



## Tarfala Research Station automatic weather station, 1988

Peter Jansson

# Contents

<b>1</b>	<b>Instrumentation</b>	<b>3</b>
<b>2</b>	<b>Notes on the station data</b>	<b>3</b>
<b>3</b>	<b>Data coverage</b>	<b>3</b>
<b>4</b>	<b>Notes on data storage</b>	<b>3</b>
<b>5</b>	<b>Data files and content</b>	<b>4</b>

# 1 Instrumentation

The TRS met station consisted of the following instruments during 1988

Sensor	Serial number	Remark
T/Rh		at 2 m
Young Wind Monitor		at 3 m
LiCor Li-200SB pyranometer		at 2 m
CS Q-7 net radiometer		at 2 m
Tipping bucket precipitation gauge		2 m
CR21X data logger		

## 2 Notes on the station data

- NOTE 3-hr sampling of data during winter, 1-hr sampling during summer.
- Switch from 3-hr data to 1 hr data on 121 0000.
- Precipitation is recorded within 10 s of any pulse from the tipping bucket rain gauge from day 164.

## 3 Data coverage

Data missing from

1988-02-06 12:00:00 to 1988-04-11 09:00:00

1988-08-01 19:00:00 to 1988-08-06 16:00:00

1988-08-09 22:00:00 to end of year

## 4 Notes on data storage

Example data line for hourly data:

121, 1988, 185, 1300, 11.9, 21.25, 1.405, 1.324, 339.6, 19.53, 183.9, 187.7, 60.9, 0

Column	Example data	Description
01:	121	ID
02:	1988	Year
03:	185	Day of Year
04:	1300	Hour-minute (hhmm)
05:	11.9	2 Young screen (T/Rh)
06:	21.25	3 Young screen relative humidity (T/Rh) (probably programmed wrong)
07:	1.405	4 Mean horizontal wind speed
08:	1.324	5 Resultant mean wind speed
09:	339.6	6 resultant mean wind direction
10:	19.53	7 Standard deviation of wind direction
11:	183.9	8 Global radiation
12:	187.7	9 Net radiation
13:	60.9	10 Standard deviation of net radiation?
14:	0	11 Precipitation

Example data line for daily data:

127, 1988, 185, 0, 8.85, 1713, 4.499, 406, 3.322, 1123, 0, 146, 0.602, 0

The daily-data file content is summarized below.

## 5 Data files and content

TRSmnet1988.csv Raw data file

TRS\_met\_1988\_Daily\_data.csv

1988-01-01 00:00:00	Date-time
-9.10	daily maximum temperature
950	time for maximum temperature
-18.57	daily minimum temperature
247	time for daily minimum
10.17	daily maximum wind speed
932	time for maximum wind speed
0.00	minimum wind speed
143	time for minimum wind speed
1.7	average wind speed???
0	daily totalized precipitation

TRS\_met\_1988\_Precipitation.csv

Date-time, hourly totalized P

1988-01-01 00:00:00,0.0

TRS\_met\_1988\_transient\_Precipitation.csv

Date-time, transient precipitation

1988-07-30 03:08:10,0.16

TRS\_met\_1988\_Radiation.csv

Date-time, Global radiation, Net radiation, Standard deviation of net radiation?

1988-01-01 00:00:00,-1.19,-39.87,0.72

TRS\_met\_1988\_Relative\_humidity.csv

Date-time, hourly average Rh

1988-01-01 00:00:00,20.7

TRS\_met\_1988\_Temperature.csv

Date-time, hourly average T

1988-01-01 00:00:00,-15.08

TRS\_met\_1988\_Wind.csv

Date-time, Mean horizontal wind speed, Resultant mean wind speed, resultant mean wind direction, Standard deviation of wind direction

1988-01-01 00:00:00,2.0,1.9,0.3,21.9

The data collected during 1988 is summarized the figure 1 and Table 1.

## Logger program

No documentation of the logger program exists for this year.

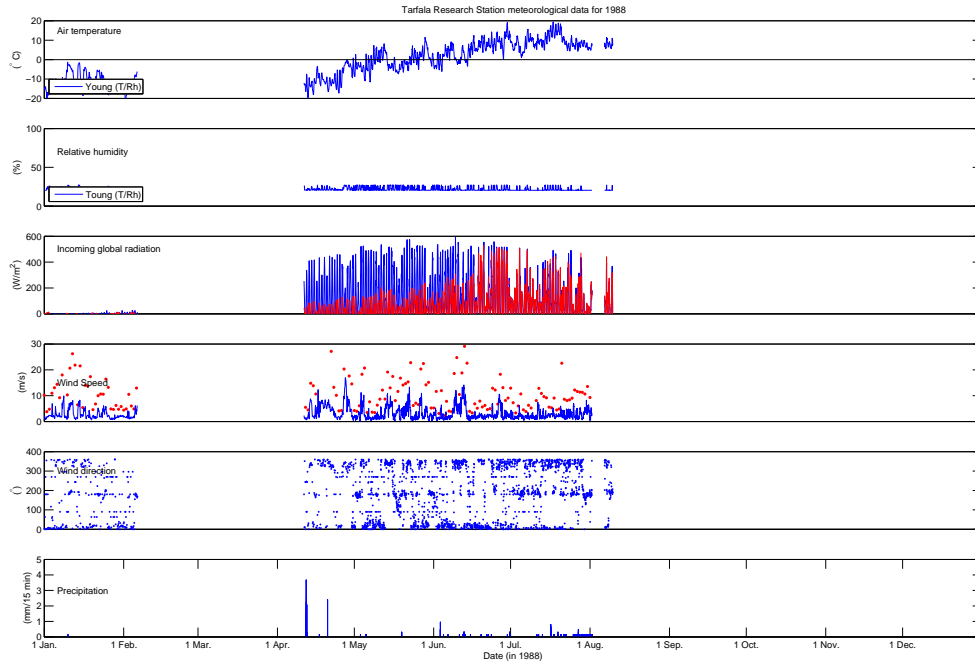


Figure. 1. Summary of meteorological data from Tarfala Research Station automatic weather station 1988.

Table. 1. Monthly averages of meteorological parameters from the Tarfala Research Station automatic weather station 1988.

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Average air temperature												
(°C)	−11.8	−13.6	—	−9.4	−0.9	5.0	9.2	7.2	—	—	—	—
<i>n</i>	248	51	—	171	743	743	743	120	—	—	—	—
Average relative humidity												
(%)	21.4	21.0	—	21.9	22.6	22.0	21.1	20.7	—	—	—	—
<i>n</i>	248	51	—	171	743	743	743	120	—	—	—	—
Positive degree sum												
(°C)	0	0	—	−9	1001	4020	6853	—	—	—	—	—
<i>n</i>	0	0	—	1	296	599	743	—	—	—	—	—
Average incoming global radiation												
(W m <sup>−2</sup> )	0.8	3.7	—	137.4	161.5	167.1	92.7	66.0	—	—	—	—
<i>n</i>	248	51	—	171	743	743	743	120	—	—	—	—
Global incoming energy sum												
(W m <sup>−2</sup> )	204	187	—	—	120031	124148	68909	—	—	—	—	—
<i>n</i>	47	20	—	—	662	735	681	—	—	—	—	—
Average net radiation												
(W m <sup>−2</sup> )	−3217.2	−218.7	—	1090.1	22196.8	67344.0	52199.9	6957.0	—	—	—	—
<i>n</i>	248	51	—	171	743	728	716	119	—	—	—	—
Totalized precipitation												
(mm)	0.16	0.00	—	16.80	0.80	11.68	152.96	18.24	—	—	—	—
<i>n</i>	1	0	—	10	4	62	932	114	—	—	—	—
Average wind speed												
(m s <sup>−1</sup> )	2.8	2.3	—	4.4	3.2	3.2	2.5	362.1	—	—	—	—
<i>n</i>	248	51	—	171	743	743	743	120	—	—	—	—