



Australian Government
Bureau of Meteorology

Australian Climate Observations Reference Network for Surface Air Temperature
Remote Australian Islands and Antarctica

Station catalogue



The Australian Climate Observations Reference Network for Surface Air Temperature
Remote Australian Islands and Antarctica Station Catalogue

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Cover image: Mawson weather station.
Photographer: Victoria Heinrich

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Introduction

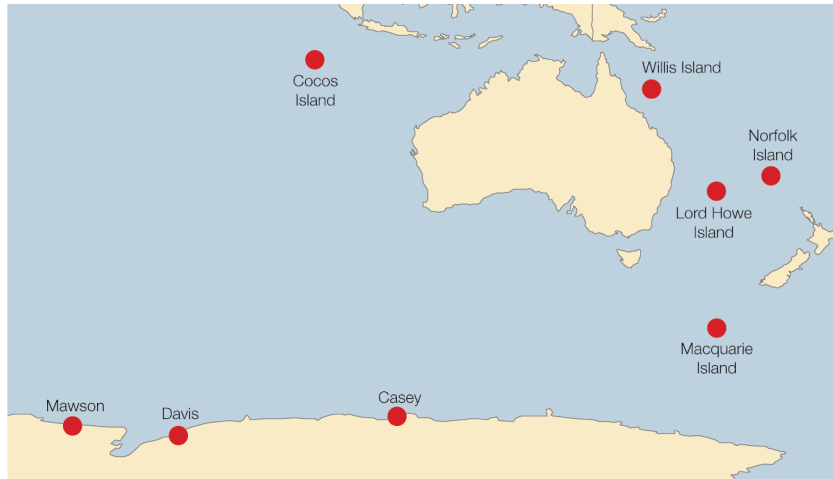
The Australian Climate Observations Reference Network

The Bureau of Meteorology maintains an extensive network of environmental monitoring systems across Australia and Australian territories. These networks and the resulting datasets allow scientists to better analyse long-term trends and changes in the climate of Australia and the surrounding region.

An important part of the climate monitoring system is the Australian Climate Observations Reference Network for Surface Air Temperature (ACORN-SAT). It consists of 112 locations across Australia and eight locations on remote Australian islands and in the Australian Antarctic Territory, which provide high-quality, ground-based temperature records. The locations are chosen to maximise the length of record and network coverage across the region.

Combined, these stations hold over 100 years of records that are used in the development of the ACORN-SAT dataset. The eight locations on remote Australian islands and in the Australian Antarctic Territory form a unique subset of this dataset.

This catalogue outlines the location and history of each station used in the ACORN-SAT remote island and Antarctica subset.



ACORN-SAT remote Australian islands and Antarctic Territory stations.

Notes

Definitions

ACORN-SAT	The Australian Climate Observations Reference Network for Surface Air Temperature
AWS	automatic weather station
station	weather station
site	weather station site
screen	the Stevenson screen is a louvre-sided instrument enclosure
Fielden	remotely read instrument, housed in a standard screen

First year of available data

At some locations data are available from earlier years than those covered in ACORN-SAT and listed in this publication.

Photographs

Photographs included in this station catalogue are from the most recently opened site.

Station site maps

Scales vary according to the location of the site.

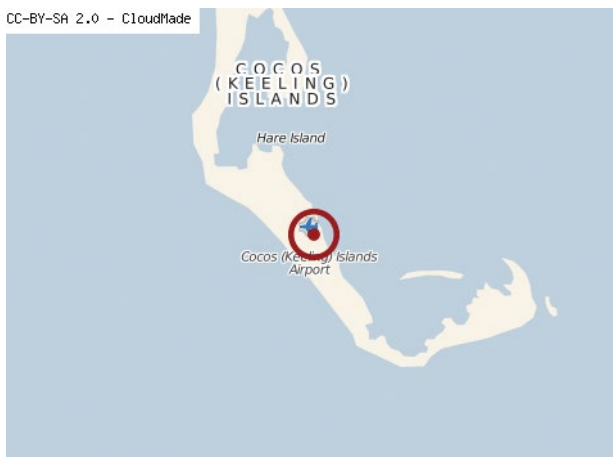
The large site maps are from OpenStreetMap.

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Station site

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Contents

- Casey1
- Cocos Island2
- Davis.....3
- Lord Howe Island.....4
- Macquarie Island5
- Mawson6
- Norfolk Island7
- Willis Island8

Casey



Site information

Site name: CASEY

Site number: 300017

Latitude: 66.28 °S

Longitude: 110.52 °E

Elevation: 40 m

First year of available data: 1970

Casey (300017/300006)

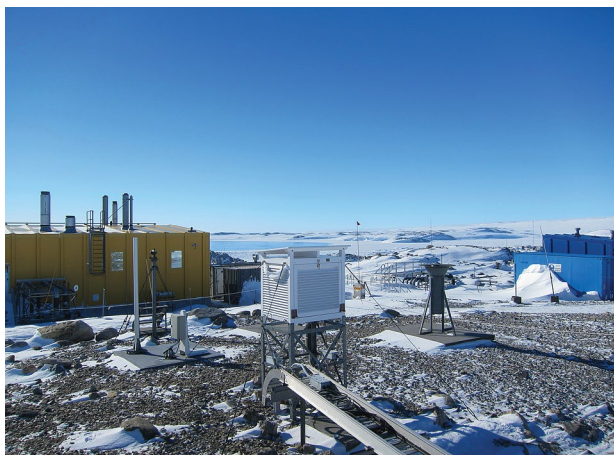
The first Casey base (The Tunnel), (300006) was built in 1969 a few miles away, on the opposite side of the bay from the old Wilkes base. In 1987 the Casey base (300017) was moved to a more elevated position, about 1 km to the south. Observations commenced on 1 January 1989.

The current site (300017) is an automatic weather station located over a non-vegetated rock surface. Patchy snow and ice often cover the surface, particularly in the winter months.

History

Observations of maximum and minimum temperatures at Wilkes started on 1 February 1960. Temperatures were obtained from liquid-in-glass or electrical resistance thermometers mounted in a Stevenson screen and a continuous record was obtained from a thermograph or a recording electrical resistance thermometer. Maximum and minimum temperatures were obtained from the thermograph trace. In 1972 a Fielden was already operational, most likely installed after the 1969 opening of the Casey base. Temperatures were taken from the maximum and minimum thermometers in the screen, except if the screen was inaccessible due to wind, when temperatures were obtained from the Fielden. In January 1994 an automatic weather station was installed. It was replaced with a new type in March 2003.

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Cocos Island



Site information

Site name: COCOS ISLAND

Site number: 200284

Latitude: 12.19 °S

Longitude: 96.83 °E

Elevation: 3 m

First year of available data: 1960

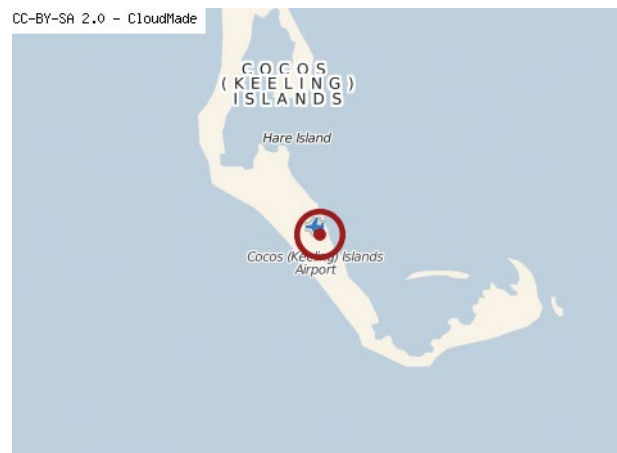
Cocos Island (200284)

The Cocos (Keeling) Islands are a group of 27 coral islands in a pair of atolls in the eastern Indian Ocean. The islands are low-lying, typically 1.5 to 3 m above the mean sea level, with the highest point having an elevation of 11 m.

The current site (200284) is an automatic weather station located at the airport on West Island. The instruments are located on flat terrain over short grass.

History

A meteorological office was opened in September 1943 by the Royal Australian Air Force at the airport (located on West Island), but it closed in August 1946. It was reopened in February 1952, with recording of temperature made by trained Bureau of Meteorology observers. A new office building was completed in May 1980 and some changes in instrumentation were made, as well as the relocation of the observation site to the opposite side of the runway. In July 1993 an automatic weather station was installed; it was then replaced with a new type in October 1997. The automatic weather station became the primary instrument on 1 June 2001.



Davis



Site information

Site name: DAVIS

Site number: 300000

Latitude: 68.57 °S

Longitude: 77.97 °E

Elevation: 18 m

First year of available data: 1958

Davis (300000)

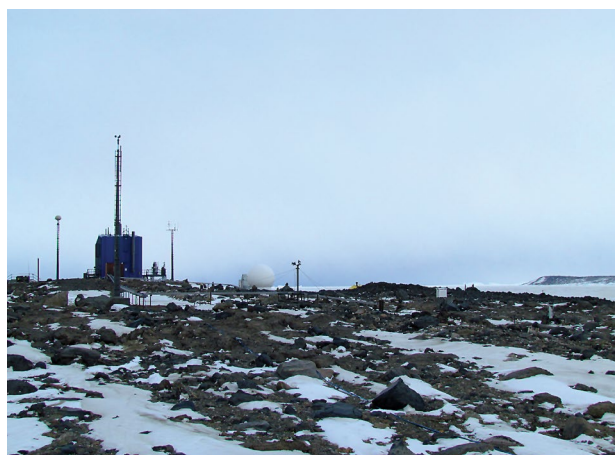
Davis is the most southerly Australian station, and was opened in January 1957. It is situated on the coast of the ice-free Vestfold Hills that shield the station from the strong winds that are normally associated with the east Antarctic coast.

The current site (300000) is an automatic weather station located over a non-vegetated rock surface. Patchy snow and ice often cover the surface, particularly in the winter months.

History

The observation of maximum and minimum temperatures at Davis commenced in February 1957. A dry-bulb thermometer and thermograph were mounted in a Stevenson screen and the thermograph was used to obtain the daily maximum and minimum temperatures. In January 1965 Davis was temporarily closed but was reopened on 15 February 1969 at the same site and with the same instrumentation. From February 1970, maximum and minimum temperatures were taken from the Fielden, while from January 1992 maximum and minimum thermometers on anti-vibration supports were installed and utilised. From December 1992 all observations were performed at a new site, due to the building of a new meteorological office and a balloon complex. An automatic weather station was installed (as a replacement for the Fielden) in May 1994 and in January 2004 it was replaced with a new type.

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Lord Howe Island



Site information

Site name: LORD HOWE ISLAND

Site number: 200839

Latitude: 31.54 °S

Longitude: 159.08 °E

Elevation: 5 m

First year of available data: 1940

Lord Howe Island (200839/200440)

Lord Howe Island is a small island in the Tasman Sea, 600 km east of the Australian mainland. It is roughly crescent-shaped, about 10 km long and up to 2 km wide, and is an eroded remnant of a volcanic crater rim. The highest point (Mt Gower) is 875 m above the mean sea level.

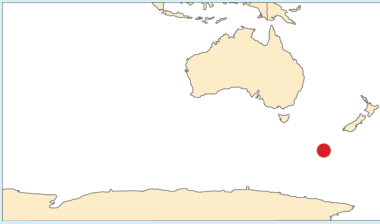
The current site (200839) is an automatic weather station located next to the airport to the north of Mt Gower. The area within 20 m of the equipment is covered with short grass, with a few large bushes and trees beyond.

History

The original site (200440) was located at the Post Office, and recording of temperature began in 1887. The Bureau of Meteorology established a meteorological office and started taking daily observations in April 1937. The observation site was relocated in December 1954 to the eastern side of the island. Another relocation of the observation site occurred in November 1988, when it was moved to near the airport runway (site 200839). At the same time an automatic weather station was installed, which was replaced with a new type in 1994.



Macquarie Island



Site information

Site name: MACQUARIE ISLAND

Site number: 300004

Latitude: 54.50 °S

Longitude: 158.94 °E

Elevation: 6 m

First year of available data: 1948

Macquarie Island (300004)

Macquarie Island is a long, narrow, steep-sided island forming a plateau, 34 km long and 5.5 km wide at its widest point, lying approximately in a north–south direction some 1100 kilometres southwest of New Zealand. The current meteorological station was established by the Australian National Antarctic Research Expeditions in March 1948 and is 6 m above the mean sea level.

The current site (300004) is an automatic weather station situated on the isthmus at the northern end of the island. The area within 20 m of the equipment is mostly covered by short natural grass, with low tussock beyond.

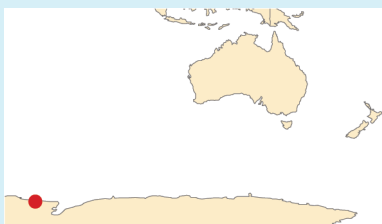
History

Observations of temperature commenced in 1948. There was a change in the enclosure (but not a relocation) in 1979. An automatic weather station was installed in August 1992; it was replaced with a new type in April 2003.

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Mawson



Site information

Site name: MAWSON

Site number: 300001

Latitude: 67.60 °S

Longitude: 62.88 °E

Elevation: 10 m

First year of available data: 1958

Mawson (300001)

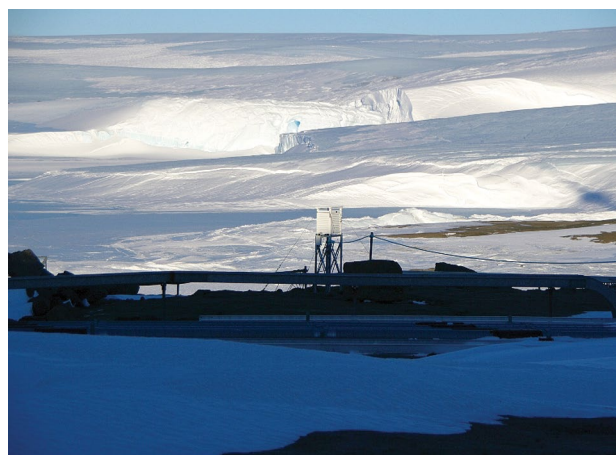
Mawson is Australia's oldest Antarctic station and the oldest continuously inhabited station south of the Antarctic Circle. It was opened in February 1954 and is located on a rocky outcrop on the Antarctic coastline. Behind the station, the continental ice sheet slopes upwards towards a high plateau, resulting in frequent strong winds.

The current site (300001) is an automatic weather station located over a non-vegetated rock surface. Patchy snow and ice often cover the surface, particularly in the winter months.

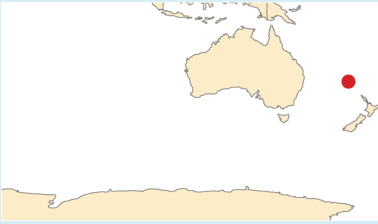
History

The observation of maximum and minimum temperatures at Mawson station started in March 1954. A dry-bulb thermometer and thermograph were mounted in a Stevenson screen and the thermograph was used to obtain the daily maximum and minimum temperatures. In early 1973 the Fielden was introduced at the station and was used for maximum and minimum temperatures. From January 1992 those temperatures were obtained from the maximum and minimum thermometers mounted on the anti-vibration supports. An automatic weather station was installed in January 1994 and was replaced by a new type in April 2004.

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Norfolk Island



Site information

Site name: NORFOLK ISLAND

Site number: 200288

Latitude: 29.04 °S

Longitude: 167.94 °E

Elevation: 112 m

First year of available data: 1944

Norfolk Island (200288)

Norfolk Island is a small island of volcanic origin, located approximately 1,600 km northeast of Sydney. It is about 8 km long and 5 km wide, with the highest point (Mt Bates) 319 m above the mean sea level.

The current site (200288) is an automatic weather station located at the airport, in flat terrain over short grass.

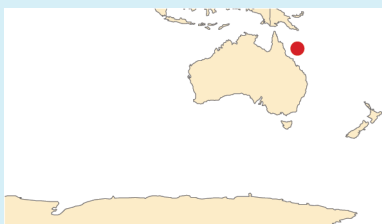
History

Records of rainfall commenced in 1890 in Kingston, the capital, and were taken by government staff. In 1939 the observation site was moved from Kingston to a site located near the centre of the island and a Bureau of Meteorology observer began to perform the observations. The Royal New Zealand Air Force moved the observation site to the airport in January 1943 and performed observations until April 1948, when responsibility for the station was transferred back to the Bureau.

In February 1997 the observation site moved approximately 90 m to the northeast and an automatic weather station was installed. Parallel manual observations continued in the old screen until May 1999 under the site number 200849.



Willis Island



Site information

Site name: WILLIS ISLAND

Site number: 200283

Latitude: 16.29 °S

Longitude: 149.97 °E

Elevation: 8 m

First year of available data: 1939

Willis Island (200283)

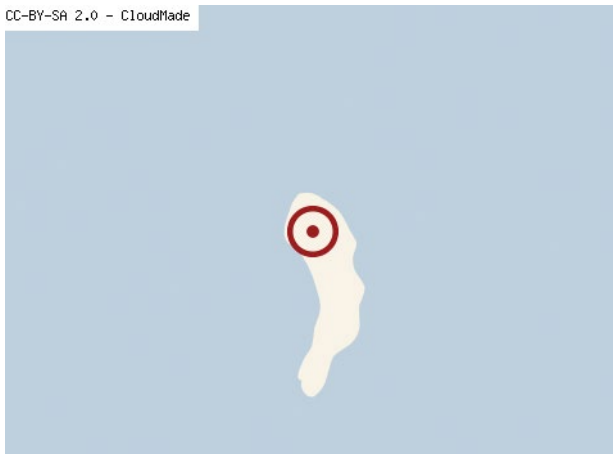
Willis Island is a small coral atoll in the Coral Sea, some 450 km east of Cairns. It is aligned northwest to southeast and is about 500 m long by 150 m wide, rising to about 9 m above the mean sea level at its highest point.

The current site (200283) is an automatic weather station located over short grass, with some bare patches of sand.

History

Recording of temperature at Willis Island began in 1922. Temperature observations were made by a Bureau of Meteorology observer from 1939. An automatic weather station was installed in June 1991, and was replaced with a new type in June 2000. Between June 2004 and November 2006 the station was closed for a major upgrade to facilities. The location is generally unchanged since observations began, although it is known that there were slight changes in the observation site which were not reported in historical files. The site was significantly affected by Tropical Cyclone Yasi in February 2011 leading to the closure of the site for repairs.

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