

Understand your bushfire risk

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Chair

Welcome Justin

Justin Leonard

Thanks Malcolm, and thanks Kevin for setting up that fantastic framing of what bushfire risk is in the landscape. Kevin's done a fantastic job of drawing a complete circle around all the considerations that we need to unpack when assessing our risk at the individual house location.

I'd like to drill into some of the up-and-coming data sets and processes that help us with some of the more difficult ones in that broader context to try and quantify, and that comes down to trying to understand things like quantifying the weather, how bad the weather could be at your location and how that translates to the severity we might experience in that particular location.

Imagine if we could readily access an informational data layer that describes what a reasonable worst case bushfire intensity might be, that your home could experience and to unpack what that is in the coming season. But also to extend that understanding to what kind of severity it might face under a climate changed future at some logical time in the future. We're planning or trying to upgrade our house to be ready for not just what we're going to face in the near term but over its reasonable life. What if we could also have those data layers be that official data layers that both state and federal governments refer to as the official layers that quantify that, and our regulations and planning and building regulations are consistent with the ones that we can access as community members. So, it's bringing that whole process together to answer a couple of the line items in Kevin's qualification of that broader process.

By no means is it the complete picture, it's some of the key, more challenging processes, for people to get their head around. Luckily most of the other processes are able to be understood and gleaned from observing the landscape around us. So how do we do that? It's a problem that is quite consistent across all of Australia. Many places across the whole nation face it. So, we're set up, with the support of the federal government, to actually provide and qualify these as complete national maps. That's getting the right terrain layers, the right weather layers, and the detailed vegetation and the fuel attributes that go with that vegetation, mapped in very fine scale and combined into a clever mapping system.

Now, we have to do quite interesting things to those, like a terrain layer needs a certain type of smoothness to it and something like a 30-metre smoothing, like Google Earth looks like (if you've ever used Google Earth and looked at how smooth the terrain is). That level of smoothness is about what the fire actually responds to as it moves through the landscape.

The weather we use to qualify is actually hourly weather that goes back about 40 years from the 1970s to present and that qualifies where the worst events are in that data set, what they mean and how frequently they occur. And then we use that comprehensive hour by hour data set over that age timescale and our global weather models to project into the future to give us expected worst case fire weather in hourly time steps at very distant times in the future like 2050 or 2090.

And that tells us what we could possibly expect our houses to have to put up with fires that occur under those worsening conditions.

And you certainly might have heard of various descriptions of what fire weather will be like in the future. There's descriptions like "Yeah so the average fire weather might be going up in some places and down in others". Unfortunately the message is that it's going up in most places. But it's

also the variability in that weather is growing, so the worst events are worse, and their duration so that's adding to the shift. Everything's getting a bit warmer and drier and the variability is increasing so unfortunately, the message is that the most extreme events are increasing in frequency and magnitude universally across Australia. That's an unfortunate message to swallow but an important one that we need to think about when planning our house on an immediate landscape.

In terms of fuel classifications and ecological classes we use high resolution vegetation models and we stick with ecological classifications so that when we go out and start thinking about fuel treatments and modifying the bush to manage risk. We can also relate to how that might have either a positive or a negative impact on our ecological waves. They can then be translated into estimates of how severe the fire might be at very high resolution around houses. We can actually map out the severity of fire and relate that to how much we need to harden our structures. We can even go on to creating layers and nominal values on structures to say that the nominal likelihood that the typical house could have a certain likelihood of failure in the reasonable worst-case scenarios. That would go to set up a context to whether you want to significantly improve that from that level using various methods. It can also serve to inform building codes and it can inform things like rating tools and systems such as the one Ian Bennetts is about to present.

Now how does it look and feel? Once again, just reinforcing that we can combine fire weather, severity, slope, and vegetation into a severity potential map. What would be the severity of fire proximal to your house if you combined these three things? It's like the local estimate and that can then be related to things like quantifying the severity and intensity of the fires proximally.

And you might find that this looks a little bit like a bushfire planning map. In fact, it is. This is a bushfire planning map for the state of Queensland that not only declares what's bushfire prone formally within their regulations but qualifies the severity classes that fall within that and a buffer around it and that's a 100m buffer that we're aware of in their planning and building systems. This sort of approach is used in some states in some authorized ways and what we're doing is making that quite universal and then also opening it up for public access and for utility with certain tools that the public can then use to qualify their own circumstances in terms of hazards and their vulnerability.

That can be used in a number of different ways. Such as an approach like this where the mapping can show you which vegetation around your particular structure presents a certain amount of intensity or hazard to your property. It shows the sphere of influence where you might want to apply fuel management and/or harden the building to be adequate.