APEC Climate Symposium 2021

Innovations in Climate Communication for Enhancing Human Security to Manage Risks of Climate Extremes

Session I- Enhancing Climate Crisis Preparedness through Climate Service

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Australian Bureau of Meteorology

Australian Government
Bureau of Meteorology

Discussion Points

- Efforts to increase resilience and mitigate around extreme events
- Enhance the use of a climate information service in response to a climate crisis
- How to minimize and/or accommodate uncertainty of climate information in implementing climate information services in decision-making
- Governmental policy or mechanisms that promote the use of climate information services in application sectors in Australia

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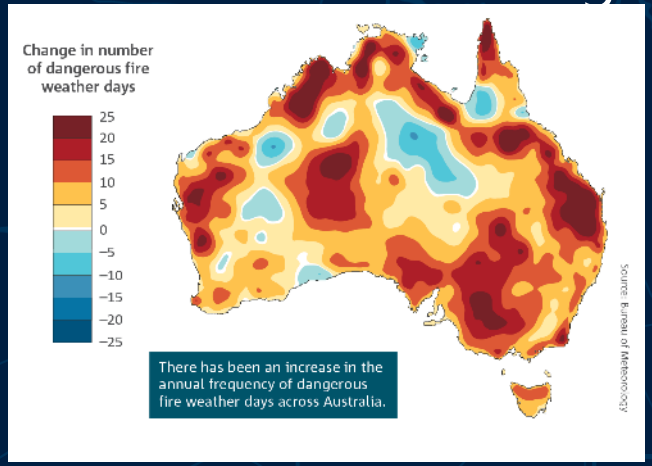
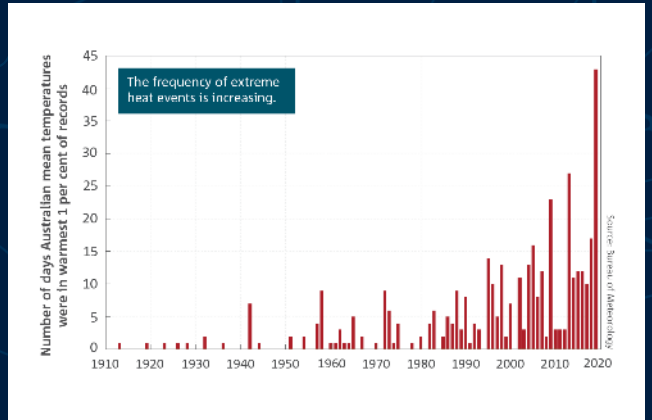
Increasing resilience and mitigating around extreme events: How are extreme events changing?

- It is important to know how extreme events are changing.
- Increased risk of more frequent and intense extreme events
- Extreme events that haven't been observed before.
- Compounding extreme events such as long-term drought and heatwaves
- Important to have awareness and education around the changing risk landscape.





State of the Climate report, released every two years details how Australia's climate is changing.

In the two years between the release of each report the report's content is strongly communicated to all sectors

Increasing resilience and mitigating around extreme events: How are extreme events going to change?

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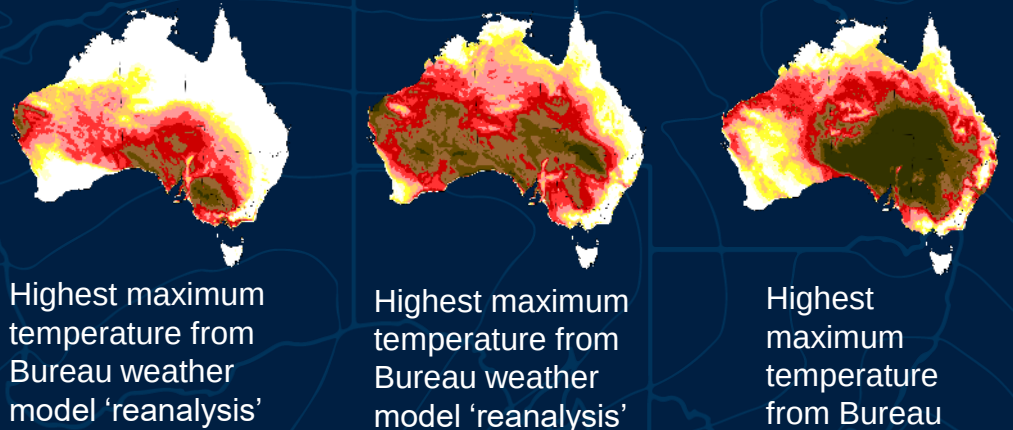
www.acs.gov.au/

- Natural hazards of the future will not be the same as in the past.
- Many hazards will be more intense, happen more often, in unprecedented combinations and in unexpected locations, and affect more of Australia's land or sea area.
- Our population is also changing, and with it our demands on urban environments, infrastructure, housing, industry, and land management practices. This means the cost of natural hazards is also increasing

NB: This is not a prediction—it is a *sample* of a plausible future high impact weather scenario such as may be used for strategic planning purposes.



Highest maximum temperature from Bureau weather model 'reanalysis' during the Black Saturday heatwave:

27 January – 8 February 2009

Highest maximum temperature from Bureau weather model 'reanalysis' during the January 2013 heatwave:

1-15 January 2013

Highest maximum temperature from Bureau weather model using a future climate scenario:

1-14 January 2050

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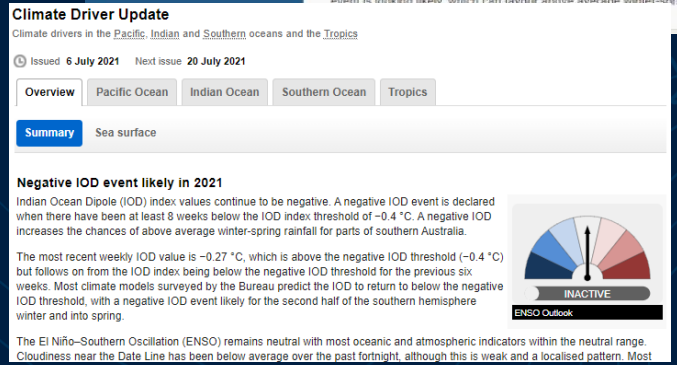
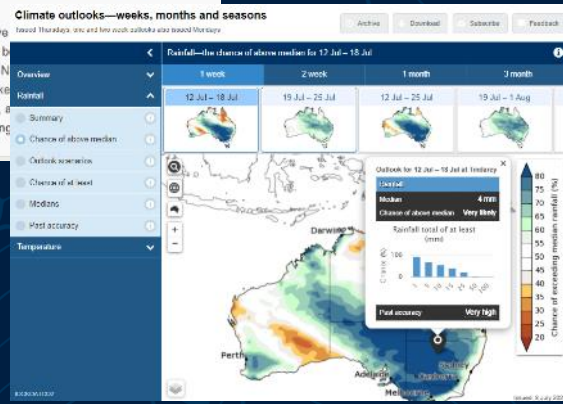
Increasing resilience and mitigating around extreme events: How are we going to manage the risk right now?

Seasonal forecasting services
www.bom.gov.au/climate/outlooks/

- Over 20 million web hits a year – gives a general idea of current situation. However more information is needed for decision making.
- Clicking through to rainfall does give more information.
- Climate Driver Update: more information on drivers of Australia's climate. Nearly 900000 page views. Can give confidence around outlook





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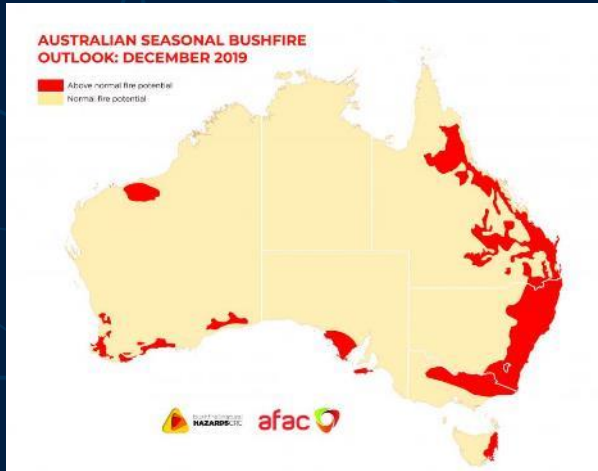
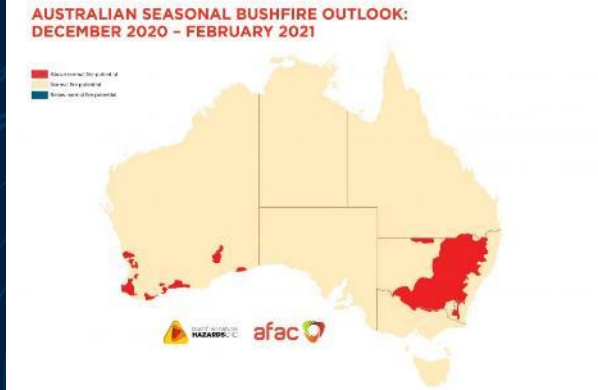
Enhancing the use of a climate information service in response to a climate crisis: Making information relevant for decision makers

Bushfire and Natural Hazards CRC www.bnhcrc.com.au/hazardnotes. Forecasting the likely bushfire conditions for the coming season: Need to have mechanisms and relationships in place before the crisis.

- **Relevant information**: What information does the customer actually need. What decisions are they trying to make? What information can you provide to facilitate that decision making process?
- **Building trust**: Trust enables warnings of likely severe conditions to be heeded and acted upon. Trust also increases when they see the application and utility of climate information that you provide.
- **Education**: Customers are more satisfied, and comfortable with using the seasonal forecast information when they understand the science.





Enhancing the use of a climate information service in response to a climate crisis: Working directly with decision makers

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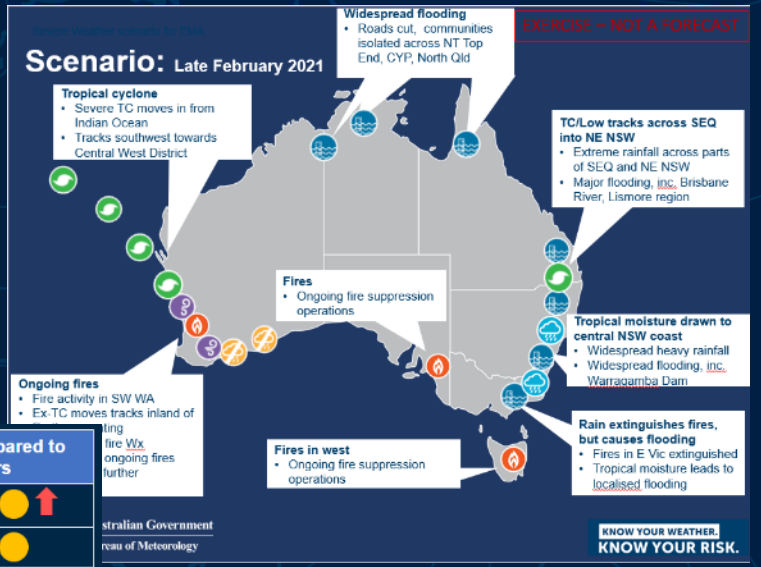
Preseason Briefings:

- Number of standardised briefings across Australia prior to the severe weather season.
- All levels of government and multiple Emergency Service Agencies ensuring consistency of messages.
- Includes fact-based (but not a forecast) scenario planning to stress test systems.
- This also includes pre-season briefing to emergency broadcasters so they are educated and aware of the likely issues.



Impact	Likelihood compared to most years
Bushfire activity	Similar (east) Slight increase (WA)
Heatwave	Similar
Widespread flooding	More likely
Severe storms	Similar
Drought	Improvement likely
Dust	Similar
Coral bleaching	Similar (east) Slight increase (WA)
Marine heatwave	Average to above average
Tropical cyclones	Average to above average
Coastal flooding / erosion	More likely

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Enhancing the use of a climate information service in response to a climate crisis: Decision relevant and action orientated information

- Increased chance of La Niña meant increased chance of flooding in Australia.
- Collaboration with Emergency Services to provide relevant public safety messages.
- Shown here is representative of the Bureau and head of an Emergency service agency demonstrating "A car can float in just 15cm of water".
- This was a public safety message consistently used throughout the season

Enhancing the use of a climate information service in response to a climate crisis: Timely information

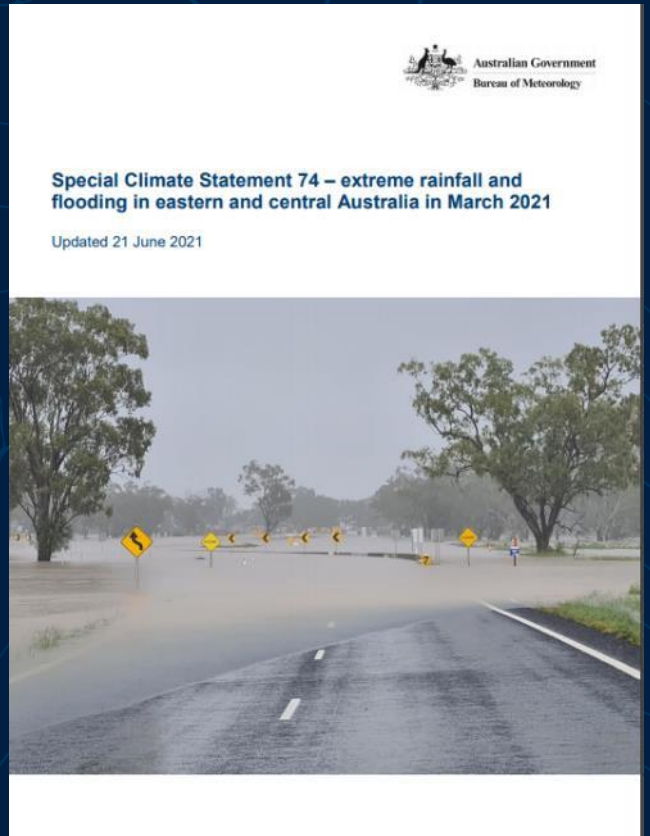
www.bom.gov.au/climate/current/statements/

- How unusual is this event?
- Are there any records or near records.

This information can influence actions. It can also reinforce the risk information provided. Post-event it can highlight the need to incorporate climate information into planning.

- An increased risk of widespread flooding was highlighted in the pre-season briefing.
- Reinforces the importance and relevance of the seasonal forecast.

Helps recovery and resilience



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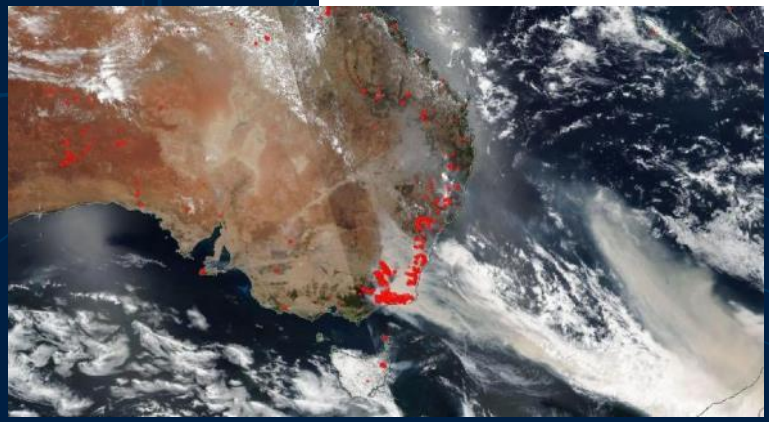
Accommodating the uncertainty of climate information in implementing climate information services : Building trust

Trust – A long-standing relationship demonstrating the application of information to those needs over time builds up a strong relationship of mutual respect and trust. Trust enables warnings of likely severe conditions to be heeded and acted upon.



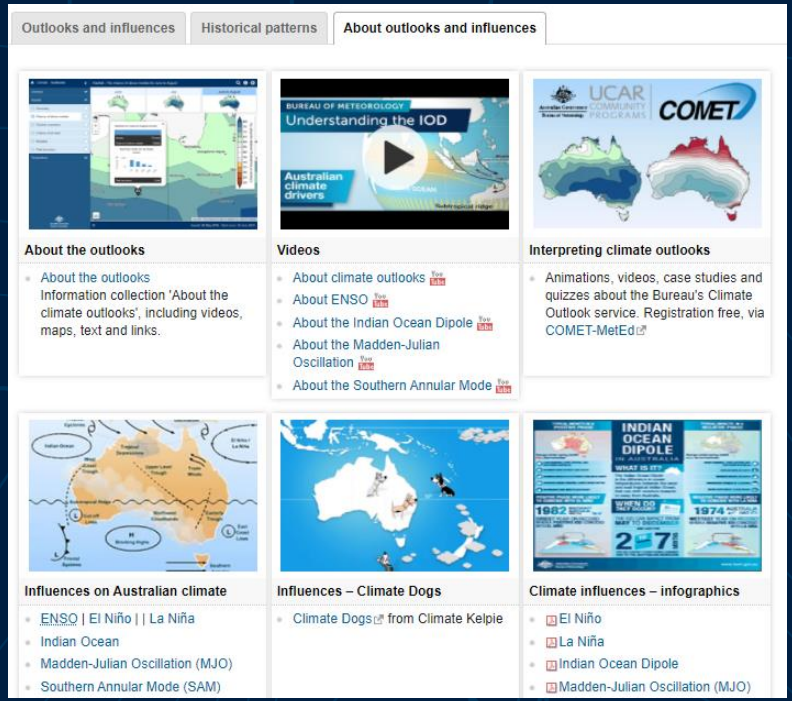
https://scitechdaily.com/satellite-imagery-shows-ferocious-fires-in-australia-intensify/

Accommodating the uncertainty of climate information in implementing climate information services : Education

www.bom.gov.au/climate/ahead/#tabs=About-outlooks-and-influences

Education – Customers are more satisfied, and comfortable with using the seasonal forecast information when they understand the science and the drivers behind the forecast. General audience or working directly with customers

- If customers are more aware of the probabilistic nature of the forecasts and applications, they are more likely to trust the information provided.
- If there is a physical mechanism such as ENSO or IOD which may be influencing the forecast, there can be more confidence placed in the forecast, meaning customers are more likely to use the information.



Accommodating the uncertainty of climate information in implementing climate information services : Improved **tools** for decision-making

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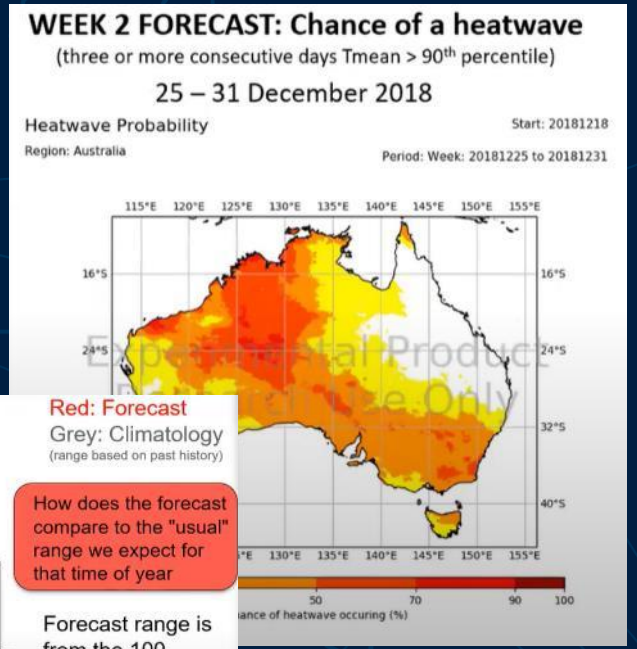
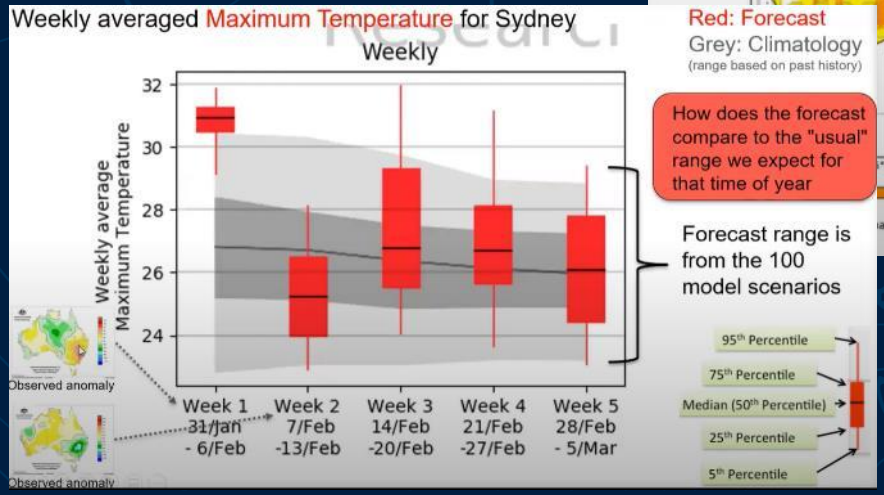
Tools – Impact-based forecast

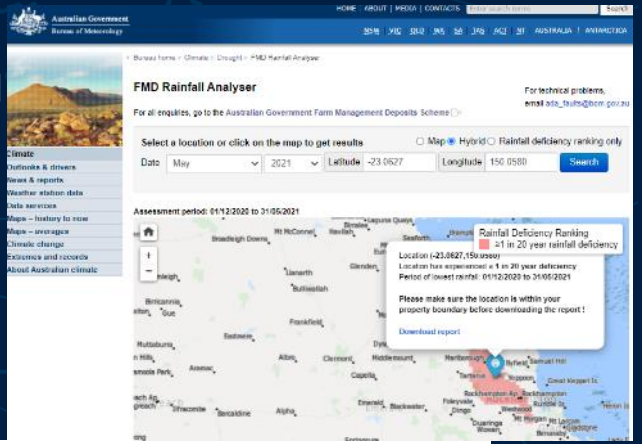


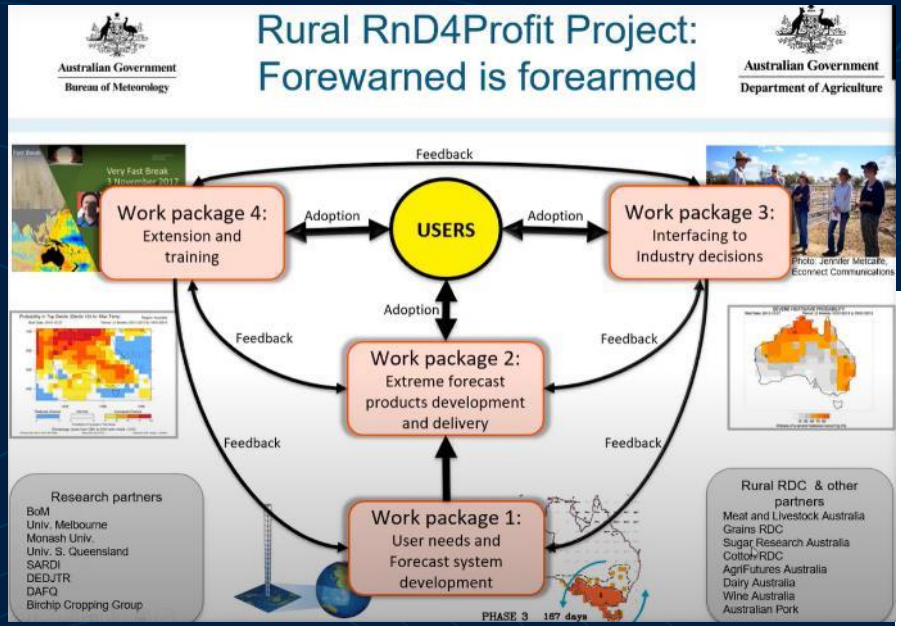
Tools – Giving the range of the forecast

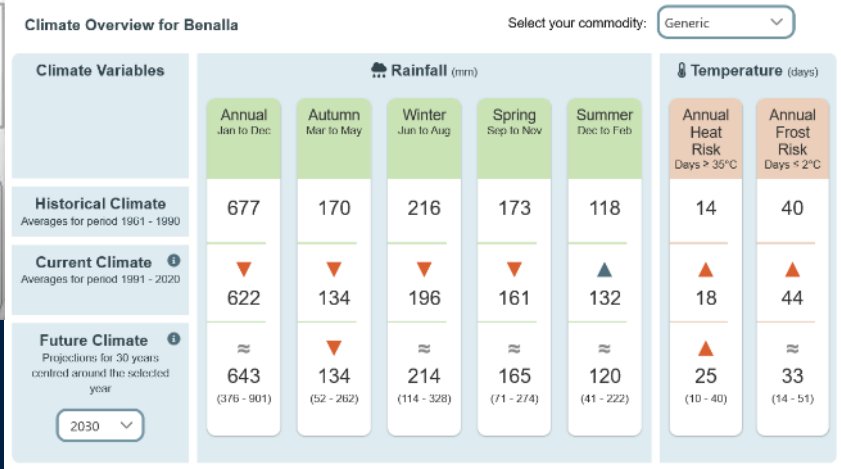


Governmental policy or mechanisms that promote the use of climate information services in application sectors in Australia: Agriculture

www.bom.gov.au/climate/ada/fmd.shtml







Climate Services for Agriculture

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Governmental policy or mechanisms that promote the use of climate information services in application sectors in Australia: Emergency Services- Australian Climate Service a large coordinated response

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Thankyou

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