





# SUMMARY REPORT Part I SoE 2018 Report Card

## Legend




### Status

<p><b>N/A Not Applicable</b></p> <p>The indicator assessment is based on future projections or the change in environmental condition and providing a status assessment is not applicable. Only a trend assessment is provided.</p>	<p> <b>Unknown</b></p> <p>Data is insufficient to make an assessment of status and trends.</p>	<p> <b>Poor</b></p> <p>Environmental condition is under significant stress, OR pressure is likely to have significant impact on environmental condition/human health, OR inadequate protection of natural ecosystems and biodiversity is evident.</p>	<p> <b>Fair</b></p> <p>Environmental condition is neither positive or negative and may be variable across Victoria, OR pressure is likely to have limited impact on environmental condition/human health, OR moderate protection of natural ecosystems and biodiversity is evident.</p>	<p> <b>Good</b></p> <p>Environmental condition is healthy across Victoria, OR pressure is likely to have negligible impact on environmental condition/human health, OR comprehensive protection of natural ecosystems and biodiversity is evident.</p>
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### Trend

<p><b>N/A Not applicable</b></p> <p>This indicator assessment is based on current environmental condition only and it is not applicable to provide a trend assessment. Only a status assessment is provided.</p>	<p> <b>Unclear</b></p>	<p> <b>Deteriorating</b></p>	<p> <b>Stable</b></p>	<p> <b>Improving</b></p>
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### Data quality

		
<p><b>Poor</b></p> <p>Evidence and consensus too low to make an assessment</p>	<p><b>Fair</b></p> <p>Limited evidence or limited consensus</p>	<p><b>Good</b></p> <p>Adequate high-quality evidence and high level of consensus</p>

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# SUMMARY REPORT Part I SoE 2018 Report Card

## Indicator

**CC:01** Observed average rainfall

Victoria has received below-average to record-low cool season rainfall for the most recent 30 years from 1985-2015. This has been influenced by declining cool season rainfall.



## Region

Victoria

## Measures

- (i) Victorian annual rainfall anomaly
- (ii) Victorian rainfall deciles for the warm and cool seasons

## Data custodian

BoM



DATA QUALITY

Good

## Indicator

**CC:02** Snow cover

A decline in snow accumulation has been observed at several locations across the Victorian alps. Snow cover and volume will decline to the extent that eventually only the highest peaks will experience any snow by 2070-99.



## Region

Victoria's alpine region

## Measures

Snow cover

## Data custodian

None



DATA QUALITY

Good

## Indicator

**CC:03** Observed surface temperature

The five years from 2013-17 were all in the top-ten warmest years on record for Victoria. There has been an observed warming in both maximum (daytime) and minimum (overnight) temperatures.



## Region

Victoria

## Measures

- (i) Victorian annual mean temperature anomaly
- (ii) Victorian annual maximum temperature anomaly
- (iii) Victorian annual minimum temperature anomaly

## Data custodian

BoM



DATA QUALITY

Good

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# SUMMARY REPORT Part I SoE 2018 Report Card

## Indicator

**CC:04** Projected changes in temperature

Physical evidence, past trends and various models all suggest Victoria will continue warming this century, so an ongoing warming is projected with high confidence.



DATA QUALITY

Good

## Region

Victoria

## Measures

Annually averaged warming in 2030 and 2090 for various emission scenarios relative to the climate of 1986-2005

## Data custodian

BoM, CSIRO

## Indicator

**CC:05** Projected changes to average rainfall

The observed reduction in cool season (April-October) rainfall during the past twenty years is projected to continue in the future.



DATA QUALITY

Fair (some uncertainty in long-term rainfall projections)

## Region

Victoria

## Measures

Percentage change in annual rainfall in 2030 and 2090 for various emission scenarios relative to the climate of 1986-2005

## Data custodian

BoM, CSIRO

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# SUMMARY REPORT Part I SoE 2018 Report Card

**Indicator**

**CC:06** Regional climate projections

**Region**

Victoria

**Measures**

Projected number of hot and frost days for various emission scenarios in 2030 and 2070

**Data custodian**

BoM, CSIRO

Further warming and declines in cool season rainfall are projected. The number of hot days is expected to increase by approximately 50% by 2030 and double by 2070 at most of Victoria's major cities and towns, while the number of frost days is likely to halve.



DATA QUALITY

Good

**Indicator**

**CC:07** Observed sea level

**Region**

Victoria's coastline

**Measures**

(i) Annual mean sea level (ii) Annual maximum sea levels

**Data custodian**

BoM

There have been rises of mean and maximum sea levels, as well as an increasing frequency of very high sea levels.



DATA QUALITY

Fair (at Victorian sites until 1993 because data until 1993 has not been formally standardised).

Good (at Victorian sites since 1993)

**Indicator**

**CC:08** Projected sea level

**Region**

Victoria

**Measures**

Projected mean sea level in 2030, 2050, 2070 and 2090 for all emission scenarios

**Data custodian**

BoM, CSIRO

Further mean sea-level rises and an increase in the frequency of extreme inundation events are projected.



DATA QUALITY

Good

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## Indicator

**CC:09** Sea-surface temperature

Sea surface temperatures in the Australian region have been observed at record-warm levels in recent years.

## Region

Victoria

## Measures

- (i) Australian region sea surface temperatures
- (ii) Australian sea surface temperature anomaly – southern region

## Data custodian

BoM, CSIRO



DATA QUALITY

Good

## Indicator

**CC:10** Annual greenhouse gas emissions

Victoria's per capita GHG emissions are relatively large compared to other OECD countries, however per capita and total GHG emissions have been reducing in Victoria since 2005.

## Region

Victoria

## Measures

- (i) Per capita greenhouse gas emissions
- (ii) net greenhouse gas emissions
- (iii) greenhouse gas emissions by sector

## Data custodian

DELWP



DATA QUALITY

Good

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# SUMMARY REPORT Part I SoE 2018 Report Card

## Indicator

**CC:11** Victorian ecosystem carbon stocks

## Region

Victoria

## Measures

(i) land sector carbon stocks (ii) blue carbon stocks

## Data custodian

DELWP

There has been a 1% growth in carbon stocks from 2007-16.



Stable for land sector and Unknown for marine and coastal ecosystems



## DATA QUALITY

Fair (no comprehensive statewide and trend data for marine and coastal ecosystems)

## Indicator

**CC:12** Occurrence and impacts of extreme weather

## Region

Victoria

## Measures

(i) Frequency of extreme heat days (ii) number of excess deaths associated with extreme heat days (iii) Forest Fire Danger Index (iv) Financial cost associated with natural disasters

## Data custodian

BoM, CSIRO, DHHS, EMV

Extreme weather events (e.g. bushfires, extreme heat events and floods) are already causing significant impacts, with an increased frequency of these events being observed (particularly extreme heat days and more dangerous weather conditions for bushfires).



## DATA QUALITY

Good

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## Indicator

**CC:13** Extent and condition of key climate-sensitive ecosystems

Examples of ecosystems and species under threat include bird species in floodplain forests, alpine Sphagnum bogs and seagrass in Corner Inlet.



### DATA QUALITY

Fair (good issue-specific research but no comprehensive statewide data)

## Region

Victoria

## Measures

Case study examples

## Data custodian

DELWP

## Indicator

**CC:14** Community awareness of climate risks and associated responsibilities

Nearly 80% of Victorians surveyed in 2016 and 2017 were concerned about climate change, with the main area of concern focused on water shortage and drought.



Good (for awareness of climate risks and mitigation) and Unknown (for adaptation to climate change)

## Region

Victoria

## Measures

- (i) Percentage of Victorians are concerned by climate change (categorised by area of concern)
- (ii) Percentage of Victorians support current GHG targets

## Data custodian

SV



### DATA QUALITY

Fair (recent data collected is good but no long-term data is available for trend analysis)

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## Indicator

**CC:15** Councils (or other organisations) with urban forestry plans or urban greening or cooling-related strategies

Urban forestry planning is a developing area of research in Victoria. Thirteen of the 32 councils within metropolitan Melbourne and some regional councils such as Geelong and Ballarat have developed or are developing urban forestry strategies.



### DATA QUALITY

Fair (no monitoring and evaluation provided)

## Region

Victoria

## Measures

Percentage of councils with, or developing, urban forestry plans

## Data custodian

Resilient Melbourne, The Nature Conservancy

## Indicator

**CC:16** Considering climate change risks in land use planning (including in the coastal zone)

There is good agreement across local councils, particularly coastal councils, that land-use planning should be informed by up-to-date climate science.



Generally Poor for inland councils and Fair for coastal councils



### DATA QUALITY

Fair (no trend analysis)

## Region

Victoria

## Measures

Percentage of councils rated high or advanced for consideration of climate change in land use planning

## Data custodian

DELWP

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# SUMMARY REPORT Part I SoE 2018 Report Card

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## Indicator

**CC:17** Percentage of agri-businesses using long-term weather and climate change projections

## Region

Victoria

## Measures

(i) Number of agricultural businesses subscribing to information about climate conditions  
(ii) Percentage of businesses strongly agreeing or somewhat agreeing that the information improved their ability to make decisions to manage seasonal risk and improved their knowledge and understanding of seasonal climate variability

## Data custodian

DEDJTR

Survey results show an increasing climate literacy and decisiveness of management actions in the agricultural sector in relation to climate change.



DATA QUALITY

Fair (limited sample)

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