FILE NAME: StationRecordVictoriaValley.doc

LAST UPDATED: 3/16/2023

STATION RECORD

## VICTORIA VALLEY

**ANTARCTICA**

**STATION:** VICTORIA VALLEY (ANT002)

|  |  |  |  |
| --- | --- | --- | --- |
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|  |  |  |  |
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**LOCATION:** Victoria Valley, Antarctica.

GPS (01/10/02): 77° 19’ 51.3” S

161° 36’ 02.2” E

1,349 ft elevation

GPS (01/15/03): 77° 19’ 51.5” S

161° 36’ 01.9” E

1,357 ft elevation

GPS (01/07/04): 77° 19’ 51.4” S

161° 36’ 02.6” E

1,342 ft elevation

GPS (01/17/05): 77° 19’ 51.3” S

161° 36’ 02.9” E

GPS (01/21/12): 77° 19’ 51.4” S

161° 36’ 02.5” E

408 m elevation

**INSTRUMENTATION:** STATION installed by Ron Sletten. Cooperative project.

Summary

|  |  |  |
| --- | --- | --- |
| Quantity | Description | Comments |
| (1) | Campbell CR-10X-2M datalogger S/N: X14673. Wiring Panel S/N: 6324. | Installed 1999. Recalled and replaced 2001 |
| 1 | Campbell CR-10X-2M datalogger S/N: X24397. Wiring Panel S/N: 6324. | Installed 02/01 by Ron Sletten. |
| 1 | Campbell AM416 multiplexer S/N: 12102. | Installed 1999. |
| 1 | Campbell SM4M storage module S/N: 4183 (Victoria Valley (A)); alternate S/N: 4184 (Victoria Valley (B)) | Installed 01/04 |
| 3 | Campbell BP24 24-amp-hr YUASA battery | Installed 2006, 2007, 2008 |
| (1) | Power-Sonic 30AH battery | Installed 1999. Provided by Ron Sletten. Replaced in 2005. |
| 1 | Campbell CH12R charger/regulator S/N: 1892. | Installed 1999. |
| 1 | Campbell MSX-20 Solar panel. | Installed 1999. |
|  | Campbell ENC 16/18 enclosure. | Installed 1999. |
| 1 | Campbell CM10 3-m tower | Installed 1999. |
| 7 | Vitel dielectric constant soil moisture/temperature sensors. | Installed 1999. |
| 3 | Campbell 107B soil temperature sensors | Installed 1999. |
| 1 | MRC soil temperature probe | Installed 1999. |
| 1 | Vaisala HMP45C temp/relative humidity sensors. | Installed 1999. |
| 1 | Campbell 109 air temperature & gill radiation sheild | Installed Jan 2010 |
| 1 | Campbell solar radiation shields for HMP35C or HMP45C temperature/humidity sensors. | Installed 1999. |
| 1 | Licor LI200X pyranometer solar radiation sensors. | Installed 1999. |
| 1 | Licor pyranometer solar radiation sensor leveling fixtures. | Installed 1999. |
| 1 | Pyranometer mounting arms. | Installed 1999. |
| 1 | Met One wind speed & direction sensors | Installed 1999; Replaced 01/08 |
| 1 | Wind sensor mounting arms | Installed 1999. |

**HISTORY:**  January 1999: Station initiated. Get information from Ron Sletten.

January 10, 2002: Air temperature/RH sensor moved from 3 m to 2 m. MRC probe moved from crack between polygons to center of polygon. Program modified to give max wind speed (10-s interval) every hour. Also to eliminate extra unused Vitel sensors.

January 15, 2003: Downloaded data to storage module. Added desiccant. Everything looks OK and is working. Also downloaded data from auxiliary station where linear transducers measure movement of polygon sides.

January 7, 2004: Downloaded data to storage module S/N: 4183 (Victoria Valley (A)) and installed the alternate S/N 4184 (Victoria Valley (B)). Installed a second Campbell BP24 24-amp-hr YUASA battery. Replaced the desiccant.

January 17, 2005: Installed storage module S/N: 4183. Removed the Power-Sonic 30AH battery and installed a third Campbell BP24 24-amp-hr YUASA battery. Secured it the same as the previous battery, sitting on top of the ENC 16/18 enclosure, wrapped with wire around the tripod mast. Used crimp type butt splices to connect the wiring. Outside wiring was encased in automotive wire sheathing. Dated the new battery. Swapped desiccant packs. Taped down loose wires. Wiped off the LI200 pyranometer. Took station pictures looking N,E,S,W. Voltages: SPR-13.889 vdc, station batteries-12.52 vdc, Li battery-3.108 vdc. Station time 1:23 PM, actual 12:23 PM, NZST. Station was reset back to NZST. MRC probe appears to have some depths out. Weather conditions: clear, -2C, wind 3-5 mph.

January 10, 2006: Added two new battery containment boxes that are located on the ground. Put the battery that was on top of the enclosure, on the ground in one of the containment boxes. Replaced one of the three 24 amp-hr batteries. Did not have enough insulated spade terminals (red color), used butt slices. Swapped storage modules. There was no data on the storage module; should replace the cable for next time. Downloaded the data and program from the datalogger. Also, downloaded data from the datalogger located on the ground about 15-20 ft from main station. Everything appeared to be working okay. Reset the clock back to NZ savings time. (Note: the data was corrected back to NZ savings time). Added three packs of desiccant. Weather conditions: cloudy, -2°C, 5-12 mph winds.

January 18, 2007: Downloaded data and swapped storage modules. Station clock was about 4 min behind. Everything appeared to be working okay. Replaced wiring from regulator to datalogger. Added two packs of desiccant. Replaced one battery (24Ah).

January 18, 2008: Downloaded data and swapped storage modules. The green light on the storage module went on, indicating data was being downloaded to the module. Swapped storage modules a second time. Station clock was about 2.5 minutes behind (NZ savings time). Replaced the MetOne wind sensor and cable. Everything appeared to be working okay. Replaced battery connections with female connectors to easily connect to batteries. Added two packs of desiccant. Replaced one battery (24Ah).

December 29, 2008: Adjustments were made to the wind sensor by Ron Sletton at 10:00 AM. The wind sensor direction was inadvertently moved during the installation of the new sensor last time. The 2008 data (starting at 1600 hours on Jan. 18) was corrected by adding 167º to the wind direction data. This only applies to the processed data, not raw data.

January 21, 2009: Downloaded data and swapped storage modules. Station clock was okay. Lithium battery was reading 3.13 volts. Everything appeared to be working okay. Replaced one battery (24Ah). Add 109 air temp for next time.

January 15, 2010: Downloaded data and swapped storage modules. Station clock was okay. Lithium battery was reading 3.16 volts. Everything appeared to be working okay. Replaced one battery (24Ah). Retreived logger program. Installed a Campbell 109 air temp sensor and gill radiation shield. Up loaded new CSI program (victorr1.dld) to take into account the new sensor. Everything seemed to be working okay. Could see top of one hydra-probe. (For next time replace battery connections with female connectors to easily connect to the battery inside the enclosure).

January 21, 2011: Downloaded data and swapped storage modules. Station clock was one minute behind. Lithium battery was reading 3.14 volts. Everything appeared to be working okay. Replaced one battery (24Ah). Left battery connector inside box for next time. Added two desiccant packs. Winds 6 mph, 0.1ºC.

January 21, 2012: Downloaded data and swapped storage modules. Data looked okay after download from datalogger. Station clock was 1.5 min behind. Lithium battery was reading 3.15 volts and battery voltage was 13.89. Everything appeared to be working okay. Replaced one battery (24Ah). Left battery connector inside box for next time. Added two desiccant packs. Replace datalogger for next time. Winds 8 mph, -0.4ºC, sunny.

December 18, 2012: Downloaded data and swapped storage modules. Data looked okay after download from datalogger. Station clock was 1 min behind. Lithium battery was reading 3.15 volts and battery voltage was 13.9. Everything appeared to be working okay. Replaced one battery (24Ah). Installed battery connector and replaced one 24 Ah battery. Weather conditions: winds 4.7 mph, 0.5ºC air temp, sunny. The wind direction data was corrected by adding 3.75º starting from 12-29-08 at 1000 hrs. This correction puts the wind direction data in line with data prior to 2008. This only applies to the processed data, not raw data.

January 15, 2014: Swapped storage modules. Battery voltage was 14 V. Replaced one 24 Ah battery. Weather condition: air temp 0.6ºC, 15 mph winds.

January 15, 2015: 1254 NZDT. Downloaded datalogger and swapped storage modules. Lithium battery was 3.16 V. Difference between station and PC time was 1 min 26 sec. Top hydra-probe was exposed at the surface – one prong was on surface so we buried it by adding about 2 cm of gravelly sand. It will need checking again next year as some will blow away. Weather measured on hand-held kestrel 3500; Measurement time1335 NZDT; Wind 4 Knots, Temp -2.4 Degrees C, RH: 57 %, Dewpoint -10 Degrees C, Wetbulb -4.3 Degrees C, Air pressure 954 hPa.

January 16, 2016: Swapped storage modules and downloaded data. Station clock was 4 minutes behind. Lithium battery was 3.17 V. Station battery voltage was 13.9 V. Oldest battery was replaced. For next time determine if station is on NZDT or NZST (should be on NZDT).

January 2, 2017: Swapped storage modules and downloaded data.

January 24, 2018: Swapped storage modules and downloaded data. Replaced oldest battery.

January 15, 2019: Swapped storage modules and downloaded data.

December 26, 2019: Swapped storage modules and downloaded data.

December 3, 2021: Swapped storage modules and downloaded data. Swapped battery. MRC height above ground was 1 cm. Clock ok.

December 12, 2022: Swapped storage modules and downloaded data. Rest clock to UTC. (3:30pm to 3:35 am).

| MULTIPLEXER  POSITION | STACK | VITEL PROBE  # | DEPTH  (cm) | COMMENTS |
| --- | --- | --- | --- | --- |
| 1 |  | 1 | 106 | In contraction crack |
| 2 |  | 2 | 91 | In contraction crack |
| 3 |  | 3 | 83 | In contraction crack |
| 4 |  | 4 | 10 | In contraction crack |
| 5 |  | 5 | 3 | In soil pit |
| 6 |  | 6 | 10 | In soil pit |
| 7 |  | 7 | 33 | In soil pit |
| 8 |  |  |  |  |
| 9 |  |  |  |  |
| 10 |  |  |  |  |
| 11 |  |  |  |  |
| 12 |  |  |  |  |

| MULTIPLEXER  POSITION | STACK | 107 TEMP  PROBE # | DEPTH  (cm) | COMMENTS |
| --- | --- | --- | --- | --- |
| 13H1 |  | 1 | 33 |  |
| 13L1 |  | 2 | 10 |  |
| 13H2 |  | 3 | 3 |  |

**DATA:**

DATALOGGER OUTPUT:

| COL | OUTPUT | UNITS | LOCATION | SENSOR | COMMENTS |
| --- | --- | --- | --- | --- | --- |
| 1 | Station ID | N/A | N/A | Campbell CR10 | 002 |
| 2 | Year | N/A | N/A | Campbell CR10 |  |
| 3 | Day | N/A | N/A | Campbell CR10 |  |
| 4 | Time | N/A | N/A | Campbell CR10 | NZ savings time |
| 5 | Battery | Volts | Enclosure | Campbell CR10 |  |
| 6 | Int Temp | °C | Datalogger | Campbell CR10 |  |
| 7 | Air Temp | °C | Air 2 m | Vaisala HMP45C |  |
| 8 | RH | % | Air 2 m | Vaisala HMP45C |  |
| 9 | Solar Rad | W/m2 | Air 2 m | LiCor |  |
| 10 | Wind Speed | mph | Air 3 m | Met One |  |
| 11 | Wind Dir | azimuth | Air 3 m | Met One | True North |
| 12 | 1V1 | Volts | Soil 106 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 13 | 1V2 | Volts | Soil 106 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 14 | 1V3 | Volts | Soil 106 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 15 | 1V4 | Volts | Soil 106 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 16 | 2V1 | Volts | Soil 91 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 17 | 2V2 | Volts | Soil 91 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 18 | 2V3 | Volts | Soil 91 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 19 | 2V4 | Volts | Soil 91 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 20 | 3V1 | Volts | Soil 83 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 21 | 3V2 | Volts | Soil 83 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 22 | 3V3 | Volts | Soil 83 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 23 | 3V4 | Volts | Soil 83 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 24 | 4V1 | Volts | Soil 10 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 25 | 4V2 | Volts | Soil 10 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 26 | 4V3 | Volts | Soil 10 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 27 | 4V4 | Volts | Soil 10 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 29 | 5V1 | Volts | Soil 3 cm | Vitel Soil Moisture/Temp |  |
| 29 | 5V2 | Volts | Soil 3 cm | Vitel Soil Moisture/Temp |  |
| 30 | 5V3 | Volts | Soil 3 cm | Vitel Soil Moisture/Temp |  |
| 31 | 5V4 | Volts | Soil 3 cm | Vitel Soil Moisture/Temp |  |
| 32 | 6V1 | Volts | Soil 10 cm | Vitel Soil Moisture/Temp |  |
| 33 | 6V2 | Volts | Soil 10 cm | Vitel Soil Moisture/Temp |  |
| 34 | 6V3 | Volts | Soil 10 cm | Vitel Soil Moisture/Temp |  |
| 35 | 6V4 | Volts | Soil 10 cm | Vitel Soil Moisture/Temp |  |
| 36 | 7V1 | Volts | Soil 33 cm | Vitel Soil Moisture/Temp |  |
| 37 | 7V2 | Volts | Soil 33 cm | Vitel Soil Moisture/Temp |  |
| 38 | 7V3 | Volts | Soil 33 cm | Vitel Soil Moisture/Temp |  |
| 39 | 7V4 | Volts | Soil 33 cm | Vitel Soil Moisture/Temp |  |
| 40 | 8V1 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 41 | 8V2 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 42 | 8V3 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 43 | 8V4 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 44 | 9V1 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 45 | 9V2 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 46 | 9V3 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 47 | 9V4 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 48 | 10V1 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 49 | 10V2 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 50 | 10V3 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 51 | 10V4 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 52 | 11V1 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 53 | 11V2 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 54 | 11V3 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 55 | 11V4 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 56 | 12V1 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 57 | 12V2 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 58 | 12V3 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 59 | 12V4 | Volts |  | Vitel Soil Moisture/Temp | No sensor. Not recorded after 01/10/02 |
| 60 | Soil Temp | °C | Soil 33 cm | Campbell 107 |  |
| 61 | Soil Temp | °C | Soil 10 cm | Campbell 107 |  |
| 62 | Soil Temp | °C | Soil 3 cm | Campbell 107 |  |
| 63 | Soil Temp | °C | Soil 0 in | MRC Temperature Probe |  |
| 64 | Soil Temp | °C | Soil 3 in | MRC Temperature Probe |  |
| 65 | Soil Temp | °C | Soil 6 in | MRC Temperature Probe |  |
| 66 | Soil Temp | °C | Soil 9 in | MRC Temperature Probe |  |
| 67 | Soil Temp | °C | Soil 12 in | MRC Temperature Probe |  |
| 68 | Soil Temp | °C | Soil 18 in | MRC Temperature Probe |  |
| 69 | Soil Temp | °C | Soil 24 in | MRC Temperature Probe |  |
| 70 | Soil Temp | °C | Soil 30 in | MRC Temperature Probe |  |
| 71 | Soil Temp | °C | Soil 36 in | MRC Temperature Probe |  |
| 72 | Soil Temp | °C | Soil 42 in | MRC Temperature Probe |  |
| 73 | Soil Temp | °C | Soil 48 in | MRC Temperature Probe |  |
| 74 | Resistance |  |  | MRC Temperature Probe | Reference value |
| 75 | Max Wind Speed | mph |  | Met One | Added 01/02 |

**DATA:**

DATALOGGER OUTPUT: After 01-15-2010

| COL | OUTPUT | UNITS | LOCATION | SENSOR | COMMENTS |
| --- | --- | --- | --- | --- | --- |
| 1 | Station ID | N/A | N/A | Campbell CR10 | 002 |
| 2 | Year | N/A | N/A | Campbell CR10 |  |
| 3 | Day | N/A | N/A | Campbell CR10 |  |
| 4 | Time | N/A | N/A | Campbell CR10 | NZ savings time |
| 5 | Battery | Volts | Enclosure | Campbell CR10 |  |
| 6 | Int Temp | °C | Datalogger | Campbell CR10 |  |
| 7 | Air Temp | °C | Air 2 m | Vaisala HMP45C |  |
| 8 | RH | % | Air 2 m | Vaisala HMP45C |  |
| 9 | Solar Rad | W/m2 | Air 2 m | LiCor |  |
| 10 | Wind Speed | mph | Air 3 m | Met One |  |
| 11 | Wind Dir | azimuth | Air 3 m | Met One | True North |
| 12 | 1V1 | Volts | Soil 106 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 13 | 1V2 | Volts | Soil 106 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 14 | 1V3 | Volts | Soil 106 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 15 | 1V4 | Volts | Soil 106 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 16 | 2V1 | Volts | Soil 91 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 17 | 2V2 | Volts | Soil 91 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 18 | 2V3 | Volts | Soil 91 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 19 | 2V4 | Volts | Soil 91 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 20 | 3V1 | Volts | Soil 83 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 21 | 3V2 | Volts | Soil 83 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 22 | 3V3 | Volts | Soil 83 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 23 | 3V4 | Volts | Soil 83 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 24 | 4V1 | Volts | Soil 10 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 25 | 4V2 | Volts | Soil 10 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 26 | 4V3 | Volts | Soil 10 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 27 | 4V4 | Volts | Soil 10 cm | Vitel Soil Moisture/Temp | Contraction crack |
| 29 | 5V1 | Volts | Soil 3 cm | Vitel Soil Moisture/Temp |  |
| 29 | 5V2 | Volts | Soil 3 cm | Vitel Soil Moisture/Temp |  |
| 30 | 5V3 | Volts | Soil 3 cm | Vitel Soil Moisture/Temp |  |
| 31 | 5V4 | Volts | Soil 3 cm | Vitel Soil Moisture/Temp |  |
| 32 | 6V1 | Volts | Soil 10 cm | Vitel Soil Moisture/Temp |  |
| 33 | 6V2 | Volts | Soil 10 cm | Vitel Soil Moisture/Temp |  |
| 34 | 6V3 | Volts | Soil 10 cm | Vitel Soil Moisture/Temp |  |
| 35 | 6V4 | Volts | Soil 10 cm | Vitel Soil Moisture/Temp |  |
| 36 | 7V1 | Volts | Soil 33 cm | Vitel Soil Moisture/Temp |  |
| 37 | 7V2 | Volts | Soil 33 cm | Vitel Soil Moisture/Temp |  |
| 38 | 7V3 | Volts | Soil 33 cm | Vitel Soil Moisture/Temp |  |
| 39 | 7V4 | Volts | Soil 33 cm | Vitel Soil Moisture/Temp |  |
| 40 | Soil Temp | °C | Soil 33 cm | Campbell 107 |  |
| 41 | Soil Temp | °C | Soil 10 cm | Campbell 107 |  |
| 42 | Soil Temp | °C | Soil 3 cm | Campbell 107 |  |
| 43 | Soil Temp | °C | Soil 0 in | MRC Temperature Probe |  |
| 44 | Soil Temp | °C | Soil 3 in | MRC Temperature Probe |  |
| 45 | Soil Temp | °C | Soil 6 in | MRC Temperature Probe |  |
| 46 | Soil Temp | °C | Soil 9 in | MRC Temperature Probe |  |
| 47 | Soil Temp | °C | Soil 12 in | MRC Temperature Probe |  |
| 48 | Soil Temp | °C | Soil 18 in | MRC Temperature Probe |  |
| 49 | Soil Temp | °C | Soil 24 in | MRC Temperature Probe |  |
| 50 | Soil Temp | °C | Soil 30 in | MRC Temperature Probe |  |
| 51 | Soil Temp | °C | Soil 36 in | MRC Temperature Probe |  |
| 52 | Soil Temp | °C | Soil 42 in | MRC Temperature Probe |  |
| 53 | Soil Temp | °C | Soil 48 in | MRC Temperature Probe |  |
| 54 | Resistance |  |  | MRC Temperature Probe | Reference value |
| 55 | Max Wind Speed | mph |  | Met One | Added 01/02 |
| 56 | Air Temp | °C | 2 m | Campbell Scientific | Added 01/10 |

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 for the Type A probes. Note that with this program negative values of soil water are converted to zero.

DATA STORAGE AND ACCESS:

See Ron Sletten

**SOILS:** Soils sampled Jan 2002.

CLASSIFICATION:

**LANDSCAPE:**

SLOPE:

ASPECT:

ELEVATION:

**VEGETATION:**

GROUND COVER: None.

CANOPY COVER: None.

**COMMENTS:**

Note: Ron Sletten set up station using NZ daylight savings time.

**NOTES FOR NEXT STATION VISIT:**