

Antarctic Automatic Weather Station Data
for the calendar year 1998

by

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TABLE OF CONTENTS

	Page
1. Introduction.....	1
2. Data Transmission.....	1
3. AWS Identification and Location.....	1
4. AWS Data Summaries.....	9
4.1. Monthly Data Summaries.....	9
D-10.....	10
D-47.....	10
Dome C.II.....	10
Penguin Point.....	11
Sutton.....	11
Byrd Station.....	11
Elizabeth.....	12
Erin.....	12
Theresa.....	12
Doug.....	13
Mount Siple.....	13
Siple Dome.....	13
Swithinbank.....	14
Marble Point.....	14
Ferrell.....	14
Pegasus North.....	15
Pegasus South.....	15
Minna Bluff.....	15
Linda.....	16
Willie Field.....	16
Windless Bight.....	16
White Out.....	16
White Island.....	16
Whitlock.....	17
Scott Island.....	17
Possession Island.....	17
Manuela.....	18
Marilyn.....	18
Schwerdtfeger.....	18
Gill.....	19
Elaine.....	19
Lettau.....	19
Larsen Ice Shelf.....	20
Butler Island.....	20
Uranus Glacier.....	20
Limbert.....	21
Racer Rock.....	21
Bonaparte Point.....	21

Ski-Hi.....	22
Santa Claus Island.....	22
Clean Air (South Pole).....	22
Henry.....	23
Nico.....	23
Relay Station.....	23
Dome Fuji.....	24
4.2. Three Hourly Data Summaries.....	25
5. AWS Calibration.....	26
5.1. Temperature.....	26
5.2. Pressure.....	26
5.3. Wind Direction and Speed.....	26
5.4. Relative Humidity.....	27
5.5. Vertical Air Temperature Difference.....	27
6. AWS Operations Summary for 1998.....	27
6.1. AWS Performance.....	27
6.2. AWS Antarctic Field Activities.....	29
7. Global Telecommunications System.....	31
8. Data Availability.....	31
9. Acknowledgments.....	32

1. INTRODUCTION

A network of automatic weather station (AWS) units is deployed to collect Antarctic surface weather observations in support of specific meteorological research projects as well as operational activities at McMurdo, Antarctica. The 1998 network consisted of 53 installed AWS units providing observations on the Ross Ice Shelf, east of the Transantarctic Mountains and north of McMurdo to the Adelie Coast, along the Antarctic Peninsula, West Antarctica, and climatological locations such as the South Pole. Each unit measures air temperature, wind speed, and wind direction at the top of the unit's tower at a nominal height of three meters and air pressure at the electronics enclosure (Figure 1). Some AWS units also measure the relative humidity at three meters and vertical air temperature difference between 0.5 and 3 meters. Measurement heights relative to the actual surface at the site are nominal due to snow accumulation around the AWS unit.

2. DATA TRANSMISSION

The transmitted AWS data are received and stored by the ARGOS data collection system on the NOAA series of polar orbiting satellites. The data are retransmitted by the satellite for reception by a local user terminal (LUT) as at McMurdo, Antarctica. The data are processed into scientific units and are available for local use. The complete data set is received at Madison, Wisconsin, from Service ARGOS, Largo, Maryland, for processing and distribution to the users.

3. AWS IDENTIFICATION AND LOCATION

Site location is defined by the latitude and longitude which is determined by various methods: sun shots, angles to geographical features, aircraft data, ice breaker data, the platform location system of Service ARGOS, and the Global Positioning System. AWS elevation is obtained by barometry and should be correct to within +/- 5 meters. Site names were introduced for convenience. Table 3.1 lists the site name, ARGOS identification number, latitude, longitude, elevation, start date for the site, and the World Meteorological Organization (WMO) number for the site. Figures 2, 3, and 4 show the locations of the AWS units in the Antarctic for 1998.

The ARGOS identification number (ID) is used to identify the data sets distributed to the users. AWS units are sometimes moved from one location to another, and as a result, the ID at a given site may change from year to year. The site name does not change. Table 3.2 lists the site name with the ARGOS ID, the site start date, and the ID start and stop dates.

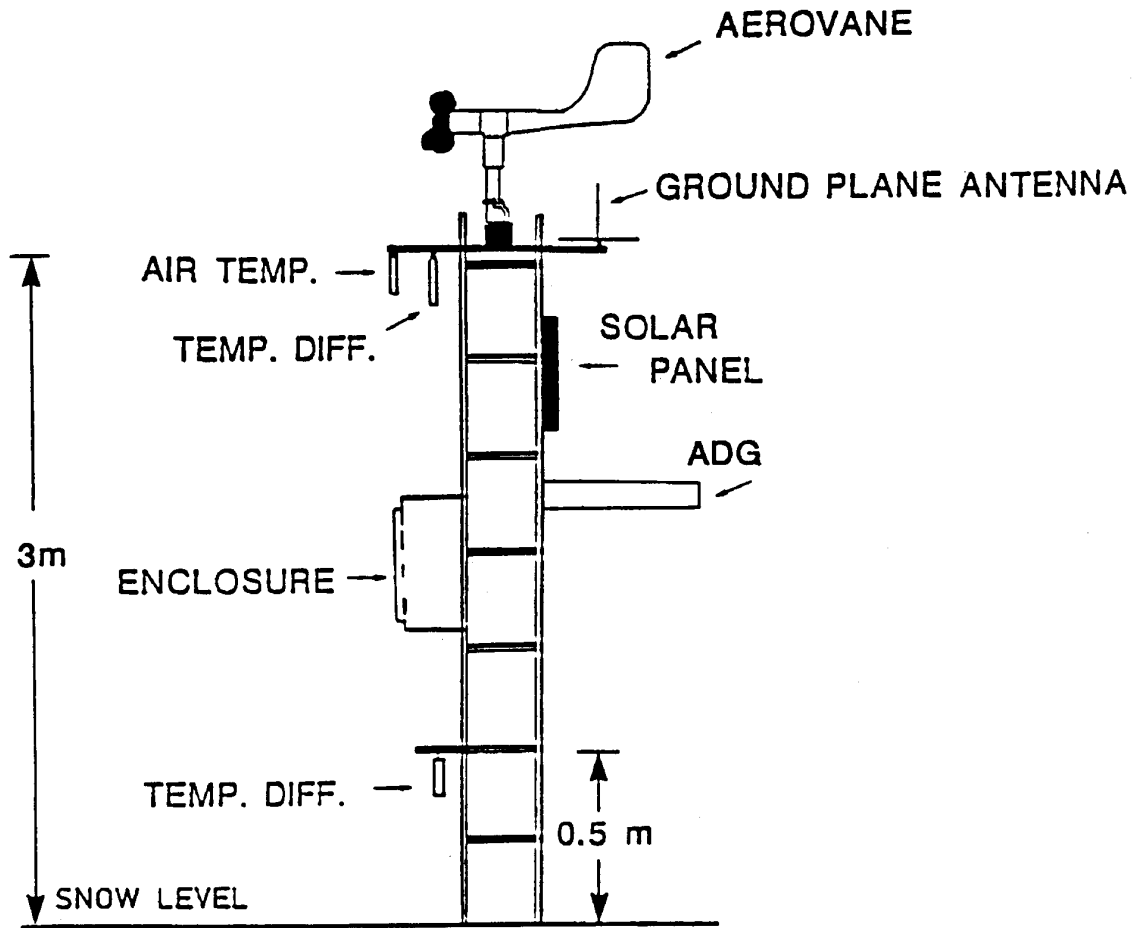


Figure 1. Layout of the AWS unit used in the Antarctic. The installed AWS unit has a 3-meter tower with a horizontal boom supporting the antenna, aerovane for measuring wind speed and direction, air temperature resistance thermometer, upper thermopile for measuring vertical air temperature difference, and the relative humidity sensor. The electronics enclosure is mounted at the midpoint of the tower. The gel cell batteries are placed at the tower base. The solar panel, located near the tower top, faces north.

Table 3.1

AWS site name, geographic location and elevation, site start date, and WMO number for 1998.

Site Name	ARGOS ID	Lat. (deg)	Long. (deg)	Elev. (m)	Site Start Date	WMO No.
Adelie Land						
D-10	8914	66.71S	139.83E	243	08 Jan 80	89832
D-47	8986	67.397S	138.726E	1560	24 Nov 82	89834
Dome C II	8989	75.121°S	123.374°E	3250	12 Dec 95	89828
Port Martin	8930	66.82°S	141.40°E	39	19 Jan 90	
Cape Denison	8907	67.009°S	142.664°E	31	20 Jan 90	
Penguin Point	#8910	67.617°S	146.18°E	30	24 Dec 92	89847
Sutton	8939	67.08°S	141.37°E	871	26 Dec 94	
Cape Webb	8933	67.934°S	146.824°E	37	28 Dec 94	
West Antarctica						
Byrd Station	8903	80.007°S	119.404°W	1530	05 Feb 80	89324
Mount Siple	8981	73.198°S	127.052°W	230	20 Feb 92	89327
J.C.	21357	85.07°S	135.516°W	549	29 Nov 94	
Theresa	21358	84.599°S	115.811°W	1463	29 Nov 94	89314
Doug	8922	82.315°S	113.24°W	1433	29 Nov 94	
Elizabeth	21361	82.606°S	137.082°W	549	30 Nov 94	89332
Brianna	21362	83.887°S	134.145°W	549	30 Nov 94	
Harry	21355	83.00S	121.69W	945	29 Nov 94	
Erin	21363	84.901°S	128.81°W	1006	29 Nov 94	
Siple Dome*	8900	81.656°S	148.773°W	620	21 Jan 97	89345
Swithinbank*	21356	81.20°S	126.174°W	945	18 Jan 97	
Ross Island Region						
Marble Point	8906	77.439°S	163.759°E	120	05 Feb 80	89866
Ferrell	8934	77.928°S	170.82°E	45	10 Dec 80	89872
Pegasus North	8927	77.952°S	166.505°E	10	23 Jan 90	89667
Pegasus South	8937	77.99°S	166.576°E	10	14 Jan 91	
Minna Bluff	#21360	78.554°S	166.656°E	920	22 Jan 91	89768
Linda	#8919	78.48°S	168.375°E	50	21 Jan 91	89769
Willie Field	8901	77.865°S	167.017°E	40	25 Jan 92	
Windless Bight*	8901	77.728S	167.703E	61	09 Dec 98	
White Out*	8697	77.87S	168.16E	30	01 Dec 98	
White Island*	8722	78.09S	168.01E	30	01 Dec 98	
Ocean Islands						
Whitlock	8921	76.144°S	168.392°E	274	23 Jan 82	89865
Scott Island	8983	67.37°S	179.97°W	30	25 Dec 87	89371
Young Island	8980	66.229°S	162.275°E	30	01 Jan 91	89660
Possession Is.	8984	71.891°S	171.21°E	30	29 Dec 92	89879
Manuela	8905	74.946°S	163.687°E	80	06 Feb 84	89864
Ross Ice Shelf						
Marilyn	8931	79.954°S	165.13°E	75	16 Jan 84	89869
Schwerdtfeger	8913	79.904°S	169.973°E	60	24 Jan 85	89868
Gill	8911	79.985°S	178.611°W	55	24 Jan 85	89376
Lettau	8908	82.518°S	174.452°W	55	29 Jan 86	89377
Elaine	#8915	83.134°S	174.169°E	60	28 Jan 86	89873

Site Name	ARGOS ID	Lat. (deg)	Long. (deg)	Elev. (m)	Site Start Date	WMO No.
Antarctic Peninsula						
Larsen Ice	8926	66.949°S	60.914°W	17	21 Oct 85	89262
Butler Island	8902	72.207°S	60.171°W	91	01 Mar 86	89266
Uranus Glacier	8920	71.43°S	68.93°W	780	06 Mar 86	89264
Limbert	8925	75.422°S	59.948°W	40	30 Nov 95	
Racer Rock	8947	64.067°S	61.613°W	17	15 Oct 89	89261
Bonaparte Pt.	8923	64.778°S	64.067°W	8	05 Jan 92	89269
AGO-A84	8932	84.36°S	23.86°W	2103	09 Jan 96	
Ski-Hi	8917	74.975°S	70.766°W	1395	21 Feb 94	89272
Santa Claus Is.	21364	64.964°S	65.67°W	25	10 Dec 94	
High Polar Plateau						
Clean Air	8987	90.00°S		2835	29 Jan 86	89208
Henry	8985	89.011°S	1.025°W	2755	26 Jan 93	89108
Nico	8924	89.00°S	89.669°E	2935	26 Jan 93	89799
Relay Station	8918	74.017°S	43.062°E	3353	01 Feb 95	89744
Dome Fuji	8982	77.31	39.70°E	3810	08 Feb 95	89734

* New sites started during 1998

New ARGOS ID for 1998 at the site

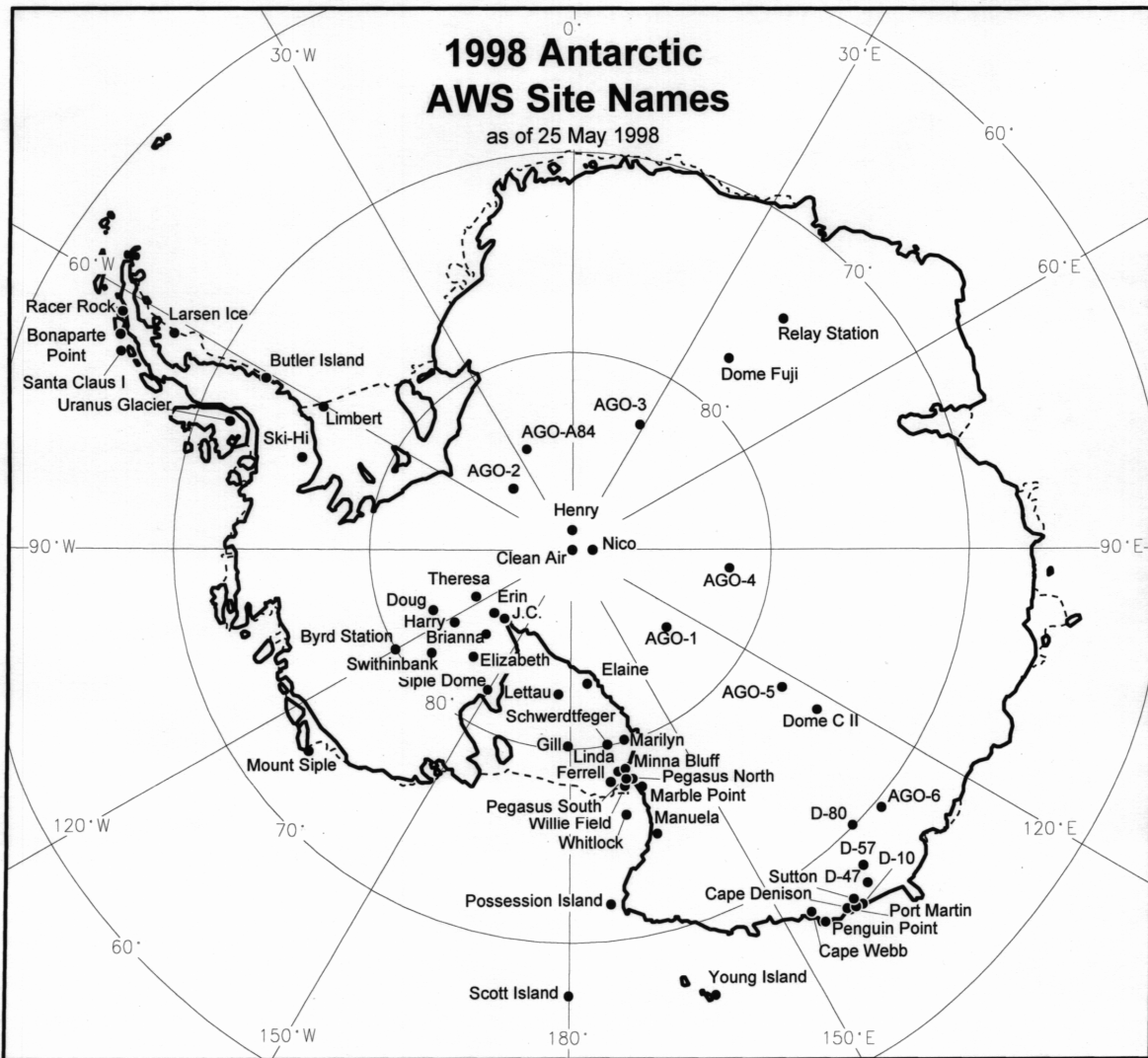


Figure 2. Antarctic automatic weather station locations during 1998 identified by the site name. Area around Ross Island is shown in Figure 3. Adelie Coast area is shown in Figure 4.

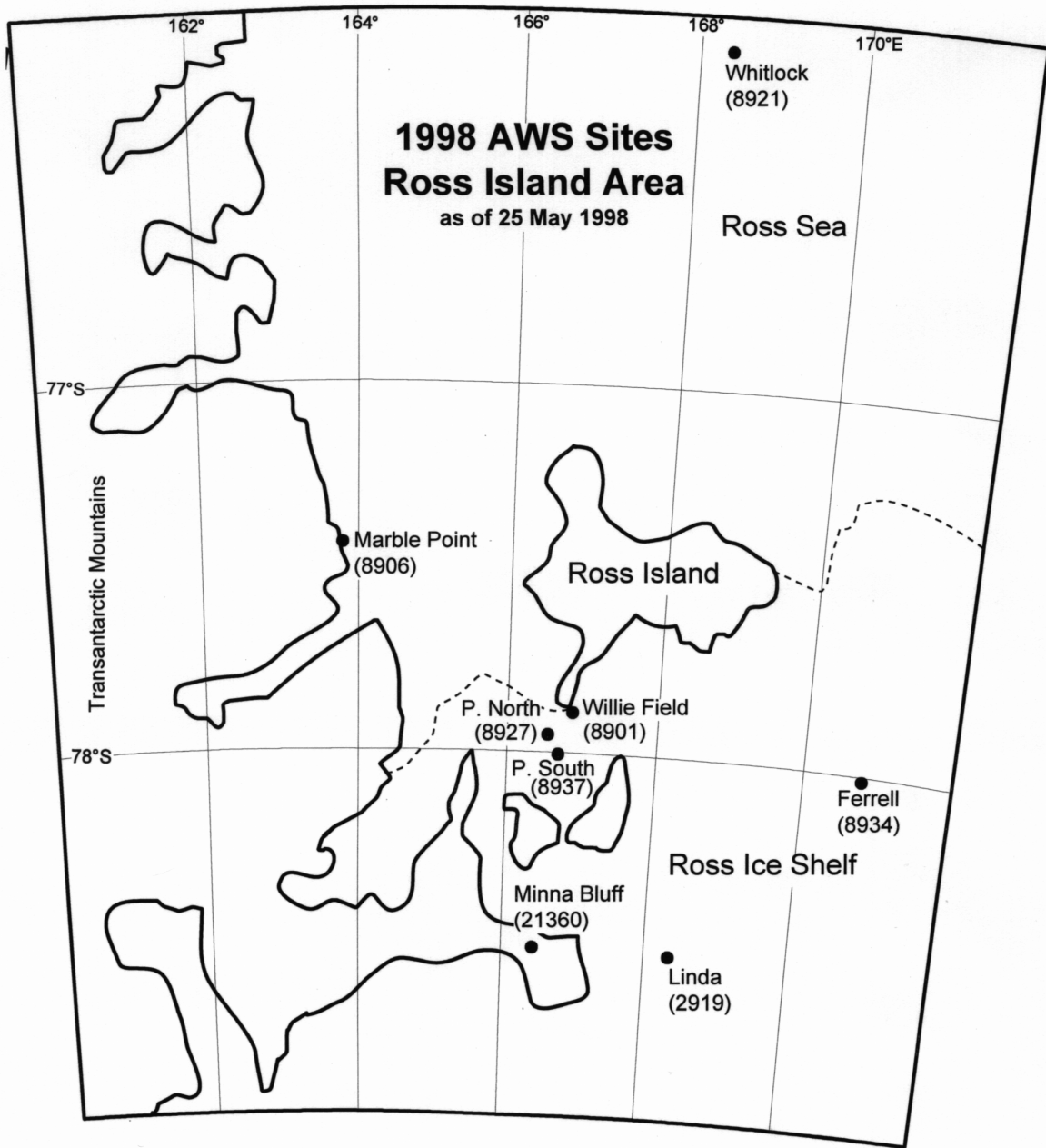


Figure 3. Location of Antarctic automatic weather stations in the vicinity of Ross Island, Antarctica during 1998.

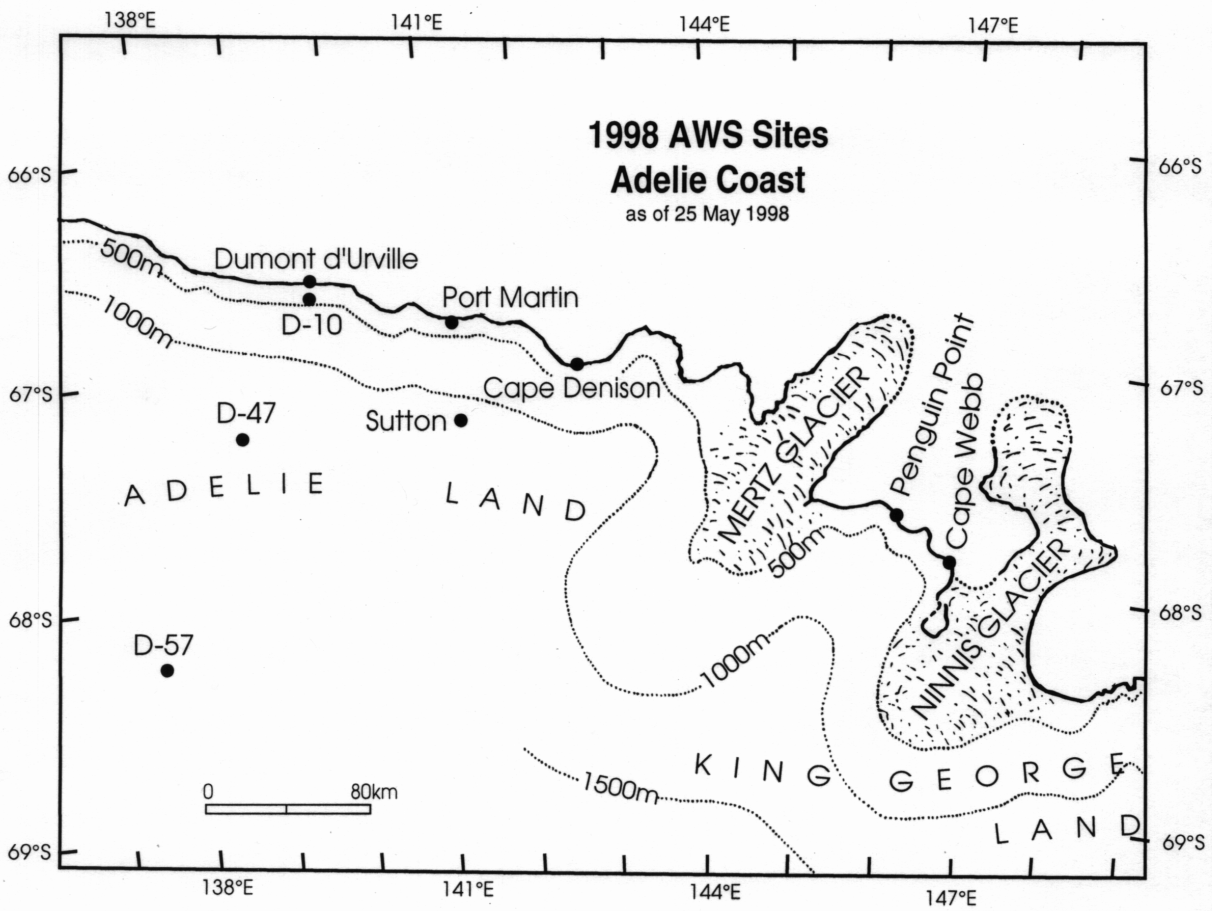


Figure 4. Location of Antarctic automatic weather stations along the Adelie Coast during 1998.

Table 3.2

1998 Antarctic AWS site name, ARGOS identification number (ID), site start date, ID start date, and ID stop date if occurring in 1998.

Site	ARGOS ID	Site Start Date	ID Start Date	ID Stop Date
D-10	8914	08 Jan 80	28 Jan 98	
D-47	8986	24 Nov 82	11 Feb 96	
Dome C II	8989	12 Dec 95	12 Dec 95	
Port Martin	8930	19 Jan 90	23 Dec 92	
Cape Denison	8907	20 Jan 90	27 Dec 94	
Penguin Point	8929	24 Dec 92	24 Dec 92	21 Dec 98
	8910		21 Dec 98	
Sutton	8939	26 Dec 94	26 Dec 94	
Cape Webb	8933	28 Dec 94	28 Dec 94	
Byrd Station	8903	05 Feb 80	05 Feb 80	
Mount Siple	8981	20 Feb 92	20 Feb 92	
J.C.	21357	29 Nov 94	29 Nov 94	
Theresa	21358	29 Nov 94	29 Nov 94	
Doug	8922	29 Nov 94	20 Jan 97	
Harry	21355	29 Nov 94	29 Nov 94	
Elizabeth	21361	30 Nov 94	17 Jan 96	
Brianna	21362	30 Nov 94	30 Nov 94	
Erin	21363	29 Nov 94	18 Jan 96	
Siple Dome	8900	21 Jan 97	21 Jan 97	
Swithinbank	21356	18 Jan 97	18 Jan 97	
Marble Point	8906	05 Feb 80	05 Feb 80	
Ferrell	8934	10 Dec 80	13 Jan 93	
Pegasus North	8927	23 Jan 90	23 Jan 90	
Pegasus South	8937	14 Jan 91	14 Jan 91	
Minna Bluff	8988	22 Jan 91	12 Jan 94	26 Jan 98
	21360		26 Jan 98	
Linda	8909	21 Jan 91	24 Jan 95	15 Jan 98
	8919		15 Jan 98	
Willie Field	8901	25 Jan 92	25 Jan 92	04 Dec 98
Windless Bight	8901	09 Dec 98	09 Dec 98	
White Out	8697	01 Dec 98	01 Dec 98	
White Island	8722	01 Dec 98	01 Dec 98	
Whitlock	8921	23 Jan 82	23 Feb 94	
Scott Island	8983	25 Dec 87	27 Dec 92	
Young Island	8980	01 Jan 91	01 Jan 91	
Possession Island	8984	29 Dec 92	29 Dec 92	
Marilyn	8931	16 Jan 84	18 Jan 91	
Schwerdtfeger	8913	24 Jan 85	22 Jan 93	
Gill	8911	24 Jan 85	25 Jan 91	
Elaine	8915	23 Jan 93	02 Jan 97	
Lettau	8908	29 Jan 86	29 Jan 86	
Manuela	8905	06 Feb 84	15 Feb 87	
Lynn	8935	19 Jan 88	23 Jan 92	05 Jan 98
Larsen Ice Shelf	8926	21 Oct 85	01 Jan 86	
Butler Island	8902	01 Mar 86	01 Mar 86	
Uranus Glacier	8920	06 Mar 86	24 Jan 92	
Limbert	8925	30 Nov 95	30 Nov 95	
Racer Rock	8947	15 Oct 89	08 Dec 91	
Bonaparte Point	8923	05 Jan 92	23 Dec 96	23 Dec 96
AGO-A84	8932	09 Jan 96	09 Jan 96	
Ski-Hi	8917	21 Feb 94	21 Feb 94	
Santa Claus Is.	21364	10 Dec 94	26 Dec 96	
Clean Air	8987	29 Jan 86	25 Jan 94	
Henry	8985	26 Jan 93	26 Jan 93	
Nico	8924	26 Jan 93	26 Jan 93	
Relay Station	8918	01 Feb 95	01 Feb 95	
Dome Fuji	8982	08 Feb 95	08 Feb 95	

4. AWS DATA SUMMARIES

The data received by the University of Wisconsin, Space Science and Engineering Center, contain all the information received by the ARGOS system including duplicate and erroneous transmissions. Invalid data are eliminated during a quality check, and the valid data are converted to scientific units producing the complete data set. Data selected at three hourly intervals, plus or minus forty minutes, produce a three hourly data set for each AWS unit month. Section 6.1, AWS Performance, provides some explanations for missing and invalid data.

Use of the 1998 Antarctic AWS data for publication should acknowledge the support of NSF-OPP Grant 9726040 or reference this publication.

4.1. Monthly Data Summaries

The monthly summaries consist of the monthly means, from the three hourly data set, and the extremes, from the complete data set. For monthly values to be included, 25% of the three hourly observations must be available. Months with 50-75% of data missing occur most often when a station is started or stopped in the middle of the month. This can cause a bias in the monthly mean, especially during seasons when parameters such as temperature change rapidly. Annual means are calculated only when twelve months of data are available. The data are presented in the same order as the sites listed in Table 3.1. Definitions of the monthly data summary headings are listed below.

Heading	Definition
Mean air temperature, °C.	Mean value for the month.
Percent of monthly data missing.	Ratio of the number of missing observations to the number of possible observations X 100.
Maximum air temperature, °C.	Maximum value for the month.
Minimum air temperature, °C.	Minimum value for the month.
Mean wind speed, m/s.	Mean value for the month.
Percent of monthly data missing.	Ratio of the number of missing observations to the number of possible observations X 100.
Resultant wind speed, dir/vv. Constancy.	Resultant speed and direction for the month. Ratio of the monthly resultant to the monthly mean wind speed.
Maximum wind speed, dir/vv.	Maximum wind speed and direction for the month.
Mean air pressure, mb.	Mean value for the month.
Percent of monthly data missing.	Ratio of the number of missing observations to the number of possible observations X 100.
Maximum air pressure, mb.	Maximum value for the month.
Minimum air pressure, mb.	Minimum value for the month.

Mon	Mean Air Temp (C)	% of Mon Data Abs	Max Air Temp (C)	Min Air Temp (C)	Mean Wind Speed (m/s)	% of Mon Data Abs	Result Wind (dir	vv	Con	Max Wind (dir	vv	Mean Air Press (mb)	% of Mon Data Abs	Max Air Press (mb)	Min Air Press (mb)
D-10 (8914)			66.71S			139.83E			243 M						
Feb	-5.4	09	1.9	-13.4	11.6	08	146	11.0	0.95	147	35	946.7	08	961.9	923.1
Mar	-13.0	07	-3.8	-22.6	11.2	07	159	10.6	0.95	153	29	946.9	07	958.8	933.2
Apr	-16.5	08	-5.2	-25.5	13.9	25	158	13.3	0.96	160	32	942.7	08	962.7	916.0
May	-17.4	09	-4.0	-27.0	9.8	46	159	8.5	0.87	168	32	953.5	09	970.8	923.4
Jun	-19.3	20	-10.6	-29.0	10.0	42	154	9.3	0.93	151	30	948.9	20	966.5	931.8
Jul															
Aug	-20.5	57	-12.4	-30.5	9.0	68	166	8.4	0.94	196	28	950.1	57	970.2	934.8
Sep	-18.0	10	-10.8	-28.5	10.6	29	154	10.5	0.99	153	32	945.2	10	967.1	926.8
Oct	-16.2	54	-10.8	-25.9	10.1	54	159	9.6	0.95	153	39	947.5	54	960.7	928.1
Nov															
Dec	-2.6	66	3.6	-8.5	12.3	66	133	11.8	0.96	112	26	953.8	66	966.8	942.1
D-47 (8986)			67.40S			138.73E			1560 M						
Feb					13.3	18	046	12.8	0.96	012	25	804.1	18	816.7	783.9
Mar					12.1	04	064	11.5	0.95	053	20	800.8	04	814.2	790.9
Apr					12.9	10	059	12.4	0.96	037	24	797.0	10	814.2	779.6
May					11.1	06	072	10.0	0.90	037	25	805.4	06	818.2	784.0
Jun					12.3	18	073	11.8	0.96	037	27	800.2	18	817.1	787.3
Jul															
Aug					12.3	55	076	11.0	0.89	066	23	802.8	55	831.6	770.0
Sep					13.1	49	047	12.6	0.96	028	24	797.4	49	815.0	782.8
Oct					12.0	10	047	11.2	0.94	029	25	801.4	07	811.1	786.9
Nov					10.5	05	071	10.1	0.97	077	23	804.6	05	827.9	786.5
Dec					11.3	11	039	10.2	0.91	019	27	806.4	11	822.0	790.7
Dome C II (8989)			75.12S			123.37E			3250 M						
Jan	-30.4	00	-20.8	-46.2	2.7	00	221	1.7	0.63	192	10	649.6	00	657.9	643.2
Feb	-38.1	00	-24.6	-57.8	3.0	00	219	1.3	0.42	279	11	651.3	00	657.8	642.4
Mar	-56.9	00	-40.4	-70.6	3.3	00	187	2.4	0.74	178	13	644.1	00	659.8	634.1
Apr	-60.0	00	-35.0	-71.2	3.6	00	275	0.9	0.25	023	15	640.4	00	654.6	631.2
May	-64.0	00	-41.9	-76.2	2.7	00	218	1.1	0.41	080	14	647.7	00	657.9	636.5
Jun	-64.7	01	-47.8	-77.1	2.3	01	181	1.6	0.71	195	8	648.3	01	663.4	640.1
Jul	-63.0	00	-40.5	-76.8	4.9	00	188	2.9	0.58	092	13	646.0	00	661.9	632.0
Aug	-62.4	00	-29.8	-75.5	3.8	00	225	1.9	0.50	285	14	645.7	00	667.0	630.9
Sep	-62.4	02	-43.0	-80.1	3.7	02	175	2.0	0.55	158	12	646.3	02	658.2	632.0
Oct	-50.2	00	-29.2	-69.4	3.5	00	154	0.9	0.24	201	10	646.2	00	664.4	633.4
Nov	-38.6	00	-20.9	-58.1	3.9	00	227	2.6	0.68	215	13	649.4	00	669.8	635.6
Dec	-27.9	00	-15.6	-38.5	3.0	00	153	0.9	0.31	111	11	653.3	00	668.9	643.3
MEAN	-51.6				3.4		201	1.5	0.50			647.4			

Mon	Mean Air Temp (C)	% of Mon Data Abs	Max Air Temp (C)	Min Air Temp (C)	Mean Wind Speed (m/s)	% of Mon Data Abs	Result Wind (dir)	vv	Con	Max Wind (dir)	vv	Mean Air Press (mb)	% of Mon Data Abs	Max Air Press (mb)	Min Air Press (mb)
Penguin Point (8910)			67.62S			146.18E			30 M						
Dec	-1.0	66	4.2	-5.2	10.3	68	148	9.6	0.93	147	23	980.7	66	990.5	970.9
Sutton (8939)			67.08S			141.37E			871 M						
Jan	-10.7	06	-3.6	-19.5								882.8	06	891.8	862.8
Feb	-12.5	06	-4.5	-20.4								877.4	06	891.5	854.5
Mar	-21.5	07	-10.1	-31.0								875.3	07	888.3	863.4
Apr	-24.1	08	-11.8	-32.0								871.5	08	891.2	852.7
May															
Jun															
Jul															
Aug															
Sep	-24.3	24	-16.0	-36.4								874.3	24	891.4	855.2
Oct															
Nov															
Dec	-10.4	46	-4.1	-19.2								875.3	46	891.3	863.2
Byrd (8903)			80.01S			119.40W			1530 M						
Jan	-14.0	00	-3.9	-29.4	3.2	02	010	2.4	0.75	028	15	815.4	00	821.3	801.5
Feb	-16.1	00	-6.4	-31.1	5.6	00	008	5.3	0.95	024	21	813.3	00	823.0	801.2
Mar	-28.0	00	-14.2	-41.2	5.6	00	003	4.6	0.82	003	13	808.4	00	820.4	787.9
Apr	-34.1	00	-18.7	-52.4	7.0	03	008	6.4	0.92	017	22	799.2	00	814.5	776.4
May	-24.8	00	-8.1	-56.3	9.3	11	348	7.3	0.78	021	23	811.3	00	829.5	790.7
Jun	-26.7	00	-12.3	-43.8	8.6	03	018	8.2	0.96	015	22	807.0	00	822.8	778.4
Jul	-41.4	00	-25.4	-55.1	8.1	43	015	8.0	0.99	021	27	801.0	00	813.6	785.9
Aug	-35.9	00	-21.6	-57.0	9.8	66	009	9.6	0.98	013	22	800.0	00	816.6	781.5
Sep	-36.8	00	-15.2	-59.1	9.0	29	010	8.7	0.97	017	20	807.3	00	826.1	787.1
Oct	-33.0	00	-13.6	-51.4								804.7	00	819.4	788.2
Nov	-23.3	00	-11.1	-45.5	10.5	72	023	9.8	0.93	031	22	801.1	00	813.6	784.0
Dec	-15.0	00	-5.5	-25.0	4.1	23	004	3.8	0.92	011	13	812.5	00	822.5	797.8
MEAN	-27.4											806.8			

Mon	Mean Air Temp (C)	% of Mon Data Abs	Max Air Temp (C)	Min Air Temp (C)	Mean Wind Speed (m/s)	% of Mon Data Abs	Result Wind (dir)	vv	Con	Max Wind (dir)	Mean Air Press (mb)	% of Mon Data Abs	Max Air Press (mb)	Min Air Press (mb)	
Elizabeth (21361)			82.61S			137.08W			549 M						
Jan	-11.0	21	-2.1	-24.4	3.2	19	029	1.8	0.56	343	11	925.7	19	932.4	913.9
Feb	-15.2	00	-0.6	-30.4	4.9	00	040	3.7	0.76	081	13	920.4	00	935.9	898.9
Mar	-26.3	00	-9.5	-40.5	5.7	00	047	4.9	0.86	360	14	918.6	00	934.8	904.2
Apr	-32.4	00	-8.4	-45.1	5.3	00	044	4.6	0.87	068	14	909.7	00	932.6	879.6
May	-27.2	00	-4.8	-45.4	7.2	54	014	5.6	0.79	043	23	919.4	00	938.3	897.8
Jun	-25.9	00	-7.9	-42.8	6.6	49	049	6.0	0.91	045	23	914.0	00	930.1	888.5
Jul	-36.7	00	-20.6	-47.8	6.2	00	046	5.7	0.91	078	15	912.8	00	931.0	898.5
Aug															
Sep															
Oct	-28.7	04	-7.6	-42.4	6.4	04	051	5.7	0.88	057	18	916.2	04	930.1	892.9
Nov	-18.2	00	-7.0	-42.4	5.3	00	060	4.3	0.81	081	16	910.2	00	927.4	886.7
Dec	-10.8	01	-2.0	-17.1	3.3	01	044	2.0	0.60	015	9	921.2	01	932.9	907.0
Erin (21363)			84.90S			128.81W			1006 M						
Jan	-10.9	00	-4.5	-22.2							878.6	00	885.7	866.6	
Feb	-13.1	00	-5.4	-24.5							875.4	00	886.2	861.9	
Mar	-24.6	00	-12.9	-36.8							873.0	00	884.4	853.4	
Apr	-29.6	00	-16.8	-40.5							863.8	00	879.7	844.5	
May	-25.0	01	-7.4	-44.2							872.6	01	887.5	857.4	
Jun	-20.6	00	-9.4	-27.9							871.7	00	886.5	849.9	
Jul	-30.0	41	-18.8	-38.5							866.7	41	875.5	853.3	
Aug															
Sep															
Oct	-26.9	40	-8.4	-40.4							871.4	40	888.6	856.3	
Nov	-17.8	00	-9.0	-30.9							867.0	00	879.9	850.1	
Dec	-10.8	00	-5.9	-16.2							875.3	00	887.5	859.9	
Theresa (21358)			84.60S			115.81W			1463 M						
Jan	-11.6	00	-2.9	-20.4	6.5	00	072	6.0	0.92	091	15	821.2	00	829.4	809.1
Feb	-14.3	00	-8.0	-25.0	8.5	00	080	8.2	0.96	090	22	818.9	00	827.5	809.8
Mar	-24.9	00	-15.0	-37.4	10.4	00	067	9.7	0.93	045	21	814.3	00	825.0	794.0
Apr	-30.5	00	-20.4	-45.4	11.2	00	081	10.9	0.97	095	29	805.2	00	816.9	790.4
May	-24.9	00	-7.2	-47.2	9.2	00	065	7.5	0.82	081	27	814.2	00	828.3	800.8
Jun	-21.0	00	-9.6	-30.6	10.6	00	076	9.5	0.90	085	22	815.0	00	829.4	791.8
Jul	-30.0	00	-19.0	-42.4	10.9	00	069	9.8	0.90	060	19	808.9	00	821.2	792.7
Aug	-28.4	00	-18.4	-51.1	11.1	00	079	10.4	0.94	085	26	807.4	00	821.9	793.2
Sep	-31.1	00	-14.2	-49.4	10.1	00	079	9.7	0.96	068	24	813.6	00	831.6	796.6
Oct	-25.9	00	-10.4	-41.2	9.7	00	067	8.7	0.89	054	27	812.2	00	831.2	799.7
Nov	-19.7	00	-10.8	-31.5	11.2	00	080	10.8	0.96	082	28	809.4	00	820.7	794.7
Dec	-12.1	00	-6.8	-20.6	6.8	00	071	6.3	0.93	081	15	818.3	00	829.7	804.2
MEAN	-22.9				9.7		074	8.9	0.92		813.2				

Mon	Mean Air Temp (C)	% of Mon Data Abs	Max Air Temp (C)	Min Air Temp (C)	Mean Wind Speed (m/s)	% of Mon Data Abs	Result Wind (dir)	vv	Con	Max Wind (dir)	vv	Mean Air Press (mb)	% of Mon Data Abs	Max Air Press (mb)	Min Air Press (mb)
Doug (8922)			82.32S			113.24W			1433 M						
Oct	-31.2	34	-12.6	-46.4	9.2	34	075	8.0	0.87	080	27	807.8	34	823.3	793.6
Nov	-21.9	02	-11.4	-39.1	9.3	02	091	8.5	0.92	358	22	803.6	02	815.2	788.0
Dec	-13.6	09	-4.2	-19.1	5.6	09	076	5.0	0.89	087	13	813.3	09	824.6	800.2
Mount Siple (8981)			73.20S			127.05W			230 M						
Jan	-1.9	00	4.6	-7.0											
Feb	-3.2	00	1.8	-8.6											
Mar	-8.7	00	-1.2	-16.1								953.6	01	972.5	923.8
Apr	-13.2	00	-6.5	-24.2								943.9	00	962.6	909.9
May	-12.1	00	-0.8	-29.9								962.2	02	987.8	934.3
Jun	-12.6	00	-2.2	-26.1								946.2	00	972.5	921.7
Jul	-19.3	01	-9.4	-31.6								948.0	01	966.3	917.2
Aug	-13.8	00	-6.1	-22.8								940.0	00	975.1	907.8
Sep	-14.8	01	-2.5	-25.1								951.9	01	975.0	913.2
Oct	-12.2	00	-2.2	-22.5								947.6	01	967.7	916.8
Nov	-8.8	01	0.9	-17.5								942.7	04	962.6	915.6
Dec	-3.0	01	2.9	-7.6								954.2	27	964.7	936.0
MEAN	-10.3														
Siple Dome (8900)			81.66S			148.77W			620 M						
Jan	-11.7	00	-1.4	-19.8	3.7	03	022	1.2	0.32	161	11	907.3	00	913.9	895.6
Feb	-13.7	00	-2.2	-25.1	4.0	00	033	0.8	0.21	002	20	901.6	00	916.8	878.2
Mar	-20.8	00	-10.2	-37.5	4.5	33	032	1.9	0.41	354	15	898.9	00	915.7	882.3
Apr	-28.1	00	-10.6	-46.2								890.0	00	914.2	859.9
May	-26.6	00	-8.1	-40.9								899.2	00	916.8	876.9
Jun	-23.6	00	-8.0	-40.6								893.9	00	911.1	872.2
Jul	-31.1	00	-16.0	-44.6								892.9	00	910.7	878.9
Aug	-27.9	00	-17.1	-46.9								890.4	00	919.1	866.7
Sep	-31.3	00	-13.5	-48.0								899.8	00	919.6	879.0
Oct	-24.7	00	-5.8	-39.2	5.1	51	026	1.4	0.28	074	18	895.9	00	909.0	872.2
Nov	-20.4	00	-8.0	-38.8	5.0	00	043	1.6	0.31	009	16	890.4	00	908.6	866.8
Dec	-11.9	00	-2.9	-20.8	3.5	00	043	0.9	0.25	336	12	902.8	00	914.2	890.2
MEAN	-22.7											896.9			

Mon	Mean Air Temp (C)	% of Mon Data Abs	Max Air Temp (C)	Min Air Temp (C)	Mean Wind Speed (m/s)	% of Mon Data Abs	Result Wind (dir	vv)	Con	Max Wind (dir	vv)	Mean Air Press (mb)	% of Mon Data Abs	Max Air Press (mb)	Min Air Press (mb)
Swithinbank (21356)			81.20S			126.17W			945 M						
Jan	-10.2	00	3.4	-25.1	4.0	00	354	3.1	0.76	008	12	874.8	00	880.3	861.1
Feb	-11.6	00	0.0	-26.6	7.0	00	357	6.6	0.94	050	20	870.6	00	883.2	853.9
Mar	-22.5	00	-9.8	-34.8	7.6	00	359	7.1	0.93	005	20	867.5	00	882.4	850.0
Apr	-27.8	00	-10.6	-43.2	8.0	00	359	7.6	0.95	360	19	858.3	00	878.7	831.4
May	-20.9	00	-4.6	-41.1	9.2	00	344	7.8	0.85	360	23	869.0	00	887.1	847.0
Jun	-21.3	00	-7.2	-34.2	11.2	00	005	10.9	0.97	016	23	864.0	00	879.9	836.3
Jul	-33.2	00	-18.8	-45.4	10.5	00	002	10.3	0.98	004	27	860.8	00	875.7	847.0
Aug	-30.8	00	-18.4	-48.9	10.6	00	005	10.3	0.97	360	27	858.8	00	882.6	838.3
Sep	-30.5	00	-10.2	-47.8	9.4	00	360	9.0	0.96	005	23	867.4	00	884.5	844.4
Oct	-26.1	00	-8.4	-40.5	9.2	00	004	8.6	0.93	360	25	864.5	00	879.2	842.8
Nov	-17.2	00	-6.8	-36.5	7.5	00	003	6.8	0.91	012	20	859.4	00	874.4	839.7
Dec	-9.7	00	-2.4	-16.4	5.4	00	353	5.0	0.93	008	13	870.5	00	881.5	854.2
MEAN	-21.8				8.3		360	7.7	0.92			865.5			
Marble Point (8906)			77.44S			163.76E			120 M						
Jan	-4.1	00	0.8	-10.6	4.3	00	132	1.7	0.41	146	12	977.5	00	985.7	969.1
Feb	-7.6	00	1.2	-16.4	4.4	00	152	3.8	0.85	123	17	973.6	00	985.6	942.8
Mar	-17.3	00	-8.5	-27.2	3.2	00	166	2.2	0.71	111	16	975.3	00	996.1	958.2
Apr	-26.3	00	-9.9	-38.6	2.8	00	170	1.9	0.68	151	22	968.9	00	990.4	941.8
May	-22.8	11	-4.0	-35.2	4.2	11	159	3.2	0.75	109	25	975.6	11	993.0	948.4
Ferrell (8934)			77.93S			170.82E			45 M						
Jan	-7.5	01	2.9	-20.9	3.1	00	171	1.3	0.44	201	12	985.3	00	993.1	977.1
Feb	-11.5	00	-3.6	-23.5	5.0	00	204	3.8	0.76	225	19	980.6	00	992.3	948.8
Mar	-24.2	00	-14.8	-43.2	5.3	00	219	4.3	0.81	202	18	982.1	00	1003.7	964.9
Apr	-35.7	00	-15.9	-52.5	3.7	00	213	2.9	0.79	205	21	976.1	00	998.0	947.6
May	-29.9	00	-7.8	-44.0	6.8	12	218	5.4	0.79	219	24	982.7	00	999.7	954.6
Jun	-23.9	00	-11.4	-43.9	7.3	28	220	7.0	0.95	232	21	977.5	00	992.9	958.4
Jul	-34.5	00	-16.8	-53.5	5.2	15	220	4.7	0.89	198	19	980.7	00	998.3	963.9
Aug	-34.7	21	-16.1	-50.8	6.4	43	220	6.1	0.95	203	21	980.8	21	1003.6	964.5

Mon	Mean Air Temp (C)	% of Mon Data Abs	Max Air Temp (C)	Min Air Temp (C)	Mean Wind Speed (m/s)	% of Mon Data Abs	Result Wind (dir)	vv	Con	Max Wind (dir)	vv	Mean Air Press (mb)	% of Mon Data Abs	Max Air Press (mb)	Min Air Press (mb)
Pegasus North (8927)			77.95S			166.51E			10 M						
Jan	-5.9	00	3.6	-21.2								993.2	00	1001.8	984.7
Feb	-9.5	00	-0.6	-21.6	4.3	00	094	2.8	0.64	185	21	989.7	00	1002.4	954.5
Mar	-20.7	00	-9.1	-38.9	4.7	00	098	2.1	0.45	184	21	992.0	00	1013.4	974.5
Apr	-32.0	00	-12.2	-52.0	3.0	00	094	1.5	0.50	171	33	986.2	00	1007.4	956.0
May	-26.7	00	-5.9	-41.5	5.6	00	127	3.1	0.56	185	38	992.8	00	1011.1	963.3
Jun	-20.7	00	-4.8	-37.1	4.9	00	135	2.2	0.45	189	29	987.3	00	1002.4	968.3
Jul	-29.1	00	-10.4	-46.1	4.8	00	092	2.7	0.55	184	31	990.8	00	1008.6	974.2
Aug	-29.1	00	-10.2	-46.0	4.7	00	100	2.5	0.54	181	28	989.4	00	1014.0	973.2
Sep	-32.6	00	-3.2	-50.9	4.5	00	084	2.6	0.58	187	28	999.1	00	1021.6	975.5
Oct	-18.9	00	-3.9	-30.8	5.5	03	133	2.5	0.45	180	29	990.2	00	1005.3	967.6
Nov	-12.0	00	-2.0	-32.4	4.5	00	108	1.9	0.42	174	24	983.2	00	1002.0	965.9
Dec	-4.7	00	3.9	-14.4	3.9	00	078	2.0	0.51	182	21	989.5	00	1002.9	972.4
MEAN	-20.2											990.3			
Pegasus South (8937)			77.99S			166.58E			10 M						
Jan	-5.9	01	2.1	-21.0	2.2	01	080	1.4	0.63	153	8	992.0	01	1000.5	983.3
Feb	-9.7	00	-1.6	-21.9	2.9	00	123	1.6	0.54	198	15	988.5	00	1001.0	955.1
Mar	-21.0	00	-9.5	-40.0	2.3	00	139	0.8	0.35	201	15	990.8	00	1012.1	973.5
Apr	-32.7	01	-12.9	-52.9	0.5	02	076	0.2	0.41	174	5	984.8	01	1006.3	955.8
May	-27.6	00	-5.4	-42.5	0.5	00	143	0.2	0.35	202	6	991.8	00	1009.8	963.1
Jun	-21.5	01	-6.0	-37.5								986.3	01	1001.3	967.2
Jul	-30.0	02	-11.0	-46.9								989.7	02	1007.4	973.3
Aug	-30.1	00	-11.1	-47.2								988.5	00	1013.0	973.3
Sep	-33.6	01	-3.0	-51.4								998.2	01	1020.6	975.5
Oct	-19.0	01	-3.8	-32.0								989.3	01	1004.4	967.0
Nov	-12.2	00	-3.0	-33.6								982.4	00	1001.3	964.9
Dec	-5.0	03	2.2	-15.4								988.5	03	1001.9	970.7
MEAN	-20.7											989.2			
Minna Bluff (21360)			78.55S			166.66E			920 M						
Feb	-15.5	00	-6.8	-25.5	7.3	00	221	3.8	0.52	022	30	877.6	00	889.0	845.6
Mar	-24.6	00	-15.9	-36.9	7.3	00	209	2.2	0.30	123	25	875.8	00	894.7	859.0
Apr	-30.4	00	-20.0	-41.0	7.3	00	330	5.5	0.75	351	39	867.2	00	890.0	841.8
May	-28.5	00	-13.8	-44.6	9.1	00	348	6.6	0.73	338	38	874.2	00	889.8	845.9
Jun	-23.6	00	-15.2	-33.1	3.0	00	200	2.5	0.83	236	28	871.9	00	887.7	856.9
Jul	-29.5	00	-18.6	-43.6								871.8	00	887.1	849.3
Aug	-28.6	00	-16.2	-38.6								871.2	00	891.0	853.2
Sep	-30.5	00	-15.0	-39.2								878.5	00	899.9	858.4
Oct	-23.9	00	-10.6	-35.4								873.8	00	888.5	848.9
Nov	-17.3	00	-6.6	-31.8								870.5	00	887.3	849.2
Dec	-10.6	00	-1.6	-20.6								879.8	00	893.1	864.6

Mon	Mean Air Temp (C)	% of Mon Data Abs	Max Air Temp (C)	Min Air Temp (C)	Mean Wind Speed (m/s)	% of Mon Data Abs	Result Wind (dir)	vv	Con	Max Wind (dir)	vv	Mean Air Press (mb)	% of Mon Data Abs	Max Air Press (mb)	Min Air Press (mb)
Linda (8919)			78.48S			168.38E			50 M						
Jan	-9.5	46	-2.0	-20.4	3.6	46	198	0.8	0.21	172	14	965.6	46	973.2	959.3
Feb	-12.7	00	-1.8	-24.4	6.7	00	192	5.5	0.82	213	25	962.5	00	974.5	929.3
Mar	-23.8	00	-14.4	-41.9	7.8	00	201	6.7	0.86	202	26	963.4	00	985.5	943.3
Apr	-33.9	00	-15.4	-53.8	5.9	00	200	4.4	0.76	191	27	957.0	00	979.9	927.2
May	-30.0	00	-8.5	-47.6	9.3	20	197	8.5	0.91	198	32	964.0	00	981.6	933.3
Jun	-23.1	00	-11.6	-42.8	11.0	26	198	10.8	0.98	199	28	958.6	00	973.5	940.0
Jul	-32.1	00	-16.2	-52.4	11.5	43	197	11.3	0.98	201	27	961.7	00	979.4	944.4
Aug	-32.3	00	-15.8	-50.4	13.1	40	197	12.9	0.98	199	32	960.3	00	984.9	942.3
Sep	-35.0	00	-10.4	-51.1	9.7	32	194	9.4	0.96	198	28	969.9	00	992.2	945.6
Oct	-22.2	00	-9.0	-34.4	8.6	00	199	7.8	0.91	210	27	961.7	00	977.1	938.3
Nov	-14.4	00	-5.5	-35.6	6.3	00	201	4.8	0.76	201	23	955.8	00	974.8	935.2
Dec	-6.9	00	2.2	-17.6	4.6	00	200	2.2	0.48	212	19	963.7	00	977.7	947.2
MEAN	-23.0				8.2		197	7.1	0.80			962.0			
Willie Field (8901)			77.87S			167.02E			20 M						
Jan	-6.5	00	2.9	-20.9	3.1	00	068	1.9	0.60	180	14	991.2	00	997.9	981.3
Feb	-10.6	00	-1.2	-24.8	3.6	00	079	2.1	0.57	189	17	986.9	00	1000.6	952.1
Mar	-21.8	00	-11.0	-39.6	3.7	00	080	1.3	0.35	177	14	988.6	00	1011.2	968.3
Apr	-33.2	47	-19.2	-52.4	1.7	47	072	1.1	0.68	168	11	987.7	47	1003.0	969.1
May															
Jun															
Jul															
Aug															
Sep															
Oct	-20.7	31	-3.4	-33.4	3.6	31	108	1.7	0.47	189	22	989.1	31	1003.0	963.8
Nov	-12.8	00	-1.4	-35.9	3.2	00	098	1.0	0.33	185	18	980.5	00	997.9	963.0
Dec															
Windless Bight (8901)			77.72S			167.70E			50 M						
Dec	-5.4	26	3.8	-18.8	1.6	26	073	0.6	0.37	172	10	986.2	26	997.9	968.5
White Out (8697)			77.87S			168.16E			30 M						
Dec	-6.6	00	1.9	-17.1	2.9	00	187	0.7	0.23	192	16	984.0	00	997.9	966.9
White Island (8722)			78.09S			168.91E			30 M						
Dec	-5.9	01	2.5	-15.6	3.7	01	207	0.9	0.25	205	21	980.7	01	995.1	963.5

Mon	Mean Air Temp (C)	% of Mon Data Abs	Max Air Temp (C)	Min Air Temp (C)	Mean Wind Speed (m/s)	% of Mon Data Abs	Result Wind (dir)	vv	Con	Max Wind (dir)	vv	Mean Air Press (mb)	% of Mon Data Abs	Max Air Press (mb)	Min Air Press (mb)	
Whitlock (8921)			76.14S					168.39E					274 M			
Jan	-5.0	01	1.5	-11.1	3.6	00	104	1.1	0.31	338	13	959.3	00	965.9	949.6	
Feb	-7.7	01	-2.4	-15.5	5.0	01	179	1.7	0.35	182	20	954.3	01	964.4	925.7	
Mar	-18.8	00	-10.0	-33.0	4.1	00	319	0.8	0.19	338	15	955.7	00	975.9	941.6	
Apr	-27.5	36	-15.9	-39.5	4.2	39	313	1.4	0.34	310	16	950.2	36	969.3	926.4	
Scott Island (8983)			67.37S					179.97W					30 M			
Jan	-0.1	04	5.1	-3.2								981.9	04	997.3	958.8	
Feb	-0.2	06	2.1	-2.9								977.1	06	998.3	947.1	
Mar	-2.4	08	1.9	-7.6								972.6	08	987.7	950.6	
Apr	-5.4	08	0.4	-18.4								970.1	08	999.0	946.9	
May	-11.9	09	0.4	-21.9								979.8	09	1011.8	949.2	
Jun	-15.3	08	-4.8	-23.4								970.9	08	989.9	941.0	
Jul	-17.5	10	0.2	-30.0								974.1	10	1001.3	940.1	
Aug	-18.9	08	-0.5	-32.6								968.8	08	997.5	946.7	
Sep	-14.6	10	0.2	-25.0								975.7	10	1001.7	954.5	
Oct	-10.2	13	0.4	-22.8								974.0	13	998.6	923.2	
Nov	-7.9	11	1.4	-19.8								972.8	11	994.1	946.6	
Dec	-1.5	06	3.6	-8.2								980.4	06	999.8	937.8	
MEAN	-8.8											974.9				
Possession Is (8984)			71.89S					171.21E					30 M			
Jan	0.6	20	7.2	-4.8								977.8	19	987.0	965.0	
Feb	-2.2	11	2.1	-5.8								972.8	07	984.9	947.5	
Mar	-11.4	00	-2.0	-21.5								974.0	00	987.8	960.4	
Apr	-20.2	01	-7.0	-29.2								969.5	01	986.4	948.6	
May	-18.5	00	-1.9	-28.8								975.1	00	1000.3	951.6	
Jun	-16.4	01	-7.8	-26.2								971.3	01	984.5	955.1	
Jul	-20.7	02	-8.0	-29.8								974.2	02	991.2	954.5	
Aug	-19.3	01	-10.6	-30.0								970.3	01	994.8	947.6	
Sep	-20.5	01	-5.2	-29.5								979.0	01	1000.1	962.0	
Oct	-13.3	10	1.0	-20.9								974.1	10	989.7	957.4	
Nov	-6.7	18	4.2	-20.0								968.0	17	987.7	953.7	
Dec	1.6	29	7.8	-6.8								975.8	29	991.7	956.7	
MEAN	-12.3											973.5				

Mon	Mean	% of	Max Air	Min Air	Mean	% of	Result	vv	Con	Max	vv	Mean	% of	Max Air	Min Air
	Air	Mon			Temp	Temp				Wind		Mon	Wind		
	Temp	Data	Temp	Temp	Speed	Data	Wind (dir			(dir		(mb)	Abs	(mb)	(mb)
	(C)	Abs	(C)	(C)	(m/s)	Abs									
Manuela (8905)			74.95S			163.69E			80 M						
Jan	-5.6	00	2.2	-14.8								981.3	00	990.2	971.4
Feb	-10.4	00	-2.9	-19.8								976.6	00	988.6	945.3
Mar	-22.0	00	-12.6	-34.4								978.8	00	1000.0	962.2
Apr	-27.4	00	-7.2	-35.6								971.6	00	993.4	945.1
May	-25.7	00	-12.4	-38.2								978.9	00	997.1	950.3
Jun	-23.5	00	-10.5	-33.8								974.5	00	989.9	952.1
Jul	-27.6	00	-13.8	-37.1								976.9	00	996.5	957.7
Aug	-25.6	00	-5.6	-34.1								975.3	00	997.8	951.9
Sep	-28.2	00	-9.6	-39.1								984.4	00	1008.8	965.1
Oct	-18.5	00	-6.4	-27.6								976.9	00	990.2	956.8
Nov	-11.1	00	-0.8	-23.6								970.9	00	989.2	951.3
Dec	-3.1	00	4.0	-9.0								978.1	00	992.5	960.8
MEAN	-19.1											977.0			
Marilyn (8931)			79.95S			165.13E			75 M						
Jan	-9.0	00	2.2	-21.5	2.4	01	234	1.1	0.44	200	13	983.2	00	991.7	973.4
Feb	-13.1	00	-1.1	-26.8	4.7	00	248	3.2	0.69	274	19	979.8	00	992.9	949.1
Mar	-25.6	00	-14.1	-41.1	5.7	00	243	4.7	0.82	260	15	980.4	00	999.7	962.4
Apr	-32.6	00	-15.8	-50.8	7.0	03	255	5.9	0.84	255	23	973.2	00	993.9	943.6
May	-31.3	00	-7.8	-48.6	8.1	22	247	6.7	0.83	269	25	981.1	00	1001.6	951.7
Jun	-23.5	00	-9.6	-36.8	8.1	05	243	6.8	0.84	262	20	975.7	00	990.9	955.2
Jul	-32.6	00	-17.5	-52.9	8.2	15	251	7.5	0.92	243	28	978.5	00	997.1	961.5
Aug	-32.4	00	-15.8	-52.8	8.1	14	254	7.3	0.90	262	24	977.5	00	1001.5	962.5
Sep	-35.1	00	-10.5	-53.5	7.8	15	260	7.0	0.91	263	29	986.3	00	1009.7	967.0
Oct	-24.2	00	-10.6	-38.1	8.8	27	237	7.8	0.89	264	27	978.9	00	992.7	959.8
Nov	-15.8	00	-5.2	-36.8	4.0	09	237	2.7	0.69	228	13	972.5	00	990.5	954.7
Dec	-7.4	01	1.6	-16.8	2.4	02	241	0.9	0.37	179	10	979.7	00	993.5	963.8
MEAN	-23.6				6.3		248	5.1	0.76			978.9			
Schwertfeger (8913)			79.90S			169.97E			60 M						
Jan	-9.9	00	-0.5	-20.6	2.9	16	243	1.0	0.33	177	10	981.8	00	990.9	973.0
Feb	-14.7	00	-2.2	-26.8	4.3	00	224	2.8	0.65	208	16	977.2	00	990.1	945.6
Mar	-28.5	00	-15.2	-44.8	4.8	00	220	3.7	0.76	188	15	977.9	00	998.5	957.9
Apr	-38.9	00	-18.5	-55.1	4.9	00	244	3.5	0.72	175	17	971.2	00	992.7	939.2
May	-34.9	00	-11.4	-54.5	5.5	00	232	3.8	0.70	161	20	978.8	00	997.3	948.5
Jun	-27.7	00	-12.5	-45.8	5.7	00	230	4.4	0.76	258	19	972.8	00	988.2	954.2
Jul	-38.6	00	-17.5	-58.8	5.2	00	233	4.4	0.83	262	17	976.1	00	994.7	956.8
Aug	-37.4	00	-19.8	-55.4	5.6	00	236	4.5	0.81	185	18	975.1	00	998.9	958.2
Sep	-40.7	00	-12.0	-57.1	5.4	00	243	4.3	0.78	258	26	984.3	00	1008.1	961.0
Oct	-27.3	00	-15.5	-40.2	6.0	00	217	4.7	0.78	191	22	975.9	00	990.7	954.5
Nov	-17.8	00	-4.9	-39.8	5.3	00	212	3.6	0.69	172	19	969.8	00	988.1	948.8
Dec	-8.7	00	-1.2	-18.9	2.4	00	218	0.6	0.25	151	10	978.1	00	992.2	962.9
MEAN	-27.1				4.8		230	3.4	0.67			976.6			

Mon	Mean Air Temp (C)	% of Mon Data Abs	Max Air Temp (C)	Min Air Temp (C)	Mean Wind Speed (m/s)	% of Mon Data Abs	Result Wind (dir)	vv	Con	Max Wind (dir)	vv	Mean Air Press (mb)	% of Mon Data Abs	Max Air Press (mb)	Min Air Press (mb)
Gill (8911)			79.99S			178.61W			55 M						
Jan	-9.1	00	-1.1	-18.0	0.8	00	325	0.3	0.43	118	8	985.2	00	995.0	975.8
Feb	-14.4	00	-4.2	-28.2	4.3	00	211	1.9	0.44	214	12	979.2	00	994.0	950.5
Mar	-29.0	00	-9.9	-42.0	4.4	00	213	2.9	0.65	217	12	979.1	00	1002.7	959.6
Apr	-41.7	00	-21.9	-55.8	2.9	00	242	1.5	0.52	219	13	972.8	00	997.3	938.6
May	-34.3	00	-15.2	-50.6	5.5	08	208	2.9	0.53	181	17	979.8	00	996.0	950.3
Jun	-30.6	00	-9.2	-49.0	3.6	13	232	2.4	0.65	233	13	973.5	00	991.5	950.8
Jul	-44.6	00	-23.6	-58.2	3.4	00	246	2.5	0.73	205	11	976.8	00	995.5	960.4
Aug	-39.6	00	-18.1	-53.6								975.2	00	1002.8	958.9
Sep	-42.8	00	-18.0	-54.8								985.5	00	1008.5	958.2
Oct	-29.1	00	-16.5	-40.8								976.9	00	995.6	955.7
Nov	-19.1	00	-8.0	-39.1								970.5	00	988.6	945.2
Dec	-9.2	00	-3.0	-21.5	3.6	09	214	1.5	0.42	188	11	981.3	00	994.3	967.3
MEAN	-28.6											978.0			
Elaine (8915)			83.13S			174.17E			60 M						
Jan	-8.9	00	0.9	-19.6	3.1	17	107	1.1	0.36	119	14	988.0	00	995.6	977.8
Feb	-11.9	00	0.4	-29.5	3.9	00	131	2.9	0.73	116	24	984.2	00	998.3	958.0
Mar	-24.3	00	-8.6	-43.0	4.1	00	150	2.7	0.65	125	16	986.4	00	1003.9	971.5
Apr	-34.3	00	-10.9	-52.0	4.2	02	140	2.9	0.69	116	22	978.6	00	1000.3	948.3
May	-31.1	00	-2.8	-50.2	5.2	00	142	2.8	0.54	116	25	986.6	00	1008.7	959.2
Jun	-20.2	00	-6.8	-42.0	6.5	00	141	5.2	0.80	116	25	981.6	00	997.4	959.3
Jul	-32.4	00	-14.5	-50.8	4.7	00	151	3.3	0.69	120	19	983.7	00	1002.1	964.9
Aug	-35.6	00	-14.2	-58.6	3.4	00	166	2.4	0.71	119	21	982.5	00	1011.1	967.1
Sep	-39.3	00	-7.5	-61.5	1.4	00	159	0.8	0.58	191	17	991.4	00	1014.7	972.1
Oct	-25.6	00	-6.8	-42.8	4.6	00	138	3.6	0.78	119	19	984.9	00	999.0	967.7
Nov	-14.3	00	-2.9	-37.1	4.6	00	137	2.9	0.63	116	23	977.4	00	994.4	958.8
Dec	-6.7	00	1.0	-13.5	2.0	00	142	0.2	0.13	184	10	984.0	00	997.6	969.2
MEAN	-23.7				4.0		142	2.5	0.61			984.1			
Lettau (8908)			82.52S			174.45W			55 M						
Jan	-6.3	61	0.0	-15.9	3.2	61	174	1.6	0.50	338	9	986.3	61	995.0	975.8
Feb	-16.2	34	-6.4	-29.6	3.6	34	153	2.3	0.62	150	14	982.4	34	994.7	970.5
Mar	-28.7	00	-13.5	-44.5	4.2	00	161	2.9	0.69	127	13	981.7	00	1001.5	967.5
Apr	-40.6	00	-13.0	-57.0	3.1	00	158	1.8	0.56	132	17	974.3	00	997.2	938.8
May	-34.3	00	-8.0	-51.1	4.9	00	159	2.2	0.44	136	18	982.1	00	1002.2	952.8
Jun															
Jul															
Aug															
Sep															
Oct	-31.6	52	-11.9	-40.5	2.8	61	173	1.6	0.56	132	17	985.2	51	996.4	973.1
Nov	-18.2	53	-6.5	-38.9	6.5	55	147	5.4	0.83	132	19	970.5	53	990.8	947.1
Dec	-7.1	62	-1.0	-12.5	2.7	62	172	1.6	0.58	167	8	982.2	62	995.6	969.6

Mon	Mean Air Temp (C)	% of Mon Data Abs	Max Air Temp (C)	Min Air Temp (C)	Mean Wind Speed (m/s)	% of Mon Data Abs	Result Wind (dir)	vv	Con	Max Wind (dir)	vv	Mean Air Press (mb)	% of Mon Data Abs	Max Air Press (mb)	Min Air Press (mb)
Larsen Ice Shelf (8926)			66.95S			60.91W			17 M						
Jan	-1.0	03	5.5	-6.4	2.6	01	146	0.8	0.31	182	12	981.0	01	996.2	960.5
Feb	-2.1	00	5.2	-12.9	3.2	00	179	0.3	0.09	209	12	986.3	00	1005.2	968.1
Mar	-9.6	01	3.5	-25.9	2.0	01	183	0.4	0.21	340	9	984.2	01	1001.3	970.3
Apr	-12.7	00	4.9	-27.5	2.7	00	250	0.9	0.32	258	15	981.8	00	1006.4	960.1
May	-16.4	00	4.9	-35.9	1.1	00	246	0.5	0.47	113	10	990.6	00	1013.0	962.6
Jun	-12.6	35	3.8	-36.2	1.5	36	238	0.6	0.43	209	12	991.1	35	1005.7	973.4
Jul															
Aug															
Sep	-18.3	06	2.5	-44.9	2.7	47	189	2.1	0.76	223	10	983.8	06	1004.8	959.5
Oct	-15.5	01	2.2	-32.8								977.4	01	999.8	953.7
Nov	-5.8	05	6.5	-23.6	4.5	05	208	1.4	0.31	180	13	975.0	05	1007.0	945.9
Dec	-2.3	04	5.5	-17.5	3.7	04	154	1.2	0.33	147	12	977.3	04	1000.8	960.8
Butler Island (8902)			72.21S			60.17W			91 M						
Jan	-2.3	06	3.9	-10.0	5.1	06	195	1.7	0.34	187	23	986.2	06	1000.5	967.1
Feb	-4.9	04	10.5	-17.1	5.8	03	200	3.5	0.61	178	17	989.7	03	1007.1	973.7
Mar	-13.6	00	3.0	-23.5	5.5	00	199	4.0	0.73	195	16	988.9	01	1000.1	976.2
Apr	-18.4	04	5.9	-30.4	5.1	04	213	2.7	0.54	271	30	983.3	04	1003.1	964.4
May	-14.0	03	6.6	-33.9	4.3	03	216	2.3	0.54	172	17	991.6	03	1015.3	970.6
Jun	-16.8	00	4.6	-30.4	5.2	04	207	3.2	0.61	181	31	992.3	00	1008.7	966.7
Jul	-25.0	00	-11.4	-32.8	3.4	00	192	2.8	0.83	184	14	984.3	00	1009.4	967.2
Aug	-25.4	01	1.2	-33.9	3.2	03	199	2.0	0.61	189	19	986.0	01	1004.0	969.2
Sep	-22.8	00	1.6	-36.8	6.5	72	185	6.3	0.98	098	28	987.6	00	1007.5	962.5
Oct	-19.6	00	0.4	-31.2								983.6	00	1008.3	959.1
Nov	-6.4	01	6.6	-21.2	5.8	01	197	2.6	0.45	195	25	980.2	01	1002.4	958.8
Dec	-3.0	09	6.6	-13.0	5.6	07	192	3.6	0.64	198	18	981.6	07	1001.8	960.1
MEAN	-14.4											986.3			
Uranus Glacier (8920)			71.43S			68.93W			780 M						
Jan	-1.4	30	7.0	-9.5	4.0	27	010	3.3	0.83	007	19	900.2	27	912.5	891.0
Feb	-3.6	14	3.8	-14.5	6.5	13	355	5.8	0.89	337	23	904.3	13	922.8	888.3
Mar	-7.5	00	3.5	-17.9	4.4	00	002	3.9	0.88	015	19	901.1	00	913.3	888.7
Apr	-9.3	00	0.2	-23.9	7.8	00	358	7.2	0.92	354	29	894.9	00	924.8	870.5
May	-13.2	00	-0.9	-37.4	9.3	27	003	8.8	0.94	023	23	910.9	00	931.6	886.7
Jun															
Jul															
Aug															
Sep	-13.6	04	-0.5	-30.4	6.3	04	009	5.3	0.85	029	23	897.8	04	926.9	875.8
Oct	-12.6	00	-0.1	-30.9	4.5	00	014	4.0	0.89	039	21	891.8	00	916.7	865.5
Nov	-8.0	03	1.9	-27.2	4.9	03	009	4.1	0.84	343	20	894.9	03	923.4	871.8
Dec	-4.3	38	4.0	-13.0	4.6	34	005	3.8	0.82	030	18	894.0	34	916.0	883.9

Mon	Mean Air Temp (C)	% of Mon Data Abs	Max Air Temp (C)	Min Air Temp (C)	Mean Wind Speed (m/s)	% of Mon Data Abs	Result Wind (dir vv) Con	Max Wind (dir vv)	Mean Air Press (mb)	% of Mon Data Abs	Max Air Press (mb)	Min Air Press (mb)			
Limbert (8925)			75.42S			59.95W			40 M						
Jan	-4.4	01	3.1	-17.9	4.2	00	150	1.6	0.38	236	14	983.7	00	1000.1	971.2
Feb	-12.6	01	3.1	-27.5	5.0	00	200	3.5	0.70	195	14	987.3	00	1004.2	973.4
Mar	-22.0	01	-7.9	-35.8	5.2	04	196	2.9	0.56	067	15	987.4	01	998.2	975.0
Apr	-29.0	00	-0.8	-42.9	5.6	34	203	4.7	0.85	209	26	980.6	00	1002.0	964.6
May	-26.6	00	-5.2	-50.4								987.8	00	1012.9	969.4
Jun	-26.9	01	-7.2	-43.5								989.6	01	1004.1	960.6
Jul	-31.1	00	-11.2	-44.0								982.3	00	1007.7	963.4
Aug	-33.5	01	-3.5	-46.0								984.1	01	1003.1	967.0
Sep	-35.8	60	-16.2	-50.4								988.2	60	1000.9	980.9
Oct	-24.7	00	-12.5	-35.5								981.4	00	1007.3	955.1
Nov	-17.7	52	-9.6	-33.0	6.6	52	215	5.5	0.82	216	23	976.7	52	993.2	957.8
Racer Rock (8947)			64.07S			61.61W			17 M						
Jan	1.1	09	5.2	-5.9	4.9	08	086	2.4	0.49	210	19	982.9	08	999.1	970.5
Feb	1.9	19	6.6	-7.8	5.0	17	153	1.1	0.21	220	23	990.5	17	1009.2	971.0
Mar	-0.7	15	3.6	-7.0	4.5	15	064	1.5	0.33	073	23	987.2	15	1006.1	966.7
Apr	-1.9	12	1.9	-13.9	7.8	12	316	3.2	0.41	306	28	989.5	12	1015.9	962.2
May	-3.0	18	2.5	-15.2	4.9	18	211	1.8	0.37	212	27	997.2	18	1015.6	970.6
Jun															
Jul															
Aug															
Sep	-5.8	49	3.0	-22.9	6.1	49	031	2.2	0.36	293	22	989.9	49	1010.9	961.4
Oct	-3.4	11	3.2	-22.2	6.6	11	059	4.0	0.61	295	24	977.8	11	1008.5	953.7
Nov	-1.5	19	3.8	-15.9	6.3	19	023	1.0	0.16	331	26	981.1	19	1016.1	952.0
Dec	0.0	17	4.6	-15.1	5.7	17	109	1.4	0.25	208	21	980.3	17	1005.0	961.9
Bonaparte Point (8923)			64.78S			64.07W			8 M						
Jan	2.3	09	9.6	-1.6	2.6	08	081	1.1	0.43	270	16	983.1	08	998.1	968.4
Feb	1.3	07	7.0	-2.9	3.5	21	084	2.0	0.56	181	19	985.8	07	1002.8	963.6
Mar	-0.1	16	7.0	-3.6	3.9	18	129	0.8	0.22	236	22	980.5	16	997.1	958.3
Apr	-0.9	13	3.1	-4.8	6.1	14	078	2.7	0.44	073	26	981.4	13	1011.2	951.7
May															
Jun	-2.5	42	3.9	-8.2	3.6	42	075	1.3	0.37	284	17	985.3	42	1006.7	955.7
Jul	-4.1	24	0.8	-10.0	4.3	24	147	2.0	0.47	180	22	966.6	24	1001.2	940.4
Aug					4.2	34	096	1.3	0.31	257	20	972.7	34	1002.1	948.7
Sep					6.2	28	160	1.6	0.25	233	24	978.1	28	1009.5	950.4
Oct	-3.3	58	1.8	-10.9	4.3	29	120	1.5	0.34	197	18	966.6	29	996.0	939.8
Nov	-1.4	14	3.8	-7.2	4.0	14	098	2.3	0.58	164	20	969.3	14	1003.5	941.5
Dec	-1.2	07	2.8	-5.9	3.0	07	087	1.6	0.53	049	17	968.1	07	992.5	949.1

Mon	Mean Air Temp (C)	% of Mon Data Abs	Max Air Temp (C)	Min Air Temp (C)	Mean Wind Speed (m/s)	% of Mon Data Abs	Result Wind (dir)	vv	Con	Max Wind (dir)	Mean Air Press (mb)	% of Mon Data Abs	Max Air Press (mb)	Min Air Press (mb)	
Ski-Hi (8917)			74.98S			70.77W			1395 M						
Jan	-4.0	65	5.5	-11.4	4.1	65	043	2.3	0.55	360	19	828.7	65	842.1	821.8
Feb															
Mar															
Apr															
May															
Jun															
Jul	-32.2	65	-21.9	-40.9	5.2	68	009	4.7	0.90	002	16	814.6	65	830.2	799.3
Aug	-35.9	56	-10.8	-50.8	3.6	56	009	3.3	0.91	012	37	820.4	56	834.7	804.8
Sep	-35.9	56	-23.5	-47.5	3.4	64	037	1.8	0.54	360	11	820.6	56	845.8	810.3
Santa Claus Is (21364)			64.96S			65.67W			25 M						
Feb	1.5	05	3.9	-1.2	5.5	05	158	1.9	0.35	132	17	991.0	05	1007.1	966.9
Mar	0.5	05	3.0	-2.2	4.6	05	300	1.7	0.37	299	19	985.6	05	1003.5	963.1
Apr	0.0	05	3.0	-5.4	6.9	05	198	3.6	0.53	198	24	988.0	05	1019.1	959.0
May	-2.5	06	1.1	-9.0	7.2	07	132	5.9	0.82	127	21	997.6	06	1016.0	968.3
Jun	-2.0	07	0.0	-7.4	4.0	41	299	3.0	0.75	303	22	991.0	07	1014.0	960.8
Jul	-3.6	14	0.0	-7.6	8.4	14	300	6.3	0.76	307	25	972.0	14	1005.5	947.7
Aug	-5.0	09	-0.8	-15.0	6.6	09	299	3.8	0.58	309	20	978.8	09	1007.1	955.1
Sep	-6.3	06	0.8	-16.8	6.0	06	265	1.2	0.20	313	18	983.8	06	1016.7	953.9
Oct	-3.0	06	0.9	-12.0	6.1	06	305	3.3	0.54	309	17	974.8	06	1003.4	948.4
Nov	-1.8	09	1.5	-5.5	4.6	09	252	0.8	0.17	319	15	979.2	09	1012.3	949.5
Dec	-0.4	05	2.2	-3.1	3.9	05	277	0.6	0.16	347	12	978.5	05	1002.8	959.6
Clean Air (8987)			90.00S						2835 M						
Jan	-26.2	01	-19.1	-37.0	3.3	02	003	2.9	0.86	032	9	687.1	01	698.5	680.3
Feb	-38.0	01	-26.2	-52.5	3.1	02	041	2.4	0.76	018	9	684.6	01	694.6	675.3
Mar	-53.4	00	-42.4	-63.9	3.6	00	042	3.1	0.87	022	9	678.9	00	687.2	664.7
Apr	-63.1	00	-47.0	-74.2	3.3	00	045	2.6	0.80	015	11	668.9	00	681.6	657.9
May	-59.3	00	-36.4	-76.1	4.4	00	042	2.9	0.67	360	14	675.6	01	685.9	653.6
Jun	-56.4	00	-37.9	-73.4	3.6	00	046	2.5	0.69	360	11	680.6	02	689.5	665.9
Jul	-60.1	00	-45.4	-76.1	4.6	00	038	4.0	0.87	009	15	674.3	00	684.2	659.5
Aug	-63.9	00	-47.4	-74.1	3.6	01	055	3.0	0.83	002	12	673.1	00	683.7	659.8
Sep	-63.7	02	-45.8	-77.1	3.4	03	052	2.9	0.87	016	10	675.7	02	688.1	663.5
Oct	-54.3	00	-38.8	-66.5	3.4	00	051	2.9	0.84	007	11	676.7	03	696.3	662.4
Nov	-36.9	02	-23.6	-48.1	4.9	03	019	4.6	0.94	026	14	678.2	02	691.7	665.5
Dec	-26.8	00	-19.5	-32.8	2.6	00	021	2.1	0.80	009	10	683.8	00	693.1	670.3
MEAN	-50.2				3.7		037	2.9	0.81			677.5			

Mon	Mean Air Temp (C)	% of Mon Data Abs	Max Air Temp (C)	Min Air Temp (C)	Mean Wind Speed (m/s)	% of Mon Data Abs	Result Wind (dir)	vv	Con	Max Wind (dir)	vv	Mean Air Press (mb)	% of Mon Data Abs	Max Air Press (mb)	Min Air Press (mb)
Henry (8985)			89.01S			1.03W			2755 M						
Jan	-25.2	00	-14.8	-35.6	3.8	00	022	3.1	0.81	005	10	696.6	00	708.4	689.5
Feb	-36.1	00	-23.9	-47.8	4.4	00	047	3.9	0.89	023	9	693.8	00	705.2	683.8
Mar	-51.5	00	-39.2	-60.6	4.6	00	045	4.3	0.95	035	11	688.7	00	696.3	675.1
Apr	-60.2	00	-44.9	-71.5	4.7	00	050	4.4	0.92	026	10	678.7	00	691.1	667.7
May	-56.8	00	-34.1	-74.9	5.8	00	047	4.6	0.80	014	13	685.5	00	697.7	662.8
Jun	-54.8	00	-39.2	-68.8	5.1	00	057	4.3	0.83	045	11	690.1	00	699.0	674.6
Jul	-57.4	00	-39.1	-69.2	6.5	00	043	6.2	0.95	025	15	684.2	00	694.2	667.8
Aug	-60.4	00	-45.8	-70.0	6.6	16	047	6.2	0.95	035	12	682.8	00	693.9	668.8
Sep															
Oct	-46.8	50	-34.5	-53.6	6.2	50	047	5.9	0.95	040	12	683.6	50	700.1	671.5
Nov	-35.0	00	-22.9	-45.9	5.1	00	032	4.9	0.97	016	14	688.0	00	702.4	674.6
Dec	-25.0	00	-19.6	-29.2	3.3	00	036	2.8	0.84	033	9	693.0	00	703.4	679.7
MEAN															
Nico (8924)			89.00S			89.67E			2935 M						
Jan	-26.5	00	-18.5	-37.5	3.8	00	260	3.0	0.79	220	9	676.9	00	688.1	670.7
Feb	-37.3	00	-27.2	-49.8	3.6	00	302	2.9	0.80	237	8	674.1	00	684.6	665.0
Mar	-52.2	00	-41.6	-64.1	3.2	00	302	2.8	0.88	285	9	668.4	00	677.1	654.2
Apr	-61.2	00	-47.0	-73.5	2.9	00	306	2.3	0.81	348	11	658.0	00	671.7	647.3
May	-58.3	00	-38.5	-76.2	4.5	02	303	3.1	0.70	234	14	665.0	00	674.6	642.1
Jun	-56.2	00	-36.9	-72.4	3.2	00	314	2.4	0.74	355	11	669.4	00	677.9	654.3
Jul	-58.2	00	-42.8	-75.1	4.0	00	292	3.7	0.90	274	15	663.9	00	673.4	650.0
Aug	-61.7	00	-46.2	-75.4	4.1	04	309	3.7	0.89	260	10	662.4	00	673.0	650.2
Sep	-61.8	00	-46.9	-75.1	3.9	08	304	3.6	0.93	291	10	664.8	00	677.2	652.6
Oct	-52.4	00	-38.5	-65.9	3.7	12	310	3.2	0.86	261	9	666.0	00	685.5	651.8
Nov	-36.4	00	-24.6	-48.2	4.5	00	285	4.1	0.92	270	12	668.4	00	682.2	655.7
Dec	-26.3	00	-19.6	-30.9	2.0	00	282	1.5	0.76	253	7	673.5	00	682.9	660.2
MEAN	-49.0				3.6		298	2.9	0.83			667.6			
Relay Station (8918)			74.02S			43.06E			3353 M						
Jan	-31.9	00	-20.6	-43.4	6.0	00	112	5.6	0.94	106	15	643.2	00	652.1	634.9
Feb	-39.1	01	-25.2	-54.5	6.8	01	118	6.5	0.96	130	17	640.1	01	648.9	633.3
Mar	-50.6	04	-35.4	-62.6	6.3	04	129	6.1	0.97	089	15	636.7	04	647.5	624.3
Apr	-58.9	00	-44.8	-70.6	7.1	00	137	6.2	0.87	088	20	623.8	00	638.1	600.9
May	-54.9	00	-33.6	-65.9	7.6	00	134	6.9	0.91	135	20	635.6	00	649.1	624.6
Jun	-55.6	00	-38.1	-65.0	7.6	00	123	7.2	0.94	079	17	633.6	00	648.3	621.2
Jul	-58.5	00	-35.8	-71.4	8.0	00	123	6.9	0.86	068	20	630.5	00	644.0	616.8
Aug	-58.3	00	-44.6	-67.8	7.7	00	130	7.1	0.93	119	17	629.0	00	644.7	614.9
Sep	-55.7	00	-40.2	-71.4	7.1	00	117	6.4	0.90	112	19	630.7	00	638.5	614.1
Oct	-52.1	01	-36.9	-67.9	7.3	01	120	6.9	0.94	088	19	630.7	01	645.1	617.2
Nov	-36.7	01	-24.8	-55.5	8.7	01	099	8.3	0.95	079	20	636.3	01	645.7	627.7
Dec	-31.7	00	-19.2	-42.1	6.2	00	102	5.7	0.92	126	18	640.1	00	653.7	626.4
MEAN	-48.7				7.2		120	6.5	0.92			634.2			

Mon	Mean Air Temp (C)	% of Mon Data Abs	Max Air Temp (C)	Min Air Temp (C)	Mean Wind Speed (m/s)	% of Mon Data Abs	Result Wind (dir vv) Con	Max Wind (dir vv)	Mean Air Press (mb)	% of Mon Data Abs	Max Air Press (mb)	Min Air Press (mb)			
Dome Fuji (8904)			77.31S				39.70E				3810 M				
Jan	-30.4	54	-16.6	-43.3	3.1	54	331	1.5	0.50	305	12	607.4	54	615.4	597.3
Feb															
Mar	-58.0	34	-43.2	-70.7	3.6	34	293	1.5	0.41	286	25	596.2	34	603.1	589.0
Apr	-65.0	11	-45.2	-75.1	10.7	28	035	4.3	0.40	094	29	586.2	08	599.1	570.4
May	-59.9	26	-38.6	-71.7	5.6	26	309	1.1	0.19	282	45	597.1	26	607.6	585.9
Jun	-60.8	14	-44.5	-72.7	3.9	14	280	1.0	0.26	323	15	596.1	14	609.7	586.1
Jul	-61.4	46	-41.8	-74.2	13.8	46	018	2.4	0.17	296	36	594.4	46	606.3	581.5

4.2. Three Hourly Data Summaries

After the data are received from Service ARGOS, ten minute interval data are created for each AWS unit. The data are calibrated for the individual station instruments, but no other corrections are made. This data set is created for those users who need fairly current information. These data are available by anonymous FTP (see Section 8).

The 10 minute data set for each AWS unit for the month is scanned to pick out the nearest observation within forty minutes of the UTC hours 00, 03, 06, 09, 12, 15, 18, and 21 to produce the three hourly data set. If valid data are not available within forty minutes of the three hourly time interval, then the entry is left blank to indicate missing data. The means, standard deviations, resultant wind speed and direction, the distribution of temperature, and wind speed with wind direction are determined from the three hourly observations and are presented as a monthly summary at the bottom of each page. A wind direction value of zero indicates a wind speed less than 0.50 m s^{-1} . North is indicated by a value of 360 degrees. The maximum and minimum values are taken from the complete 10 minute data set, not the three hourly data set. The appropriate monthly data from the three hourly data set are used for the monthly summaries presented in Section 4.1. In the presence of sunlight the air temperatures are questionable if the wind speed is less than 1 m s^{-1} . These summaries are available by anonymous FTP (see Section 8). If you are unable to access the Internet, we will send the information either on diskettes or paper. Please contact us for further information (the address is at end of Section 8).

5. AWS CALIBRATION

5.1. Temperature

The external and internal temperatures are calibrated using a 1000 ohm 0.05% resistor in place of the platinum resistance thermometers with 1000 ohms resistance at 0°C. Because the other resistances in the temperature circuit are known only to 1%, the temperature calibration will vary from one electronic unit to another. The correction factor determined from the calibration resistor is programmed into the read-only-memories for each unit. After the correction factors have been programmed into the AWS, a calibration box with 0.1% resistors is used to check the temperature calibration.

5.2. Pressure

The atmospheric pressure transducer is a Parascientific model 215A Digiquartz® pressure gauge. The transducer frequency changes from a nominal 40 kHz at zero pressure to a nominal 36 kHz at 1000 hPa. The pressure resolution is about 0.05 hPa.

Paulin aneroid barometers calibrated against a mercury barometer of 10 mm bore are used to check the pressure gauge calibration. Comparisons are made between AWS units, a Parascientific Model 760-16B accurate to +/- 0.1 hPa, and with the mercury barometers at Scott Base, Antarctica. The calibrations should be within +/- 0.2 hPa. Two mercury barometers have been purchased for use at McMurdo, Antarctica but are not yet available.

The reference vacuum on the older pressure transducers can degrade with time with a maximum observed 4 hPa shift to lower pressure after fifteen years. Recalibration of each pressure transducer would be desirable when each unit is serviced.

5.3. Wind direction and Speed

The Belfort model 123 aerovane measures wind direction and speed. The aerovane rotates a potentiometer wiper, and the fraction of full scale of the potentiometer is measured. The wind direction is checked by positioning the aerovane to the cardinal directions relative to the boom supporting the aerovane. North or the potentiometer zero is towards the antenna on the boom and has a maximum dead zone of 3°. During the field installation, the boom is usually aligned along the north-south line as determined from the sun's azimuth, longitude, and Greenwich Mean Time. In some cases the 180° end of the boom may point in a direction other than south. At Manuela site, the 180° end of the boom points up the glacier and a correction is added to the data during processing. At Byrd site the wind is usually out of the north so the boom was rotated 120° and the correction added during the data processing. The wind speed is determined from the aerovane tachometer voltage output as 0.0472 volt per meter per second. The aerovane tachometers are spun at 1800 rpm with a load of 1071.5 ohms, and the output should be 9.20 +/- 0.05 vdc.

Three additional wind sensors were used with AWS units for 1998. These were the Vaisala anemometer model WAA-15, the R.M. Young wind monitor model 05103, and the Hydro-Tech WS-3 rotor anemometer. The Vaisala WAA-15 and the Hydro-Tech WS-3 were used as backup sensors for measuring wind speed in the Adelie Coast area. The WAA-15 is a 3-cup opto-electronic anemometer. When rotating, the anemometer produces a pulsed output that is proportional to the wind speed. Rated accuracy is +/- 2% up to 75 m/s. The pulsed output was input into one of the digital counter channels for 5 seconds. This resulted in a calibration value of .293 m/s/bit. The Hydro-Tech WS-3 is a disk rotor, 3 in. high and 12 in. overall diameter, with radial cups, and the threshold sensitivity is 3 mph. The anemometer utilizes a commercial dc tachometer generator. Output is 0 to +5 vdc (and 0 to 1 ma) over the desired full scale wind speed of 85 m/s. Accuracy is +/- 2%.

The R.M. Young monitor 05103 also used a 10,000 ohm potentiometer with a 3° dead zone so that the wind direction was recorded identically with the Belfort/Bendix aerovanes. The wind speed was from the range of 0 to 1.0 volt full scale corresponding to 50 m/s. Thus the calibration for wind speed was a nominal .195 m/s/bit for the R.M. Young with +/- 1% up to 50 m/s.

5.4. Relative Humidity

The Vaisala HMP-35A/45A humidity sensor output voltage varies linearly with relative humidity (U). The sensor is calibrated by placing it over saturated salt solutions with known relative humidities at room temperature: sodium chloride (U=75%), and lithium chloride (U=12%) are used. In addition, a dry inert gas, forced past the sensor, gives a 0% U, and the sensor output can be zeroed. Then, the gain setting can be set directly using a salt solution with a high relative humidity, such as sodium chloride. The resolution of the humidity sensor is about 1% and the drift is 2 to 3% per year in the field. The relative humidity data are not included on the summary pages but are included in the 3 hourly data sets.

5.5. Vertical Air Temperature Difference

Two junction thermocouples are used to measure the air temperature difference between 3 m and 0.5 m on the tower. The output is about 78 microvolts for 1°C temperature difference between the junctions at 0.0°C, dropping to 60 microvolts at -80°C. Zero output is adjusted to 0.4 volts, so that 0 to 1 volt corresponds to a -6°C to +9°C range of air temperature differences between 3 m and 0.5 m. The resolution is 0.05°C. Calibration of the individual systems is done by applying known voltages to the amplifier input. The vertical temperature difference data are not included on the summary pages but are included in the 3 hourly data sets.

6. AWS OPERATIONS SUMMARY FOR 1998

6.1. AWS Performance

Forty-two AWS units were installed at the start of 1998 and 45 were installed by the end of 1998. Based on the installation months the AWS units delivered 76% of the temperature data, 77% of the pressure data and 62% of the wind data during 1998. Complete data sets were received from 9 AWS units and 26 AWS units operated for the installed period. Fifteen AWS units were not received for one month or more during the year or stopped during the year. Many of the stations were not received during the winter months due to low battery voltage. Some exceptional periods of bad weather during the 1997-1998 austral summer prevented maintenance work including replacing batteries.

The wind system has the poorest performance. If the wind speed is zero or the wind direction is constant for extended periods (days to months) then the data is considered invalid. The reason for this behavior is not known but is believed to be due to the build up of frost on the wind system. This usually occurs in the winter season and at several AWS sites. The wind speed is most frequently zero when the wind direction is constant. Another problem with the wind system involves the tachometer for measuring wind speed. The brushes on the Belfort aerovane quickly wear down and fill the gaps between the contacts with brush material, shorting out the tachometer output. We have begun to install a new wind system manufactured by R.M. Young.

Site	Performance
D-10	New station electronics installed in January. The aerovane was "frozen" occasionally in April through June and August and September. The station transmitted erratically from the end of June through the middle of August. The station stopped transmitting from the middle of August to the middle of December. The station was rebooted and began to transmit again.
D-47	Station reinstalled 5 February. Temperature sensor not functioning. Station stopped transmitting 26 June due to low battery voltage. Station resumed transmitting 29 July and stopped 9 August. Station resumed transmitting 25 August and stopped 15 September. Station resumed transmitting 27 September and stopped 30 December.
Dome C II	OK.

Cape Denison	Sporadic transmission April, May, August, and September. Pressure corrected for high wind speed conditions. Hydro-Tech anemometer continued to function after aerovane failed.
Penguin Point	Repaired and back on the air 21 December. Pressure corrected for high wind speed conditions.
Sutton	Wind speed and direction not functioning properly because the tower may be leaning or have fallen. A Hydro-Tech anemometer is installed instead of a delta-T sensor. Station stopped transmitting 30 April due to low battery voltage. Station resumed transmitting 5 September. Station stopped transmitting again 5 October and resumed 26 November. Station stopped again 19 December.
Byrd	Aerovane not functioning 12 July to 2 August, parts of August and September, the last half of October, most of November and early December.
Elizabeth	Aerovane "frozen" mid May through mid June. Station stopped transmitting 3 August due to low battery voltage and started transmitting again 1 October.
Erin	Aerovane not functioning. Station stopped transmitting 19 July due to low battery voltage and resumed intermittent transmissions in late September as battery recharged in the austral spring.
Theresa	Delta-T sensor buried after 22 February until late November.
Doug	Station started transmitting 11 October. Relative humidity sensor not functioning.
Mount Siple	Site has a "dog house" AWS without wind speed and direction. Pressure sensor not functioning correctly January, February, November, and December.
Siple Dome	Aerovane not functioning or only partially functioning during the colder months. Delta-T sensor not installed.
Swithinbank	Delta-T sensor not functioning.
Marble Point	Station stopped transmitting 31 May due to low battery voltage. Sporadic transmissions August and September. Transmitting with gaps in
November.	
Ferrell	Aerovane "frozen" occasionally May through August. Station stopped transmitting 25 August due to low battery voltage.
Pegasus North	Relative humidity sensor not functioning. Aerovane not functioning until 30 January.
Pegasus South	Relative humidity sensor not functioning. Wind speed not functioning June through December.
Minna Bluff	New AWS installed with high wind unit 26 January. Relative humidity sensor not functioning. Aerovane not functioning from July through December.
Linda	New station electronics installed 15 January. Aerovane occasionally "frozen" May through September.
Willie Field	Station stopped transmitting 16 April due to low battery voltage. Resumed transmitting sporadically during September and the first half of October. Station removed 5 December.
Windless Bight	Station installed 9 December. Relative humidity not functioning.
White Out	Station installed 1 December.
White Island	Station installed 1 December.
Whitlock	Station began transmitting erratically in April and stopped transmitting 10 May due to low battery voltage. Delta-T sensor not functioning.
Scott Island	Site has a "dog house" AWS without wind speed and direction.
Possession Island	Site has a "dog house" AWS without wind speed and direction.
Marilyn	Aerovane "frozen" occasionally April through November.
Schwerdtfeger	Relative humidity sensor stopped functioning in March. It began working again for the first half of June, the first half of October, and most of November and December.
Gill	Relative humidity sensor not functioning. Aerovane not functioning 7 August to beginning of December.

Elaine	Relative humidity sensor worked sporadically throughout the year.
Lettau	Transmitting with gaps in January and February. Transmissions continuous from 18 February to 2 June when the station stopped due to low battery voltage. Station began transmitting again in the second half of October. November and December had many gaps in the transmission.
Manuela	Aerovane broken.
Lynn	Station removed 4 January.
Larsen Ice Shelf	Station stopped transmitting 20 June due to low battery voltage. Station started transmitting again 8 August, although the aerovane was not functioning for most of August through October.
Butler Island	Aerovane not functioning from 10 September to 27 October. Pressure continues to need correction due to the failure of the precision time-based correction to the system clock.
Uranus Glacier	Gaps in transmission in January and February. Station stopped on 4 June due to low battery voltage. Station resumed transmitting 24 August.
Limbart	Aerovane occasionally "frozen" from mid April through mid May and then continuously through most of October. Station stopped transmitting 2 December.
Racer Rock	Station transmission sporadic June through 23 September due to low battery voltage.
Bonaparte Point	Occasional problems with wind direction. Relative humidity sensor not functioning. Station stopped transmitting 6 May due to low battery voltage. Station resumed transmitting 4 June with periodic gaps in the data through October. Temperature not functioning from beginning of August to middle of October.
Ski-Hi	Intermittent data transmissions. No transmissions received for December.
Santa Claus Island	Station electronics repaired in January. Relative humidity sensor not functioning very well. Aerovane "frozen" first week of June.
Clean Air	Occasional problems with relative humidity sensor.
Henry	Aerovane occasionally "frozen" in August. Station stopped transmitting 11 September due to low battery voltage. Station resumed transmitting 16 October as the battery recharged in the austral spring.
Nico	Aerovane occasionally "frozen" August through October.
Relay Station	OK.
Dome Fuji	Transmitted erratically the last half of January and all of February. Began transmitting continuously 11 March with occasional gaps in May, June, and July. Station stopped transmitting 30 July. Station transmitted sporadically in October and December.

6.2. AWS Antarctic Field Activities

Field work in the McMurdo and Ross Ice Shelf areas was performed by Robert Holmes of the University of Wisconsin and John Cassano of the University of Wyoming. Mr. Cassano had made two trips to Antarctica while a graduate student at the University of Wisconsin.

On 5 January 1998 Lynn site was visited by Twin Otter and AWS 8935 was removed. The site has now been abandoned. On 6 January Elaine site was visited by Twin Otter. The aerovane was replaced and the delta-T raised. After a week of bad weather and the absence of the Twin Otter, a Twin Otter flight was made to Schwerdtfeger site on 13 January. The aerovane was replaced and the delta-T raised.

With constant bad weather settling in, operations shifted to the area closer to McMurdo. On 14 January, Willie Field site was visited by Twin Otter van. The CR-10 for the acoustic depth gauge was

removed for upgrading. A test was made of the PICO hand drill. Linda site was visited on 15 January using a USCG helicopter. The electronics and aerovane were replaced with AWS 8919. A return flight on 16 January via a PHI helicopter was made to replace the batteries, solar panel and junction box and to retrieve the old batteries.

After more than a week of bad weather, a Twin Otter flight was made to Gill site on 27 January. The aerovane was changed and the delta-T raised. Minna Bluff site was also visited on 27 January using a USCG helicopter. A new station was installed (AWS 21360) with a high wind speed unit. Pegasus North site was visited using the Twin Otter van on 30 January. The sensor boom, R.M. Young, antenna and batteries were replaced.

Field work in Adelie Land is performed by the Institut Francais Pour la Recherche et la Technologie Polaires (IFRTP). The M/S Astrolabe visited Cape Denison site but was unable to land due to bad weather. The ship also visited Port Martin site and found that the tower was broken and a complete new station was needed. On 28 January a new electronics box was installed at D-10 site, and the tower was raised. On 5 February D-47 site was reinstalled, and the tower raised.

Field work on the Antarctic Peninsula is performed by the British Antarctic Survey. On 18 January, Uranus Glacier site was visited, and the tower raised one section. Ski-Hi site was visited on 28 January, and the batteries were replaced. On 31 January, Limbert site was visited. The tower was raised two sections, and the antenna was replaced. Larsen Ice Shelf site was visited on 1 February. The tower was raised, and it was noted that the site is now 17 km from the ice edge. Finally, Butler Island site was visited on 5 February, and the tower raised one section.

AWS sites near Palmer Station are serviced by the Long Term Ecological Research group and Palmer Station personnel. Bonaparte Point site was visited, and the electronics were repaired.

Austral spring field work in 1998 was performed by C.R. Stearns on board the ice breaker Polar Sea. The first stop was at D-10 site on the Adelie Coast near Dumont D'Urville on 20 December. Visibility was near zero due to fog, and it was not possible to fly to Dumont D'Urville, D-10, Sutton, Port Martin or Cape Denison. The poor visibility was forecast to continue so the decision was made to transit to Cape Webb, arriving there on 21 December. A helicopter flight was made to Penguin point site where AWS 8929 as well as the boom and aerovane were removed. AWS 8910 was installed with a high wind speed and direction system. Two helicopters were loaded for the trip to Cape Webb site. G. Wendler and C. Stearns looked for a new location to place the AWS. The choice was made to locate the unit on the rim of the bowl where the old site was located. The old site was dismantled, but the equipment had sustained heavy damage. The tower had collapsed and was partially buried in the snow covered ice. The antenna end of the boom was buried in the ice along with the electronics box on the underside of the tower and the aerovane tail. Due to the damage to the equipment and the inability to remove any of the chain, it was not possible to install the unit at the new site without going to the icebreaker for the necessary equipment. Contact with the icebreaker revealed that the icebreaker was in fog, and no flights would be able to take off. Battery boxes, tower sections, and the solar panel were left at the new site. Visibility continued to be limited so the cruise continued around the Balleny Islands to head for McMurdo.

In the McMurdo area, SPAWAR personnel removed Willie Field site (AWS 8901) on 4 December. Two new stations were installed by SPAWAR personnel at White Out (AWS 8697) and White Island (AWS 8722) on 1 December.

The British Antarctic Survey also performed some field work during the austral spring. Limbert site was visited on 25 October, and the aerovane was replaced. Uranus Glacier site was raised 2 tower sections on 3 November, a damaged solar panel was replaced, and new connections were made to the cable to the regulator box which is buried in the snow. The aerovane was replaced at Butler Island site on 25 October because the wind direction had jammed due to ice.

Finally, two boxes of three batteries each and battery cables were added to Racer Rock unit on 23

December by Kevin Bliss.

7. GLOBAL TELECOMMUNICATIONS SYSTEM

The data from 35 Antarctic AWS units were entered into the Global Telecommunications System (GTS) during 1998. The data are collected by Service ARGOS. As soon as the data are received, Service ARGOS processes them and sends them on to the National Weather Service which distributes the data to the GTS. The data headers are:

```
SMAA14 KARS YYGGgg  
SIAA14 KARS YYGGgg  
SNAA14 KARS YYGGgg
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where S indicates surface, M is main observations (at 00, 06, 12, and 18 UT), I is intermediate observations (at 03, 09, 15, and 21 UT), and N is any other time. AA14 is for Antarctica, and KARS stands for the Largo receiving center (backup is LFPW for the center in Toulouse, France). YY indicates the day in the month, GG is the hour, and gg is the minutes. Table 3.1 contains the WMO identification number used by the GTS grouped according to their purpose and proximity where possible.

The University of Wisconsin-Madison is responsible for obtaining WMO numbers for AWS sites and for providing Service ARGOS with calibration information for processing the data. The main reason for getting the AWS data into the GTS is to make sure that the data are available in near real time for all organizations operating in Antarctica.

8. DATA AVAILABILITY

The data from our Automatic Weather Stations are available by anonymous FTP. The IP address and domain name are 128.104.109.33 (ice.ssec.wisc.edu). The login is "anonymous" (do not use the quotation marks), and the password is your email address. Once you have logged in, change to the pub subdirectory. A listing of our station locations, names, and ARGOS ID numbers is located in the file "biglist" in this subdirectory. It is meant to serve as a guide to our stations as their ID numbers sometimes change. A complete guide for navigating the site may be found in the file "readme.faq".

Our three-hourly interval data for Antarctica in ASCII text format are contained in the year subdirectories of pub/antrdr. The data have been corrected, i.e. an effort has been made to remove the bad data points. These data take longer to process, so the data for recent months are not available in this format. Within each of the year subdirectories of pub/antrdr, there are text files named "3hrlist??" (where ?? indicates the last two digits of the year). These files list what station's data are contained in which files. The files "readme.updates?" in pub/antrdr contain information on updates and/or corrections to the data, and the file "readme.3format" contains file name construction information and format of the three-hourly data. The file "readme.mailinglist" contains information on joining a mailing list which distributes information on data updates and changes. To subscribe, send email to aws@ssec.wisc.edu with the subject line left blank. In the message body, type "subscribe three yourname@email.address" (do not use quotation marks) and substitute your own email address for "yourname@email.address".

The directory pub/summary/monthly contains ASCII printable text files of the paper data summary sheets. The format of the files can be found in the file "readme.sum" while updates and corrections to the data are located in "readme.sumupdates". The data are located in year subdirectories of pub/summary/monthly.

For those users who need more current information, we have created 10 minute interval data in ASCII text format for each station. These data are located in year subdirectories of pub/10min/rdr. The data have been calibrated for the individual station instruments, but no other corrections have been made. The data are generally available up to and including the last full month of this year. The year subdirectories also contain a text file named "namelist??" (where ?? indicates the last two digits of the year in question). These files list what station's data are contained in which files.

Several important readme files are located in pub/10min/rdr. The file "readme.5digit" contains information on the Siple Coast stations which have a different station identification. The file "readme.format" contains information on filename construction of the data, as well as file content, and is a must for those unfamiliar with the data. The files "readme.updates?" contain important information on changes/additions to the data, and the file "readme.mailinglist" contains information on joining a mailing list to receive notification by email of data changes and updates. To subscribe, send email to aws@ssec.wisc.edu with the subject line left blank. In the message body, type "subscribe ant yourname@email.address" (do not use quotation marks) and substitute your own email address for "yourname@email.address".

Our site is available 24 hours a day, 7 days a week. If you have questions or problems, send email to aws@ssec.wisc.edu. We can also be reached by phone at (608) 265-4816 or fax at (608) 262-5947. By mail, please contact:

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