



## Firetech startups have solutions for bushfire response

Radio National Breakfast - 26 September 2023  
A/Prof Marta Yebra of ANU Bushfire Research Centre  
Philip Vanderburg, CEO of Carbonix

Audio Link: <https://www.abc.net.au/listen/programs/radionational-breakfast/bushfire-tech/102898462>

<b>Patricia Karvelas (PK)</b>	An early bushfire season that saw blazes burning in three states last week has forewarned the long, hot and dangerous summer fire season. We have ahead. This week representatives from more than 200 crisis management response and recovery organizations met in Canberra to discuss what more can be done in the coming months to better prepare. But some startups say they already have the novel technologies and ready-to-deploy solutions that could be used to help fight fires this season - that is if the government is willing to work with them. This morning, we're joined by Philip Vanderburg, the CEO of Carbonix, it's a startup developing fleets of uncrewed aircrafts to track the spread of remote fires. And Associate Professor Mata Yebra from the Australian National University Bushfire Research Centre for Excellence. Welcome to the program.
<b>Philip Vanderburg (PV)</b>	Good morning.
<b>Marta Yebra (MY)</b>	Good morning.
<b>PK</b>	Thank you for being here. Professor Yebra, you've been researching bushfires for years. How significant is the threat we're facing this summer?
<b>MY</b>	Well, that's a \$100 million question. And I guess, this summer, well for a catastrophic bushfire to happen we need three ingredients. We need fire weather conditions that are prone to fires; we need dry fuels and big fuel loads; and we need a source of ignition. So it's obvious that we are already having the conditions in terms of weather. The announcement of the El Nino system, gives us those hot weather and dry conditions that we need. But the dry fuel is not still there. I mean, looking at the Australian flammability monitoring system - we see some areas in the in the northeast of Sydney that are below average in terms of fuel moisture content condition. And we know that there has been a lot of rains that have bring up a lot of fuel growth. But it's still a forested areas are not as dry as they were in, for example, the 2019-2020 fire season. So we are seeing dryness in the landscape. But no, it's still not as dry and extensive as they were in the 2019-2020 fire season.

<b>PK</b>	Philip, what specific technology has your startup company? Carbonix developed for Australia's fire management?
<b>PV</b>	Yeah, so we develop long range aerial drone systems, which enable capturing critical areas of data particularly use in the prevention of bushfires. And I've been working with ANU for the last two years and particularly in helping their research efforts in towards these goals.
<b>PK</b>	Your drones have been modified to be able to weather the rigors of Australian bush fires and provide real time data. So what kind of insights are you seeing and how is this being used in fire prediction?
<b>PV</b>	So we we in fact, use thermal cameras or ISR cameras. So it's really about getting that situational awareness on the ground, particularly when a storm goes through a particular area where there's going to be a whole bunch of hotspots. And you can send manned aviation after a storm, chasing the storm, using the ANU terminology. But actually, it's much safer to enable or to provide a drone or an unmanned system to kind of spot where the hotspots are. So that actually they can be prevented or extinguished before they actually become big bushfires.
<b>PK</b>	So are the drones manufactured here? And are they expensive to produce? Like to actually roll this out in a bigger way - what do you need?
<b>PV</b>	So, we design, and everything's manufactured, in Australia, so it's a pure sovereign capability. We have a partner company called Quickstep who's also producing these aircraft for us, which allows us to really kind of scale the production before the requirements that are needed. So yes, everything we have is fully Australian.
<b>PK</b>	Professor Yebra Is this the sort of thing that we need to be seeing rolled out more broadly?
<b>MY</b>	Again, definitely, and that's why we partner with Carbonix at ANU. So, apart from the advantages that we just heard, they can fly faster to verify locations and sometimes, for example, when when it comes to lightning storms that normally happen late in the evening, sometimes normal aircraft, manned aircraft cannot be sent or deployed because they are very dangerous flying conditions, or they have limitations to fly at night-time. So sending an autonomous vehicle like drones that can quickly be deployed to areas of high risk, or areas the lightning strike has hit and there is potential for an ignition, is a big step forward for safety also for the crews.
<b>PK</b>	The National bushfire summit Phillip was held in Canberra earlier this week, over 200 people from Fire Authorities, states, territories, community leaders, like lots were there. Have you approached the government to explore opportunities for collaboration on this sort of work?
<b>PV</b>	We have approached various government agencies, but we're seeing a lack of adoptions, and you know, are very kind of happy with the work that we've been doing with the ANU and their their stakeholders as well. It's been interesting to see how you know, kind of with the urgency associated with the upcoming bushfire seasons, actually, the kind of the phone has not been ringing red hot on this particular topic, even though particularly on foreign soil and this case, you know, in Northern Territory, US and Canada, we have been approached and are working with local entities there to kind of start

	putting our systems into play to not only prevent, but also to monitor the current wildfires out there.
<b>PK</b>	Just final word to you, Professor Yebra, the Agriculture minister Mary Walsh, said that the States have done everything they can when it comes to hazard reduction. Do you agree?
<b>MY</b>	Well, I guess they have. I mean, that is, most of the efforts are focused always on hazard reduction in terms of prescribed burning. And of course, that's only one piece of the puzzle. And there has been even research saying that in certain conditions, those burns are not effective. So I think we need to be a bit more holistic and, and for example not only focus on hazard reduction, but also on investing in new technologies for early fire detection. And the drone technology is just one of the technologies that we can invest in - we have also ground sensors, cameras on towers, satellite technology, that all can be used in an integrative way to detect fires early. And of course, if we do that, then the higher the chances of a first attack success. But also, again, improving forecasting on fire risk conditions, they get in better information about the fuel at a national scale, has been another recommendation by national and local inquiries.
<b>PK</b>	Thank you to both of you for having this conversation, which I think is going to be a daily conversation as the months roll on. Thank you so much. Thank you. Philip Vanderburg is the CEO of Carbonix and the Associate Professor Marta Yebra from the Australian National University Bushfire Research Centre of Excellence and this is ABC RN breakfast.