

GEOGRAPHY TEACHERS ASSOCIATION OF AUSTRALIA (GTAV) ARTICLE FOR QUARTERLY INTERACTION MAGAZINE. BUSHFIRES: IS THE 2019/2020 BUSHFIRE SEASON A PORTENT FOR THE FUTURE ?

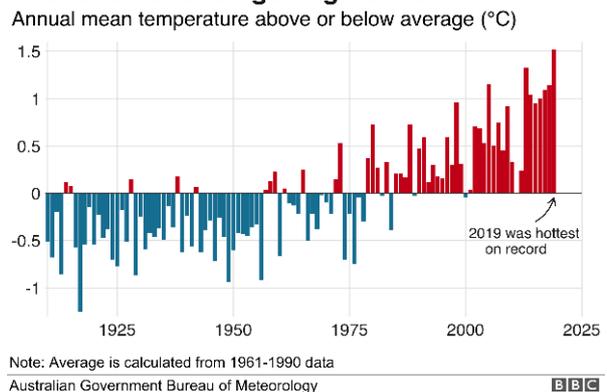
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This article initially briefly reviews the Australian weather pattern for 2019. It then analyses the emergency response stage initiatives which affected bushfire communities experienced through during the height of the 2019/2020 bushfire season, and the longer recovery stage initiatives which individuals and communities are currently working through. It then briefly looks at Disaster Risk Reduction (DRR) requirements which are needed for the future, these including the requirement for robust climate change action.

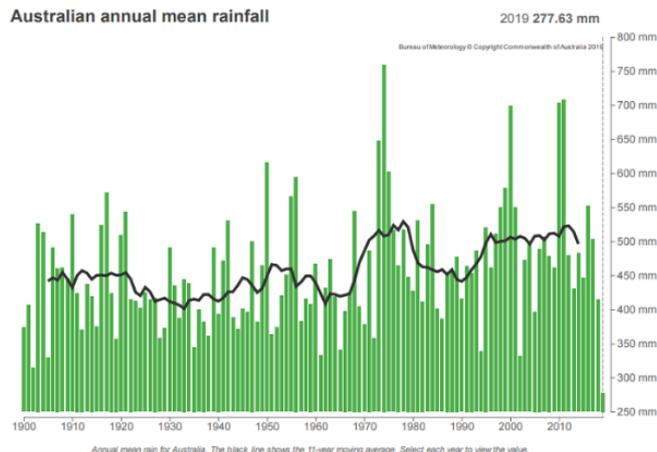
By early 2020, Australia had already experienced its most dramatic bushfire season ever. With fires breaking out across most states and territories, by late January over 2,000 homes had been destroyed, over 10 million hectares of countryside burnt out, and at least 32 people dead. The Bureau of Meteorology (BOM) indicated¹ that 2019 was a year of weather extremes. What was incontrovertible however was that the annual mean rainfall was the lowest ever, whilst the annual mean temperature was also the highest ever (see two diagrams here).

The BBC has produced a useful visual guide to the 2019/2020 bushfires², and the map below indicates the extent of the fires in New South Wales (NSW) and Victoria in early January 2020. Some of the bushfire conditions were also so extreme, that the fires were creating their own weather conditions. TorqAid uses a Disaster Risk Management Cycle (DRMC), which illustrates the key components which occur throughout both the emergency response stage, and the later, more drawn out, recovery stage. Many of the emergency response scenes (of people and animals fleeing the fires) will still be fresh in the memories of this article’s readership.

Australia has been getting warmer



Australian annual mean rainfall



Early warning both for both residents and tourists in Victoria is provided through the Emergency Management Victoria (EMV)³ website, which in turn draws on weather reports from the Bureau of Meteorology (BOM). The EMV details are also complemented by regular broadcasts through the Australian Broadcasting Company (ABC) media network. Whilst early self-evacuation was continually promoted, in some extreme cases this needed to be supplemented by evacuation

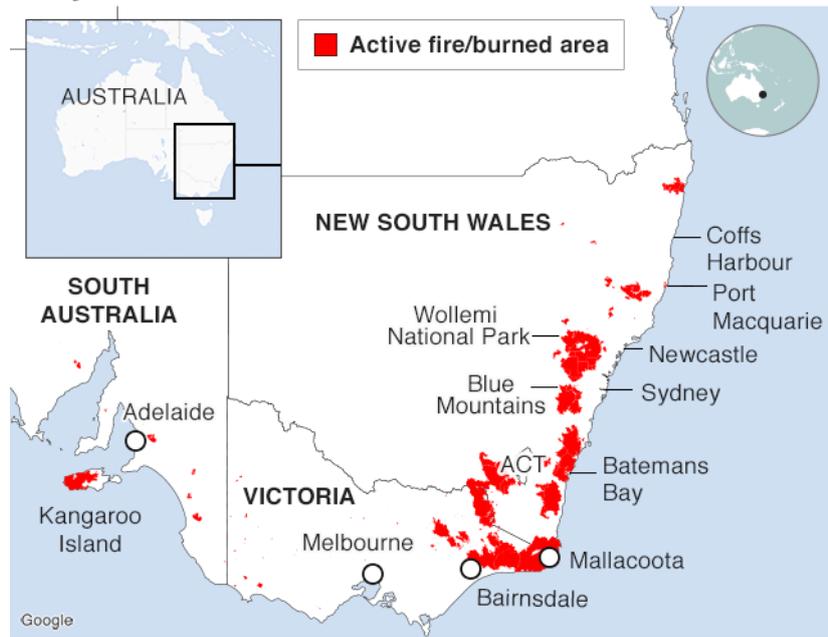
¹ Cited in ABC report at bibliography

² See bibliography

³ With similar initiatives taking place in other States and Territories

by sea⁴ and air. The Red Cross also plays an important role in registering dislocated or missing people. An early priority of the emergency services⁵ is to keep people safe, and look for missing individuals. The re-establishment of essential services, particularly power, water and telecommunications, is then a vital objective to allow affected communities to begin to start functioning normally. Equally important is the opening up and clearing of logistical routes, such as roads, from fallen or burnt trees.

Major bushfires in Australia



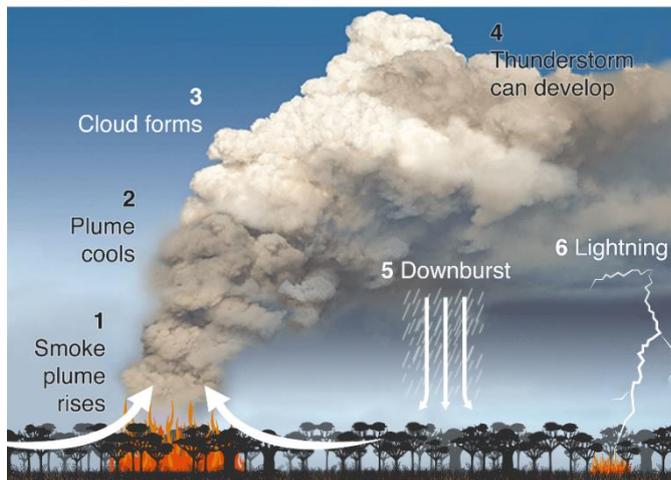
Source: DAFF and local fire services, 21 Jan

BBC

Visible leadership was initially provided by state Premiers, supported by senior emergency managers, with Federal leadership later complementing this. The large numbers of stakeholders involved in the emergency response stage requires detailed management, communications and coordination. Across Victoria this is handled by the EMV, drawing down on, and using, the procedures and resources outlined in the Emergency Management Manual Victoria (EMMV).

Bushfires can create their own weather

How pyrocumulonimbus clouds develop



Source: Australia's Bureau of Meteorology

BBC

Whilst humanitarian assistance is initially required for all affected people, this quickly focuses on the most vulnerable⁶. Initial damage & needs assessments will take place, both from the air and ground, these involving a range of experts, including those from the Insurance Council of Australia (ICA). Finally, the DRMC diagram indicates that the emergency response stage can be accompanied by intense national and international media (and social media) coverage, which was certainly the case of the 2019/2020 bushfires. This media focus is translated into potential funding initiatives, which was dramatically evident here. Over AUD 261 million had been privately pledged by

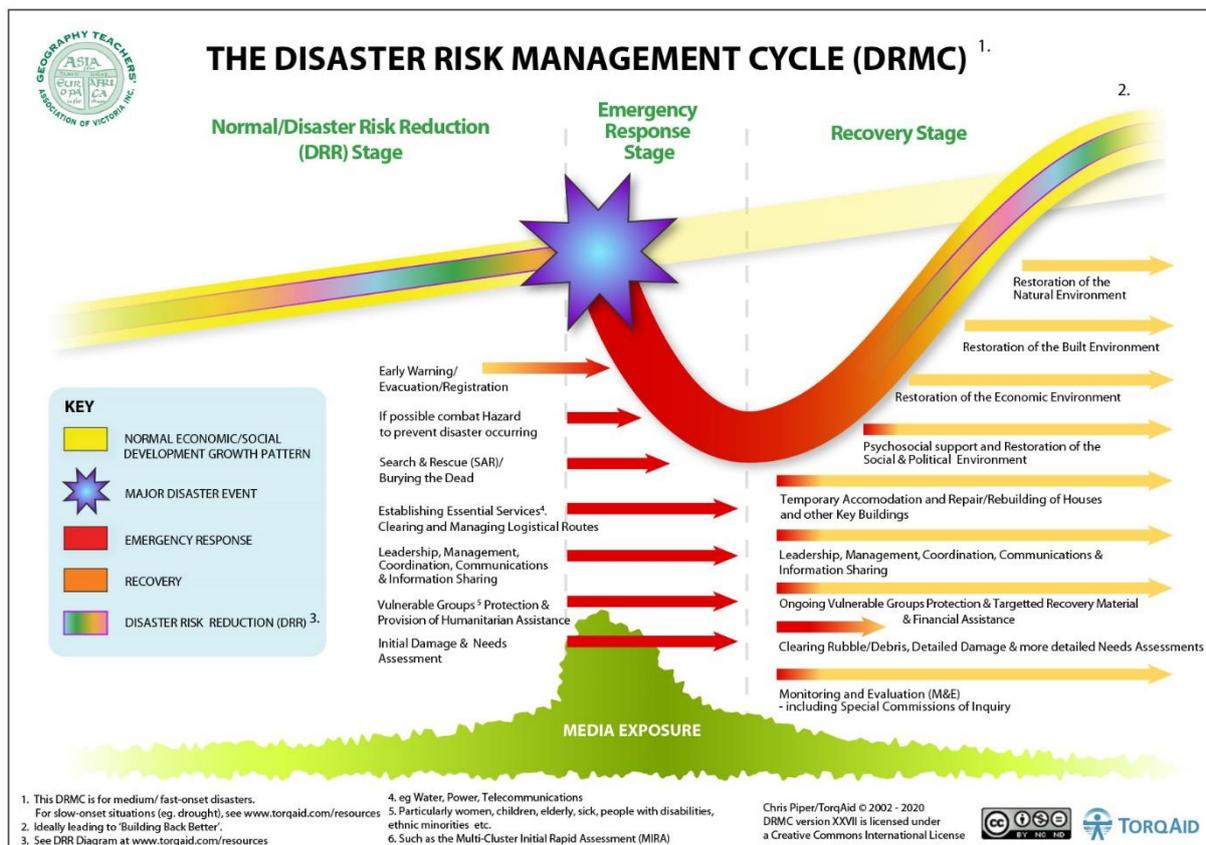
⁴ An example being tourists and some residents' evacuation from Victoria's Mallecoota township by Royal Australian Navy (RAN) warships

⁵ Emergency services in Victoria include the EMA, Victoria Police, the Country Fire Authority (CFA), and State Emergency Services (SES)

⁶ These including the injured and/or traumatised, as well as the sick, young, old, those with young children, and individuals with disabilities.

individuals and others by 22 January 2020⁷, this excluding the AUD 3.086 billion pledged by the Federal and state Governments⁸.

The DRMC diagram also highlights the key components which are ideally required in the Recovery Stage. This process is invariably both longer and more complicated than the Emergency Response Stage, with effective recovery from the recent bushfires likely to last for years in the most extreme cases. This recovery process is required for multiple stakeholders, these including individuals, communities, and a range of small to large businesses. A number of useful lessons can be learnt from earlier similar events. Following the 2009 bushfires, Celeste Geer (Rebel Films) produced a film on the recovery of an affected Victoria rural community. The Rural Australia Institute (RAI) also produced a document on the recovery of four Australian communities from natural disasters, one of these being bushfire-devastated Marysville in Victoria.



The DRMC diagram indicates that media attention will inevitably taper off over during the Recovery Stage, when, paradoxically, this is the time when the majority of financial resources are required. Fortunately large amounts of Federal and state government funds have already (early January 2020) been pledged, these including AUD 2 billion from the National Bushfire Recovery Fund (NBRF), and AUD 50 million from Bushfire Recovery Victoria (BCV)⁹. Leadership, management, coordination and communications are still needed in this Recovery Stage. Coordination will prove challenging, particularly interaction between the Department of Health and Human Services (DHHS), and Local Government Authorities (LGAs), both of which have recovery responsibilities, and newly formed

⁷ As reported in the Australian newspaper

⁸ See ABC report at <https://www.abc.net.au/news/2020-01-23/bushfire-aid-row-continues-as-red-cross-attacked-again/11892062>

⁹ With other States similarly supporting planned initiatives within their separate geographical areas

bodies such as the National Recovery Bushfire Agency (NRBA) and BCV. Other complementary coordination mechanisms will be required for the multitude of pledged finances from different sources. With regards to information sharing, the National Bushfire Recovery Agency (NBRA) already currently provides some useful fact sheets, which include important contact details.

Clearing the rubble and debris left over from the bushfires is a time-consuming and labour-intensive process, and will most require the tendered services of a number of specialist companies¹⁰, likely supported in the first three months by Australian and other overseas Defence Force personnel. A series of detailed damage and needs assessments will then be carried out by sectoral¹¹ and insurance specialists, the challenge here being to share information, where relevant, to avoid duplication of effort. Ongoing targeted humanitarian assistance will then be provided to particularly vulnerable affected community members, these including those who are uninsured or under-insured.

An early challenge will be the need for temporary accommodation, particularly for those people who have lost their homes, or who have badly damaged houses. Following the 2009 Victorian bushfires, temporary accommodation villages were established in two of the worst affected areas, namely Kinglake and Marysville, where these were occupied over two years. People will want to repair or rebuild their houses as soon as possible, but there will be inevitable frustrating delays for multiple reasons, these including the effects of trauma, and financial issues regarding insurance, and likely new, more stringent, building requirements.

In the months following the bushfire events, there will be challenges relating to both restoration of the social environment, and the dealing of psychosocial issues. Gordon has written an important background paper on the social dislocation of communities affected by disasters. The Geer film on this Victorian community's recovery process also deals with this issue. Hobfall has an article on five essential elements of immediate and mid-term mass trauma intervention, and two other papers from the 2009 bushfires are also relevant, prepared by the Victorian Government¹², and the University of Melbourne¹³.

The DRMC diagram clearly indicates that initiatives will be required to help restore the Economic, Built and Natural Environments. The Regional Australia Report has detailed some of the challenges in this restoration process for four Australian communities devastated by natural disasters. By mid January 2020, AUD 50 million had been pledged from the National Bushfire Recovery Fund (NBRF) to go towards protection of wildlife affected by the bushfires, whilst a package of grants, low-interest loans, and financial counselling is being committed to small businesses. Another component of the DRMC Recovery Stage, is effective project management¹⁴ and the possible introduction of Special Commissions of Inquiry. Following the 2009 Victorian bushfires, there was a Victorian Bushfires Royal Commission (VBRC)¹⁵, and the Prime Minister has already indicated the strong possibility of a National Bushfire Royal Commission being established.

Two final components conclude the DRMC diagram. The first is that a range of so-called 'Disaster Risk Reduction (DRR)' initiatives need to be implemented. These will be discussed following the

¹⁰ The agency Grocon – www.grocon.com won the tender for the clearing of debris following the 2009 Victorian bushfires

¹¹ Such as the farming/forestry/fishing, small or medium business sectors, etc

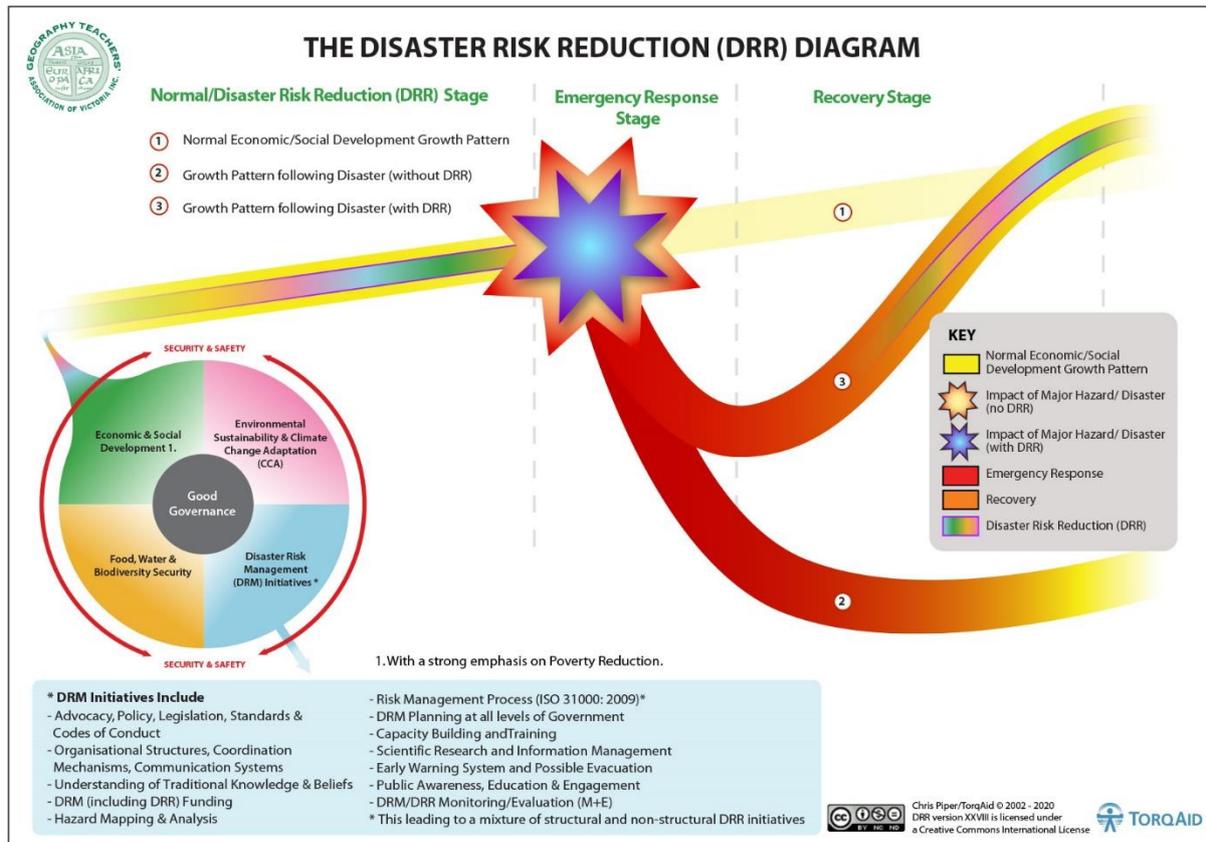
¹² 'After the Bushfires: Victoria's psychosocial recovery framework'.

¹³ 'Ten years beyond Bushfires: Community, Resilience & Recovery'

¹⁴ Such as an effective Monitoring and Evaluation (M&E) systems

¹⁵ See the bibliography for a reference on the VBRC Final report, this including, in the Summary, the 67 Recommendations made

introduction of the DRR diagram below. The 'Theory of Change' hypothesis of the DRMC then suggests that, if the range of emergency response and recovery components are effectively carried out, then the affected communities will be in a position to 'build back better', which will allow it to more effectively withstand similar threats in the future.



The Disaster Risk Reduction (DRR) diagram suggests that DRR is a combination of six complementary components. These are security and safety; good governance; economic and social development, with a strong emphasis on poverty reduction; food, water & biodiversity security; environmental sustainability and climate change adaptation (CCA); and twelve key disaster risk management (DRM) initiatives. When all these work together, this will reduce the impact and likelihood of natural hazards (such as bushfires, tropical cyclones, drought, and floods), as well as from other main natural or man-made threats¹⁶, and allow affected communities to work through the Emergency Response and Recovery Stages more quickly and effectively. Improved DRM initiatives recommended by the VBRC, such as improved Bushfire Safety Policy (Recommendations 1-7), and Emergency and Incident Management (Recommendations 8-19), have undoubtedly contributed to less loss of life this time around. Whilst Australia is fortunately blessed with positive indicators in many of these six key DRR components¹⁷, there are others which require improvement. Some relate to food, water and biodiversity security issues, with others to environmental sustainability and climate change adaptation (CCA).

The intensity and scale of the 2019/2020 Australian bushfires have added to the argument that climate change is making Australia more vulnerable to the effects from natural hazard occurrences such as drought, bushfires and floods. This debate will no doubt be an increasingly important one in

¹⁶ Such as pandemics or terrorist attacks

¹⁷ Such as commendable safety and security, governance, and economic and social indicators

the months and years ahead, and serious discussion should focus around evidence based material. The BBC (see references) regularly reports on key climate change studies, and will itself be offering throughout 2020 a year-long series of special programming events and coverage on climate change, entitled 'Our Planet Matters'. Readers will separately want to also access other key evidence-based publications relating to climate change produced over the past few years. These include the Intergovernmental Panel on Climate Change (IPCC) reports¹⁸; an overview of the UN's 2015 Paris Climate Agreement; and the lead up to the next United Nations Climate Change Conference (COP 26) being held in Glasgow in November 2020.

Geography and other Subjects Classroom Activities

This topic can be covered in Geography at both VCE and International Baccalaureate (IB) levels across all Secondary School Year Levels. The suggested Classroom Activities below also include and exercise on climate change, the role of the media, and psycho-social issues. Examples of investigations¹⁹ could include the following.

Topic Covered	Examples	References (see list below) and comments
Australian weather	Explain the role of the El Nino Southern Oscillation (ENSO), the Indian Ocean Dipole (IOD), and Southern Annular Mode (SAM) as key climate drivers in explaining Australia's weather.	ABC article; Bureau of Meteorology (BOM) website.
Disaster Risk Management (DRM) Diagrammatic Framework	Is the Disaster Risk Management Cycle (DRMC) a useful framework in helping explain the key components covered in the Emergency Response and Recovery Stage of the 2019/2020 bushfires. Does this model work for other fast-onset hazards (such as earthquakes/cyclones etc) ?	This GTAV article. Piper DRM Diagrammatic Framework article. Geer DVD. Regional Australia Institute (RAI) article. National Bushfire Recovery Agency (NBRA) website.
Bushfire recovery process	Research and chart the successes and challenges of the bushfire recovery process during the first 6-12 months of 2020.	Bushfire Recovery Victoria (BCV) and NBRA websites. Piper DRM article.
Role of the Media	What are positive, and not-so-positive aspects of the media and social media in reporting disasters, particularly during the Emergency Response Stage.	DRMC diagram. ABC & BBC websites. Muller article.
Risk Reduction	Using the Disaster Risk Reduction (DRR) diagram as a framework, what are the various ways to successfully reduce risks from bushfires. How can research from agencies such as the CSIRO and BNHCRC be augmented by indigenous fire management practices.	This GTAV and Piper DRM articles. ABC, State Government of Victoria (2009 Royal Commission + Safer Together) & the University of Melbourne articles. CSIRO & BNHCRC websites.
Spatial Technology	Explain how Spatial Technology can be used to assess and manage bushfires in Australia.	ArcCGIS Online articles.
Psycho-social issues	What are the psycho-social effects of individuals and communities affected by bushfires or other disasters ? What interventions work best to assist these stakeholders?	Geer DVD. AIDR & Emerging Minds, Gordon, Hobfall, State Government of Victoria (Psychosocial Recovery

¹⁸ In particular the 2014 Fifth Assessment Report (AR5), and a series of Special Reports since then

¹⁹ Teachers who have contributed to these questions include those from Christian College, Geelong, and Geelong Grammar School

		Framework), & the University of Melbourne articles.
Climate Change	What is climate change, and what is the evidence for this ? What is the effect of climate change on drought and bushfires in Australia ?	BBC 'Our Planet Matters' website. Various ABC & BBC articles. IPPC reports. UN's Paris Climate Agreement. BOM website.

Chris Piper Bio

Chris Piper is both a Geography teacher, as well as Global Humanitarian and Development Practitioner. He has worked extensively overseas, as well as across Australia. Following the 2009 Victorian bushfires, he both coordinated a number of community-focussed recovery initiatives, and also prepared a related background paper for a Victorian State Government Department.

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Agency Directory

BBC – www.bbc.co.uk. The BBC has the latest news updates, and provides in-depth coverage of key current global major events. Throughout 2020 the BBC has announced plans for a year-long series of special programming and coverage on climate change, entitled ‘Our Planet Matters’²⁰.

Bureau of Meteorology (BOM) – www.bom.gov.au. The BOM is Australia's national weather, climate and water agency. It also provides key explanations for Australia’s main climate drivers, namely the El Nino Southern Oscillation (ENSO), the Indian Ocean Dipole (IOD), and the Southern Annular Mode (SAM)²¹.

Bushfire and Natural Hazards Cooperative Research Centre (BNHCRC) – www.bnhcrc.com.au. The BNHCRC draws together all of Australia and New Zealand's fire and emergency service authorities, land management agencies, as well as non-government organizations and leading experts, across a range of scientific fields to explore the causes, consequences, and mitigation of natural disasters.

Bushfire Recovery Victoria (BCV) – www.vic.gov.au/bushfire-recovery-victoria
BCV is a new permanent and dedicated agency, which will work directly with local communities impacted by Victoria’s devastating bushfires.

Commonwealth Scientific and Industrial Research Organisation (CSIRO) – www.csiro.au Australia's national science research agency helps solve some of the nation’s greatest challenges, by using innovative science and technology. With regards bushfires, CSIRO is a leading authority on fire management, behaviour and prediction.

Emergency Management Victoria (EMV) – <https://www.emv.vic.gov.au/>. The EMV leads emergency management in Victoria by working with communities, government, agencies, and others to strengthen their capacity to withstand, plan for, respond to and recover from emergencies. The EMV issues and updates the Emergency Management Manual Victoria²².

National Bushfire Recovery Agency (NBRA) – <https://www.bushfirerecovery.gov.au/> The NBRA has been established by the Federal Government to lead and coordinate a national response to rebuilding communities affected by bushfires across large parts of Australia. The NBRA will also oversee the initial amount of AUD 2 billion allocated to the Australian National Bushfire Fund (NBRF). The NBRC also includes Fact Sheets, Contact Lists, and a plethora of other useful information.

²⁰ See <https://www.bbc.com/news/world-51104776> for more details

²¹ See www.bom.gov.au/climate/enso; www.bom.gov.au/iod; and www.bom.gov.au/sam

²² See bibliography at www.torgaid.com/bushfires-bibliography