AWS Field Report 2018-19

Field Team: Lee Welhouse, Dave Mikolajczyk, Elina Valkonen, Forbes Filip, Michael Penn

1. Dec 06 – **Laurie II (21360)** Station raise with 7' tower
2. Dec 07 – **Sabrina (8915)** Station raise with 7' tower, replaced power system
3. Dec 12 – **Ferrell (8947)** Raise power system and lower instrumentation
4. Dec 21 – **D-47 (8916)** Station raise
5. Dec 21 – **Nico (8924)** Raise power system, swap enclosure and upper RTD
6. Dec 22 – **Henry (8985)** Raise power system, swap enclosure and upper RTD
7. Dec 22 – **Gill (8911)** Raise power system, upload new program
8. Dec 30 – **Lorne (99507)** Raise
9. Dec 30 – **Byrd (8903)** Swap data card, raise power system
10. Jan 02 – **Austin (8901)** Boomerang (flat light) in attempt to visit
11. Jan 03 – **Kominko-Slade (21364)** Swap data card, station checkup
12. Jan 05 – **Alexander Tall Tower! (99601)** Raise power system and cable
13. Jan 07 – **Bear Peninsula (8922)** Replace guy wire, fix radiation shields
14. Jan 12 – **Austin (8901)** Swap enclosure, raise power system
15. Jan 15 – **Evans Knoll (8923)** and **Thurston Island (8930)** Remove EKN; install Taylor high wind system at THI
16. Jan 15 – **Marble Point I (8906) and II (99608)** Checkup, swap UHF for Iridium
17. Jan 15 – **D-85 (8912)** Station checkup
18. Jan 17 – **Minna Bluff (99606)** Checkup, swap UHF for Iridium
19. Jan 17 – **Theresa (21358)** and **Erin (21363)** Raise TRS with 5' section; raise lower instruments at ERN
20. Jan 19 – Minna Bluff (99606) Fix temperature sensor issue
21. Jan 19 – **Harry (8900)** and **Elizabeth (21361)** Swap Paros at HRY; raise ELZ with 5' tower
22. Jan 19 – **D-10 (8914)** Station raise
23. Jan 21 – **Janet (8936)** Swap batteries and data card
24. Jan 23 – **Willie Field (99502)** Remove enclosure to bring to lab for Iridium modem install
25. Jan 23 – **Phoenix (8908)** Remove enclosure and power system to troubleshoot/swap
26. Jan 23 – Lorne (99612) Swap Freewave modem/antenna for Iridium 9602-N modem
27. Jan 25 – Alexander Tall Tower! (99601) Raise solar panels, enclosure, install disdrometers
28. Jan 25 – **White Island (99610)** Inspect station, replace UHF with Iridium
29. Jan 28 – Sabrina (8915) and **Lettau (8928)** Fix SAB temperature cables and swap RM Young wind monitor; Swap data card at LET
30. Jan 29 – **Emma (8919)** Raise power system, swap data card
31. Jan 29 – Willie Field (99607) and Phoenix (8908) Reinstall enclosures and new power system at PHX
32. Jan 31 – **Marilyn (8934)** Raise, check wind monitor
33. Jan 31 – **Windless Bight (99611)** Swap UHF modem to Iridium, raise power system/lower instruments
34. Feb 01 – **Port Martin (8933)** Take pictures of AWS

35. Feb 02 – Port Martin (8933) Remove instruments/equipment to send back to Madison for repair/replacement
36. Feb 04 – **Cape Bird (99609)** Swap UHF modem to Iridium, station checkup
37. Feb 05 – Willie Field (99607) Fix Iridium modem 9602-N transmission issue

<u>12/06/18:</u> Helo to Laurie II (LR2) AWS
Purpose: Raise the station with 7' tower

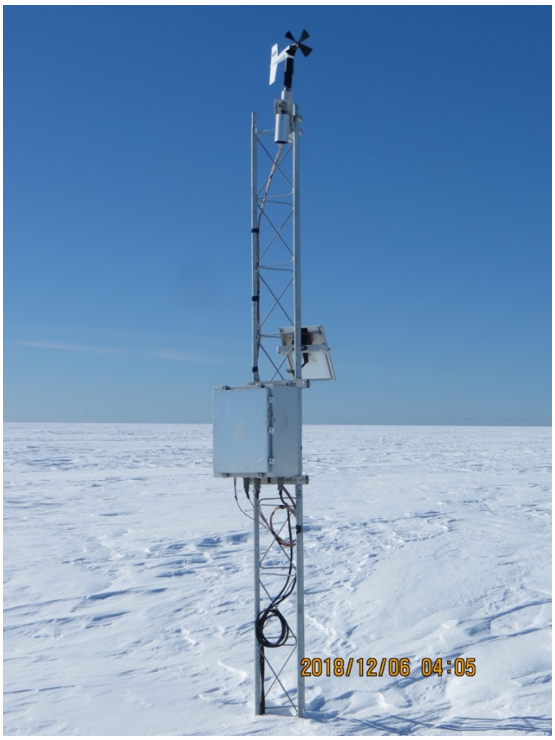
Helo pilots: Harland; Tech: Matt
AWS Team: Dave, Lee, Elina, Mike

1610: Depart McMurdo
1656: Arrive LR2

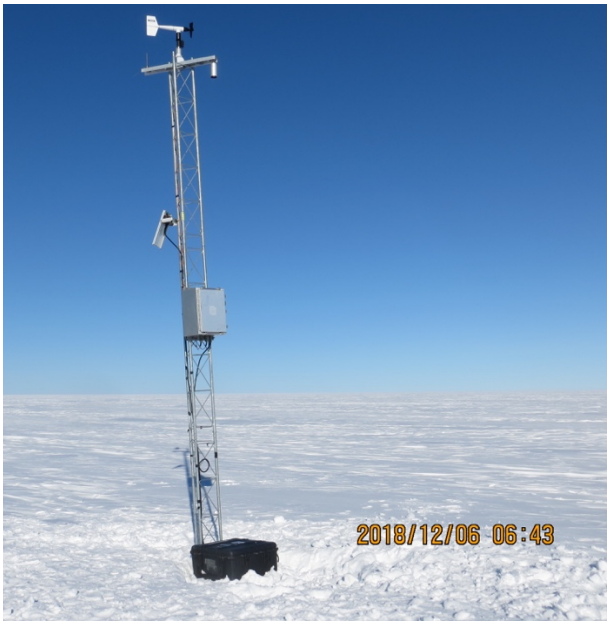
Surface conditions: Calm winds, warm, clear skies (AKA hot and gorgeous)
Station type: AWS2B
UNAVCO GPS was set up throughout the visit.

Instrument heights from surface before (after):
Enclosure: 54" (93")
Solar panel: 76" (136")
Boom: 136" (220")

Raised the station with a 7' tower section and raised the power system to the surface. Note there is slight tilt to the tower.



LR2 before.



LR2 after.

<u>12/07/18:</u> Otter to Sabrina (SAB) AWS
Purpose: Replace power system, recover old one, raise with 7' tower

Otter Pilots (KBH): Lindsey, Mark
AWS Team: Dave, Elina, Mark
Boondoggler: Daniel Garcia (heavy equipment operator)

0915: Depart Willie Field
1132: Arrive S+200 fuel cache
1223: Depart S+200
1355: Arrive SAB

Surface conditions: Partly cloudy, steady ~6 m/s wind, temps around -4C
Program running on SAB: SabrinaVaisalaPressure.CR1

UNAVCO GPS was set up throughout the visit.
UNAVCO GPS coordinates: S 84° 14' 14.8256" / W 170° 15' 36.6898"

Instrument heights from surface before:
Lower temperature: 13"
Boom: 34"
Enclosure: 44"
Relative humidity: 45"
Junction box: 57"
Upper temperature: 108"
Wind: 134"

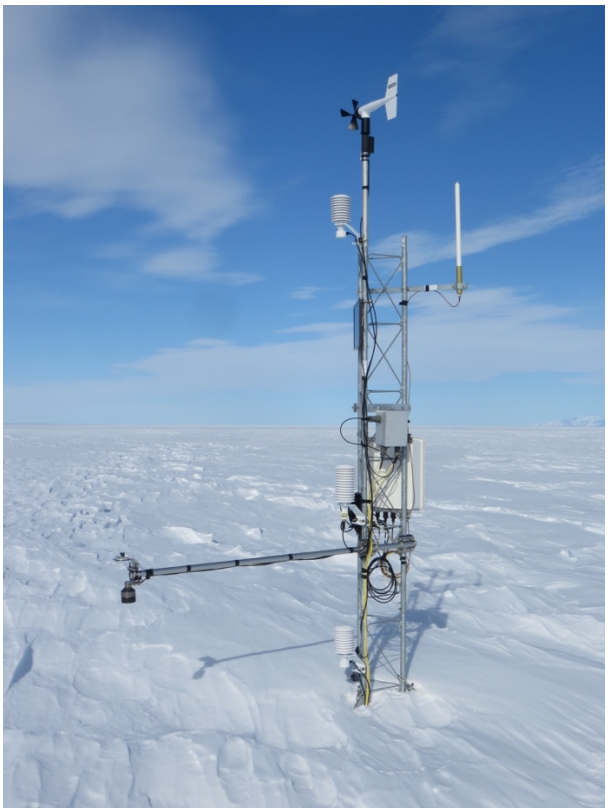
Due to pilots' duty day restrictions, we were only given 2 to 2.5 hours of ground time. This meant we did not attempt to dig out the batteries that were buried, and instead just install a new power system, with a new solar panel. A 7' tower section was added. The old solar panel and junction box was recovered, including as much of the battery cables as possible.

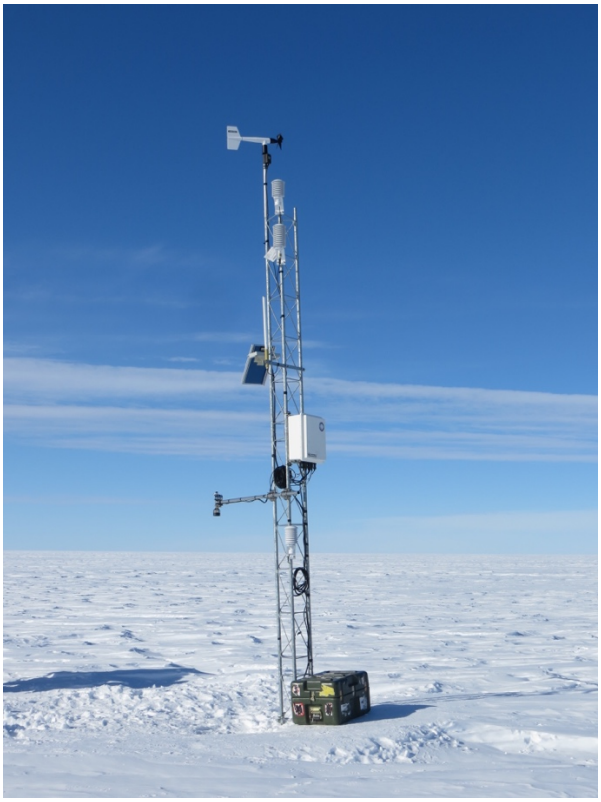
The existing data card was full. The data card was unable to be read back in the lab, so it appears we will not be able to recover the data.

Instrument heights after:
Lower temp: 58"
Boom: 83"
Enclosure: 90"
RH: 163"
Upper temp: 186"
Wind: 216"

****NOTE**:** The lower temperature is plugged into the upper temperature plug on the enclosure.

1650: Depart SAB
1931: Arrive Willie Field


SAB before.


SAB after.

<u>12/12/18:</u> Helo to Ferrell (FER) AWS
Purpose: Station raise

AWS Team: Dave, Elina, Forbes
Boondogglers: Megan Archuleta (Galley admin), Cat Morjan (Waste)

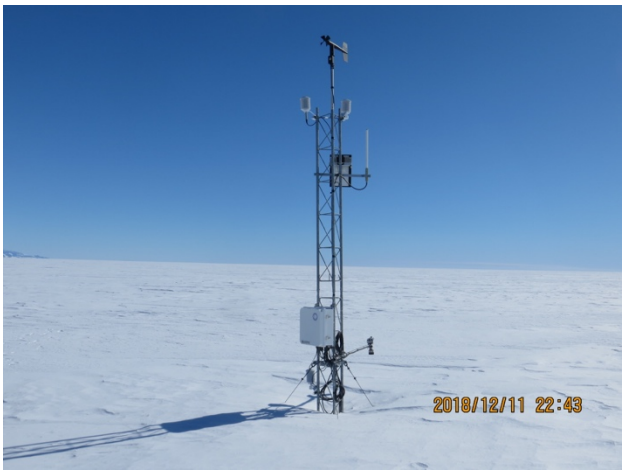
1045: Depart McMurdo
1125: Arrive FER

Surface conditions: Temps around -4C, light winds which got lighter throughout, sunny
Program running: Ferrellv3.CR1
UNAVCO GPS was set up throughout the visit.
UNAVCO GPS coordinates: S 77° 47' 02.9990" / E 170° 48' 55.9192"

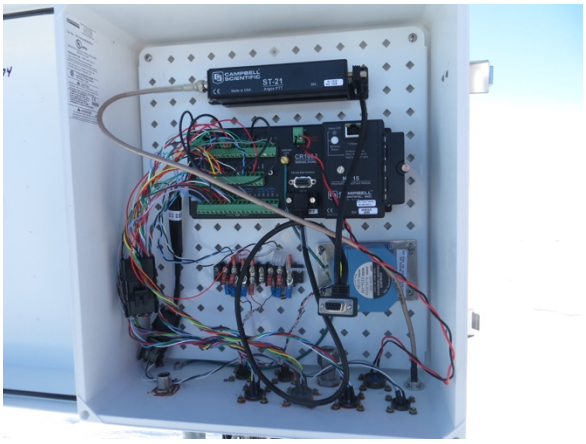
Instrument heights before (after):
Lower temperature: 12" (66")
Boom: 24" (85")
Enclosure: 30" (89")
Upper temperature and relative humidity: 171"
Wind: 141"

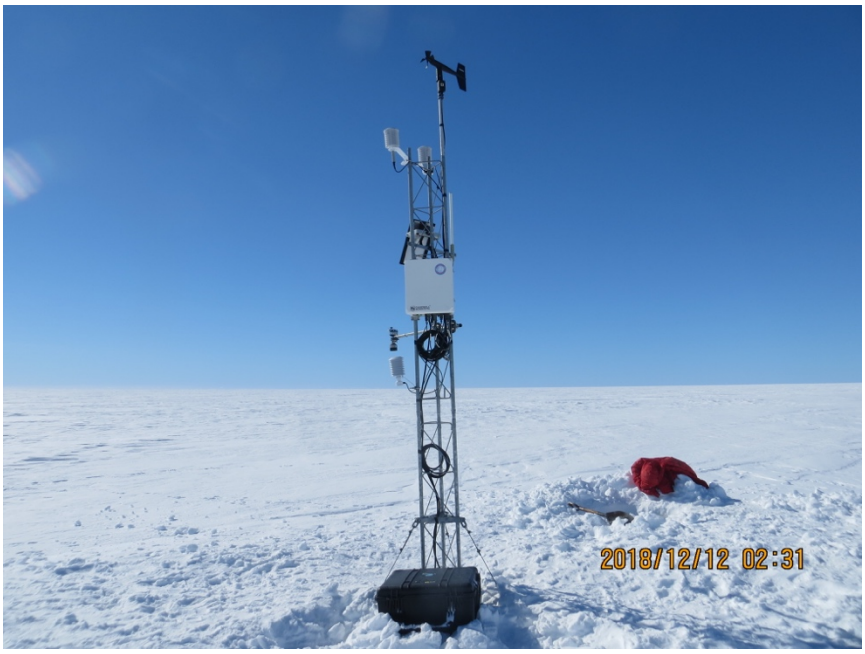
We swapped the data card. The power system was buried about 5'. That was dug out and raised to the surface. **NOTE:** The positive wire for one of the batteries is spliced and hardwired to the solar panel plug. The lower temperature, boom, and enclosure were raised on the tower. The tower was deemed tall enough, so no new tower section was added. Perhaps in a couple years a new one should be added.

1623: Depart FER
1700: Arrive McMurdo



FER before.


FER's enclosure.



FER after.

12/21/2018: French visit D-47 (D47) AWS
Purpose: Raise station

Staff: J. Meric, D. Colin, Ambroise Dufour, Vincent Favier

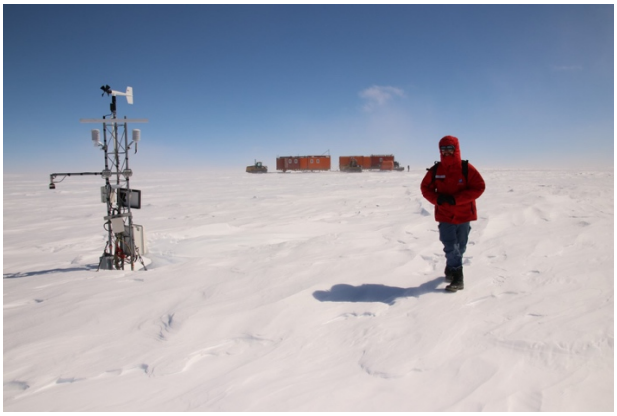
Station was working correctly before intervention. Data were verified with the Campbell keyboard.

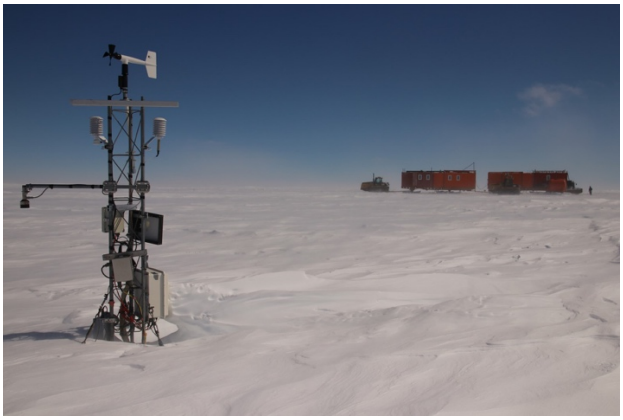
Sensor height before moving the station (at 12:20 Local Time)
SR50: 117 cm above the ground level
HMP (Thermohygrometer): 196 cm agl
Young (wind gauge): 246 cm agl
big sastruga at the level of the AWS box.

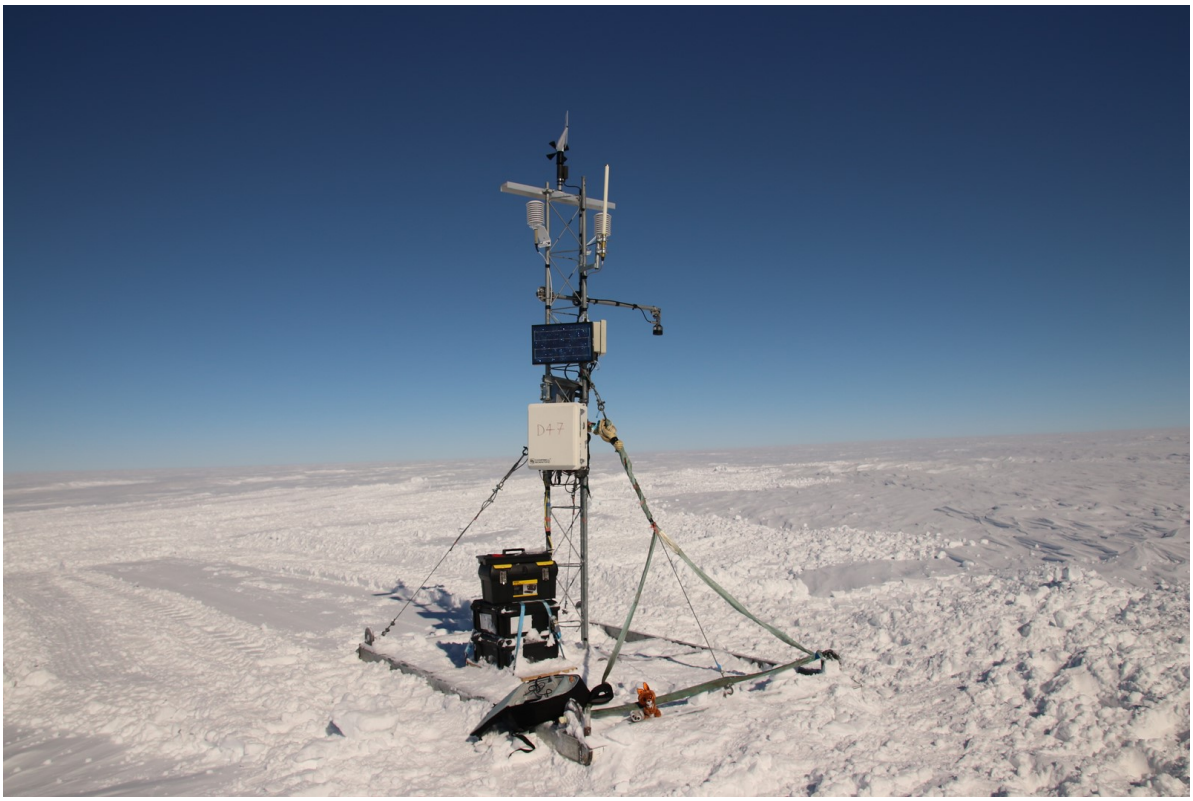
The station was moved with the groomer.

Sensor height after intervention (at 16:30 Local Time)
SR50: 244 cm agl
HMP: 323 cm agl
Young: 373 cm agl

The data from compact flash card were downloaded but only outcard file was OK, the flowcapt one was corrupted and it was impossible to download it.
We tried to format the CF card (using Campbell Keyboard) but it did not result. We formatted the card with Windows (fat32 format) but the card was still impossible to format on the CR1000 after formatting under windows.
The station was working correctly when leaving the site. Data were checked with the Campbell keyboard, and did not present any warning or error.


D-47 before.


D-47 before.



D-47 after.

<u>12/21/18:</u> Otter to Nico (NIC) AWS
Purpose: Swap out enclosure, raise power system, swap upper temperature sensor

Otter pilots (KBH): Lindsey, Mark
AWS team: Lee, Mike

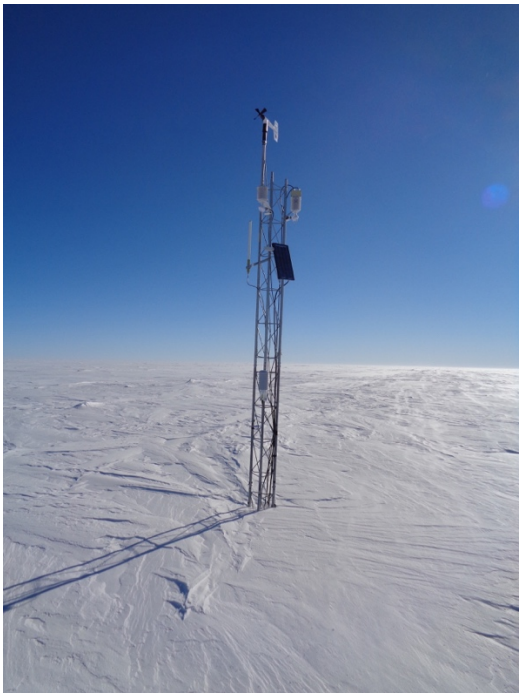

NIC upon arrival.

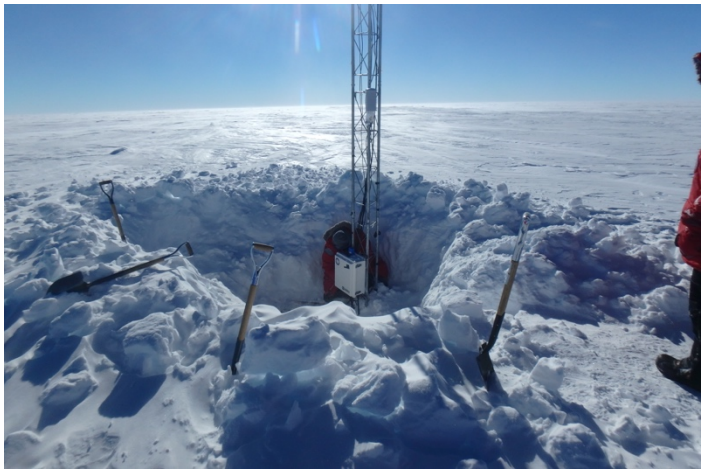

The new power system.

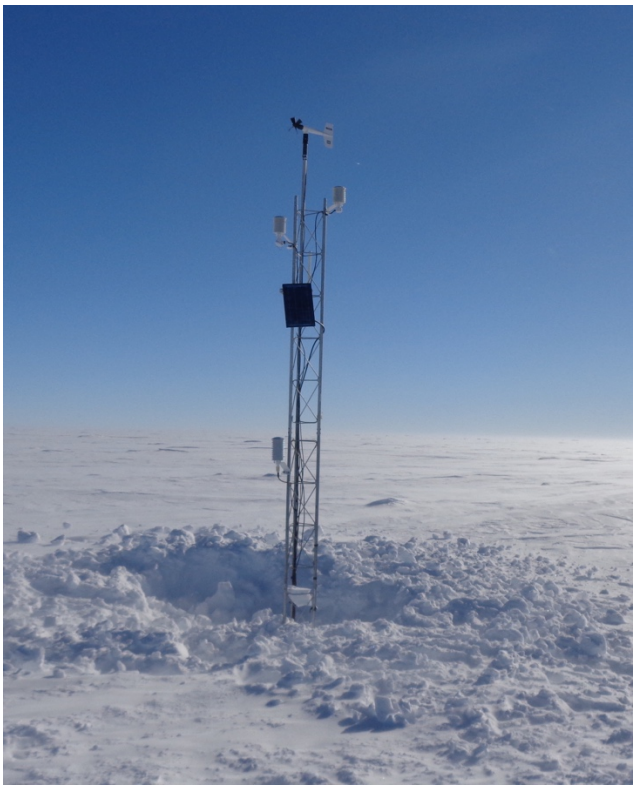
NIC after.

<u>12/22/18:</u> Otter to Henry (HEN) AWS
Purpose: Swap out enclosure, raise power system

Otter pilots (KBH): Lindsey, Mark
AWS team: Lee, Mike


HEN upon arrival.


Digging down to the power system and enclosure.



HEN after.

12/22/18: Otter to Gill (GIL) AWS
Purpose: Update program with correct Paros calibration values, raise power system

Otter pilots (CKB): Steve King, Alex Pelletier
AWS team: Dave, Elina

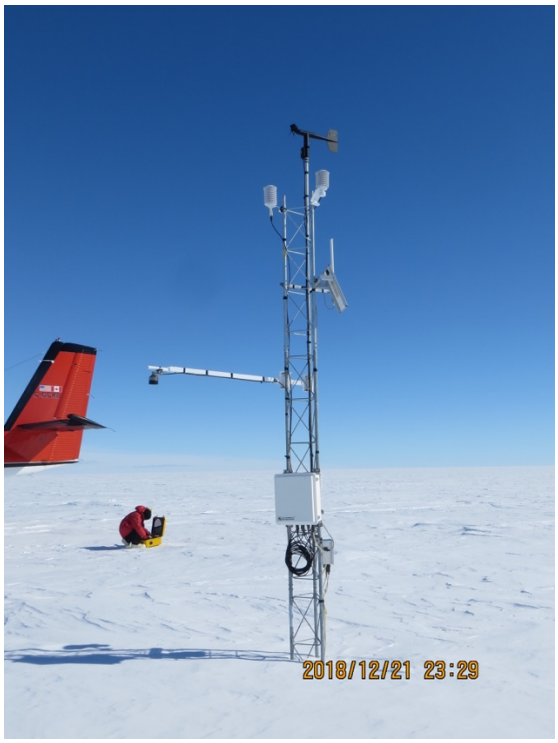
1036: Depart WFD
1216: Arrive GIL

Surface conditions: Mostly sunny, temps ~-7C, winds ~4 m/s. Some low clouds in the area.
New program installed and now running: GIL2017.CR1
UNAVCO GPS was set up for duration of visit.
Pilots said Gill was ~0.3 km true North from the November 2017 coordinates.

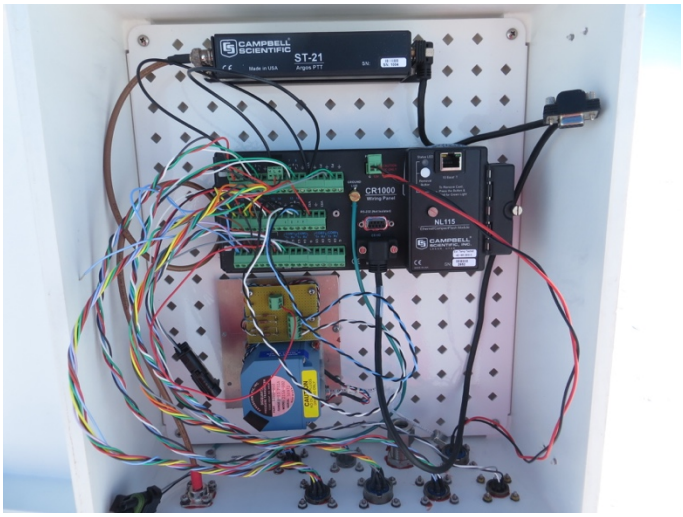
A new program was installed that had the correct Paros pressure calibration values. The data card was swapped. We had plenty of time to dig down the ~8 feet to recover the power system and bring it to the surface. The power system consists of two wooden boxes, with a cable coming out of each and connecting to the junction box on the tower. The boxes were placed side-by-side and flush with the tower underneath the junction box, with the cables extending to the outsides from the boxes. See pictures.

Instrument heights:
Junction box: 33”
Enclosure: 48”
Lower temperature: 57”
Boom (ADG only): 98”
Upper temperature and Relative humidity: 165”
Wind: 195”

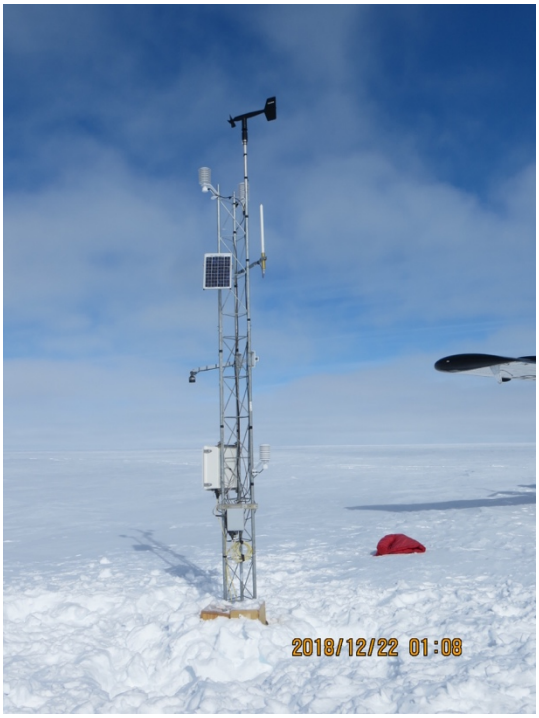
1414: Depart GIL
1534: Arrive WFD



GIL upon arrival.



GIL enclosure.



GIL after.

Battery boxes. Note power cable coming out of box.

<u>12/30/18:</u> Helo to Lorne (LOR) AWS
Purpose: Raise the station

12/30/18: Otter to Byrd (BYD) AWS
Purpose: Swap data card, raise power system

Otter pilots (KBG): Troy, Jeff Amantea
AWS team: Dave, Elina
Boonie: Jess (NBY weather observer)
Andrew (POLENET) and Aurora (IRIS/PASSCAL) were also on the flight to service POLENET's seismic site at Byrd Camp.

This trip was technically a "morale" trip for us as we did not plan on visiting BYD this season, but 2 comms people needed to be brought from NBY to WSD. There was space on the Otter, so we thought we would ride along and do these basic tasks.

0950: Depart WSD
1028: Arrive NBY (Byrd Camp) then taxi over to POLENET's site, to be picked up on snowmo by Jess
1048: Arrive BYD

Surface conditions: Sunny, temp around -12C, winds 7 to 8 m/s, some blowing snow
Program running on Byrd: 14412.CR1
UNAVCO GPS was setup for duration of visit.

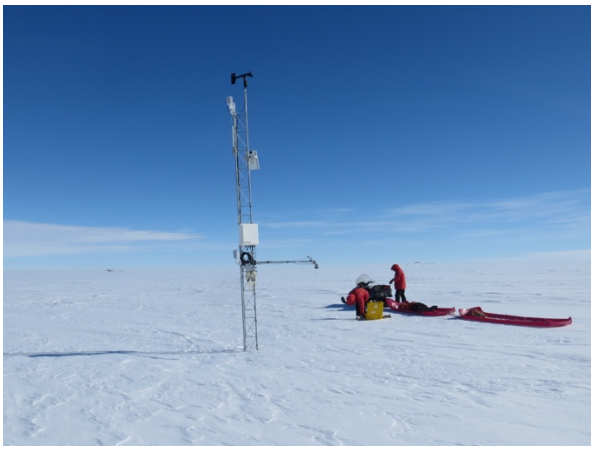
Instrument heights (inches):
Junction box: 60
Boom and lower temperature: 72
Enclosure: 87
Upper temperature and relative humidity: 204
Wind: 234

We raised the power system to the surface. The 2 wooden battery boxes are directly below the junction box. They were buried about 3 feet. We swapped the data card and copied the program onto the Getac.

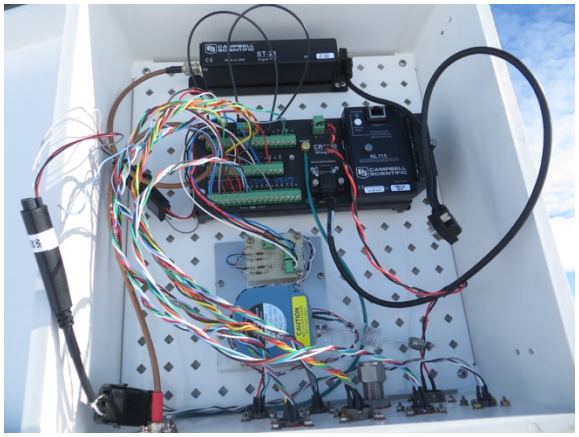
1148: Depart BYD

Elina, Jess, and I checked up on Andrew, Aurora, Troy, and Jeff at the seismic site then snowmoed back to camp. The camp population is 3 people. All of us (Jonathan [chef], John [mechanic], Jess, Peter and Caleb [comms], and all Otter pax) had lunch at camp. Jonathan made us some delicious burritos. Then we headed back to WSD with the 2 new pax, Peter and Caleb.

1328: Depart NBY
1408: Arrive WSD



BYD upon arrival.



BYD enclosure.

BYD after.

01/02/19: Otter to Austin (ATN) AWS
Purpose: Swap enclosure, raise power system

Otter pilots (BBV): Jordan Byng, Alex Sinclair
AWS team: Dave, Elina

0742: Depart WSD
0904: Arrive Turn 1 fuel cache
0943: Depart Turn 1
1105: Begin circling ATN

Flat light, with a solid cloud deck at 1000 feet, yielded minimal to no surface definition. We were unable to land, so boomeranged back to WSD.

1135: Boomerang
1245: Arrive Turn 1
1324: Depart Turn 1
1449: Arrive WSD

<u>01/03/19:</u> Ski to Kominko-Slade KMS) AWS
Purpose: Swap data card, station checkup

AWS team: Dave, Elina

This trip wasn't planned for this field season, but since weather was good and the Otters at camp had a different mission to do, we decided to ski to KMS.

0943: Depart WSD
0952: Arrive KMS

Program running: WAISDivide.CR3

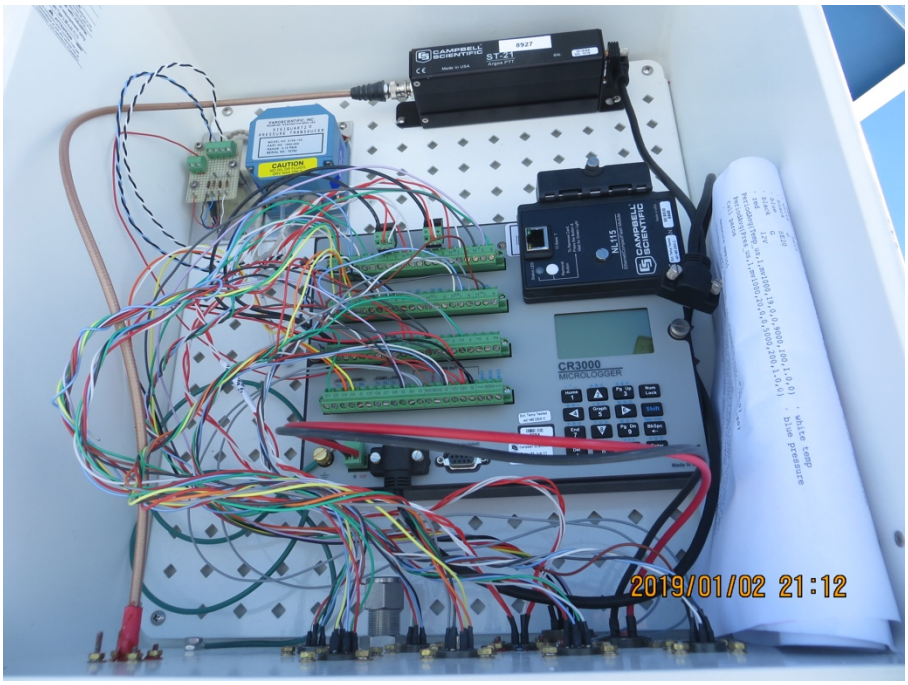
Instrument heights (inches):
Lower temperature boom: 50
Multiplexer enclosure and lower temperature: 57
ADG/CNR2 boom: 67
Enclosure: 75
Upper temperature and relative humidity: 137
Wind: 167

Station looked good, no complaints. Swapped existing data card (256 MB, ~253 MB used) with a 1 GB data card.

1015: Depart KMD
1025: Arrive WSD

KMS upon arrival.


Another angle of KMS.



KMS enclosure.

<u>01/05/18:</u> Otter to Alexander Tall Tower! (BAT) AWS
Purpose: Raise power system

<u>01/07/18:</u> Otter to Bear Peninsula (BRP) AWS
Purpose: Replace guy wire and chip out boulder that caused the guy wire to fray, fix/replace radiation shields, swap wind with Taylor high wind system

Otter pilots (BBV): Jordan, Alex
Pax: Dave, Elina (AWS); Andy Boyd (mountaineer); Aurora Roth (PASSCAL) to service their seismic site next to the fuel cache at Bear Peninsula

0810: Depart WSD
0927: Arrive Lower Thwaites Glacier to refuel. WAS traverse is here.
1002: Depart LTG
1102: Arrive BRP

Surface conditions: Sunny, mostly clear, temperature ~-5 C, light breeze but got windier during visit then subsided somewhat.

UNAVCO GPS was set up for duration of visit.
Program running at BRP upon arrival: NONAME.CR1
New program installed (2 changes: the name, and now it doesn't read for wind): brp2019.CR1

We all ferried our cargo from the Otter to BRP, using a combination of a banana sled to drag the heaviest items up the ice/snow slope to the rock, and orange ECW bags and Dave's sleep kit duffle bag. Cargo included a generator, jerry can with MOGAS fuel, demolition hammer, guy wire, preforms, bolt cutter, Taylor high wind system, and other standard equipment. It took about 25 minutes to hike the gear from the Otter to the site. While all others went back to the plane/seismic site, Dave and Elina began by setting up the GPS and chipping out the boulder that was causing the fraying on the troubled guy wire. The wind monitor was missing its propeller, the temperature sensor was wonky on the tower, and the Gill shield for the relative humidity sensor was missing a screw rod.

Andy came back to BRP and helped Dave install the new guy wire. It took a few tries to get the correct tension and preform install for the guy wire at the turnbuckle, but we were able to achieve sufficient tension on the guy wire.

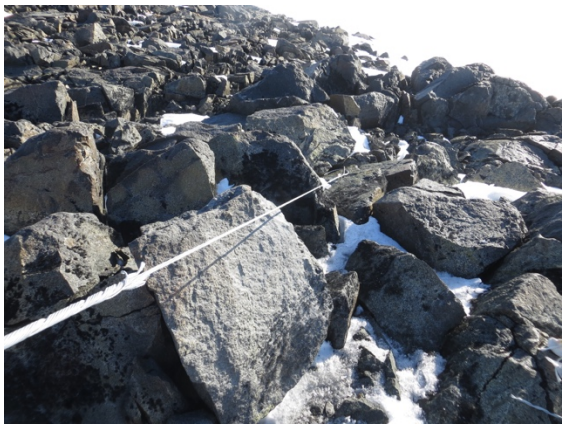
We were unable to install the Taylor high wind system as there was a plug mismatch: the existing RM Young wind monitor had a 6-pin plug, whereas the Taylor HWS has 7 pins. We removed the RM Young wind monitor and the ADG sensor and boom. Elina swapped the data card and swapped the temperature radiation shield. The new relative humidity radiation shield didn't fit on the RH sensor, so the existing radiation shield was left installed, and we used a screw rod from the old temperature radiation shield for the RH radiation shield.

1639: Depart BRP
1856: Arrive WSD

BRP upon arrival.

Guy wire and boulder upon arrival.

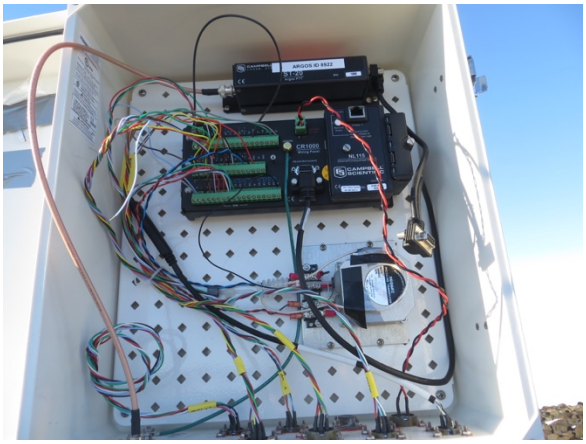
Chipped-out boulder.



The new guy wire.

The new guy wire at the anchor.

New guy wire at the turnbuckle.



BRP enclosure.

BRP after.

<u>01/12/19:</u> Otter to Austin (ATN) AWS
Purpose: Swap enclosure, raise power system to surface, replace lower T radiation shield. Attempted to visit Kathie (KTH) AWS on way back to WAIS to raise power system and swap data card, but fixed wing had incorrect coordinates, so we couldn't find the AWS.

Otter pilots (BBV): Jordan, Alex
AWS team: Dave, Elina

0745: Depart WSD
0909: Arrive Turn 1 fuel cache
1130: Arrive ATN

Surface conditions: Clear skies, winds ~7 m/s at beginning, decreased to ~3.5 m/s at end, temperature ~-15C
UNAVCO GPS was set up for duration of visit.

New enclosure installed, with program atn2019.CR1

Instrument heights before (after), in inches:
Lower temperature: 73 (64)
Boom: 87
Enclosure: 95
Upper temperature and relative humidity: 185
Wind: 215

The power system was buried about 4-5 feet. With the solar panel uncovered, the voltage coming from the power system was ~13.6 V. When the solar panel was disconnected for ~20 minutes, the voltage in both batteries decreased to ~5.0 V. Both batteries were replaced with new 100 Amp-hour gel-cell batteries (purchased in 2018). After installing the new batteries and plugging in the solar panel, battery voltage was ~13.1 V.

We swapped the enclosure, and the new CR1000 is running program atn2019.CR1 with a 2 gb data card. We swapped the lower temperature sensor Gill radiation shield, as the previous one was cracked. We leveled the boom and radiation/ADG sensors, as they were not quite level/plumb. We confirmed Argos transmissions with the Telonics.

Upon completion, we asked the pilots if we could stop by KTH as it was on the way back to WSD and near Turn 1 fuel cache. This would be a bonus visit as it wasn't in our field season plans. They said yes, but we would only have 30-45 minutes of ground time.

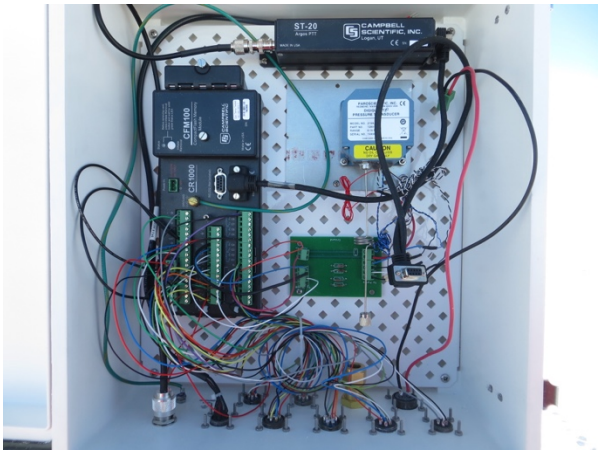
1415: Depart ATN

We planned to simply raise the power system, get instrument heights, and swap the data card. Unfortunately, we did not have the updated coordinates for the site which we had recorded in

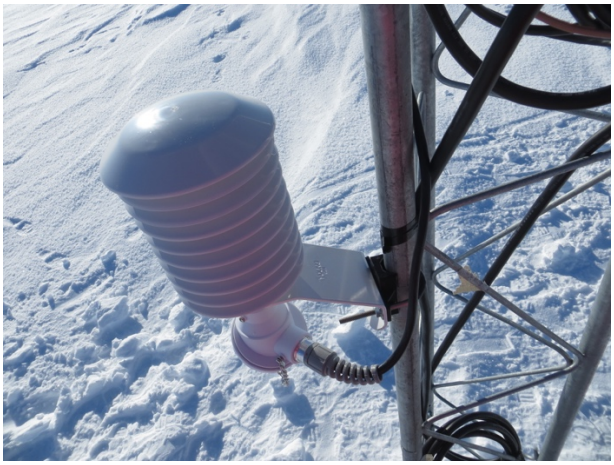
our previous visit in December 2017. The fixed wing coordinates given to BBV had incorrect longitude (off by ~4 miles). We circled the area but couldn't find the site, so we scrapped that visit.

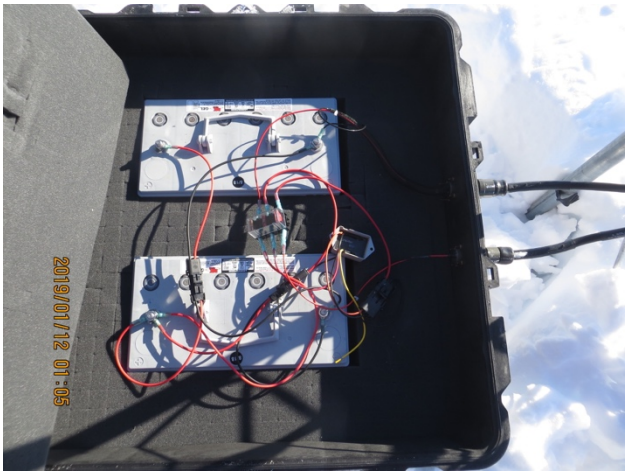
1530: Begin looking for KTH
1540: Stop looking for KTH
1603: Arrive Turn 1 fuel cache
1648: Depart Turn 1
1813: Arrive WSD

ATN on arrival.

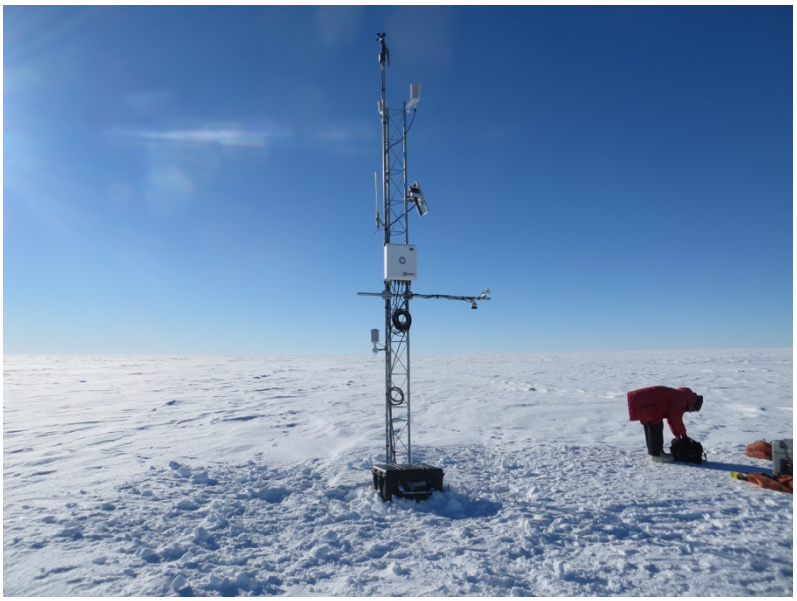


New ATN enclosure.


New lower T radiation shield.



Power system with new batteries installed.



ATN after.

<u>01/15/2019:</u> Helo to Marble Point I (MPT) and II (MP2) AWS
Purpose: Station checkup, swap UHF to Iridium

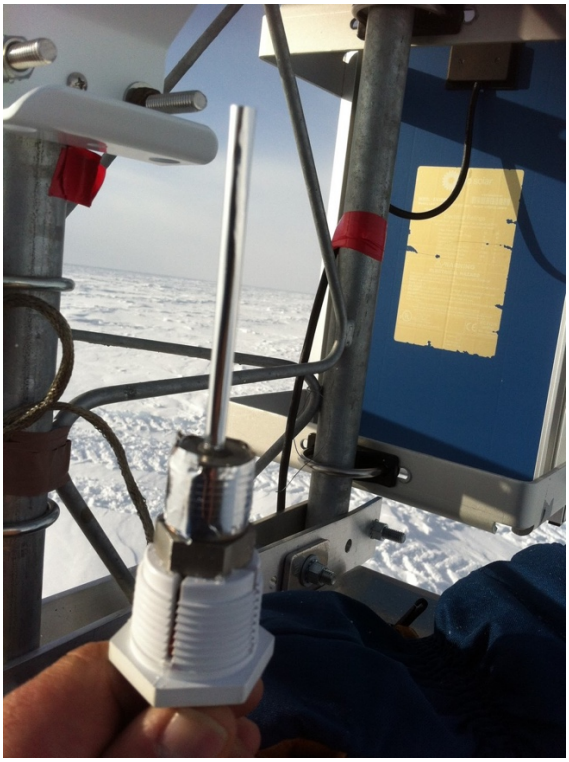
Pilot: Ryan
Field Team: Lee and Forbes

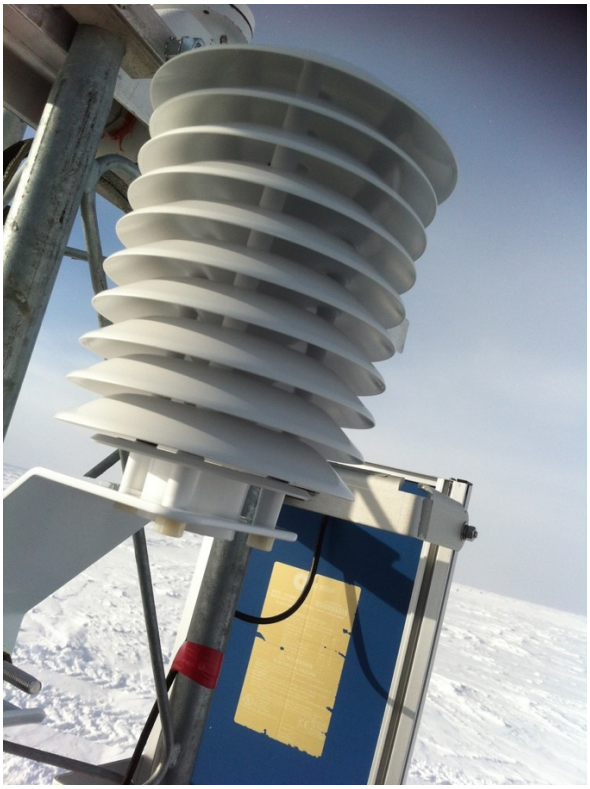
Heights at the station remain the same, the freewave modem acting as a repeater for Cape Bird remains installed and will require removal next year. The iridium modem was successfully installed with the freewave program pulled and the iridium program installed. Text on passthrough/iridium response remains garbled as the baud rate for the logger and modem are set at 19.2kbps and will require being updated to 9600 on next visit.

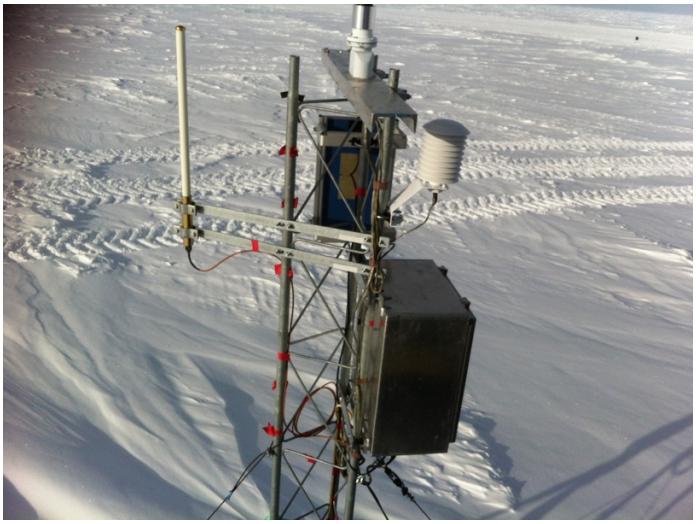
MP2 after visit.

<u>01/15/2019:</u> French visit D-85 (D85) AWS
Purpose: Station checkup, get pictures

From Vincent Favier: French logistic traverse leader Jacky Meric looked at D85. He took some photographs from the sensors and from the AWS, and I was surprised to observe that the sensor installed is not a HMP45 but looks like a PT100. This may justify why the station is not giving correct humidity values.







<u>01/17/19:</u> Helo to Minna Bluff (MNB) AWS
Purpose: Determine temperature sensor issue, replace UHF modem with Iridium Modem

Helo Pilot: Ryan
AWS Team: Lee Welhouse and Forbes Filip

12:00 Leave McMurdo
12:30 Land Minna Bluff

Surface conditions: sunny, calm winds
Program running:

Rock site, so all heights remain fine. Temperature sensor plug was found to have the screws backed off, it fell out tearing out the wires. Reinstall on site wasn't possible necessitating return on January 19th. UHF Modem successfully removed and replaced with Iridium Modem.

1330: Leave Minna Bluff
1400: Arrive McMurdo

<u>01/15/2019:</u> Otter to Evans Knoll (EKN) and Thurston Island (THI) AWS
Purpose: Remove EKN, install Taylor high wind system at THI

Otter pilots (KBG): Troy, Jeff
Pax: Dave, Elina (AWS); Mark Whetu (mountaineer); Andrew Lloyd (POLENET)

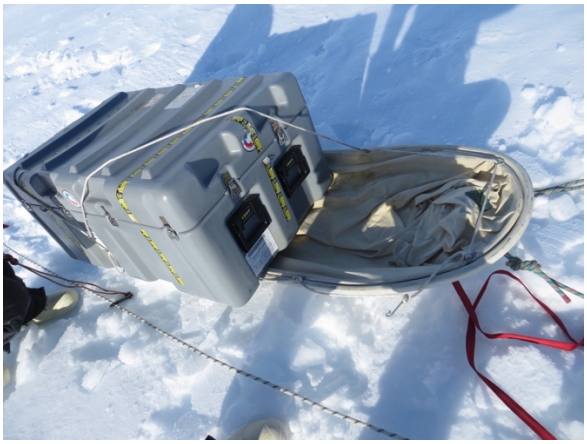
0815: Depart WSD
1015: Arrive EKN

Surface conditions: Sunny, calm winds, temps around -2C
Program running: THURST.CR1

The crevasse was just as apparent, if not more so, as it was in January 2018. Mark began by approaching the crevasse and setting up an anchored rope line to the crevasse, then all the way up the hill to the AWS.


(Left) Taken next to the fuel cache where the Otter stopped. Mark is beyond the crevasse working on the rope lines. (Right) Mark with the complete rope lines established.

We used a banana sled and a Hardigg to transport all of our gear up the hill. We only had ~1 hr to remove the site once we got there, as we were hoping to go to Thurston Island after. We removed everything except for the tower base plate and 2 of the 3 guy wire anchors (which were just the guy wire wrapped around a rock). We were unable to unscrew the bolts to the base plate, and the guy wire anchors were too frozen in to get free. The two battery boxes were very iced in but we got them free (thanks in large part to Andrew!).



(Left) the banana sled. (Right) One of the guy wire anchors left.

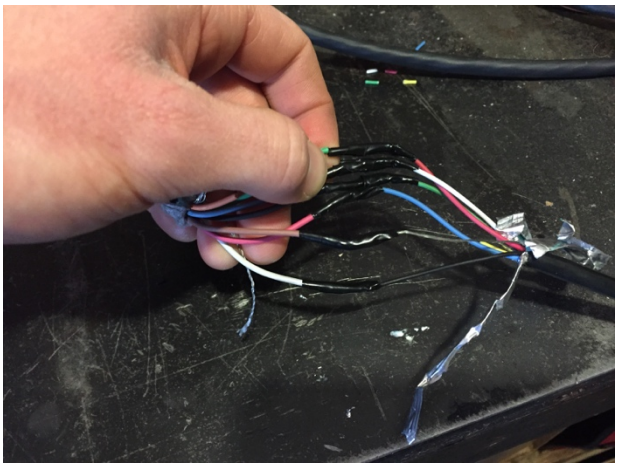

What was left. The tower base plate can be seen. The banana sled is how we brought most of the remaining gear down the hill.

1330: Depart EKN
1432: Arrive THI

Surface conditions: Partly cloudy, winds 10-20 m/s, temperature ~-4C.
Previous program running: BEAR.CR1
New program installed: thi2019-hwsoffset.CR1
UNAVCO GPS was set up for duration of visit.

While we worked on our site, Andrew and Mark taxied with the Otter to service their seismic site. The wind monitor was missing the propeller. All else looked good with the site, save the relative humidity radiation shield (which wasn't the correct shield for the sensor type). We swapped the existing RM Young wind boom with a Taylor high wind system boom, replaced the relative humidity radiation shield, and removed the ADG boom. Transmissions were verified with the Telonics.

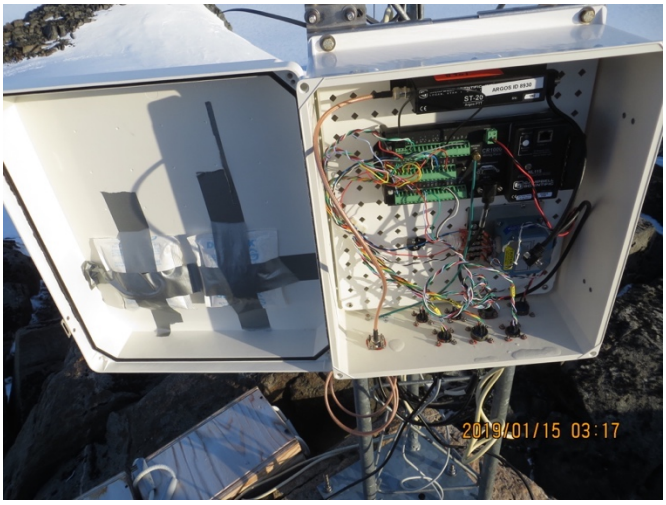
The Taylor high wind system plug was modified at WAIS (with the help of Steve, camp mechanic) to have Bear Peninsula's 6-pin wind plug. At camp, we soldered each individual wire together, then electrical taped each wire, then heat-shrunk it all together.



The new plug on the end of the cable coming from the Taylor high wind sensor boom.

THI before.

THI after.



THI enclosure, after.

1650: Depart THI AWS, then taxied to POLENET site
1653: Arrive POLENET site
1726: Depart Thurston Island
1934: Arrive Turn 1 fuel cache
2002: Depart Turn 1
2143: Arrive WSD

<u>01/17/2019:</u> Otter to Theresa (TRS) and Erin (ERN) AWS
Purpose: Raise TRS and ERN

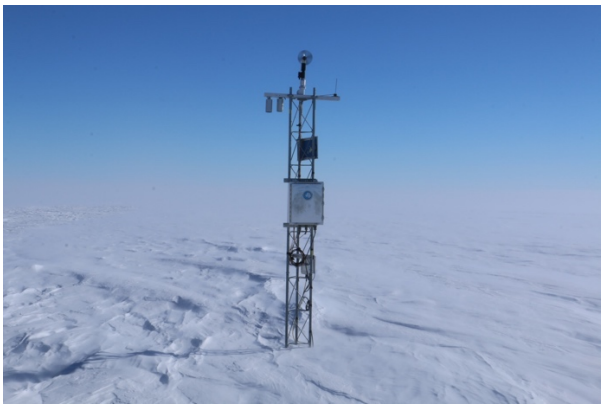
Otter pilots (KBG): Troy, Jeff
Pax: Dave, Elina (AWS); Andrew (POLENET); Aurora (PASSCAL)

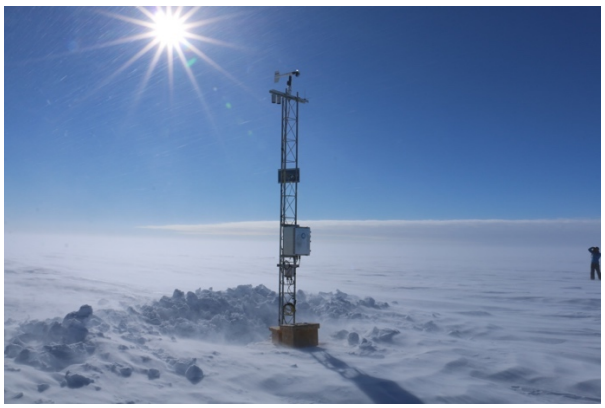
0843: Depart WSD (after we were activated, then canceled for MELT camp pullout at Thwaites Glacier, then reactivated when MELT camp wasn't ready for pullout)
1054: Arrive TRS

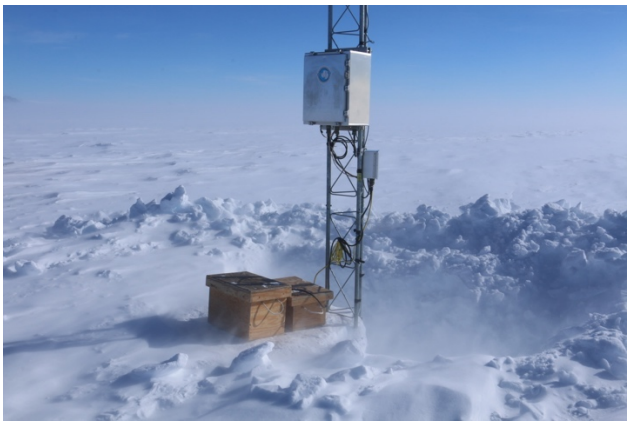
Surface conditions: Windy around 15-20 m/s, temps ~-20C, mostly sunny
TRS is an AWS2B.
UNAVCO GPS was set up for duration of visit.

Instrument heights before (after), in inches:
Junction box: 35 (35)
Enclosure: 59 (61)
Wind/temperature boom: 119 (177)

Station was raised with a 5' tower section. The batteries were recovered and brought to the surface. They were buried about 8 feet down. We confirmed transmissions with the Telonics at the end of the visit.


TRS before.

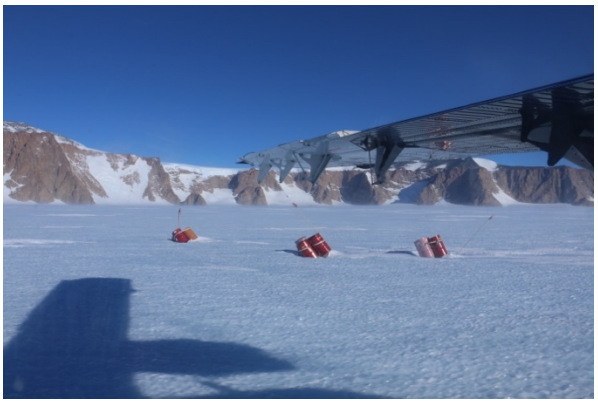

TRS after.



Batteries now under enclosure.

The hole to recover the batteries.

1330: Depart TRS
1341: Arrive Ohio Range fuel cache



Ohio Range fuel cache. Also windy here.

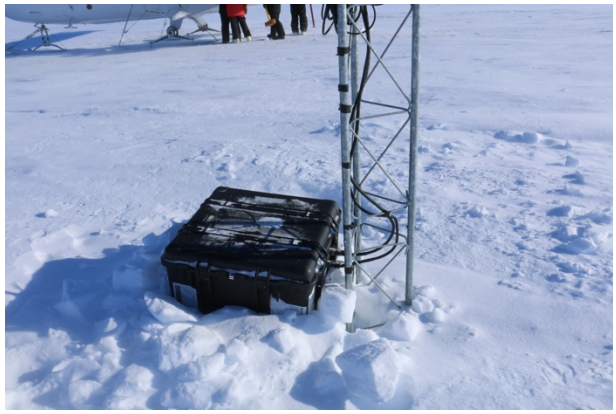
1428: Depart Ohio Range fuel cache
1459: Arrive ERN

Surface conditions: Windy around 10-13 m/s, sunny, temps ~-15C
Program running: Erin21363.CR1
UNAVCO GPS was set up for duration of visit

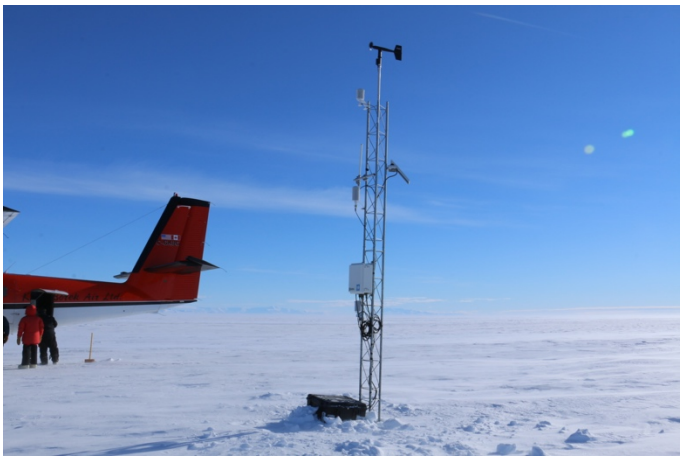
Instrument heights before (after), in inches:
Lower temperature: 44 (63)
Enclosure: 62 (74)
Relative humidity: 129 (129)
Upper temperature: 190 (190)
Wind: 220 (220)

Power system was buried ~1-2 feet and was raised to the surface. Only the lower temperature and enclosure were raised on the tower. We swapped the data card (error message said that the previous one was not being written to). We confirmed transmissions with the Telonics.

ERN before.



Power system.



ERN after.

1642: Depart ERN
1721: Arrive Fallone Nunatak, for POLENET seismic/UNAVCO GPS servicing

Fallone Nunatak (no AWS here).

1845: Depart Fallone Nunatak
2140: Arrive WSD

<u>01/19/2019:</u> Otter to Harry (HRY) and Elizabeth (ELZ) AWS
Purpose: At HRY, swap Paros pressure sensor and install RH; at ELZ, raise

Otter pilots (KBG): Troy, Jeff
Pax: Dave, Elina (AWS); Scott Deaton (WAIS PA); Nick Chisari (WAIS cargo)

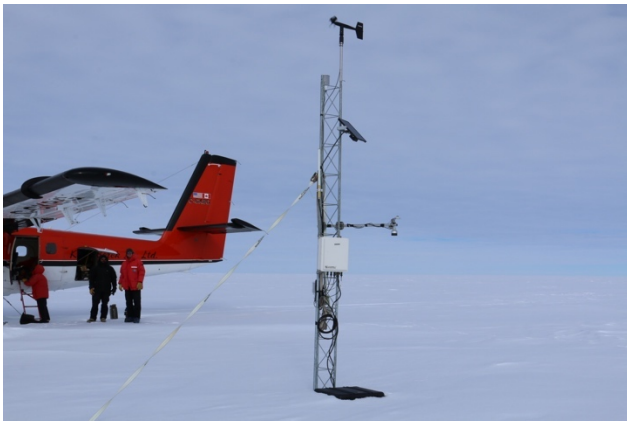
0805: Depart WSD
0934: Arrive HRY

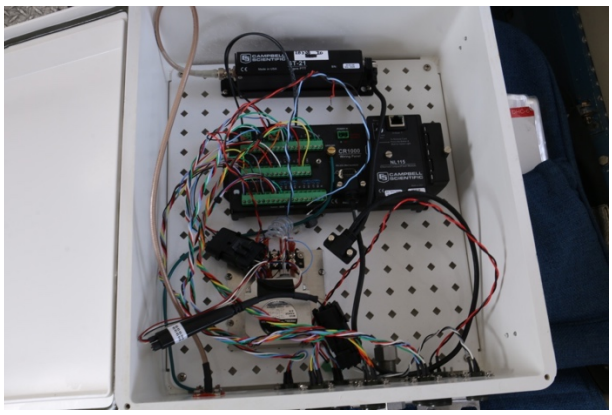
The pilots filled the plane with fuel, from drums cached at HRY earlier in the season.
Surface conditions: Mostly cloudy, winds ~10 m/s, temperature ~-14C
UNAVCO GPS was set up for duration of visit.
Previous program running:
New program installed: hry2019.CR1

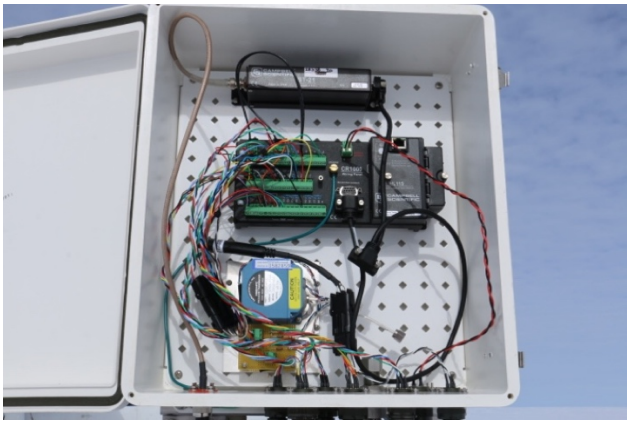
Instrument heights (inches):
Lower temperature: 48
Enclosure: 63
ADG/pyranometer boom: 87
Upper temperature: 161
Relative humidity: 161
Wind: 191

The power system was brought to the surface (the top was still visible). The Paroscientific pressure sensor, SN 4730, was swapped with the Paros recovered from Austin earlier this season, SN 48706. An HMP155 relative humidity sensor was installed. A new program was uploaded to the CR1000 data logger, hry2019.CR1. All instrument readings were checked and looked good. Argos transmissions were verified with the Telonics.

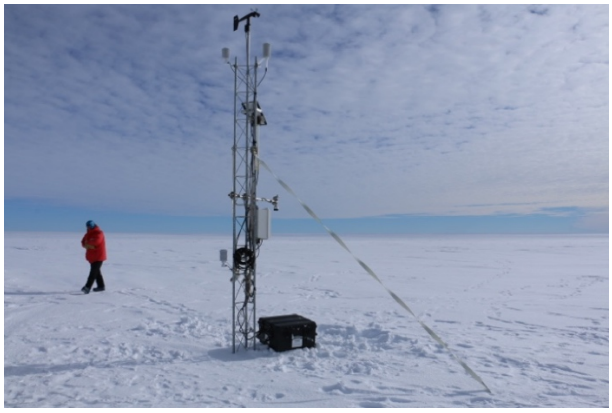
After the visit and upon reviewing the pictures, we noticed that the humidity sensor was coming partway out of the radiation shield.


HRY upon arrival.


HRY enclosure before swapping pressure.



HRY enclosure with new pressure.



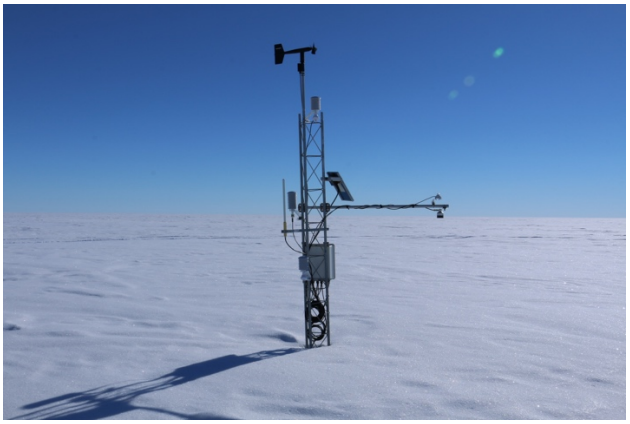
HRY after. Note the RH sensor.

1059: Depart HRY
1153: Arrive ELZ

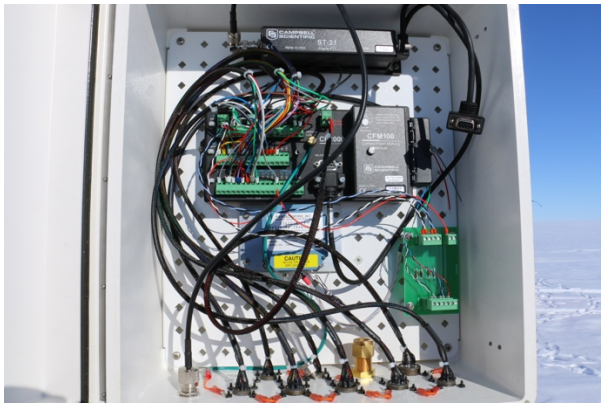
Surface conditions: Sunny, winds ~6 m/s, temperature ~-8C
UNAVCO GPS was set up for the duration of the visit.
Programs running:

Instrument heights before (after), in inches:
Lower temperature: 38 (57)
Enclosure: 36 (88)
Relative humidity: 69 (143)
ADG/pyranometer boom: 71 (71)
Upper temperature: 109 (172)
Wind: 139 (202)

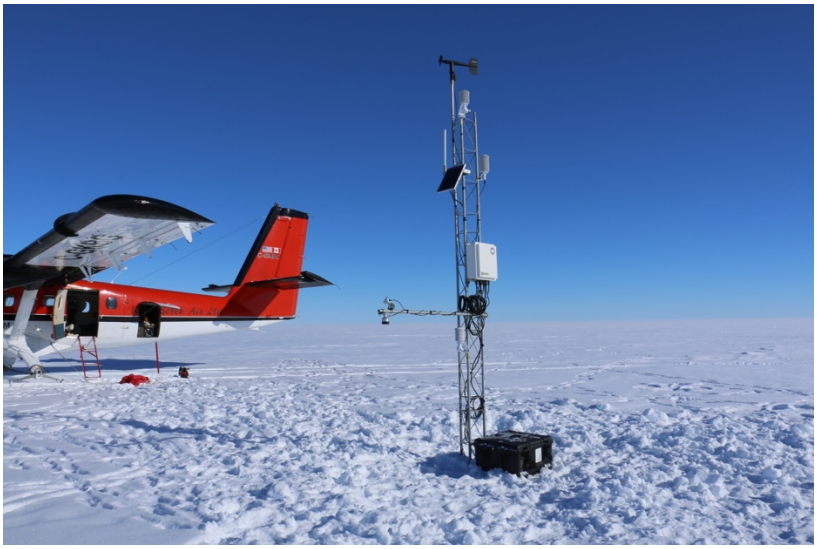
The power system was buried about 4 feet. That was brought to the surface. We installed a 5' tower section. Transmissions were verified with the Telonics.



ELZ upon arrival.



Inside ELZ enclosure.



ELZ after.

1437: Depart ELZ
1648: Arrive WSD

<u>01/19/2019:</u> French visit D-10 (D10) AWS
Purpose: Raise the station

Staff: A. Leluc , Ambroise Dufour, Vincent Favier

The station was working correctly before intervention. Data were verified with the Campbell keyboard.

Sensor height before moving the station (at 10:00 Local Time)
Pyranometer : 67 cm agl
Met21 (at the level of the temperature or HMP155 sensor): 187 cm agl
Second MET21: 185 cm agl
Young 05103 anemometer: 245 cm agl
SR50: under the ground level

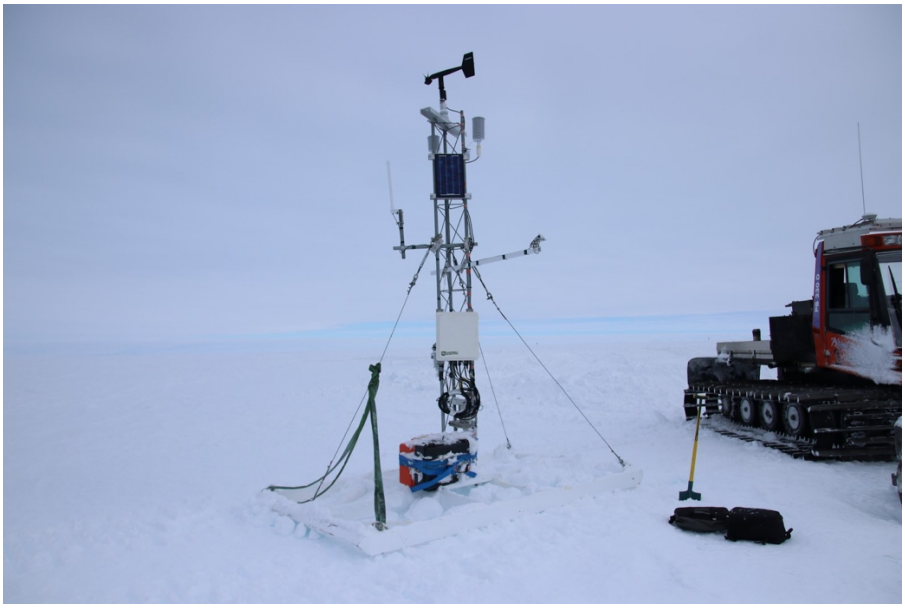
We first dug a pit around the station with shovels to avoid destroying the sensor. Then, the station was moved with the groomer.

Sensor height after intervention (at 17:30 Local Time)
Pyranometer: 242 cm agl
SR50: cm 114 above the sledge and 130 agl
MET21 / HMP: 360 cm agl
RM Young wind: 420 cm agl

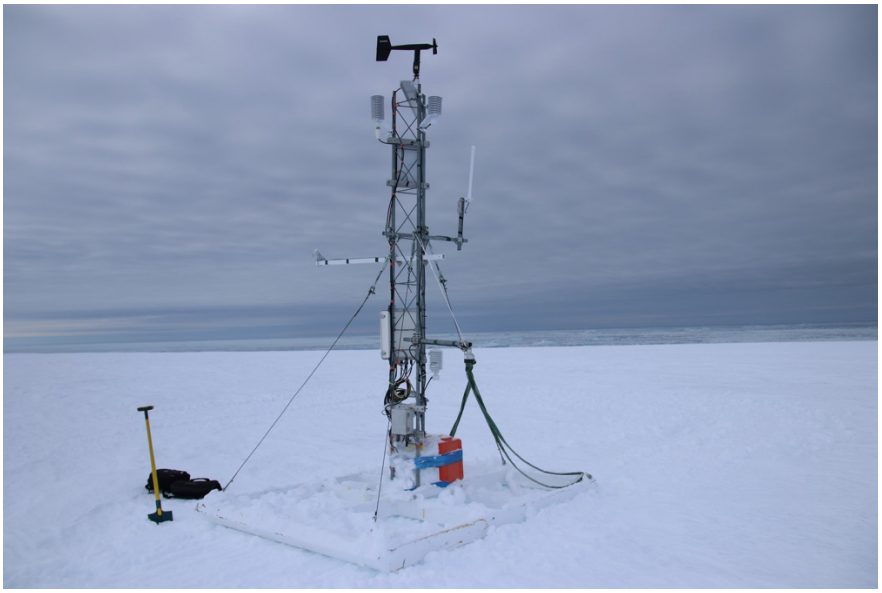
There were no data on the compact flash card: the file in the card was corrupted and was empty.
Data were downloaded with my computer but the battery of my computer collapsed. I will return at D10 station soon to download the remaining part of the data.
I formatted the CF card (using Campbell Keyboard).
The station was working correctly when leaving the site. Data were checked with the Campbell keyboard, and did not present any warning or error.

D-10 during servicing.

D-10 during servicing.



D-10 after servicing.



D-10 after servicing.

<u>01/21/2019:</u> Otter to Janet (JNT) AWS
Purpose: Swap batteries in power system, swap data card

Otter pilots (KBG): Troy, Jeff
Pax: Dave, Elina (AWS); Nikko Bayou, Eric Kendrick (UNAVCO); Mark Whetu (mountaineer)

1303: Depart WSD
1438: Arrive Toney Mountain (UNAVCO GPS site). Very windy! ~35-40 knots.
1525: Depart Toney Mountain
1645: Arrive JNT after 15-minute taxi due to low cloud/fog

Surface conditions: temps ~-21C, winds ~3.5 m/s, cloudy
UNAVCO GPS was set up for the duration of the visit.
Program running: 14413.CR1

Instrument heights (inches):
Lower temperature: 66
Boom: 85
Enclosure: 94
Upper temperature and relative humidity: 167
Wind: 226

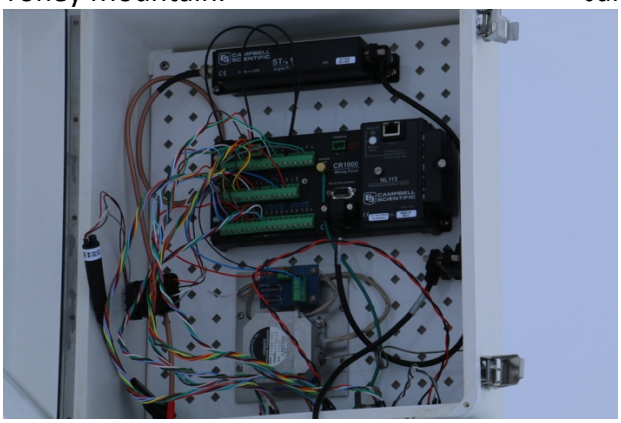
The power system was buried ~0.5' from top of the box. Both 100-Ahr batteries were swapped with new ones. Data card was swapped with a 1 GB data card. Transmissions were verified with the Telonics. As can be seen in the pictures, JNT has a fair amount of tilt to it.

We took about an hour at the AWS, then helped the others dig up all the fuel barrels at the cache about 30 yards from the AWS.

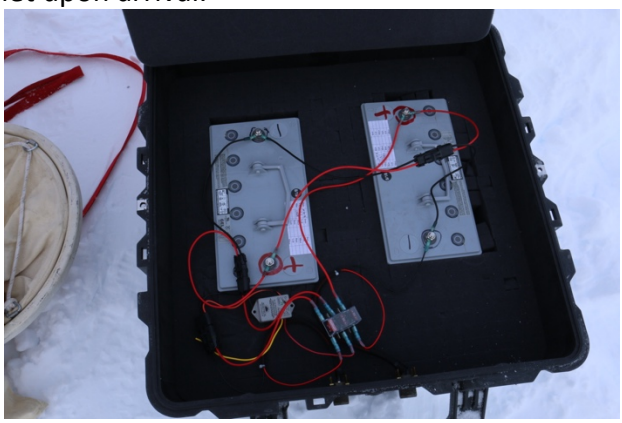
1905: Depart JNT
2048: Land about 16 miles from WSD due to fog. Taxied back to camp.
2213: Arrive WSD

Toney Mountain.

Janet upon arrival.

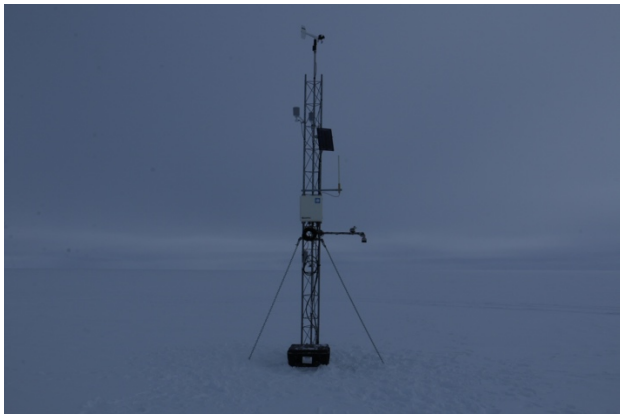


Inside JNT enclosure.



New batteries in the power system.

Power system.



JNT after.

<u>01/23/2019:</u> Mattracks to Willie Field (WFD) and Phoenix (PHX) AWS
Purpose: Swap UHF for Iridium at WFD; pull PHX enclosure for troubleshooting

Pax: Dave, Lee, Elina

1336: Depart Crary
1410: Arrive WFD

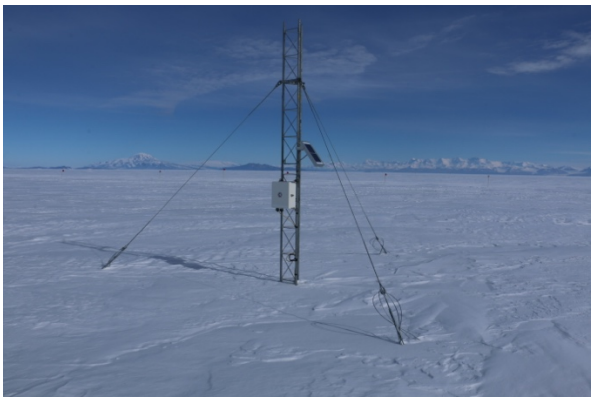
Surface conditions: mostly sunny, winds ~6 m/s

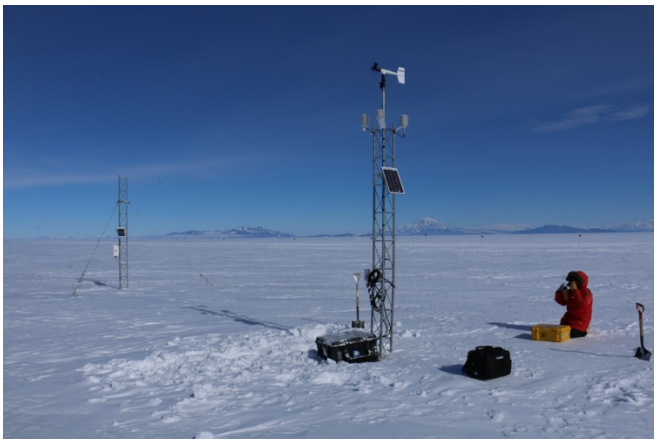
Instrument heights (inches):
Lower temperature: 38
Enclosure: 51
Relative humidity, upper temperature PRT, thermistor: 130
Wind: 160

The horizontal distance between the upper temperature PRT and the thermistor is ~19 inches.

We removed the enclosure to bring back to the lab to swap out the UHF modem for the Iridium modem. We removed the Yagi antenna and raised the power system to the surface.


WFD upon arrival.


Madison College PCWS prototype.



WFD after.

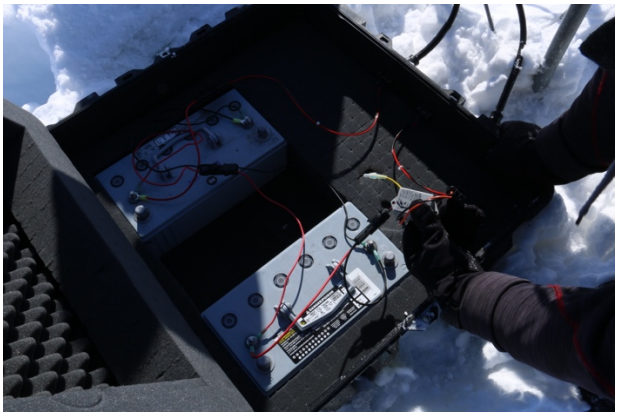
1456: Depart WFD
1524: Arrive PHX

Surface conditions: sunny, winds ~4 m/s

Instrument heights (inches):
Enclosure: 29
Lower temperature: 59
Boom: 83
Relative humidity: 138
Upper temperature: 160
Wind: 190

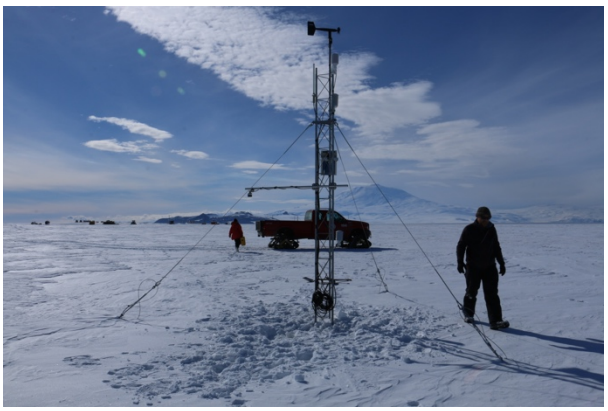
We removed the enclosure to bring back to the lab to troubleshoot PHX transmission issues. We removed the power system as well, as we noticed issues with it. Upon arrival, the battery voltage was ~16 V (too high). The charge controller visually appeared damaged/fried (though the green status light was still functioning). The voltage from the solar panel was ~22 V, which was nominal.

PHX upon arrival.



Power system.

The damaged charge controller.



PHX after.

1555: Depart PHX
1700: Arrive Crary

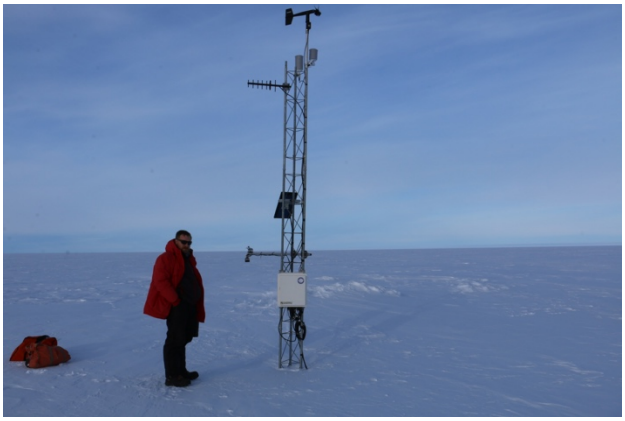
<u>01/23/19:</u> Helo to Lorne (LOR) AWS
Purpose: Swap UHF modem/antenna for Iridium 9602-N modem/antenna

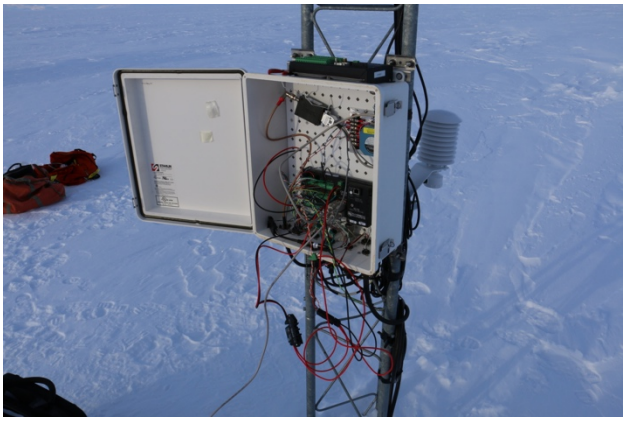
A-Star helo 31L pilot: Hugo
Pax: Dave, Lee

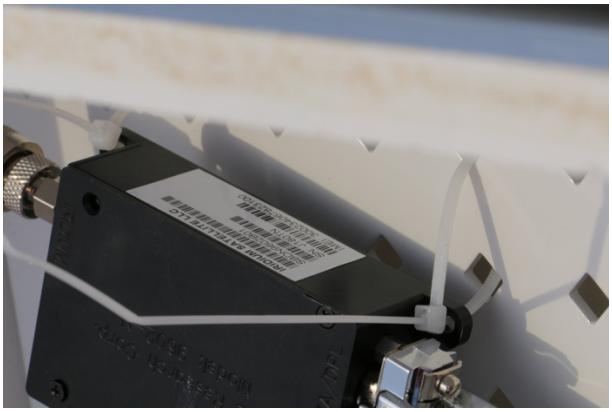
2130: Depart McM
2201: Arrive LOR

New program running: lorneiridium2019.CR1

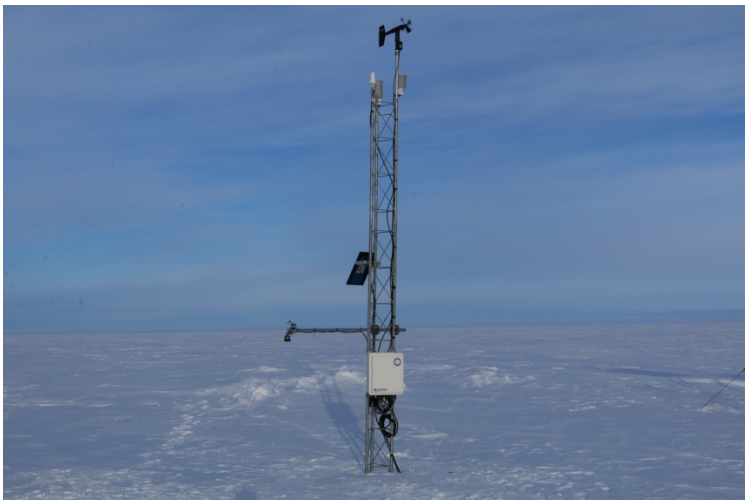
We successfully swapped the Freewave UHF modem and antenna for the Iridium 9602-N modem and antenna (IMEI: 300234067823100). Since the Iridium modem isn't activated yet, we were unable to verify that the AWS is transmitting data successfully. Our attempts to verify that the modem and CR1000 data logger are communicating have been inconclusive.


LOR upon arrival.


In the process of swapping the modems.


The 9602-N Iridium modem.


The Iridium antenna.



LOR after.

2336: Depart LOR
0005: Arrive McM

<u>01/25/19:</u> Otter to Alexander Tall Tower! (BAT) AWS
Purpose: Raise solar panels, enclosure; install disdrometers

Otter pilots (KBG): Troy, Jeff
Pax: Dave, Lee, Elina (AWS); Robin Herzig (dispatcher), Kirk Edgington (firefighter)

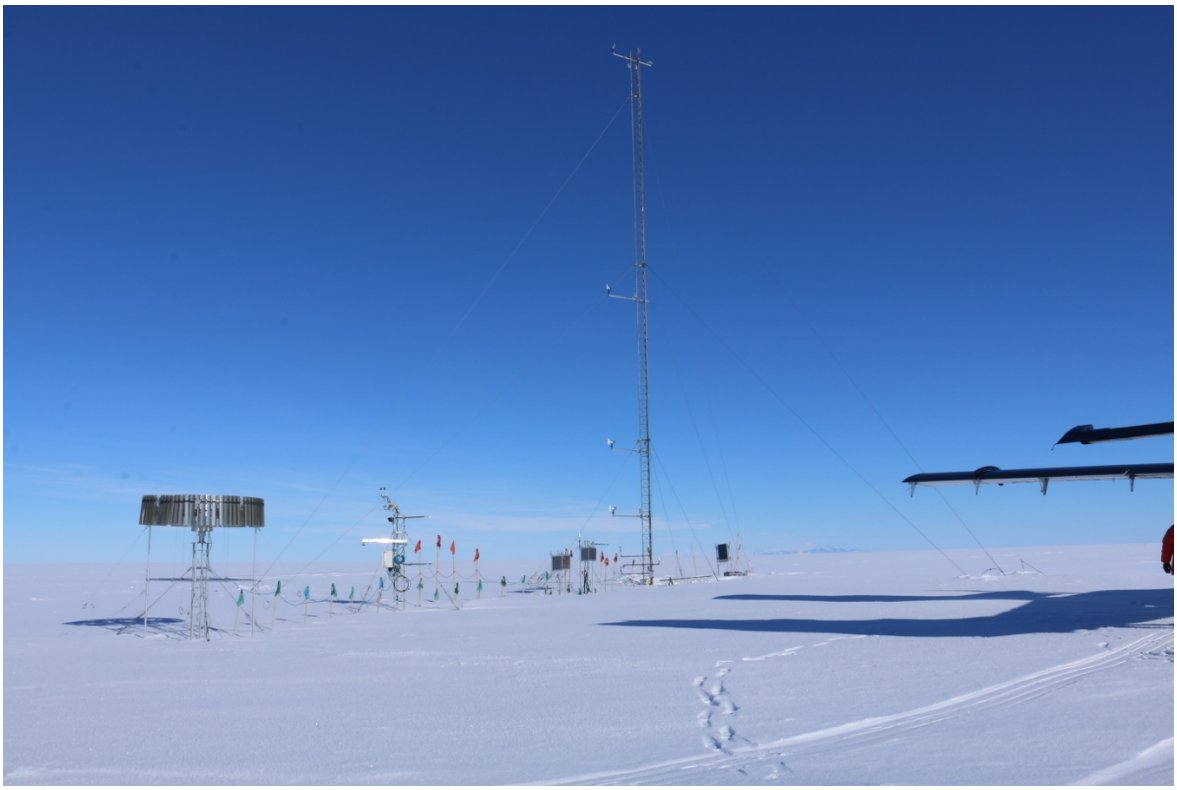
0904: Depart WFD
0945: Arrive BAT

Surface conditions: Sunny, temperature ~-10C, winds ~6 m/s
UNAVCO GPS was set up for the duration of the visit.

We dug up and raised the solar panel assembly and moved it to be in line with the power cable and battery box coming from the tower. We raised the enclosure, which was half buried, and installed 2 disdrometers. Note, the disdrometer data needs to be divided by 100 and is in units of km/hr. The disdrometers are 40 inches long. Lee climbed to the top to move the CNR4 to be on the open tower nipple. We left one 10' tower section at the site but brought bag all of the rigger gear that was left there (shovel, guy spools, etc).

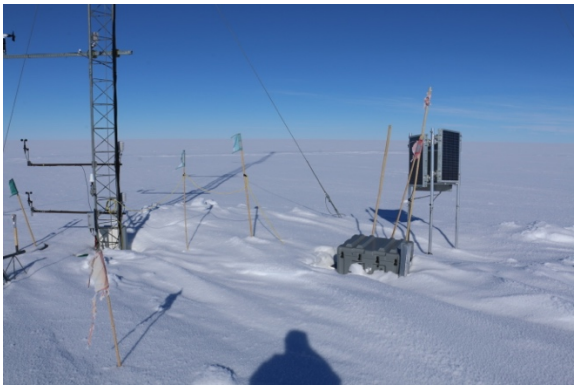
New instrument heights (inches):
Enclosure: 89
Lower disdrometer: 25(at bottom)
Upper disdrometer: 213 (at bottom)

1510: Depart BAT
1551: Arrive WFD



BAT on arrival.

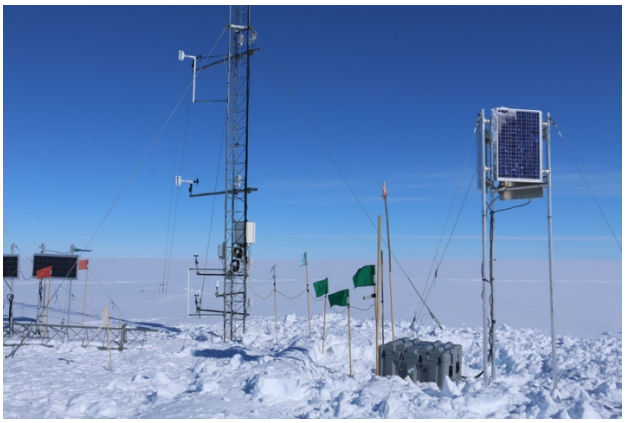
Lower instruments before.



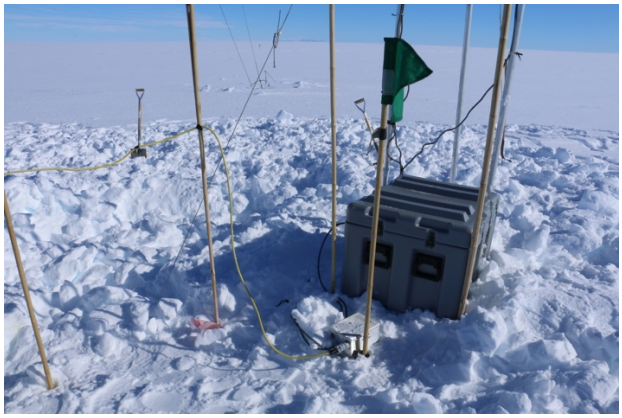
Power system and solar panels before.

The equipment we returned to the riggers.

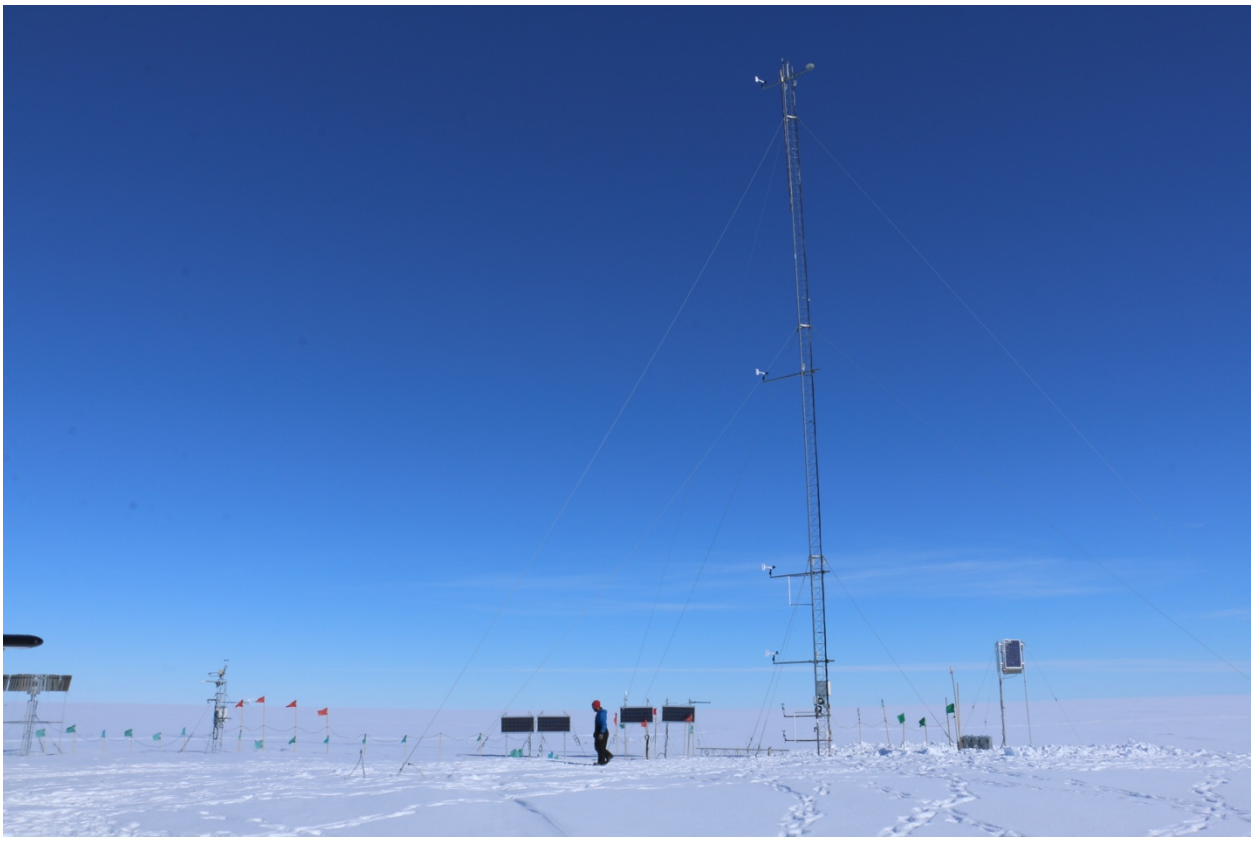
Inside the power system.



Lower instruments after. Note tower section.



The power system. Note junction box/cable.



BAT after.

<u>01/28/19:</u> Otter to Sabrina (SAB) and Lettau (LET) AWS

Purpose: Fix temperature cable mixup at Sabrina; swap data card at Lettau

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<u>01/29/19:</u> Otter to Emma (EMA) AWS
Purpose: Raise power system, swap data card

Otter pilots (KBG): Troy, Jeff
Pax: Dave and Elina (AWS), Keith Williams (UNAVCO)

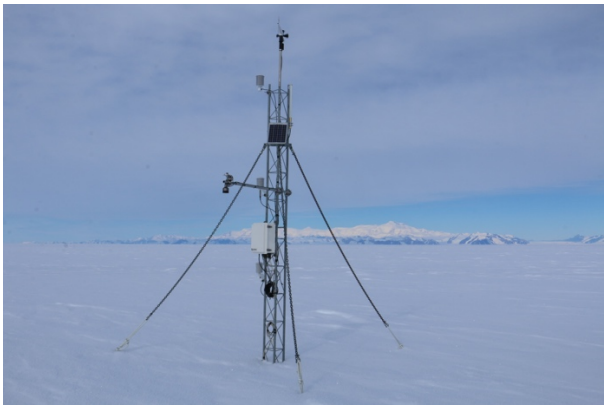
0924: Depart WFD
1206: Arrive EMA

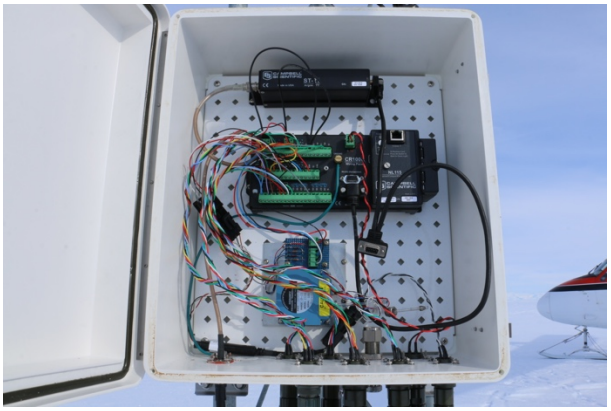
The UNAVCO GPS was set up for the duration of the visit.
Program running: 14633.CR1

Instrument heights, in inches:
Lower temperature: 49
Enclosure: 62
Solar radiation/ADG boom: 96
Relative humidity: 98
Upper temperature: 159
Wind: 187

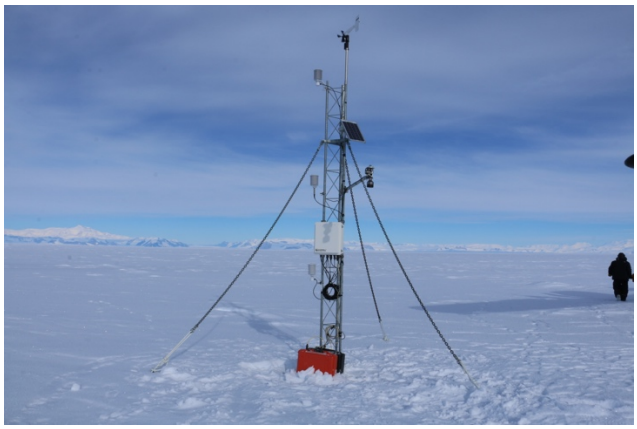
We raised the power system to the surface. It was buried ~2 feet. It was very icy around the boxes. We also swapped the data card for a 2 GB data card.

1303: Depart EMA
1327: Arrive Ramsey Glacier (UNAVCO GPS site)
1404: Depart Ramsey Gl
1527: Arrive Ascent Glacier fuel cache (taxied until 1534)
1627: Depart Ascent Gl
1853: Arrive WFD


EMA upon arrival.


EMA enclosure.

The power system.



EMA after.

<u>01/31/19:</u> Otter to Marilyn (MLN) AWS
Purpose: Raise station, check wind monitor due to potential bad values

Otter pilots (KBG): Troy, Jeff
Pax: Lee (AWS); Richard Horton (boondoggler)

Depart McM
Arrive Marilyn

Conditions: Sunny and light winds

Upon arrival the enclosure was almost entirely buried so we began the dig out of the power system and enclosure. The power system was raised to the surface, and the enclosure raised to a nominal height. Original plans to add tower weren't viable as the tower was damaged in the removal of a past pipe mount for a wind sensor. Instead, enclosure and lower T were raised. For next visit, recommend bringing sufficient tower to replace upper tower section and add additional tower length.

Heights	Before	After
Enclosure:	Beneath surface	41"
Lower T:	17"	64"
Humidity:	54"	134"
Upper T:	134"	134"
ADG:	68"	68"
Pyro:	77"	77"
Wind:	155"	155"

<u>01/31/19:</u> Snowmobile to Windless Bight (WDB) AWS
Purpose: Swap UHF modem for Iridium, raise power system and lower instruments

Pax: Dave, Forbes

1525: Depart Snowmo Depot off snow road
1633: Arrive WDB

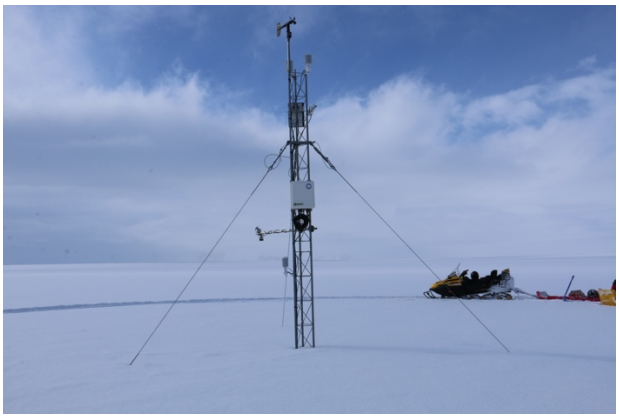
Surface conditions: Some low clouds, flurries off and on, sun came through for a bit; light and variable winds, temperature ~-7C.
UNAVCO GPS was set up for duration of the visit.
Old program running: newawsFWv31_WB.CR1
New program running: IridiumWDB2019.CR1

Instrument heights before (after), in inches:
Lower temperature: 52 (83)
Enclosure: 87 (91)
Boom: 76 (121)
Relative humidity: 181
Upper temperature: 181
Wind: 211

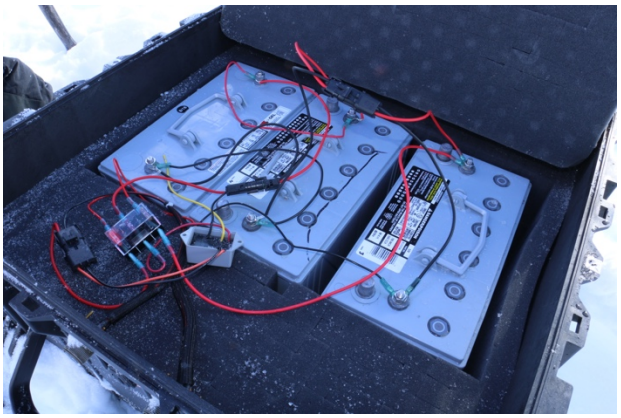
The power system was buried about 3 to 4 feet down, which we dug out and brought to the surface. We swapped the 3 100-Ahr led acid batteries for new ones, as the power system was reporting a minimum of 8.9 V in October 2018. We removed the Yagi antenna from the tower, installed the Iridium modem on the boom, raised the boom to be above the enclosure on the tower, and raised the lower temperature sensor. Dave swapped the Freewave UHF modem in the enclosure for a 9602-N Iridium modem, IMEI 300234067729960. The old CR1000 program was pulled and saved to the Getac, and the new program, IridiumWDB2019.CR1was uploaded.

Some issues arose with communicating between the Iridium modem and the data logger. The program originally had a baud rate of 9600. When connected through the CS I/O port and using the terminal through Loggernet's Device Control Config utility, we were unable to talk to the modem. Dave tried uploading the program with 19200 baud rate which then led to garbled text output in the terminal. Dave used the command AT+IPR=5 to set the baud rate on the modem to 9600, then resent the program with the 9600 baud rate to the data logger. Text output was still garbled in the terminal (but there was at least a response when connected), so this program was kept running on the data logger. The station is successfully transmitting, upon the modem being activated.

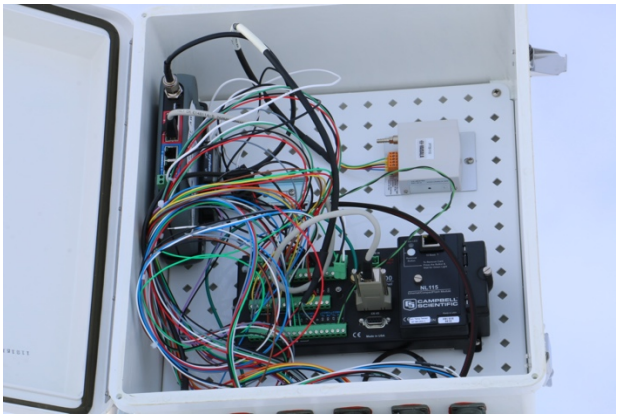
2229: Depart WDB
2320: Arrive snowmo depot



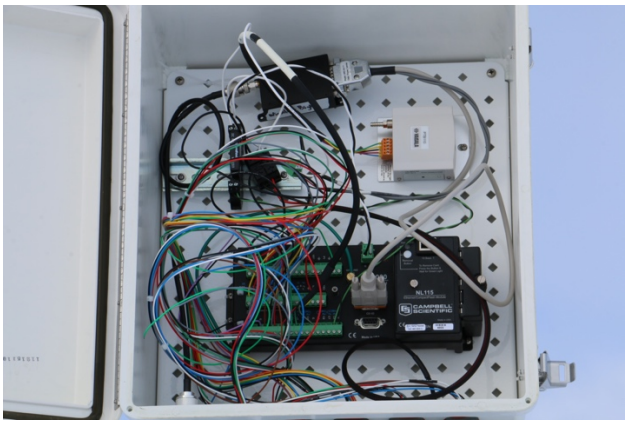
WDB upon arrival.



3 new batteries in the power system.



Enclosure before.



Enclosure after.

The boom with the Iridium antenna.

The power system.

WDB after.

<u>02/01/19:</u> French visit Port Martin (PTM) AWS

IPEV took pictures before AWS removal on 2 February 2019 to be shipped back to UW to troubleshoot/repair AWS.

<u>02/02/19:</u> French visit Port Martin (PTM) AWS

IPEV removed PTM instrumentation to ship back to UW to troubleshoot/repair the AWS. The tower was left installed at the site.

<u>02/04/19:</u> Helo to Cape Bird (CBD) AWS
Purpose: Swap UHF modem for Iridium, station checkup

Bell-212 helo 36J: Ryan (pilot), Anna (helo tech)
Pax: Dave, Lee, Elina, Forbes (AWS); Tad (boonie)

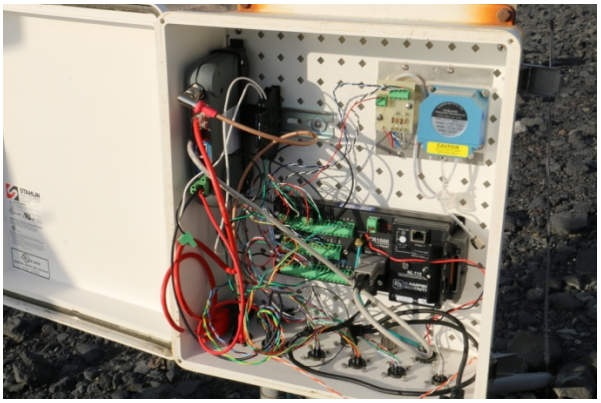
1959: Depart McM
2031: Arrive CBD

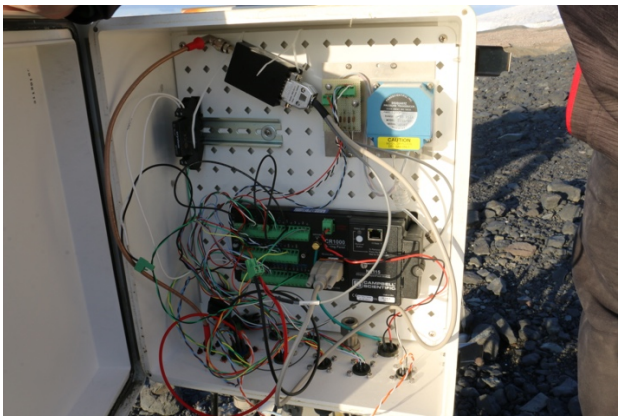
Surface conditions: Mostly sunny, temperatures around 0C, winds ~5-10 knots
Previous program running: newawsFWv31_CBD.CR1
New program installed: IridiumCBD2019.CR1

The walk from the helo, which landed at the shore, up to CBD past the Kiwi huts on the hill, took about 10-15 minutes. We brought a 7-foot ladder to reach instrumentation on the tripod.

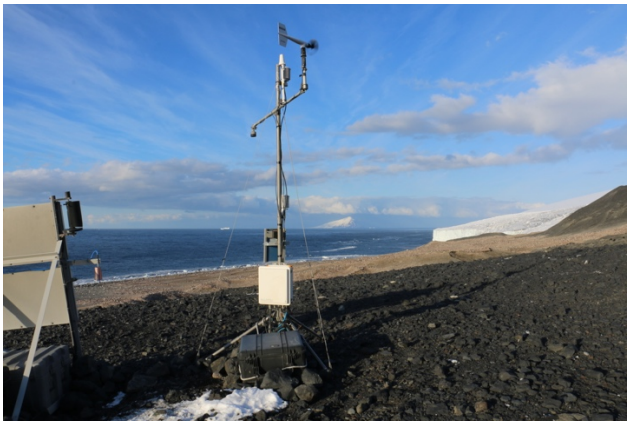
We removed the Yagi antenna, installed the Iridium antenna on the boom, and swapped out the Freewave modem for an Iridium 9602-N modem, IMEI 300234067726980. We changed the program running on the CR1000 data logger to IridiumCBD2019.CR1. We also swapped the nose cone and prop on the RM Young wind monitor, as it appeared the prop was wobbling a little bit.


CBD upon arrival.

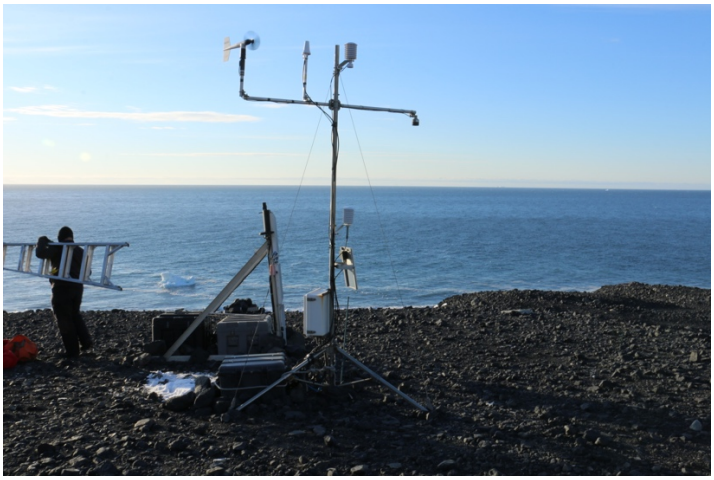

CBD enclosure before.



CBD enclosure after.



CBD after.



CBD after. Note Iridium antenna on boom.