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Citation


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PERRICOOTA

**RAINFALL**
Projected Mean Growing Season Rainfall
- 212 mm (1997–2017)
- 200 mm (2041–2060)
- 198 mm (2081–2100)

**TEMPERATURE**
Projected Mean Growing Season Temperature
- 21.3°C (2041–2060)
- 23.0°C (2081–2100)

**EXTREME COLD**
Projected Mean Growing Season Frost Risk Days
- 1.5 days (1997–2017)
- 0.4 days (2041–2060)
- 0.1 days (2081–2100)

**EXTREME HEAT**
Projected Mean Excess Heat Factor
- 14.5 EHF (1997–2017)
- 18.1 EHF (2041–2060)
- 18.0 EHF (2081–2100)

**ARIDITY**
Projected Mean Annual Aridity Index
- 0.24 (1997–2017)
- 0.20 (2041–2060)
- 0.18 (2081–2100)
Figure 1: Observed mean Growing Season Temperature (October to April) across all growing years from 1997–2017.

Figure 2: Observed change in mean Growing Season Temperature between the current (1997–2017) and historical (1961–1990) periods. Growing Season Temperature has increased across the region over recent decades.

Figure 3: Projected mean Growing Season Temperature (October to April) for 20-year time periods from 2021 to 2100. Growing Season Temperature is expected to increase steadily into the future. Each grid cell is the mean of the 6 ensemble members.

Figure 4: Projected Growing Season Temperature (October to April) for 20-year time periods from 2021 to 2100. Growing Season Temperature is expected to increase steadily into the future. Each grid cell is the mean of the 6 ensemble members.

Figure 5: Distribution of Growing Season Temperature. Grey shapes represent the probability distribution of GST for contrasting regions during 1997–2017. A shift to the right (left) indicates warmer (cooler) conditions.

Figure 6: Distribution of Growing Degree Days. Grey shapes represent the probability distribution of growing year maximum GDD for contrasting regions during 1997–2017. A shift to the right (left) indicates warmer (cooler) conditions.

Figure 7: Cumulative Growing Degree Days (GDD) across the growing year (July–June). Dashed lines show GDD values (1000, 1500, 2000, 2500) for some example phenological thresholds. Each growing year is represented by a colored line. In future time periods, heat accumulates faster, thresholds are reached earlier and maximum GDD reached is higher.

Figure 8: Distribution of date when Growing Degree Days reaches threshold. Grey shapes indicate the range of dates at which the example phenological thresholds (1000, 1500, 2000, 2500) are reached for each time period. Variability can occur spatially within the region, across years, or between ensemble members. A shift to the left (right) indicates earlier (later) harvest dates. A single (thinner) curve indicates a single range of harvest dates. A missing time period indicates that the specific phenological threshold was not reached within the growing year (July–June).
Figure 1: Observed mean Growing Season Rainfall (Oct–Apr) across all growing years from 1997–2017.

Figure 2: Change in Growing Season Rainfall (Oct–Apr) between the current (1997–2017) and historical (1961–1990) periods. Negative values indicate a trend towards drier conditions. Positive values indicate a trend towards wetter conditions.

Figure 3: Projected mean Growing Season Rainfall for 20-year time periods from 2021 to 2100. Each grid cell is the mean of the 6 ensemble members.

Figure 4: Time series of Growing Season Rainfall (mm). Blue points are the annual values for each grid cell, for each of the 6 ensemble members. Horizontal grey bars represent the mean Growing Season Rainfall value during 1997–2017 in selected regions across Australia. These provide a comparison between current conditions (1997–2017) and future conditions in this region and help identify future analogue regions. Coloured bars represent the projected mean global temperature increase into the future (following the BCP 4.5 scenario). These can be used to make decisions based on projected temperature change rather than time.

Figure 5: As with Figure 4, but for Non-Growing Season Rainfall (mm). Horizontal grey bars represent the mean Non-Growing Season Rainfall value during 1997–2017 in selected regions across Australia.

Figure 6: Violin plots of monthly rainfall (mm) for 20-year time periods from 2001 to 2100. Each violin represents monthly totals for each grid cell, for each of the 6 ensemble members, and for each calendar year within the period. In each panel the annual violin indicates the expected probability distribution of rainfall across the growing year. The current period (2001–2020) is shadowed underneath the future time periods to highlight any differences expected into the future. Dots represent the mean monthly rainfall for each violin. If the violin shifts lower (higher) this indicates a change towards drier (wetter) conditions.

Figure 7: Distribution of seasonal rainfall

Figure 8: Number of rainy days during harvest for each 20-year period. Harvest refers to the date when Growing Degree Days (GDD) reach example phenological thresholds (1000, 1500, 2000, 2500) which were chosen to reflect development time of different grape styles and varieties. Rainy days during harvest were defined as days with >10mm of rain from 7 days before to 7 days after the date each GDD threshold was reached. Variability can occur spatially within the region, across years, or between ensemble members. A shift in the curve to the left (right) indicates fewer (more) rainy days during harvest. A missing time period indicates that the specific phenological threshold was not reached within the growing year (July–June).
Figure 1: Observed mean annual Aridity Index

Figure 2: Observed change in mean annual Aridity Index

Figure 3: Projected mean annual Aridity Index

Figure 4: Projected Aridity Index

Figure 5: Projected monthly Aridity Index

Figure 6: Distribution of seasonal Aridity Index

Figure 7: Distribution of mean Aridity Index from July until harvest
Figure 1: Observed mean Excess Heat Factor (EHF) during heatwaves (as per Nairn and Fawcett (2013)), across all growing years from 1997–2017. EHF is an index that characterises heatwaves, high values indicate more intense heatwaves. The mean EHF is the mean value from all heatwaves that occurred from 1997–2017.

Figure 2: Change in mean EHF during heatwaves between the current (1997–2017) and historical (1961–1990) periods. Positive (negative) values indicate a trend towards more (less) intense heatwaves.

Figure 3: Projected mean EHF during heatwaves for 20-year time periods from 2021 to 2100. Increasing (decreasing) values indicate a trend towards more (less) intense heatwaves.

Figure 4: Projected mean number of extreme heat days. The shape of the curve is driven by the level of variability experienced within each 20-year period. Variability can occur spatially within the region, across years, or between ensemble members. A shift to the right (left) indicates higher (lower) temperature heatwaves.

Figure 5: Projected number of days with severe risk to humans working outside. The shape of the curve is driven by the level of variability experienced within each 20-year period. Variability can occur spatially within the region, across years, or between ensemble members. A shift to the right (left) indicates heatwaves occurring earlier (later).

Figure 6: Projected range of hot summer days. The shape of the curve is driven by the level of variability experienced within each 20-year period. Variability can occur spatially within the region, across years, or between ensemble members. A shift to the right (left) indicates heatwaves occurring earlier (later).

Figure 7: Distribution of daily minimum and maximum temperature during a heatwave. The shape of the curve is driven by the level of variability experienced within each 20-year period. Variability can occur spatially within the region, across years, or between ensemble members. A shift to the right (left) indicates higher (lower) temperature heatwaves.

Figure 8: Distribution of date of heatwave days. The shape of the curve is driven by the level of variability experienced within each 20-year period. Variability can occur spatially within the region, across years, or between ensemble members. A shift to the right (left) indicates heatwaves occurring earlier (later).
Figure 1: Observed mean number of days at risk of frost during the growing season (October to April) over the period 1997–2017. Days at risk of frost are those with a daily minimum temperature < 2°C. High (low) values indicate high (low) frost risk.

Figure 2: Observed change in mean number of days at risk of frost during the growing season (October to April) between the current (1997–2017) and historical (1961–1990) periods. Days at risk of frost are days with a minimum temperature < 2°C. High (low) values indicate increased (decreased) frost risk.

Figure 3: Projected mean number of days at risk of frost during the growing season (October to April) for 20-year time periods from 2021 to 2100. Each grid cell is the mean of the 6 ensemble members. Increasing (decreasing) values indicate a trend towards higher (lower) frost risk.

Figure 4: Observed daily minimum temperature (°C) for each month for 20-year periods from 2001 to 2020. Each violin represents daily data for each grid cell, for each of the 6 ensemble members, and for each growing year within the time period; e.g. the top-left most violin represents the daily minimum temperature for every January day in the period 2001–2010, for each grid cell in the region, for each of the 6 ensemble members. The current period (2001–2020) has been shadowed underneath future time periods to highlight any differences expected into the future. Dots represent the means for each violin. If the violin shifts lower (higher) this indicates a change towards colder (warmer) conditions.

Figure 5: Monthly average cumulative frost days for 20-year periods from 2001 to 2010. Values are a summary across all grid cells, for all years within each 20-year period, for each of the 6 ensemble members. This reflects how frost risk varies across the year within each 20-year period. The current period (2001–2020) has been shadowed underneath future time periods to highlight any differences expected into the future.

Figure 6: Timeseries of accumulated frost intensity, which is the cumulative total of temperatures less than 2°C over a growing season. This index characterises exposure to cold conditions. High values indicate cold winters/springs. Points are for each grid cell, averaged across the 6 ensemble members.

Figure 7: Time-series of the number of days per growing year when temperature falls below selected thresholds (< 2°C, < 0°C, < -2°C). Areas indicate the number of days temperatures fall below each threshold per growing year. Values are averaged across all grid cells and the 6 ensemble members. Fewer instances reflect a warming climate.