CLIMATE CHANGE IN AUSTRALIA

PROJECTIONS
FOR AUSTRALIA'S NRM REGIONS

GLOBAL CLIMATE CHANGE

Greenhouse gas concentrations have increased due to human activities since 1750. The Intergovernmental Panel on Climate Change has concluded that human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes.

CLIMATE MODELS AND PROJECTIONS

- Global climate models (GCMs) are the primary tools researchers have to examine future global and regional climate change.
- Models are based on accepted physical principles and are closely related to models used successfully in day-to-day weather forecasting.
- Climate modelling groups from around the world produce different simulations of future climate which can be compared and used to assess climate change in any region.
- A good simulation of the key aspects of regional climate and ability to reproduce past changes provides a basis for placing confidence in the regional projections of the models.
- Confidence is higher in some models than in others, and higher for some variables (e.g. regional temperature) than for others (e.g. local rainfall).
- GCMs are not perfect representations of the real world and can be limited by the way in which key climate processes are included.

TIME PERIODS AND BASELINES FOR PROJECTIONS

- Projections are calculated by averaging results over a 20 year period, centred on a particular year of interest.
- The 'near future' is centred on 2030, which means results are averaged over the period 2020–2039. 'Late in the century' projections are centred on 2090, which means results are averaged over the period 2080–2099.
- The baseline climate (or modelled historic climate) is centred on 1995 (average from 1986–2005).
- Historical observed baseline temperature comes from the Australian Climate Observations Reference Network—Surface Air Temperature (ACORN-SAT). This data is the most up-to-date temperature analysis for Australia developed specifically to monitor climate variability and change.

WWW.CLIMATECHANGEINAUSTRALIA.GOV.AU

CSIRO

Australian Government
Department of the Environment
Bureau of Meteorology

AUSTRALIAN NRM SUPER-CLUSTERS[+]

[+] THE FOUR SUPER-CLUSTERS DESCRIBED BELOW ARE FORMED BY AMALGAMATIONS OF NRM CLUSTERS

LEGEND:

- **NA** NORTHERN AUSTRALIA
- **RL** RANGELANDS
- **EA** EASTERN AUSTRALIA
- **SA** SOUTHERN AUSTRALIA
- ▲ INCREASE
- ▼ DECREASE
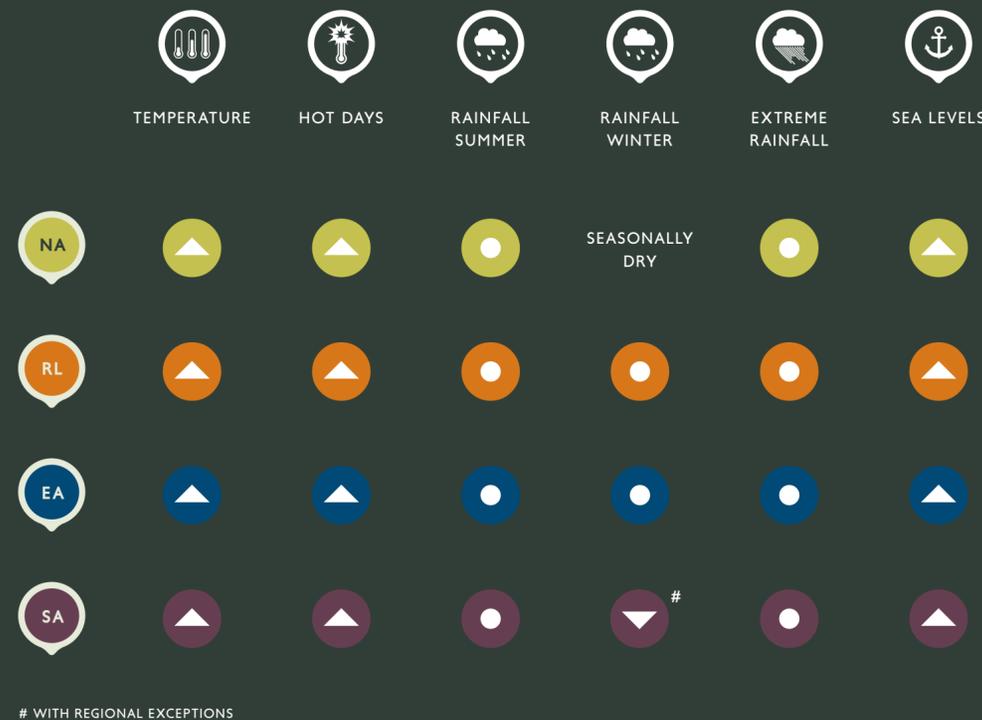- ● NATURAL VARIABILITY PREDOMINATES
- ◆ DIRECTION OF CHANGE UNCLEAR

2090—HIGH EMISSION SCENARIO (RCP8.5)

	TEMPERATURE	HOT DAYS	RAINFALL SUMMER	RAINFALL WINTER	EXTREME RAINFALL	SEA LEVELS
NA	▲	▲	◆	SEASONALLY DRY	▲	▲
RL	▲	▲	◆	▼	▲	▲
EA	▲	▲	◆	▼	▲	▲
SA	▲	▲	◆ [#]	▼ [#]	▲	▲

[#] WITH REGIONAL EXCEPTIONS

2030—ALL EMISSION SCENARIOS[*]

[*] IN 2030, PROJECTIONS ARE SIMILAR ACROSS ALL EMISSION SCENARIOS CONSIDERED. THESE PROJECTIONS ARE ALSO SIMILAR TO THOSE IN 2090 UNDER A LOW EMISSION SCENARIO (RCP2.6)

	TEMPERATURE	HOT DAYS	RAINFALL SUMMER	RAINFALL WINTER	EXTREME RAINFALL	SEA LEVELS
NA	▲	▲	●	SEASONALLY DRY	▲	▲
RL	▲	▲	●	●	●	▲
EA	▲	▲	●	●	●	▲
SA	▲	▲	●	▼ [#]	●	▲

[#] WITH REGIONAL EXCEPTIONS

2090—INTERMEDIATE EMISSION SCENARIO (RCP4.5)

	TEMPERATURE	HOT DAYS	RAINFALL SUMMER	RAINFALL WINTER	EXTREME RAINFALL	SEA LEVELS
NA	▲	▲	◆	SEASONALLY DRY	▲	▲
RL	▲	▲	◆	▼	▲	▲
EA	▲	▲	●	▼	▲	▲
SA	▲	▲	● [#]	▼ [#]	▲	▲

[#] WITH REGIONAL EXCEPTIONS

MORE INFORMATION ON CLIMATE CHANGE PROJECTIONS CAN BE FOUND IN CLIMATE CHANGE IN AUSTRALIA CLUSTER BROCHURES AND REPORTS, AS WELL AS IN THE TECHNICAL REPORT.