Australia's Variable Rainfall

April to March Annual Australian Rainfall Relative to Historical Records 1890-2023

1890–1891 | 1900–1901 | 1910–1911 | 1920–1921 | 1930–1931 | 1940–1941 | 1950–1951 | 1960–1961 | 1970–1971 | 1980–1981 | 1990–1991 | 2000–2001 | 2010–2011 | 2020–2021

1891–1892 | 1901–1902 | 1911–1912 | 1921–1922 | 1931–1932 | 1941–1942 | 1951–1952 | 1961–1962 | 1971–1972 | 1981–1982 | 1991–1992 | 2001–2002 | 2011–2012 | 2021–2022

1892–1893 | 1902–1903 | 1912–1913 | 1922–1923 | 1932–1933 | 1942–1943 | 1952–1953 | 1962–1963 | 1972–1973 | 1982–1983 | 1992–1993 | 2002–2003 | 2012–2013 | 2022–2023

1893–1894 | 1903–1904 | 1913–1914 | 1923–1924 | 1933–1934 | 1943–1944 | 1953–1954 | 1963–1964 | 1973–1974 | 1983–1984 | 1993–1994 | 2003–2004 | 2013–2014 | 2023–2024

1894–1895 | 1904–1905 | 1914–1915 | 1924–1925 | 1934–1935 | 1944–1945 | 1954–1955 | 1964–1965 | 1974–1975 | 1984–1985 | 1994–1995 | 2004–2005 | 2014–2015 | 2024–2025

1895–1896 | 1905–1906 | 1915–1916 | 1925–1926 | 1935–1936 | 1945–1946 | 1955–1956 | 1965–1966 | 1975–1976 | 1985–1986 | 1995–1996 | 2005–2006 | 2015–2016 | 2025–2026

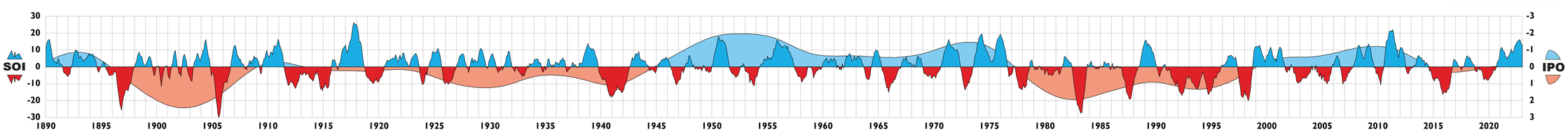
1896–1897 | 1906–1907 | 1916–1917 | 1926–1927 | 1936–1937 | 1946–1947 | 1956–1957 | 1966–1967 | 1976–1977 | 1986–1987 | 1996–1997 | 2006–2007 | 2016–2017 | 2026–2027

1897–1898 | 1907–1908 | 1917–1918 | 1927–1928 | 1937–1938 | 1947–1948 | 1957–1958 | 1967–1968 | 1977–1978 | 1987–1988 | 1997–1998 | 2007–2008 | 2017–2018 | 2027–2028

1898–1899 | 1908–1909 | 1918–1919 | 1928–1929 | 1938–1939 | 1948–1949 | 1958–1959 | 1968–1969 | 1978–1979 | 1988–1989 | 1998–1999 | 2008–2009 | 2018–2019 | 2028–2029

1899–1900 | 1909–1910 | 1919–1920 | 1929–1930 | 1939–1940 | 1949–1950 | 1959–1960 | 1969–1970 | 1979–1980 | 1989–1990 | 1999–2000 | 2009–2010 | 2019–2020 | 2029–2030

a printable map update sheet is made available each year at www.longpaddock.qld.gov.au/rainfall-poster



Classification of years

Years are classified, according to colour, based on whether they are either 'El Niño' years (red text year title), 'La Niña' years (blue text) or 'ENSO Neutral' years (dark grey text).

For this poster: El Niño and La Niña year classification is based on values of the Southern Oscillation Index (SOI)* between June and March. An original classification proposed by Dr Rob Allan has been modified to allow for late-forming El Niño or La Niña events. Threshold values of the SOI have been adjusted such that the frequency of El Niño and La Niña years from 1950–51 to 2009–10 is similar to that obtained by the 'WMO RA IV Consensus Index and Definitions of El Niño and La Niña'**.

El Niño
Originally referred specifically to a warming of the sea surface off the coast of Peru, now more generally refers to the warming of the central and eastern equatorial Pacific Ocean, strongly associated with persistently negative values of the Southern Oscillation Index (SOI). Generally associated with extended drier periods.

For this poster: An 'El Niño year' is indicated if the six-month average value of the SOI, ending in any month between November and March, was below a threshold value of negative 6.0.

La Niña
Now used to refer to the opposite of El Niño, or events associated with persistently positive values of the SOI. Generally associated with extended wetter periods.

For this poster: A 'La Niña year' is indicated if the six-month average value of the SOI, ending in any month between November and March, was above a threshold value of positive 6.0.

ENSO Neutral
ENSO refers to the El Niño–Southern Oscillation which fluctuates between El Niño or La Niña (above). 'ENSO Neutral' refers to neither El Niño or La Niña. Often the equatorial Pacific Ocean temperatures are near the long-term average. It is possible to have wet or dry periods associated with 'ENSO Neutral' years.

For this poster: 'ENSO Neutral' are all years which do not fall in either El Niño or La Niña categories (above).

*Monthly SOI values calculated using base period 1933–1992 inclusive (monthly values available at: http://www.bom.gov.au/climate/current/soihtm1.shtml)

**NOAA: World Meteorological Organisation Region IV Adopts Consensus El Niño and La Niña Index and Definitions, Press Release, April 28, 2005 (available at: https://wfile.ait.org.tw/wf-archive/2005/050428/epf413.htm)

Rainfall classification

Maps for each year show rainfall ranked against historical records from 1890 to 2023. The ranking is expressed as a percentile. For example, a percentile rank of 0–1 indicates that rainfall over the year ranks within the lowest one per cent of rainfall values recorded for all annual periods, at that location.

Percentile 99–100	Highest on record
90–99	Extremely high rainfa
80–90	Well above average
70–80	Above average
30–70	Average
20–30	Below average
10–20	Well below average
1–10	Extremely low rainfal
0–1	Lowest on record

Graph

The bottom graph shows fluctuations in the six-month moving average of the **Southern Oscillation Index (SOI)**. The SOI compares the difference in atmospheric pressure anomalies between Tahiti and Darwin. The graph also shows fluctuations in the **Inter-decadal Pacific Oscillation (IPO)**, a slower moving fluctuation in Pacific Ocean sea surface temperatures which influences climate variability. The IPO values on the graph are the filtered time series using 11 year Chebychev filter provided by Andrew Coleman, UK Met Office, updated to May 2020.

Produced by

Queensland Government, Ecosciences Precinct.
GPO Box 2454, Brisbane, Queensland 4001.
email: longpaddock@qld.gov.au
web: www.LongPaddock.qld.gov.au

Acknowledgments

- Rainfall data sourced from the Australian Bureau of Meteorology (www.bom.gov.au). Interpolation and percentile calculations by Queensland Government.
- SOI data sourced from the Australian Bureau of Meteorology (www.bom.gov.au) with monthly values smoothed using a six-month moving average.
- IPO data sourced under © Crown copyright, UK Met Office. Reproduced under Licence Number MetO/IPR/2/2003 0027.

Queensland Government

Data: Friday, 12 May 2023 Created: Monday, 31 July 2023 7:51:20 PM