



Basic Climatological Station Metadata

Current status

Metadata compiled: 27 JUL 2020

Station: INVERELL RESEARCH CENTRE

Bureau of Meteorology station number: 056018

Bureau of Meteorology district name: Northern Tablelands (W)

State: NSW

World Meteorological Organization number: 94541

Identification: INVL

Network Classification: National Benchmark Network for Agrometeorology

Station purpose: Climatological

Automatic Weather Station: Almos



Current Station Location				
Latitude	Decimal	-29.7752	Hour Min Sec	29°46'31"S
Longitude	Decimal	151.0820	Hour Min Sec	151°4'55"E
Station Height	664 m	Barometer Height	664.3 m	
Method of station geographic positioning			GPS	

Year opened: 1949

Status: Open

Station summary

No summary for this site has been written as yet.

Historical metadata for this site has not been quality controlled for accuracy and completeness. Data other than current station information, particularly earlier than 1998, should be considered accordingly. Information may not be complete, as backfilling of historical data is incomplete.

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Basic Climatological Station Metadata

Current status

Station: INVERELL RESEARCH CENTRE	Location: INVERELL RESEARCH CENTRE			State: NSW
Bureau No.: 056018	WMO No.: 94541	Aviation ID: INVL	Opened: 01 Jan 1949	Current Status: Still open
Latitude: -29.7752	Longitude: 151.0820	Elevation: 664 m	Barometer Elev: 664.3 m	Metadata compiled: 27 JUL 2020

Observation summary

The table below indicates the approximate completeness of the record for individual element types within the Australian Data Archive for Meteorology. For elements not listed see the note below.



DAILY DATA HOLDINGS

OBSERVATION TYPE	FIRST MONTH	LAST MONTH	COMPLETENESS (% estimate)	SINGLE DAYS MISSED	FULL MONTHS MISSED
EVAPORATION	JAN 1965	JUN 2020	80.0	1124	96
EVAPORIMETER - MAXIMUM WATER TEMPERATURE	DEC 1973	DEC 2015	63.0	963	155
GROUND MINIMUM TEMPERATURE	JAN 1965	JUN 2020	92.7	747	24
MAXIMUM AIR TEMPERATURE	JAN 1965	JUN 2020	93.9	983	8
MAXIMUM WIND GUST SPEED	DEC 2002	JUN 2020	90.1	632	0
SUNSHINE HOURS	JUN 1982	JUN 2020	86.7	1085	25
WIND RUN ABOVE 10 FEET	JAN 1965	JUN 2020	57.6	496	266
WIND RUN BELOW 10 FEET	DEC 1973	DEC 2019	90.3	1286	11
RAINFALL	MAY 1949	JUL 2020	99	N/A	N/A

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HOURLY DATA HOLDINGS - from 1 to 24 observations per day

OBSERVATION TYPE	FIRST MONTH	LAST MONTH	COMPLETENESS (% estimate)	FREQUENCY average daily	SINGLE DAYS MISSED	FULL MONTHS MISSED
AIR TEMPERATURE	JAN 1965	JUN 2020	94.2	3.3	795	8
1 8 5 0	1 9 0 0	1 9 5 0	1 9 5 0		2 0 0 0	
DEW POINT	JAN 1965	JUN 2020	87.4	3.4	822	52
1 8 5 0	1 9 0 0	1 9 5 0	1 9 5 0		2 0 0 0	
MEAN SEA LEVEL PRESSURE	DEC 2002	JUN 2020	96.8	8.1	77	0
1 8 5 0	1 9 0 0	1 9 5 0	1 9 5 0		2 0 0 0	
SOIL TEMPERATURE - 10cm	FEB 1970	JUN 2020	80.3	1.0	888	89
1 8 5 0	1 9 0 0	1 9 5 0	1 9 5 0		2 0 0 0	
TOTAL CLOUD AMOUNT	JAN 1965	JUN 2020	93.1	1.0	988	8
1 8 5 0	1 9 0 0	1 9 5 0	1 9 5 0		2 0 0 0	
WIND SPEED	JAN 1965	JUN 2020	94.0	3.3	850	8
1 8 5 0	1 9 0 0	1 9 5 0	1 9 5 0		2 0 0 0	

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RAINFALL INTENSITY DATA HOLDINGS

OBSERVATION TYPE	FIRST MONTH	LAST MONTH	COMPLETENESS (% estimate)	SINGLE DAYS MISSED	FULL MONTHS MISSED
RAINFALL INTENSITY	AUG 1947	OCT 2014	85.6	1233	75

ONE-MINUTE DATA HOLDINGS

OBSERVATION TYPE	FIRST MONTH	LAST MONTH	COMPLETENESS (% estimate)	FREQUENCY average daily	SINGLE DAYS MISSED	FULL MONTHS MISSED
ALL ELEMENTS	NOV 2004	JUL 2020	95.5	1375.2	N/A	67

HALF-HOURLY DATA HOLDINGS

OBSERVATION TYPE	FIRST MONTH	LAST MONTH	COMPLETENESS (% estimate)	FREQUENCY average daily	SINGLE DAYS MISSED	FULL MONTHS MISSED
ALL ELEMENTS	DEC 2002	JUL 2020	80.3	38.6	N/A	0

THERE ARE NO UPPER-AIR EDT DATA HOLDINGS

Holdings calculated up to 01 Jul 2020

The % complete figure is the completeness of observations averaged over all months of record, for the given station and observation type, taking gaps into account. For hourly holdings, the completeness is relative to the maximum number of daily observations for the site each month, and is therefore an estimate. For daily holdings, the completeness figure shown is exact.

The single days missed figure is the total number of days for which no observation was received, not including full missed months. The full months missed figure is the total of full month gaps over the period of record. Where an element is not included assumptions can generally be made about availability, and the list to use has been suggested below.

Unlisted element

- Minimum air temperature
- Wet bulb temperature
- Soil temperature at 20, 50 & 100cm
- Relative humidity
- Minimum temp. of water in evaporimeter
- Visual observations eg. weather, visibility
- Sea related observations

Listed element to use

- Maximum air temperature
- Dew point
- 10cm soil temperature
- Dew point
- Evaporimeter - max water temp
- Total cloud amount
- Sea state

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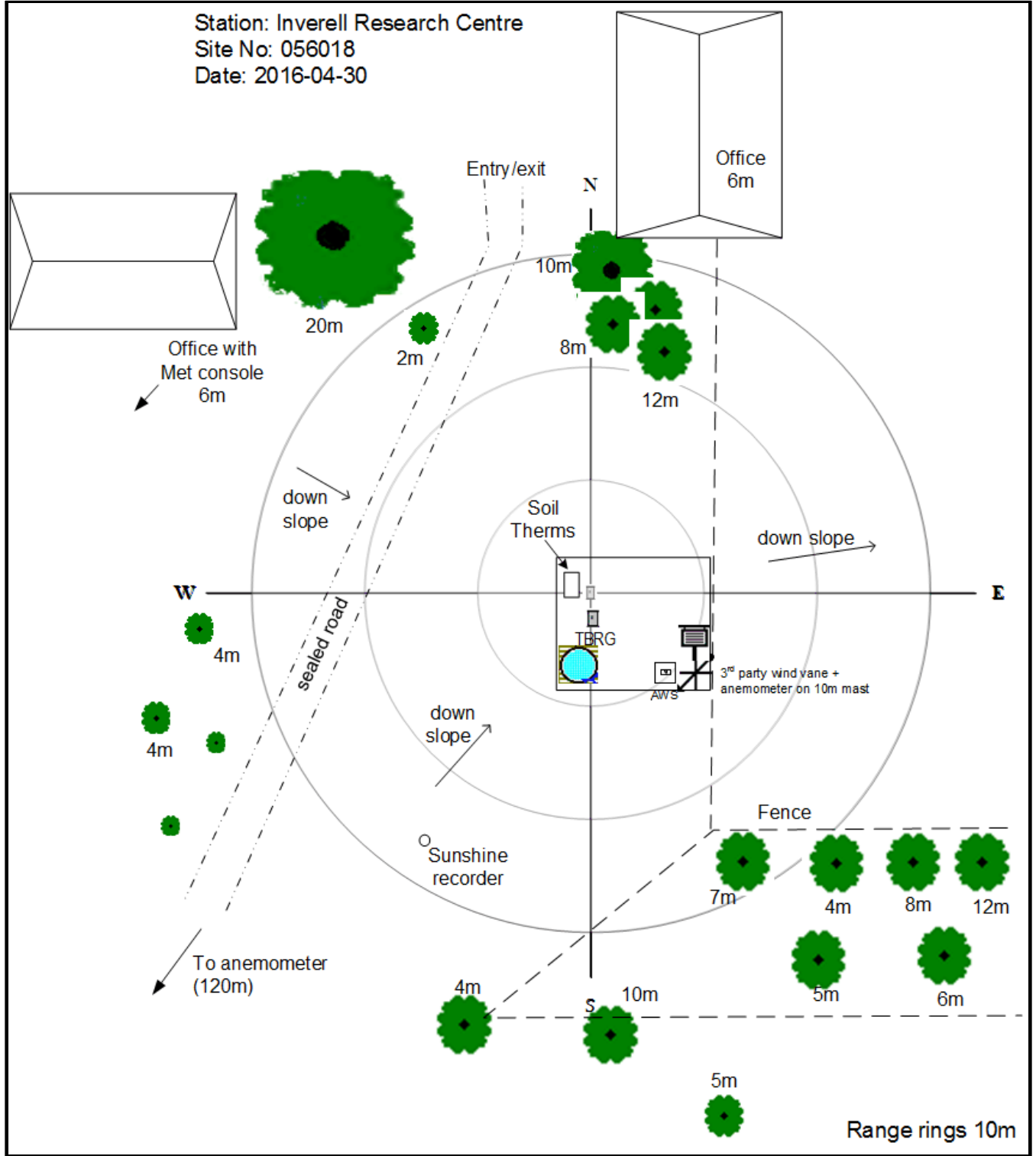
Extended Climatological Station Metadata

All History

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Instrument Location and Surrounding Features

30/04/2016(most recent)



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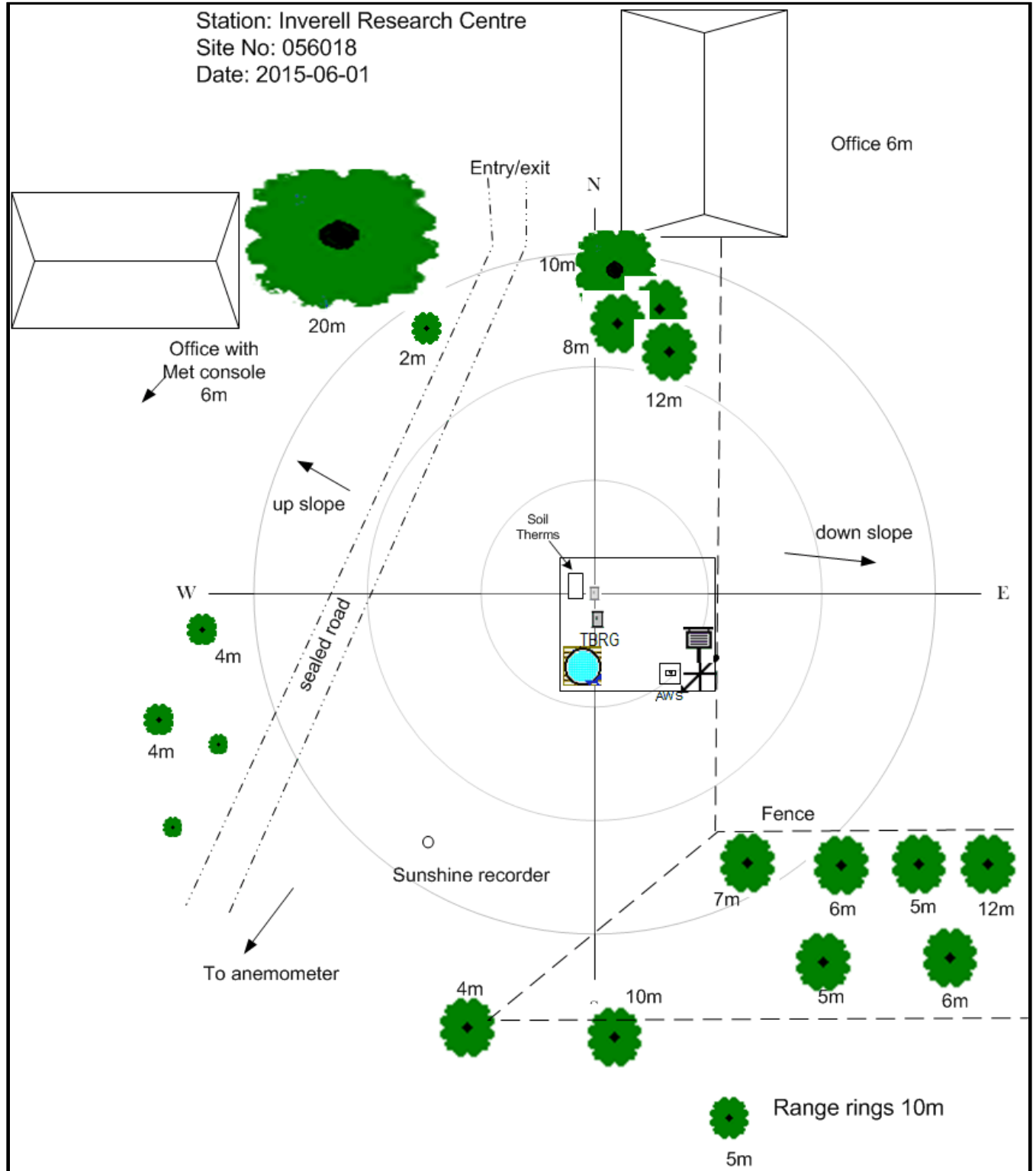
Extended Climatological Station Metadata

All History

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Instrument Location and Surrounding Features

01/06/2015



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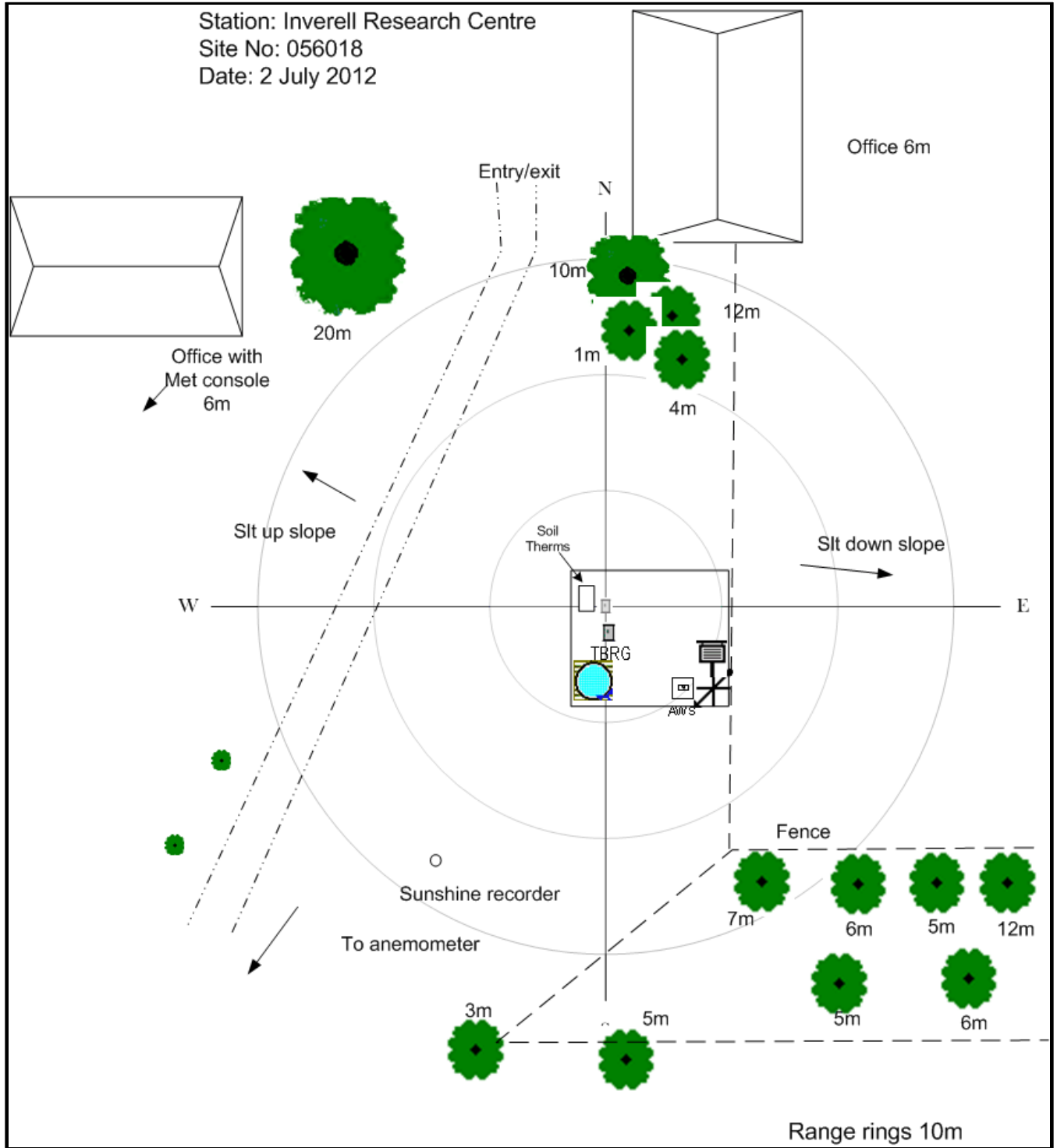
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Instrument Location and Surrounding Features

02/07/2012



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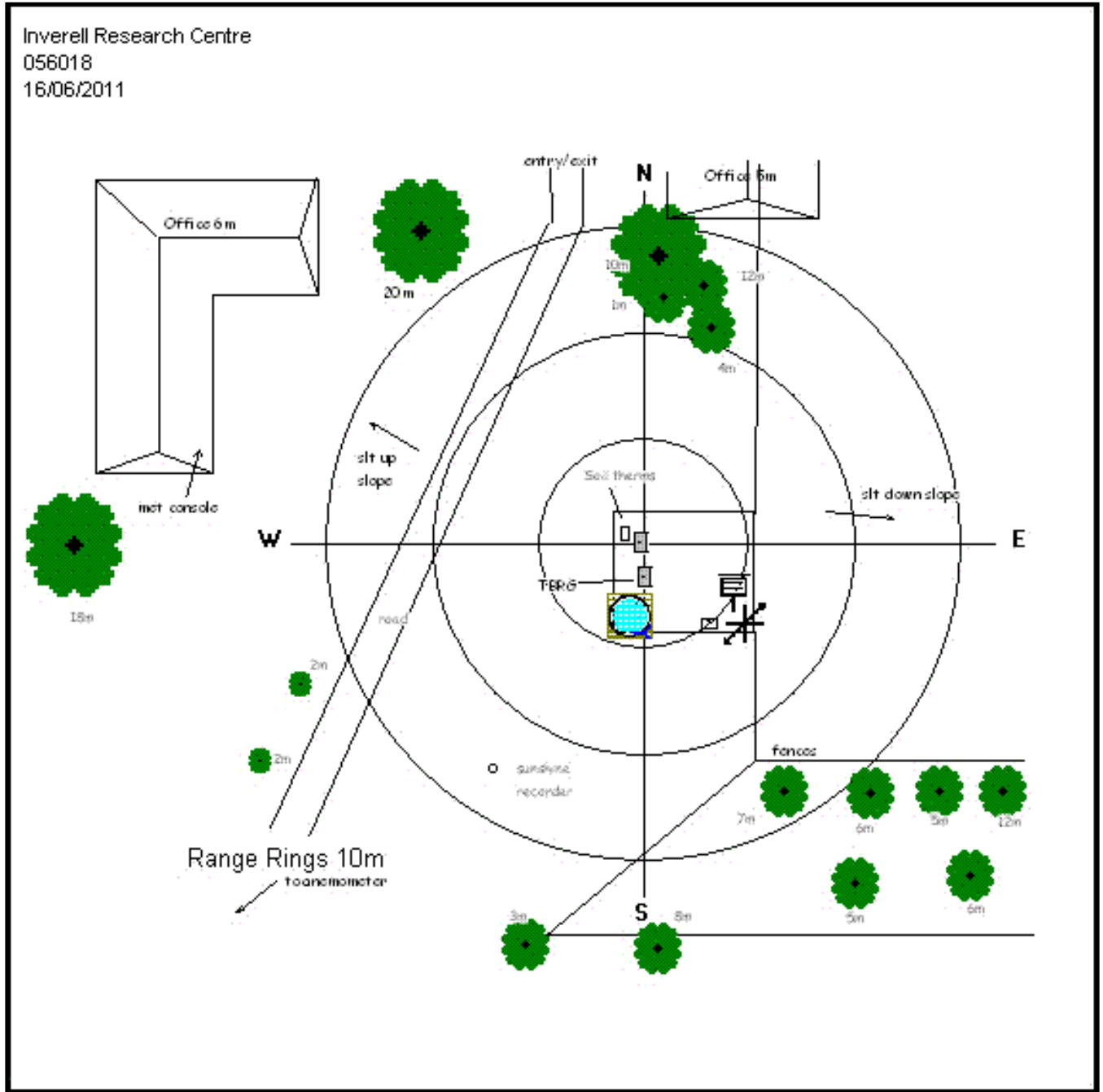
Extended Climatological Station Metadata

All History

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Instrument Location and Surrounding Features

16/06/2011



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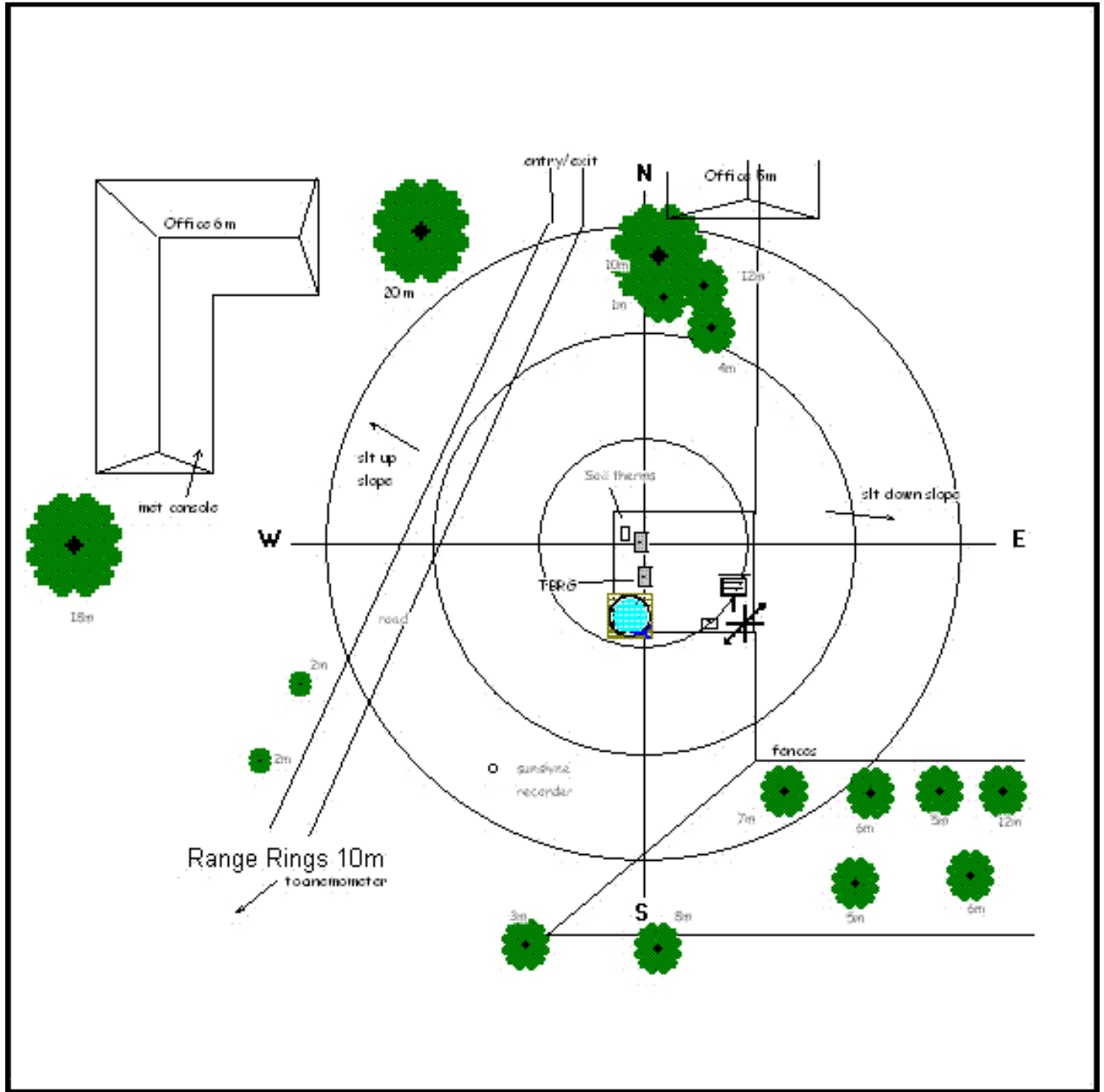
Extended Climatological Station Metadata

All History

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Instrument Location and Surrounding Features

23/06/2010



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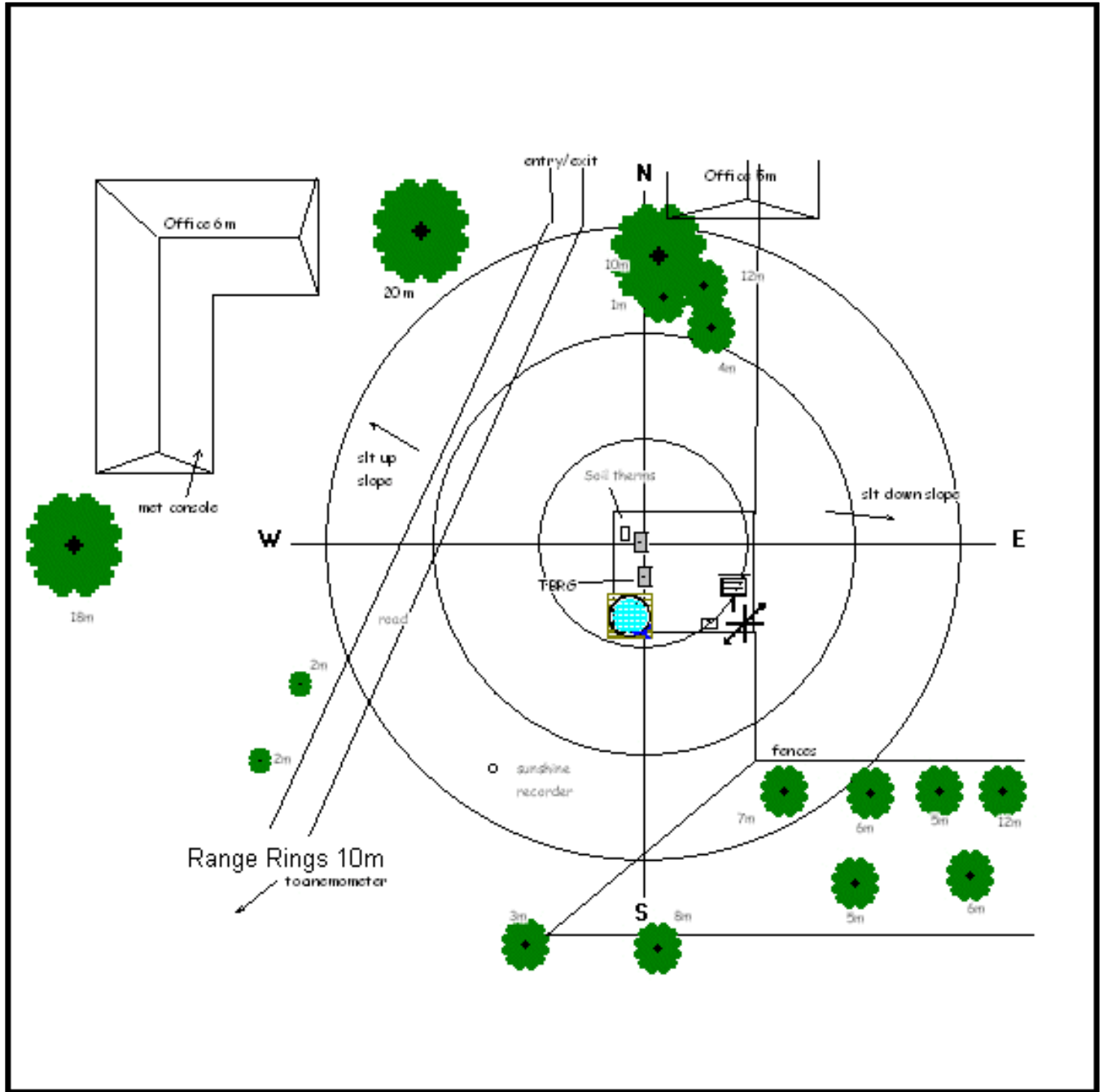
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Instrument Location and Surrounding Features

02/05/2007



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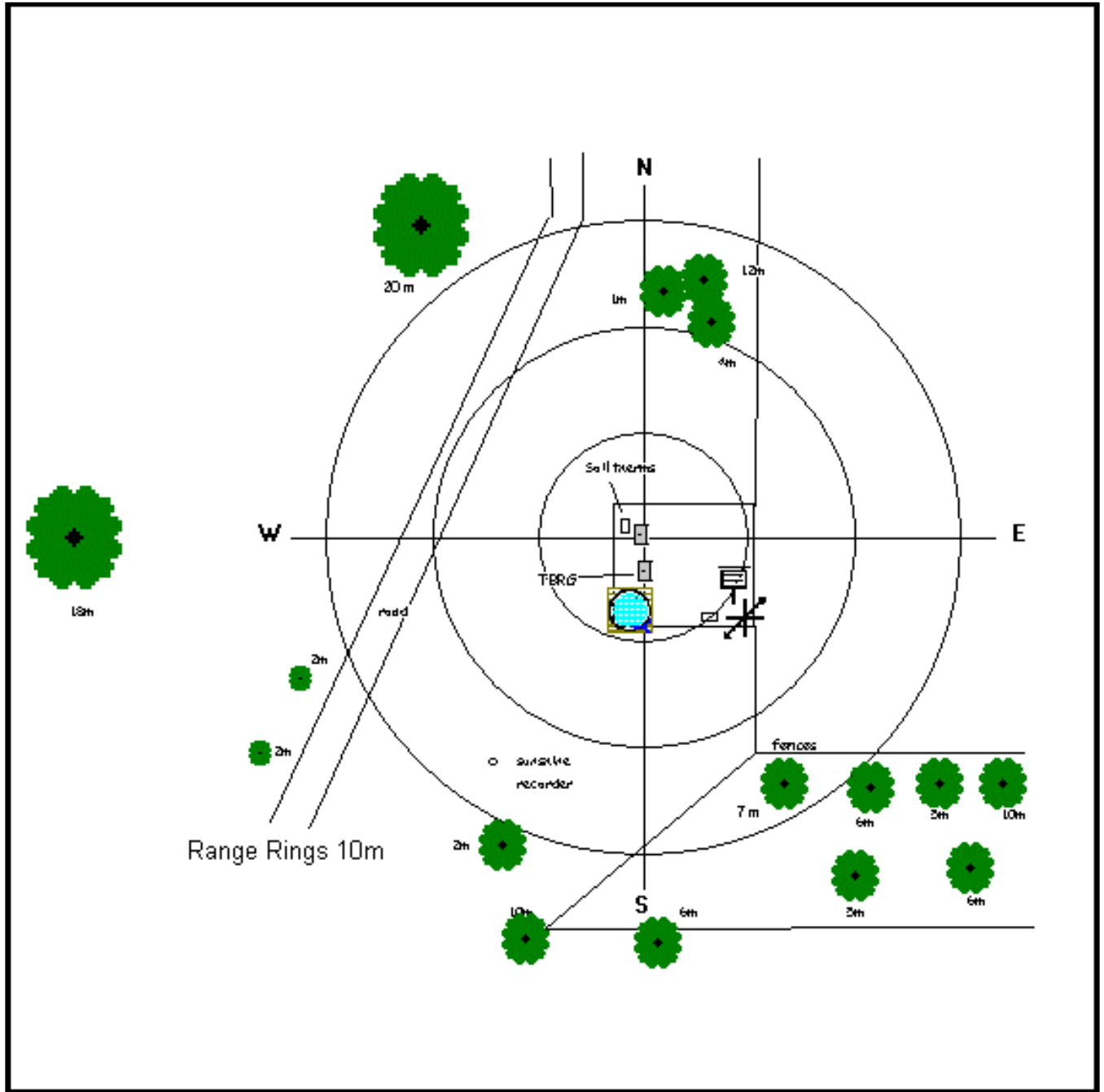
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Instrument Location and Surrounding Features

12/04/2006



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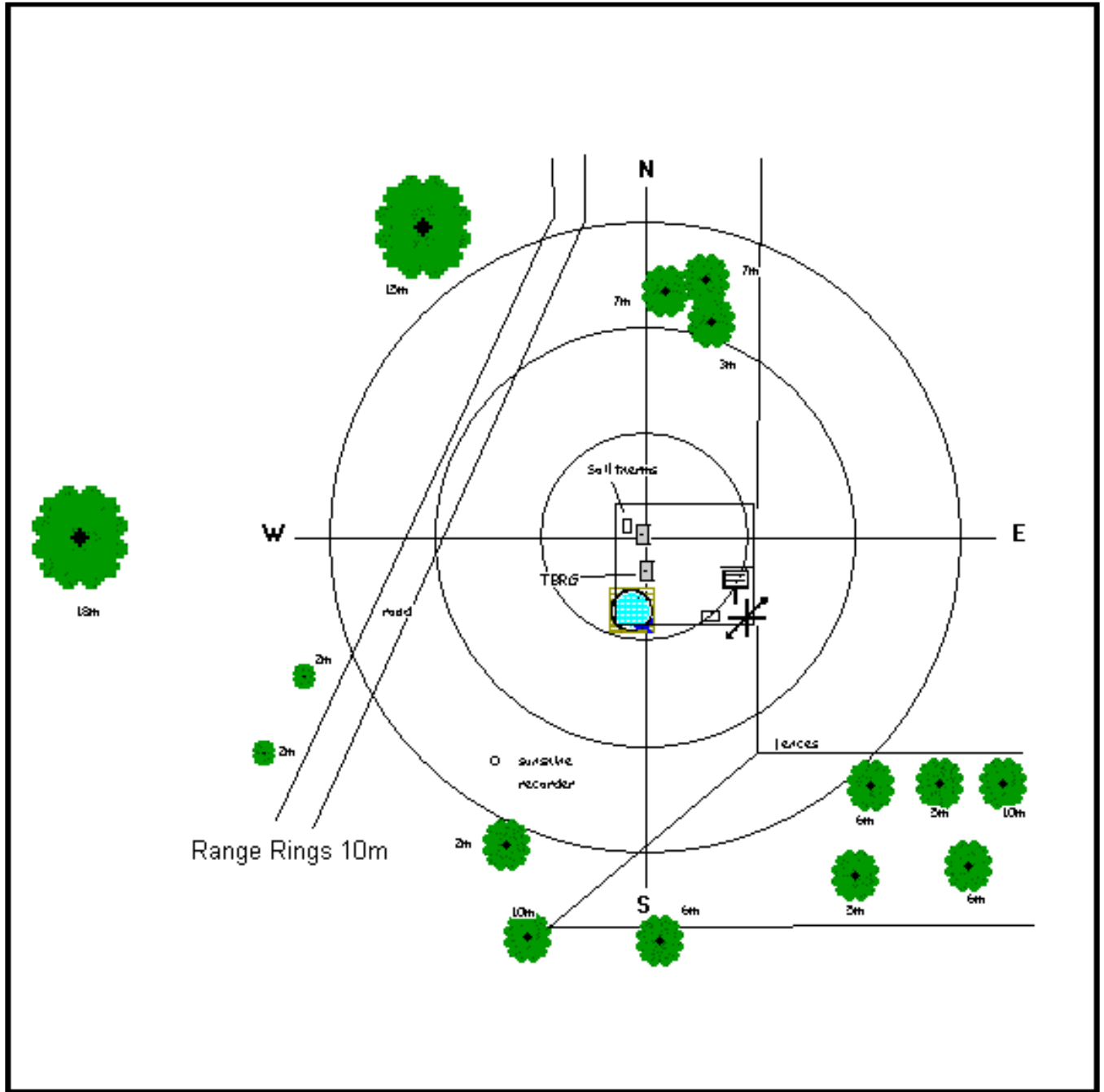
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Instrument Location and Surrounding Features

18/12/2002



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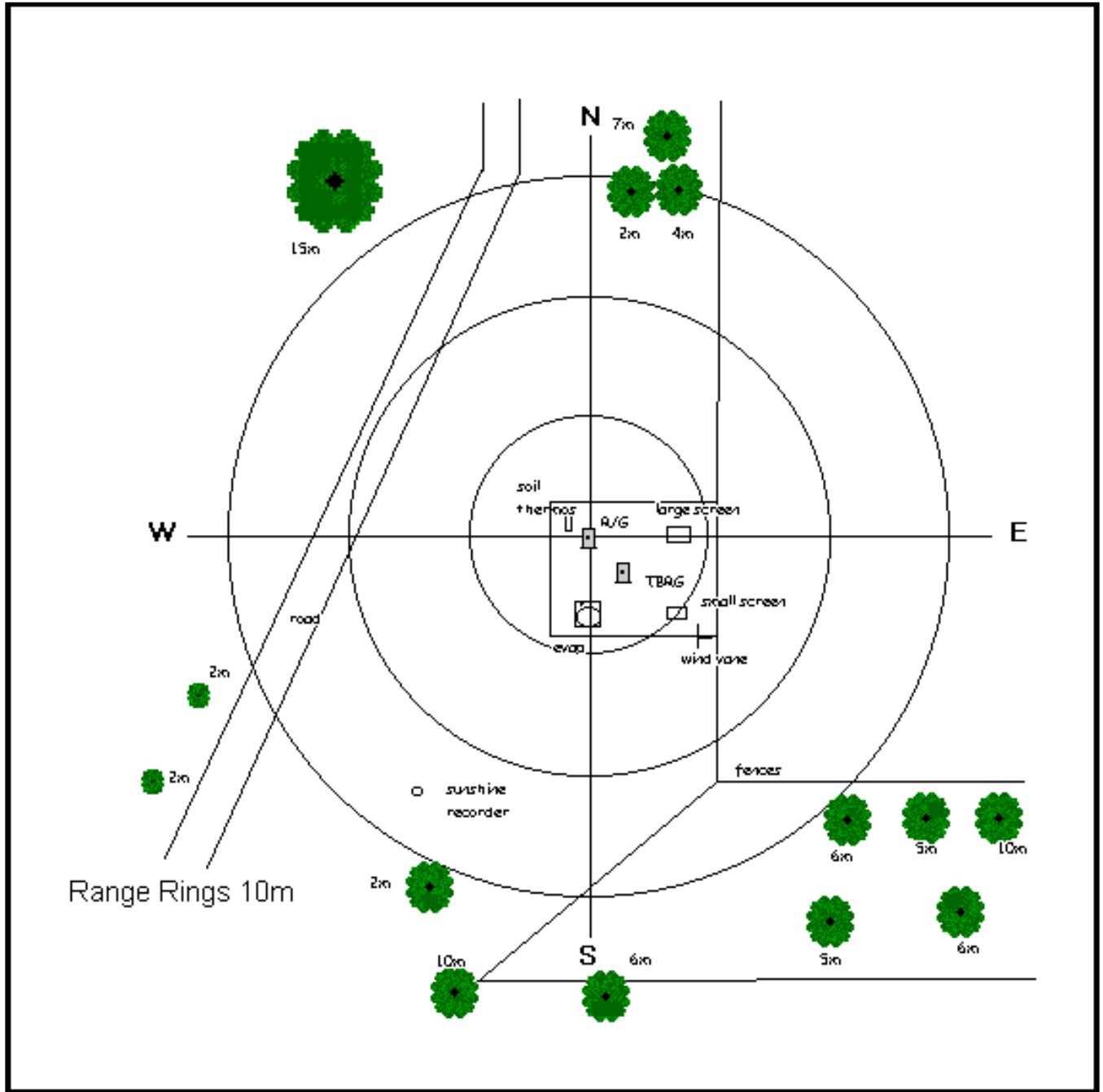
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17/04/2020



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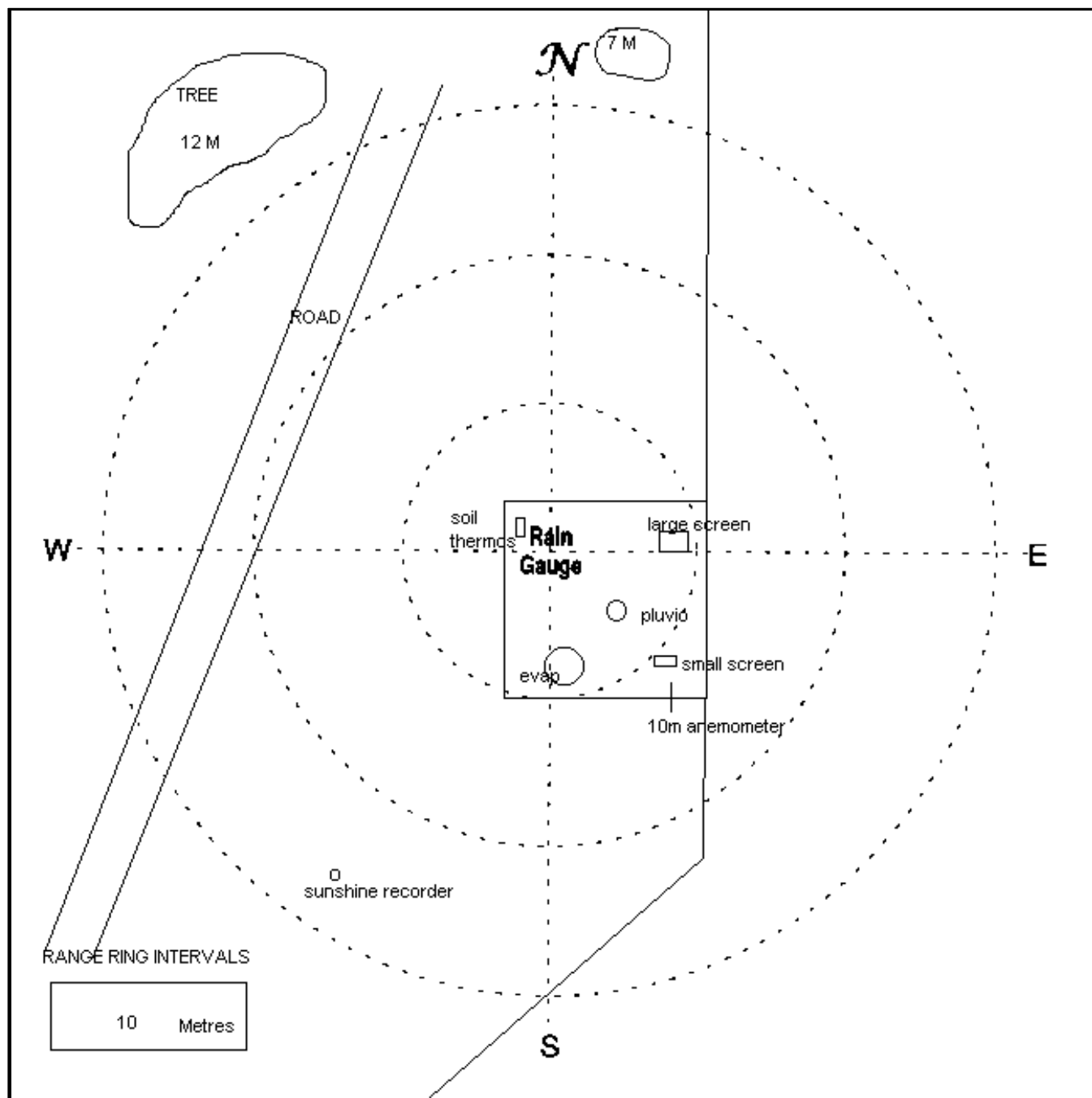
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Instrument Location and Surrounding Features

18/08/1998



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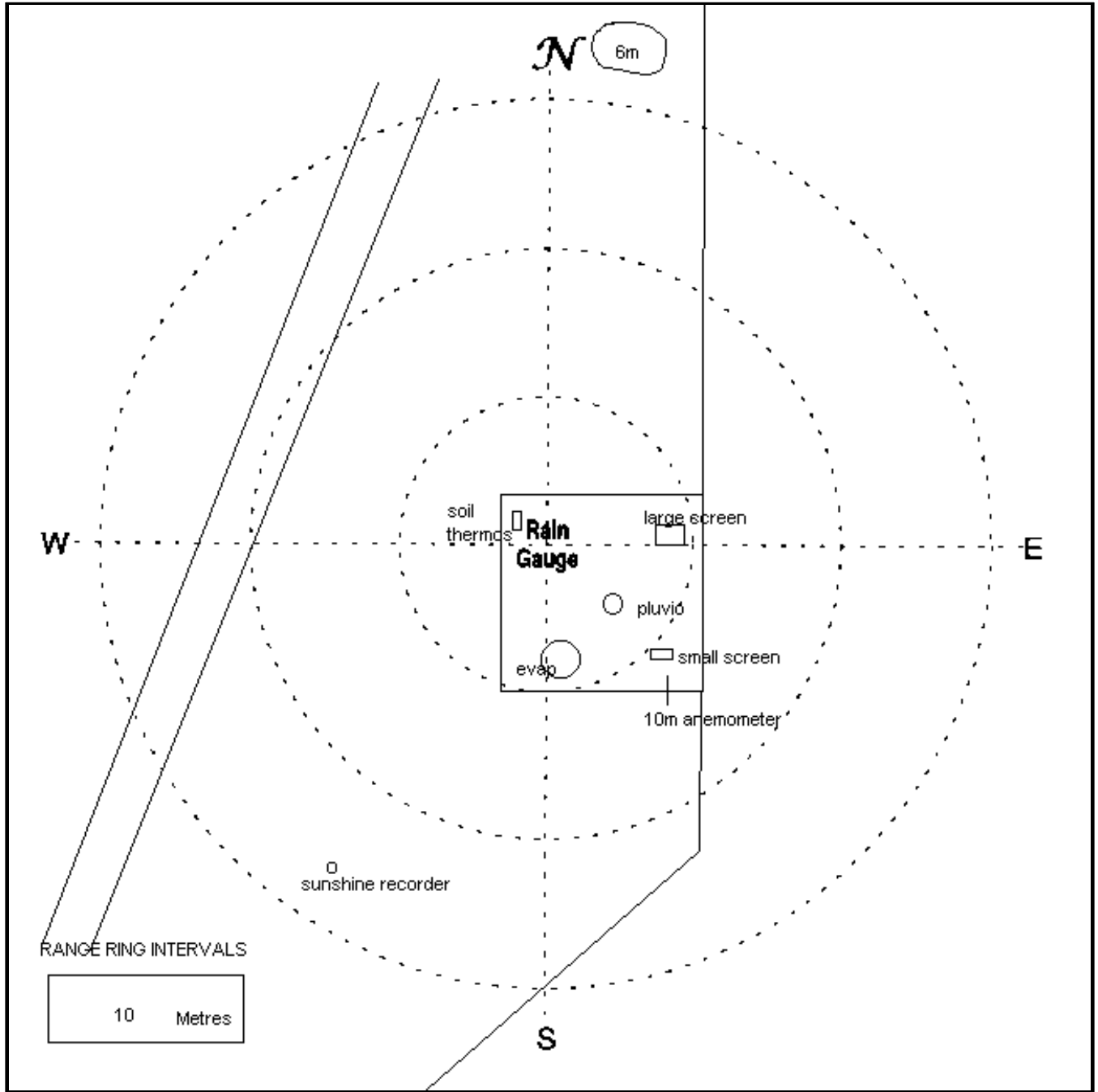
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Instrument Location and Surrounding Features

26/11/1997



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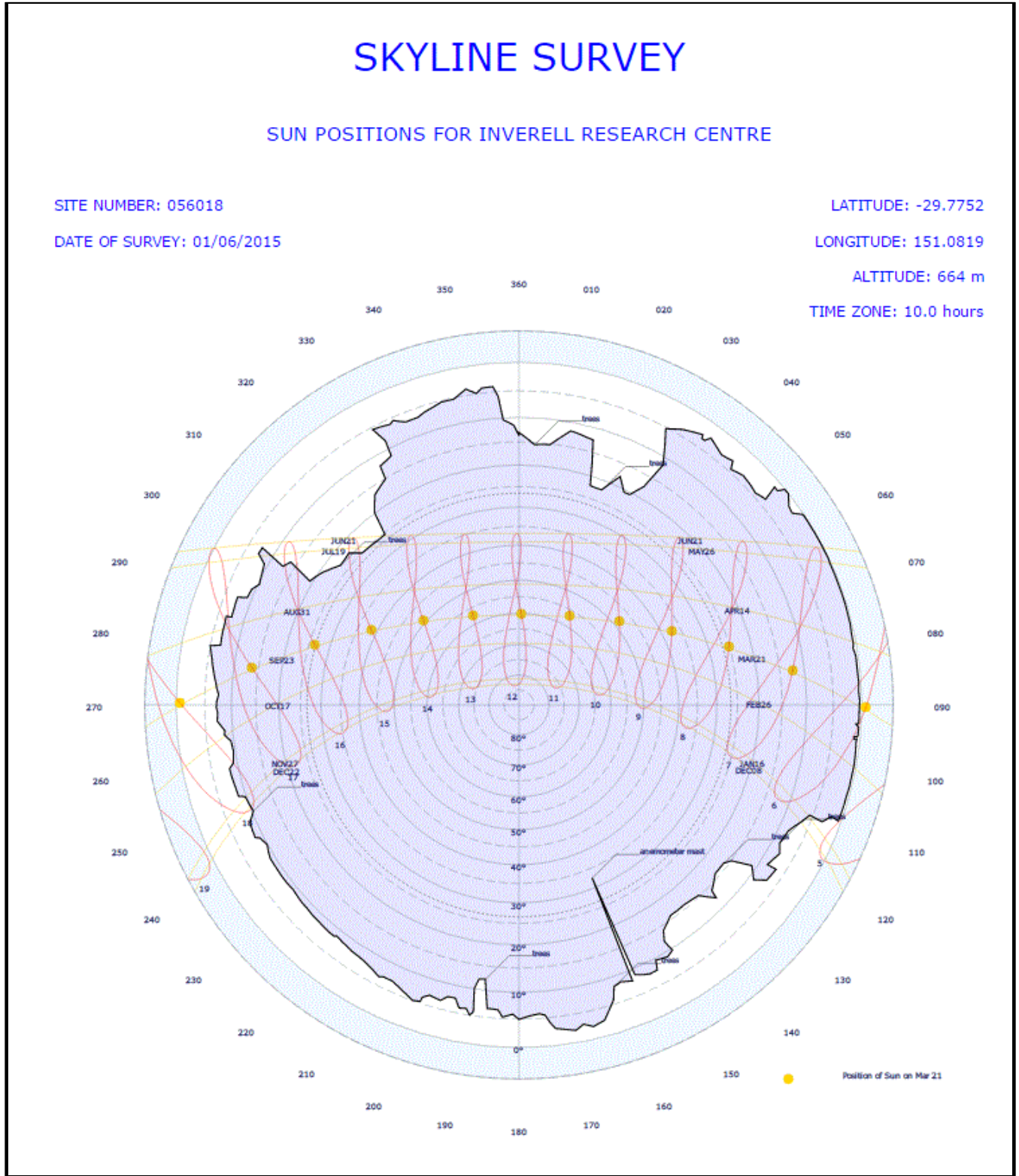


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Skyline Diagram 01/06/2015(most recent)



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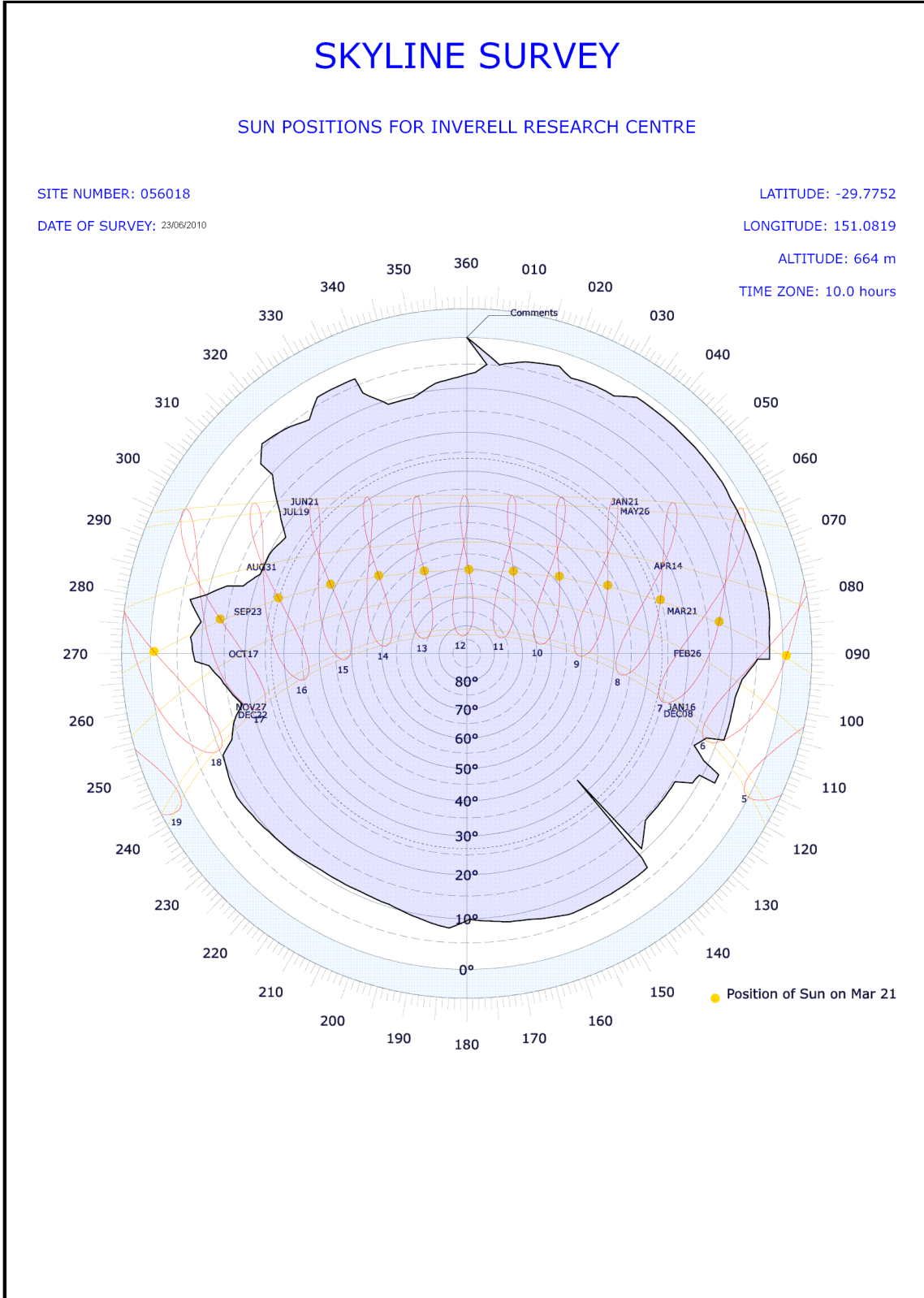


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Skyline Diagram 23/06/2010



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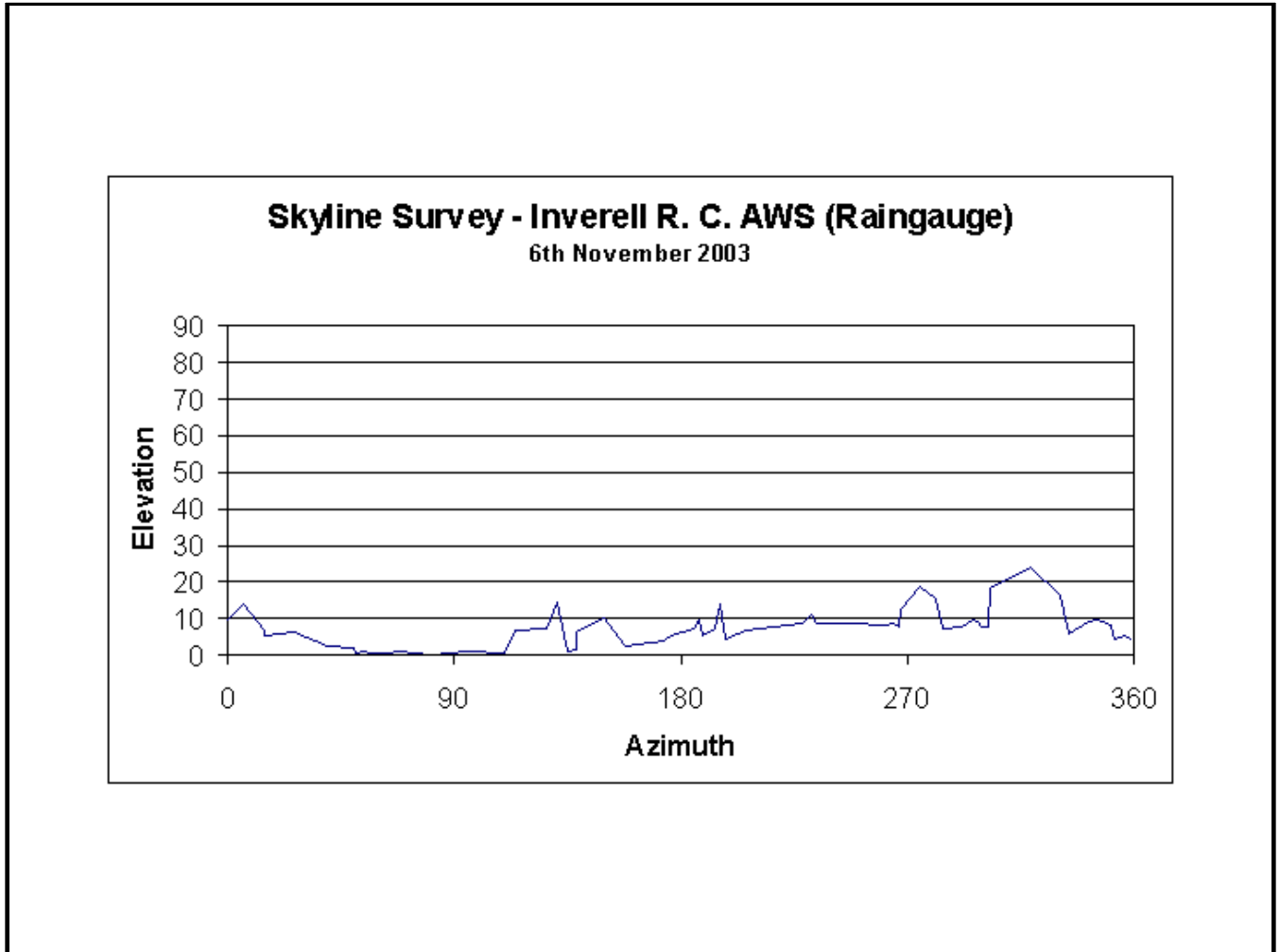
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Skyline Diagram

06/11/2003



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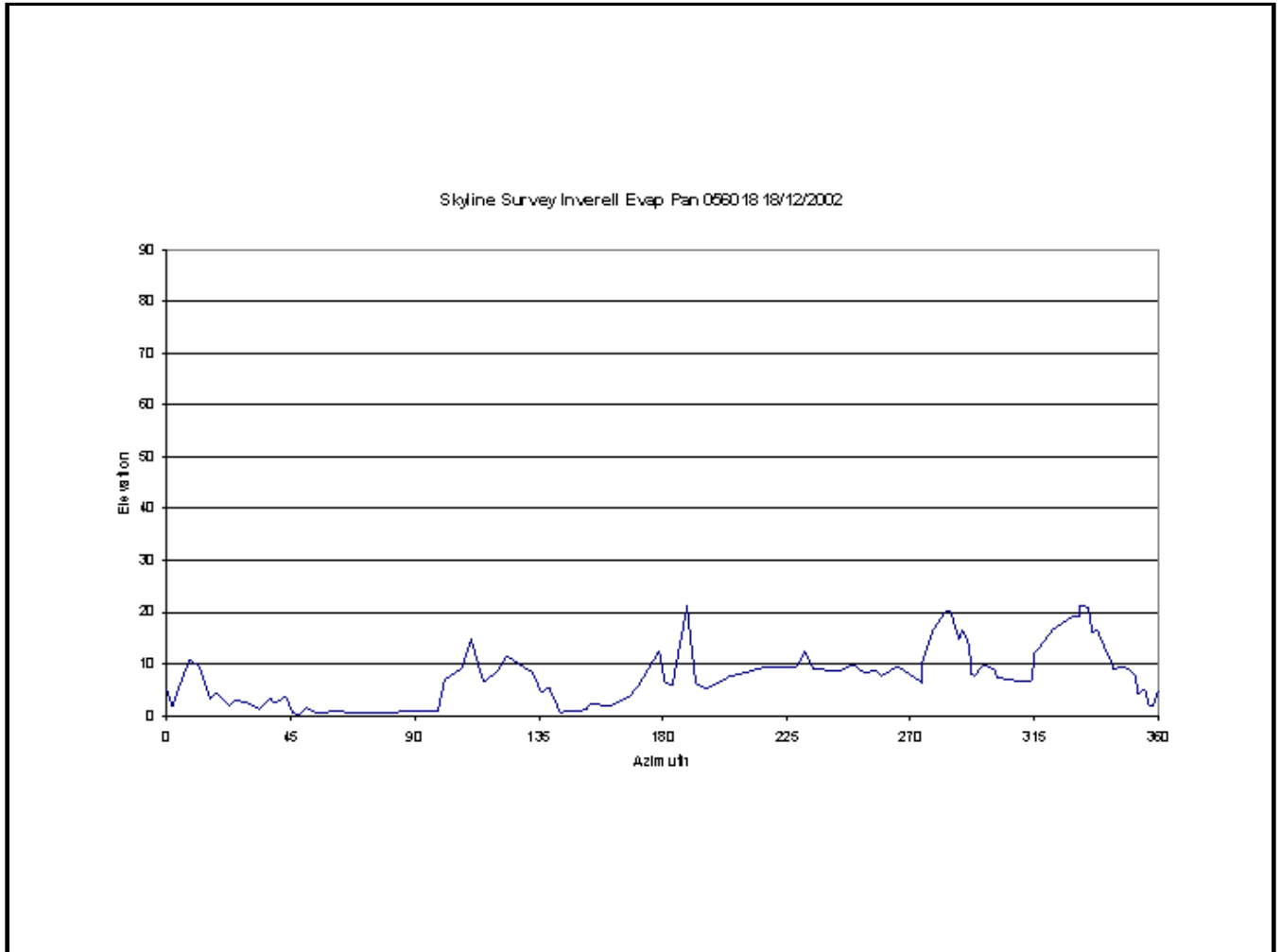
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Skyline Diagram

18/12/2002



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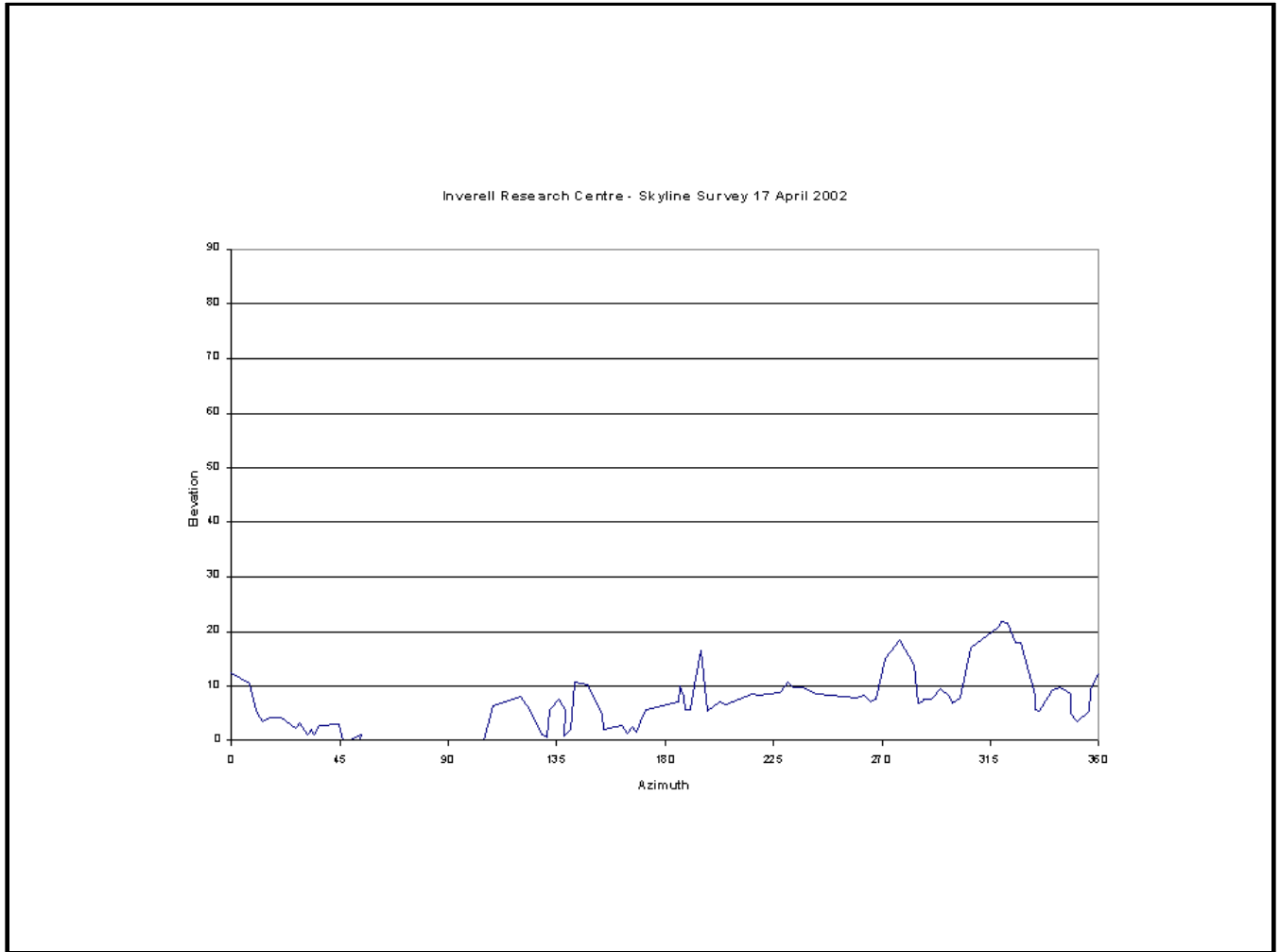
Extended Climatological Station Metadata

All History

Station:	INVERELL RESEARCH CENTRE		Location:	INVERELL RESEARCH CENTRE		State:	NSW
Bureau No.:	056018	WMO No.:	94541	Aviation ID:	INVL	Opened:	01 Jan 1949
Latitude:	-29.7752	Longitude:	151.0820	Elevation:	664 m	Barometer Elev:	664.3 m
						Current Status:	Still open
						Metadata compiled:	27 JUL 2020

Skyline Diagram

17/04/2002



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Extended Climatological Station Metadata

All History

Station:	INVERELL RESEARCH CENTRE		Location:	INVERELL RESEARCH CENTRE		State:	NSW		
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Station Observation Program Summary (Surface Observations) from 01/05/1949 to 25/03/1998

Current Observation	Continuous	Half Hourly	Hourly
Surface Observations	-	-	-

Current Observation	Program Type	12 AM	3 AM	6 AM	9 AM	12 PM	3 PM	6 AM	9 AM
Surface Observation	PERFORMED	-	-	-	Y	-	-	-	-
Surface Observation	REPORTED	-	-	-	-	-	-	-	-
Surface Observation	SEASONAL	-	-	-	-	-	-	-	-

Station Observation Program Summary (Surface Observations) from 25/03/1998 to 17/12/2002

Current Observation	Continuous	Half Hourly	Hourly
Surface Observations	-	-	-

Current Observation	Program Type	12 AM	3 AM	6 AM	9 AM	12 PM	3 PM	6 AM	9 AM
Surface Observation	PERFORMED	-	-	-	Y	-	-	-	-
Surface Observation	REPORTED	-	-	-	Y	-	-	-	-
Surface Observation	SEASONAL	-	-	-	-	-	-	-	-

Station Observation Program Summary (Surface Observations) 27 JUL 2020 (most recent)

Current Observation	Continuous	Half Hourly	Hourly
Surface Observations	Y	Y	Y

Current Observation	Program Type	12 AM	3 AM	6 AM	9 AM	12 PM	3 PM	6 AM	9 AM
Surface Observation	PERFORMED	Y	Y	Y	Y	Y	Y	Y	Y
Surface Observation	REPORTED	Y	Y	Y	Y	Y	Y	Y	Y
Surface Observation	SEASONAL	-	-	-	-	-	-	-	-

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Extended Climatological Station Metadata

All History

Station: INVERELL RESEARCH CENTRE	Location: INVERELL RESEARCH CENTRE	State: NSW
Bureau No.: 056018	WMO No.: 94541	Aviation ID: INVL
Latitude: -29.7752	Longitude: 151.0820	Elevation: 664 m
	Opened: 01 Jan 1949	Current Status: Still open
	Barometer Elev: 664.3 m	Metadata compiled: 27 JUL 2020

Station Equipment History

Equipment Install/Remove

Cloud Height (No Electronic History)

River Height (No Electronic History)

Wind Run

- 20/NOV/1973 INSTALL Wind Run Anemometer (Type Munro S/N - Unknown) Surface Observations
- 20/NOV/1973 INSTALL Wind Run Anemometer (Type Synchronac S/N - Unknown) Surface Observations
- 23/DEC/2002 REMOVE Wind Run Anemometer (Type Synchronac S/N - Unknown) Surface Observations
- 05/JUL/2013 REPLACE Wind Run Anemometer (Now Munro S/N - 10780) Surface Observations
- 02/JAN/2003 REPLACE Wind Run Anemometer (Now Munro S/N - 2765) Surface Observations

Spectral Radiation (No Electronic History)

Sea Surface Temperature (No Electronic History)

Sea Water Temperature (No Electronic History)

Evaporation

- 20/NOV/1973 INSTALL Evaporation Pan (Type Class A S/N - NONE) Surface Observations

Minimum Temperature

- 01/MAY/1949 INSTALL Thermometer, Alcohol, Min (Type Dobbie S/N - 892) Surface Observations
- 18/DEC/2002 REMOVE Thermometer, Alcohol, Min (Type Dobbie S/N - 892) Surface Observations

Soil Temperature 50cm

- 01/MAY/1949 INSTALL Thermometer, Soil, 50cm (Type Dobros S/N - 138) Surface Observations
- 10/SEP/2001 REPLACE Thermometer, Soil, 50cm (Now Dobros S/N - S6742) Surface Observations

Sub Surface Temperature (No Electronic History)

Electrical Conductivity (No Electronic History)

Maximum Temperature

- 01/MAY/1949 INSTALL Thermometer, Mercury, Max (Type Dobbie S/N - 479) Surface Observations
- 18/DEC/2002 REMOVE Thermometer, Mercury, Max (Type Dobbie S/N - 18833) Surface Observations
- 28/MAR/2001 REPLACE Thermometer, Mercury, Max (Now Dobbie S/N - 18833) Surface Observations

Soil Temperature 20cm

- 01/MAY/1949 INSTALL Thermometer, Soil, 20cm (Type Dobros S/N - 9566416) Surface Observations
- 25/FEB/2014 REPLACE Thermometer, Soil, 20cm (Now Amarol S/N - 0967150) Surface Observations
- 17/OCT/2016 REPLACE Thermometer, Soil, 20cm (Now Unknown S/N - 0709620) Surface Observations

Solar Radiation (No Electronic History)

Soil Temperature 5cm (No Electronic History)

Oxygen Content (No Electronic History)

Sea Water Level (No Electronic History)

Surface Inclination (No Electronic History)

Terrestrial Minimum Temperature

- 01/MAY/1949 INSTALL Thermometer, Terrestrial, Min (Type Dobbie S/N - 4939) Surface Observations
- 25/AUG/1999 REPLACE Thermometer, Terrestrial, Min (Now Dobbie S/N - 17329) Surface Observations
- 28/NOV/2004 REPLACE Thermometer, Terrestrial, Min (Now Dobbie S/N - 19444) Surface Observations
- 19/APR/2002 REPLACE Thermometer, Terrestrial, Min (Now Dobbie S/N - 19613) Surface Observations
- 02/MAY/2007 REPLACE Thermometer, Terrestrial, Min (Now Dobbie S/N - 19613) Surface Observations
- 18/AUG/1998 REPLACE Thermometer, Terrestrial, Min (Now Dobbie S/N - 19613) Surface Observations
- 20/APR/2005 REPLACE Thermometer, Terrestrial, Min (Now Dobbie S/N - 23187) Surface Observations
- 23/JUN/2010 REPLACE Thermometer, Terrestrial, Min (Now Dobbie S/N - 23187) Surface Observations

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Extended Climatological Station Metadata

All History

Station: INVERELL RESEARCH CENTRE	Location: INVERELL RESEARCH CENTRE			State: NSW
Bureau No.: 056018	WMO No.: 94541	Aviation ID: INVL	Opened: 01 Jan 1949	Current Status: Still open
Latitude: -29.7752	Longitude: 151.0820	Elevation: 664 m	Barometer Elev: 664.3 m	Metadata compiled: 27 JUL 2020

Station Equipment History (continued)

Equipment Install/Remove(Continued)

- 18/OCT/2004 REPLACE Thermometer, Terrestrial, Min (Now Dobbie S/N - 23369) Surface Observations
- 30/NOV/2015 REPLACE Thermometer, Terrestrial, Min (Now Dobbie S/N - 27629) Surface Observations
- 07/JUN/2016 REPLACE Thermometer, Terrestrial, Min (Now Dobbie S/N - M0163) Surface Observations
- 16/JUN/2011 REPLACE Thermometer, Terrestrial, Min (Now WIKA S/N - 31255) Surface Observations

Visibility (No Electronic History)

Solar Radiation (Direct) (No Electronic History)

Magnetic Bearing (No Electronic History)

Wind Direction

- 12/DEC/2002 INSTALL Anemometer (Type Synchrotac Cups - Type 732 S/N - 82143) Surface Observations
- 12/DEC/2002 INSTALL Anemometer (Type Synchrotac Vane - Type 706 S/N - NONE) Surface Observations
- 01/MAY/1949 INSTALL Anemometer (Type Wind Vane S/N - NONE) Surface Observations
- 12/DEC/2002 INSTALL Mast Anemometer (Type Pivot, Standard 8m S/N - NONE) Infrastructure
- 20/NOV/1973 INSTALL Wind Run Anemometer (Type Munro S/N - Unknown) Surface Observations
- 20/NOV/1973 INSTALL Wind Run Anemometer (Type Synchrotac S/N - Unknown) Surface Observations
- 23/DEC/2002 REMOVE Wind Run Anemometer (Type Synchrotac S/N - Unknown) Surface Observations
- 19/APR/2018 REPLACE Anemometer (Now Synchrotac Cups - Type 732 S/N - 70906) Surface Observations
- 19/APR/2018 REPLACE Anemometer (Now Synchrotac Vane - Type 706 S/N - 170106) Surface Observations
- 05/JUL/2013 REPLACE Wind Run Anemometer (Now Munro S/N - 10780) Surface Observations
- 02/JAN/2003 REPLACE Wind Run Anemometer (Now Munro S/N - 2765) Surface Observations

Air Temperature

- 04/OCT/2018 INSTALL Humidity Probe (Type Rotronics S/N - 11666014) Surface Observations
- 12/DEC/2002 INSTALL Temperature Probe - Dry Bulb (Type Rosemount S/N - 0589) Surface Observations
- 19/FEB/2003 REPLACE Temperature Probe - Dry Bulb (Now Rosemount S/N - 0575) Surface Observations
- 08/OCT/2009 REPLACE Temperature Probe - Dry Bulb (Now Temp Control TCBMP01 S/N - 10303) Surface Observations
- 01/MAY/1949 INSTALL Thermograph (Type Daily S/N - Unknown) Surface Observations
- 02/FEB/2000 REMOVE Thermograph (Type Daily S/N - Unknown) Surface Observations
- 23/JUN/2010 INSTALL Thermometer, Mercury, Dry Bulb (Type Dobbie S/N - 14622) Surface Observations
- 01/MAY/1949 INSTALL Thermometer, Mercury, Dry Bulb (Type Dobbie S/N - 14622) Surface Observations
- 03/OCT/2018 REMOVE Thermometer, Mercury, Dry Bulb (Type Dobbie S/N - 14622) Surface Observations
- 18/DEC/2002 REMOVE Thermometer, Mercury, Dry Bulb (Type Dobbie S/N - 14622) Surface Observations

Wet Bulb Temperature

- 12/DEC/2002 INSTALL Temperature Probe - Wet Bulb (Type Rosemount S/N - 0274) Surface Observations
- 03/OCT/2018 REMOVE Temperature Probe - Wet Bulb (Type Rosemount S/N - 0274) Surface Observations
- 23/JUN/2010 INSTALL Thermometer, Mercury, Wet Bulb (Type Dobbie S/N - M2888) Surface Observations
- 01/MAY/1949 INSTALL Thermometer, Mercury, Wet Bulb (Type Dobbie S/N - M2888) Surface Observations
- 03/OCT/2018 REMOVE Thermometer, Mercury, Wet Bulb (Type Dobbie S/N - M2888) Surface Observations
- 18/DEC/2002 REMOVE Thermometer, Mercury, Wet Bulb (Type Dobbie S/N - M2888) Surface Observations

Lightning (No Electronic History)

Turbidity (No Electronic History)

Total Column Ozone Amount (No Electronic History)

Pressure

- 12/DEC/2002 INSTALL Barometer (Type Vaisala PTB220B S/N - U4930015) Surface Observations
- 19/SEP/2013 REPLACE Barometer (Now Vaisala PTB330B (General Use) S/N - J2470002) Surface Observations

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Extended Climatological Station Metadata

All History

Station:	INVERELL RESEARCH CENTRE		Location:	INVERELL RESEARCH CENTRE		State:	NSW	
Bureau No.:	056018	WMO No.:	94541	Aviation ID:	INVL	Opened:	01 Jan 1949	
Latitude:	-29.7752	Longitude:	151.0820	Elevation:	664 m	Barometer Elev:	664.3 m	
							Current Status:	Still open
							Metadata compiled:	27 JUL 2020

Station Equipment History (continued)

Equipment Install/Remove(Continued)

Humidity

- 04/OCT/2018 INSTALL Humidity Probe (Type Rotronics S/N - 11666014) Surface Observations
- 01/MAY/1949 INSTALL Hygrograph (Type Hair Hygrograph S/N - Unknown) Surface Observations
- 02/FEB/2000 REMOVE Hygrograph (Type Hair Hygrograph S/N - Unknown) Surface Observations

Sunshine Hours

- 01/MAR/1982 INSTALL Sunshine Recorder (Type Campbell-Stokes S/N - 5136) Surface Observations

Pressure Trend (No Electronic History)

Snow Height (No Electronic History)

Wind Speed

- 12/DEC/2002 INSTALL Anemometer (Type Synchronac Cups - Type 732 S/N - 82143) Surface Observations
- 12/DEC/2002 INSTALL Anemometer (Type Synchronac Vane - Type 706 S/N - NONE) Surface Observations
- 01/MAY/1949 INSTALL Anemometer (Type Wind Vane S/N - NONE) Surface Observations
- 12/DEC/2002 INSTALL Mast Anemometer (Type Pivot, Standard 8m S/N - NONE) Infrastructure
- 20/NOV/1973 INSTALL Wind Run Anemometer (Type Munro S/N - Unknown) Surface Observations
- 20/NOV/1973 INSTALL Wind Run Anemometer (Type Synchronac S/N - Unknown) Surface Observations
- 23/DEC/2002 REMOVE Wind Run Anemometer (Type Synchronac S/N - Unknown) Surface Observations
- 19/APR/2018 REPLACE Anemometer (Now Synchronac Cups - Type 732 S/N - 70906) Surface Observations
- 19/APR/2018 REPLACE Anemometer (Now Synchronac Vane - Type 706 S/N - 170106) Surface Observations
- 05/JUL/2013 REPLACE Wind Run Anemometer (Now Munro S/N - 10780) Surface Observations
- 02/JAN/2003 REPLACE Wind Run Anemometer (Now Munro S/N - 2765) Surface Observations

Rainfall

- 01/AUG/1947 INSTALL Pluviograph (Type Dines syphoning S/N - Unknown) Rainfall Intensity
- 31/AUG/1996 REMOVE Pluviograph (Type Dines syphoning S/N - Unknown) Rainfall Intensity
- 01/MAY/1949 INSTALL Raingauge (Type 203 mm (8in) - 200mm capacity S/N - NONE) Surface Observations
- 09/AUG/1996 INSTALL Raingauge (Type HS TB3A-0.2 S/N - 96/151) Rainfall Intensity
- 12/DEC/2002 REPLACE Raingauge (Now Rimco 7499 TBRG S/N - 82406) Rainfall Intensity
- 12/DEC/2002 REPLACE Raingauge (Now Rimco 7499 TBRG S/N - 82406) Surface Observations
- 02/FEB/2000 REPLACE Raingauge (Now Rimco 8020 TBRG S/N - 77778) Rainfall Intensity
- 02/FEB/2000 REPLACE Raingauge (Now Rimco 8020 TBRG S/N - 77778) Surface Observations
- 12/DEC/2002 SHARE Raingauge (Type HS TB3A-0.2 S/N - 96/151) Surface Observations
- 12/DEC/2002 SHARE Raingauge (Type Rimco 8020 TBRG S/N - 77778) Surface Observations

Soil Temperature 100cm

- 01/MAY/1949 INSTALL Thermometer, Soil, 100cm (Type Dobros S/N - 094) Surface Observations
- 03/MAR/2015 REPLACE Thermometer, Soil, 100cm (Now Dobros S/N - M0965) Surface Observations

Soil Temperature 10cm

- 01/MAY/1949 INSTALL Thermometer, Soil, 10cm (Type Dobros S/N - 9572452) Surface Observations
- 02/MAY/2003 REPLACE Thermometer, Soil, 10cm (Now Dobros S/N - 701) Surface Observations
- 13/MAY/2003 REPLACE Thermometer, Soil, 10cm (Now Dobros S/N - 9725417) Surface Observations

Solar Radiation (Long Wave) (No Electronic History)

RF Reflectivity (No Electronic History)

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Extended Climatological Station Metadata

All History

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Current Status:							Still open
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Station Equipment History (continued)

The following table summarises information on field performance checks available electronically over the period indicated. The number of instances an instrument was found to fail field performance checks should only be used as a guide. A system of data quality flags is implemented by the Bureau of Meteorology to indicate the data quality of an observation as determined by a multi-stage quality control process.

Available Date Range	Element	Fail Field Performance Check
02/JUN/1999 - 28/FEB/2019	Wind Run	0
27/APR/2001 - 28/FEB/2019	Evaporation	0
18/AUG/1998 - 17/APR/2002	Minimum Temperature	0
18/AUG/1998 - 28/FEB/2019	Soil Temperature 50cm	1
18/AUG/1998 - 17/APR/2002	Maximum Temperature	0
18/AUG/1998 - 28/FEB/2019	Soil Temperature 20cm	0
18/AUG/1998 - 28/FEB/2019	Terrestrial Minimum Temperature	4
18/AUG/1998 - 28/FEB/2019	Wind Direction	2
18/AUG/1998 - 28/FEB/2019	Air Temperature	1
18/AUG/1998 - 03/OCT/2018	Wet Bulb Temperature	0
18/DEC/2002 - 28/FEB/2019	Pressure	0
04/OCT/2018 - 28/FEB/2019	Humidity	0
18/AUG/1998 - 28/FEB/2019	Wind Speed	2
18/AUG/1998 - 28/FEB/2019	Rainfall	7
18/AUG/1998 - 28/FEB/2019	Soil Temperature 100cm	0
18/AUG/1998 - 28/FEB/2019	Soil Temperature 10cm	0

Station Detail Changes

12/DEC/2002 CLASSIFICATION Climate (FCL)
 10/JAN/2011 CLASSIFICATION Important (ASOSIMP)
 21/MAR/2016 CLASSIFICATION NOT Processed by ASOS (NPBA)
 01/MAY/1989 CLASSIFICATION National Benchmark Network for Agrometeorology (NBNA)
 01/JUL/2017 CLASSIFICATION Observing Operations Hub - Brisbane (OOH-B)
 01/JUL/2017 CLASSIFICATION SLS Flood forecasting priority â€” Medium (FWP-M)
 10/JUN/2014 CLASSIFICATION Standard Aviation or Defence (AVSTD)
 21/NOV/2019 OBJECT - (jtaylor2) Document/SITE LEASE
 12/DEC/2019 OBJECT - (jtaylor2) Document/YIVL config 191212
 30/AUG/2017 OBJECT - (jtaylor2) Photo/PANORAMA 02
 27/OCT/2011 OBJECT Document/AWS SITE AUDIT
 28/FEB/2019 OBJECT Document/AWS mast audit Feb 2019
 29/AUG/2017 OBJECT Document/INVL almos config 29Aug17
 18/DEC/2002 OBJECT Document/Inverell Evaporation skyline points
 17/APR/2002 OBJECT Document/Inverell Research Centre
 13/JAN/2010 OBJECT Document/SITE LEASE
 02/MAY/2007 OBJECT Document/SKYLINE 056018070502 sunshine recorder
 06/NOV/2003 OBJECT Document/SKYLINE DATA
 01/JUN/2015 OBJECT Document/SKYLINE DATA
 02/MAY/2007 OBJECT Document/SKYLINE DATA - ANEMOMETER

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Extended Climatological Station Metadata

All History

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Station Equipment History (continued)

Station Detail Changes(Continued)

02/JUL/2012 OBJECT Document/SKYLINE DATA - ANEMOMETER
 30/AUG/2017 OBJECT Document/SKYLINE DATA - ANEMOMETER
 01/JAN/1949 STATION - (nondb seeding) Opened
 01/JAN/1949 STATION - (nondb seeding) name Changed to INVERELL RESEARCH CENTRE
 06/DEC/2002 STATION aviation_id Changed to INVL
 10/DEC/2002 STATION bar_ht Changed to 664.3
 10/DEC/2002 STATION bar_ht_deriv Changed to SURVEY
 01/JAN/1949 STATION latitude Changed to -29.77515Seeded from NonDb
 30/APR/2016 STATION latitude Changed to -29.77516
 30/APR/2016 STATION latlon_deriv Changed to GPS
 01/JAN/1949 STATION latlon_deriv Changed to GPS
 30/APR/2016 STATION latlon_error Changed to 3
 01/JAN/1949 STATION latlon_error Changed to 5
 01/JAN/1949 STATION longitude Changed to 151.08194Seeded from NonDb
 30/APR/2016 STATION longitude Changed to 151.08197
 26/NOV/1997 STATION lu_0_100m Changed to Open farmland, grassland or tundra
 26/NOV/1997 STATION lu_100m_1km Changed to Town 1000 to 10,000
 26/NOV/1997 STATION lu_1km_10km Changed to Open farmland, grassland or tundra
 26/NOV/1997 STATION soil_type Changed to black soil
 01/JAN/1949 STATION stn_ht Changed to 664
 01/JAN/1949 STATION stn_ht_deriv Changed to SURVEY
 26/NOV/1997 STATION surface_type Changed to fully covered by grass
 28/FEB/2019 STATION surface_type Changed to mostly covered by grass
 25/MAR/1998 STATION wmo_num Changed to 94541

System Changes

01/AUG/1947 SYSTEM Infrastructure Commenced
 01/AUG/1947 SYSTEM Rainfall Intensity Commenced
 01/MAY/1949 SYSTEM Surface Observations Commenced

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Notes on these metadata

The following notes have been compiled to assist with interpreting the metadata provided in this document. These notes are subject to change as the network evolves. Changes in station-specific metadata occur more frequently, both as recent changes are recorded and historical information is transferred from paper file to electronic database.

Reliability of the metadata

The Commonwealth Bureau of Meteorology maintains information on more than 20,000 stations which have operated since observations began in the mid 1800s. The amount of information available for each of these sites and its associated uncertainty are influenced by a number of factors including the type and purpose of the station and the time over which it operated.

Early information about stations was held only on paper file. In 1998 a corporate electronic database was established to help maintain information about the network and its components. The number of parameters recorded about a station is now much greater than before this database was established. The national database has also helped improve consistency in the metadata through the implementation of predefined fields. As a result, and through the refinement of operating procedures, station metadata recorded since 1998 are of a higher overall standard than previously, although occasional omissions and errors are still possible.

The Bureau is part way through a task of entering historical information held on paper file into the corporate database. **Until this process is completed there will remain large gaps in the information contained in these metadata documents and considerable caution should be used when deriving conclusions from the metadata.** As an example, two consecutive entries about a rain gauge dated 50 years apart may appear in the equipment metadata. This may either mean that nothing happened to that instrument over the 50 years, or that information for the intervening period has yet to be entered into the database. Similarly, if no information was available about instruments at a site when it was first established, fields which were required to have a value present may have used the earliest information available as a best-guess estimate. Sometimes this was the metadata current when the database was established in 1998. In some instances there may be gaps in metadata relevant to the post 1998 period.

For the above reasons it is recommended that all metadata prior to 1998 be considered as indicative only, and used with caution, unless it has been quality controlled. The Bureau of Meteorology should be contacted if further information or confirmation of the data is required. Depending on the nature of the inquiry there may be a fee associated with this request. Contact details are provided in the telephone book for each capital city or the Bureau's web site at:
<http://www.bom.gov.au>

The following pages contain explanatory notes for selected terms found in this document.

Station Number

The Bureau of Meteorology station number uniquely specifies a station and is not intended to change over time, although on very rare occasions a station number may change or be deleted from the record (usually to correct an error). Generally a new station number is established if an existing station changes in a way that would affect the climate data record for that site (measured in terms of air temperature and precipitation). Significant station moves are an example of this.

Some stations also possess a World Meteorological Organization (WMO) station number. The WMO number is different to the Bureau of Meteorology number. It also uniquely specifies a station at any given time but can be reassigned to another station if the new station takes priority in the global reporting network. Only selected stations will have a WMO number. Significant stations may maintain their WMO number for many decades.

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Notes on these metadata

Network Classification

SUPPORTING the BASIC CLIMATE SERVICE
Global Climate Observing System (GCOS)
GCOS Upper Air Network (GUAN)
GCOS Surface Network (GSN)
National Climate Network {not yet assigned}
Reference Climate Stations (RCS)
Regional Basic Climatological Network (RBCN)
CLIMAT Stations (CLC)
CLIMAT TEMP Stations (CLT)
SUPPORTING the NATIONAL WEATHER WATCH SYSTEM
WMO Global Observing System (GOS)
GOS Upper Air Network
GOS Satellite Network
Global Atmospheric Watch
Background Atmospheric Pollution Monitoring Network (BAPMON)
Basic Ozone Network
Basic Solar and Terrestrial Radiation Network
Regional Basic Synoptic Network (RBSN)
WMO Global Oceanic Observing System (GOOS)
SUPPORTING the BASIC WEATHER SERVICE (BWS)
BWS Land Network
Significant Land Locations
Capital City Mesonets
National Benchmark Network for Agrometeorology (NBNA)
BWS Marine Network
Significant Coastal Locations
Open Ocean Network
BWS Upper Air Network
Major Significant Locations
BWS Remote Sensing Network
Weather Watch Radar Network
Fire Weather Wind Mesonets
High Resolution Satellite
SUPPORTING the BASIC HYDROLOGICAL SERVICE
Regional Flood Warning Network
Water Resources Assessment Network
Global Hydrological Network
Global Terrestrial Observing System (GTOS)
World Hydrological Cycle Observing System (WHYCOS)
National Hydrological Network

Networks of stations are defined for a variety of purposes (as defined in above table).

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Notes on these metadata

Network Classification Continued...

Stations may be included in several different networks, which may change over time. The table on the previous page lists current network classifications related to the scientific purpose of the network. Some of these networks - the GCOS network for instance - are components of a global network. Entries in the database for some networks may not be complete, thus not properly representing the status of the network. The composition of the network will usually change over time. While several of the networks have international significance, other network classifications have been developed to aid operational management.

Station Purpose

The station purpose can be classified according to the observation program listed below. Parameters in brackets list some of the various different configurations which occur.

- Synoptic [Seasonal, River Height, Climatological, Telegraphic Rain, Aeronautical, Upper Air]
- Climatological [Seasonal, Telegraphic Rain]
- Aeronautical
- Rainfall [River Height]
- River Height
- Telegraphic Rain [Non-Telegraphic River Height, Telegraphic River Height]
- Non-Telegraphic Rain [Telegraphic River Height]
- Evaporation [Rainfall, River Height, Telegraphic River Height, Non-Telegraphic River Height, Telegraphic Rain, Non-Telegraphic Rain]
- Pluviograph [Rainfall, Telegraphic Rain, Non-Telegraphic Rain, River Height, Telegraphic River Height, Non-Telegraphic River Height]
- Radiation
- Lightning Flash Counter
- Public Information
- Local Conditions
- Radar Site
- Unclassified
- No Routine Observations

Note: Telegraphic observations are those which are sent by some electronic means be it a phone or telegram to the responsible Bureau office. It is a term which is historically linked to analogue non automatic data transmission.

Station Observation Program Summary

Surface Observations

The following terms are used to describe the frequency of surface observations at a site. Historical observation programs will typically be missing for many sites until the database is backfilled with information.

Set a)

- Continuous Program
 - More than half hourly observations sent (eg an automatic weather station {AWS} which continuously transmits 10 minute observations). This will automatically include half hourly and hourly observations programs.
- Half hourly observations
 - Half hourly observations sent. This will automatically include hourly observations.
- Hourly observations
 - Hourly observations sent only. Stations report on non-synoptic hours (ie. 0100, 0200, 0400, 0500, etc)

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Notes on these metadata

Surface observations continued....

Set b)

- Performed
 - Observations performed, instruments read and observations recorded
- Reported
 - Observations performed, instruments read and reported real time
- Seasonal
 - The program may only be performed during a defined season (such as Fire Weather observations) or the routine program may increase in reporting frequency and/or parameters. The program dates are currently modified at the start and end of each season for stations performing seasonal observations. Historically this was not always the case.

Current Station Equipment Summary

Equipment listed in this metadata product is catalogued under one of systems listed below, appropriate to its application. The "Infrastructure" category has been included since it contains information about the mast height of an anemometer (if present).

- Flood Warning
- Infrastructure
- Radiation
- Rainfall Intensity
- Surface Observations
- Upper Air
- Weather Watch {RADAR}

Station Equipment History

Equipment Install/Remove

One of four types of actions can be performed on an instrument in this listing:

Install - A new instrument is installed at the site. This can be either a completely new addition (eg the first barometer at the site), or the replacement of an existing instrument with a different type (eg replacing mercury barometer with electronic barometer)

Remove - An instrument can be removed either when it is no longer necessary to measure a particular element, or when the element is to be measured by an instrument of a different type (see under "Install" above)

Replace - This occurs when one instrument is replaced with another of the same type (eg Kew pattern mercury barometer replacing another Kew pattern mercury barometer)

Share - The same instrument is used for observations under two (or more) systems (eg a rain gauge may be used within both Surface Observations and Rainfall Intensity systems)

Unshare - The instrument is no longer shared between systems

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Notes on these metadata

Calibration

During a site inspection an instrument will be calibrated as either being within or not within the specified tolerance in accuracy.

Where a quantitative calibration result can be achieved by comparison to a transfer standard (eg barometer comparisons and tipping bucket rain gauge calibrations), the instrument will be recorded as being within or outside the required tolerance. Instruments (such as 203mm rain gauges, screens and evaporation pans) where quantitative calibrations cannot be derived should be regarded as meeting specifications when the instrument is in 'good working order'.

This product provides a summary table of the number of times an instrument was found to be out of calibration

Station Detail Changes

This set of metadata indicates when some aspect of the general information about a station has changed.

- STATION

Metadata which are categorised as pertaining to STATION are items of (textual) information describing a specific attribute of the station. A reference to (nondB seeding) indicates initial information of this field has been sourced from a previous database.

Station position

- Latitude and longitude

Derivation of station latitude and longitude, defined by the location of the rain gauge when it is present, has changed over time. Current practice is to locate or verify open and operational station latitude and longitude based on Global Positioning System equipment. Methods used to locate a station as described in this product (latlon_deriv) are as follows: GPS, MAP 1:10000, MAP 1:12500, MAP 1:25000, MAP 1:50000, MAP 1:100000, MAP 1:250000, SURVEY, and Unknown (which is more commonly represented by a null value). The field latlon_error should be used with caution as the method of determining this value has been interpreted in different ways over time.

- Height

Determination of heights for observing sites is by survey where possible. Otherwise height may be determined using a Digital Aneroid Barometer and a known surveyed point, or derived from map contours. The source of height is provided in the corresponding parameter with a suffix of "_deriv".

Heights which may appear in these metadata are:

- aero_ht
 - The official elevation of the aerodrome which normally corresponds to the altitude of the highest threshold of the runways at that airport;
- bar_ht
 - this represents the height of the mercury barometer cistern or the digital aneroid barometer above mean sea level (MSL);
- stn_ht
 - this normally represents the height of the rain gauge above MSL

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Notes on these metadata

- Land Use

To assist the long term understanding of climate change it is important to be able to determine the differences over time which are attributed to variations in the climate. Since land use has an effect on the micro climate around the site, and changes in land use will therefore affect the climate record, it is important that the characteristics of the site are monitored. Soil types are recorded as they affect the land use and also add to the knowledge of the site details.

Defined Land use Types.

- Non-vegetated (barren, desert)
- Coastal or Island
- Forest
- Open farmland, grassland or tundra
- Small town, less than 1000 population
- Town 1000 to 10,000 population
- City area with buildings less than 10 metres (3 stories)
- City area with buildings greater than 10 metres (3 stories)
- Airport

The land use code is entered on the station inspection form in the ranges 0 to 100 m, 100 to 1 km and 1km to 10 km; ie:

- lu_0_100m: Land Use 0 to 100 metres from the enclosure
- lu_100m_1km: Land Use 100 metres to 1 kilometre
- lu_1km_10km: Land Use 1 kilometre to 10 kilometres

Defined Soil Type (At Enclosure).

- unable to determine
- sand
- black soil
- clay
- rock
- red soil
- other

Surface Type (At Enclosure).

- unable to determine
- fully covered by grass
- mostly covered by grass
- partly covered by grass
- bare ground
- sand
- concrete
- asphalt
- rock
- other

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