Antarctic Automatic Weather Station Field Report: 1995-1996

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The National Science Foundation's Office of Polar Programs places automatic weather station (AWS) units in remote areas in Antarctica in support of meteorological research, applications, and operations. (See Figures 1-5.) The basic AWS units measure air temperature, wind speed, and wind direction at a nominal height of 3 meters above the surface. Air pressure is measured at the height of the electronics enclosure. Some units measure relative humidity at 3 meters above the surface and the air temperature difference between 3 meters and 0.5 meters above the surface at the time of installation. The data are collected by the ARGOS Data Collection System on board the National Oceanic and Atmospheric Administration series of polar-orbiting satellites.

Tables 1 and 2 give the AWS unit's site name, ARGOS identification number, latitude, longitude, elevation above sea level, site start date, and WMO number for the Global Telecommunications System for AWS units in operation in 1996. The AWS units are grouped together based on the area and are usually related to a single meteorological experiment.

The AWS units are located in arrays for meteorological experiments and at other sites for operational purposes. Any one AWS may contribute to several experiments and all contribute to operational purposes, especially for preparing weather forecasts for aircraft flights to and from New Zealand and within Antarctica.

Some of the areas supported are:

a. Barrier wind flow along the Antarctic Peninsula and the Transantarctic Mountains;
b. Katabatic wind flow down Reeves Glacier, Byrd Glacier, Beardmore Glacier, Siple Coast, and the slope to the Adelie Coast;
c. Mesoscale circulation and the sensible and latent heat fluxes on the Ross Ice Shelf;
d. Climatology of Byrd and Dome C stations;
e. Meteorological support around the South Pole;
f. Research in Antarctic Coastal Ecosystem Rates (RACER) along the Antarctic Peninsula;
g. Long Term Ecological Research (LTER) along the Antarctic Peninsula;
h. Meteorological support for flight operations at McMurdo, Antarctica;

The automatic weather station data are available at 3-hour intervals on floppy disks starting in 1980. The yearly data books prior to 1994 contain 3-hourly data and monthly summaries. The AWS data are also available via

anonymous ftp on the Internet.

The 1995-1996 Antarctic field season began on 2 November, 1995 when G. A. Weidner and R. E. Holmes left Madison, Wisconsin for McMurdo Station, Antarctica, arriving on 6 November 1995.

A Twin Otter flight was made to Sandra AWS site on 8 November. The unit was completely removed and AWS 8923 was returned to McMurdo to be repaired and redeployed at another site. A Twin Otter flight was made on 9 November to Gill AWS site. Unfortunately, the site could not be located. The flight continued to Schwerdtfeger AWS site. One 1.5 m tower section was added and AWS 8913 was removed and returned to McMurdo to be repaired.

Weather prevented aircraft operations until 14 November, when a Twin Otter flight to Elaine site was made. The aerovane was stuck in one direction because of a build up of ice. The aerovane was replaced with a Belfort aerovane. Two boxes of three gel-cell batteries were installed, and the lower delta-T sensor was unburied and raised to a height of 0.7 meters above the snow.

Pegasus North AWS site was visited by snowmobile on 17 November 1995. Two boxes of three gel-cell batteries were installed. On 18 November, an NSFA helicopter flight was made to Linda AWS site. A Bendix aerovane was installed. Upon return to the lab, it was discovered that the aerovane removed from Linda AWS site was in good working order. Therefore, the problem with the wind direction at Linda site was not the aerovane, but rather some other component. Weather prevented our scheduled return to Linda AWS site on 21, 22, and 23 November. On 24 November, an NSFA helicopter flight was made to Linda AWS site. AWS 8915 was removed and replaced with AWS 8909. A new 0.9 m boom was installed along with a new lower delta-T unit. The height of the lower delta-T unit was 1.1 m above the snow surface.

Willie Field AWS site was visited by truck on 27 November, 1995. Two boxes of three gel-cell batteries were installed and the station was raised by one 1.8 m tower section. The Ultrasonic Depth Gauge (UDG) data were downloaded from the CR-10 data logger, and the UDG sensor was raised to a height of 1.36 m. The lower delta-T unit was raised to a height of 1.1 m.

G.A. Weidner and R.E. Holmes left McMurdo Station to return to Madison, WI on 30 November.

On 16 December, Dr. Charles Stearns and Jonathan Thom left Madison, WI for the USCG Polar Star in Hobart Tasmania, arriving there on 18 December. The Polar Star left Hobart on 20 December. Two dog house units were assembled for deployment on Young and Scott Islands. The dog house units did not function properly. AWS 8980 transmitted abnormally and no air pressure data was transmitted by 8983, so the trips to the islands had to be canceled. On 25 December 1995 a USCG helicopter flight was made to D-10 where AWS 8914 was removed and returned to the ship to be repaired. A second flight was made to D-10 and AWS 21364 was installed as well as a new 0.8 m boom equipped with vertical temperature difference and relative humidity sensors. The 1/8 in diameter antenna was replaced with a 1/4 in diameter antenna. On the return

flight a search was made for Sutton site but it could not be located. A flight was then made to Port Martin site. The tower was leaning and one guy cable was broken. A new guy cable was installed after returning from the Polar Star. The return flight stopped at Cape Denison and the unit was found to be in good working order.

A USCG helicopter flight was made to Cape Webb on 26 December. The power supply was disconnected and then reconnected and the station began to cycle normally. A search for a more suitable site for the AWS was done by air but a better site was not located. A USCG helicopter flight was made to Penguin Point. As with Cape Webb, the power supply was disconnected and then reconnected and the station began to cycle normally. The 1/8 in diameter antenna was replaced with a 1/4 in diameter antenna.

On 28 December, Greig Thompson left Madison, WI for McMurdo Station, arriving there on 4 January, 1996. Stearns and Thom arrived at McMurdo on 6 January. Unfortunately, two of the AWS units that had been left in the lab in McMurdo were not functioning normally when they arrived, limiting the resources thought available for use on the Siple Coast array and the Ross Ice Shelf. AWS 21356 was transmitting abnormally and AWS 8938 had a problem with the pressure data when the unit was placed in the enclosure. The pressure sensor functioned normally outside of the enclosure.

On 16 January, Stearns, Thompson and Thom left McMurdo Station for Up Stream Bravo. On 17 January, a Twin Otter flight was made to Elizabeth site and AWS 21356 was removed and replaced with new 21361 electronics. The antenna cable did not have the shield soldered to the TNC connector. The aerovane was replaced with a Bendix aerovane and the antenna cable was replaced with one that had the shield soldered to the TNC connector.

On 18 January a Twin Otter flight was made to J.C. site. The power supply was disconnected and then reconnected and the unit began to cycle normally. The malfunctioning wind direction was not checked because of the high wind speed at the time of the site visit. The flight continued on to Erin site, where the antenna cable was replaced with one that had the shield soldered to the TNC connector, but the unit still did not transmit. Because of limited resources, the electronics were not replaced at that time and the party returned to Up Stream Bravo. A Twin Otter flight was made to Theresa site. One battery box was not connected to the junction box. The power supply was disconnected and then reconnected and the station began to cycle normally. A second flight to Erin site was then made and AWS 21361 was replaced with 21363. A Belfort aerovane was also installed.

On 19 January, Stearns, Thom, and Thompson returned to McMurdo Station by LC-130.

The two AWS units that were returned to McMurdo from Up Stream Bravo did not have the antenna shield soldered to the connectors. All possible antenna connectors inside and external to the AWS electronics were examined and the shields soldered to the connectors.

On 23 January a Twin Otter flight was made to Marilyn site. The site was

raised by clamping two 1.8 m Rohn tower sections to the exposed 2.0 m of Tri-ex tower using two sets of mounting bars. Three nylon rope guys were added as well. Two boxes of three gel-cell batteries were installed as well as a new power junction box and a new solar panel. The boom is now 3.8 m above the snow surface. The 1/8 in diameter antenna was replaced with a 1/4 in diameter one. On 24 January a Twin Otter flight was made to Gill site and the site was raised in a similar fashion as that at Marilyn.

A Twin Otter flight was made to Schwerdtfeger site on 27 January and AWS 8913 was installed. A Bendix aerovane was installed as well as 2 boxes of three gel-cell batteries and new battery cables.

Using parts from those AWS units returned from Up Stream Bravo, AWS units 8980 and 8983 were repaired. Crew members of the USCG Polar Star installed a dog house AWS 8980 at Young Island. Dog house AWS 8983 was not installed at Scott Island because of fog. AWS 8983 will be returned to Seattle and transferred to the Polar Sea for installation at Scott Island during the next field season.

On the Antarctic Peninsula, members of the British Antarctic Survey raised the AWS unit at Uranus Glacier on 28 November and installed AWS 8925 at Limbert site on the Ronnie Ice Shelf on 30 November. On 10 December, Ski Hi site was visited and the station was in good working order and did not need to be raised. Members of the Long Term Ecological Research group replaced the batteries at Bonaparte Point AWS site on 14 January and installed a sea-water temperature probe at Santa Clause Island AWS site on 13 February. The sea-water temperature probe did not function properly (see Appendix A).

Members of Programma Nazionale di Ricerche in Antartide at Terra Nova Bay installed a Belfort aerovane at Manuela site. The aerovane was delivered to them by the Polar Star on the refueling trip for the base.

Members of Institut Francais pour la Recherche et la Technologie Polaires (IFRTP) installed AWS 8989 at Dome-C II on 12 December. On 15 December, Dome-C AWS unit was disconnected from the Radioactive Thermonuclear Generator and was connected to batteries. The station ran for approximately 18 days before the batteries were drained of power. AWS 8904 operated flawlessly from 13 January 1983 until 2 January 1996. AWS 8919 was removed from D-80 and AWS 8916 was installed at D-80 on 24 January. In early February, AWS 21360 was installed at D-57 and AWS 8986 was installed at D-47. Also, AWS 31264 was inadvertency removed from D-10 on 21 January. The replacement unit, AWS 8919, is currently not working.

Plans for next field season are to service sites as necessary that are accessible from McMurdo Station. Three units will be installed for meteorological support for McMurdo Station. They will be deployed near Cape Crozier, at Cape Bird, near the Ross Ice Shelf edge, and on the Byrd Glacier névé (Table 3). A dog house unit (AWS 8983) is planned for Scott Island.

Units in West Antarctica will be serviced from Siple Dome and two additional units will be installed. One unit will be deployed at Siple Dome in support of the ice coring and one unit will be deployed at 81.20°S 126.10°W

completing the network for the study of the katabatic flow down the slope along the Siple Coast. The Siple Dome AWS unit will have a snow temperature profile to a depth of 10 m. An acoustic depth gauge will be installed with the data being recorded through a Campbell Scientific CR-10 with a memory module.

Three AWS sites will be serviced from South Pole Station. Clean Air site will be moved approximately two miles from its current location, along the edge of the clean air sector, and a snow temperature profile to a depth of 16 m will be installed. Henry and Nico sites will be raised.

Bonaparte Point, Santa Clause Island, and Racer Rock sites will be serviced by University of Wisconsin personnel from Palmer Station depending on the availability of sufficient ship time for transportation from Punta Arenas to the three sites. The water temperature probes leaked and the connectors on the AWS units are failing due to salt corrosion. Connectors are being purchased that are supposed to resist salt corrosion at a cost of $4,000. AWS systems equipped with the corrosion resistant connectors will be sent to the Antarctica Peninsula for installation when ship time is available.

Additional plans for 1996-1997 include the inclusion of the meteorological data obtained from the six Automatic Geophysical Observatories (AGO) in Antarctica (Table 4). This will include processing the data and making it easily accessible via anonymous ftp. The data will also be entered into the GTS via Service ARGOS.

C.R. Stearns will need to make a trip on the ice breaker along the Adelie Coast. Two AWS units are not transmitting and two units do not have the wind speed operating. As these sites are very windy there are sure to be other problems before the ice breaker arrives at the coast. The HydroTech wind speed systems installed two years ago are operating satisfactorily at sites where the primary wind speed system has failed. The goal is to install the HydroTech wind speed system at all the sites along the Adelie Coast and at Manuela site in Terra Nova Bay.

We were assisted in Antarctica by Jonathan Thom and Greig Thompson of the Department of Atmospheric and Oceanic Sciences, University of Wisconsin, NSFA-Meteorology, and by the crews of the Twin Otters, LC-130s, NSFA helicopters, USCG helicopters, and the USCG Polar Star. The AWS program is supported by National Science Foundation grant OPP 9419128.

Table 1. The 1996 Antarctic automatic weather station site name, ARGOS identification number, latitude, longitude, altitude above sea level, site start date and WMO number for the Global Telecommunications System. Sites with three digits after the decimal point in the latitude and longitude were located using the ARGOS positions for a three day period.

Site	ARGOS ID	Lat. (deg)	Long. (deg)	Alt. (m)	Date Start	WMO#
Adelie Coast						
D-10	#8919	66.71°S	139.83°E	243	Jan 80	89832
D-47	#8986	67.397°S	138.726°E	1560	Nov 82	89834
D-57	#21360	68.199°S	137.538°E	2105	Jan 96	
D-80	#8916	70.040°S	134.878°E	2500	Jan 83	89836
Dome C II*	8989	75.121°S	123.374°E	3250	Dec 95	89828
Port Martin	8930	66.82°S	141.40°E	39	Jan 90	
Cape Denison	8907	67.009°S	142.664°E	31	Jan 90	
Penguin Point	8929	67.617°S	146.180°E	30	Dec 93	89847
Sutton	8939	67.08°S	141.37°E	871	Dec 94	
Cape Webb	8933	67.934°S	146.824°E	37	Dec 94	
West Antarctica						
Byrd Station	8903	80.007°S	119.404°W	1530	Feb 80	89324
Brianna	21362	83.887°S	134.145°W	549	Nov 94	
Elizabeth	#21361	82.606°S	137.082°W	549	Nov 94	89332
J.C.	21357	85.070°S	135.516°W	549	Nov 94	
Erin	#21363	84.901°S	128.810°W	1006	Nov 94	
Harry	21355	83.003°S	121.393°W	945	Nov 94	
Theresa	21358	84.599°S	115.811°W	1463	Nov 94	89314
Doug	21359	82.315°S	113.240°W	1433	Nov 94	
Mount Siple	8981	73.198°S	127.052°W	230	Feb 92	89327
Ross Island Region						
Marble Point	8906	77.439°S	163.759°E	120	Feb 80	89866
Ferrell	8934	77.928°S	170.820°E	45	Dec 80	89872
Pegasus North	8927	77.952°S	166.505°E	10	Jan 90	89667
Pegasus South	8937	77.990°S	166.576°E	10	Jan 91	
Minna Bluff	8988	78.554°S	166.656°E	920	Jan 91	89768
Linda	#8909	78.480°S	168.375°E	50	Jan 91	89769
Willie Field	8901	77.865°S	167.017°E	40	Jan 92	
Ocean Islands						
Whitlock	8921	76.144°S	168.392°E	274	Jan 82	89865
Scott Island	8983	67.37°S	179.97°W	30	Dec 87	89371
Young Island	8980	66.229°S	162.275°E	30	Jan 91	89660
Possession Island	8984	71.891°S	171.210°E	30	Dec 92	89879
Ross Ice Shelf						
Marilyn	8931	79.954°S	165.130°E	75	Jan 84	89869
Schwerdtfeger	8913	79.904°S	169.973°E	60	Jan 85	89868
Gill	8911	79.985°S	178.611°W	55	Jan 85	89376
Elaine	8900	83.134°S	174.169°E	60	Jan 86	89873
Lettau	8908	82.518°S	174.452°W	55	Jan 86	89377
Reeves Glacier						
Manuela	8905	74.946°S	163.687°E	80	Feb 84	89864
Lynn	8935	74.207°S	160.409°E	1772	Jan 88	89860
Antarctic Peninsula						
Larsen Ice	8926	66.949°S	60.914°W	17	Oct 85	89262
Butler Island	8902	72.207°S	60.171°W	91	Mar 86	89266
Uranus	8920	71.43°S	68.93°W	780	Mar 86	89264
Limbert*	8925	75.422°S	59.948°W	40	Dec 95	
Racer Rock	8947	64.067°S	61.613°W	17	Nov 89	89261
Bonaparte Point	8912	64.778°S	64.067°W	8	Jan 92	89269
AGO-A84*	8932	84.36°S	23.86°W	2103	Jan 96	
Ski-Hi	8917	74.975°S	70.766°W	1395	Feb 94	89272
Santa Claus I	8910	64.964°S	65.670°W	25	Dec 94	
High Polar Plateau						
Clean Air	8987	90.00°S		2835	Jan 86	89208
Henry	8985	89.011°S	1.025°W	2755	Jan 93	89108
Nico	8924	89.000°S	89.669°E	2935	Jan 93	89799
Relay Station	8918	74.017°S	43.062°E	3353	Feb 95	89744
Dome Fuji	8982	77.31°S	39.70°E	3810	Feb 95	89734

* New locations for 1996

CRS, 9 May 1996

New ARGOS ID for 1996 at the site

Table 2. Antarctic automatic weather station locations for 1996 including the ARGOS ID and WMO#. The AWS units are in the order of the ARGOS ID. Sites with three digits after the decimal point in the latitude and longitude were located using the ARGOS positions for a three day period.

Site	ARGO ID	Lat. (deg)	Long. (deg)	Alt. (m)	Date Start	WMO#
Elaine	8900	83.134°S	174.169°E	60	Jan 86	89873
Willie Field	8901	77.865°S	167.017°E	40	Jan 92	
Butler Island	8902	72.207°S	60.171°W	91	Mar 86	89266
Byrd Station	8903	80.007°S	119.404°W	1530	Feb 80	89324
Not Active	8904	o	o			
Manuela	8905	74.946°S	163.687°E	80	Feb 84	89864
Marble Point	8906	77.439°S	163.759°E	120	Feb 80	89866
Cape Denison	8907	67.009°S	142.664°E	31	Jan 90	
Lettau	8908	82.518°S	174.452°W	55	Jan 86	89377
Linda	#8909	78.480°S	168.375°E	50	Jan 91	89769
Santa Claus I	8910	64.964°S	65.670°W	25	Dec 94	
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Bonaparte Point	8912	64.778°S	64.067°W	8	Jan 92	89269
Schwerdtfeger	8913	79.904°S	169.973°E	60	Jan 85	89868
Not Active	8914	o	o			
Not Active	8915	o	o			
D-80	#8916	70.040°S	134.878°E	2500	Jan 83	89836
Ski-Hi	8917	74.975°S	70.766°W	1395	Feb 94	89272
Relay Station	8918	74.017°S	43.062°E	3353	Feb 95	89744
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Uranus	8920	71.43°S	68.93°W	780	Mar 86	89264
Whitlock	8921	76.144°S	168.392°E	274	Jan 82	89865
	8922		Kenton, Greenland			
Not Active	8923	o	o			
Nico	8924	89.000°S	89.669°E	2935	Jan 93	89799
Limbert*	8925	75.422°S	59.948°W	40	Dec 95	
Larsen Ice	8926	66.949°S	60.914°W	17	Oct 85	89262
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	8928		Barber, Greenland			
Penguin Point	8929	67.617°S	146.180°E	30	Dec 93	89847
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Ferrell	8934	77.928°S	170.820°E	45	Dec 80	89872
Lynn	8935	74.207°S	160.409°E	1772	Jan 88	89860
	8936		GISP2 Greenland			
Pegasus South	8937	77.990°S	166.576°E	10	Jan 91	
Not Active	8938	o	o			
Sutton	8939	67.08°S	141.37°E	871	Dec 94	
Racer Rock	8947	64.067°S	61.613°W	17	Nov 89	89261
Young Is.	8980	66.229°S	162.275°E	30	Jan 91	89660
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Dome Fuji	8982	77.31°S	39.70°E	3810	Feb 95	89734
Scott Island	8983	67.37°S	179.97°W	30	Dec 87	89371
Possession Is.	8984	71.891°S	171.210°E	30	Dec 92	89879
Henry	8985	89.011°S	1.025°W	2755	Jan 93	89108
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Clean Air	8987	90.00°S		2835	Jan 86	89208
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Dome C II*	8989	75.121°S	123.374°E	3250	Dec 95	89828
Harry	21355	83.003°S	121.393°W	945	Nov 94	
Not Active	21356	o	o			
J.C.	21357	85.070°S	135.516°W	549	Nov 94	
Theresa	21358	84.599°S	115.811°W	1463	Nov 94	89314
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D-57	#21360	68.199°S	137.538°E	2105	Jan 96	
Elizabeth	#21361	82.606°S	137.082°W	549	Nov 94	89332
Brianna	21362	83.887°S	134.145°W	549	Nov 94	
Erin	#21363	84.901°S	128.810°W	1006	Nov 94	
Not Active	21364	o	o			

* New Sites

New ARGOS ID for 1996

Table 3. AWS units planned for installation during the 1996-1997 field season.

Site	Lat.	Lon.
Cape Crozier	77.55°S	174.46°E
Ross Ice Shelf	77.80°S	175.00°E
Cape Bird	77.20°S	166.70°E
Siple Coast	81.20°S	126.10°W
Byrd Névé	80.50°S	152.00°E
Siple Dome	81.65°S	148.81°W

Table 4. The 1996 AGO sites; ARGOS identification number, latitude, longitude and altitude above sea level.

Site	ARGOS ID	Lat.	Lon.	Alt.
AGO-1	20655	83.86°S	129.61°E	2865 m
AGO-2	08073	85.67°S	313.62°E	1860 m
AGO-3	20654	82.76°S	28.58°E	2912 m
AGO-4	08864	82.01°S	96.76°E	3565 m
AGO-5	26620	77.23°S	123.50°E	3084 m
AGO-6	26621	69.51°S	130.01°E	2560 m

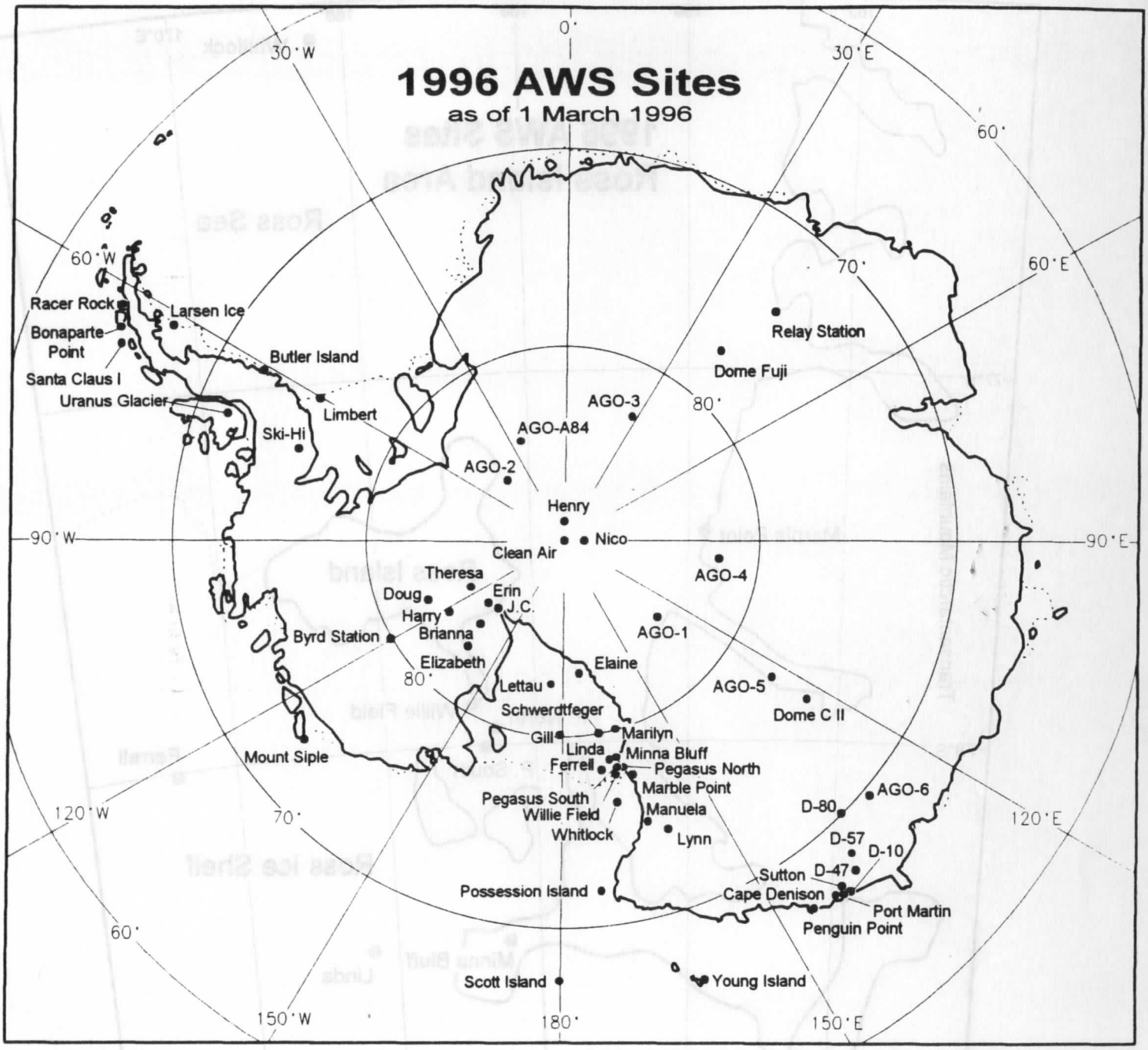

Figure 1. Map of Antarctica showing the locations of widely spaced automatic weather stations for 1996. The locations of the AGO sites are included but are not a part of the AAWS program.

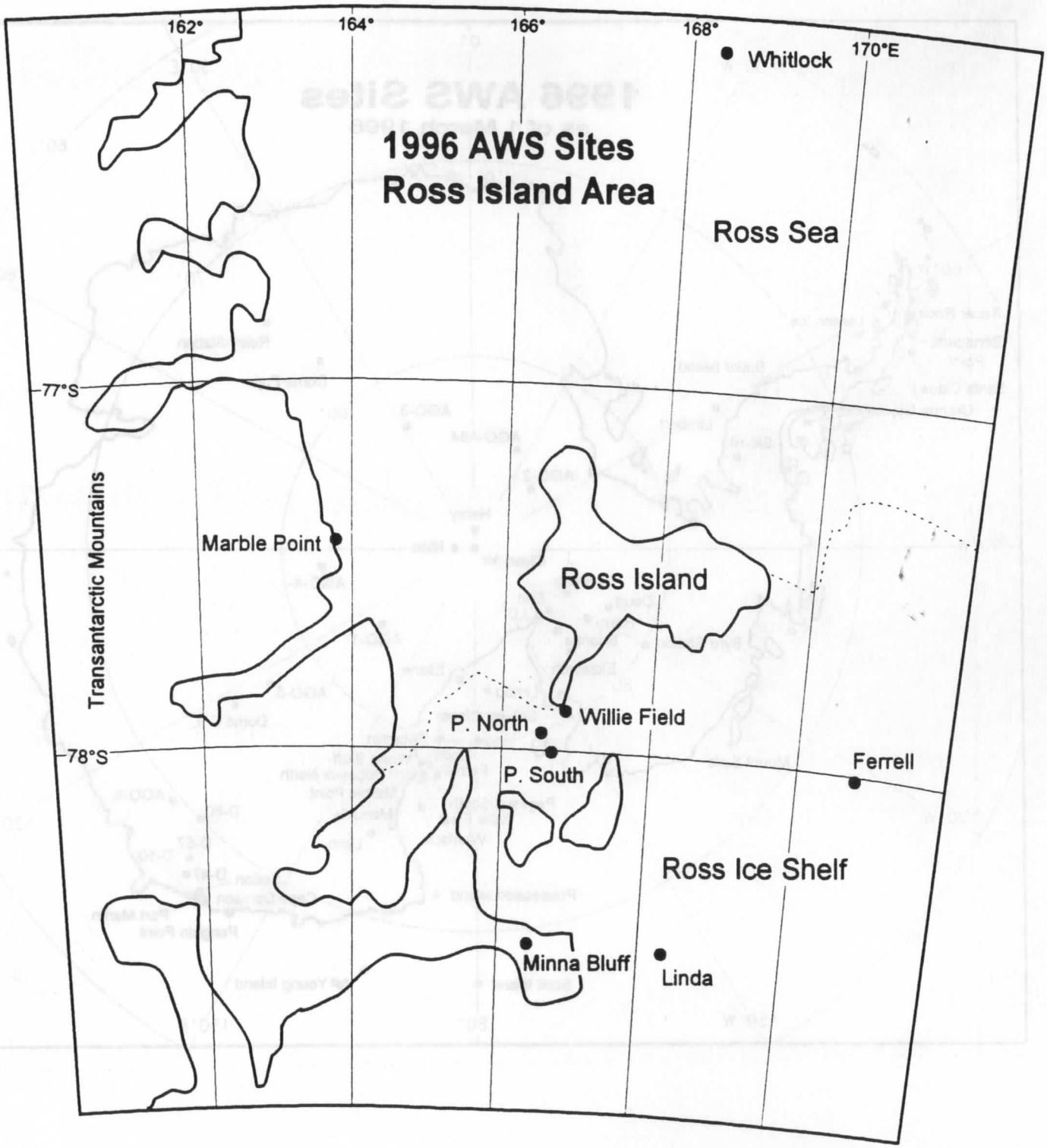

Figure 2. Location map of the automatic weather stations in the Ross Island vicinity for 1996.

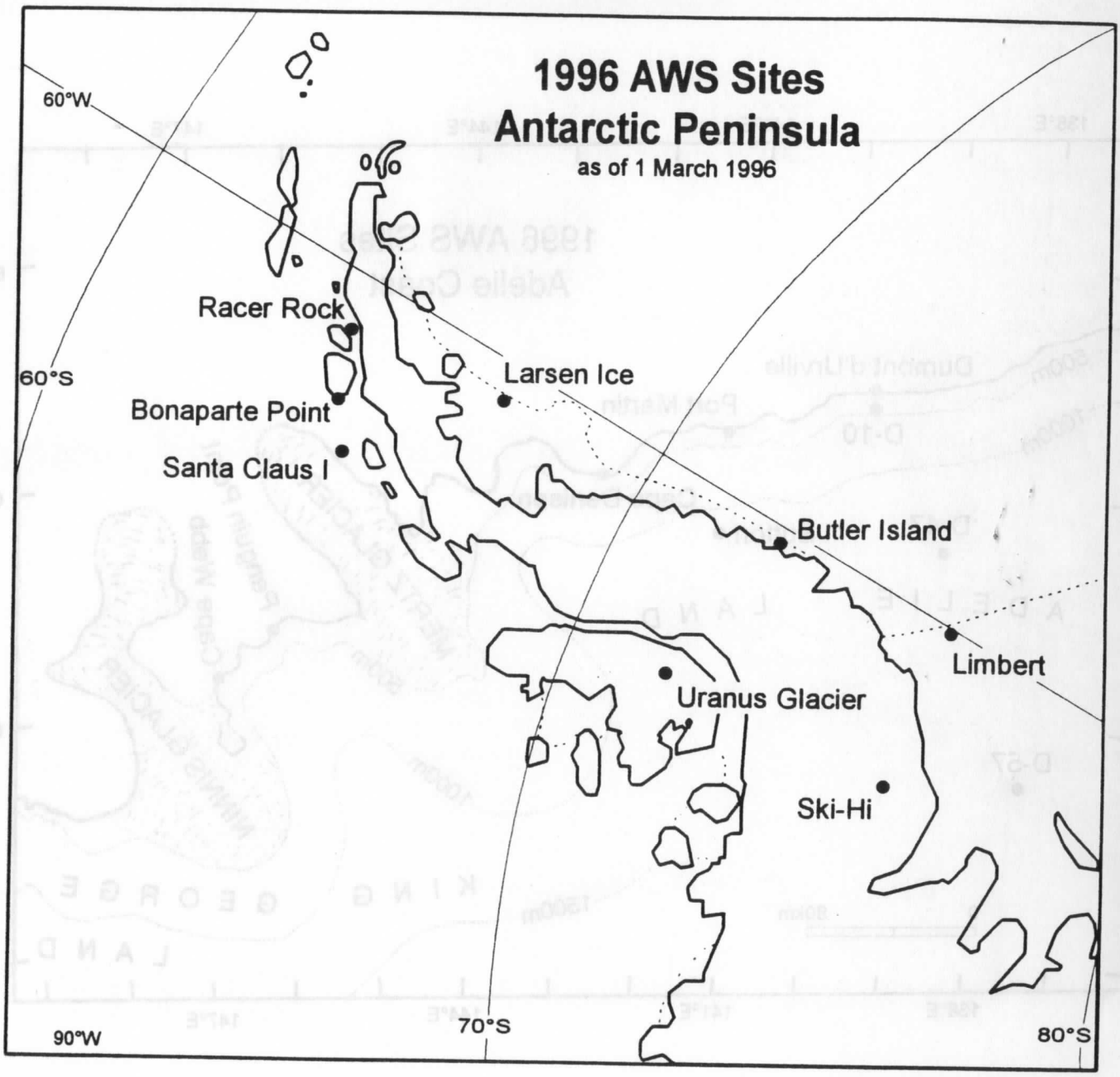

Figure 3. Location map of the automatic weather stations in the Antarctic Peninsula region for 1996.

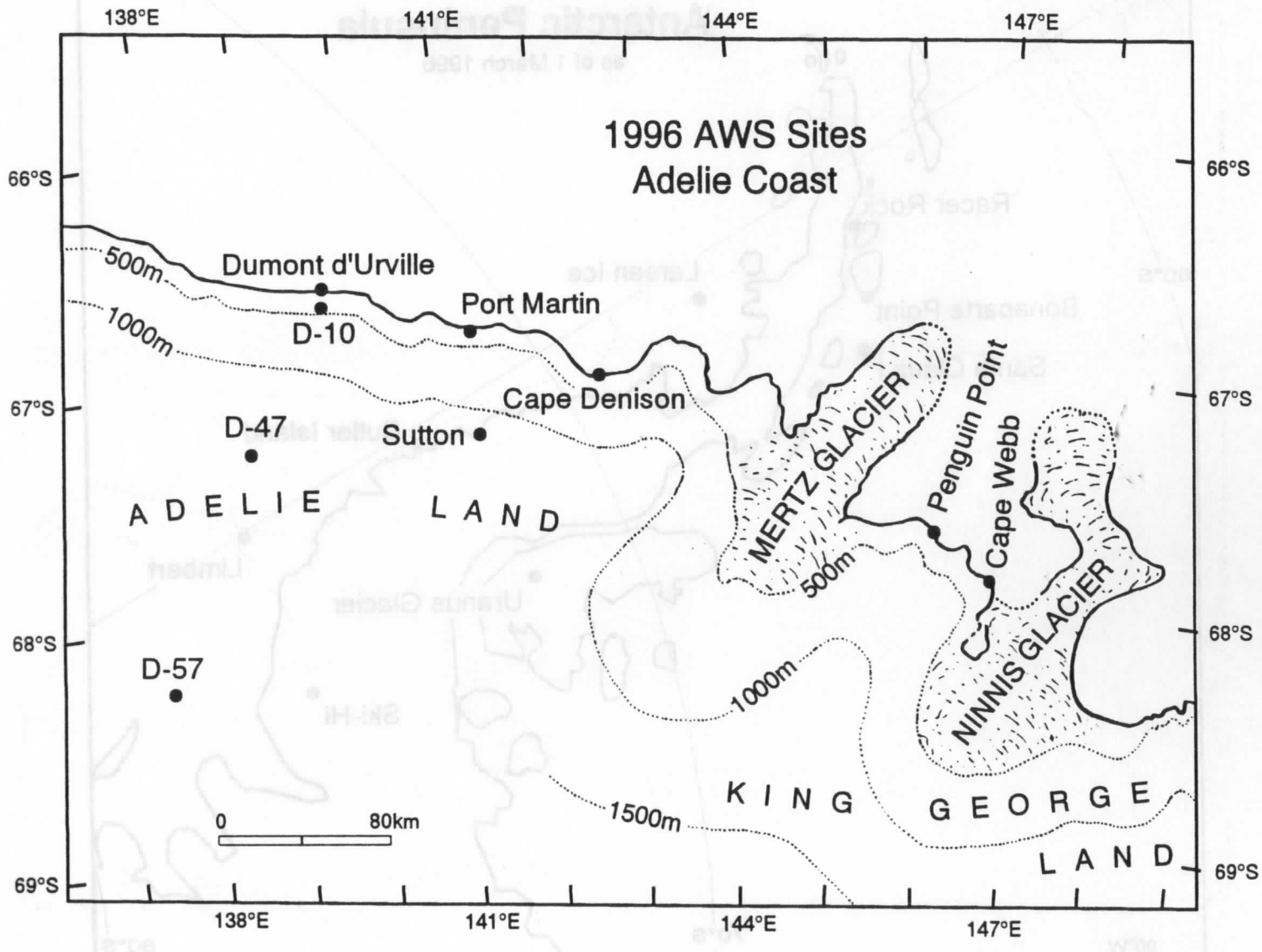

Figure 4. Location map of the automatic weather stations along the Adelie Coast for 1996.

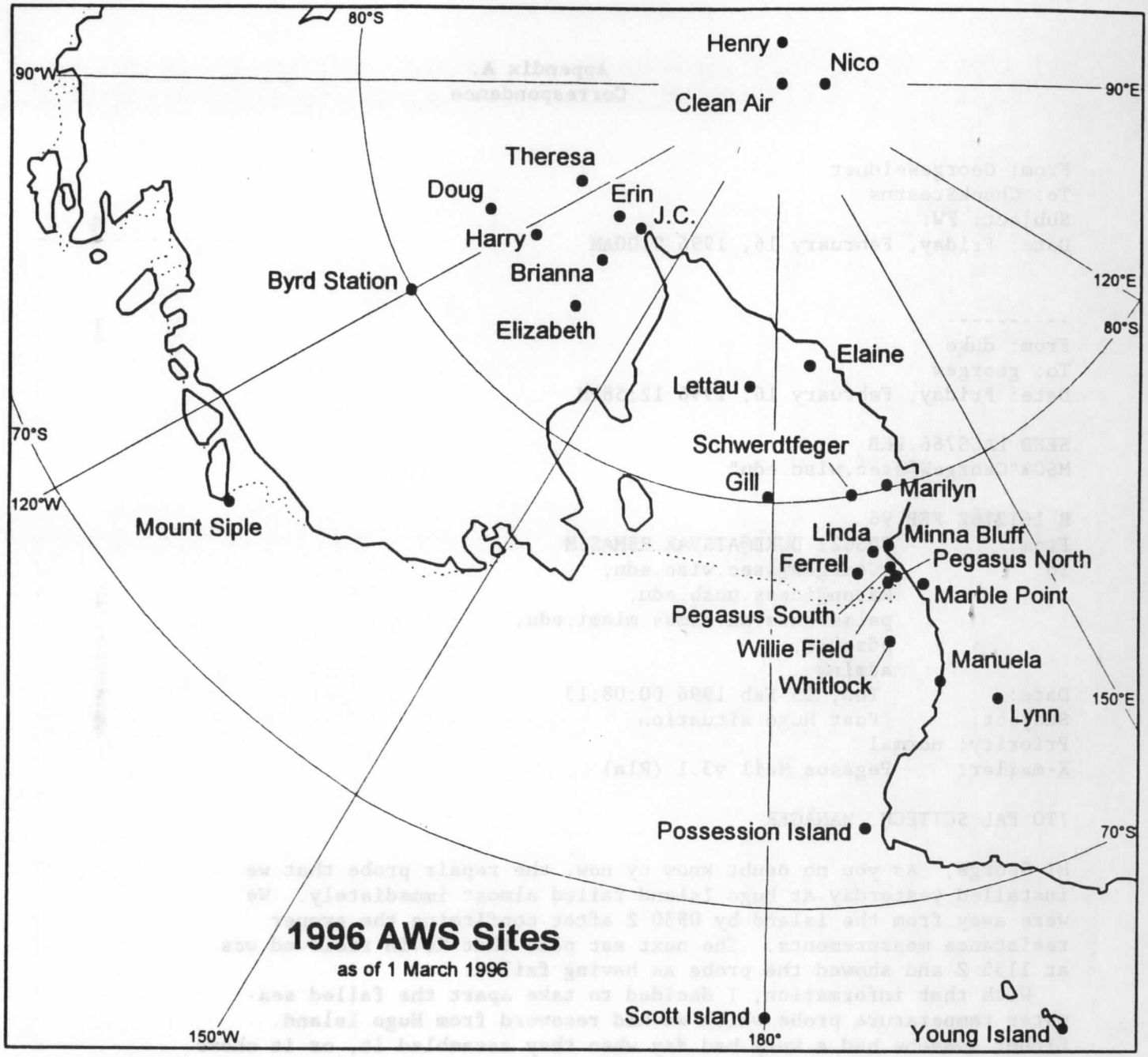

Figure 5. Location map of the automatic weather stations in West Antarctica, on the Ross Ice Shelf, near Ross Island, and those on ocean islands for 1996.

Appendix A.
Correspondence

From: GeorgeWeidner
To: ChuckStearns
Subject: FW:
Date: Friday, February 16, 1996 9:00AM

From: duke
To: georgew
Date: Friday, February 16, 1996 12:58PM

SEND LACS766.FEB
MSG%"GeorgeW@ssec.wisc.edu"

R 161216Z FEB 96
From: PDSC21.DUKE@ATSVAX.RSMAS.M
To: GeorgeW@ssec.wisc.edu,
karen@icess.ucsb.edu,
palmer@atsvax.rsmas.miami.edu,
pdsc01@,
admin@
Date: Thu, 15 Feb 1996 00:08:13
Subject: Post Hugo situation
Priority: normal
X-mailer: Pegasus Mail v3.1 (R1a)

!TO PAL SCITECH, MANAGER

Hi George, As you no doubt know by now, the repair probe that we installed yesterday at Hugo Island failed almost immediately. We were away from the island by 0930 Z after confirming the proper resistance measurements. The next sat pass that Kevin recieved was at 1135 Z and showed the probe as having failed.

With that information, I decided to take apart the failed sea-water temperature probe which we had recoverd from Hugo Island. Either someone had a very bad day when they assembled it, or it shows extremely poor design. There was not even any Teflon tape between the stainless pipe nipple on the back of the commercial temperature probe and the stainless coupling that is meant to protect the electrical connections. The plastic pass-thru threaded into the other end of the pipe coupling did not mechanically compress onto the rubber wire leading from the probe. The rubber insulated wire was soldered to the thin leads from the platinum probe and then the probe was screwed into the coupling, resulting in about 15 twists in this delicate pair of wires. The assembly should have held the cable from twisting while the packing gland was tightened. The blob of silicon

glue that was supposed to provide insulation for the electrical connections had adheared to the rubber wire and plastic pass through but not to the stainless coupling.

The net result of this littany of problems was that despite the shallow depth of 2 meters, salt water rapidly entered the probe (probably both at the stainless threads with no Teflon tape and at the oversized packing gland.) Water easily penetrated to the solder connections on both wires, thus providing a sea-water resistive path in parallel to the platinum one. Such a path tends to polarize and change resistance with time of power application so the number of seconds of applied power before the resistance measurement was made would affect the indicated resistance.

With the proper splicing equipment it is trivial to make waterproof splices (I made one with just heat-shrink tubing and a dime store hot-glue gun that functioned to 2 miles deep in these same ice cold waters.)

Now it appears that the replacement probe has likely failed in the same manner. We were dogged in our mania to get back to Hugo Island to correct what we thought was OUR screw up on the initial installation (greatly contributed to by the total lack of documentation or instructions for installation.) Now when we think of all the man hours and ship time (at about $15,000 per day) spent we are not happy campers!

I attempted to clean up the saltwater corrosion to the electrical connections to see if the probe would return to its specifications of 1000 ohms at 0 deg C. It appears that either salt water has wicked down the lead wires into the resistive element or that there is some physical damage because the probe is still reading low and is changing many ohms as power is left applied to it. I don't think that such a time dependent resistance pattern is an acceptable operating condition.

The remaining probes are at Palmer Station so I am not able to determine whether the others are equally unsuitable for their intended application. I suppose that I could have been more thourough in my inspection of the probes, but one tends to have a confidence that an item that you are asked to assist in deploying has been quality tested prior to shipment. This confidence has been erroded several times in my dealings with the AWS systems. It now appears that all connectors should be changed to types suitable for a marine environment. The blob of RTV glue on the back of each Amphenol connector is not providing sufficient protection at Bonoparte Point.

I will make no predictions as to when another attempt will be made to replace the second faulty sea water probe at Hugo. It probably will not be before next year, and onlyy if a suitable replacement probe is provided along with evidence of testing and documentation on correct performance and installation.

Dave Menzies

From: GeorgeWeidner
To: ChuckStearns
Subject: FW:
Date: Monday, February 19, 1996 11:33AM

From: duke
To: georgew
Date: Friday, February 16, 1996 9:24PM

SEND LACS832.FEB
MSG%"georgew@ssec.wisc.edu"

R 162118Z FEB 96
From: PDSC01.DUKE@ATSVAX.RSMAS.M
To: ADMIN@,
karen@icess.ucsb.edu,
georgew@ssec.wisc.edu,
ppenhale@nsf.gov,
alsuther@nsf.gov,
shephedo.asa@asa.org,
mcwillda.asa@asa.org,
ray@icess.ucsb.edu
Date: Fri, 16 Feb 1996 13:44:09
Subject: AWS at Hugo Island
Priority: normal
X-mailer: Pegasus Mail v3.1 (R1a)

Karen, please forward this letter to Dr. Stearns. We do not have his e-mail address on board. Thank you, Maria

Dear Dr. Stearns,

I hope this letter finds you well and that the trip to McMurdo was a fruitful one. I would also like to thank you for sending the new AWS system from McMurdo to Palmer to replace the failing system at Bonaparte Point.

I am writing to you as the Chief Scientist of the LTER 1996 cruise to let you know that I am very disappointed about the quality of the instrumentation, service and support of the AWS station at Hugo Island by your group. As you may know from the e-mail exchange between David Menzies and George Weidner we went 5 times to Hugo Island during our 33-day cruise on January/February 1996. Two trips were unsuccessful due to bad weather. During the other three trips we were able to land and work on the system. If we have had all the right documentation, information on the testing procedures, and high quality instrumentation, only one of those trips would have been necessary.

Five trips to Hugo Island in one month is a huge effort on our part, both in terms of time and money. It takes 5 hours steaming from Palmer Station to Hugo Island. Every trip took an average 13 to 15 hours of valuable shiptime. We in the LTER program are committed to support and service those AWS at Racer Rock, Bonaparte and Hugo Island to the best of our ability but I feel that in this case our good faith has been abused. It was my decision to go so many times to Hugo Island during this cruise and I stand by it. I was interested in having the best quality meteorological data and committed to provide the best service. Our work and the success of our mission was impaired by the lack of support from the University of Wisconsin. Every pertinent information was obtained after the fact. To make matters worse, the two underwater temperature sensors installed during this period seemed to have failed a few hours after being in the water. Have these sensors even been tested before sending them to the field? As of today, and after the 5 trips to Hugo Island, we still do not have underwater temperature data for Hugo Island and will not have another oportunity to install one until the next season (96/97).

In order to be successful in the future we need from you:

- instruments with full documentation on installation, testing and trouble shooting

- instruments that have been tested

- improvements on the standard AWS systems to adapt to marine conditions

I look forward to hearing from you on how to implement a plan which would ensure stable systems, good quality data and a more efficient use of our time in servicing and maintaing the AWS stations on the Western Coast of the Antarctic Peninsula.

Sincerely,

Maria Vernet
Chief Scientist
e-mail: mvernet@ucsd.edu

TO: Maria Vernet

DATE: 02-19-96
TIME: 13:36

CC: bernielettau
ChuckStearns

karenbaker

SUBJECT: Hugo Island AWS
PRIORITY:
ATTACHMENTS:

Dear Dr. Vernet:

I am sorry that you are disappointed in the quality of the instrumentation, service, and support of the AWS station at Hugo Island. You are not as sorry as I am because to support your request other parts of my AWS program may suffer.

The AWS program is a meteorological research program based on acquiring automatic weather station data in remote areas of Antarctica. There is cooperation between five other countries and about 100 other researchers. We are not equipped to operate as a service program nor do we necessarily have time to test or document every request for support beyond our own records. We have not been directly funded for the Hugo Island AWS. We did it because I felt that it was important for LTER to have the best possible meteorological data. I am the one who suggested measuring the water temperature. Perhaps I made a mistake.

We would like the return of all available equipment as soon as possible so that we can carry out the three items which you have suggested in your E mail to me dated 16 February 96. The return should be through Lee DeGalon. We do not have the funds to purchase new equipment to send south before we have the old equipment returned. Please let me know by return message when the equipment can be returned to the University of Wisconsin. The address is

Prof. Charles R. Stearns
1225 W. Dayton St.
Madison, Wisconsin 53706

Professor Charles R. Stearns "chucks@ssec.wisc.edu"

Return-Path: <command@polarstar.org>
X-Sender: command@polarstar.org (Unverified)
Message-Id: <v01530508ad7a66df5cb4@[204.157.98.79]>
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
Date: Sun, 24 Mar 1996 05:59:11 -1000
To: ChuckS@ssec.wisc.edu
From: crew@polarstar.org (USCGC Polar Star (WAGB-10))
Subject: Young Is

Dr. Sterns,

Hello from Suva, Fiji. Sorry I didn't get back to you sooner, but I know you don't read your E-Mail anyway.

The trip to Young Is was like going down memory lane. About the only

difference from 5 years ago was that we approached the island from the east instead of the west side. The visibility was relatively poor and we were coming through pack ice. About 6 miles out I could start to make out the island and by 4 or 5 could see your rock. It was pretty neat for me since I was the only one on the ship who had any idea where this thing was going to go. The ship came within about 2 miles of the east side of the island and we launched. Again it was just like 5 years ago with the threatening weather. Snow was to the south of us and a squall ended up separating us from the rock and the ship. I had Pat Monarch fly it from the right seat. It carried about as badly as the last time so that we flew about 30-40 kts the entire way. It was really turbulent around the north end and we could see the wind dropping off the north side of the island. It was actually more turbulent than the first time because this time it even affected the rock. Pat did a great job at holding it steady for the flight mech, Jerry Jones. He lowered slowly and had to lift it for a couple secs so the doghouse could turn enough to have the solar panel to the north. It worked out fine. Needless to say the old one was there in perfectly good condition. I could tell the wood had weathered a bit, but that was it. They are almost side by side now. You've probably got room for another two. I have it on video and still so will send you a copy of the still. The video is possible too if you would like.

It was fun and I'm glad it worked out. Sorry we couldn't stick around Scott to get that one on. The seas weren't too good and as you know the island is so small there was no real lee to put the ship in to get calmer waters. I was ready to give it a shot and the fog moved in very quickly so the Capt said we were out of there. Maybe we will get it done from the Sea this next Deep Freeze.

It was nice to work with you again and hope to see you this winter.

Alda