FILE NAME: StationRecord\_ANT011.doc

LAST UPDATED: 3/16/2023

STATION RECORD

## DON JUAN POND

**ANTARCTICA**

**STATION:** Don Juan Pond (ANT011)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **STATION MANAGER:**  Phone:  FAX:  E-mail: | | Cathy Seybold  USDA NRCS  Federal Bldg., Rm. 152  Lincoln, NE 68508  USA  (402) 437-4132  (402) 437-5336  cathy.seybold@lin.usda.gov | | Deb Harms  USDA NRCS  Federal Bldg., Rm. 152  Lincoln, NE 68508  USA  (402) 437-5324  (402) 437-5336  deb.harms@lin.usda.gov |  |
|  | |  | |  |  |
| **PROJECT PERSONNEL:**  Phone:  FAX:  E-mail: | | Jackie Aislabie  Landcare Research  Private Bag 3127  Hamilton, NZ  +647 858 3713  +647 858 4926  aislabie@landcare.cri.nz | | Megan Balks  Dept. of Earth Sciences  Waikato University  Private Bag 3105  Hamilton, NZ  +647 8562 889  +647 8560 115  m.balks@waikato.ac.nz | Malcolm McLeod  Landcare Research  Private Bag 3127  Hamilton, NZ  +647 858 4926  mcleodm@landcare.cri.nz |
|  | |  | |  |  |
|  |  | |
|  |  | |

**LOCATION:** On a ridge about 700 m above Don Juan Pond at the upper end of the Wright valley, Antarctica.

GPS (01/11/11): 77° 34’ 26.1” S 77.57388 S

161° 14’ 19.8” E 161.2388 E

2394 ft elevation 728 m elevation

GPS (01/20/12): 77° 34’ 26.0” S

161° 14’ 19.6” E

734 m elevation

**INSTRUMENTATION:**

Summary

|  |  |  |
| --- | --- | --- |
| Quantity | Description | Comments |
| 1 | Campbell CR1000 datalogger S/N: 11856. Wiring panel S/N: 11532. | Installed 2011. |
| 1 | Campbell AM416 multiplexer S/N: 13072. | Installed 2011. |
| 1 | Campbell NL115 storage flash card module S/N: 5815 | Installed 2011. |
| 4 | Campbell BP24 24-amp-hr YUASA battery | Two installed 2011; one installed 2012; one installed 2016. |
| 1 | Campbell CH100 charger/regulator S/N: 4650. | Installed 2011. |
| 1 | Campbell MSX-20 Solar panel. | Installed 2011. |
| 1 | Campbell ENC 16/18 Enclosure. | Installed 2011. |
| 1 | Campbell CM6 2-m Tower | Installed 2011. |
| 6 | Hydra-probe soil moisture/temperature sensors, analog 2.5 volt. | Installed 2011. |
| 6 | Campbell 107 soil temperature sensors | Installed 2011. |
| 1 | MRC soil temperature probe | Installed 2011. |
| 2 | Campbell CS215 RH and Temp probe | Installed 2011. |
| 1 | Campbell 109 Air Temp Probe w/radiation shield. | Installed 2011. |
| 1 | Licor LI200X pyranometer solar radiation sensor w/leveling fixture and mounting arm | Installed 2011. |
| 1 | RM Young wind sensor | Installed 2011. |
| 1 | Campbell HMP45C Relative Humidity and Radiation Shield | Installed 2011. |
| 1 | Guy Kit | Installed 2011. |

**HISTORY:**  January 12, 2011: Station initiated. The station was started in the late afternoon of the 10th. A soil pit was open using a jack hammer (Hitachi rock breaker) to 120 cm. The Campbell 107s were placed at 2, 10, 25, 35, 50, and 75 cm depths. Hydra-probes were placed in two stacks at 2, 10, and 25 cm depths. The 107s were placed alongside of the hydra-probes in the first stack. Two CS215 soil RH sensors were placed at 2 and 10 cm depths. The MRC probe was placed so the top was flush with the soil surface. At 11:00 am of the 12th finished the site. Reset the clock to NZ standard time. Checked sensor readings at 1:10 PM, everything looked okay. Added four desiccant packs to the enclosure (Nema box). Reinforced the solar panel to the tripod with wire. The battery voltage was 13.9 volts and the lithium battery was 3.34 volts. Everything seemed to be working okay.

January 15, 2011: Downloaded the data to the RECON just after 12:00 pm. Checked the data again, everything seemed to be working okay.

January 20, 2012: Swapped flash cards. Program was not running. Station clock was 30 sec behind. Lithium battery was reading 3.4 V and battery voltage was 13.9. Downloaded the program and everything everything seemed to be working okay. Checked the guy cables and secured the turn-buckles with electrical tape. There was about 6 months of data on the flash card. Checked the data again, everything seemed to be working okay. Add third battery for next time.

December 17, 2013: Swapped flash cards. Could not connect to datalogger. Datalogger was down. The NL115 did not respond at all. Checked the wiring panel for power; reading 13.6 volts. Replaced lithium battery in datalogger and still no datalogger response. The replaced lithium battery was okay (3.6 volts). Removed the datalogger. Guy cables were okay. Installed one new 24 Ahr battery on the ground in a small NEMA box.

December 18, 2012: Replaced the two batteries in the enclosure with batteries that were taken out of other stations. Replace all batteries for next time. Installed new datalogger with program already loaded. Installed existing NL115 with flash card that was used when loading the program. Plugged in the power. Checked the program with the laptop, it was running. Swapped storage modules and datalogger program accepted and was formatting the card. Everything seemed to be working okay. Lithium battery was reading 3.41 volts.

January 6, 2014: Swapped memory cards. Replaced one 24 Ahr battery. Datalogger quit storing data to the memory card on 12-25-2013.

January 15, 2015: 1127 NZDT. Downloaded datalogger and swapped memory cards. Lithium battery was 3.37 V. Difference between station and PC time was 1 min 30 sec. MRC probe height was at level with the snow. Snow cover about 10 cm depth. Weather measured on hand-held kestrel 3500; Measurement time1150 NZDT; Wind max 1-3 Knots, Temp -8.1 Degrees C, RH: 86 %, Dewpoint -9.4 Degrees C, Wetbulb -7.2 Degrees C, Air pressure 908 hPa.

January 16, 2016: Downloaded datalogger and swapped memory cards. Lithium battery was 3.4 V. Station clock was the same as computer. MRC probe height was 7 cm out of the ground. The oldest battery was replaced. A fourth battery (24 Ahr) was installed.

January 3, 2017: Downloaded datalogger and swapped memory cards.

January 20, 2018: Downloaded datalogger and swapped memory cards. The site only downloaded 75 records. The CF card recorded about 15 days of data in early January 2018. All the measurements look reasonable apart from the CS125’s. Removed the CS125’s still installed at the site, just unwired from the datalogger and wrapped the wire tips in tape to eliminate any risk of shorting. Uploaded the new program. Chris made similar edits as was undertaken for the Bull Pass East site. The oldest battery was replaced.

January 12, 2019: Downloaded datalogger and swapped memory cards. After looking at the 2018 data, adjustments made to the datalogger wiring last time caused all Vitels to not work and a few 107s were disconnected. The CS125’s temperature wires were not all disconnected.

December 27, 2019: Downloaded datalogger and swapped memory cards. After looking at the 2019 data, adjustments made to the datalogger wiring in January 2018 caused all Vitels to not work and a few 107s were disconnected. The CS125’s temperature wires were not all disconnected.

December 2, 2021: Downloaded datalogger and swapped memory cards. Swapped battery. MRC probe height above the ground is 7 cm. Reset clock. Showing program error - skipped records, data recovered ok.

December 12, 2022: Downloaded datalogger and swapped memory cards. MRC probe height above the ground is 7.5 cm. Rest clock to UTC. (10:46am to 10:46pm).

| MULTIPLEXER  POSITION | STACK | VITEL PROBE  # | DEPTH  (cm) | COMMENTS |
| --- | --- | --- | --- | --- |
| 1 | 1 | 1-2 | 2 |  |
| 2 | 1 | 1-10 | 10 |  |
| 3 | 1 | 1-25 | 25 |  |
| 4 | 2 | 2-2 | 2 |  |
| 5 | 2 | 2-10 | 10 |  |
| 6 | 2 | 2-25 | 25 |  |
| 7 | 3 |  |  |  |
| 8 | 3 |  |  |  |
|  |  |  |  |  |

| MULTIPLEXER  POSITION | STACK | 107 TEMP  PROBE # | DEPTH  (cm) | COMMENTS |
| --- | --- | --- | --- | --- |
| 9H1 | 1 | 1 | 2 |  |
| 9L1 | 1 | 2 | 10 |  |
| 9H2 | 1 | 3 | 25 |  |
| 9L2 | 1 | 4 | 35 |  |
| 10H1 | 1 | 5 | 50 |  |
| 10L2 | 1 | 6 | 75 |  |

| MULTIPLEXER  POSITION | STACK | SENSOR  # | DEPTH  (cm) | COMMENTS |
| --- | --- | --- | --- | --- |
| 14H1 |  | RH1 | 2 | Relative humidity sensor. |
| 14L1 |  | RH2 | 10 | Relative humidity sensor. |
| 15H1 |  |  |  |  |
|  |  |  |  |  |

**DATA:**

DATALOGGER OUTPUT:

| COL | OUTPUT | UNITS | LOCATION | SENSOR | COMMENTS |
| --- | --- | --- | --- | --- | --- |
| 1 | Timestamp | N/A | N/A | Campbell CR1000 | ANT011 |
| 2 | Record # | N/A | N/A | Campbell CR1000 |  |
| 3 | Year | N/A | N/A | Campbell CR1000 |  |
| 4 | Day | N/A | N/A | Campbell CR1000 |  |
| 5 | Time | N/A | N/A | Campbell CR1000 | NZ standard time |
| 6 | Battery | Volts | Enclosure | Campbell CR1000 |  |
| 7 | Lithium Bat | Volts | Datalogger | Campbell CR1000 |  |
| 8 | Int Temp | ºC | Datalogger | Campbell CR1000 |  |
| 9 | Air Temp | ºC | Air 2 m | Campbell 109 |  |
| 10 | Air T Max | ºC | Air 2 m | Campbell 109 |  |
| 11 | Air T Min | ºC | Air 2 m | Campbell 109 |  |
| 12 | Air Temp | ºC | Air 1.6 m | HMP45C |  |
| 13 | RH | % | Air 1.6 m | HMP45C |  |
| 14 | Solar Rad | W/m2 | Air 2.2 m | LiCor LI200X |  |
| 15 | Wind Speed | mph | Air 2.2 m | RM Young sensor |  |
| 16 | Wind Dir | azimuth | Air 2.2 m | RM Young sensor |  |
| 17 | Wind Max | mph | Air 2.2 m | RM Young sensor |  |
| 18 | Wind speed | m/s | Air 2.2 m | RM Young sensor |  |
| 19 | Soil Temp | ºC | Soil 2 cm | Campbell CS215 probe | Disconnected 2018 |
| 20 | Soil RH | % | Soil 2 cm | Campbell CS215 probe | Disconnected 2018 |
| 21 | Soil Temp | ºC | Soil 10 cm | Campbell CS215 probe | Disconnected 2018 |
| 22 | Soil RH | % | Soil 10 cm | Campbell CS215 probe | Disconnected 2018 |
| 23 | Soil Temp | ºC |  |  | Not installed |
| 24 | Soil RH | % |  |  | Not installed |
| 25 | Soil Temp | ºC | Soil 2 cm | Campbell 107 |  |
| 26 | Soil Temp | ºC | Soil 10 cm | Campbell 107 |  |
| 27 | Soil Temp | ºC | Soil 25 cm | Campbell 107 |  |
| 29 | Soil Temp | ºC | Soil 35 cm | Campbell 107 |  |
| 29 | Soil Temp | ºC | Soil 50 cm | Campbell 107 |  |
| 30 | Soil Temp | ºC | Soil 75 cm | Campbell 107 |  |
| 31 | Soil Temp | ºC | Soil 0 cm | MRC Temperature Probe |  |
| 32 | Soil Temp | ºC | Soil 5 cm | MRC Temperature Probe |  |
| 33 | Soil Temp | ºC | Soil 10 cm | MRC Temperature Probe |  |
| 34 | Soil Temp | ºC | Soil 15 cm | MRC Temperature Probe |  |
| 35 | Soil Temp | ºC | Soil 20 cm | MRC Temperature Probe |  |
| 36 | Soil Temp | ºC | Soil 25 cm | MRC Temperature Probe |  |
| 37 | Soil Temp | ºC | Soil 30 cm | MRC Temperature Probe |  |
| 38 | Soil Temp | ºC | Soil 40 cm | MRC Temperature Probe |  |
| 39 | Soil Temp | ºC | Soil 50 cm | MRC Temperature Probe |  |
| 40 | Soil Temp | ºC | Soil 60 cm | MRC Temperature Probe |  |
| 41 | Soil Temp | ºC | Soil 70 cm | MRC Temperature Probe |  |
| 42 | Soil Temp | ºC | Soil 80 cm | MRC Temperature Probe |  |
| 43 | Soil Temp | ºC | Soil 95 cm | MRC Temperature Probe |  |
| 44 | Soil Temp | ºC | Soil 120 cm | MRC Temperature Probe |  |
| 45 | Resistance |  |  | MRC Temperature Probe | Reference value |
| 46 | 1V1 | Volts | Soil 2 cm | Hydra-probe Soil Moisture |  |
| 47 | 1V2 | Volts | Soil 2 cm | Hydra-probe Soil Moisture |  |
| 48 | 1V3 | Volts | Soil 2 cm | Hydra-probe Soil Moisture |  |
| 49 | 1V4 | Volts | Soil 2 cm | Hydra-probe Soil Moisture |  |
| 50 | 2V1 | Volts | Soil 10 cm | Hydra-probe Soil Moisture |  |
| 51 | 2V2 | Volts | Soil 10 cm | Hydra-probe Soil Moisture |  |
| 52 | 2V3 | Volts | Soil 10 cm | Hydra-probe Soil Moisture |  |
| 53 | 2V4 | Volts | Soil 10 cm | Hydra-probe Soil Moisture |  |
| 54 | 3V1 | Volts | Soil 25 cm | Hydra-probe Soil Moisture |  |
| 55 | 3V2 | Volts | Soil 25 cm | Hydra-probe Soil Moisture |  |
| 56 | 3V3 | Volts | Soil 25 cm | Hydra-probe Soil Moisture |  |
| 57 | 3V4 | Volts | Soil 25 cm | Hydra-probe Soil Moisture |  |
| 58 | 4V1 | Volts | Soil 2 cm | Hydra-probe Soil Moisture |  |
| 59 | 4V2 | Volts | Soil 2 cm | Hydra-probe Soil Moisture |  |
| 60 | 4V3 | Volts | Soil 2 cm | Hydra-probe Soil Moisture |  |
| 61 | 4V4 | Volts | Soil 2 cm | Hydra-probe Soil Moisture |  |
| 62 | 5V1 | Volts | Soil 10 cm | Hydra-probe Soil Moisture |  |
| 63 | 5V2 | Volts | Soil 10 cm | Hydra-probe Soil Moisture |  |
| 64 | 5V3 | Volts | Soil 10 cm | Hydra-probe Soil Moisture |  |
| 65 | 5V4 | Volts | Soil 10 cm | Hydra-probe Soil Moisture |  |
| 66 | 6V1 | Volts | Soil 25 cm | Hydra-probe Soil Moisture |  |
| 67 | 6V2 | Volts | Soil 25 cm | Hydra-probe Soil Moisture |  |
| 68 | 6V3 | Volts | Soil 25 cm | Hydra-probe Soil Moisture |  |
| 69 | 6V4 | Volts | Soil 25 cm | Hydra-probe Soil Moisture |  |
| 70 | 7V1 | Volts |  |  | Not installed |
| 71 | 7V2 | Volts |  |  | Not installed |
| 72 | 7V3 | Volts |  |  | Not installed |
| 73 | 7V4 | Volts |  |  | Not installed |
| 74 | 8V1 | Volts |  |  | Not installed |
| 75 | 8V2 | Volts |  |  | Not installed |
| 76 | 8V3 | Volts |  |  | Not installed |
| 77 | 8V4 | Volts |  |  | Not installed |

DATA PROCESSING ALGORITHMS:

Vitel Hydra Probe soil moisture, temperature, complex dielectric constant, electrical conductivity, and salinity are determined from the raw data (four voltages), and a calibration option (1, 2, or 3), depending on the soil texture, with a program supplied by Vitel, Inc. Option 1 (sand) is used here.

DATA STORAGE AND ACCESS:

Contact Cathy Seybold or Deb Harms. Data are in Excel files organized by calendar year. Data can be downloaded from the NSSC website at <http://soils.usda.gov/survey/scan/>.

**SOILS:**

CLASSIFICATION: At the time of sampling: Sandy-skeletal, mixed, hypergelic Typic Haplorthel.

Sampled for characterization at time of station installation.

LAB PEDON NUMBER:

SITE IDENTIFICATION NUMBER:

**LANDSCAPE:**

SLOPE: 5 %

ASPECT: East

ELEVATION: 728 m.

**VEGETATION:**

GROUND COVER: None

CANOPY COVER: None

**COMMENTS:** Soil described by Malcolm McLeod, Cathy Seybold, and Jackie Aislabie. Soil samples were collected for characterization.

Note: NZ standard time is used here because Scott Base uses NZ time. Actually, NZ and Scott Base use daylight savings time during the summer.

**NOTES FOR NEXT STATION VISIT:**