia, the current government position is to maintain its election promises and achieve emission reduction targets though investment in the renewable sector.

As per the Australian Broadcasting Corporation’s January 12 interview with the prime minister, our climate change policies are continuing to “evolve.” I hope they will evolve into something meaningful.

Yet, individual states can come up with more ambitious targets like the Australian Capital Territory (ACT), which has made a pledge to be carbon neutral by 2050 (it was done before these wildfires).

FG: How do the bushfires in Australia compare to wildfires in California and internationally?

LV: I think this is the biggest recorded wildfire in history, with an estimated 10.3 million hectares already burnt (compared to about 7 million hectares for Siberia and 105,000 hectares for the 2019 California fires).

FG: Do you have an opinion on the importance of burn-offs or fuel reduction burning?

LV: They help and this is why they are implemented routinely in southern Australia at about a 15–30-year return interval. But we need more of them and more often. I have observed that prescribed burning conducted 3 months before a wildfire had stopped the wildfire and greatly reduced emissions [2].

Also, along with my colleagues from the CSIRO [Commonwealth Scientific and Industrial Research Organisation] and the University of Melbourne, I recently developed a full carbon model specifically looking at the emission abatement potential of prescribed burning (currently there are no such models available to the government).

Our model showed that in the scenario when we have more than three wildfires per century (historically it was one), there is a mitigation potential of prescribed burning conducted at 5–7-year return intervals. The mitigation is achieved by increasing soil carbon and by protecting above-ground storage through avoiding tree mortality (not to say the impact on communities and wildlife).

Such a return interval (5–10 years) is also the most beneficial for direct suppression attack [3]. Frequent burning is also in line with Aboriginal practices.

Yet, conducting prescribed burning at such short return intervals is very expensive and requires communities to be on board in supporting the burning practices, as well as conducting burning on private lands. Also, burning must be strategic and conducted around important assets.

References

[1] Lucas, Hennessy, Mills and Bathols (2007). Bushfire weather in southeast Australia: recent trends and projected climate change impacts. Consultancy report prepared for the Climate Institute of Australia. Melbourne: Bushfire Cooperative Research Centre, Australian Bureau of Meteorology and CSIRO Marine and Atmospheric Research.

[2] Volkova, Meyer, Murphy, Fairman, Reisen, and Weston (2014). Fuel reduction burning mitigates wildfire effects on forest carbon and greenhouse gas emission. *International Journal of Wildland Fire*, 23 (6), 771–780.

[3] McCarthy and Tolhurst (1998). Effectiveness of firefighting first attack operations by the Department of Natural Resources and Environment from 1991/92–1994/95. Fire Management Branch Research Report No. 47, Victorian Department of Natural Resources and Environment, Melbourne, Victoria.



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