FILE NAME: Station Record AK010.doc

LAST UPDATED: 8/28/23

**SAGWON, ALASKA**

SITE 1, NON-ACIDIC

### Station AK010 Record

**STATION:** AK010, SAGWON 1, MOIST NON-ACIDIC TUNDRA, FLUX STUDY SITE 95-3 (010). This station will monitor air temp and soil temperature at 14 soil depths. The station was installed to supplement the water content data collected by station AK005. The existing long term soil temperature monitoring Hobo probe system is old and was discontinued; this station will replace that system and continue long-term monitoring.

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|  |  |  |  |

**LOCATION:** West of Haul Road (Dalton Hwy.) near Sagwon materials site.

GPS (08/13/05): 69° 26’ 22.3” N

148° 40’ 07.5” W

845 ft elevation

GPS (08/08/07): 69° 26’ 22.2” N

148° 40’ 07.8” W

803 ft elevation

GPS (08/14/08): 69° 26’ 22.3” N

148° 40’ 07.8” W

811 ft elevation

GPS (08/14/09): 69° 26’ 22.3” N

148° 40’ 07.7” W

800 ft elevation

GPS (08/13/10): 69° 26’ 22.3” N

148° 40’ 07.8” W

825 ft elevation

**INSTRUMENTATION:**

Summary

| Quantity | Description | Comments |
| --- | --- | --- |
| 1 | Campbell CR-10X-2M datalogger SN: Wiring panel SN: | Installed 8/05 |
| 1 | Campbell SM4M storage module SN: | Installed 8/05 |
| 1 | Campbell 12-Ah battery | Installed 8/05 |
| 1 | Campbell PS12LA regulator | Installed 8/05 |
| 1 | Solar panel | Installed 8/05 |
| 1 | Campbell ENC 16/18 enclosure | Installed 8/05 |
| (1) | MRC soil temperature probe (120 cm) | Installed 8/05; Removed 8/07 |
| 1 | MRC soil temperature probe (70 cm) | Installed 8/07 |
| 1 | MRC soil temperature probe (70 cm) | Installed 8/06 |
| 1 | Campbell 107 air temperature sensor  With radiation shield | Installed 8/05 |
| 1 | Campbell CM6 Tripod | Installed 8/05  Provided by Fritz Nelson |

**HISTORY:**

August 13, 2005: Station initiated. One MRC probe and one air temp (2 m) were installed and wired to a CR10X-2M. The enclosure was mounted onto a tripod with station AK005. Clock was set to Alaska savings. The AM and PM are reversed and need to be corrected next time, and the data adjusted accordingly. The site contained large rock fragments at about 60-70 cm that prevented drilling deeper. A hand auger was used, but it did not work well. Next time, a powered ice drill should used to search out a hole to insert an MRC probe to 120cm. MRC probe #1 was inserted horizontal across a vegetation mound. The depth of the probe starting at the zero depth sensor (cord insertion) was: at cord insertion 1cm soil depth; at 25 cm from cord 10cm soil depth; at 50 cm from cord 10 cm; at 75 cm from cord 11 cm; at 100 cm from cord 8 cm; at 120 cm from cord 5 cm depth. Next time measured again before removing probe. The second MRC probe was returned back to Lincoln and will not be installed at the site. All sensors were collecting data.

August 14, 2006: Arrived at about 5:30 PM. MRC #1 was knocked out of place, probably by a passing caribou (took photo). Station clock was 12 hrs behind; reset clock. Installed a 70 cm MRC probe (#2) and wired to datalogger; probe is sitting on gravel/stones. Installed MRC #1 as deep as was possible given the stones; 32 cm of probe was out of the ground; packed two tussocks around probe (to the MRC cable insertion point). Swapped storage modules. Added two desiccant packs. Everything else seemed to be working OK. For next time, need to download corrected program to read 11 sensors instead of 15 for the 2nd MRC probe.

August 08, 2007: Swapped storage modules. Station clock was a couple of min ahead. Lithium battery was 3.13 volts. MRC #2 was 12 cm out of the ground. Pulled out and re-installed in in the exact same hole. The probe is setting on the stones. MRC #1 was 48.5 cm out of the ground. Pulled it out and installed a 70 cm MRC probe in the exact hole; did not need to drill out hole. The probe fit exactly in the hole, exact same depth. Put the two tussocks back over probe. Added two desiccant packs. Everything seemed to be working OK. For next time, need to corrected program to read 11 sensors instead of 15 for both MRC probes.

August 14, 2008: Arrived at site about 1:00 PM. Swapped storage modules. Lithium battery was 3.19 volts. Station clock was 5 minutes ahead; reset the clock. Everything seems to be working okay. MRC #1 was out of the ground 5.5 cm and MRC #2 was out of the ground 6.0 cm. Pushed the MRC probes back into the ground. MRC #1 was flush with the ground surface. MRC #1 was still 2 cm out of the ground (could feel the MRC probe hit rocks). Spray painted the enclosure with tundra color paint to reduce the visibility of the station. Forgot to download the modified logger program (corrected the amount of sensors being read for MRC #2); download next time.

August 14, 2009: Downloaded data from logger and swapped storage modules. Lithium battery was 3.13 volts. Station clock was 1.5 minutes ahead. Everything seems to be working okay. MRC #1 was out of the ground 3.5 cm and MRC #2 was out of the ground 8.0 cm. Pushed #1 MRC back into the ground so it was flush with the ground surface. MRC #2 could not be pushed into the ground. Download the modified logger program (corrected the amount of sensors being read for MRC #2).

August 13, 2010: Downloaded data from data logger (with RECON) and swapped storage modules. Lithium battery was 3.23 volts; battery was 13.2 volts. Station clock was 3 minutes ahead; reset clock. Everything seems to be working okay. MRC #1 was 8 cm out of the ground (push back into ground to 2 cm out) and MRC #2 was out of the ground 16.0 cm (could not push back into the ground). Air temp was 15.9ºC with light winds.

August 12, 2012: Downloaded data from data logger (with RECON) and swapped storage modules. Lithium battery was 3.29 volts; battery was 13.29 volts. Station clock was 3 minutes ahead; reset clock. Everything seems to be working okay. MRC #1 was 18.5 cm out of the ground in crevasse (pushed back into ground to 8 cm out in crevasse). Crevasse was 8 cm deep. MRC #2 was out of the ground 27.0 cm (pushed back into the ground to 20.5 cm out). Air temp was 15.3ºC.

August 14, 2014: Swapped storage modules.

August 16, 2015: AEK & FEN at 11:15 am. Swapped storage modules. Air temperature sensor was out of radiation shield—it was reinstalled. MRCs – were able to be pushed down. Measured before & then after pushed to point of resistance.

MRC #1. 22, 22, 22, and 22.5 cm. After pushed down, new measurements were 10, 10, 10.5, 12 cm. Was not so much a hole on one side as area all around it was a hole (believe was over 40 cm from top of MRC but that didn’t get written into book – think I thought Fritz was writing down what I was reading off but he was mixing slurry). FEN mixed 2 cups of slurry and poured it into hole and it filled it most of way but think it may need more next year.

MRC #2. 24.5 cm min; 27max cm, on other 4 sides 26 & 26. Hole on one side as 31.5 cm deep. After pushing down, had heights of 15, 17, 17.5, and 18 cm on sides and hole 19.5 cm. FEN then mixed about 2 cups of slurry from local puddle and muddy spot and poured that down. It seemed to fill hole.

August 15, 2016: Swapped storage modules.

August 15, 2017: Swapped storage modules.

August 16, 2018: Swapped storage modules.

August 13, 2019: Swapped storage modules. MRC probe 1 height (heaved): 28 cm, 28 cm, 28 cm, 30 cm; MRC probe 1 height (after pushed down as far as could): 5.5 cm, 5.5 cm, 7 cm, 7 cm; MRC probe 2 height (heaved): 30cm , 31 cm, 30 cm, 28 cm; MRC probe 2 height (after pushed down as far as could): 9 cm, 10 cm, 8 cm, 9 cm.

August 13, 2021: Swapped storage modules at about 1300.

August 16, 2022: Swapped storage modules at about 1456. The north MRC probe was 21 & 22 cm above ground but was pushed down to 15 & 16 cm high. The south MRC probe was 24 & 26 cm above ground and was pushed down to 19 & 20 cm high.

August 13, 2023: Swapped storage modules at about 1540 AST. The north MRC probe was 22.5 cm above ground and was pushed down to 13 cm high. The south MRC probe was 27.6 cm above ground and was pushed down to 18.6 cm high.

**DATA:**

DATALOGGER OUTPUT:

| COL | OUTPUT | UNITS | LOCATION | SENSOR | COMMENTS |
| --- | --- | --- | --- | --- | --- |
| 1 | Station ID | N/A | N/A | Campbell CR10X | 010 |
| 2 | Year | N/A | N/A | Campbell CR10X |  |
| 3 | Day | N/A | N/A | Campbell CR10X |  |
| 4 | Time | N/A | N/A | Campbell CR10X | AK savings time |
| 5 | Battery | Volts | Enclosure | Campbell CR10X |  |
| 6 | Int Battery | Volts | Datalogger | Campbell CR10X |  |
| 7 | Int Temp | °C | Datalogger | Campbell CR10X |  |
| 8 | Air Temp | °C | 2 m | Campbell 107 |  |
| 9 | Soil Temp | °C | Soil 0 cm (-32 cm) | MRC probe #1 | Removed 2007 |
| 10 | Soil Temp | °C | Soil 5 cm (-27 cm) | MRC probe #1 | Removed 2007 |
| 11 | Soil Temp | °C | Soil 10 cm (-22 cm) | MRC probe #1 | Removed 2007 |
| 12 | Soil Temp | °C | Soil 15 cm (-17 cm) | MRC probe #1 | Removed 2007 |
| 13 | Soil Temp | °C | Soil 20 cm (-12 cm) | MRC probe #1 | Removed 2007 |
| 14 | Soil Temp | °C | Soil 25 cm (-7 cm) | MRC probe #1 | Removed 2007 |
| 15 | Soil Temp | °C | Soil 30 cm (-2 cm) | MRC probe #1 | Removed 2007 |
| 16 | Soil Temp | °C | Soil 40 cm (8 cm) | MRC probe #1 | Removed 2007 |
| 17 | Soil Temp | °C | Soil 50 cm (18 cm) | MRC probe #1 | Removed 2007 |
| 18 | Soil Temp | °C | Soil 60 cm (28 cm) | MRC probe #1 | Removed 2007 |
| 19 | Soil Temp | °C | Soil 70 cm (38 cm) | MRC probe #1 | Removed 2007 |
| 20 | Soil Temp | °C | Soil 80 cm (48 cm) | MRC probe #1 | Removed 2007 |
| 21 | Soil Temp | °C | Soil 95 cm (63 cm) | MRC probe #1 | Removed 2007 |
| 22 | Soil Temp | °C | Soil 120 cm (88 cm) | MRC probe #1 | Removed 2007 |
| 23 | Soil Temp | °C | Reference | MRC probe #1 | Removed 2007 |
| 24 | Soil Temp | °C | Soil 0 cm | MRC probe #1 | Installed 2007 |
| 25 | Soil Temp | °C | Soil 5 cm | MRC probe #1 | Installed 2007 |
| 26 | Soil Temp | °C | Soil 10 cm | MRC probe #1 | Installed 2007 |
| 27 | Soil Temp | °C | Soil 15 cm | MRC probe #1 | Installed 2007 |
| 28 | Soil Temp | °C | Soil 20 cm | MRC probe #1 | Installed 2007 |
| 29 | Soil Temp | °C | Soil 30 cm | MRC probe #1 | Installed 2007 |
| 30 | Soil Temp | °C | Soil 40 cm | MRC probe #1 | Installed 2007 |
| 31 | Soil Temp | °C | Soil 50 cm | MRC probe #1 | Installed 2007 |
| 32 | Soil Temp | °C | Soil 60 cm | MRC probe #1 | Installed 2007 |
| 33 | Soil Temp | °C | Soil 70 cm | MRC probe #1 | Installed 2007 |
| 38 | Soil Temp | °C | Reference | MRC probe #1 | Installed 2007 |
| 24 | Soil Temp | °C | Soil 0 cm | MRC probe #2 | Installed 2006 |
| 25 | Soil Temp | °C | Soil 5 cm | MRC probe #2 | Installed 2006 |
| 26 | Soil Temp | °C | Soil 10 cm | MRC probe #2 | Installed 2006 |
| 27 | Soil Temp | °C | Soil 15 cm | MRC probe #2 | Installed 2006 |
| 28 | Soil Temp | °C | Soil 20 cm | MRC probe #2 | Installed 2006 |
| 29 | Soil Temp | °C | Soil 30 cm | MRC probe #2 | Installed 2006 |
| 30 | Soil Temp | °C | Soil 40 cm | MRC probe #2 | Installed 2006 |
| 31 | Soil Temp | °C | Soil 50 cm | MRC probe #2 | Installed 2006 |
| 32 | Soil Temp | °C | Soil 60 cm | MRC probe #2 | Installed 2006 |
| 33 | Soil Temp | °C | Soil 70 cm | MRC probe #2 | Installed 2006 |
| 38 | Soil Temp | °C | Reference | MRC probe #2 | Installed 2006 |

DATA PROCESSING ALGORITHMS:

DATA STORAGE AND ACCESS:

**SOILS:** **:** Loess. Sampled for characterization.

CLASSIFICATION:

**LANDSCAPE:**

SLOPE:

ASPECT:

ELEVATION:

**VEGETATION:**  Moss, grass, and small annual flowers.

GROUND COVER:

CANOPY COVER:

**COMMENTS:**

**NOTES FOR NEXT STATION VISIT:** Routine maintenance.