



Tarfala Research Station automatic weather station, 2007

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1 Instrumentation

The TRS met station consisted of the following instruments during 2007

Sensor	Serial number	Remark
Pt100		in Stevenson screen
Pt100		in Young screen
Young Wind Monitor		at 3 m
LiCor Li-200SB pyranometer		at 2 m
Tipping bucket precipitation gauge		at 2 m
Vent HygroClip T/Rh		at 2 m
CR10X-2M data logger		

2 Notes on the station data

- Barometric pressure sensor added 2007-04-22 12:00:00.
- No changes to or breaks in data.

3 Data coverage

- General data gap:
2007-04-09 09:00:00 to 2007-04-09 13:00:00
2007-04-09 16:00:00 to 2007-04-10 09:00:00

4 Notes on data storage

Example of hourly data:

101,2007,185,1300,14.259,14.401,13.012,60.845,3.0235,300.55,.0368,499.51,0,0,0,4.9392,1206,
14.839,14.907,13.464,58.183,14.239,1252,12.015,1210,886.55

Column	Example data	Description
01:	101	ID
02:	2007	Year
03:	191	Day of Year
04:	1600	hour-minute (hhmm)
05:	14.259	2 Pt100 T in Stevenson screen)
06:	14.401	3 Pt100 in new Young screen
07:	13.012	4 Ventilated T
08:	69.845	5 Ventilated T
09:	3.0235	6 Mean horizontal wind speed
10:	300.55	7 resultant mean wind direction
11:	.0368	8 Standard deviation of wind direction
12:	499.51	9 Global radiation
13:	0	10 Precipitation/SR50
14:	0	11 Not used
15:	0	12 Not used
16:	4.9392	13 hourly max wind speed
17:	1206	14 time for max wind speed
18:	14.839	15 Sample T Stevenson
19:	14.907	16 Sample T Young
20:	13.464	17 Sample ventilated T
21:	58.183	18 Sample ventilated Rh
22:	14.239	19 Max T
23:	1252	20 time for max T
24:	12.015	21 Min T
25:	1210	22 time for min T
26:	886.55	23 Barometric pressure

Example of daily data summaries:
124,2007,185,2400,11.027,11.563,10.29,71.643,17.984,1423,7.2003,2145,6.3602,539,
2.2402,325.28,171.97,2.72,13.891,0,0,886.68

Column	Example data	Description
01:	124	ID
02:	2007	Year
03:	185	Day of Year
04:	2400	hour-minute (hhmm)
05:	11.027	2 Daily average T in Stevenson screen)
06:	11.563	3 Daily T from T/Rh in Young screen
07:	10.29	4 Daily T from ventilated T/Rh
08:	71.643	5 daily average Rh from ventilated T/Rh
08:	17.984	6 Daily maximum temperature in Young screen
10:	1423	7 hhmm for maximum daily temperature
11:	7.2003	8 Daily minimum temperature in Young screen
12:	2145	9 hhmm for minimum daily temperature
13:	6.3602	10 Maximum wind speed
14:	539	11 hhmm for maximum wind speed
15:	2.2402	12 Average wind speed
16:	325.28	13 Average wind direction
17:	171.97	14 Incoming radiation
18:	2.72	15 Totalized precipitation
19:	13.891	16 Battery voltage
20:	0	17 Not used
21:	0	18 Not used
21:	886.68	18 Average barometric pressure

Example of 'Synoptic' output:

103,2007,185,1300,14.907

Column	Example data	Description
01:	103	ID
02:	2007	Year
03:	185	Day of Year
04:	1300	hour-minute (hhmm)
05:	14.907	Pt100 in Young screen

5 Data files and content

TRSmnet2007.csv Raw data file

TRS_met_2007_Barometric_pressure.csv

2007-01-01 01:00:00,NaN

TRS_met_2007_Precipitation.csv

Date-time, Precipitation

2007-01-01 01:00:00,0.00

TRS_met_2007_Radiation.csv

Date-time, Global radiation

2007-01-01 01:00:00,0.00

TRS_met_2007_Relative_humidity.csv

Date-time, Vented Rh, ssample ventilated Rh

2007-01-01 01:00:00,82.0,78.7

TRS_met_2007_Temperature.csv

Date-time, hourly average T (Stevenson), hourly average T (Young), hourly average vented T/Rh, sample T (Stevenson), Sample T (Young), sample T vent, max T vent, time for max T vent, min T vent, time for min T vent

2007-01-01 01:00:00,-2.11,-1.67,-2.94,-2.14,-1.66,-2.88,-2.78,52,-3.14,17

TRS_met_2007_Wind.csv

Date-time, Mean horizontal wind speed, resultant mean wind direction, hourly max wind speed, time of max wind spd

2007-01-01 01:00:00,3.6,335.9,0.0370,12.33,22

TRS_met_2007_Daily_data.csv

Data columns follows description above except last two columns (not used)

2007-01-02 00:00:00,-5.74,-5.03,-6.32,74.7,-1.29,39,-9.07,1540,17.8,114,3.7,332.0,0.2,0.0,12.62

TRS_met_2007_Synop_data.csv

Date-time, sample temperature

2007-01-01 01:00:00,-1.66

The data collected during 2007 is summarized the figure 1 and Table 1.

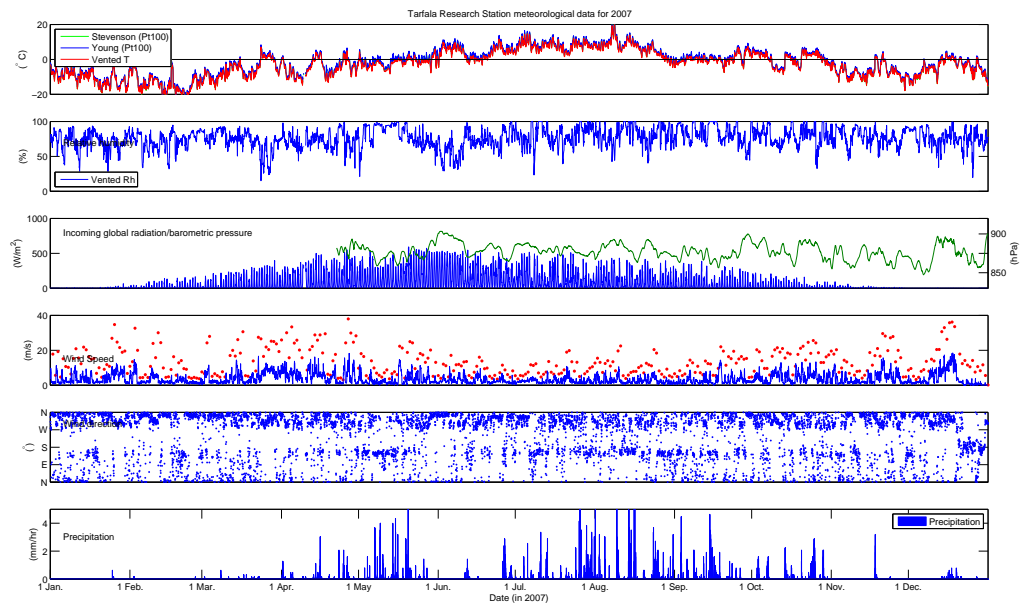


Figure. 1. Summary of meteorological data from Tarfala Research Station automatic weather station 2007.

Table. 1. Monthly averages of meteorological parameters from the Tarfala Research Station automatic weather station 2007.

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Average air temperature (Stevenson)												
(°C)	−10.3	−13.9	−5.8	−4.6	−0.9	4.5	8.4	7.0	0.7	0.6	−6.8	−4.9
<i>n</i>	743	671	767	720	743	743	743	767	743	767	743	767
Average air temperature (Young)												
(°C)	−9.7	−13.2	−5.2	−4.1	−0.4	5.1	8.9	7.5	1.2	1.1	−6.3	−4.3
<i>n</i>	743	671	767	720	743	743	743	767	743	767	743	767
Average air temperature												
(°C)	−10.7	−14.2	−6.4	−5.3	−2.0	3.6	7.7	6.3	0.0	−0.0	−7.3	−5.2
<i>n</i>	743	671	767	720	743	743	743	767	743	767	743	767
Positive degree sum												
(°C)	0	0	211	—	208	2839	5719	4961	721	1184	46	114
<i>n</i>	0	0	113	—	133	630	743	698	333	460	36	117
Average relative humidity												
(%)	71.6	72.3	72.4	73.0	81.0	68.5	80.0	80.9	82.5	79.5	78.3	76.3
<i>n</i>	743	671	767	720	743	743	743	767	743	767	743	767
Average incoming global radiation												
(W m ^{−2})	1.4	12.9	51.8	106.9	157.6	163.3	114.9	84.0	56.1	20.4	2.3	−0.6
<i>n</i>	743	671	767	720	743	743	743	767	743	767	743	767
Global incoming energy sum												
(W m ^{−2})	1080	8674	39740	—	117095	121352	85384	64614	41954	15987	2211	108
<i>n</i>	257	330	626	—	679	743	712	568	430	323	187	98
Totalized precipitation												
(mm)	0.80	0.48	3.04	39.68	95.68	34.24	128.64	184.16	108.64	98.88	10.08	12.80
<i>n</i>	743	671	767	720	743	743	743	767	743	767	743	767
Average wind speed												
(m s ^{−1})	3.9	2.8	4.4	5.6	3.1	2.7	2.5	2.6	2.7	4.3	3.7	3.8
<i>n</i>	743	671	767	720	743	743	743	767	743	767	743	767
Average barometric pressure												
(hPa)	—	—	—	881.8	875.0	884.0	879.9	880.2	875.3	880.2	870.2	872.2
<i>n</i>	—	—	—	204	743	743	743	767	743	767	743	767

Logger program

5.1 Program until 2007-04-22 12:00:00 (same as for end of 2006)

```
;{CR10X}
*Table 1 Program
01: 10.0000 Execution Interval (seconds)

;-----
; Check battery voltage
; and stop execution if lower than 9.7V
1: Batt Voltage (P10)
1: 10 Loc [ Battery ]

2: If (X<=>F) (P89)
1: 10 X Loc [ Battery ]
2: 4 <
3: 9.7 F
4: 0 Go to end of Program Table

;-----
; A I R T E M P E R A T U R E
; Measure R/R0 for old met cage Rt100
3: 3W Half Bridge (P7)
1: 1 Reps
2: 33 25 mV 50 Hz Rejection Range
3: 1 SE Channel
4: 2 Excite all reps w/Exchan 2
5: 2100 mV Excitation
6: 21 Loc [ R_R0_T_1 ]
7: 100.1 Mult
8: 0 Offset

; Meaasure R/R0 for Young screen Rt100
4: 3W Half Bridge (P7)
1: 1 Reps
2: 33 25 mV 50 Hz Rejection Range
3: 3 SE Channel
4: 2 Excite all reps w/Exchan 2
5: 2100 mV Excitation
6: 22 Loc [ R_R0_T_2 ]
7: 100.2 Mult
8: 0 Offset

; Calculate T for both Rt100
5: Temperature RTD (P16)
1: 2 Reps
2: 21 R/R0 Loc [ R_R0_T_1 ]
3: 1 Loc [ T_1 ]
4: 1 Mult
5: 0 Offset

;-----
; V E N T I L A T E D T & Rh
; Measure temperature from ventilated
; HygroClip sensor
6: Volt (Diff) (P2)
1: 1 Reps
2: 35 2500 mV 50 Hz Rejection Range
3: 3 DIFF Channel
4: 3 Loc [ T_vent ]
5: .1 Mult
6: -40 Offset

; Measure humidity from ventilated
; HygroClip sensor
7: Volt (Diff) (P2)
1: 1 Reps
2: 35 2500 mV 50 Hz Rejection Range
3: 4 DIFF Channel
4: 4 Loc [ rH_vent ]
5: .1 Mult
6: 0.0 Offset

;-----
; W I N D
; Measure wind speed on Young Wind Monitor
8: Pulse (P3)
1: 1 Reps
2: 1 Pulse Channel 1
3: 21 Low Level AC, Output Hz
4: 5 Loc [ Wind_spd ]
5: .098 Mult
6: 0 Offset

; Measure wind direction on Young Wind Monitor
```



```

9: Excite-Delay (SE) (P4)
1: 1      Reps
2: 5      2500 mV Slow Range
3: 9      SE Channel
4: 1      Excite all reps w/Exchan 1
5: 2      Delay (0.01 sec units)
6: 2500   mV Excitation
7: 6      Loc [ Wind_dir ]
8: .142   Mult
9: -135   Offset

; Make corrections to wind direction
10: If (X<=>F) (P89)
1: 6      X Loc [ Wind_dir ]
2: 4      <
3: 0      F
4: 30     Then Do

11: Z=X+F (P34)
1: 6      X Loc [ Wind_dir ]
2: 360    F
3: 6      Z Loc [ Wind_dir ]

12: End (P95)

;-----
; G L O B A L   R A D I A T I O N
; Measure Li200s Pyranometer
13: Volt (SE) (P1)
1: 1      Reps
2: 33     25 mV 50 Hz Rejection Range
3: 10     SE Channel
4: 7      Loc [ Li200S ]
5: 116.55 Mult
6: 0      Offset

;-----
; P R E C I P I T A T I O N
; Measure tipping bucket rain gauge
14: Pulse (P3)
1: 1      Reps
2: 2      Pulse Channel 2
3: 2      Switch Closure, All Counts
4: 8      Loc [ Precip ]
5: .16    Mult
6: 0      Offset

;-----
; I N T E R N A L   T E M P E R A T U R E
15: Internal Temperature (P17)
1: 9      Loc [ T_int ]

;-----
; H O U R L Y   O U T P U T
16: If time is (P92)
1: 0      Minutes (Seconds --) into a
2: 60     Interval (same units as above)
3: 10     Set Output Flag High (Flag 0)

17: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 101    Array ID

18: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

; Store average unvent and vent T and Rh
19: Average (P71)
1: 4      Reps
2: 1      Loc [ T_1 ]

; Store wind speed, dir and std dev
20: Wind Vector (P69)
1: 1      Reps
2: 1      Samples per Sub-Interval
3: 0      S, theta(1), sigma(theta(1)) with polar sensor
4: 5      Wind Speed/East Loc [ Wind_spd ]
5: 6      Wind Direction/North Loc [ Wind_dir ]

; Store average global rad
21: Average (P71)
1: 1      Reps
2: 7      Loc [ Li200S ]

; Store hourly precipitation
22: Totalize (P72)
1: 1      Reps

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2: 8      Loc [ Precip   ]

; no data
23: Average (P71)
1: 2      Reps
2: 11     Loc [ _____ ]

; Store maximum wind speed during last hour
24: Maximum (P73)
1: 1      Reps
2: 10     Value with Hr-Min
3: 5      Loc [ Wind_spd ]

; Store transient unvent and vent T and Rh
25: Sample (P70)
1: 4      Reps
2: 1      Loc [ T_1      ]

; Store max vent T
26: Maximum (P73)
1: 1      Reps
2: 10     Value with Hr-Min
3: 3      Loc [ T_vent   ]

; Store min vent T
27: Minimum (P74)
1: 1      Reps
2: 10     Value with Hr-Min
3: 3      Loc [ T_vent   ]

; Write to card
28: Serial Out (P96)
1: 71     Storage Module

;-----
; D A I L Y   O U T P U T
29: If time is (P92)
1: 0      Minutes (Seconds --) into a
2: 1440   Interval (same units as above)
3: 10     Set Output Flag High (Flag 0)

30: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 124    Array ID

31: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

; Store daily average unvent and vent T & Rh
32: Average (P71)
1: 4      Reps
2: 1      Loc [ T_1      ]

; Store daily max unvent T
33: Maximum (P73)
1: 1      Reps
2: 10     Value with Hr-Min
3: 2      Loc [ T_2      ]

; Store daily min unvent T
34: Minimum (P74)
1: 1      Reps
2: 10     Value with Hr-Min
3: 2      Loc [ T_2      ]

; Store daily max wind speed
35: Maximum (P73)
1: 1      Reps
2: 10     Value with Hr-Min
3: 5      Loc [ Wind_spd ]

; Store average wind vector
36: Wind Vector (P69)
1: 1      Reps
2: 1      Samples per Sub-Interval
3: 1      S, theta(1) with polar sensor
4: 5      Wind Speed/East Loc [ Wind_spd ]
5: 6      Wind Direction/North Loc [ Wind_dir ]

; Store daily avg global radioation
37: Average (P71)
1: 1      Reps
2: 7      Loc [ Li200S   ]

; Store daily precipitation
38: Totalize (P72)
1: 1      Reps

```

```

2: 8      Loc [ Precip  ]

; Store sample of battery voltage
39: Sample (P70)
1: 1      Reps
2: 10     Loc [ Battery  ]

; no data
40: Average (P71)
1: 2      Reps
2: 11     Loc [ _____ ]

; Write to card
41: Serial Out (P96)
1: 71     Storage Module

;-----
; S Y N O P T I C O U T P U T
; transient T data is stored every 3 hrs
; according to synoptic standards.
42: If time is (P92)
1: 60     Minutes (Seconds --) into a
2: 1440   Interval (same units as above)
3: 10     Set Output Flag High (Flag 0)

43: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

44: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

45: Sample (P70)
1: 1      Reps
2: 2      Loc [ T_2      ]

46: If time is (P92)
1: 240    Minutes (Seconds --) into a
2: 1440   Interval (same units as above)
3: 10     Set Output Flag High (Flag 0)

47: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

48: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

49: Sample (P70)
1: 1      Reps
2: 2      Loc [ T_2      ]

50: If time is (P92)
1: 420    Minutes (Seconds --) into a
2: 1440   Interval (same units as above)
3: 10     Set Output Flag High (Flag 0)

51: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

52: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

53: Sample (P70)
1: 1      Reps
2: 2      Loc [ T_2      ]

54: If time is (P92)
1: 600    Minutes (Seconds --) into a
2: 1440   Interval (same units as above)
3: 10     Set Output Flag High (Flag 0)

55: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

56: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

57: Sample (P70)
1: 1      Reps
2: 2      Loc [ T_2      ]

58: If time is (P92)
1: 780    Minutes (Seconds --) into a
2: 1440   Interval (same units as above)

```

```

3: 10      Set Output Flag High (Flag 0)

59: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

60: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

61: Sample (P70)
1: 1      Reps
2: 2      Loc [ T_2      ]

62: If time is (P92)
1: 960    Minutes (Seconds --) into a
2: 1440   Interval (same units as above)
3: 10     Set Output Flag High (Flag 0)

63: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

64: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

65: Sample (P70)
1: 1      Reps
2: 2      Loc [ T_2      ]

66: If time is (P92)
1: 1140   Minutes (Seconds --) into a
2: 1440   Interval (same units as above)
3: 10     Set Output Flag High (Flag 0)

67: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

68: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

69: Sample (P70)
1: 1      Reps
2: 2      Loc [ T_2      ]

70: If time is (P92)
1: 1320   Minutes (Seconds --) into a
2: 1440   Interval (same units as above)
3: 10     Set Output Flag High (Flag 0)

71: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

72: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

73: Sample (P70)
1: 1      Reps
2: 2      Loc [ T_2      ]

```

```

*Table 2 Program
01: 0.0000   Execution Interval (seconds)

```

```

*Table 3 Subroutines

```

```

End Program

```

1	[T_1]	RW--	3	1	Start -----
2	[T_2]	RW--	13	1	----- End
3	[T_vent]	RW--	5	1	-----
4	[rH_vent]	RW--	3	1	-----
5	[Wind_spd]	RW--	4	1	-----
6	[Wind_dir]	RW--	4	2	-----
7	[Li200S]	RW--	2	1	-----
8	[Precip]	RW--	2	1	-----
9	[T_int]	-W--	0	1	-----
10	[Battery]	RW--	2	1	-----
11	[-----]	R---	2	0	-----
12	[-----]	R---	2	0	-----
13	[-----]	----	0	0	-----
14	[-----]	----	0	0	-----
15	[-----]	----	0	0	-----
16	[-----]	----	0	0	-----
17	[-----]	----	0	0	-----
18	[-----]	----	0	0	-----
19	[-----]	----	0	0	-----

20	[_____]	----	0	0	-----
21	[R_RO_T_1]	RW--	1	1	-----
22	[R_RO_T_2]	RW--	1	1	-----

5.2 Program from 2007-04-22 12:00:00 (added barometric pressure sensor)

```

;{CR10X}
*Table 1 Program
  01: 10.0000   Execution Interval (seconds)

;-----
; Check battery voltage
; and stop execution if lower than 9.7V
1: Batt Voltage (P10)
  1: 10      Loc [ Battery  ]

2: If (X<=>F) (P89)
  1: 10      X Loc [ Battery  ]
  2: 4       <
  3: 9.7     F
  4: 0       Go to end of Program Table

;-----
; A I R   T E M P E R A T U R E
; Measure R/R0 for old met cage Rt100
3: 3W Half Bridge (P7)
  1: 1       Reps
  2: 33      25 mV 50 Hz Rejection Range
  3: 1       SE Channel
  4: 2       Excite all reps w/Exchan 2
  5: 2100    mV Excitation
  6: 22      Loc [ R_RO_T_1  ]
  7: 100.1   Mult
  8: 0       Offset

; Meaasure R/R0 for Young screen Rt100
4: 3W Half Bridge (P7)
  1: 1       Reps
  2: 33      25 mV 50 Hz Rejection Range
  3: 3       SE Channel
  4: 2       Excite all reps w/Exchan 2
  5: 2100    mV Excitation
  6: 23      Loc [ R_RO_T_2  ]
  7: 100.2   Mult
  8: 0       Offset

; Calculate T for both Rt100
5: Temperature RTD (P16)
  1: 2       Reps
  2: 22      R/R0 Loc [ R_RO_T_1  ]
  3: 1       Loc [ T_1        ]
  4: 1       Mult
  5: 0       Offset

;-----
; V E N T I L A T E D   T & Rh
; Measure temperature from ventilated
; HygroClip sensor
6: Volt (Diff) (P2)
  1: 1       Reps
  2: 35      2500 mV 50 Hz Rejection Range
  3: 3       DIFF Channel
  4: 3       Loc [ T_vent     ]
  5: .1      Mult
  6: -40     Offset

; Measure humidity from ventilated
; HygroClip sensor
7: Volt (Diff) (P2)
  1: 1       Reps
  2: 35      2500 mV 50 Hz Rejection Range
  3: 4       DIFF Channel
  4: 4       Loc [ rH_vent    ]
  5: .1      Mult
  6: 0.0     Offset

;-----
; W I N D
; Measure wind speed on Young Wind Monitor
8: Pulse (P3)
  1: 1       Reps
  2: 1       Pulse Channel 1
  3: 21      Low Level AC, Output Hz
  4: 5       Loc [ Wind_spd   ]
  5: .098    Mult
  6: 0       Offset

```

```

; Measure wind direction on Young Wind Monitor
9: Excite-Delay (SE) (P4)
1: 1      Repts
2: 5      2500 mV Slow Range
3: 9      SE Channel
4: 1      Excite all reps w/Exchan 1
5: 2      Delay (0.01 sec units)
6: 2500   mV Excitation
7: 6      Loc [ Wind_dir ]
8: .142   Mult
9: -135   Offset

; Make corrections to wind direction
10: If (X<=>F) (P89)
1: 6      X Loc [ Wind_dir ]
2: 4      <
3: 0      F
4: 30     Then Do

11: Z=X+F (P34)
1: 6      X Loc [ Wind_dir ]
2: 360    F
3: 6      Z Loc [ Wind_dir ]

12: End (P95)

;-----
; G L O B A L   R A D I A T I O N
; Measure Li200s Pyranometer
13: Volt (SE) (P1)
1: 1      Repts
2: 33     25 mV 50 Hz Rejection Range
3: 10     SE Channel
4: 7      Loc [ Li200S ]
5: 116.55 Mult
6: 0      Offset

;-----
; P R E C I P I T A T I O N
; Measure tipping bucket rain gauge
14: Pulse (P3)
1: 1      Repts
2: 2      Pulse Channel 2
3: 2      Switch Closure, All Counts
4: 8      Loc [ Precip ]
5: .16    Mult
6: 0      Offset

;-----
; I N T E R N A L   T E M P E R A T U R E
15: Internal Temperature (P17)
1: 9      Loc [ T_int ]

;-----
; B A R O M E T R I C   P R E S S U R E
16: If time is (P92)
1: 59     Minutes (Seconds --) into a
2: 60     Interval (same units as above)
3: 48     Set Port 8 High

17: If time is (P92)
1: 0      Minutes (Seconds --) into a
2: 60     Interval (same units as above)
3: 30     Then Do

18: Volt (SE) (P1)
1: 1      Repts
2: 15     2500 mV Fast Range
3: 11     SE Channel
4: 11     Loc [ P_mb ]
5: 0.2    Mult
6: 600    Offset

19: Do (P86)
1: 58     Set Port 8 Low

20: End (P95)

;-----
; H O U R L Y   O U T P U T
21: If time is (P92)
1: 0      Minutes (Seconds --) into a
2: 60     Interval (same units as above)
3: 10     Set Output Flag High (Flag 0)

```

```

22: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 101    Array ID

23: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

24: Resolution (P78)
1: 1      High Resolution

; Store average unvent and vent T and Rh
25: Average (P71)
1: 4      Repts
2: 1      Loc [ T_1      ]

26: Resolution (P78)
1: 1      High Resolution

; Store wind speed, dir and std dev
27: Wind Vector (P69)
1: 1      Repts
2: 1      Samples per Sub-Interval
3: 0      S, theta(1), sigma(theta(1)) with polar sensor
4: 5      Wind Speed/East Loc [ Wind_spd  ]
5: 6      Wind Direction/North Loc [ Wind_dir ]

28: Resolution (P78)
1: 1      High Resolution

; Store average global rad
29: Average (P71)
1: 1      Repts
2: 7      Loc [ Li200S    ]

; Store hourly precipitation
30: Totalize (P72)
1: 1      Repts
2: 8      Loc [ Precip    ]

; no data
31: Average (P71)
1: 2      Repts
2: 12     Loc [ _____ ]

32: Resolution (P78)
1: 1      High Resolution

; Store maximum wind speed during last hour
33: Maximum (P73)
1: 1      Repts
2: 10     Value with Hr-Min
3: 5      Loc [ Wind_spd  ]

34: Resolution (P78)
1: 1      High Resolution

; Store transient unvent and vent T and Rh
35: Sample (P70)
1: 4      Repts
2: 1      Loc [ T_1      ]

36: Resolution (P78)
1: 1      High Resolution

; Store max vent T
37: Maximum (P73)
1: 1      Repts
2: 10     Value with Hr-Min
3: 3      Loc [ T_vent    ]

38: Resolution (P78)
1: 1      High Resolution

; Store min vent T
39: Minimum (P74)
1: 1      Repts
2: 10     Value with Hr-Min
3: 3      Loc [ T_vent    ]

40: Resolution (P78)
1: 1      High Resolution

41: Sample (P70)
1: 1      Repts
2: 11     Loc [ P_mb      ]

;-----

```

```

; D A I L Y O U T P U T
42: If time is (P92)
1: 0      Minutes (Seconds --) into a
2: 1440   Interval (same units as above)
3: 10     Set Output Flag High (Flag 0)

43: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 124    Array ID

44: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

45: Resolution (P78)
1: 1      High Resolution

; Store daily average unvent and vent T & Rh
46: Average (P71)
1: 4      Reps
2: 1      Loc [ T_1      ]

47: Resolution (P78)
1: 1      High Resolution

; Store daily max unvent T
48: Maximum (P73)
1: 1      Reps
2: 10     Value with Hr-Min
3: 2      Loc [ T_2      ]

49: Resolution (P78)
1: 1      High Resolution

; Store daily min unvent T
50: Minimum (P74)
1: 1      Reps
2: 10     Value with Hr-Min
3: 2      Loc [ T_2      ]

51: Resolution (P78)
1: 1      High Resolution

; Store daily max wind speed
52: Maximum (P73)
1: 1      Reps
2: 10     Value with Hr-Min
3: 5      Loc [ Wind_spd  ]

53: Resolution (P78)
1: 1      High Resolution

; Store average wind vector
54: Wind Vector (P69)
1: 1      Reps
2: 1      Samples per Sub-Interval
3: 1      S, theta(1) with polar sensor
4: 5      Wind Speed/East Loc [ Wind_spd  ]
5: 6      Wind Direction/North Loc [ Wind_dir ]

55: Resolution (P78)
1: 1      High Resolution

; Store daily avg global radioation
56: Average (P71)
1: 1      Reps
2: 7      Loc [ Li200S    ]

; Store daily precipitation
57: Totalize (P72)
1: 1      Reps
2: 8      Loc [ Precip    ]

; Store sample of battery voltage
58: Sample (P70)
1: 1      Reps
2: 10     Loc [ Battery   ]

; no data
59: Average (P71)
1: 2      Reps
2: 12     Loc [ _____ ]

60: Resolution (P78)
1: 1      High Resolution

61: Average (P71)
1: 1      Reps

```



```

2: 11      Loc [ P_mb      ]

;-----
; S Y N O P T I C O U T P U T
; transient T data is stored every 3 hrs
; according to synoptic standards.
62: If time is (P92)
1: 60      Minutes (Seconds --) into a
2: 180     Interval (same units as above)
3: 10      Set Output Flag High (Flag 0)

63: Set Active Storage Area (P80)
1: 1       Final Storage Area 1
2: 103     Array ID

64: Real Time (P77)
1: 1220    Year,Day,Hour/Minute (midnight = 2400)

65: Resolution (P78)
1: 1       High Resolution

66: Sample (P70)
1: 1       Repts
2: 2       Loc [ T_2      ]

*Table 2 Program
01: 0.0000 Execution Interval (seconds)

*Table 3 Subroutines

End Program

1  [ T_1      ] RW--  3      1      Start -----
2  [ T_2      ] RW--  6      1      ----- End
3  [ T_vent   ] RW--  5      1      -----
4  [ rH_vent  ] RW--  3      1      -----
5  [ Wind_spd ] RW--  4      1      -----
6  [ Wind_dir ] RW--  4      2      -----
7  [ Li200S   ] RW--  2      1      -----
8  [ Precip   ] RW--  2      1      -----
9  [ T_int    ] -W--  0      1      -----
10 [ Battery  ] RW--  2      1      -----
11 [ P_mb     ] RW--  2      1      -----
12 [ ----- ] R--  2      0      -----
13 [ ----- ] R--  2      0      -----
14 [ ----- ] ----  0      0      -----
15 [ ----- ] ----  0      0      -----
16 [ ----- ] ----  0      0      -----
17 [ ----- ] ----  0      0      -----
18 [ ----- ] ----  0      0      -----
19 [ ----- ] ----  0      0      -----
20 [ ----- ] ----  0      0      -----
21 [ ----- ] ----  0      0      -----
22 [ R_R0_T_1 ] RW--  1      1      -----
23 [ R_R0_T_2 ] RW--  1      1      -----

```