

# AWS Field Season Report 2022-23

Field Team A: Taylor Norton and Angie Montgomery

Field Team B: Lee Welhouse

1. 14 Nov. – **Phoenix (99615)** Swapped Argos for Iridium modem and updated program; forgot to change header along with the program
2. 16 Nov. – **Cape Hallett (99602)** Found station tipped over from snapped guy wire; many damages to multiple sensors, still running, not transmitting; left it tipped over
3. 17 Nov. – **Vito (8931)** Raised with 7' section, broke power cable
4. 19 Nov. – **Emilia (8939)** Raised power system to surface; power cycled station
5. 24 Nov. – **Alexander Tall Tower! (99601)** Raised power system and two booms
6. 25 Nov. – **Lorne (99612)** Raised power system, enclosure and solar panel
7. 30 Nov. – **Margaret (8910)** Raised with 5' section
8. 2 Dec. – **Laurie II (21360)** Raised power system, enclosure and solar panel
9. 7 Dec. – **Ferrell (8947)** Raised with 5' and 3' tower sections
10. 17 Dec. – **Alexander Tall Tower! (99601)** Completed full instrument raise and removed flowcapt sensors
11. 20 Dec. – **Windless Bight (99611)** Reset internal clock and inspected station
12. 22 Dec. – **Vito (8931)** Finalized raise
13. 22 Dec. – **Minna Bluff (99606)** Recovered high wind speed sensor
14. 23 Dec. - **Laurie II (21360)** Replaced damaged wind sensor
15. 23 Dec. – **White Island (99610)** Attempted install of high wind speed sensor and station inspection
16. 05 Jan. – **Cape Bird (99609)** Station inspection
17. 07 Jan. – **Phoenix (8908)** Finalized Iridium swap
18. 07 Jan. – **Sarah (99613)** Recovered PCWS enclosure
19. 07 Jan. – **Willie Field (99607)** Inspected station
20. 10 Jan. – **Linda (99603)** Raise power system and lower temperature
21. 10 Jan. – **Minna Bluff (99606)** Replace High Wind Speed Sensor and rewire
22. 10 Jan. – **White Island (99610)** Rewire High Wind Speed Sensor

**11/14/22: Truck to Phoenix (PHX) AWS**

Purpose: Swap Argos for Iridium modem and update program

Pax: Taylor, Angie

1430: Depart McMurdo

1520: Arrive PHX

Wx Conditions: Sunny, single digits (F), light winds

Instrument heights:

Enclosure: 31"

Lower temperature: 36"

Relative Humidity: 106"

Upper temperature: 125"

Wind: 157"

We swapped out the Argos modem for an Iridium one. We updated the program on the datalogger to accompany it. Unfortunately, we forgot to also change the header, so it was not working properly. Lee Welhouse and Niko Bayou returned on January 7<sup>th</sup>. The antenna was replaced and the installation was completed.

Argos ID: 8908 -> Iridium ID: 99615

1640: Depart PHX

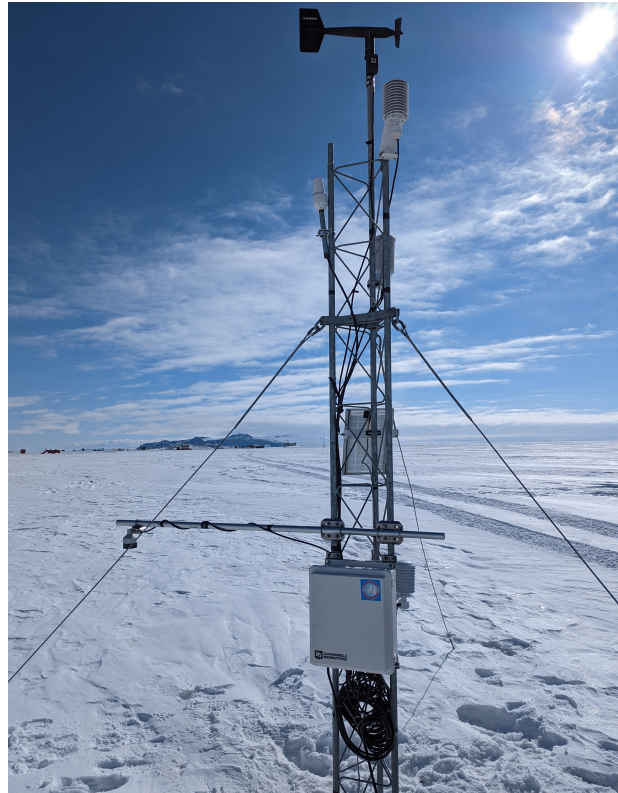
1720: Arrive MCM

**Pictures taken:**

Before



After



## **11/16/22: Otter to Cape Hallett (CHA) AWS**

Purpose: Swap Iridium modem and update program, swap batteries in power system

CKB: Lauren and Shawn

Pax: Taylor, Angie, 4 kiwis (Craig Cary, Doug Henderson, etc...)

0855: Depart Willie Field

1140: Picked up 4 kiwis near Cape Hallett

1230: Arrive CHA

Wx Conditions: Sunny, single digits (F), light winds and later a few clouds started creeping in and a bit stronger wind

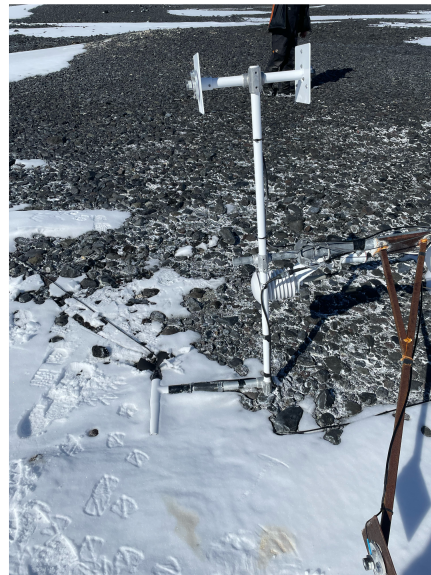
We came up to the station knocked over on its side with many damages including a snapped guy wire. We removed the wind sensor as it was missing a tail and two sections of the impellor. The radiation sensor had been snapped and left hanging by the cable so we removed that as well. We dug out some of the loose cabling/sensors in the snow that got pulled out, dug out the battery boxes a bit to move them and tilt the station upright. We opened the enclosure and noticed the modem connection was broken (likely hence the transmissions stopping as the antenna was not broken). We powered off and on the station and then tested to see if it would run, which it did. We pulled the data card, but it was decided there was too much damage to bother with the swaps planned as the station will need to be fully replaced another time. We also decided that it was best to lay the station back on its side since we had no way to securely tie it back down and wanted to prevent more damages in the future.

1600: Depart CHA

1800: Depart Mario Zucchelli (MZS)

1925: Arrive Willie Field

### **Pictures taken: Damaged station**



**11/16/22: Otter to Vito (VTO) AWS**

Purpose: Raise with 7' tower section

CKB: Lauren and Shawn

Pax: Taylor, Angie

0850: Depart Willie Field

1045: Arrive VTO

Coordinates (from pilots): 78° 20.91 S, 177° 52.66 E

Wx Conditions: Sunny, -15F and 10 knot winds to start, dropped to -22F and same if not stronger winds

Instrument heights before (after):

Enclosure: under surface (42")

Relative Humidity: 63" (176")

Upper temperature: 63" (176")

Wind: 88" (188")

Antenna (top): 38" (100")

We dug out the power system, but in unplugging the station to move the box we broke the power cable to the enclosure. Both cable connections were strained to begin with as well, solar panel cord may need to be replaced. Checked battery voltages – they were above 13 V. We were able to raise the station with a 7' tower section and the instruments. With no new power cable, station was left not transmitting.

1845: Depart VTO

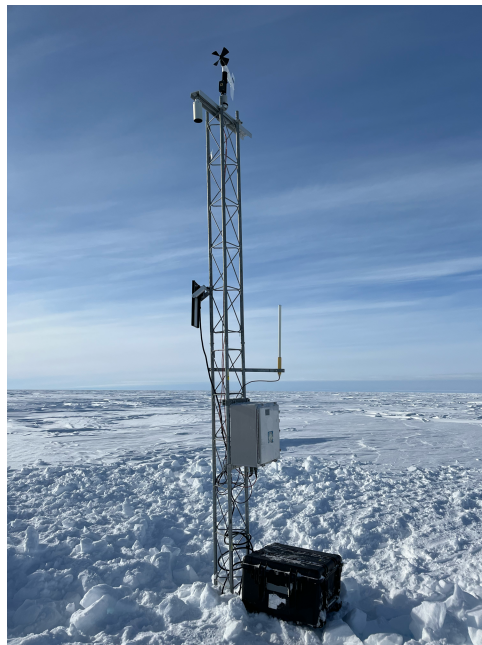
2000: Arrive Willie Field

**Pictures taken:**

Before



After



**11/19/22: Otter to Emilia (EML) AWS**

Purpose: Power cycle, if that fails, replace enclosure

CKB: Troy and Mckayla

Pax: Taylor, Angie, Kyle (KBA flight steward)

0845: Depart Willie Field

0930: Arrive EML

Coordinates (from pilots): 78° 22.60 S, 173° 13.46 E

Wx Conditions: Sunny, -17C, light winds

Instrument heights before:

Enclosure: 62"

Relative Humidity: 164"

Upper temperature: 164"

Wind: 180"

Solar panel (bottom): 88"

We dug out the power system, and then unplugged to power cycle. This worked and the station started to transmit data. Checked battery voltages – they were above 13 V.

1050: Depart EML

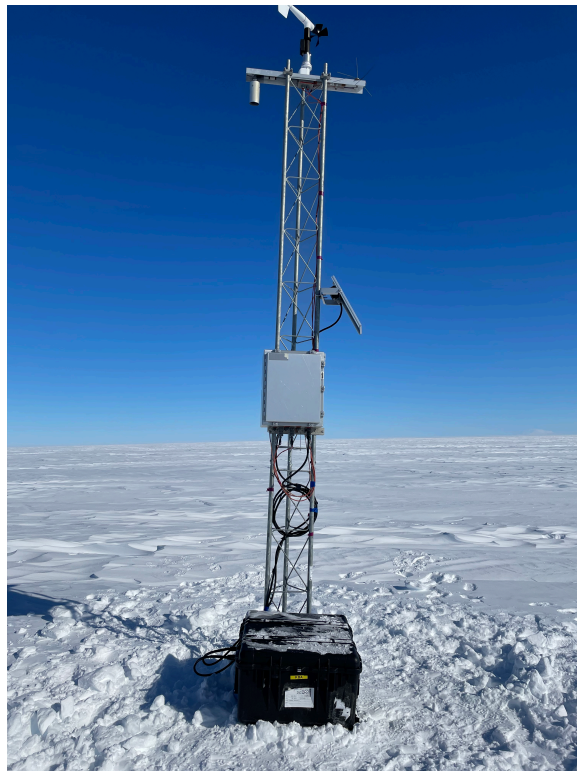
1140: Arrive Willie Field

**Pictures taken:**

Before



After



## **11/24/22: Otter to Alexander Tall Tower! (ATT) AWS**

Purpose: Raise station, replace radiation mount

CKB: Troy and McKayla, Lauren and Shawn

Pax: Taylor, Angie, Erika Schreiber, and riggers (Matt Burkley, Geoffrey DeLaune, Will Jasinevicius, Gabriel Menkhus, Otto Neumuth, Zac Schroeder)

0900: Depart Willie Field

0945: Arrive ATT

Coordinates (from pilots): 78° 58.7200' S, 170° 47.6200' E

Wx Conditions: Mostly sunny, single digits (F), ~15 knot winds switching to almost no wind in the latter half of the day

Instrument heights before:

Level 4 boom: 74”

We dug out the power system for TT! and then worked on getting UNAVCO's cases raised. Checked our battery voltages – they were 12-13 V. The riggers were able to raise the highest and 3<sup>rd</sup> highest boom. The radiation mount was not compatible, so it was not replaced. The GPS and wind sensor were left unplugged. Tower was transmitting.

1655: Depart ATT

1735: Arrive Willie Field

### **Pictures taken:**

Before



After



## **11/25/22: Helo to Lorne (LOR) AWS**

Purpose: Raise

Helo Pilot: Ryan

Pax: Taylor, Angie

0825: Depart McMurdo

0900: Arrive LOR

Coordinates (from pilot): 78° 9.702 S, 170° 2.489' E

Wx Conditions: Partly cloudy (high clouds above us), -8C, under 10 knot winds, briefly picked up around when we left

Instrument heights before (after):

Enclosure: 23" (69")

Relative Humidity: 109"

Upper temperature: 113"

Wind: 39"

ADG: 49"

Solar panel: (64")

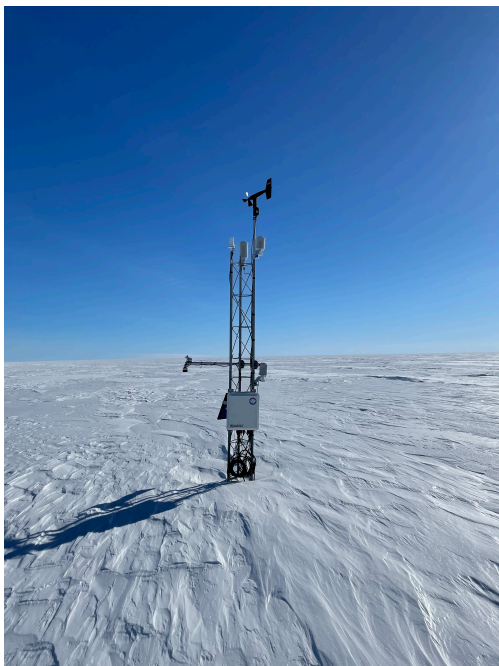
We dug out the power system and raised it to the surface (~6 ft deep). Checked battery voltages – they were above 13 V. We raised the enclosure and the solar panel since we ran out of time and couldn't do a full raise. Tower was transmitting.

1345: Depart LOR

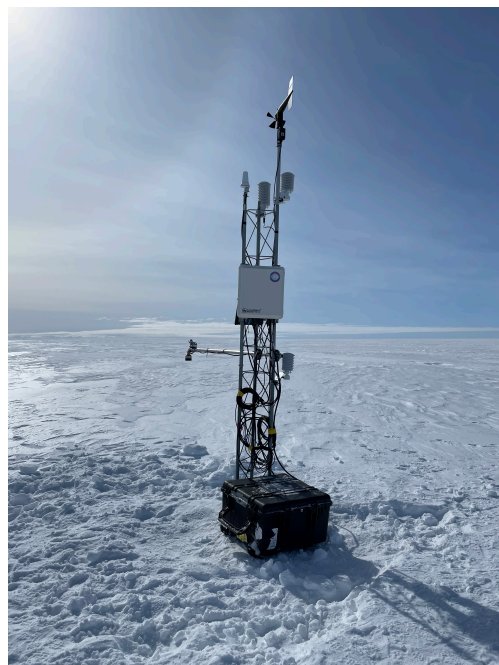
1425: Arrive McMurdo

### **Pictures taken:**

Before



After



**11/30/22: Otter to Margaret (MAR) AWS**

Purpose: Raise station

CKB: Lauren and Shawn

Pax: Taylor, Angie, Dan Ascik, Chris Polich

0910: Depart Willie Field

1135: Arrive MAR

Coordinates (from pilots): 79° 57.6900' S, 165° 11.7300' W

Wx Conditions: Mostly sunny, single digits (F), ~10 knot winds, increasing a bit at the end of the visit

Instrument heights before (after):

Enclosure: 42" (79")

Relative Humidity: 115" (175")

Upper temperature: 115" (175")

Lower temperature: 1" (61")

Wind: 131" (191")

ADG: -1" (56")

Solar panel: 66" (86")

Antenna: (126")

We dug out the power system for Margaret and it was about 6 feet deep. Checked battery voltages – they were above 13 V. We then raised the tower with a 5-foot tower section and replaced instruments at higher heights. Tower was transmitting.

1620: Depart MAR

1655: Arrive fuel cache

1730: Depart fuel cache

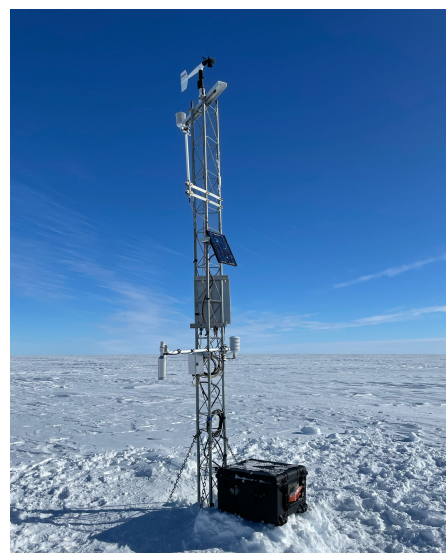
1957: Arrive Willie Field

**Pictures taken:**

Before



After





**12/2/22: Helo to Laurie II (LR2) AWS**

Purpose: Raise station

Helo Pilot: Ryan

Pax: Taylor, Angie, Ema Mayo

0835: Depart McMurdo

0905: Arrive LR2

Coordinates (from pilot): 77° 24.0458' S, 170° 43.1593' E

Wx Conditions: Mostly sunny, ~15F, light winds (~5kts)

Instrument heights before (after):

Enclosure: 44" (75")

Relative Humidity: 168"

Upper temperature: 160"

Wind: 188"

Solar panel: 84" (133")

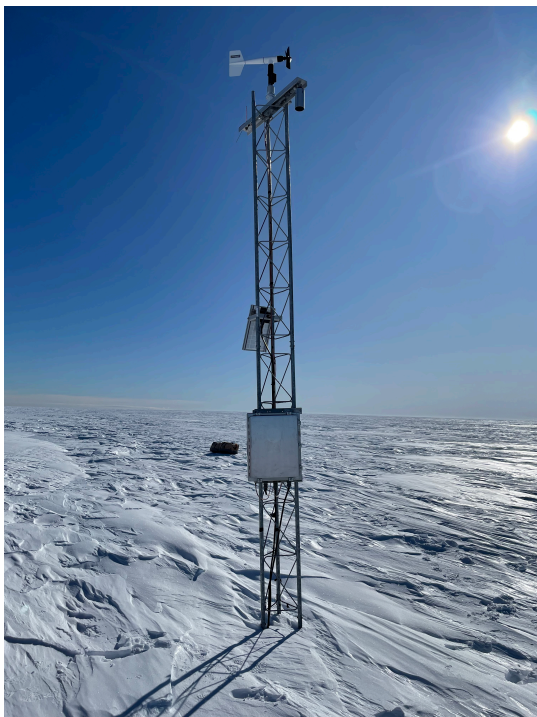
We dug out the power system and raised it to the surface (~5 ft deep). Checked battery voltages – they were above 13 V. We raised the enclosure and the solar panel. Tower was transmitting.

1355: Depart LR2

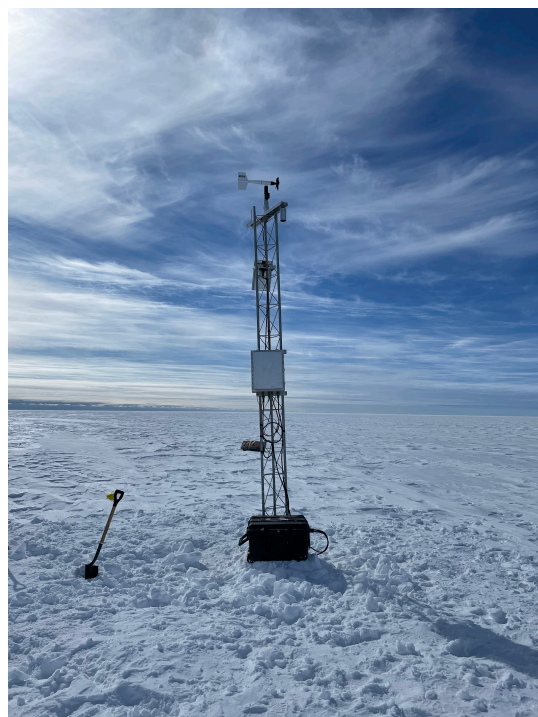
1435: Arrive McMurdo

**Pictures taken:**

Before



After



**12/2/22: Helo to Ferrell (FER) AWS**

Purpose: Raise station

Helo Pilot: George, Jay

Pax: Taylor, Angie, Hannah, Jason

0900: Depart McMurdo

0955: Arrive FER

Coordinates (from pilot): 77° 45.574' S, 170° 48.737' E

Wx Conditions: Mostly sunny, 20F, wind speed 18 kts for the first half, 10 kts second half

Instrument heights before (after):

Enclosure: 19" (86")

Relative Humidity: 74" (166")

Upper temperature: 74" (166")

Wind: 103" (198")

Solar panel: 39" (130")

ADG: 10" (74")

Lower temperature: 0" (72")

We dug out the power system and raised it to the surface (~6.5 ft deep). Checked battery voltages – they were above 13 V. We raised all the instruments. Tower was transmitting.

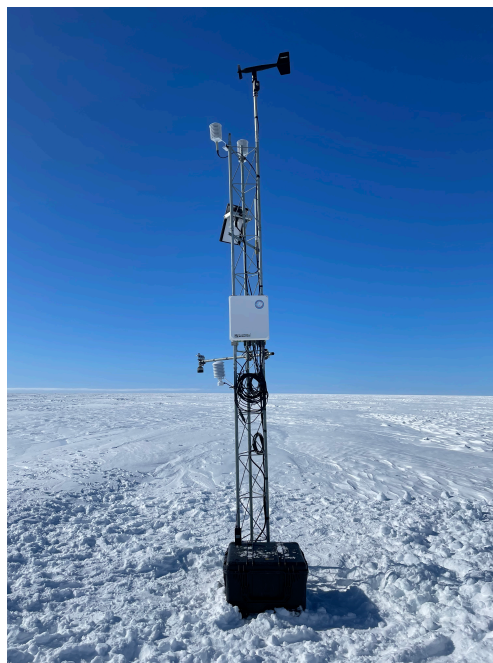
1620: Depart FER

1650: Arrive McMurdo

**Pictures taken:**

Before

After



**12/17/22: Otter to Alexander Tall Tower! (ATT) AWS**

Purpose: Raise station

CKB: Lauren and Shawn

Pax: Lee Welhouse, and riggers (Matt Burkley, Geoffrey DeLaune, Will Jasinevicius, Gabriel Menkhus, Otto Neumuth, Zac Schroeder)

0900: Depart Willie Field

0945: Arrive ATT

Coordinates (from pilots): 78° 58.7200' S, 170° 47.6200' E

Wx Conditions: Partly cloudy for much of the day, periodic low cloud/fog bank on the horizon

Work completed: All sensor booms raised to nominal heights (30m, 15m, 7.5m, 4m, 2.5m, 1.5m). Flowcapt systems removed due to inconsistent measurements more testing needed

1655: Depart ATT

1735: Arrive Willie Field

**Pictures taken:**

Completed tower raise



**12/22/2022: Helo to Windless Bight AWS**

Purpose: Reset internal clock

Pilot: Nick Giguere

Pax: Lee Welhouse

1900: Depart McMurdo

1945: Arrive Windless Bight

Work performed: Station inspected and in good shape. Data logger clock reset performed successfully

2015: Leave Windless Bight

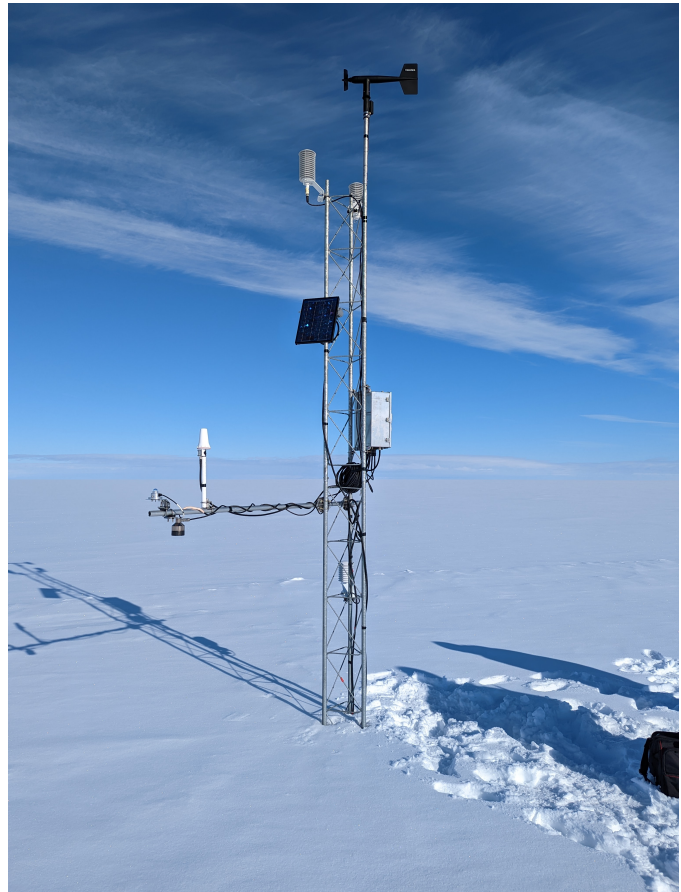
2100: Return McMurdo

**Pictures taken:**

Before



After



**12/22/22: Otter to Vito (8931)**

Purpose: Replace power cable and complete raise

CKB: Lauren and Shawn

Pax: Lee Welhouse

0900: Depart Willie Field

1100: Arrive Vito

Wx Conditions: Sunny and warm

Work completed: Damaged power cable replaced, and cables tied down

Final heights:

Wind sensor: 177"

Sensor boom: 159"

Enclosure: 61"

1735: Arrive Willie Field

**Pictures taken:**

Final Station



## 12/22/22 Helicopter to Minna Bluff (99606)

Purpose: Repair high wind speed sensor

Pilot: Ryan

Pax: Lee Welhouse

1900: Depart McMurdo

2015: Arrive Minna bluff

Weather: 10 knot winds

Work performed: Station inspected and found in heavy rime conditions. High wind speed sensor not reporting values even when cleared of ice. System removed as wiring in the winds wasn't viable. Revisited on January 10. Installed and rewired.

2130: Depart Minna bluff for White Island

### Pictures Taken:

Before



After



## **12/23/2022 Helicopter to White Island (99610)**

Purpose: Attempted install of high wind speed sensor and station inspection

Pilot: Ryan

Pax: Lee Welhouse

2130: Depart Minna Bluff

2230: Arrive White Island

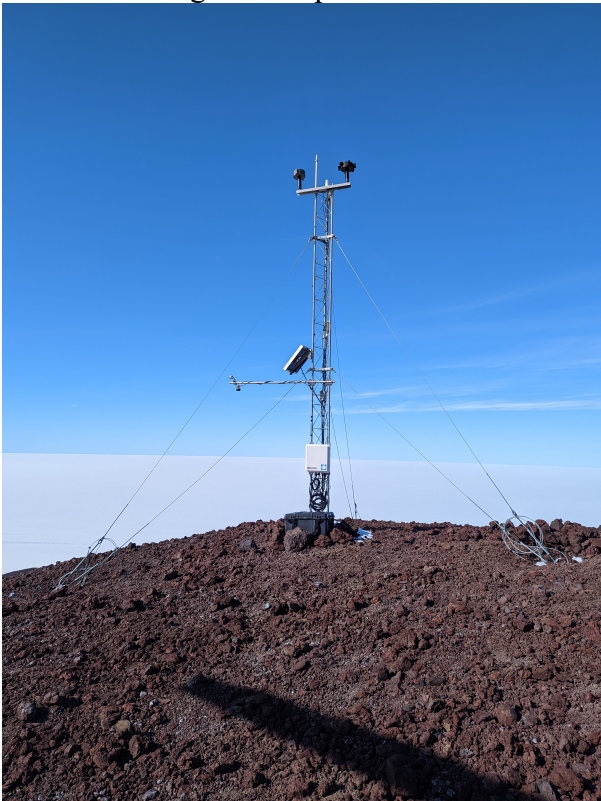
Weather: Wind speeds of approximately 18 knots according to the pilot.

Work performed: Station inspection, station in generally good shape. Radiation shield damage has increased and should be replaced in the next 2 years. High wind speed sensor installed. Wind speed values reading nominally, wind direction not reading. Revisited on 10 January to complete the wind sensor. Wind direction remains non operational due to likely excitation connection break.

0015: Depart White Island for Laurie II

### **Pictures taken:**

Station with high wind speed sensor installed



## **12/23/22 Helicopter to Laurie II (21360)**

Purpose: Replaced damaged wind sensor

Pilot: Ryan

Pax: Lee Welhouse

0015: Depart White Island

0130: Arrive Laurie II

Work performed: Replace damaged wind sensor, all heights remain the same from prior visit. Station is approximately 3 nautical miles from ice edge and should be a candidate for repositioning in the next 2 years.

0200: Depart Laurie II

0330: Arrive McMurdo

Pictures taken

New Wind sensor installed:





**01/05/23 Helicopter to Cape Bird (99609)**

Purpose: Station inspection

Pilot: Grauke

Pax: Lee Welhouse, Nikolaus Bayou

1335 Depart McMurdo

1415 Arrive Cape Bird

Weather: Clear skies, light winds, and warm weather

Work performed: Station inspection performed and antenna returned to vertical position from slightly tilted. Damage to solar panel back panel, as well as increased corrosion on the plugs of the site found. Solar panel replacement recommended, and expected full replacement of the corroded equipment in the next few years.

1600: Depart Cape Bird

1700: Return McMurdo

Pictures taken

Station condition

Corrosion and damage found



**01/07/23 Piston Bully to Sarah (99613)**

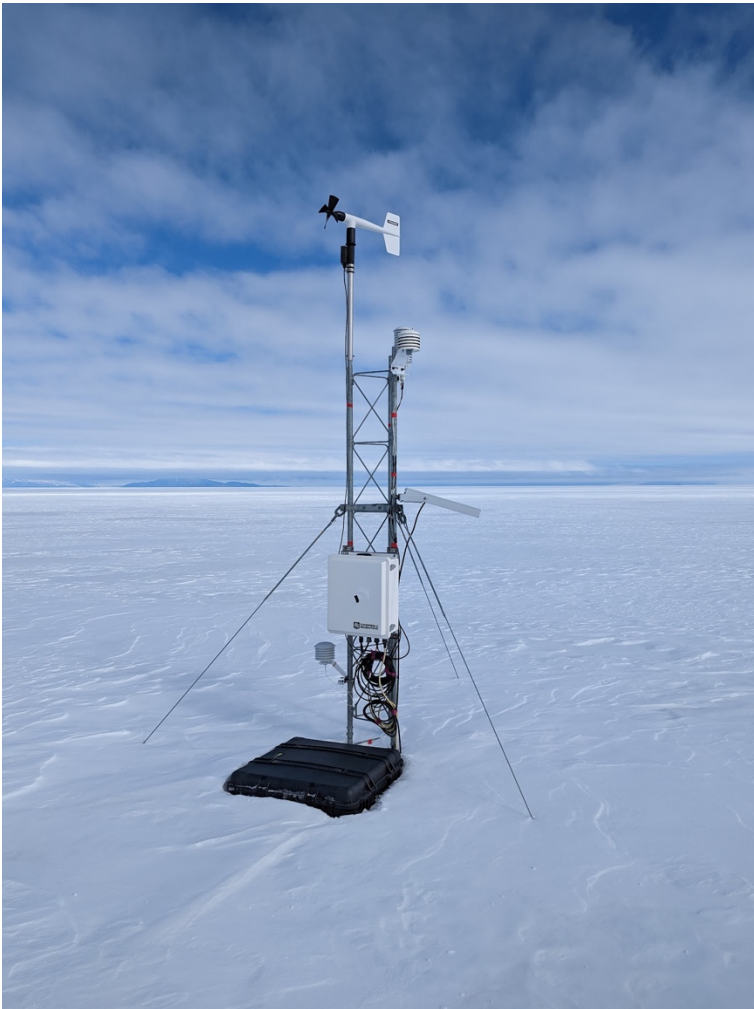
Purpose: Recovered PCWS enclosure

PAX: Lee Welhouse and Niko Bayou

Work performed: Station checked. Battery voltages found at 10V. Station remains over 1 mile from the road. Recommended repositioning to the road along with Willie Field station. System not operational.

Pictures taken:

Before



**01/07/23 Piston Bully to Willie Field (99607)**

Purpose: Inspected station

PAX: Lee Welhouse and Niko Bayou

Work performed: Station inspected. CR1000X doing well at the test site, lasting through the winter without issue. Test site should be repositioned back to the road.

Pictures taken:

Current station



**01/10/23 Helo to Linda ( 99603)**

Purpose: Raise power system, determine the need for raise

Pilot: Lehman

PAX: Lee Welhouse, Gavin Reynolds

Weather: Partly cloudy

1000: Depart McMurdo

1200: Arrive Linda

Work performed: Station inspected and in good shape tower not in need of a full raise. Power system returned to the surface. Station estimated GPS was considerably off, which was fortunate as estimates were in a heavily crevassed zone

Instrument heights:

Relative Humidity 49”

Temperature 110”

Instrument boom 61”

Wind 141”

Pictures taken:

**Before**



**After**

