

# AUSTRALIA

## CLIMATE OF OUR CONTINENT

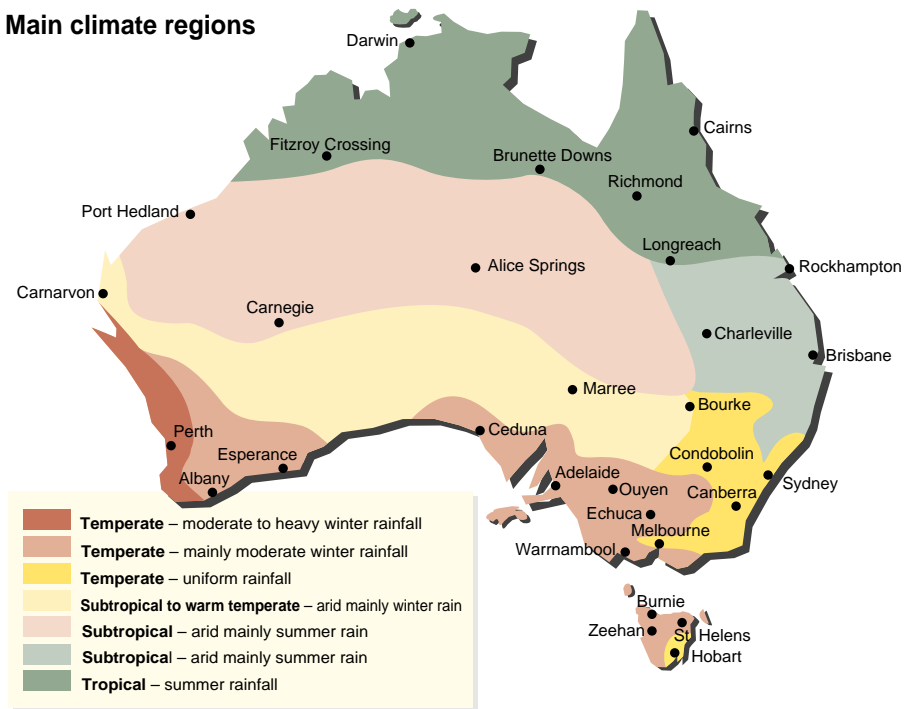
**Australia's major climate zones—and an annual rainfall variability greater than any other continent—combine to create a diverse range of environments.**

### Climate in outline

Australia's climate is dominated by the dry, sinking air of the subtropical high pressure belt which moves north and south with the seasons. This causes the rainfall pattern over Australia to be strongly seasonal and helps to define the main climate regions shown opposite. When the high pressure systems move north during winter, southern Australia comes under the influence of westerly winds and rain-bearing cold fronts. Most of Australia's primary production occurs in the temperate regions of the south and east, and relies on this winter rainfall. Cold snaps may lead to frosts inland, though temperatures about the coast are generally mild all year round. Summers over southern Australia are mostly dry and hot with coastal sea-breezes. Following a long dry spell, hot, dry winds from the interior can cause bushfires in southern and eastern Australia. The flammability of the Australian bush (which has adapted to the climate) adds to the risk.

In comparison, tropical regions of northern Australia experience a wet

### Main climate regions



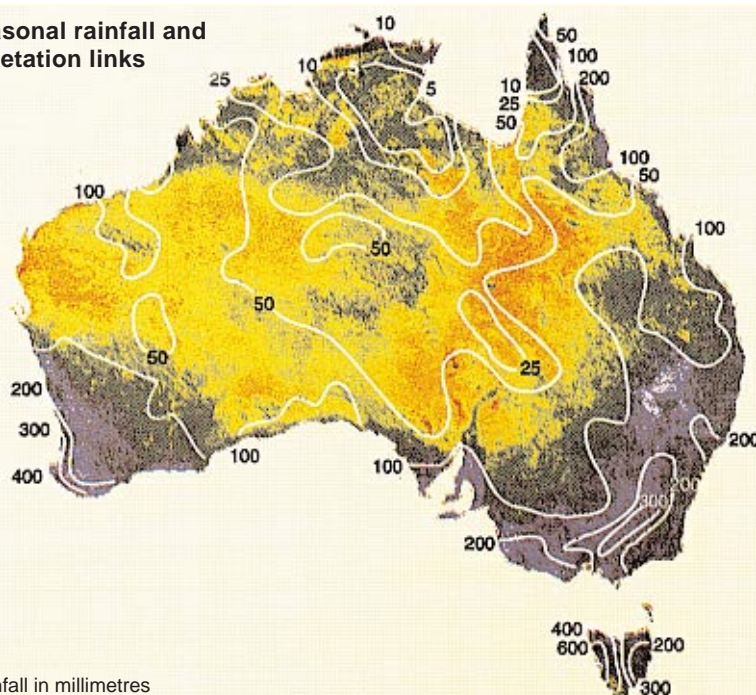
summer as the monsoon moves in. During 'the wet', typically October to April, moist northwesterly winds bring humid conditions with showers and thunderstorms. Rainfall amounts may vary markedly from year-to-year, and

occasional tropical cyclones can bring abundant rainfall to tropical coastal regions and possibly further inland. Once the monsoon has retreated, winter brings blue skies and mild, dry conditions. Dryland agriculture and pastoralism have adapted to the harsh climate of the vast inland tropical area.

As a result of the influence of the high pressure belt, much of Australian rainfall is low and variable. Eighty per cent of the continent has an average annual rainfall less than 600 mm. The vegetation of the arid interior adapts to dry conditions and responds quickly when rainfall is received.

The effect of these markedly seasonal rainfall regimes is apparent in the adjacent satellite image for winter 1993 which shows variation in landcover greenness. Yellow and red colours indicate minimal growing vegetation; green and blue indicate actively growing vegetation. This example also superimposes the rainfall of winter 1993 (lines). Southern parts of Australia have responded to winter rainfall while northern Australia is drying and awaits its summer monsoon.

### Seasonal rainfall and vegetation links



Rainfall in millimetres

Source: Bureau of Meteorology Research Centre—Satellite Meteorology

## A quick look at major cities

Location	Mean Temperatures (°C)				Rain (mm)
	January		July		
	Max	Min	Max	Min	
Adelaide	28.5	16.6	14.9	7.5	553
Alice Springs	36.1	21.2	19.5	4.0	274
Brisbane	29.2	21.0	20.6	9.5	1189
Canberra	27.8	12.9	11.1	-0.2	631
Darwin	31.8	24.8	30.4	19.3	1666
Hobart	21.5	11.7	11.5	4.5	624
Melbourne	25.7	14.0	13.3	5.8	661
Perth	31.5	16.8	17.7	8.1	869
Sydney	26.3	18.5	16.9	6.7	1220

The table above outlines key climate elements at capital city (or central) locations.

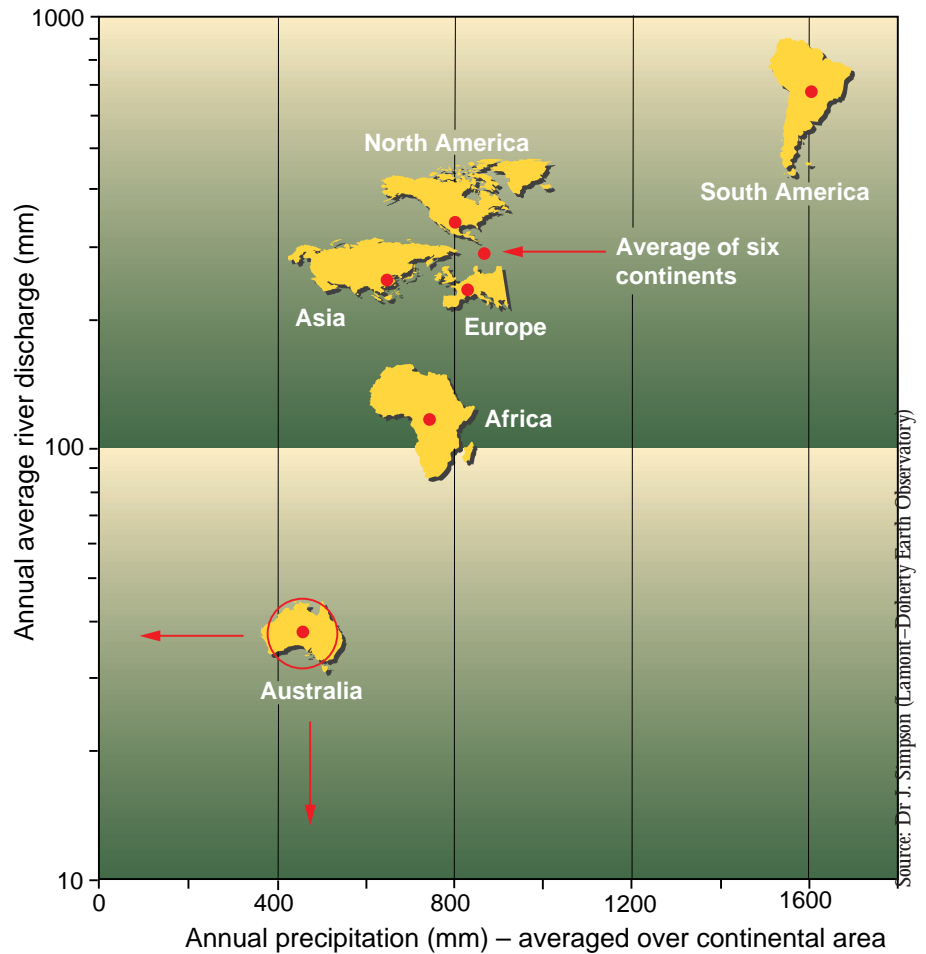
## How does Australia compare with other continents?

Australia's rainfall is easily the lowest of the five continents (excluding Antarctica). Low rainfall combined with very high evaporation (particularly in inland Australia) leads to low surface water flows and seasonal river systems. The graph opposite shows that discharge of Australia's rivers into the sea is by far the lowest of any of the continents. Low and seasonal flows contribute to problems of salinity and algal blooms.

With a smaller continental area separated from polar regions by the Southern Ocean, Australia escapes the harsh outbreaks of true polar air which invade northern hemisphere continents during winter. Northern hemisphere continents have a greater temperature contrast between summer and winter.

The most notable feature of Australia's climate is its high year-to-year rainfall variability. This is influenced by the Southern Oscillation which is driven largely from the tropical Pacific Ocean and overlying atmosphere. The phenomenon known as El Niño is part of this system and makes a significant contribution to this variability. Even though the El Niño-Southern Oscillation is linked to persistent seasonal anomalies in many parts of the globe, Australia is one of the most affected continents, experiencing major droughts interspersed with extensive wet periods. Frequencies of tropical cyclones, heat-waves, bushfires and

## River discharge by continent (excluding Antarctica) related to rainfall supply



frosts are also linked to the Southern Oscillation. Given Australia's low and variable rain, there is environmental concern about the sustainable management of surface water, its use, its quality and even its very existence in some places.

Our plants and animals have evolved on a geographically isolated continent, through a time of a slowly drying climate, combined with continuing high

variability. The uniqueness of much of Australia's flora and fauna is thus at least partly due to these features of our climate.

Climate variability (from year-to-year and from decade-to-decade), affects environmental management issues, particularly if combined with potential climate change, (slower and on a longer time-scale).

### Further information

- Bureau of Meteorology in your State
- Internet: <http://www.bom.gov.au/>
- Dial *Weather by Fax* with your fax in poll mode: 1800 630 100
- Weather/Climate public display– Bureau of Meteorology, ground floor  
150 Lonsdale Street Melbourne  
Tel: (03) 9669 4000
- *Farming a Sunburnt Country*–video and booklet for climate education  
Tel: (03) 9669 4072

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