GEOLOGICAL SURVEY OF CANADA

OPEN FILE 2562

High Arctic IRMA (Integrated Research and Monitoring Area) automatic weather station field data 1990-91 Part 3

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R.M. Koerner, S.A. Edlund

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Canada

HIGH ARCTIC IRMA
(INTEGRATED RESEARCH AND MONITORING AREA)
AUTOMATIC WEATHER STATION FIELD DATA
1990-91

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Angus Headley[3], Roy M. Koerner[1], and Sylvia A. Edlund[1]

Geological Survey of Canada
Open File 2562

1991-92 report of Green Plan Program
INSTRUMENTAL MONITORING OF CLIMATE CHANGE IN THE HIGH ARCTIC

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TABLE:1

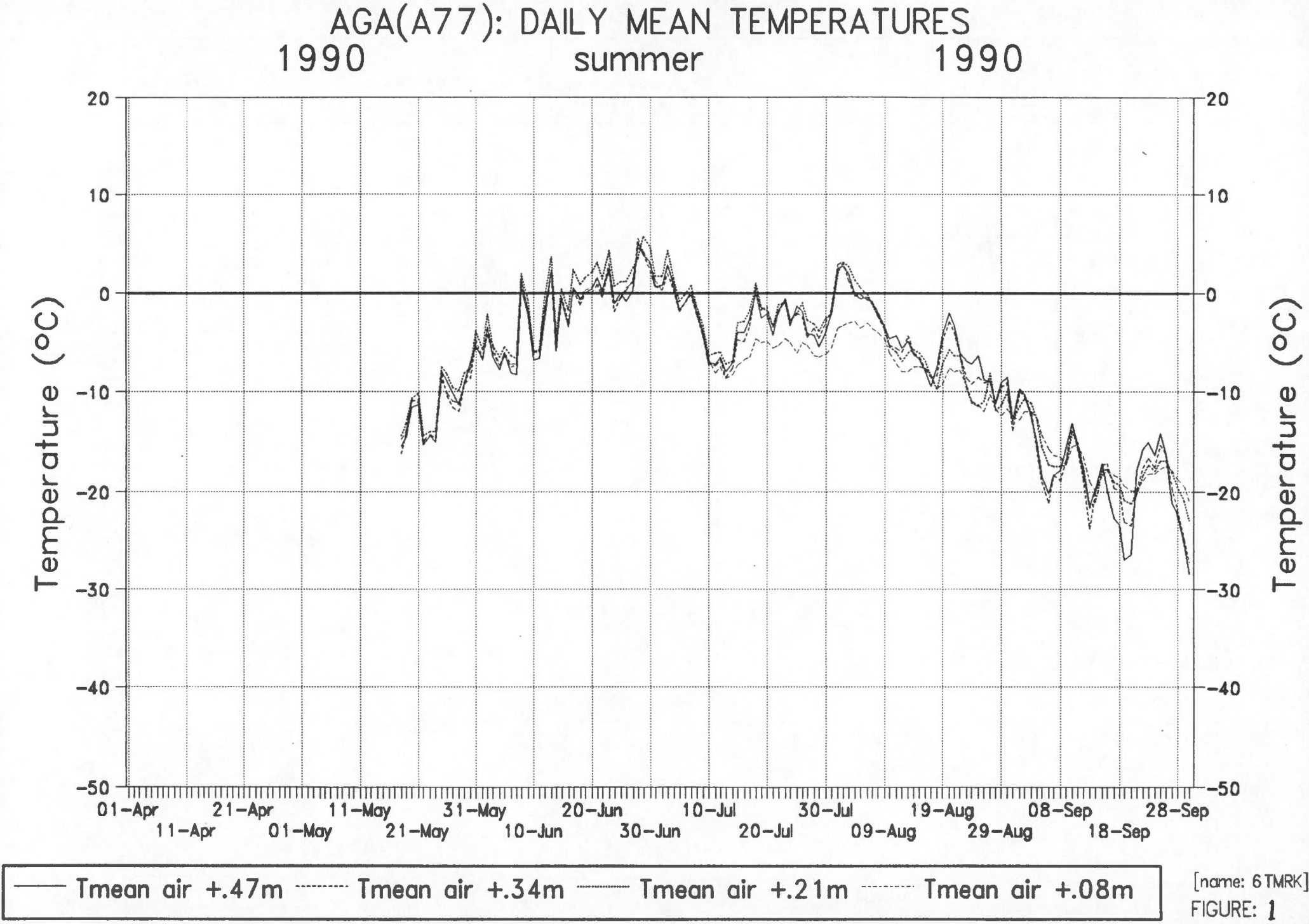
File: AGA9090D.WQF

AGA(A77): Agassiz Ice Cap 1977 bore hole site

April - September 1990

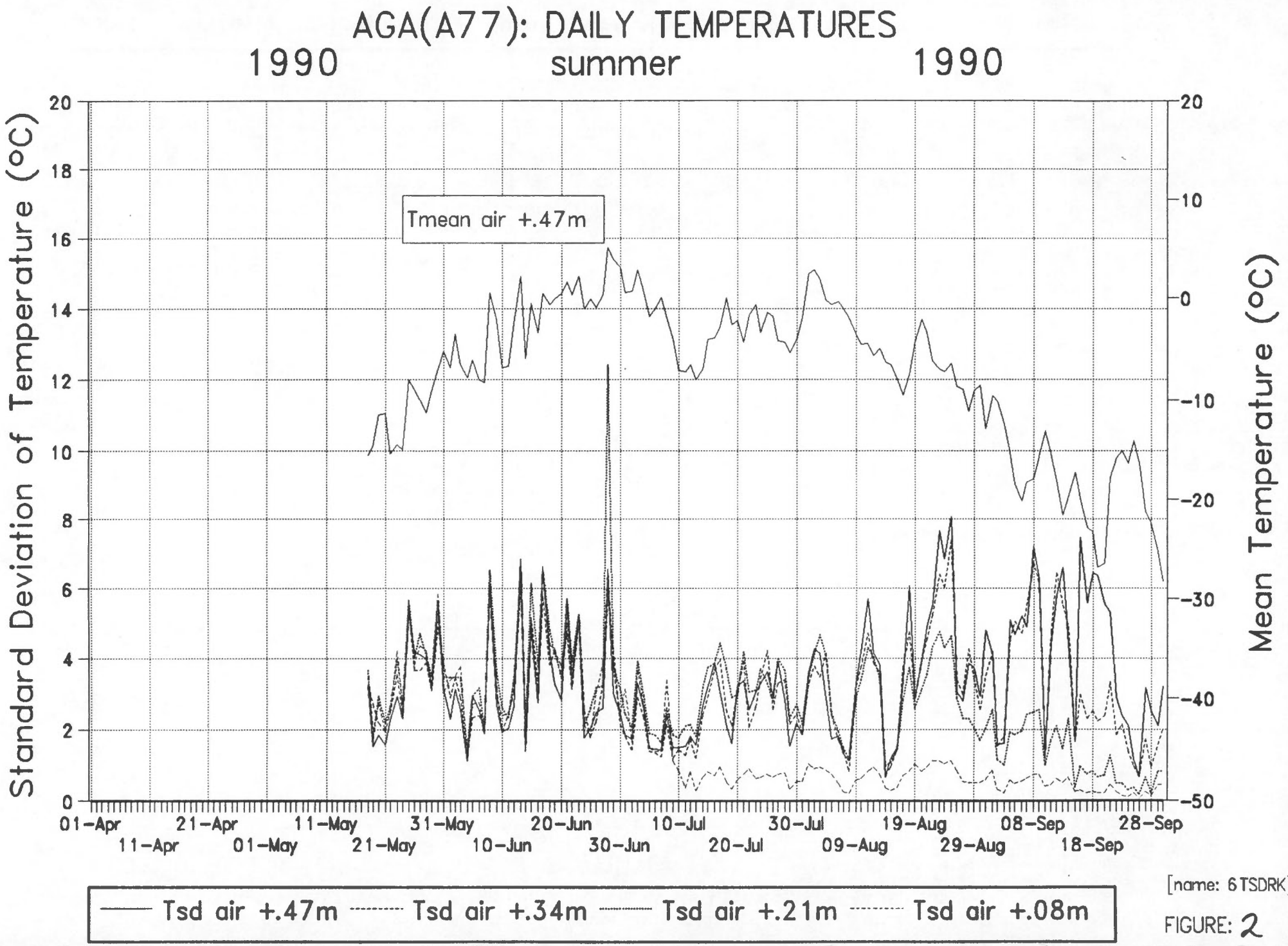
Daily Values

name:	Figure no.		Season / month	Year	Figure Caption
6tmrk	AGA9090D.	1	Summer	1990	Daily mean air temperature at various heights above the snow: RMK snow depth array
6tsdrk	AGA9090D.	2	Summer	1990	Daily standard deviation of temperature at various heights: RMK snow depth array
6tbatrk	AGA9090D.	3	Summer	1990	Daily battery power and mean air temperatures
ltmrk	AGA9090D.	4	Melt Season	1990	Daily mean air temperature at various heights above the snow: RMK snow depth array
4tmrk	AGA9090D.	5	May - August	1990	Daily mean air temperature at various heights above the snow: RMK snow depth array
maytmrk	AGA9090D.	6	May	1990	Daily mean air temperature at various heights above the snow: RMK snow depth array
maytsdrk	AGA9090D.	7	May	1990	Daily standard deviation of temperature at various heights: RMK snow depth array
juntmrk	AGA9090D.	8	June	1990	Daily mean air temperature at various heights above the snow: RMK snow depth array
juntsdrk	AGA9090D.	9	June	1990	Daily standard deviation of temperature at various heights: RMK snow depth array
jultsdrk	AGA9090D.	10	July	1990	Daily standard deviation of temperature at various heights: RMK snow depth array
augtsdrk	AGA9090D.	11	August	1990	Daily standard deviation of temperature at various heights: RMK snow depth array
septsdrk	AGA9090D.	12	September	1990	Daily standard deviation of temperature at various heights: RMK snow depth array



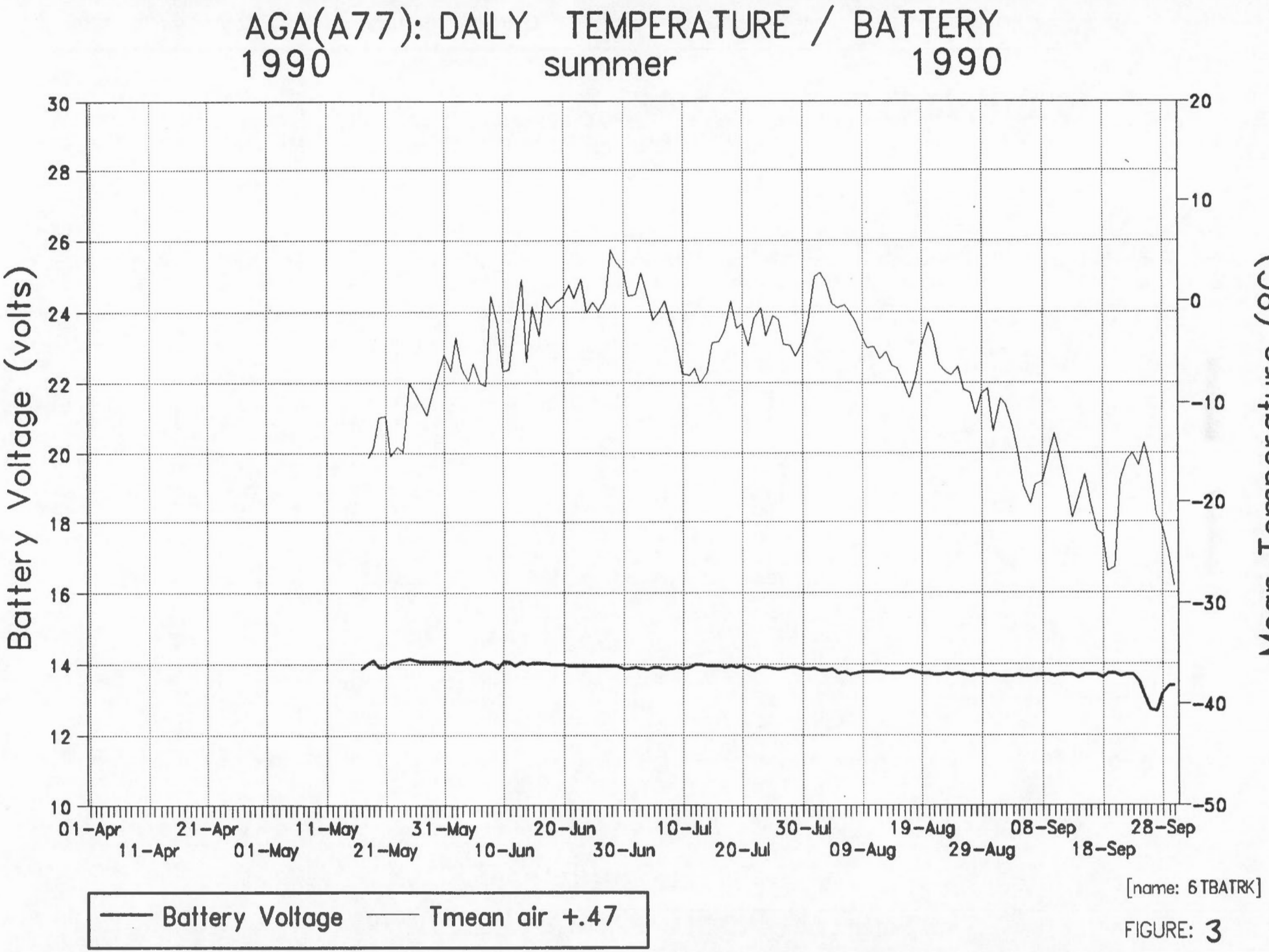
[name: 6TMRK]

FIGURE: 1



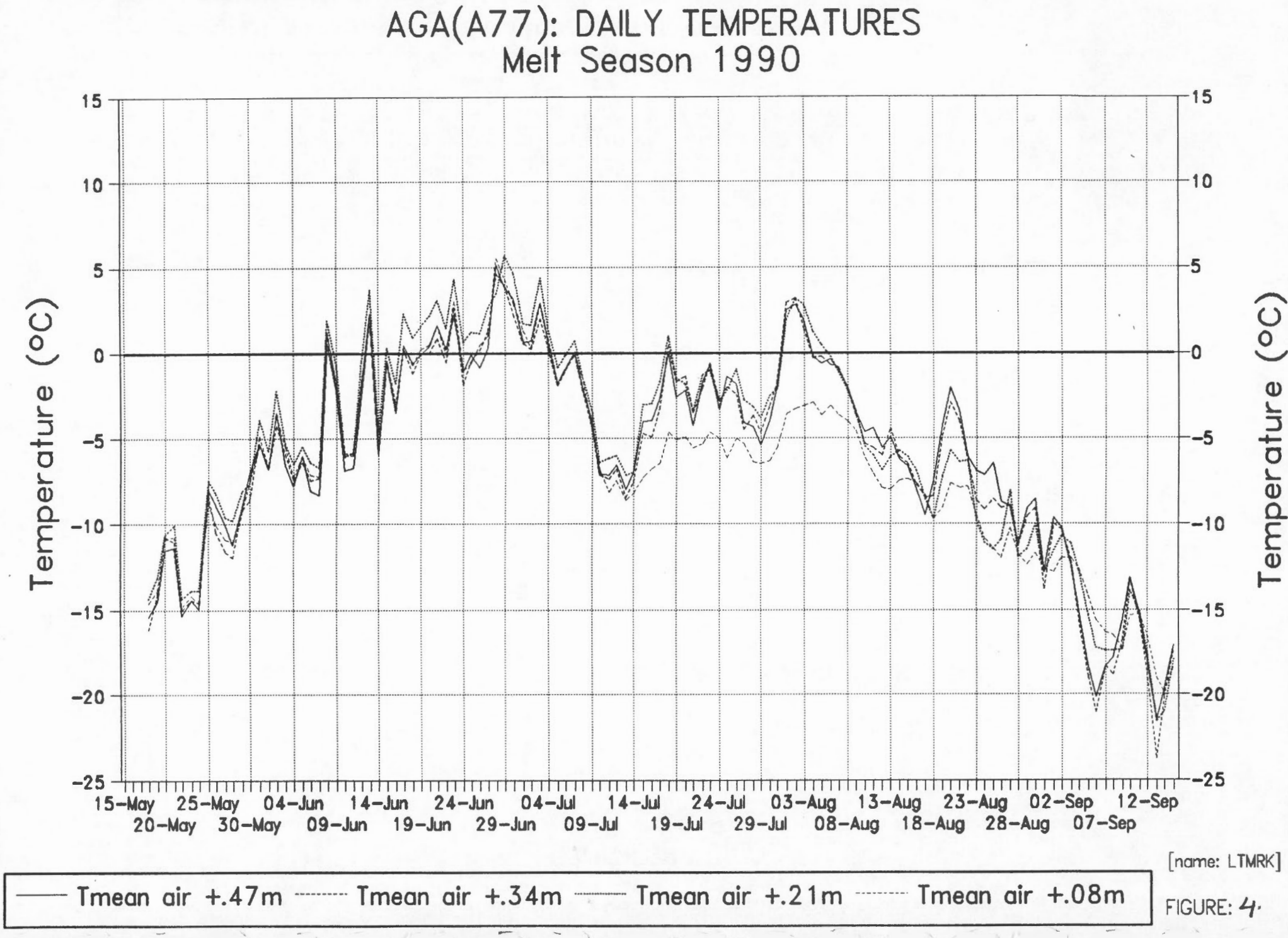
[name: 6TSDRK]

FIGURE: 2



[name: 6TBATRK]

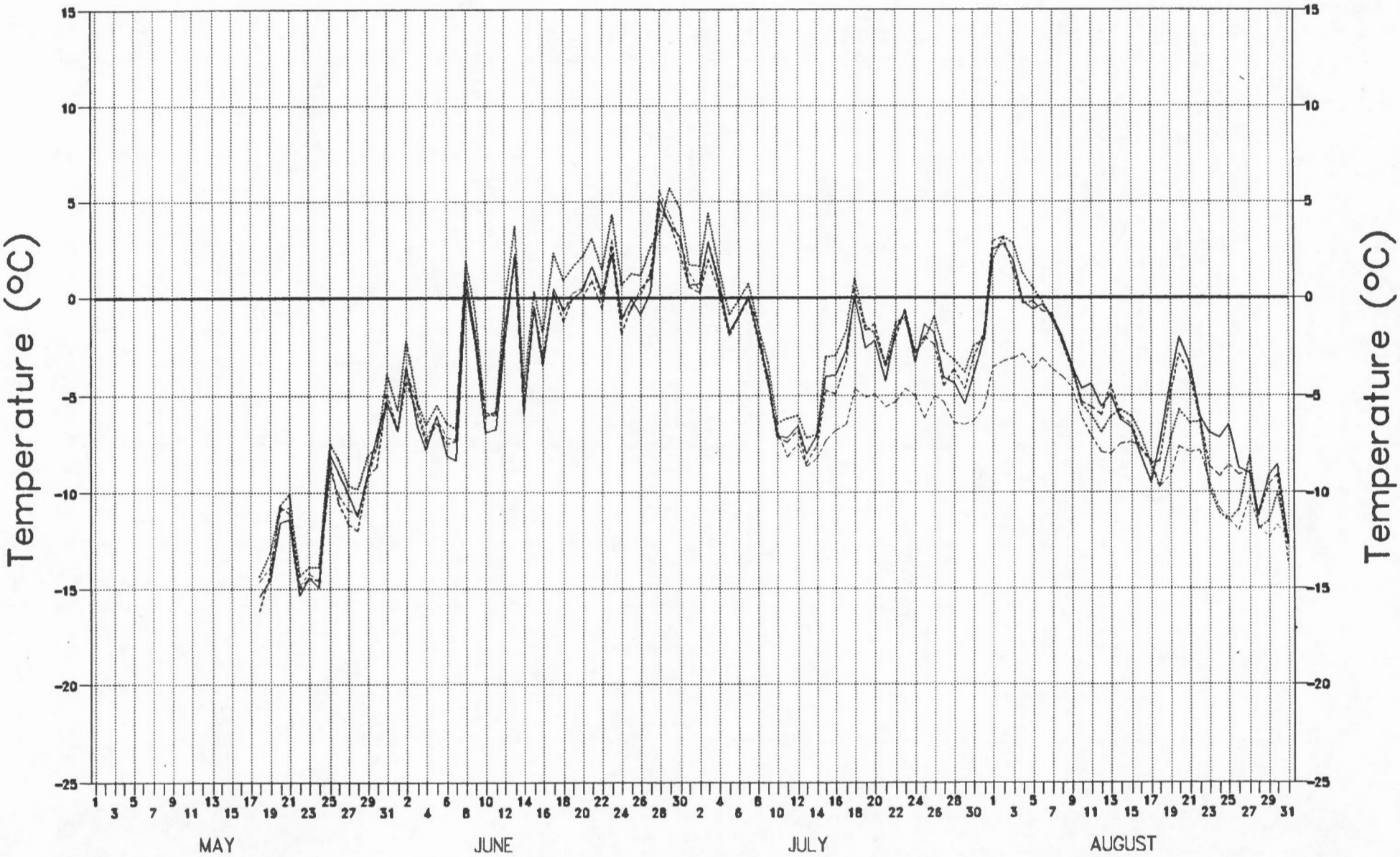
FIGURE: 3



[name: LTMRK]

FIGURE: 4.

AGA(A77): DAILY TEMPERATURES
May – August 1990

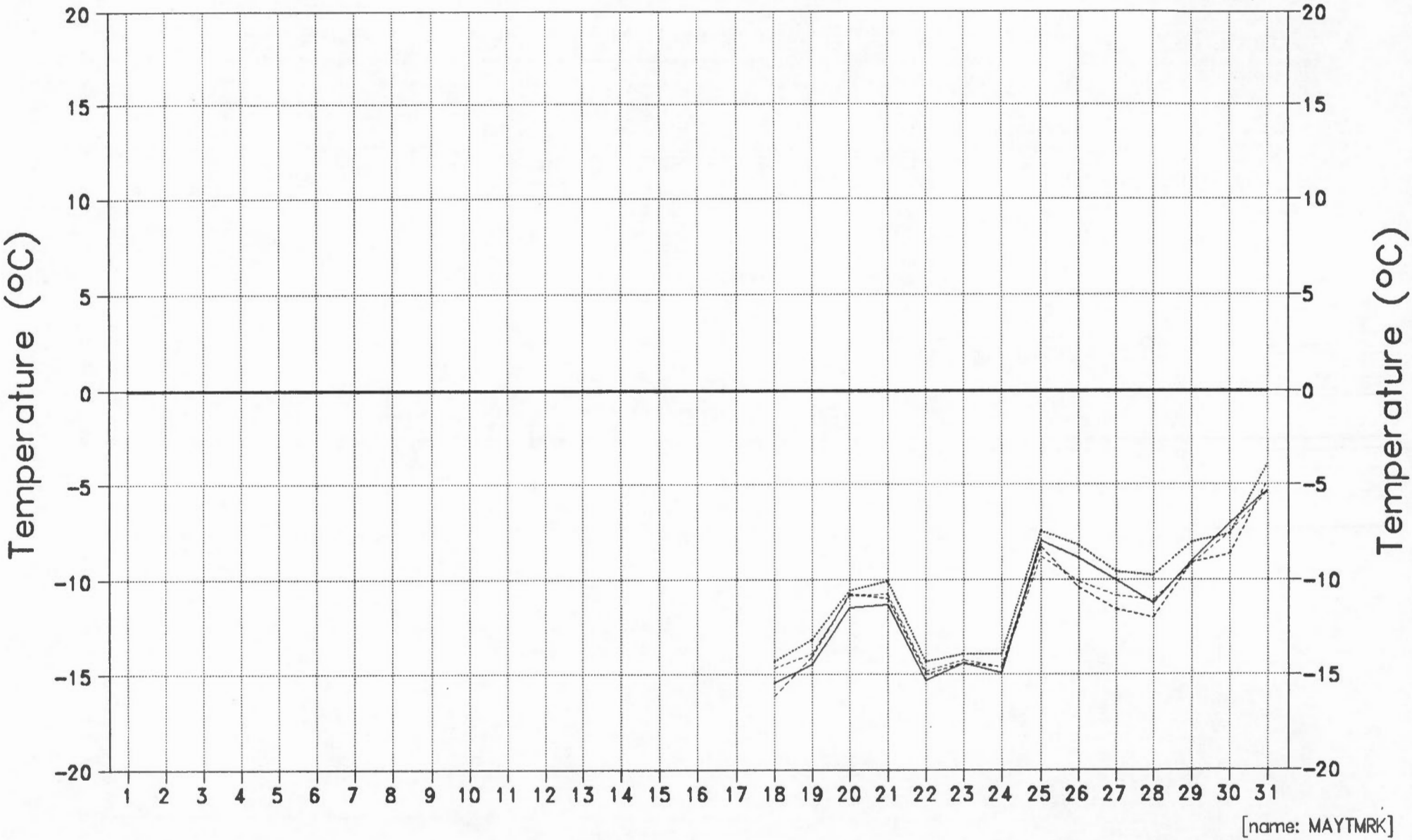


[name: 4TMRK]

Tmean air +.47m — Tmean air +.34m — Tmean air +.21m — Tmean air +.08m

FIGURE: 5

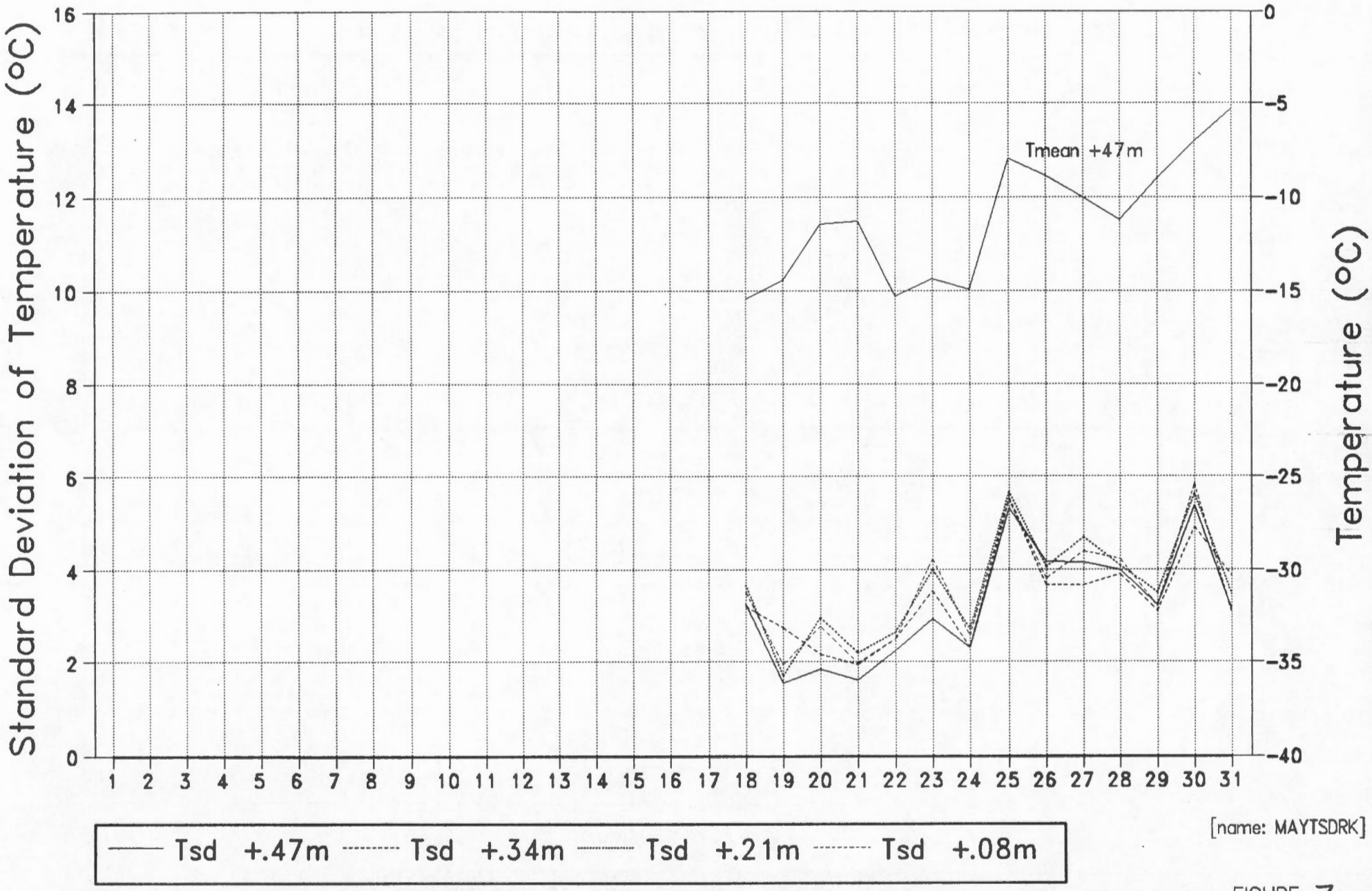
AGA(A77): DAILY TEMPERATURES
May 1990



Tmean air +.47m — Tmean air +.34m — Tmean air +.21m — Tmean air +.08m

FIGURE: 6

AGA(A77): RK SNOW DEPTH ARRAY
May 1990



[name: MAYTSDRK]

FIGURE: 7

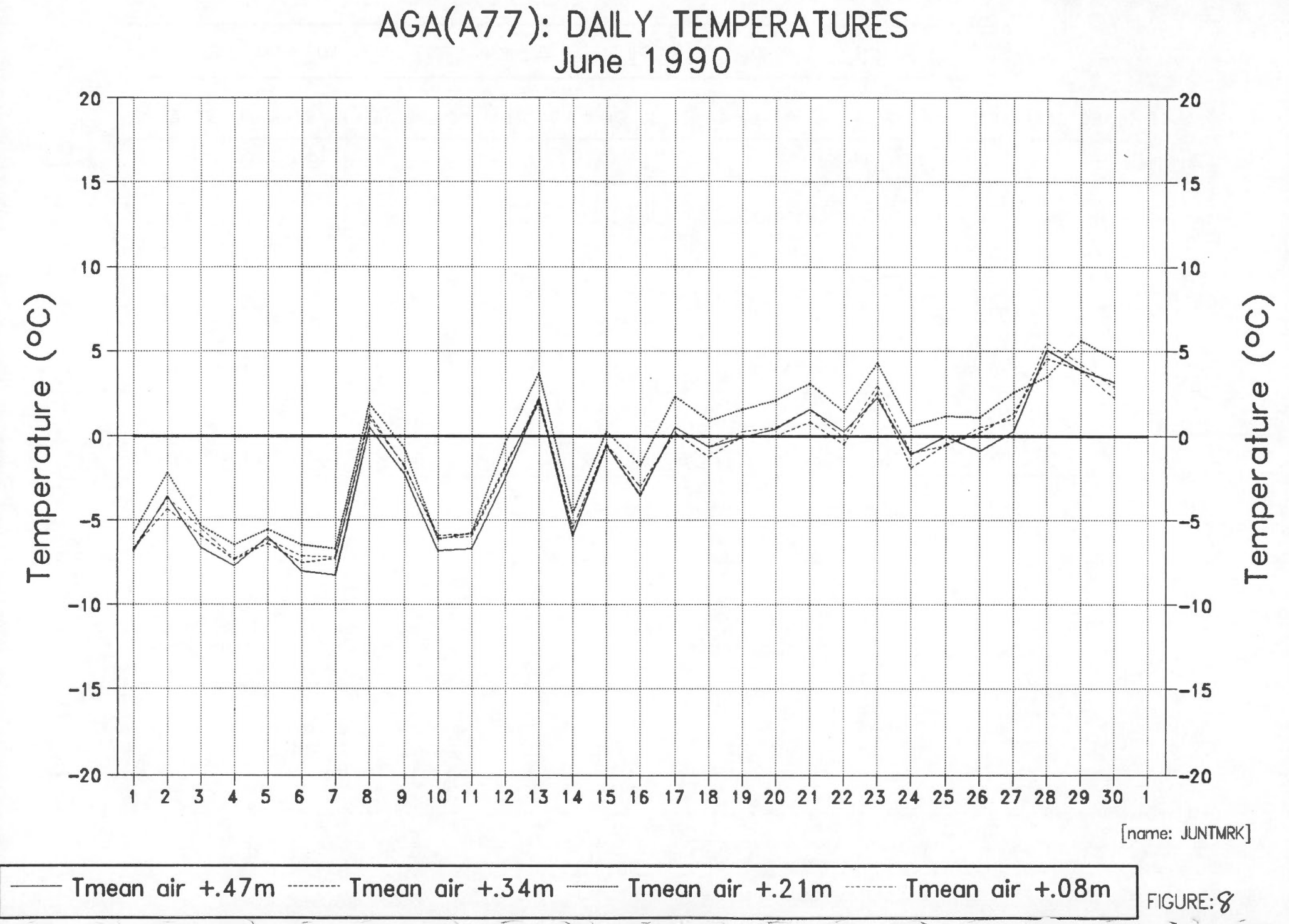
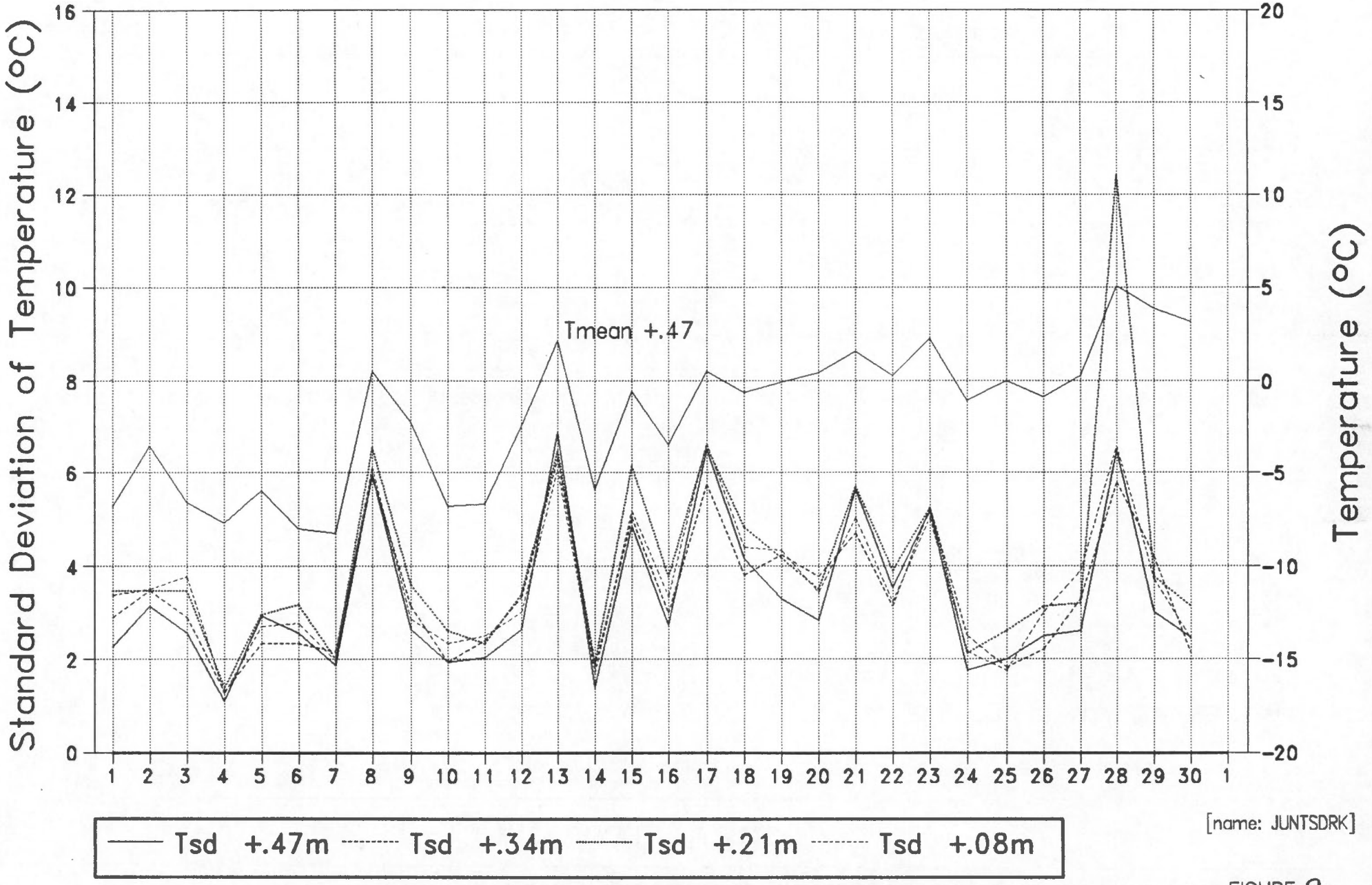

AGA(A77): DAILY TEMPERATURES
June 1990
Temperature (°C)
20
15
10
5
0
-5
-10
-15
-20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 1
[name: JUNTMRK]
Tmean air +.47m
Tmean air +.34m
Tmean air +.21m
Tmean air +.08m

FIGURE: 8

AGA(A77): RK SNOW DEPTH ARRAY
June 1990



[name: JUNTSDRK]

FIGURE: 9

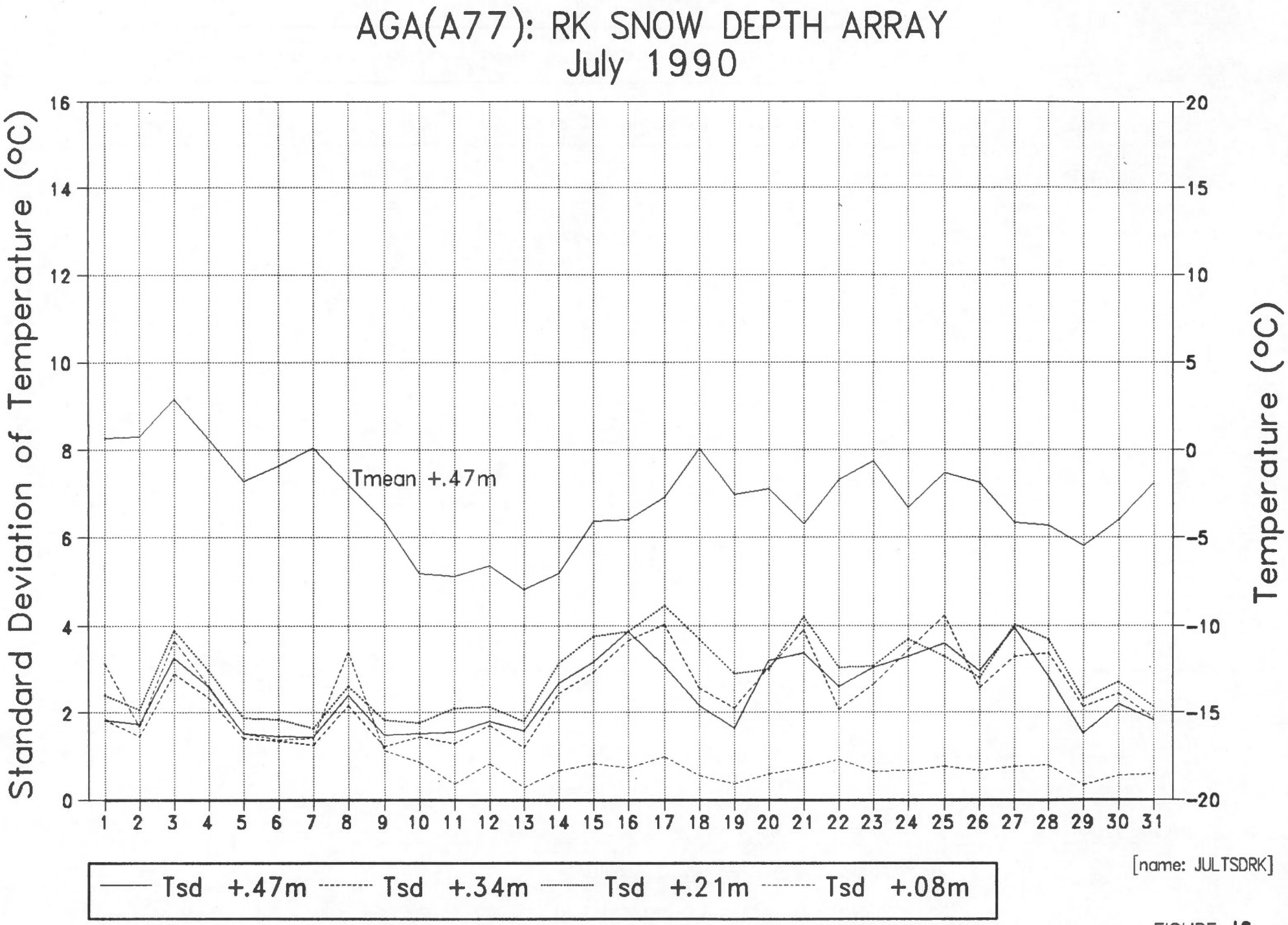
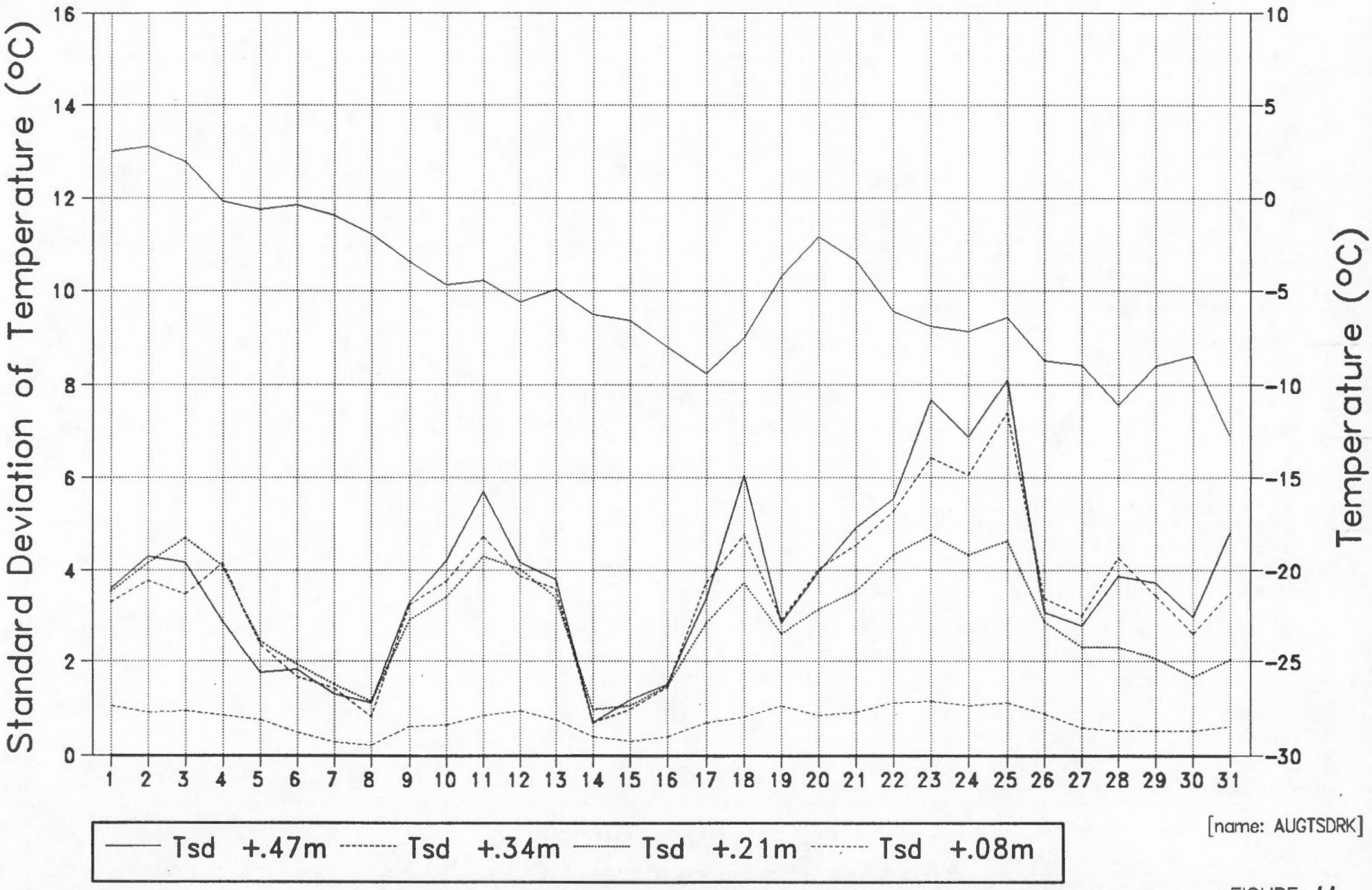

AGA(A77): RK SNOW DEPTH ARRAY
July 1990
Standard Deviation of Temperature (°C)
Temperature (°C)
Tmean +.47m
Tsd +.47m
Tsd +.34m
Tsd +.21m
Tsd +.08m
[name: JULTSDRK]

FIGURE: 10

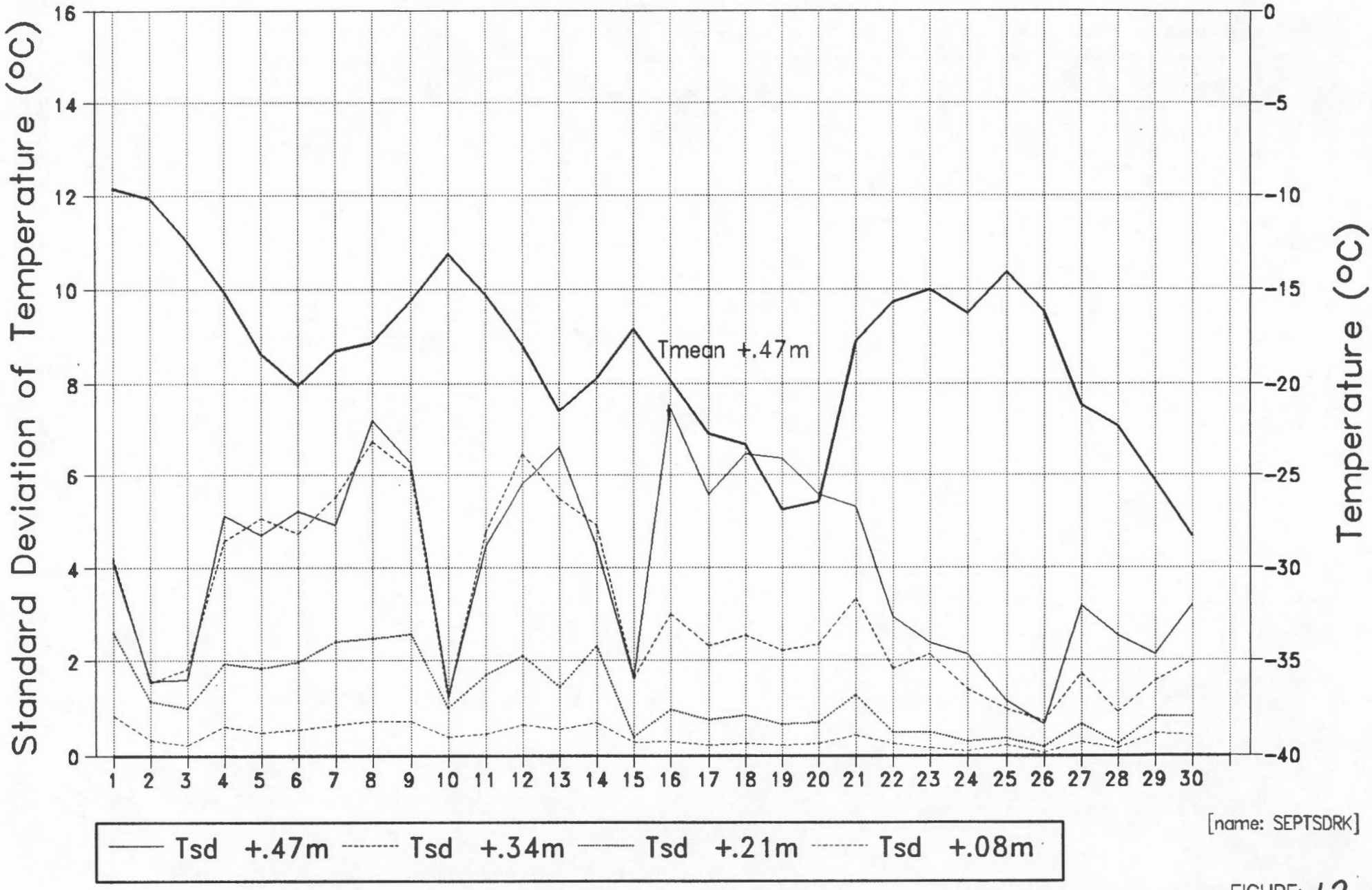
AGA(A77): RK SNOW DEPTH ARRAY
August 1990



[name: AUGTSDRK]

FIGURE: 11

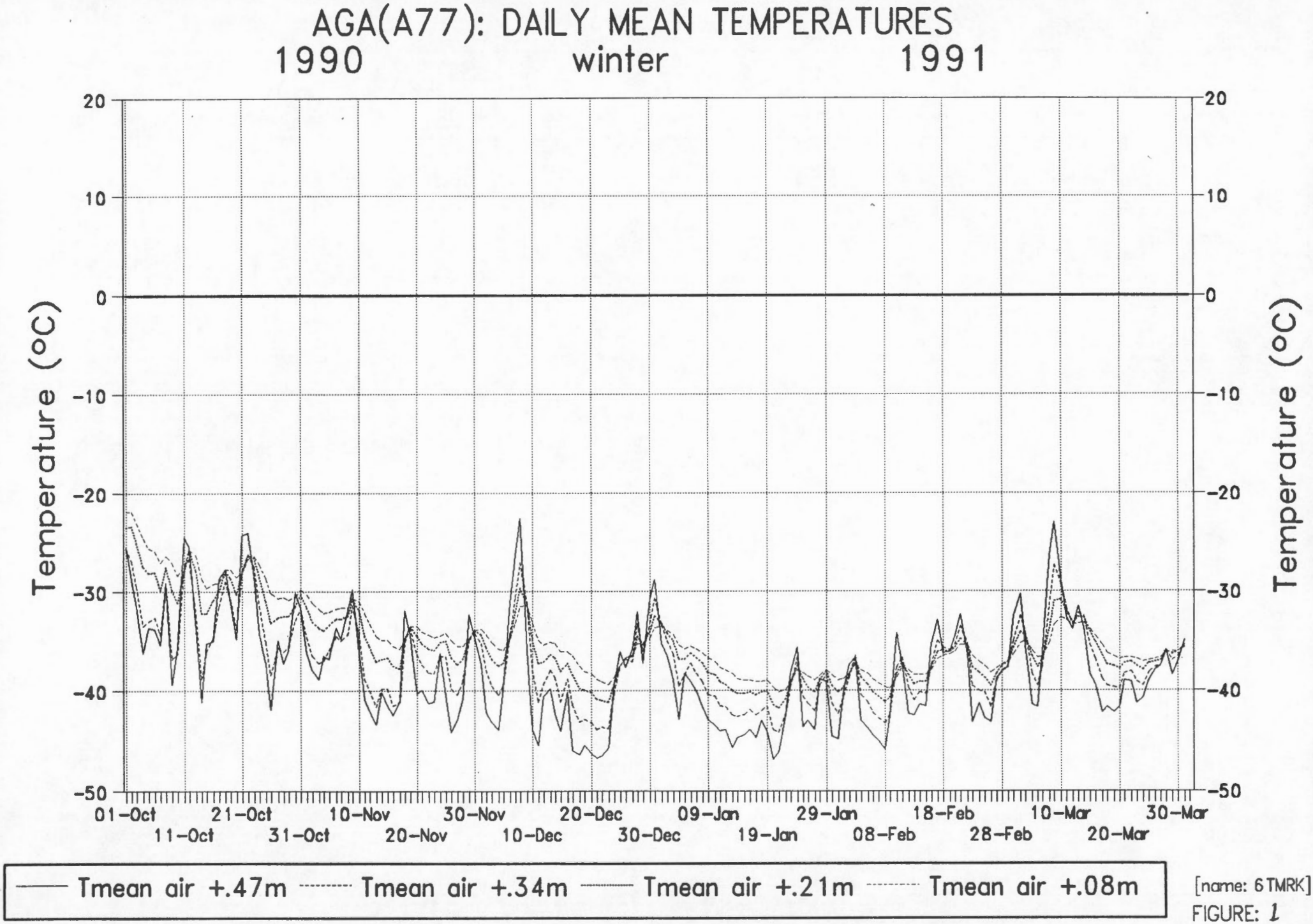
AGA(A77): RK SNOW DEPTH ARRAY
September 1990



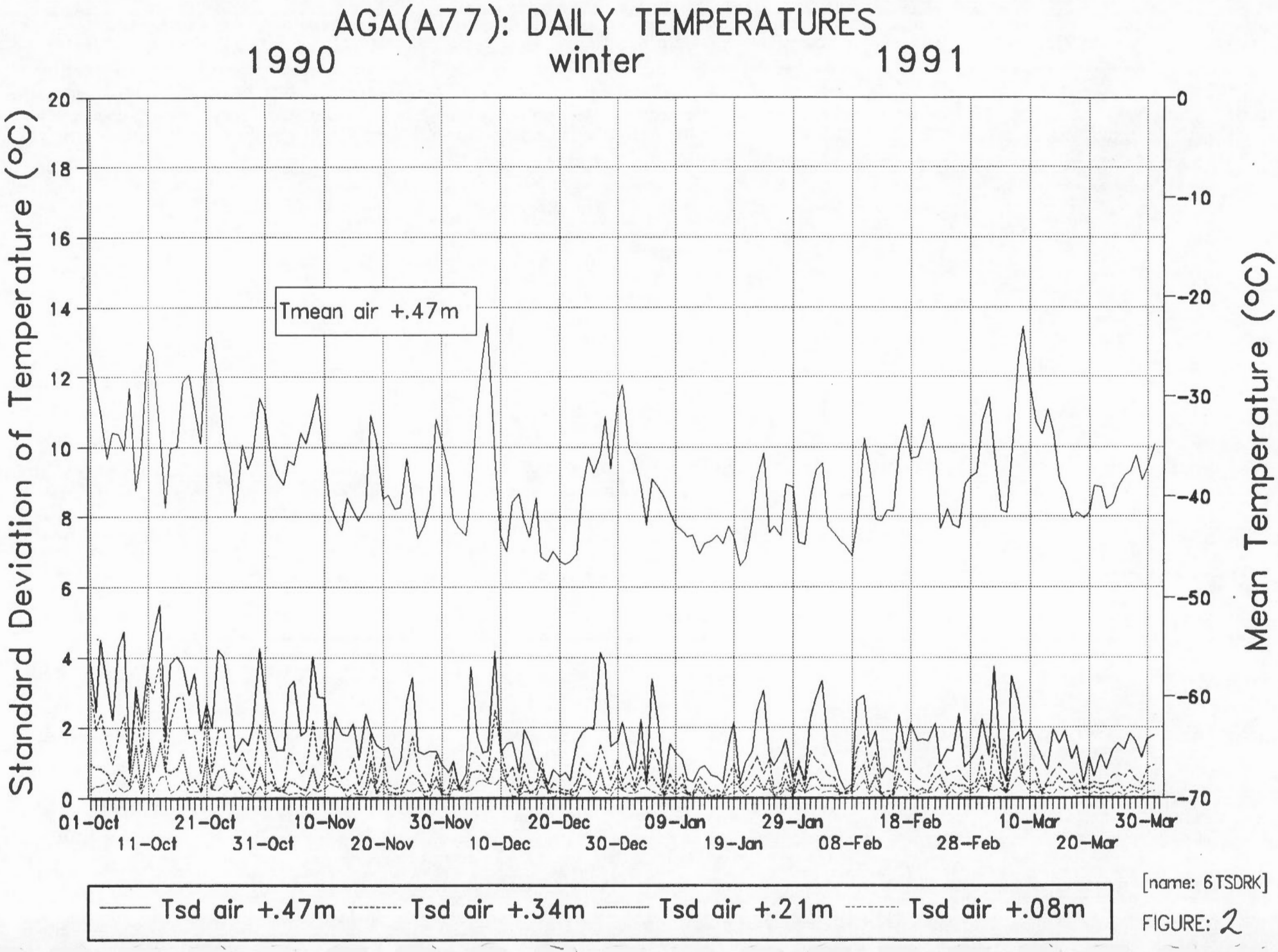
[name: SEPTSDRK]

FIGURE: 12

TABLE: 2					
File: AGA9090D.WQA					
AGA(A77): Agassiz Ice Cap 1977 bore hole site					
October 1990 - November 1991					
Daily Values					
name:	Figure no.		Season / month	Year	Figure Caption
6tmrk	AGA9091D.	1	Winter	1990-1991	Daily mean air temperature at various heights above the snow: RMK snow depth array
6tsdrk	AGA9091D.	2	Winter	1990-1991	Daily standard deviation of temperature at various heights: RMK snow depth array
6tbatrk	AGA9091D.	3	Winter	1990-1991	Daily battery power and mean air temperatures



[name: 6TMRK]
FIGURE: 1



[name: 6TSDRK]

FIGURE: 2

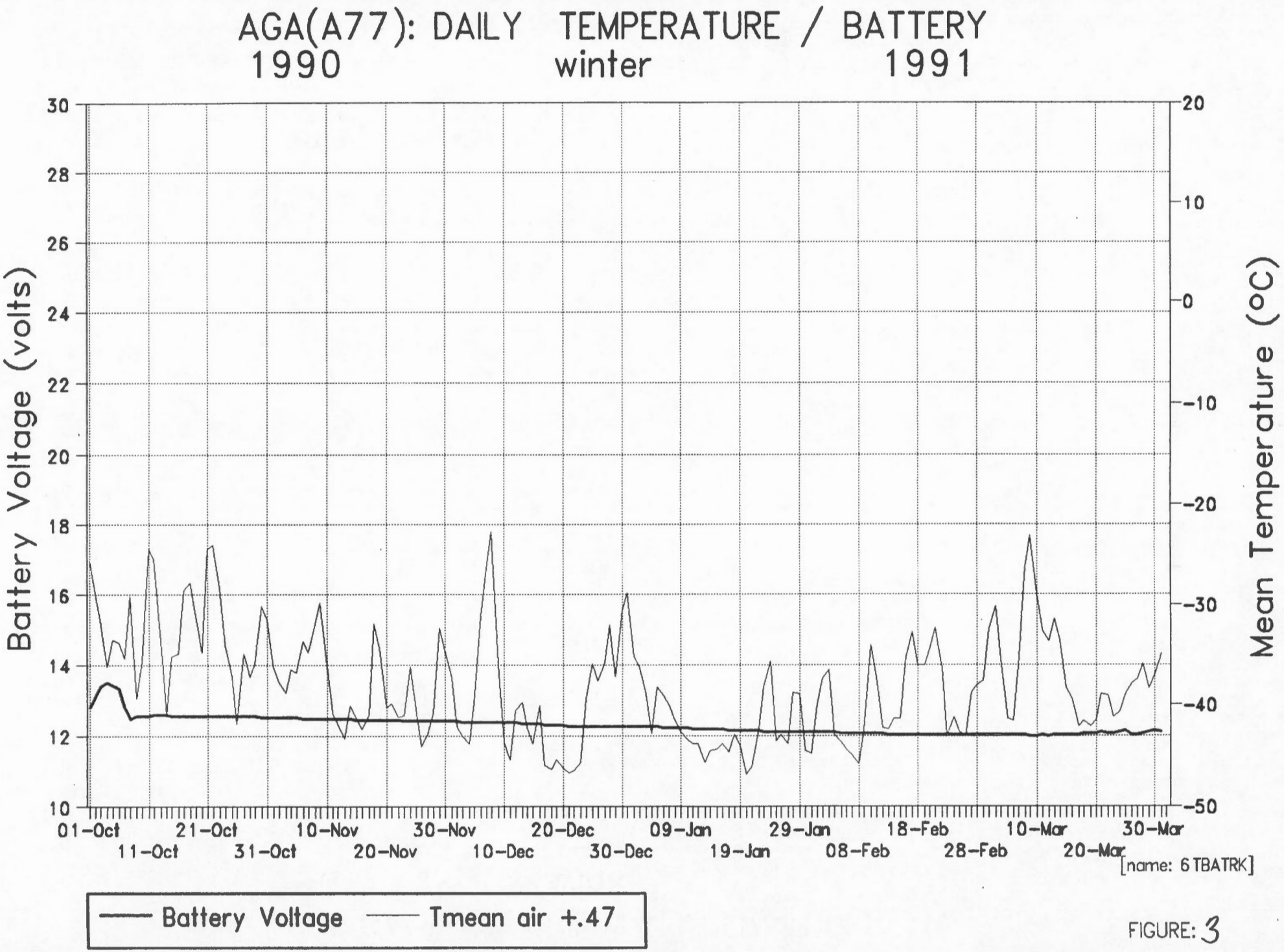

AGA(A77): DAILY TEMPERATURE / BATTERY
1990 winter 1991
Battery Voltage (volts)
Mean Temperature (oC)
30
28
26
24
22
20
18
16
14
12
10
20
10
0
-10
-20
-30
-40
-50
01-Oct
11-Oct
21-Oct
31-Oct
10-Nov
20-Nov
30-Nov
10-Dec
20-Dec
30-Dec
09-Jan
19-Jan
29-Jan
08-Feb
18-Feb
28-Feb
10-Mar
20-Mar
30-Mar
[name: 6TBATRK]
Battery Voltage
Tmean air +.47

FIGURE: 3

TABLE:3

File: AGA9090C.WQF

AGA(A77): Agassiz Ice Cap 1977 bore hole site

April - September 1990

Calculated Values

name:	Figure no.		Season / month	Year	Figure Caption
g6txn	AGA9090C.	1	Summer	1990	Calculated Daily maximun and minimum temperature (°C) from 24 hourly sample values in Gill shield
g6rhm	AGA9090C.	2	Summer	1990	Calculated Daily mean relative humidity (%) from 24 hourly sample values in Gill shield
4txn	AGA9090C.	3	May - August	1990	Calculated Daily maximun and minimum temperature (°C) from 24 hourly sample values in Gill shield
ltxn	AGA9090C.	4	Melt Season	1990	Calculated Daily maximun and minimum temperature (°C) from 24 hourly sample values in Gill shield
gmaytrhm	AGA9090C.	5	May	1990	Calculated Daily maximun and minimum temperature (°C) from 24 hourly sample values in Gill shield and mean relative humidity (%)
gjuntrhn	AGA9090C.	6	June	1990	Calculated Daily mean relative humidity (%) and maximun and minimum temperature (°C) from 24 hourly sample values in Gill shield
gjultrhm	AGA9090C.	7	July	1990	Calculated Daily mean relative humidity (%) and maximun and minimum temperature (°C) from 24 hourly sample values in Gill shield
gaugtrhm	AGA9090C.	8	August	1990	Calculated Daily mean relative humidity (%) and maximun and minimum temperature (°C) from 24 hourly sample values in Gill shield
gseptrhm	AGA9090C.	9	September	1990	Calculated Daily mean relative humidity (%) and maximun and minimum temperature (°C) from 24 hourly sample values in Gill shield
maytxn	AGA9090C.	10	May	1990	Calculated Daily maximun and minimum temperature (°C) from 24 hourly sample values in Gill shield
juntxn	AGA9090C.	11	June	1990	Calculated Daily maximun and minimum temperature (°C) from 24 hourly sample values in Gill shield
jultxn	AGA9090C.	12	July	1990	Calculated Daily maximun and minimum temperature (°C) from 24 hourly sample values in Gill shield
augtxn	AGA9090C.	13	August	1990	Calculated Daily maximun and minimum temperature (°C) from 24 hourly sample values in Gill shield
septxn	AGA9090C.	14	September	1990	Calculated Daily maximun and minimum temperature (°C) from 24 hourly sample values in Gill shield

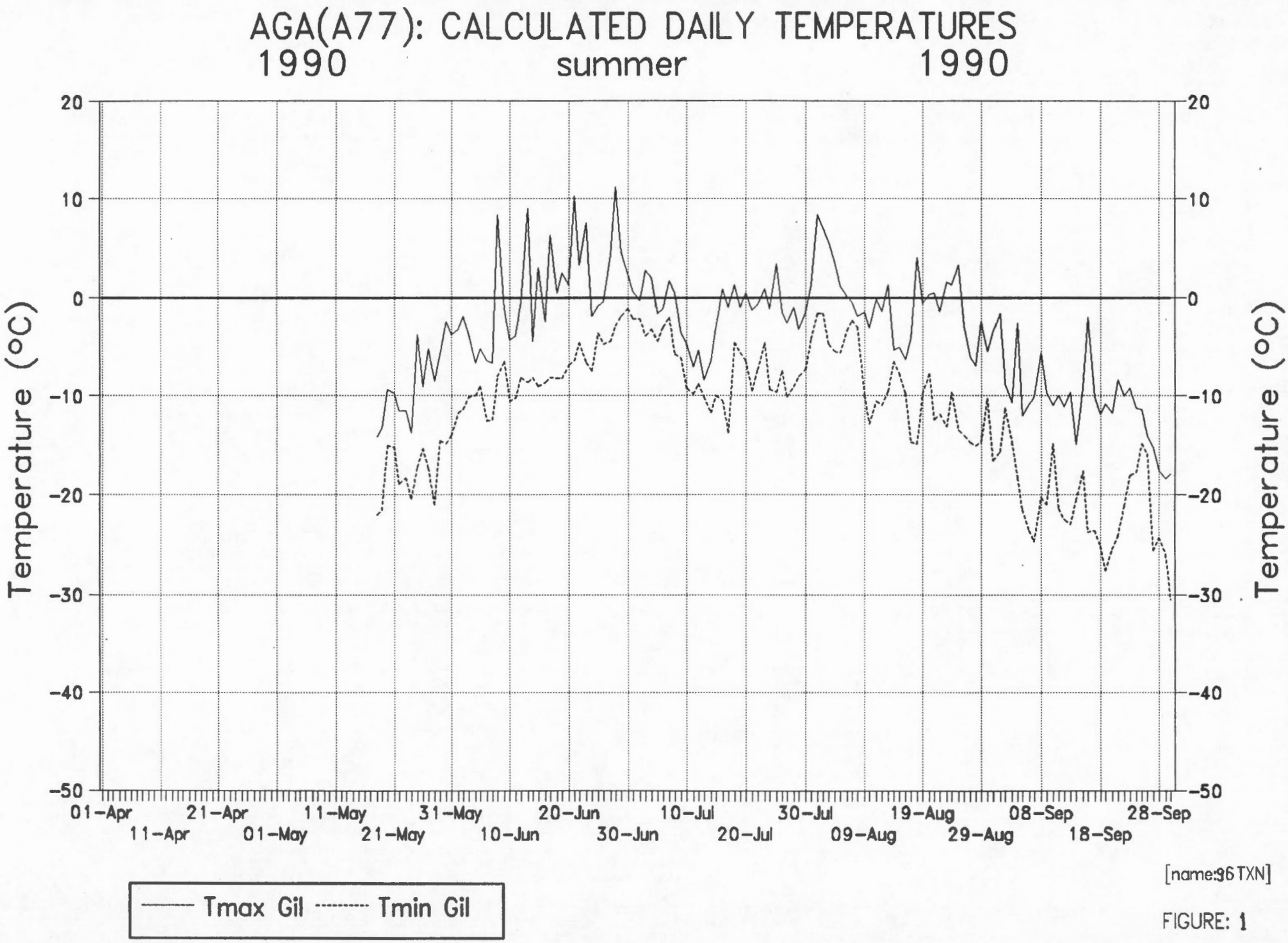

AGA(A77): CALCULATED DAILY TEMPERATURES
1990 summer 1990
Temperature (°C)
20
10
0
-10
-20
-30
-40
-50
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
[name:96TXN]
Tmax Gil
Tmin Gil

FIGURE: 1

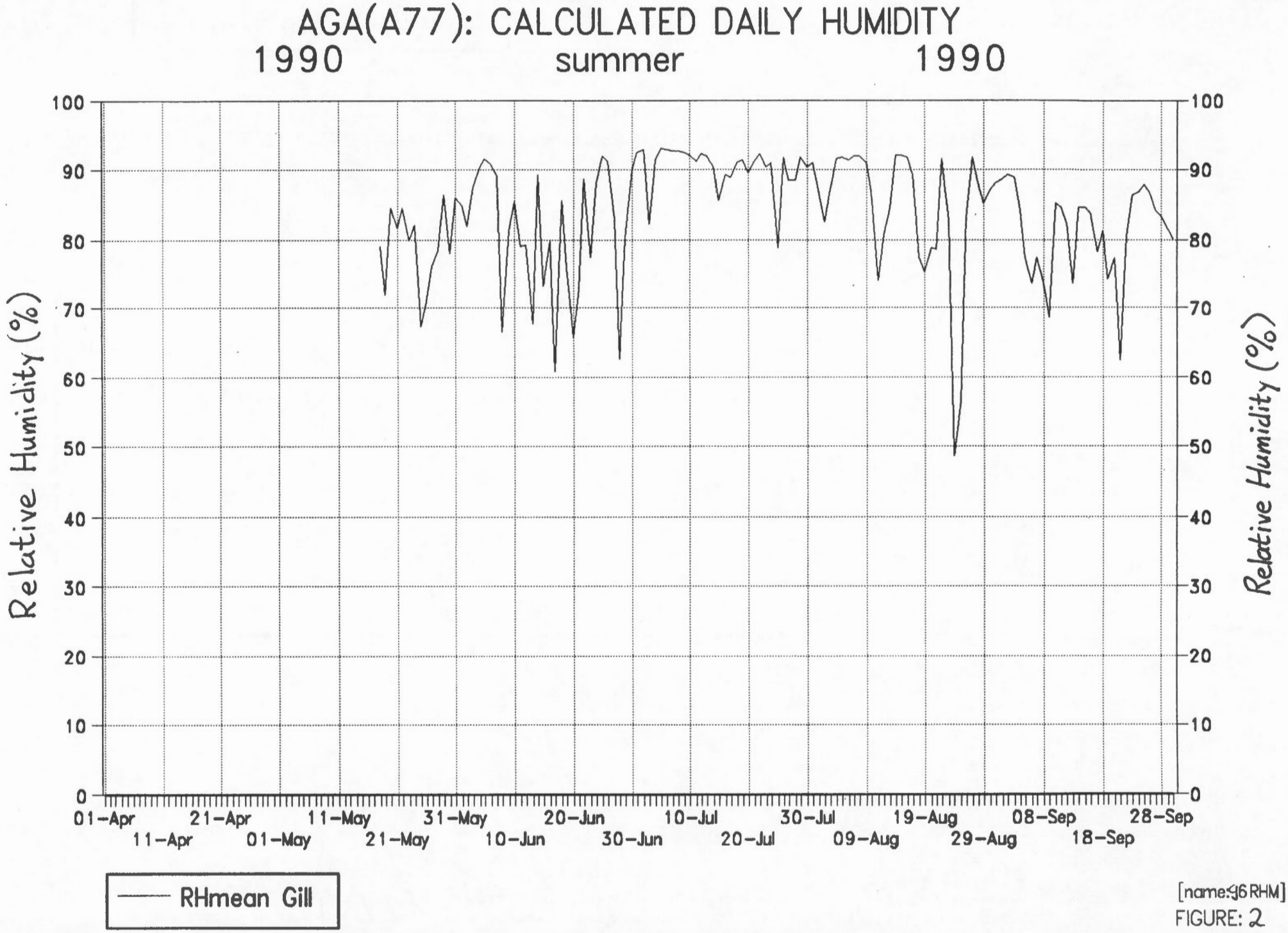
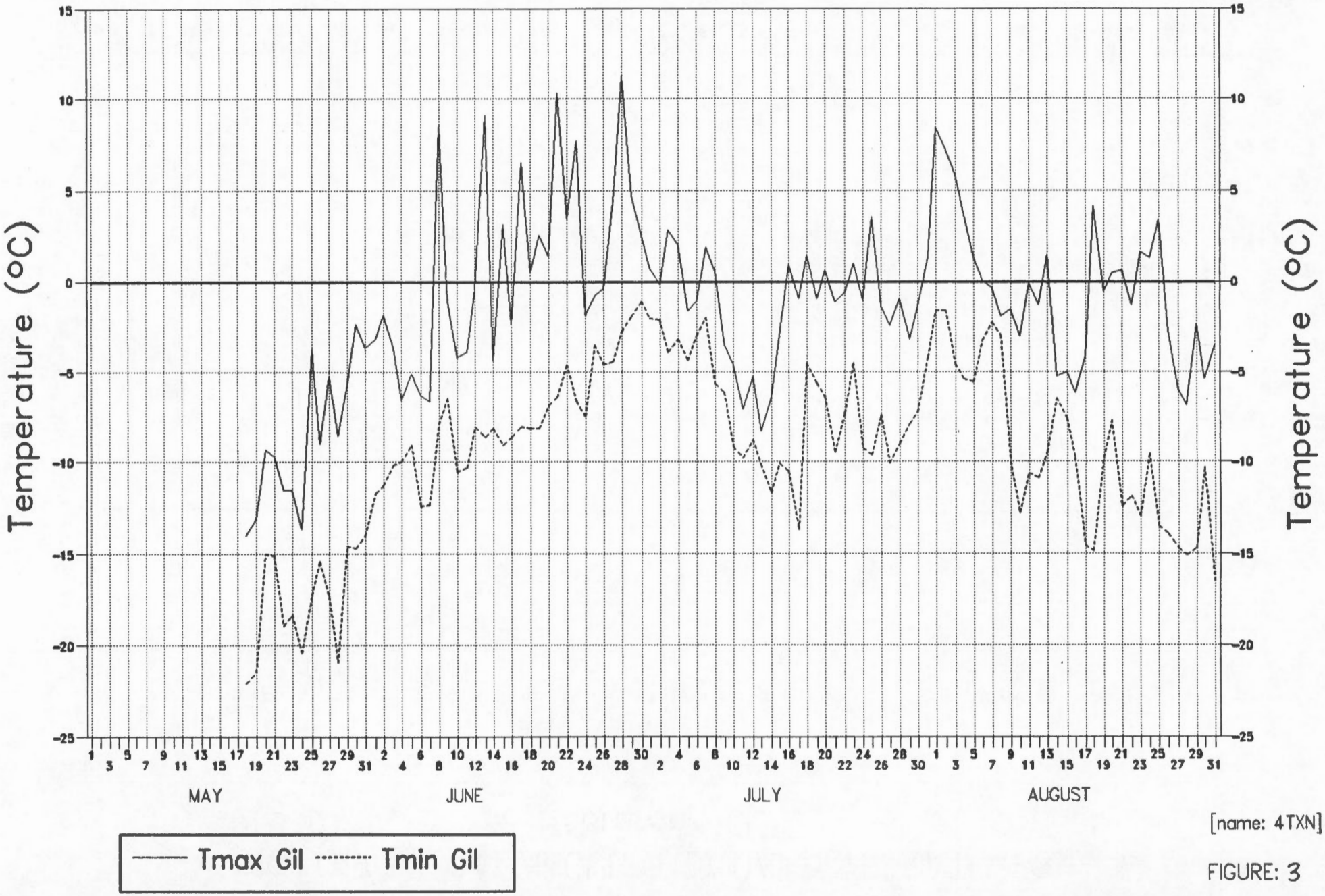

AGA(A77): CALCULATED DAILY HUMIDITY
1990 summer 1990
Relative Humidity (%)
100
90
80
70
60
50
40
30
20
10
0
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
RHmean Gill
[name:96RHM]

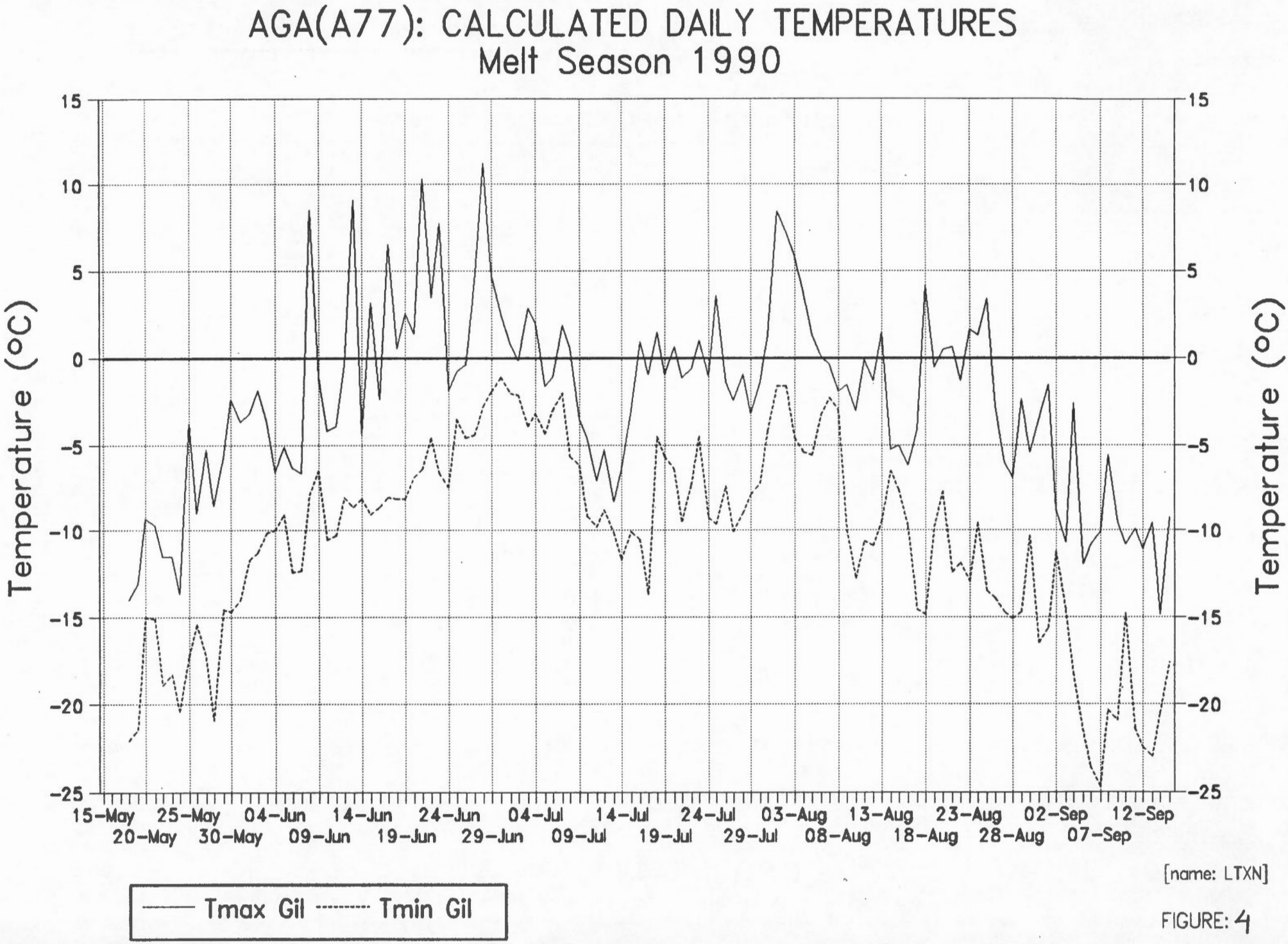
FIGURE: 2

AGA(A77): CALCULATED DAILY TEMPERATURES
May – August 1990



[name: 4TXN]

FIGURE: 3



[name: LTXN]

FIGURE: 4

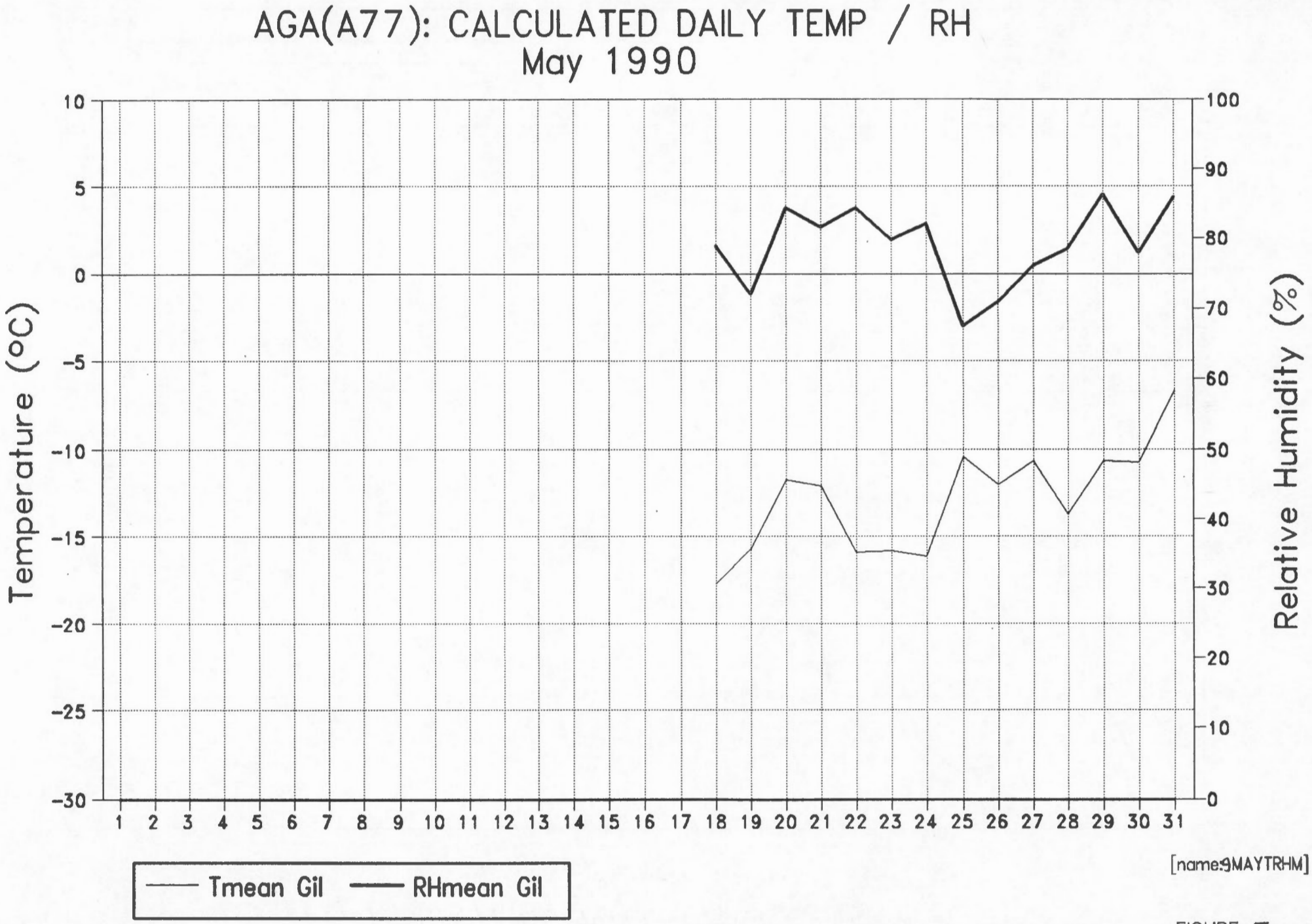

AGA(A77): CALCULATED DAILY TEMP / RH
May 1990
Temperature (°C)
Relative Humidity (%)
10
5
0
-5
-10
-15
-20
-25
-30
100
90
80
70
60
50
40
30
20
10
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Tmean Gil
RHmean Gil
[name:9MAYTRHM]

FIGURE: 5

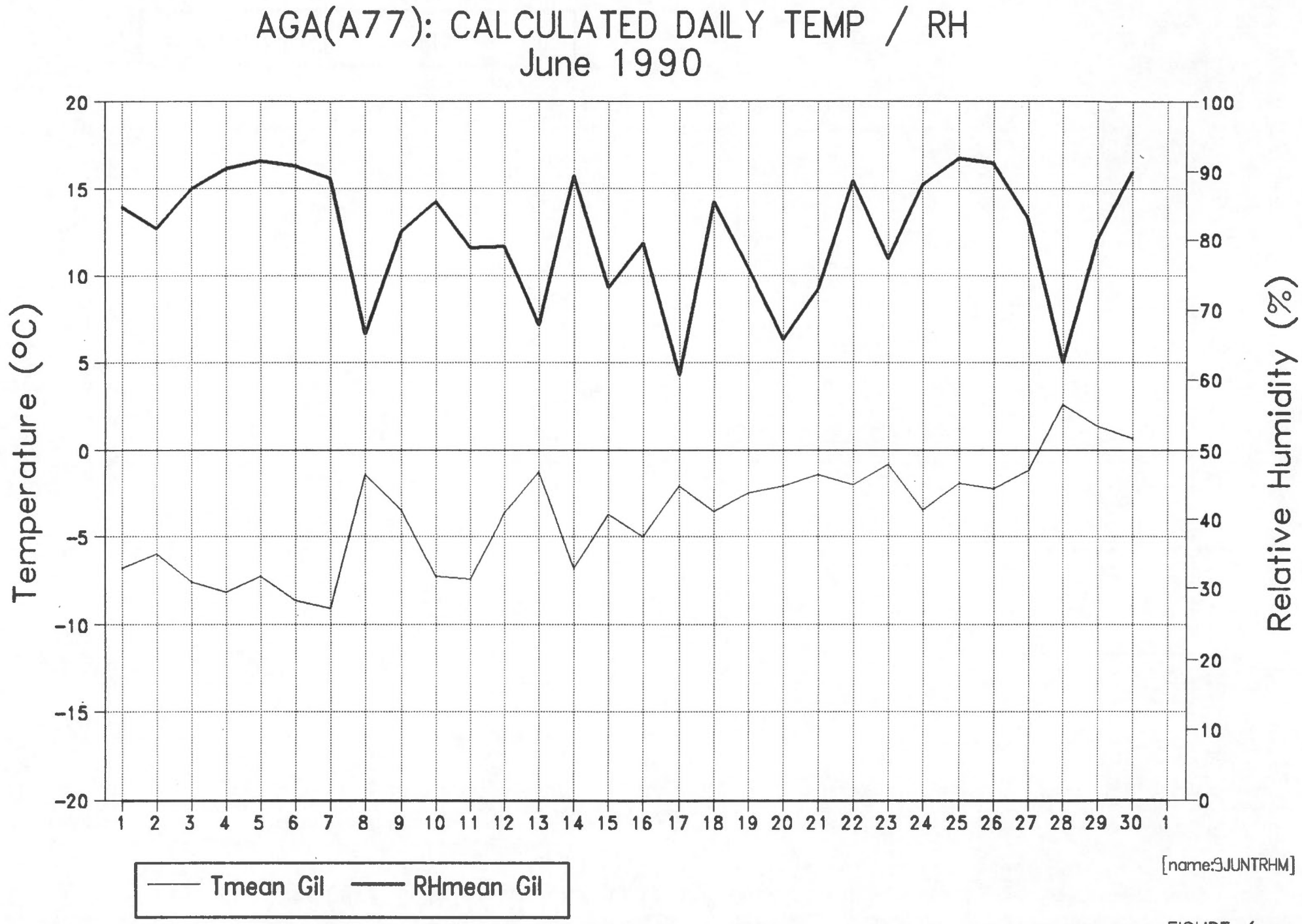

AGA(A77): CALCULATED DAILY TEMP / RH
June 1990
Temperature (°C)
Relative Humidity (%)
20
15
10
5
0
-5
-10
-15
-20
100
90
80
70
60
50
40
30
20
10
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 1
Tmean Gil
RHmean Gil
[name:9JUNTRHM]

FIGURE: 6

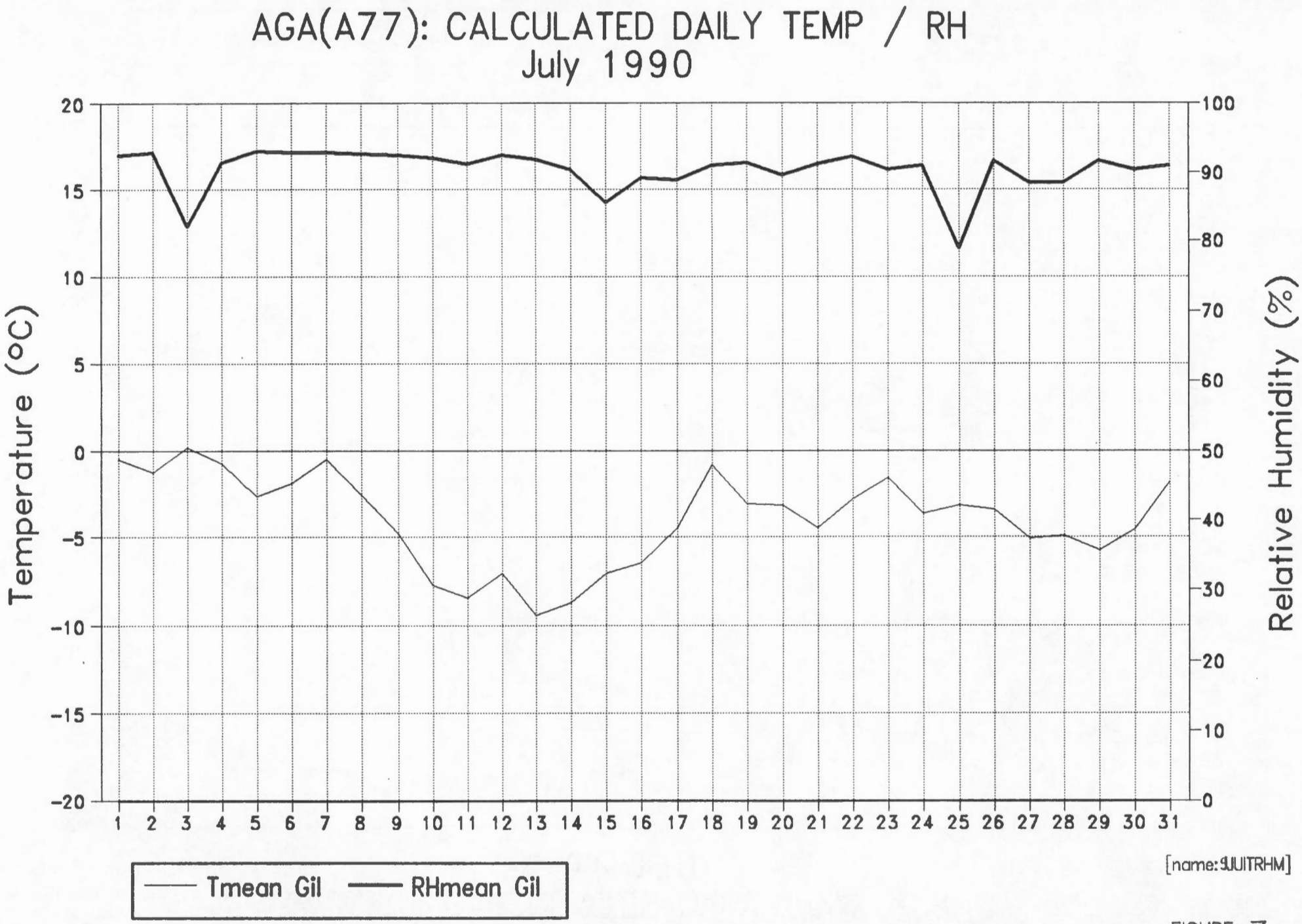

AGA(A77): CALCULATED DAILY TEMP / RH
July 1990
Temperature (°C)
Relative Humidity (%)
20
15
10
5
0
-5
-10
-15
-20
100
90
80
70
60
50
40
30
20
10
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Tmean Gil
RHmean Gil
[name:9JUITRHM]

FIGURE: 7

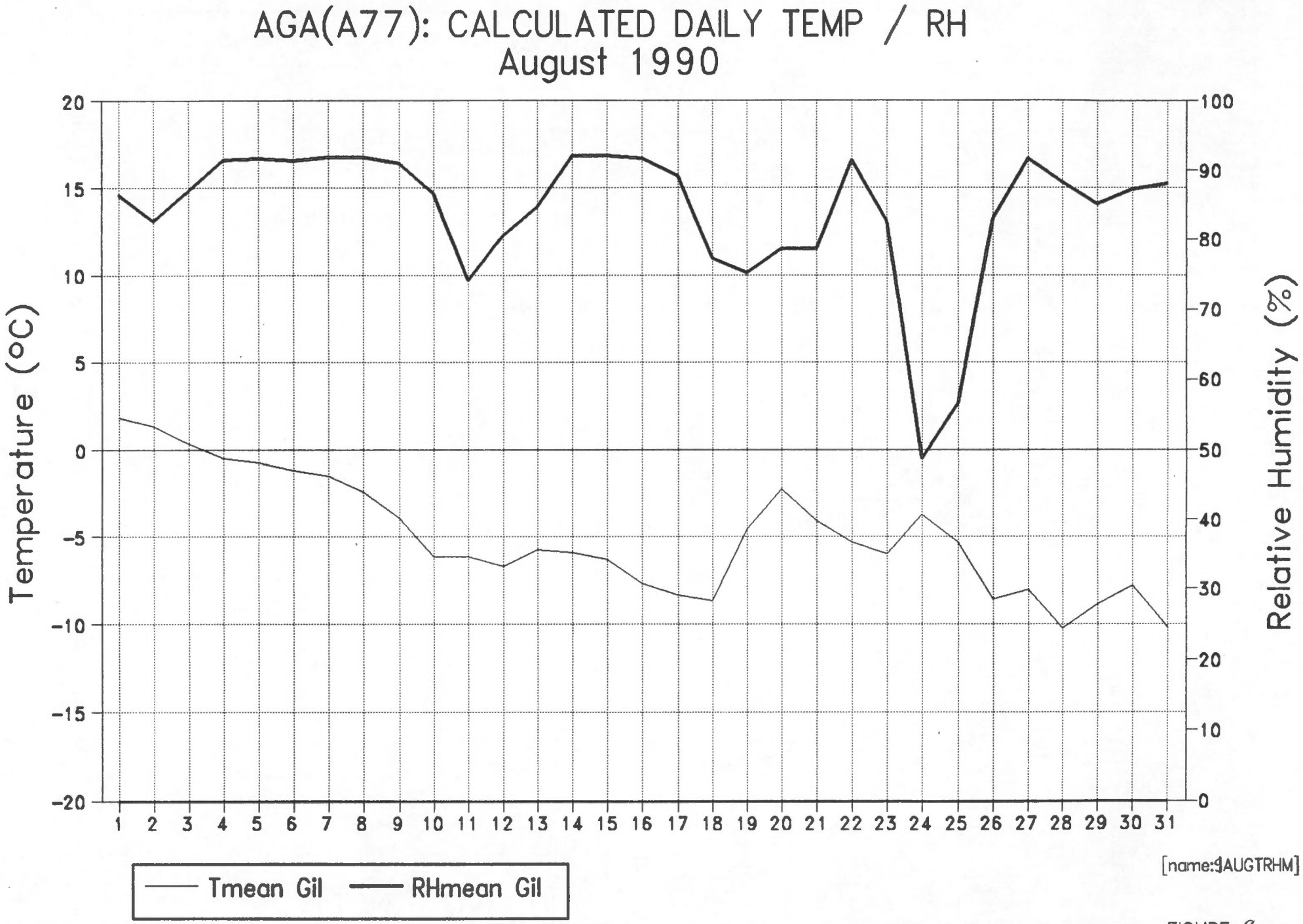

AGA(A77): CALCULATED DAILY TEMP / RH
August 1990
Temperature (°C)
Relative Humidity (%)
20
15
10
5
0
-5
-10
-15
-20
100
90
80
70
60
50
40
30
20
10
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Tmean Gil
RHmean Gil
[name:9AUGTRHM]

FIGURE: 8

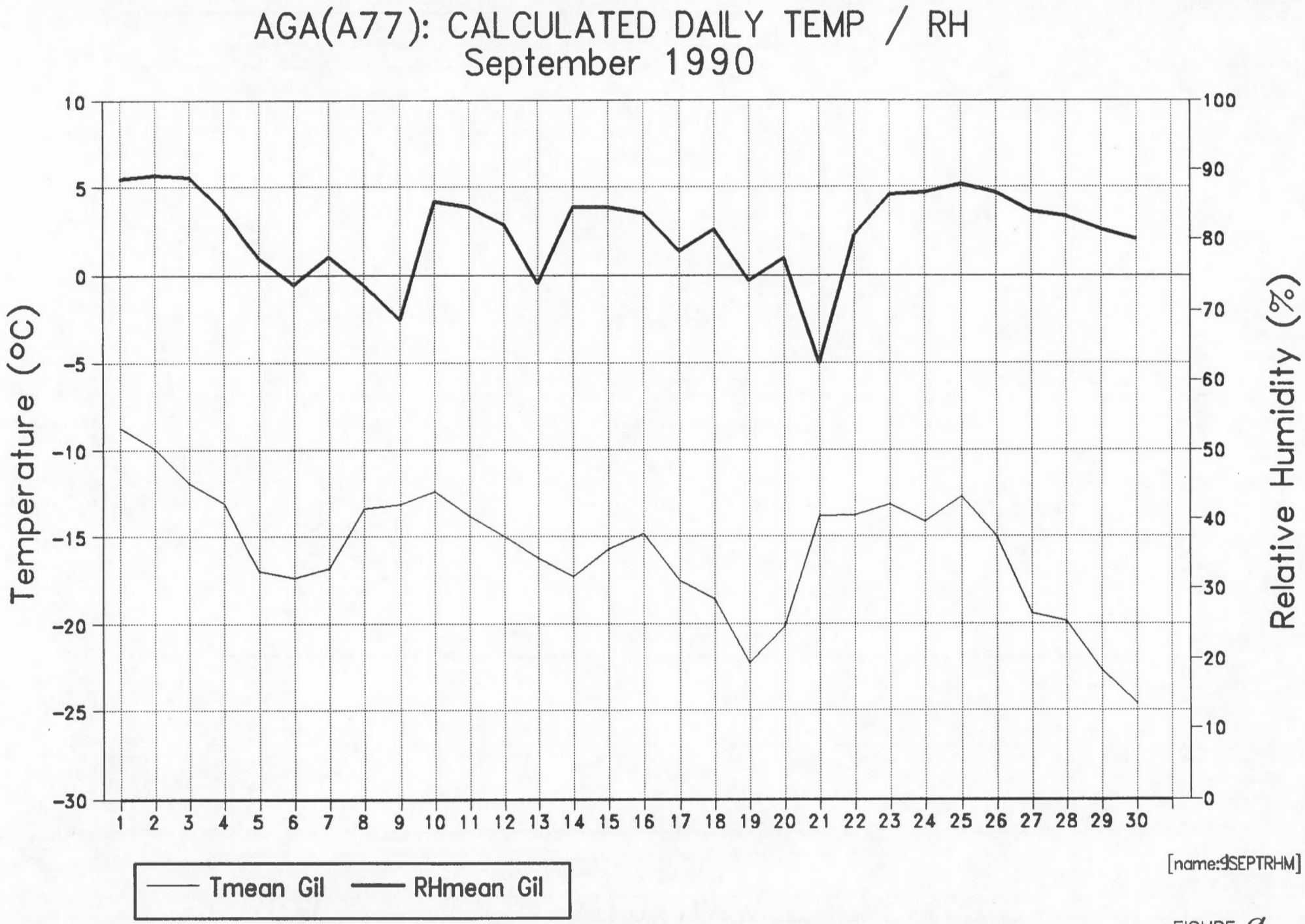
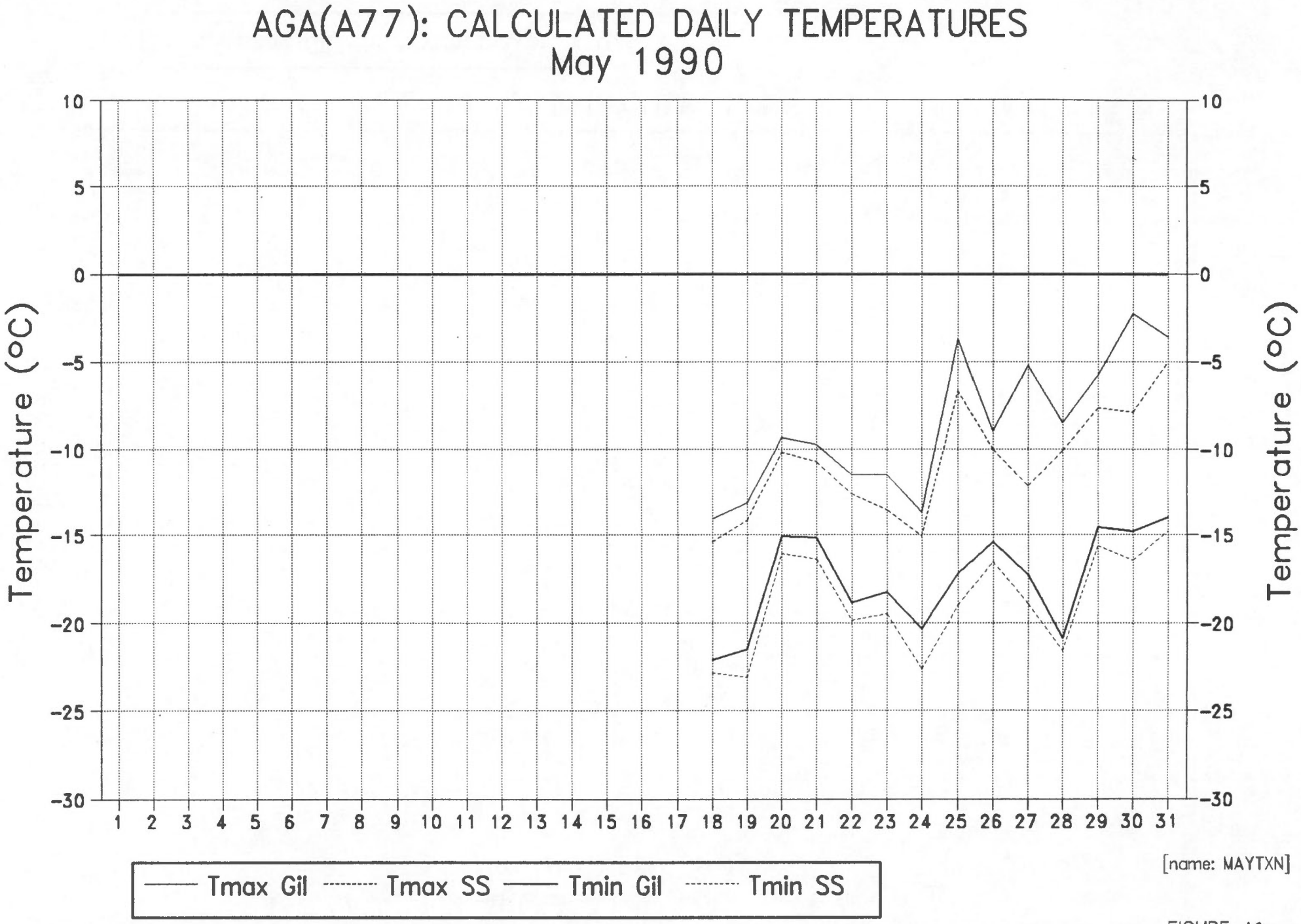

AGA(A77): CALCULATED DAILY TEMP / RH
September 1990
Temperature (°C)
Relative Humidity (%)
10
5
0
-5
-10
-15
-20
-25
-30
100
90
80
70
60
50
40
30
20
10
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Tmean Gil
RHmean Gil
[name:9SEPTRHM]

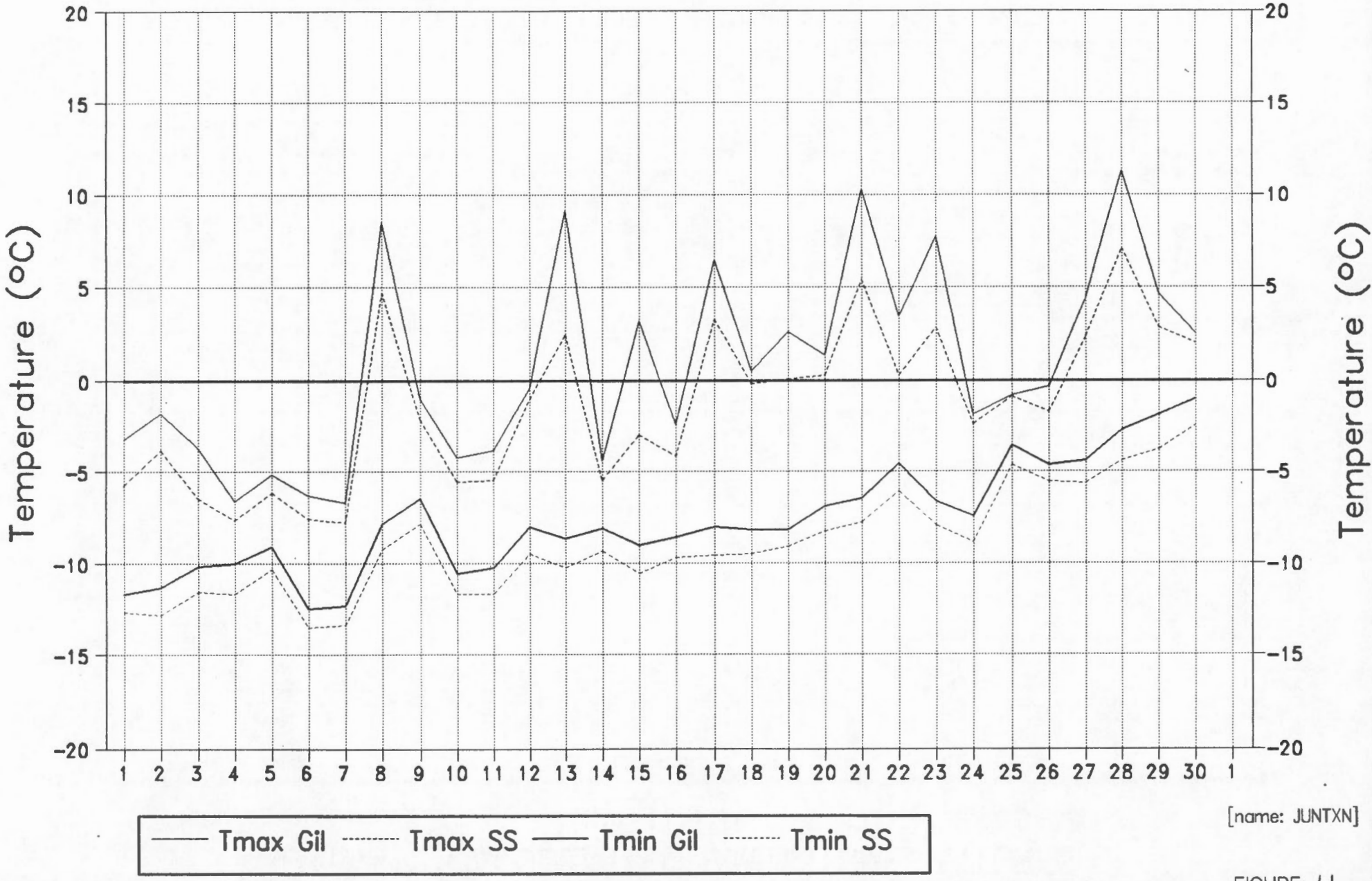
FIGURE: 9



[name: MAYTXN]

FIGURE: 10

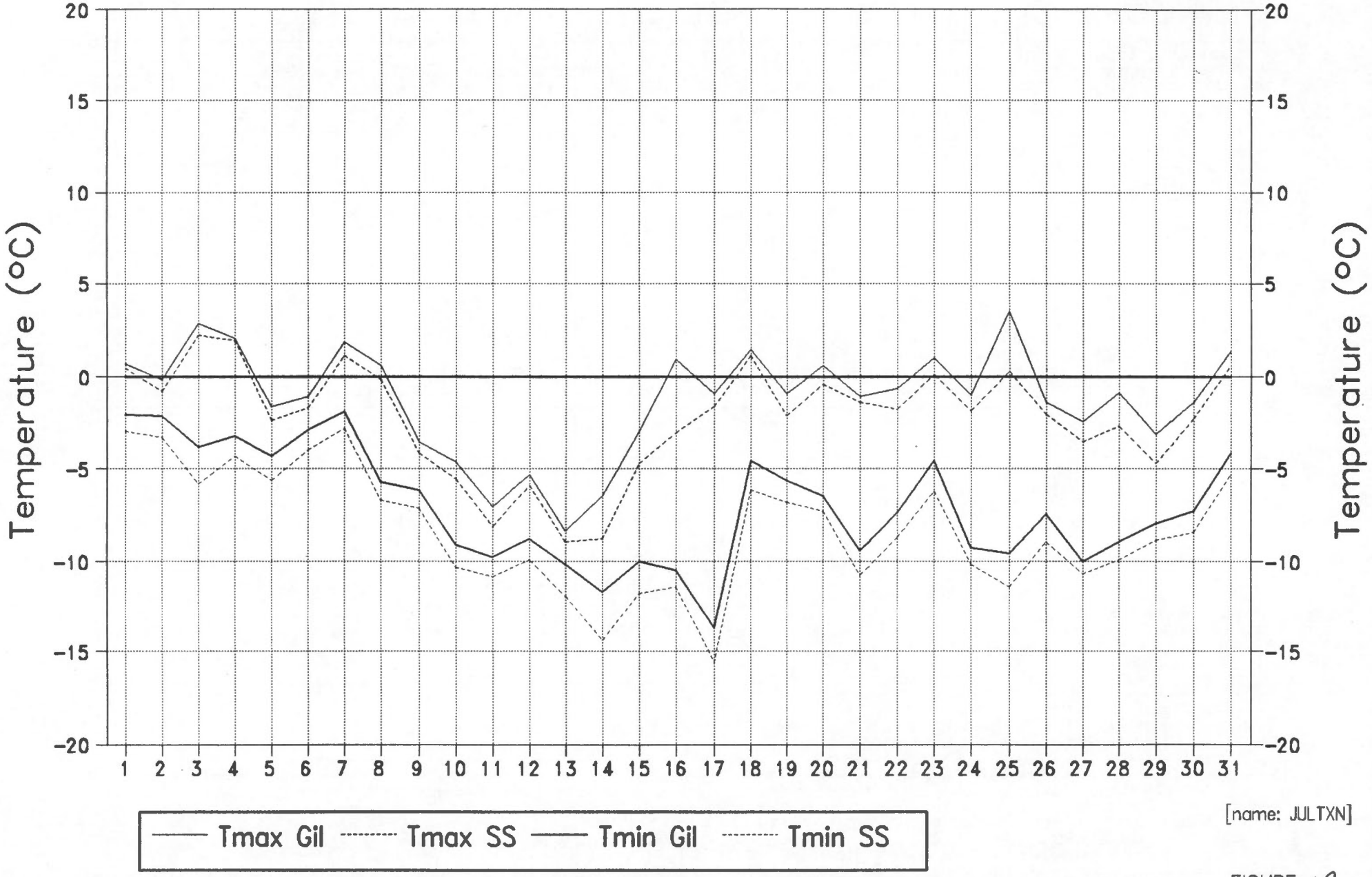
AGA(A77): CALCULATED DAILY TEMPERATURES
June 1990



[name: JUNTXN]

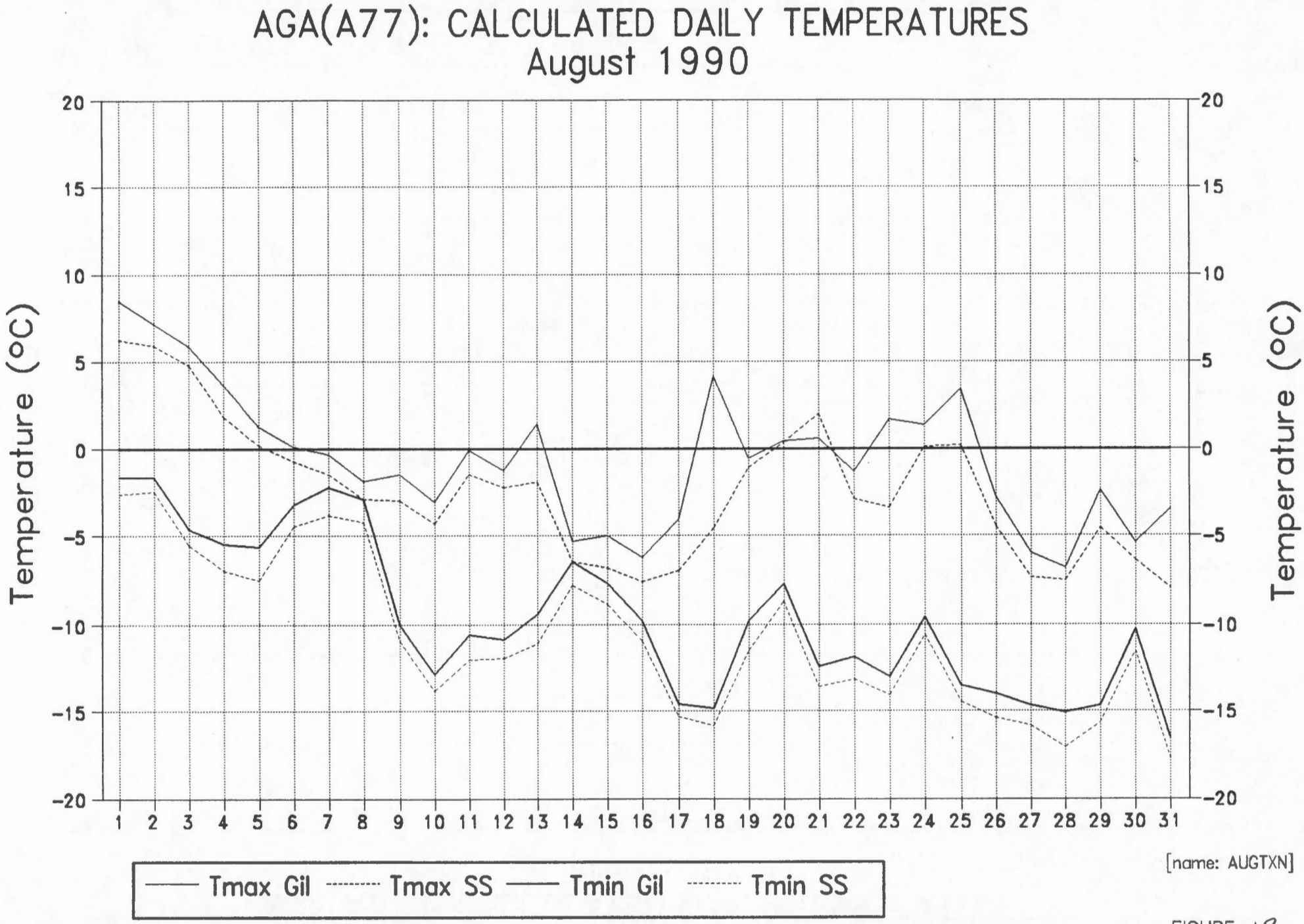
FIGURE: 11

AGA(A77): CALCULATED DAILY TEMPERATURES
July 1990



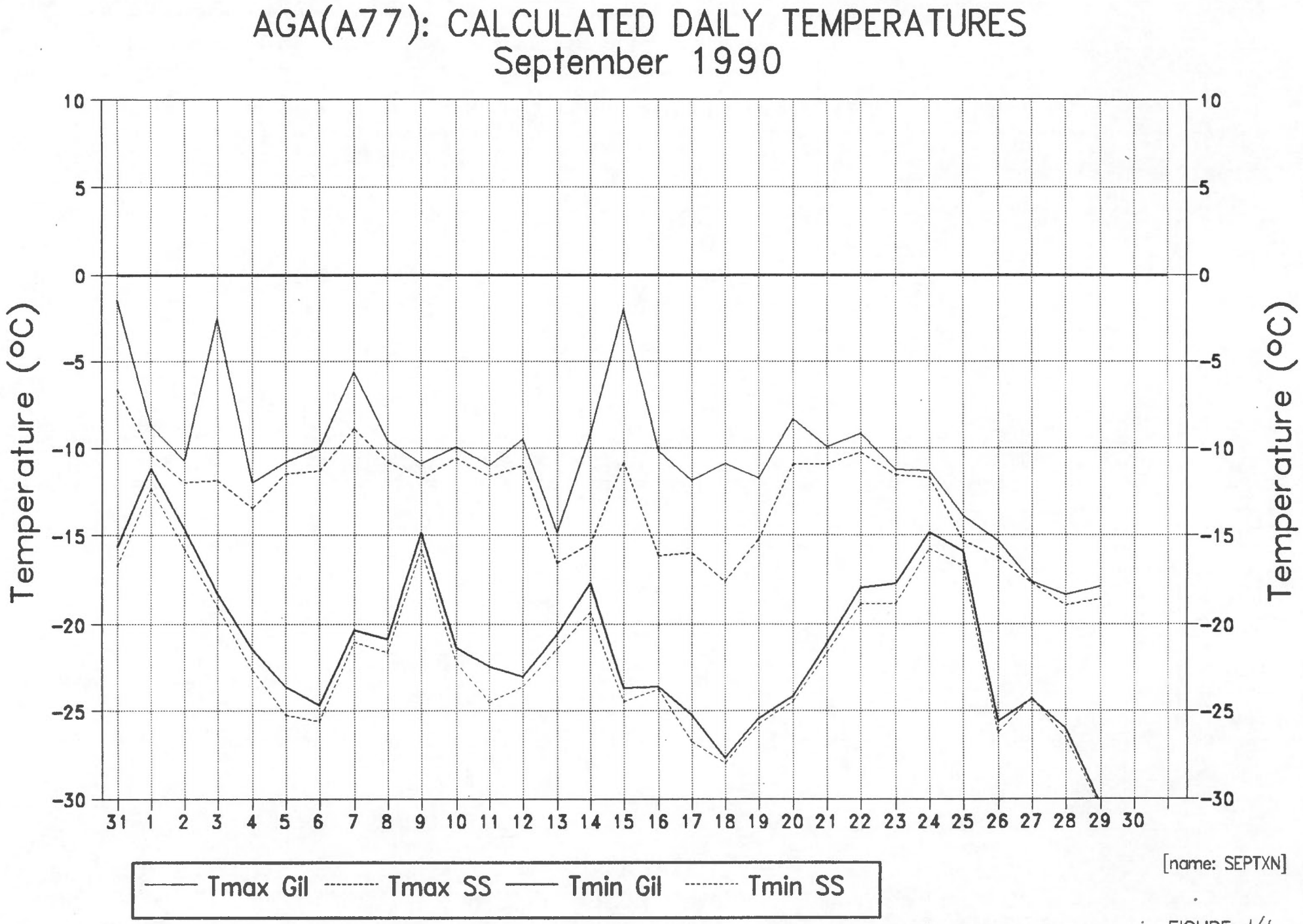
[name: JULTXN]

FIGURE: 12



[name: AUGTXN]

FIGURE: 13



[name: SEPTXN]

FIGURE: 14

TABLE:4

File: AGA90056.WQF

AGA(A77): Agassiz Ice Cap 1977 bore hole site

May 1991

Six Hourly

name:	Figure no.		Season / month	Year	Figure Caption
gtxn	AGA90056.	1	May	1990	Six Hourly maximum and minimum temperature (°C) from Gill shield
rhxn	AGA90056.	2	May	1990	Six Hourly Maximum and minimum relative humidity (%) from Gill shield
gtrhm	AGA90056.	3	May	1990	Six hourly mean temperature and relative humidity from Gill shield

AGA(A77): SIX HOURLY TEMPERATURES
MAY 1990

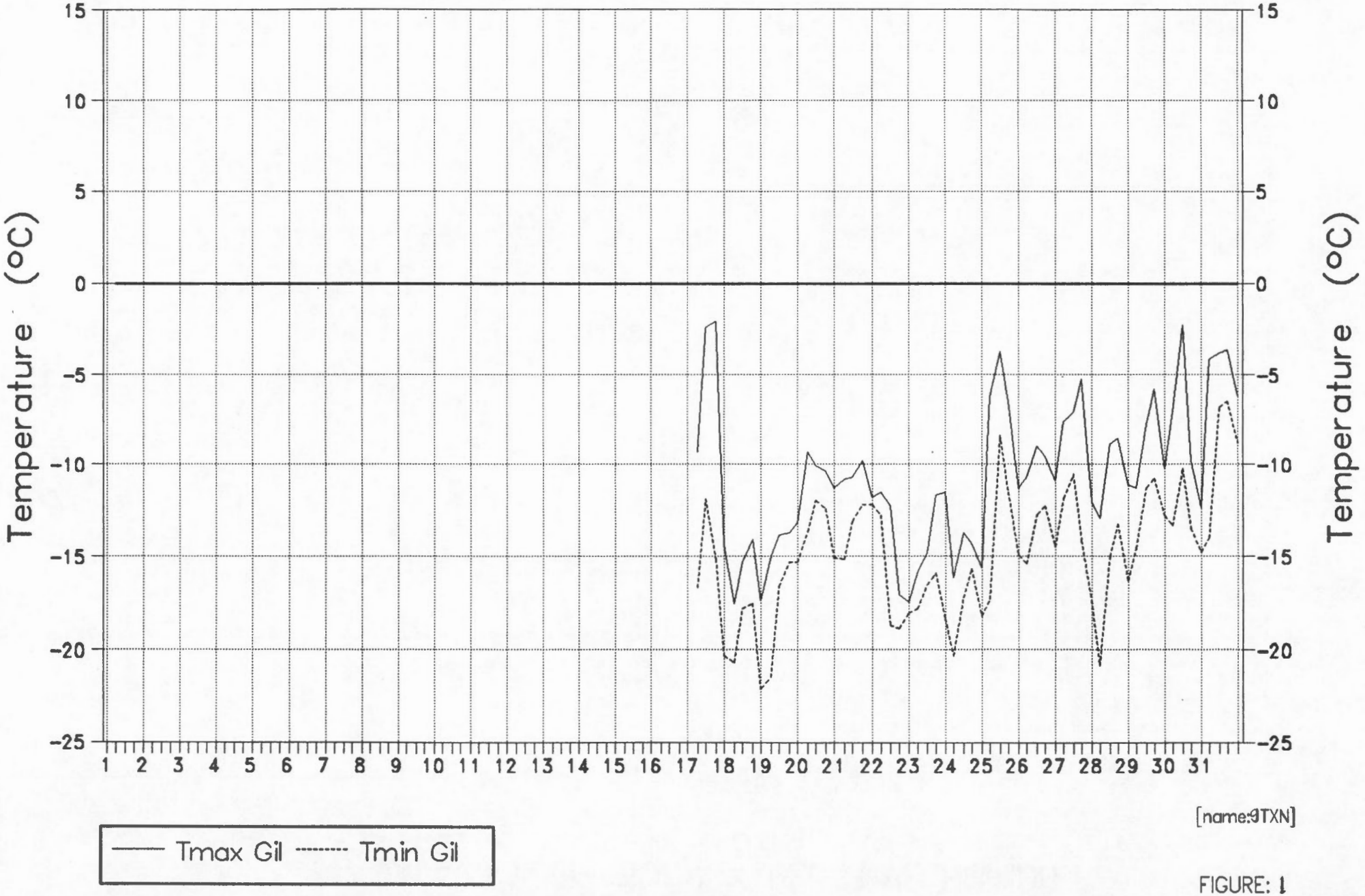
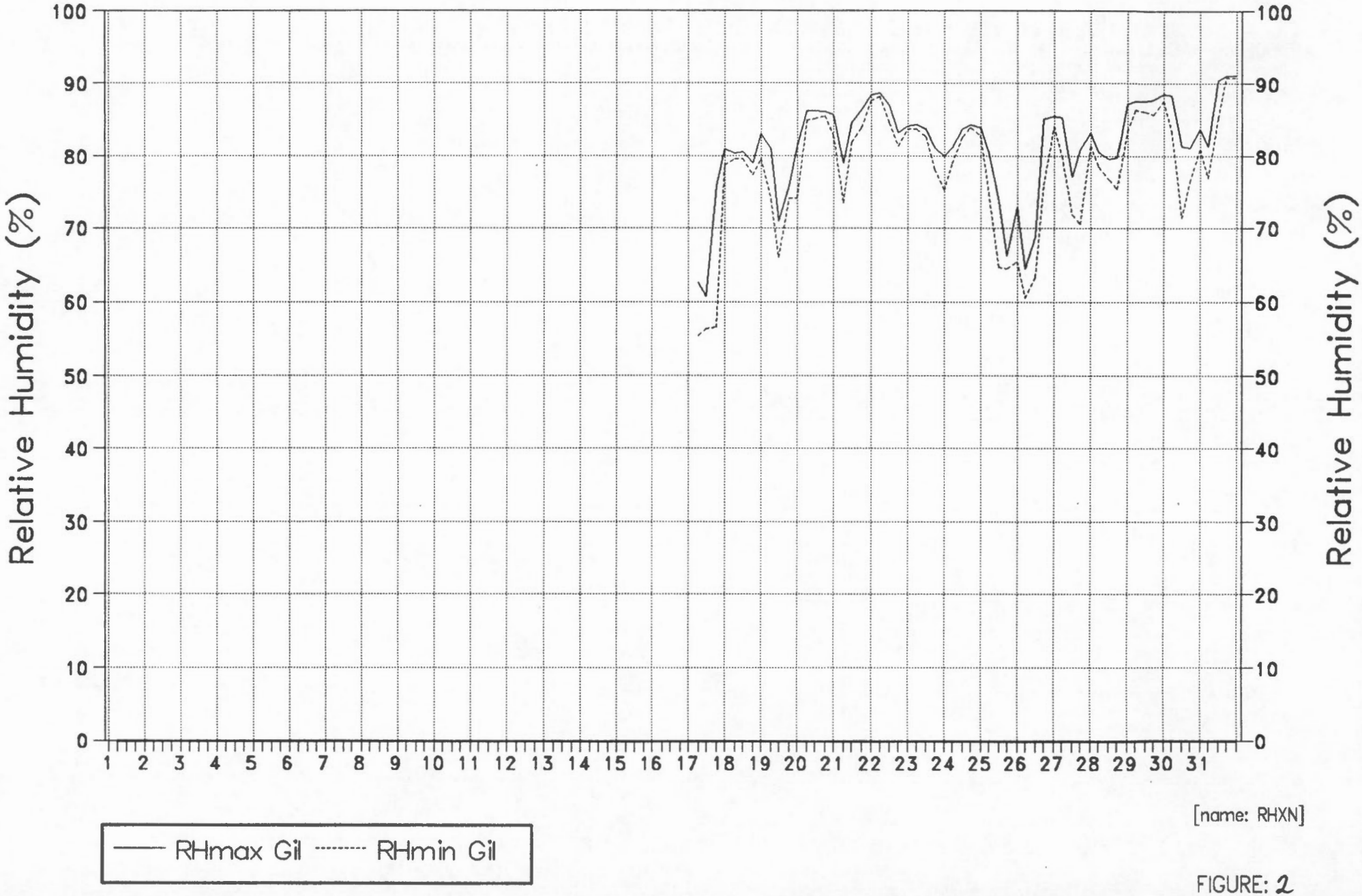


FIGURE: 1

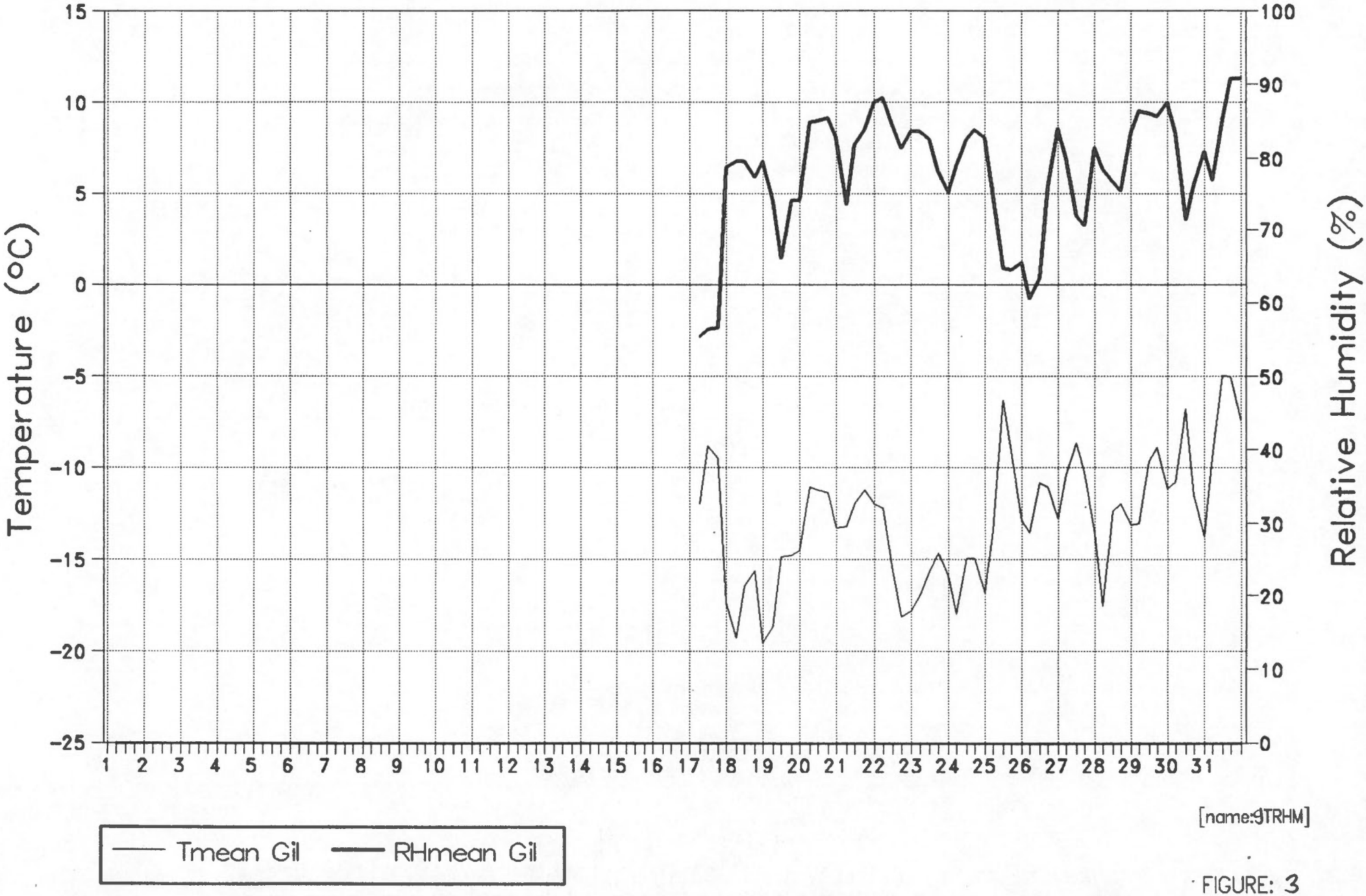
AGA(A77): SIX HOURLY RELATIVE HUMIDITY
May 1990



[name: RHXN]

FIGURE: 2

AGA(A77): SIX HOURLY TEMP / HUMIDITY
MAY 1990



[name:9TRHM]

FIGURE: 3

TABLE:5

File: AGA90076.WQ1

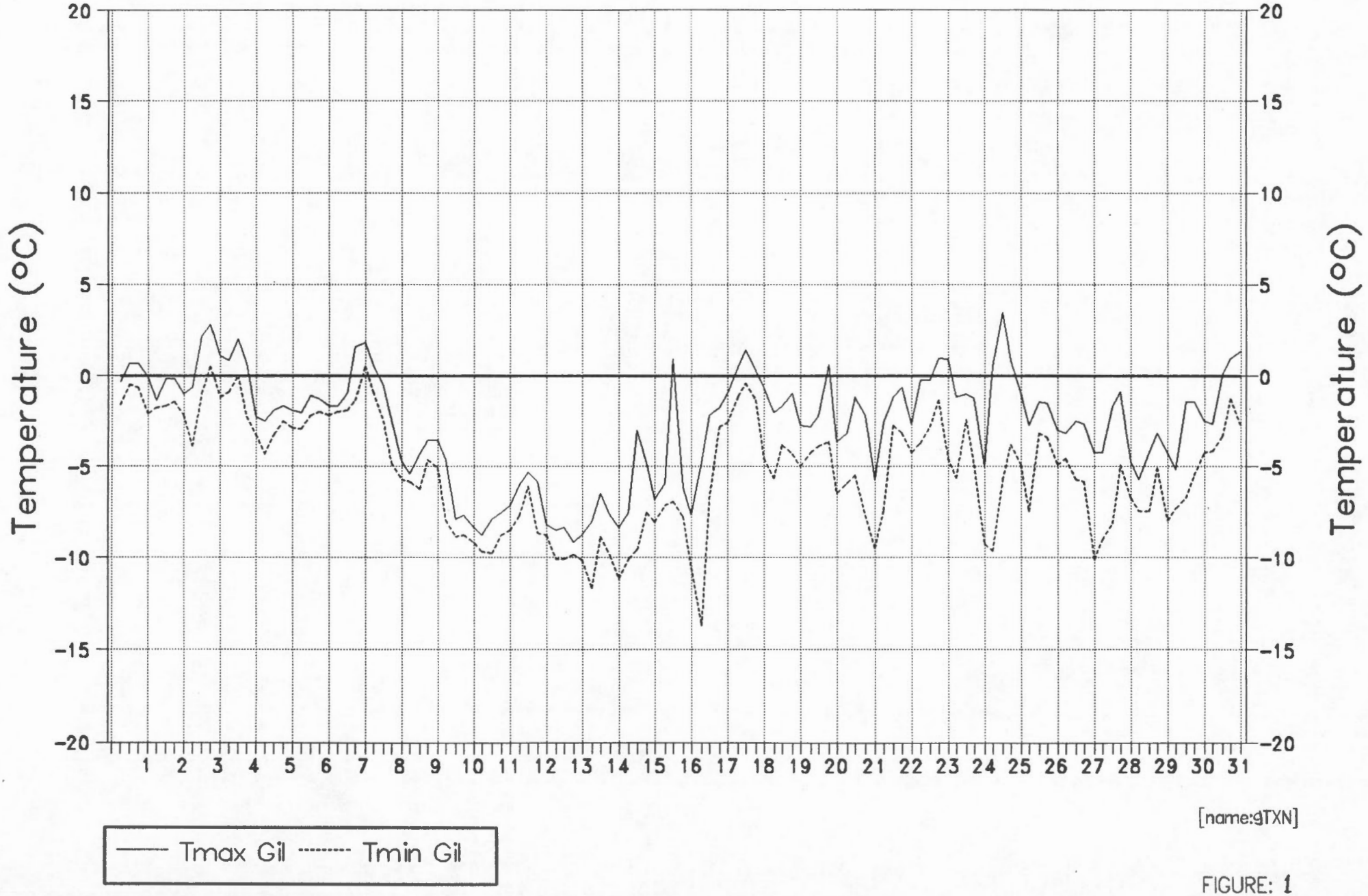
AGA(A77): Agassiz Ice Cap 1977 bore hole site

July 1990

Six Hourly

name:	Figure no.		Season / month	Year	Figure Caption
gtxn	AGA90076.	1	July	1990	Six Hourly maximum and minimum temperature (°C) from Gill shield
rhxn	AGA90076.	2	July	1990	Six Hourly Maximum and minimum relative humidity (%) from Gill shield
gtrhm	AGA90076.	3	July	1990	Six hourly mean temperature and relative humidity from Gill shield

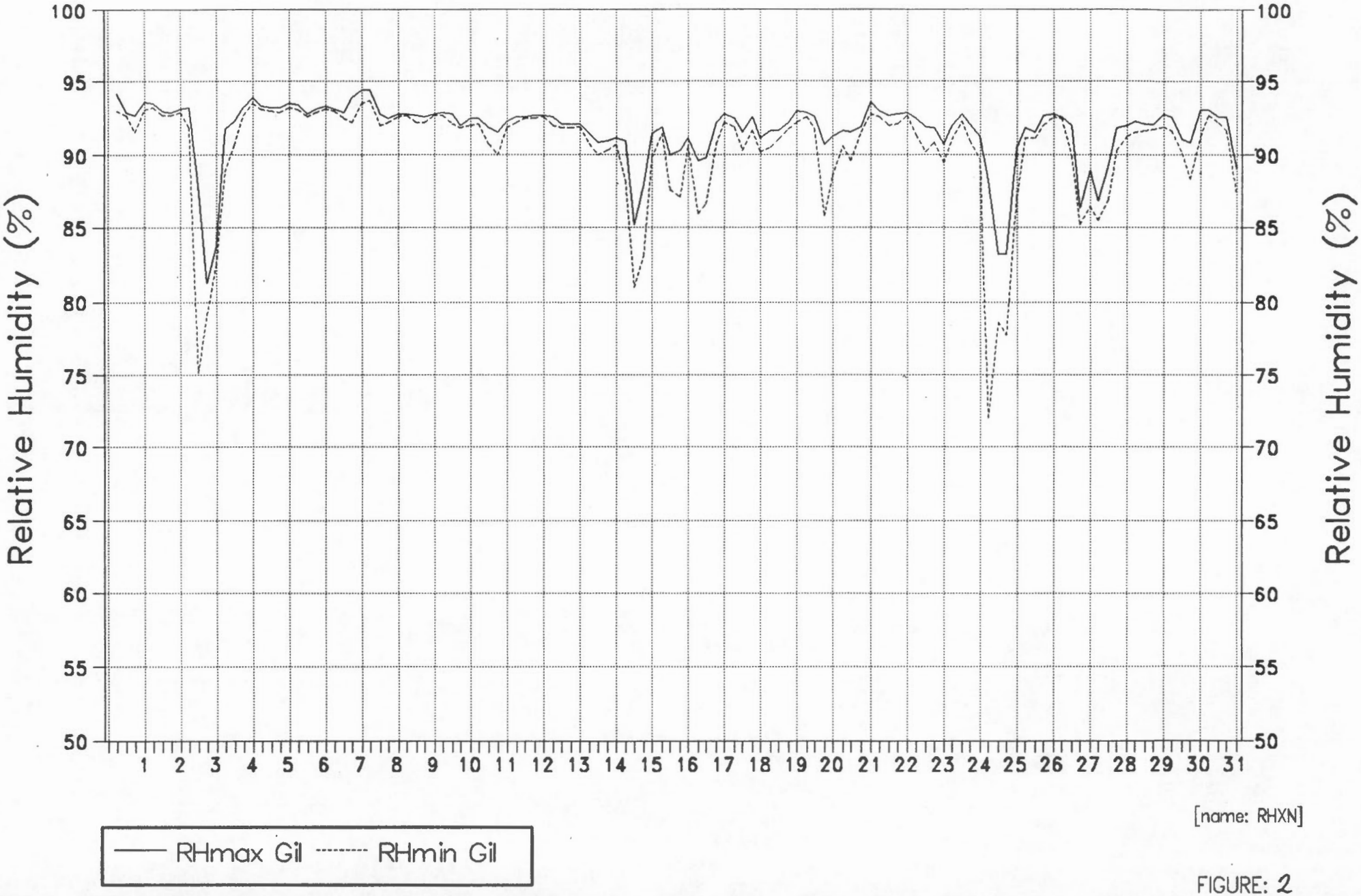
AGA(A77): SIX HOURLY TEMPERATUREs
July 1990



[name:gTXN]

FIGURE: 1

AGA(A77): SIX HOURLY RELATIVE HUMIDITY
July 1990



[name: RHXN]

FIGURE: 2

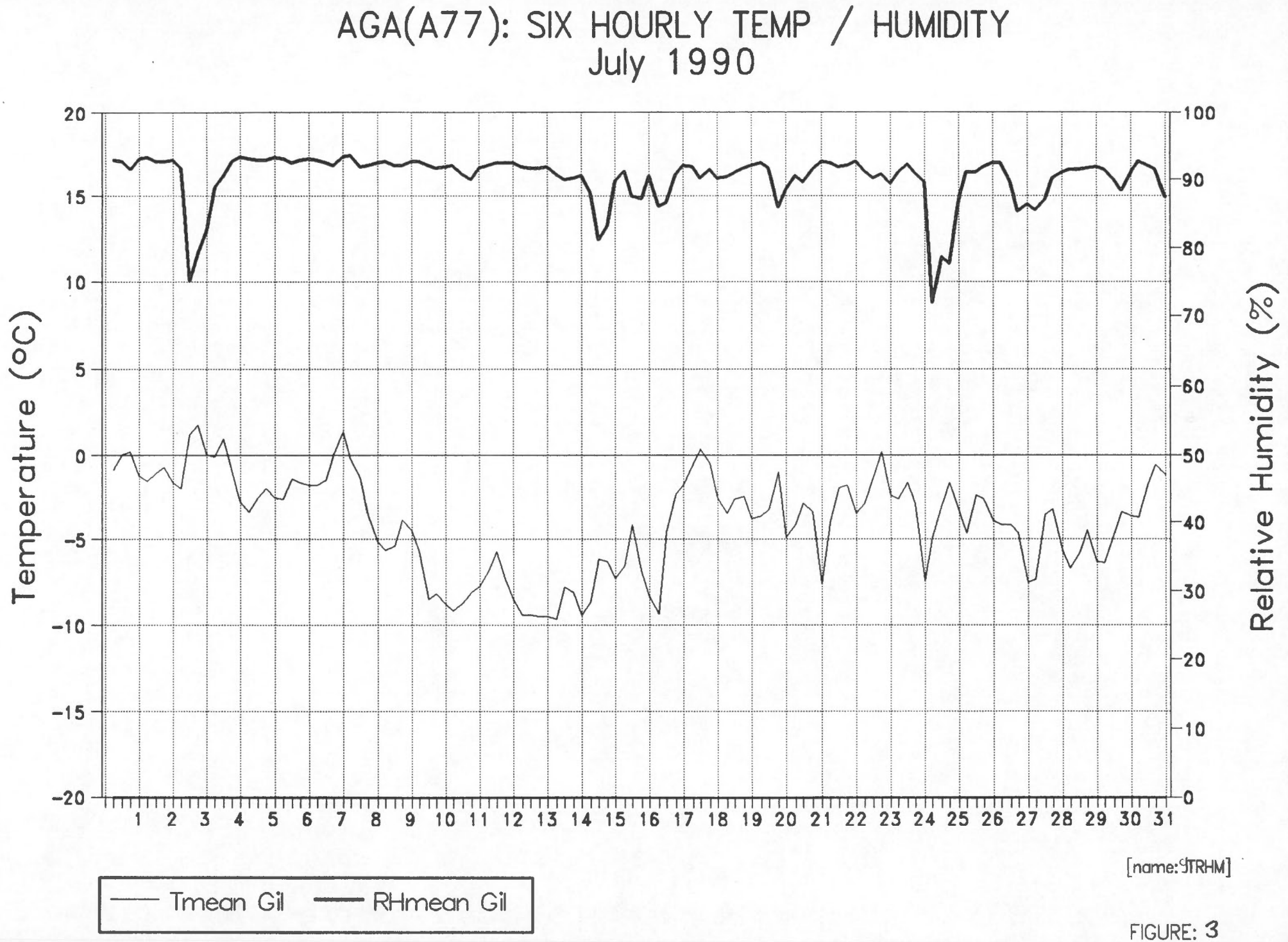

AGA(A77): SIX HOURLY TEMP / HUMIDITY
July 1990
Temperature (°C)
Relative Humidity (%)
20
15
10
5
0
-5
-10
-15
-20
100
90
80
70
60
50
40
30
20
10
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
[name:9TRHM]
Tmean Gil
RHmean Gil

FIGURE: 3

TABLE: 6

HWC(AWS): Hot Weather Creek (Automatic Weather Station) Site

April 1990 - September 1990

Daily Values

File : HWC9090D.WQF

name:	Figure no.		Season/ Month	Year(s)	Figure Caption
6tm	HWC9090D.	1	Summer	1990:	Daily mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
6txn	HWC9090D.	2	Summer	1990:	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
6wsxwd	HWC9090D.	3	Summer	1990:	Daily maximum wind speed (Km/HR) and direction of that maximum speed (deg)
6rad	HWC9090D.	4	Summer	1990:	Daily total incomming solar radiation (KJ/m^2) from Epply pryanometer
6sndc	HWC9090D.	5	Summer	1990:	Daily cleaned snow depth (mm): all spurious data removed
6bat	HWC9090D.	6	Summer	1990:	Daily battery Power (volts)
5txnm	HWC9090D.	7	Melt Season	1990:	Daily Maximum, minimum and mean temperature (°C) 207F in Gill screen
5wsxwd	HWC9090D.	8	Melt Season	1990:	Daily maximum wind speed (Km/HR) and direction of that maximum speed (deg)
5rad	HWC9090D.	9	Melt Season	1990:	Daily total incomming solar radiation (KJ/m^2) from Epply pryanometer
4txn	HWC9090D.	10	May-Aug	1990:	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
augtm	HWC9090D.	11	August	1990:	Daily mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
augtxn	HWC9090D.	12	August	1990:	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
augwsxwd	HWC9090D.	13	August	1990:	Daily maximum wind speed (Km/HR) and direction of that maximum speed (deg)
augrad	HWC9090D.	14	August	1990:	Daily total incomming solar radiation (KJ/m^2) from Epply pryanometer
augsndc	HWC9090D.	15	August	1990:	Daily cleaned snow depth (mm): all spurious data removed
septm	HWC9090D.	16	September	1990:	Daily mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
septxn	HWC9090D.	17	September	1990:	Daily maximum and minimum air temperature (°C) from 207F in Gill screen

TABLE: 6					
HWC(AWS): Hot Weather Creek (Automatic Weather Station) Site					
April 1990 - September 1990					
Daily Values					
File : HWC9090D.WQF					
name:	Figure no.		Season/ Month	Year(s)	Figure Caption
sepwsxwd	HWC9090D.	18	September	1990:	Daily maximum wind speed (Km/HR) and direction of that maximum speed (deg)
seprad	HWC9090D.	19	September	1990:	Daily total incomming solar radiation (KJ/m^2) from Epply pryanometer
sepsndc	HWC9090D.	20	September	1990:	Daily cleaned snow depth (mm): all spurious data removed
6radtm	HWC9090D.	21	Summer	1990:	Daily total incomming solar radiation (MJ/m^2) and mean air temperature (°C) in Gill screen.
6battm	HWC9090D.	22	Summer	1990:	Daily Battery Power (volts) and mean air temperature (°C) from 207F in Gill screen
4radtm	HWC9090D.	23	May-Aug	1990:	Daily total incomming solar radiation (MJ/m^2) and mean air temperature (°C) in Gill screen.

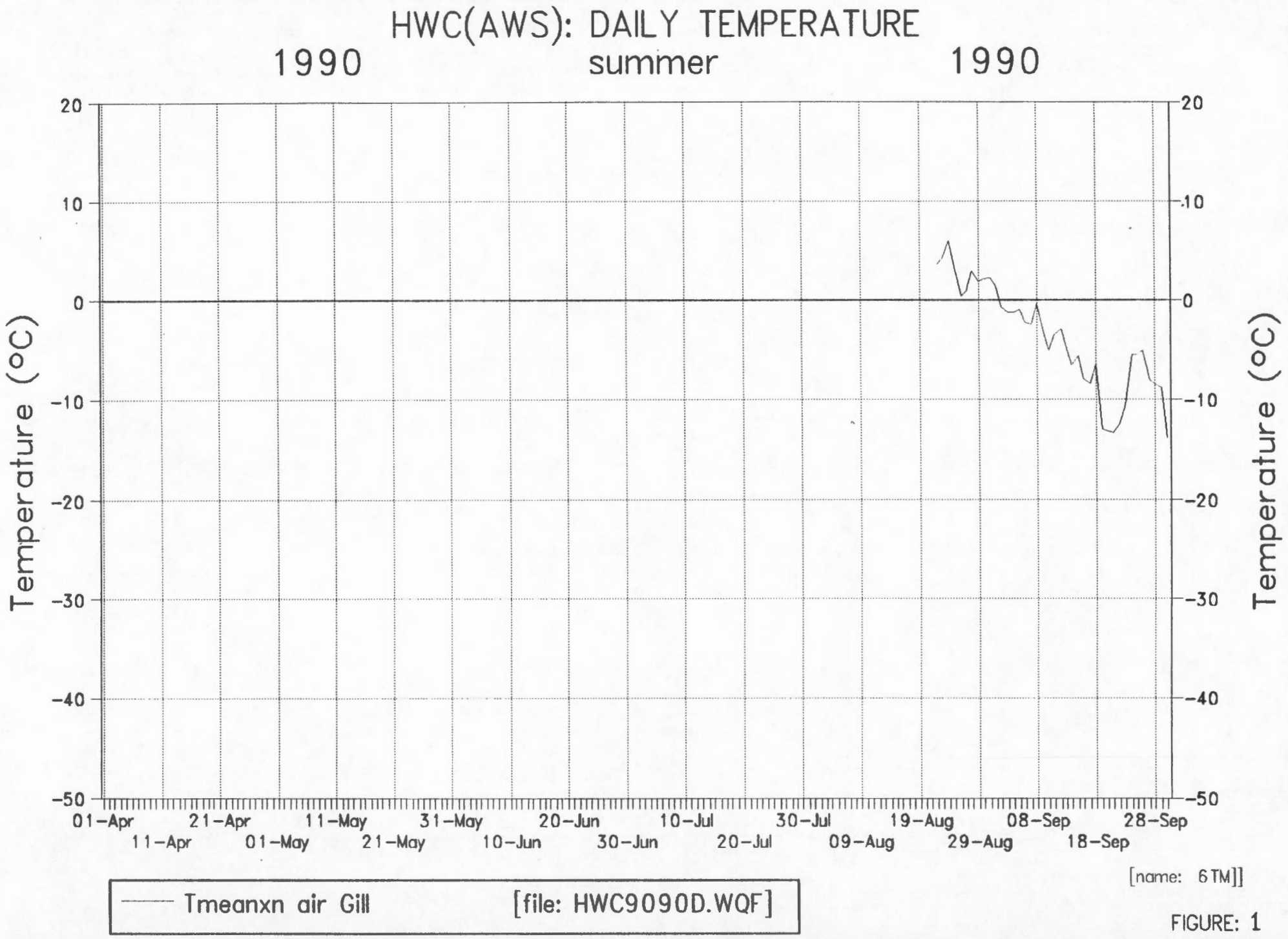
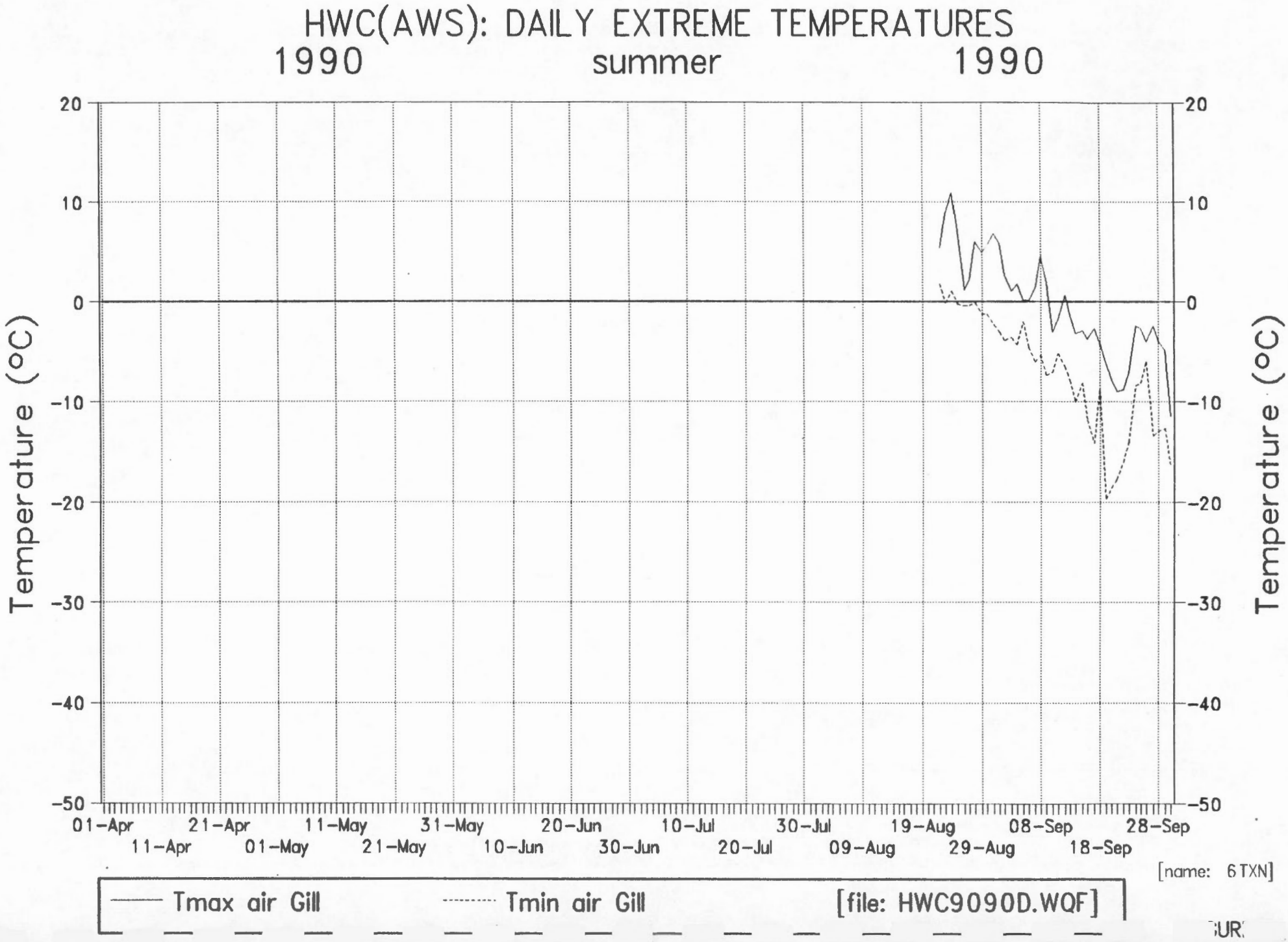

HWC(AWS): DAILY TEMPERATURE
1990 summer 1990
Temperature (°C)
20
10
0
-10
-20
-30
-40
-50
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
[name: 6TM]]
Tmeanxn air Gill
[file: HWC9090D.WQF]

FIGURE: 1


HWC(AWS): DAILY EXTREME TEMPERATURES
1990 summer 1990
Temperature (°C)
20
10
0
-10
-20
-30
-40
-50
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
[name: 6TXN]
Tmax air Gill
Tmin air Gill
[file: HWC9090D.WQF]

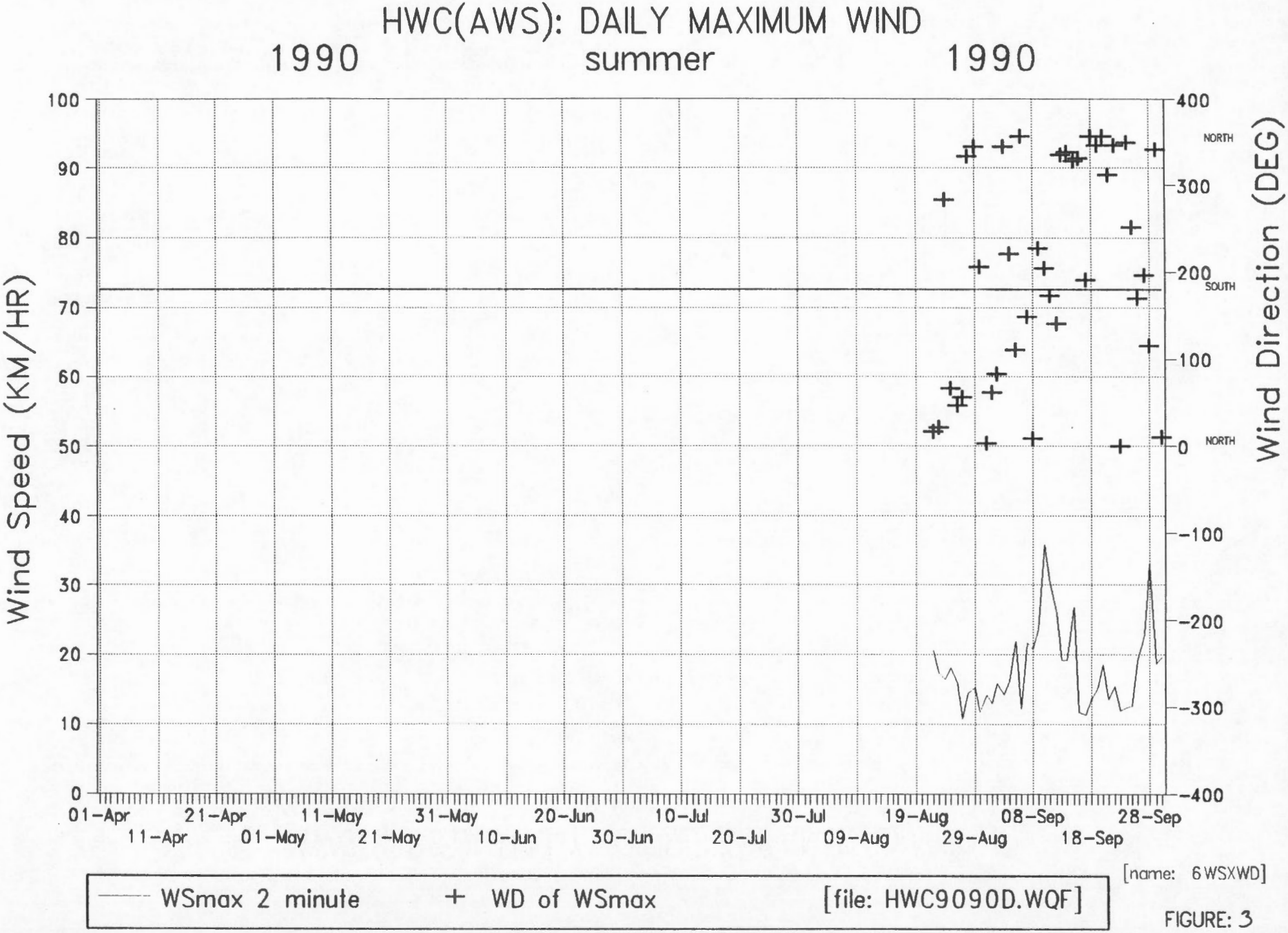
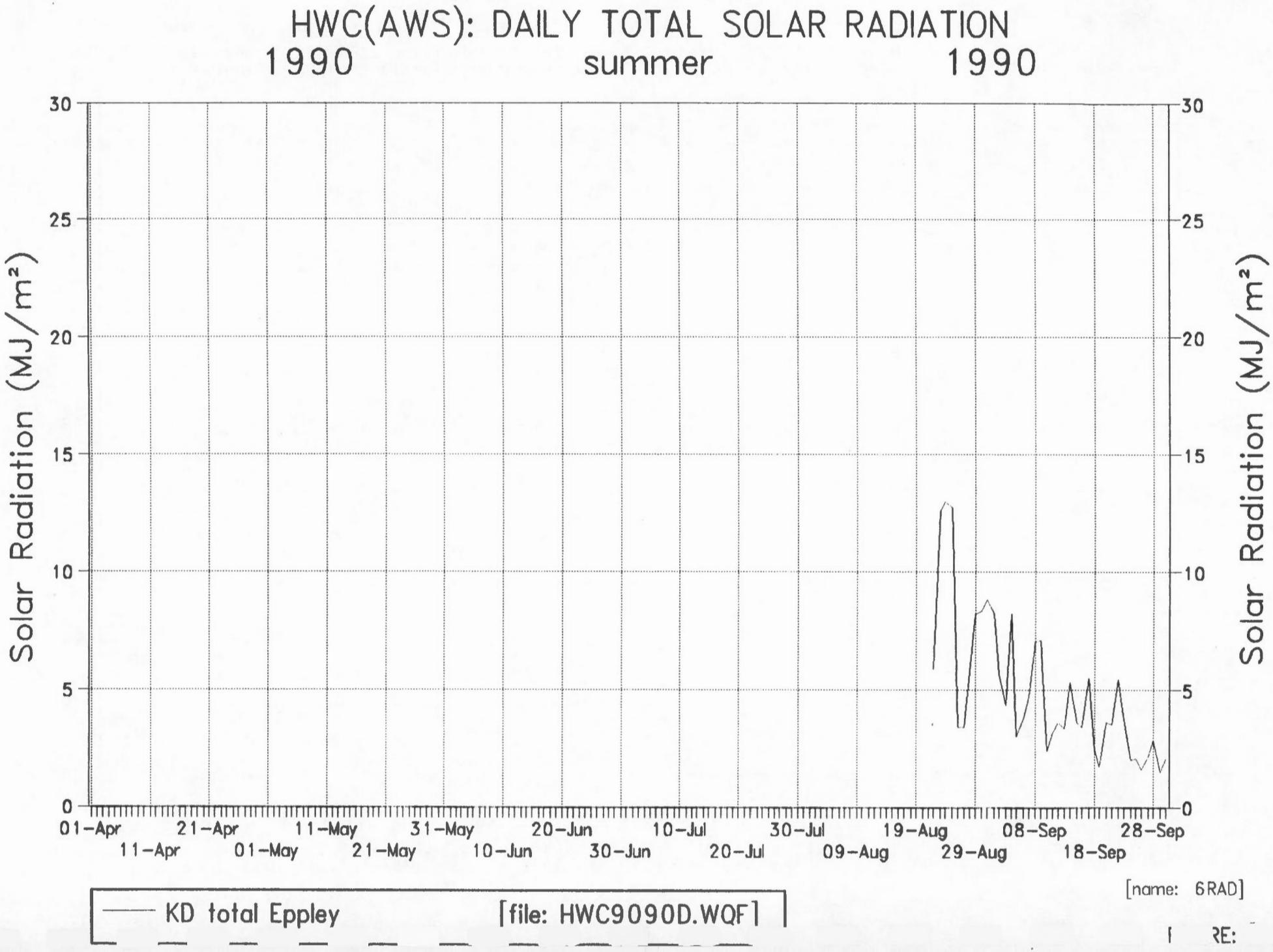

HWC(AWS): DAILY MAXIMUM WIND
1990 summer 1990
Wind Speed (KM/HR)
Wind Direction (DEG)
100
90
80
70
60
50
40
30
20
10
0
400
300
200
100
0
-100
-200
-300
-400
NORTH
SOUTH
NORTH
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
WSmax 2 minute
WD of WSmax
[file: HWC9090D.WQF]
[name: 6WSXWD]

FIGURE: 3


HWC(AWS): DAILY TOTAL SOLAR RADIATION
1990 summer 1990
Solar Radiation (MJ/m²)
30
25
20
15
10
5
0
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
KD total Eppley
[file: HWC9090D.WQF]
[name: 6RAD]

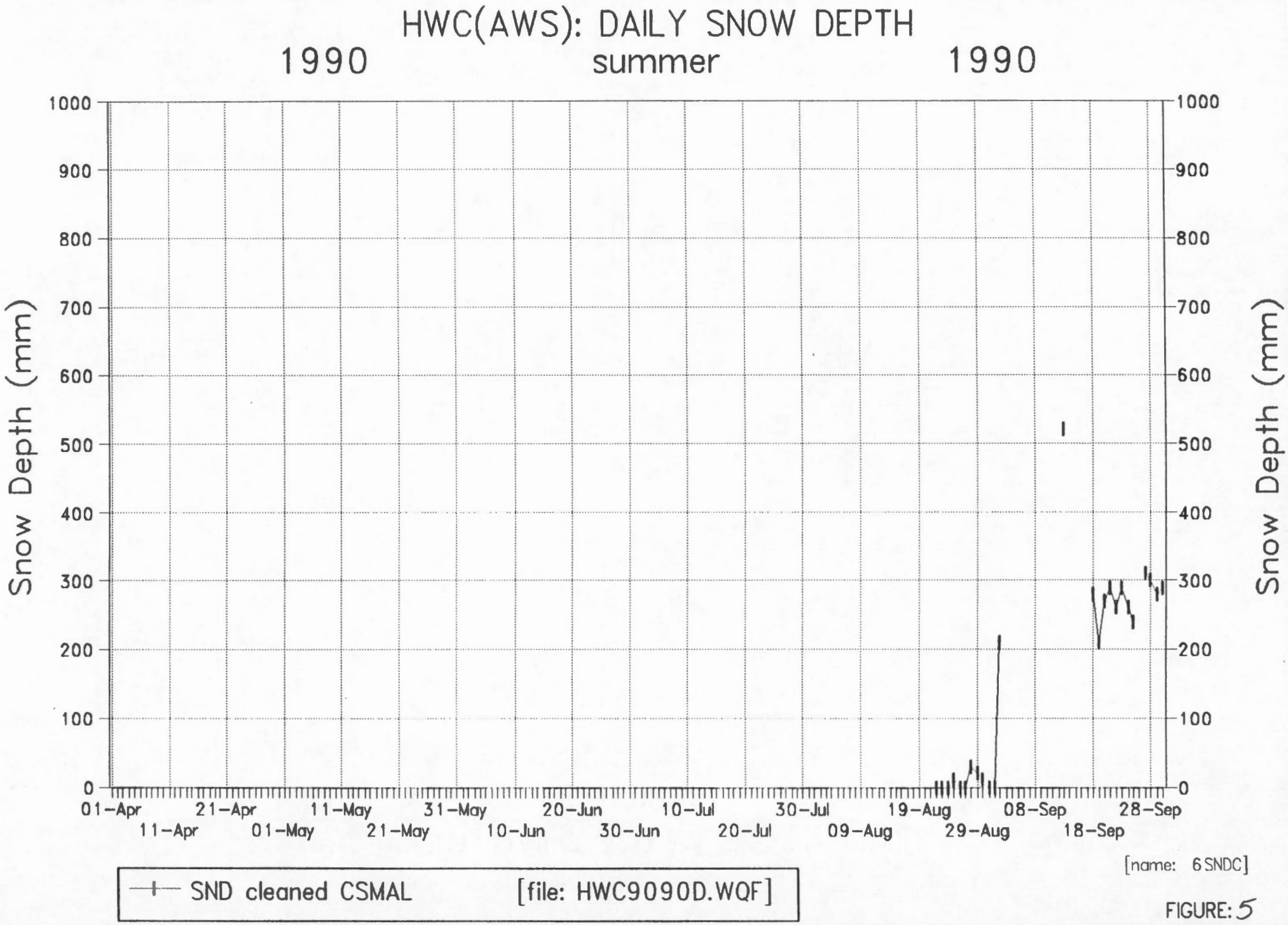
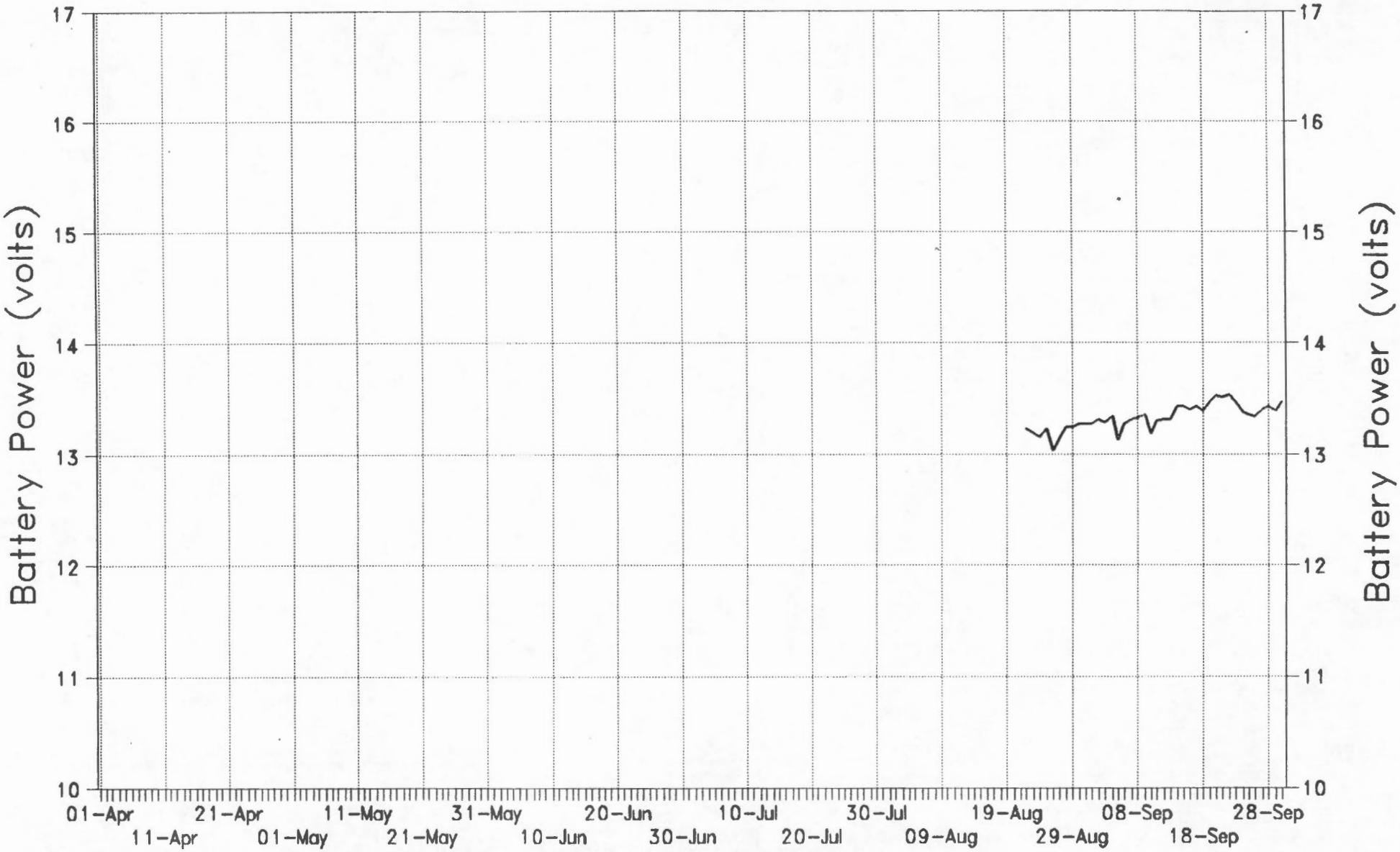

HWC(AWS): DAILY SNOW DEPTH
1990 summer 1990
Snow Depth (mm)
1000
900
800
700
600
500
400
300
200
100
0
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
[name: 6SNDC]
SND cleaned CSMAL
[file: HWC9090D.WQF]

FIGURE: 5

HWC(AWS): DAILY BATTERY POWER

1990 summer 1990



[name: 6BAT]

Battery Voltage [file: HWC9090D.WQF]

F E: (

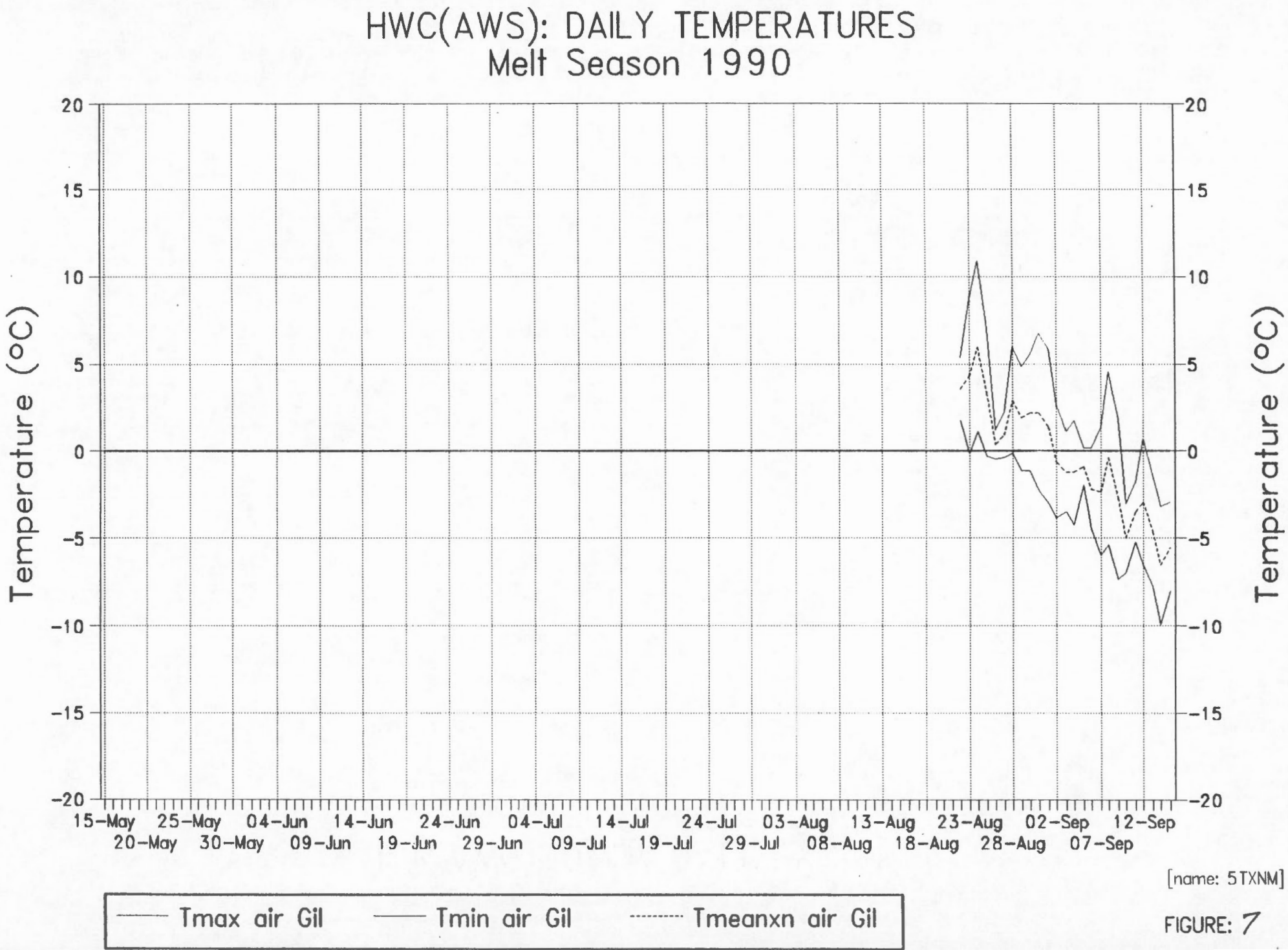
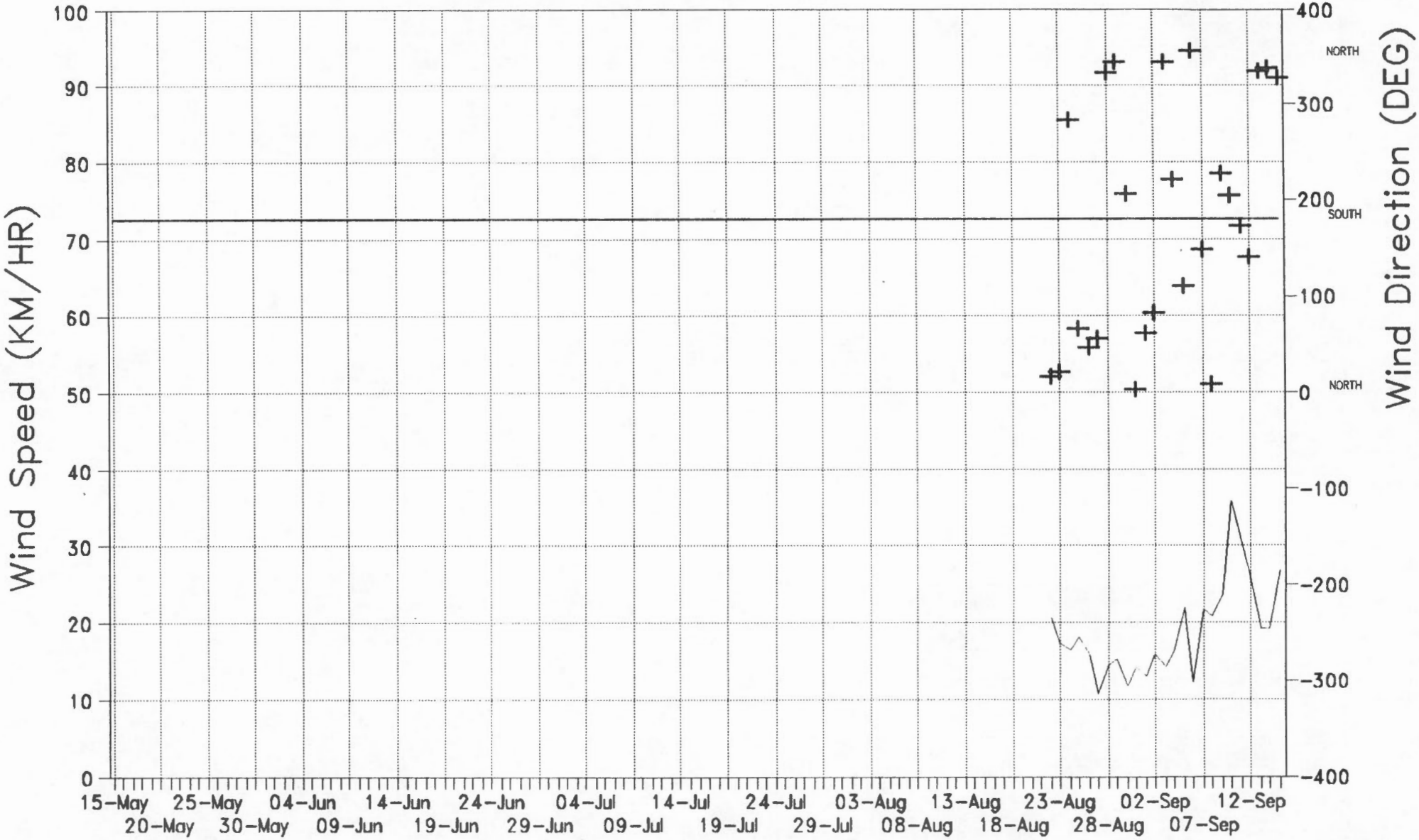

HWC(AWS): DAILY TEMPERATURES
Melt Season 1990
Temperature (°C)
20
15
10
5
0
-5
-10
-15
-20
15-May
20-May
25-May
30-May
04-Jun
09-Jun
14-Jun
19-Jun
24-Jun
29-Jun
04-Jul
09-Jul
14-Jul
19-Jul
24-Jul
29-Jul
03-Aug
08-Aug
13-Aug
18-Aug
23-Aug
28-Aug
02-Sep
07-Sep
12-Sep
[name: 5TXNM]
Tmax air Gil
Tmin air Gil
Tmeanxn air Gil

FIGURE: 7

HWC(AWS): DAILY MAXIMUM WIND
Melt Season 1990



[name: 5WSXWD]

WSmax 2 minute + WD of WSmax [file: HWC9090D.WQF]

RE:

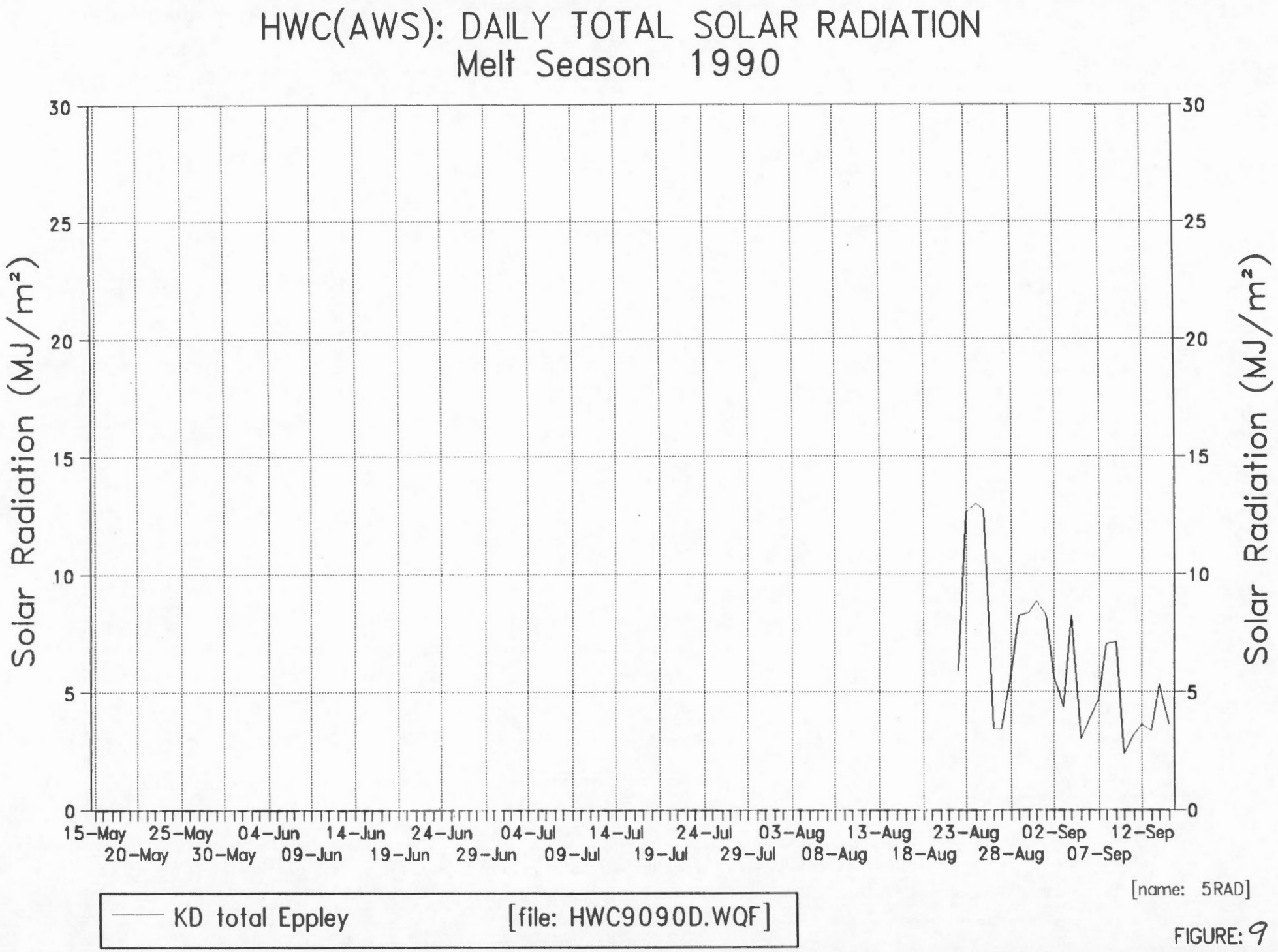
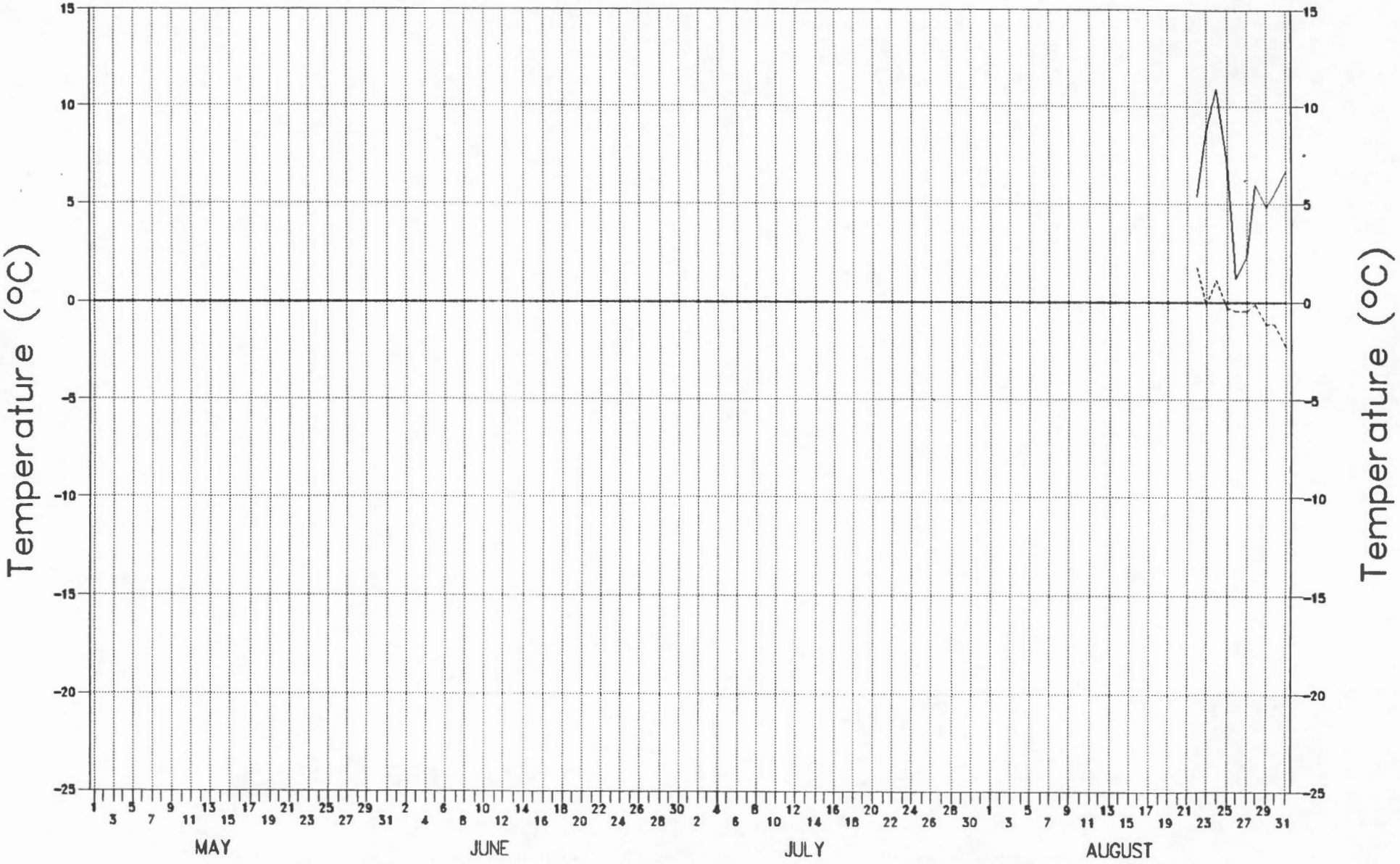

HWC(AWS): DAILY TOTAL SOLAR RADIATION
Melt Season 1990
Solar Radiation (MJ/m²)
30
25
20
15
10
5
0
15-May
20-May
25-May
30-May
04-Jun
09-Jun
14-Jun
19-Jun
24-Jun
29-Jun
04-Jul
09-Jul
14-Jul
19-Jul
24-Jul
29-Jul
03-Aug
08-Aug
13-Aug
18-Aug
23-Aug
28-Aug
02-Sep
07-Sep
12-Sep
[name: 5RAD]
KD total Eppley
[file: HWC9090D.WQF]

FIGURE: 9

HWC(AWS): DAILY EXTREME TEMPERATURES
May – August 1990



[name: 4TXN]

Tmax air Gill — Tmin air Gill [file: HWC9090D.WQF]

FIGURE: 10

HWC(AWS): DAILY TEMPERATURE
August 1990

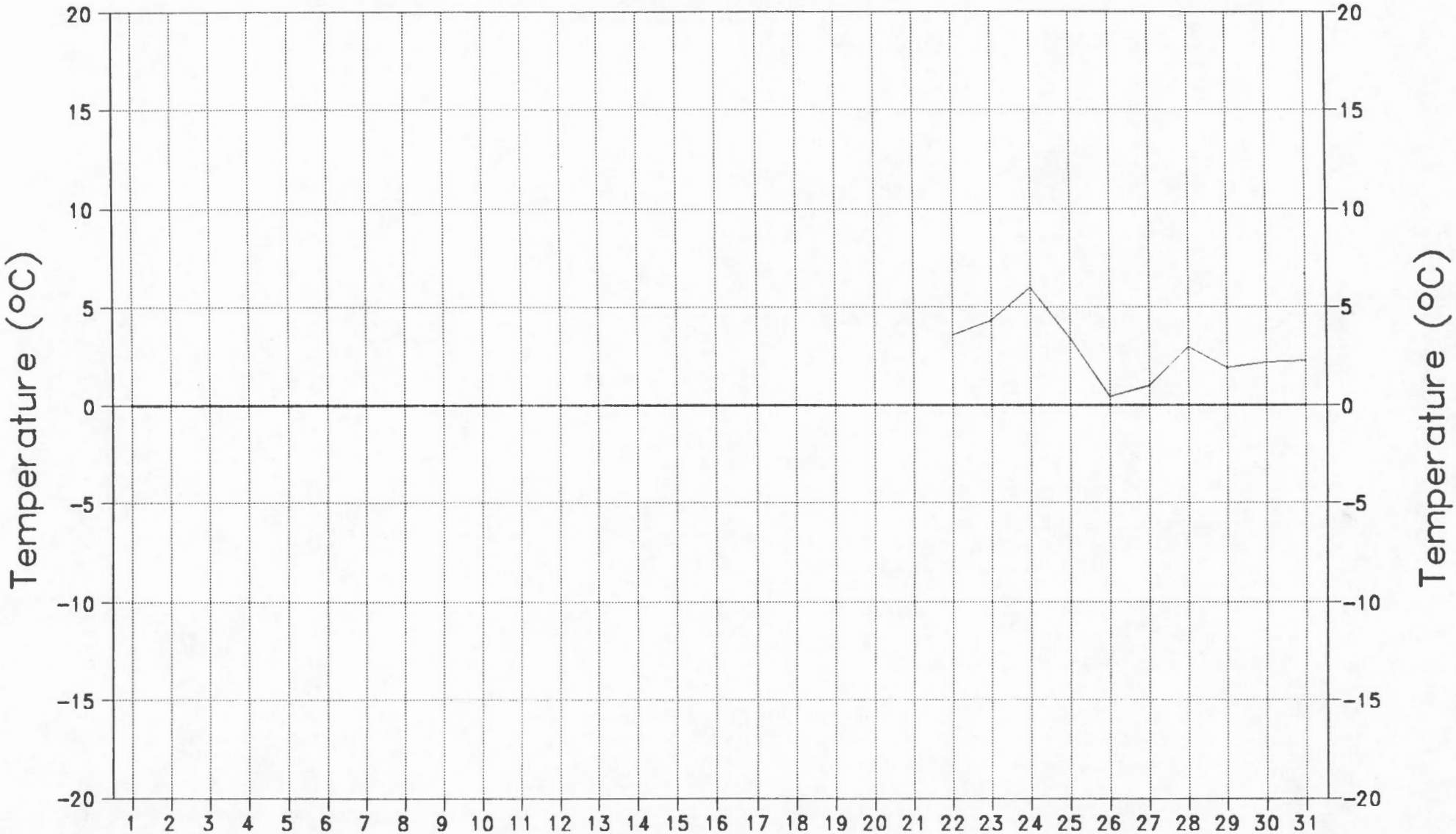


FIGURE: 11

HWC(AWS): DAILY EXTREME TEMPERATURES
August 1990

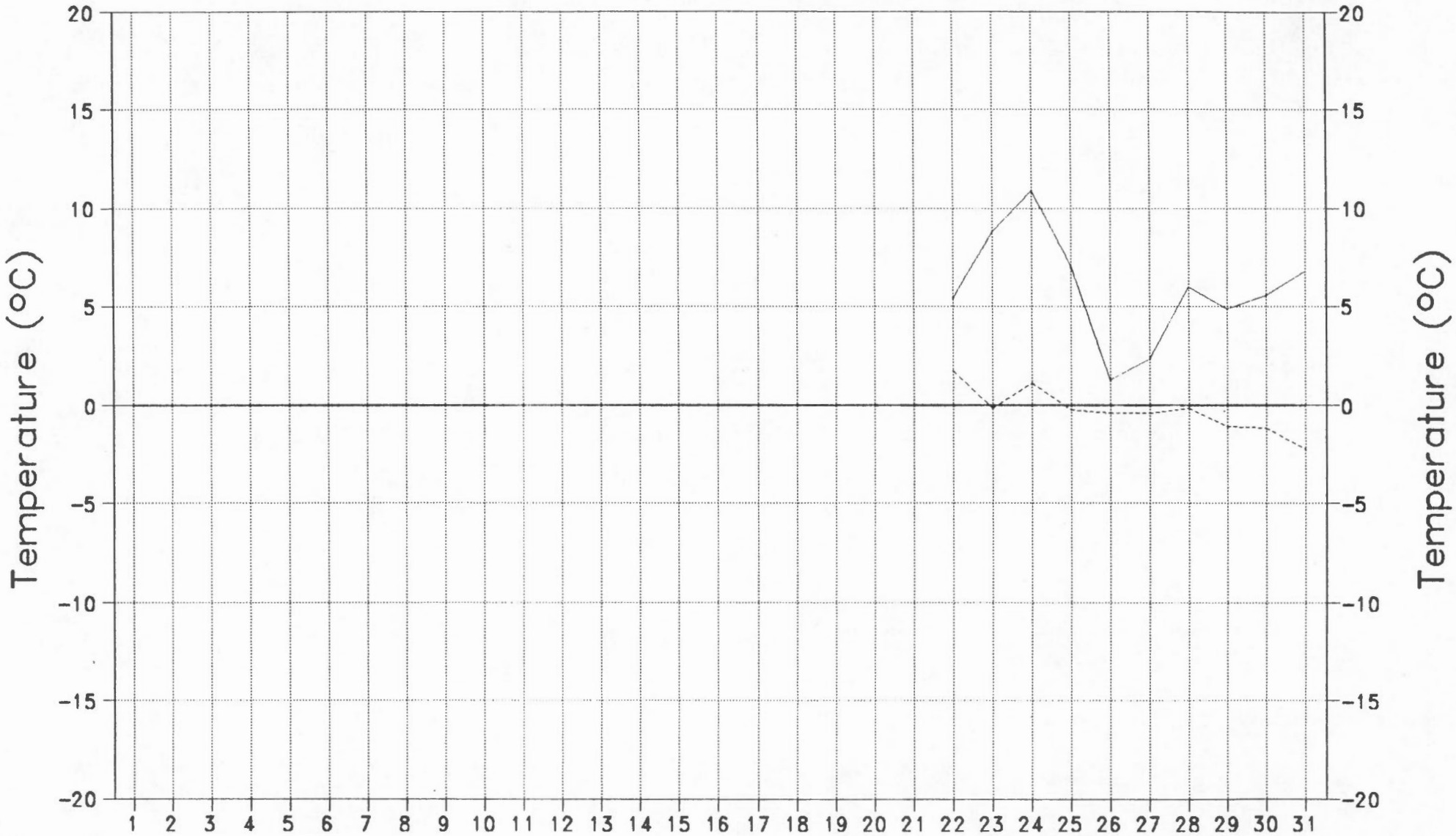
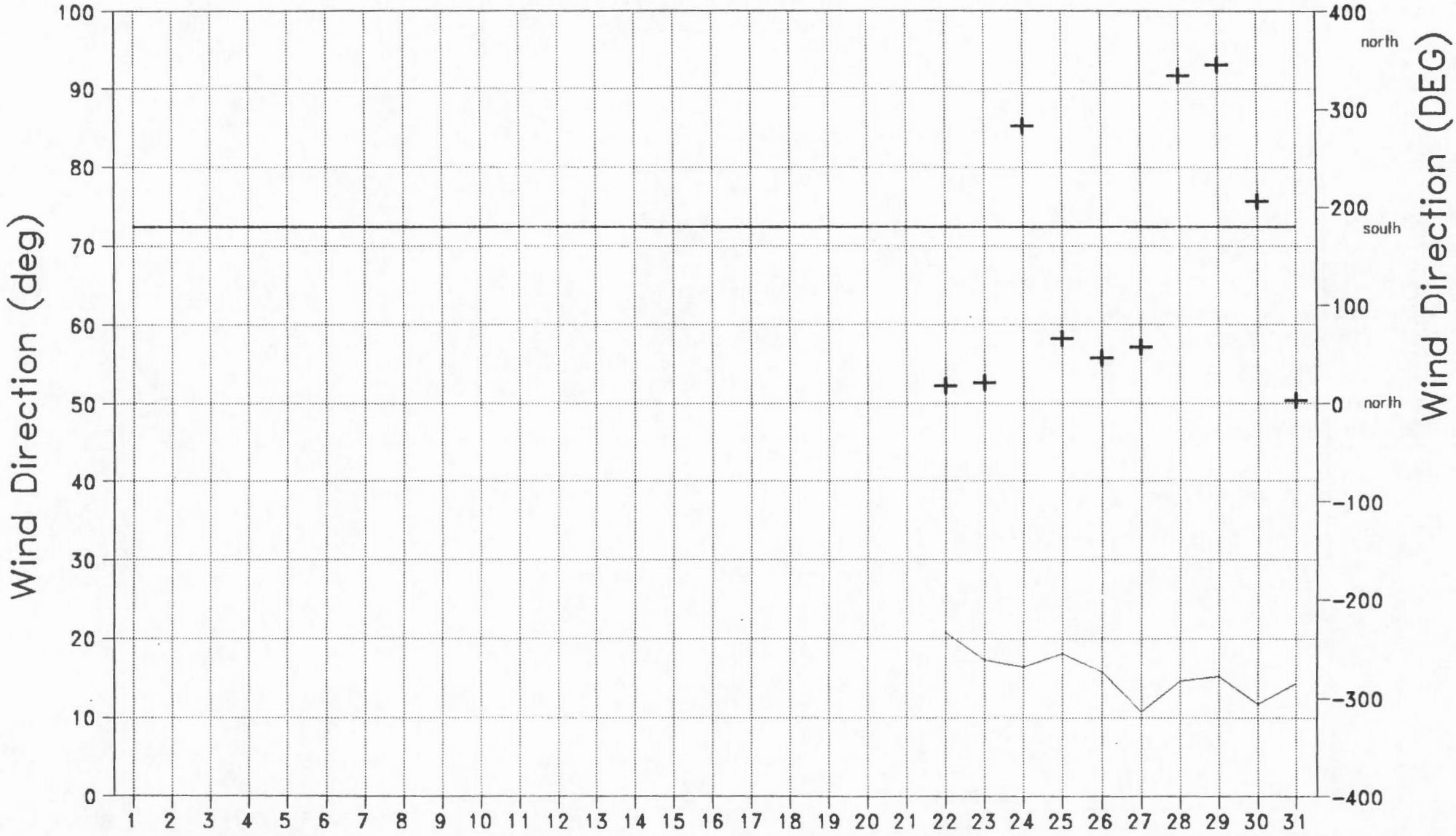


FIGURE: 12

HWC(AWS): DAILY MAXIMUM WIND
August 1990



[name: AUGWSXWD]

WSmax 2 minute + WD of WSmax [file: HWC9090D.WQF]

FIGURE: 13

HWC(AWS): DAILY TOTAL SOLAR RADIATION
August 1990

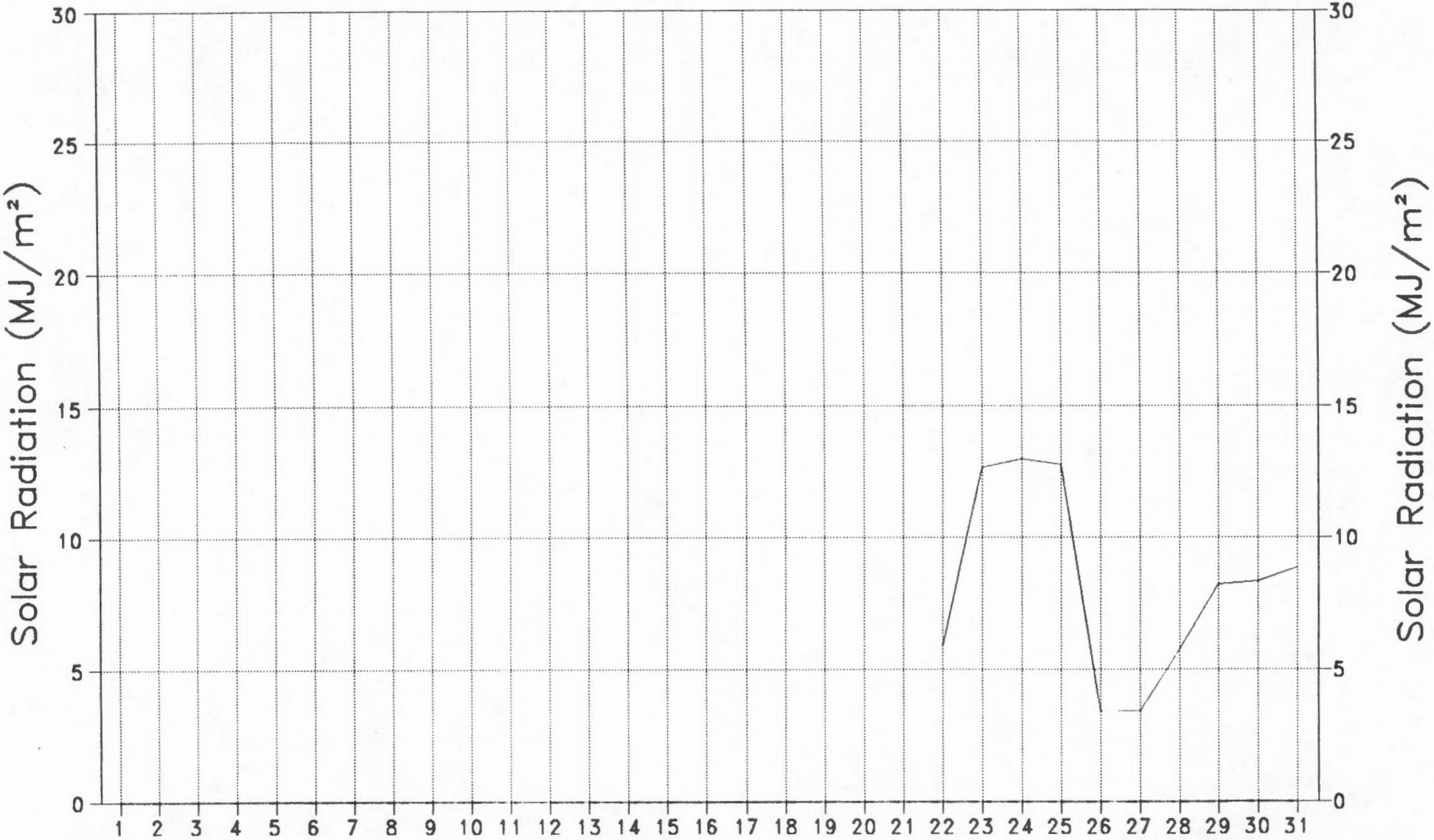
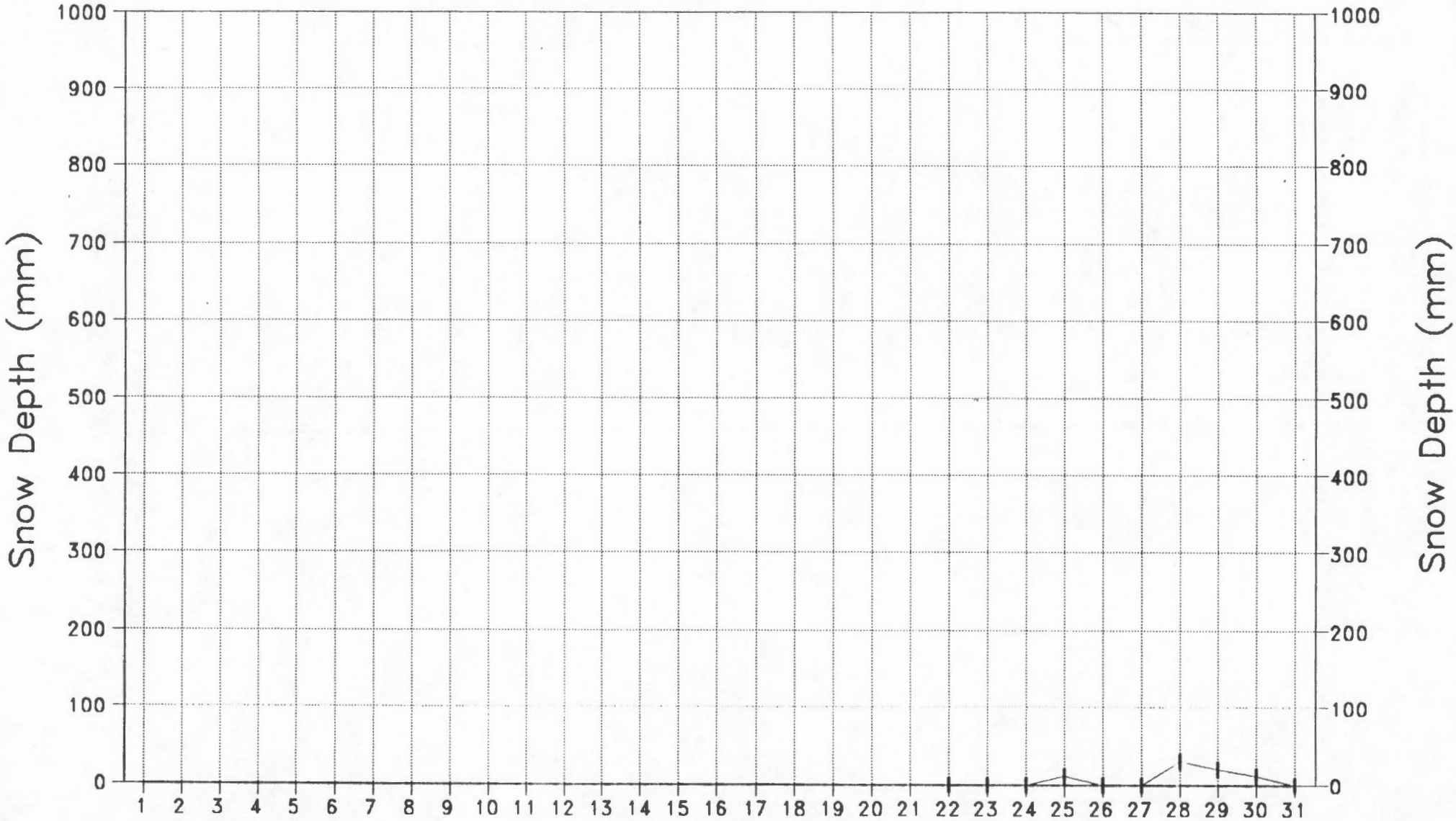


FIGURE: 14

HWC(AWS): DAILY SNOW DEPTH
August 1990

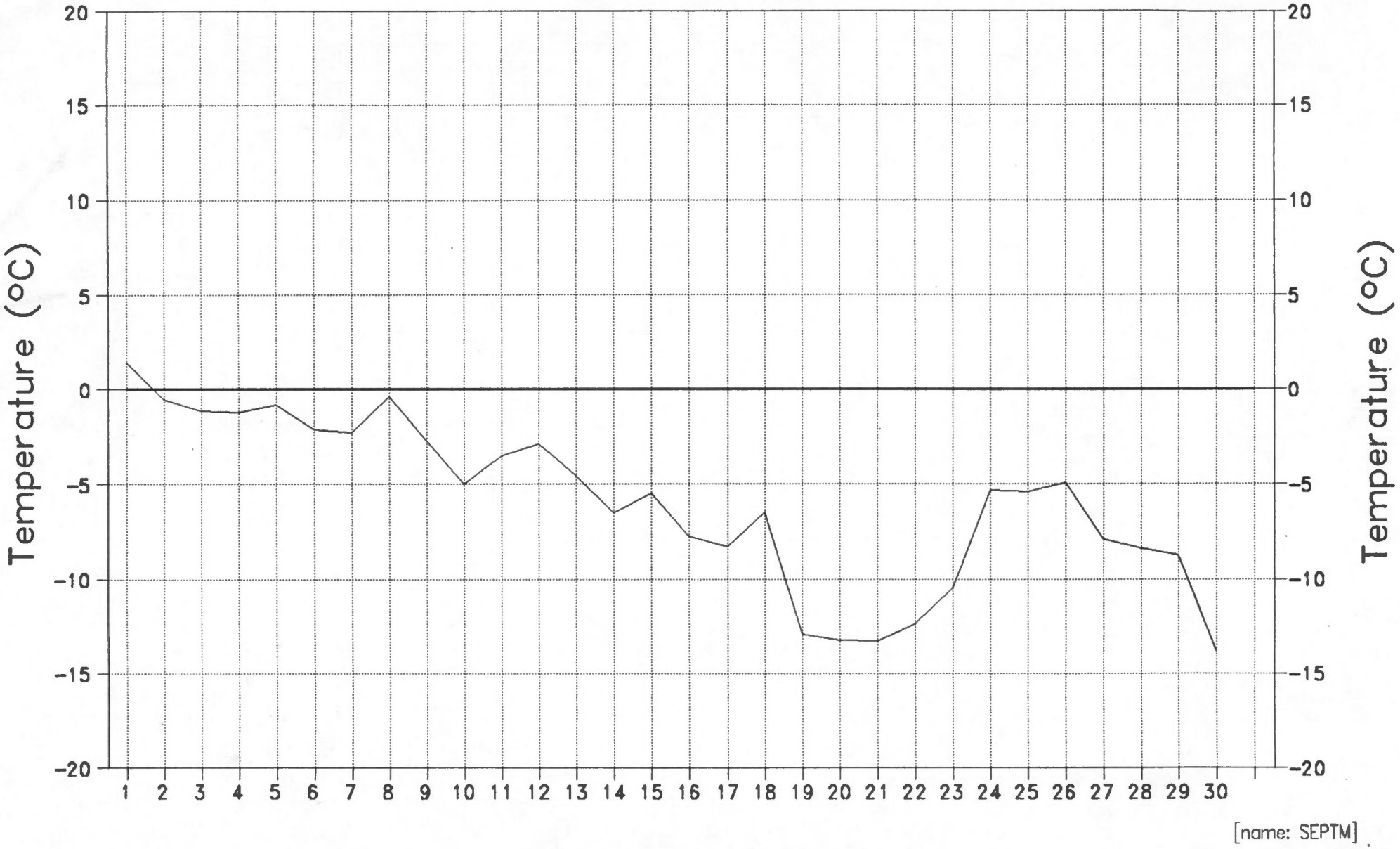


[name: AUGSNDC]

SND cleaned CSMAL [file: HWC9090D.WQF]

FIGURE: 15

HWC(AWS): DAILY TEMPERATURE
September 1990



Tmeanxn air Gill [file: HWC9090D.WQF]

FIGURE: 16

HWC(AWS): DAILY EXTREME TEMPERATURES
September 1990

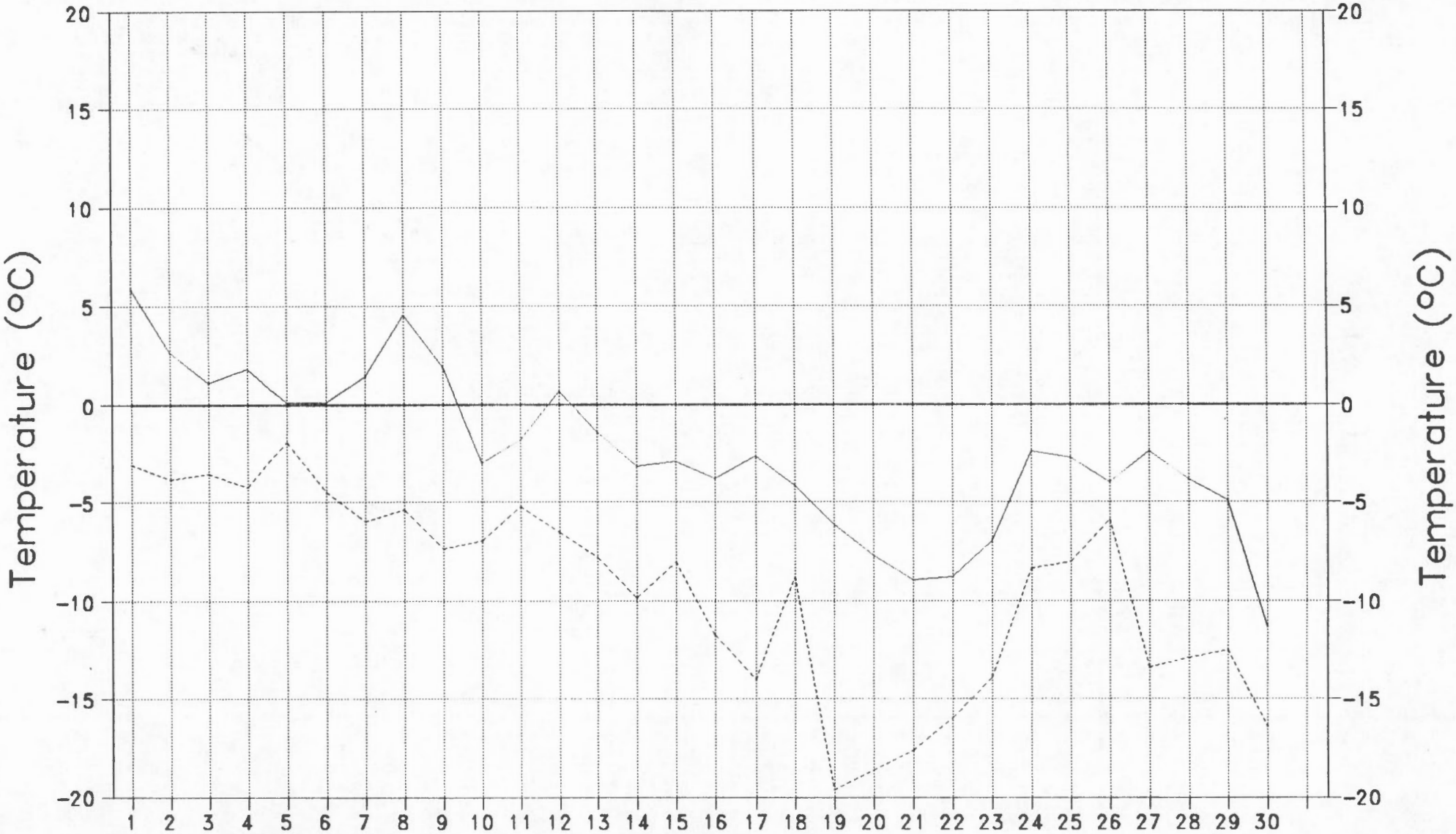


FIGURE: 17

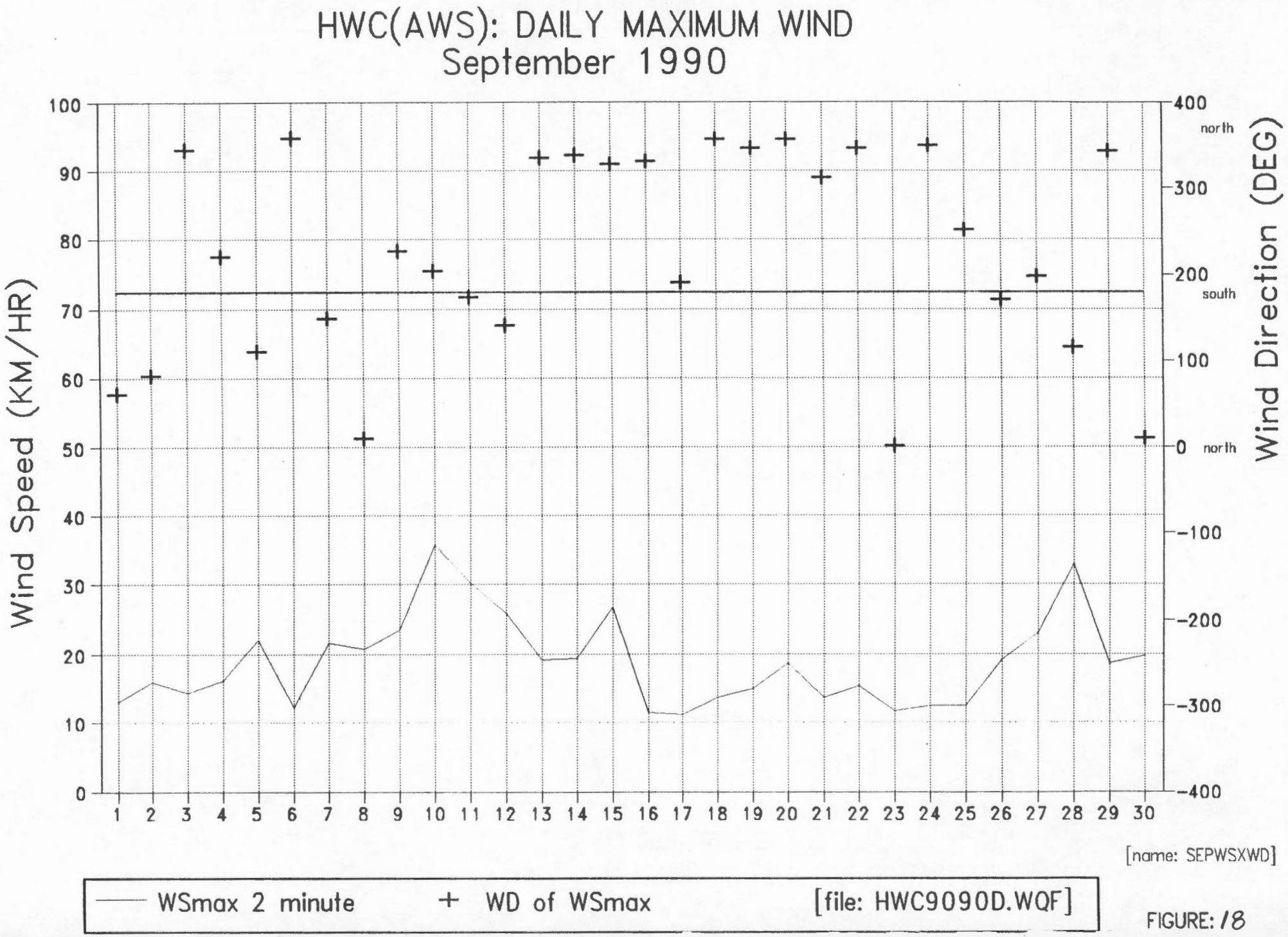

HWC(AWS): DAILY MAXIMUM WIND
September 1990
Wind Speed (KM/HR)
Wind Direction (DEG)
north
south
north
[name: SEPWSXWD]
WSmax 2 minute
WD of WSmax
[file: HWC9090D.WQF]

FIGURE: 18

HWC(AWS): DAILY TOTAL SOLAR RADIATION
September 1990

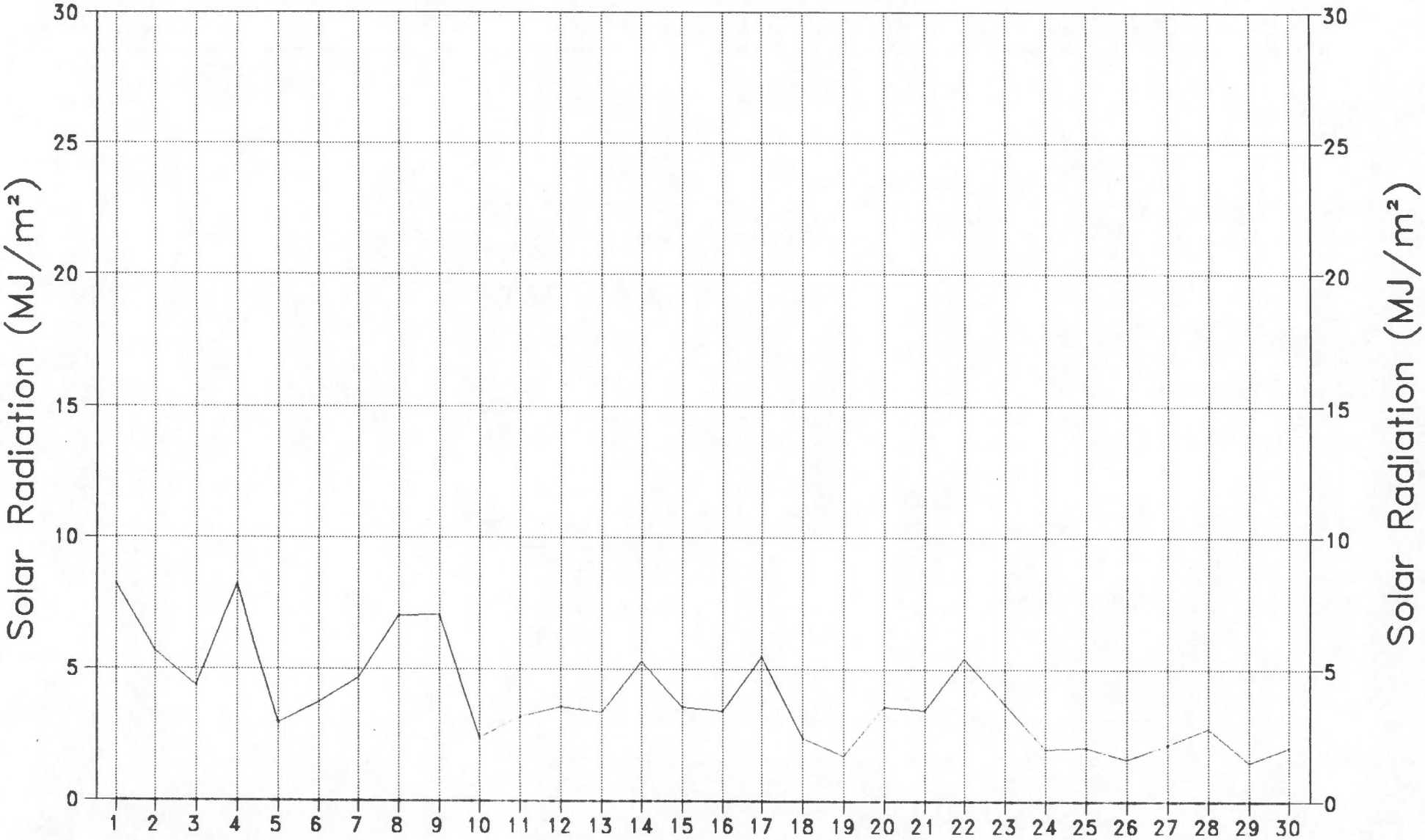


FIGURE: 19

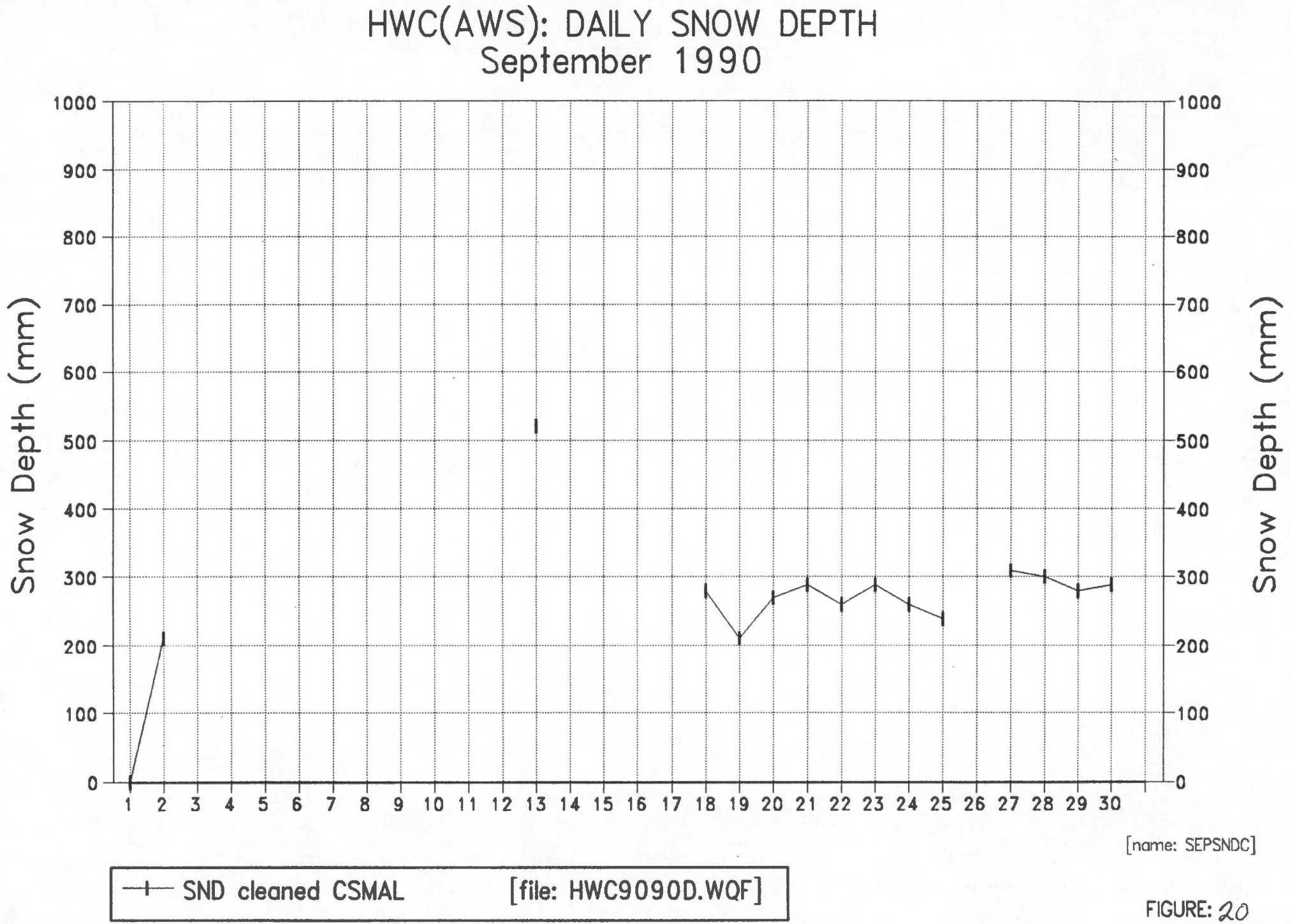

HWC(AWS): DAILY SNOW DEPTH
September 1990
Snow Depth (mm)
1000
900
800
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
[name: SEPSNDC]
SND cleaned CSMAL
[file: HWC9090D.WQF]

FIGURE: 20

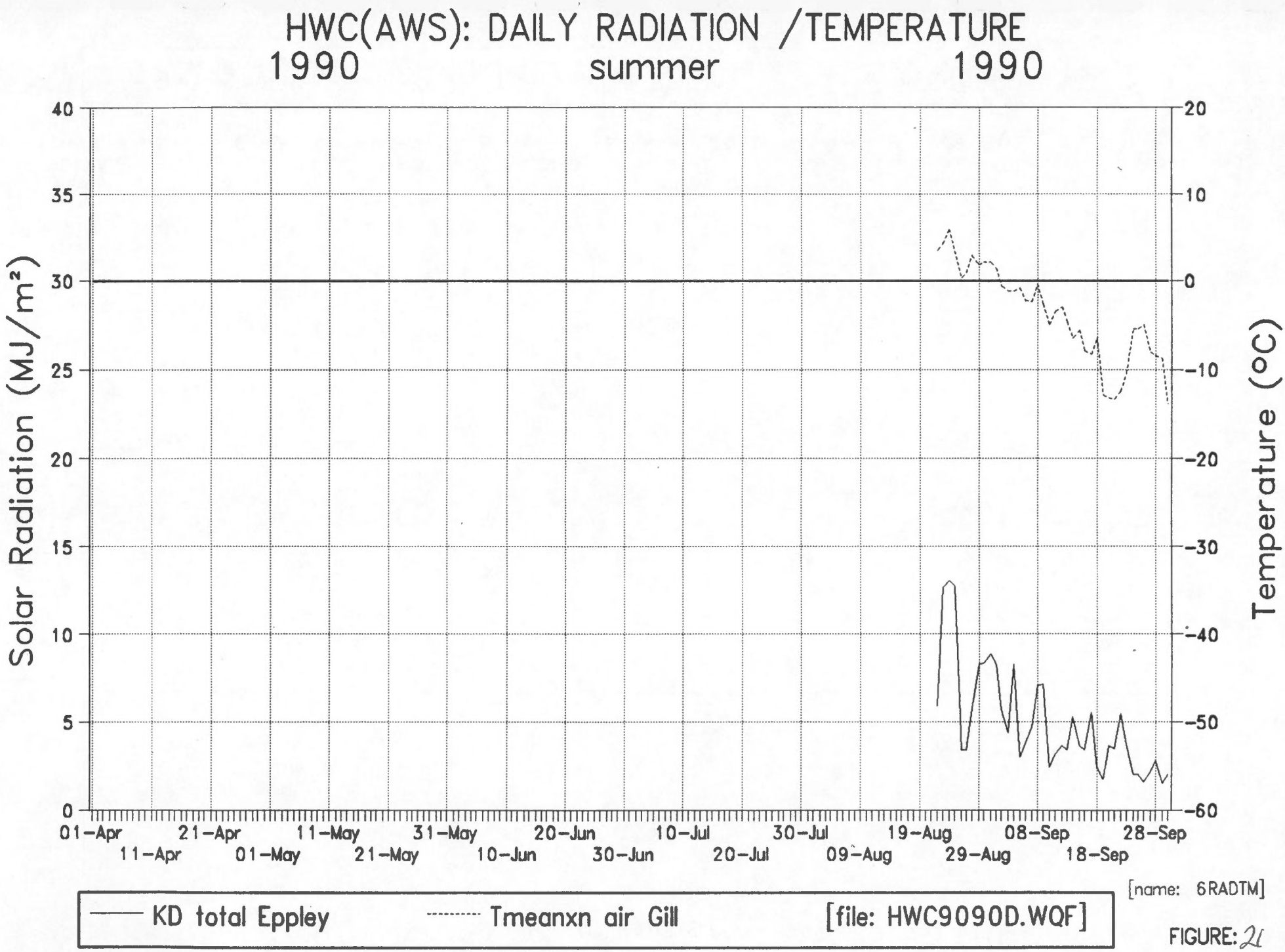

HWC(AWS): DAILY RADIATION /TEMPERATURE
1990 summer 1990
Solar Radiation (MJ/m²)
Temperature (°C)
40
35
30
25
20
15
10
5
0
20
10
0
-10
-20
-30
-40
-50
-60
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
KD total Eppley
Tmeanxn air Gill
[file: HWC9090D.WQF]
[name: 6RADTM]

FIGURE: 21

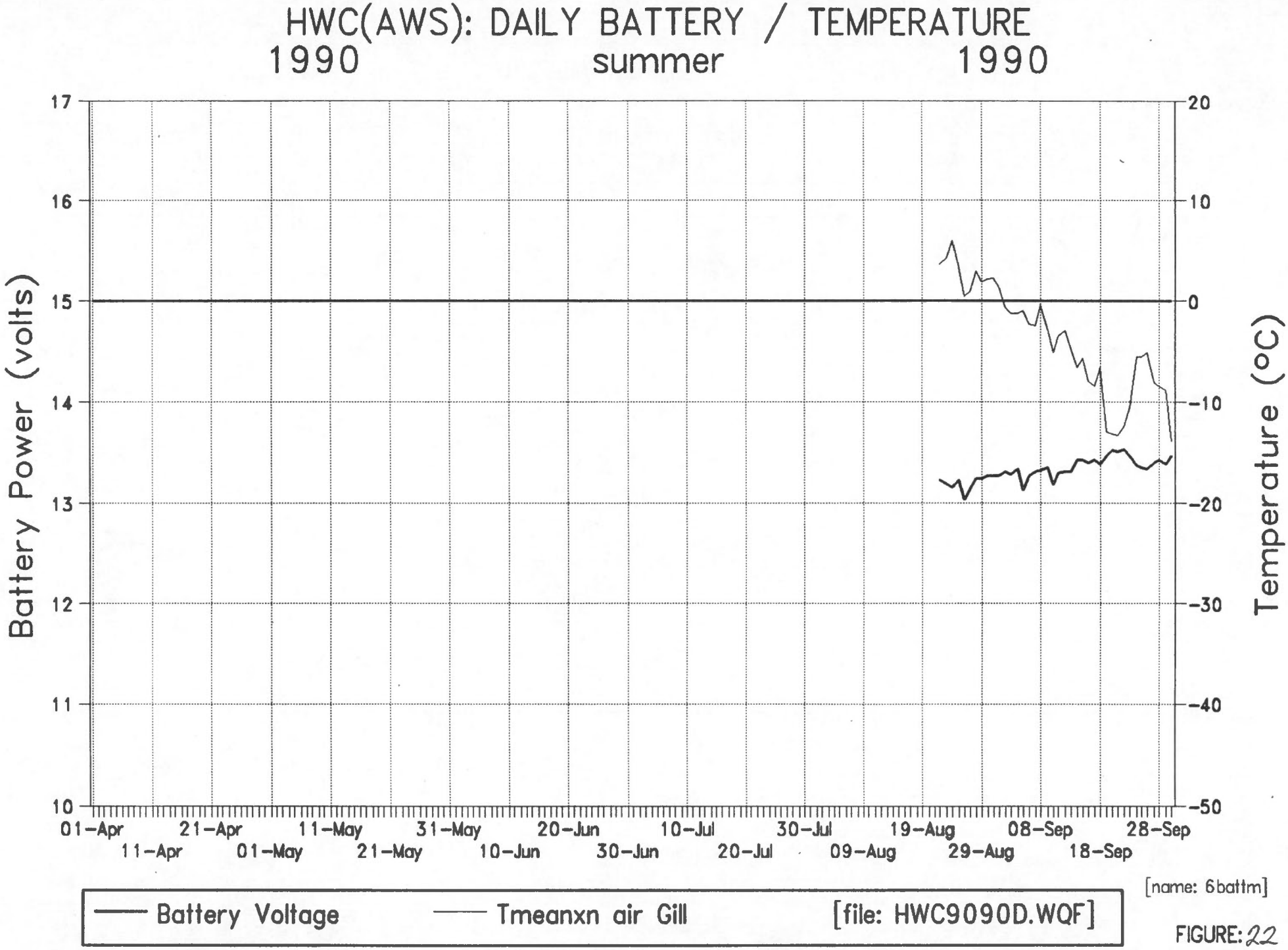
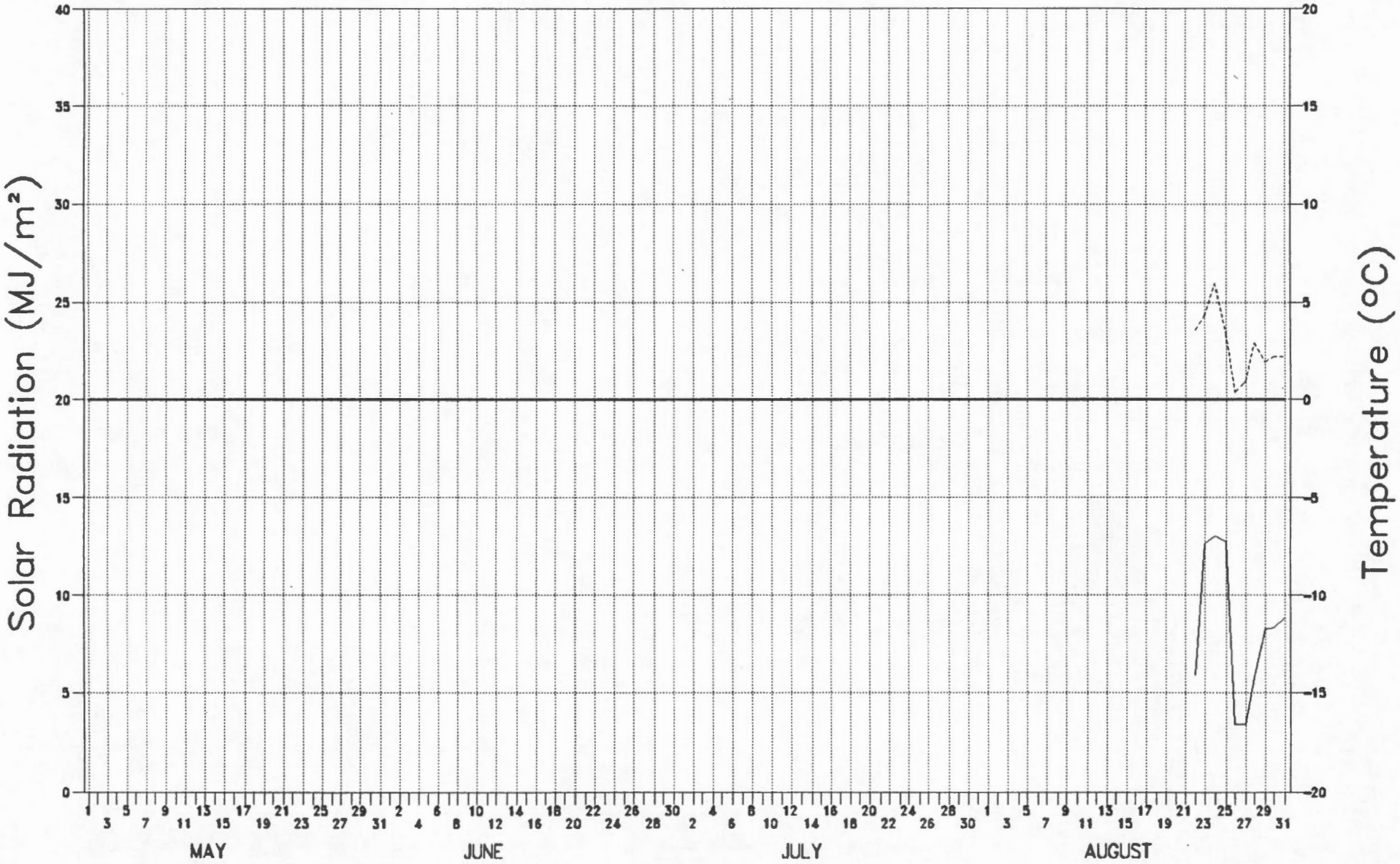

HWC(AWS): DAILY BATTERY / TEMPERATURE
1990 summer 1990
Battery Power (volts)
Temperature (°C)
17
16
15
14
13
12
11
10
20
10
0
-10
-20
-30
-40
-50
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
Battery Voltage
Tmeanxn air Gill
[file: HWC9090D.WQF]
[name: 6battm]

FIGURE: 22

HWC(AWS): DAILY RADIATION /TEMPERATURE
May – August 1990



[name: 4RADTM]

KD total Eppley ---------- Tmeanxn air Gill [file: HWC9090D.WQF]

FIGURE: 23

TABLE:7

HWC(AWS):Hot Weather Creek HWC(AWS)Daily Plots

Daily Plots

Winter 1990-91: October 1990 - March 1991

[file:HWC9091D.WQF]

name:	Figure no.		Season/ Month	Year	Figure Caption
6tm	HWC9091D.	1	Winter	1990-91	Daily mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
6txn	HWC9091D.	2	Winter	1990-91	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
6wsxwd	HWC9091D.	3	Winter	1990-91	Daily maximum wind speed (Km/hr) and direction of that maximum speed (deg)
6rad	HWC9091D.	4	Winter	1990-91	Daily total incomming solar radiation (KJ/m^2) from Eppley pyranometer
6sndc	HWC9091D.	5	Winter	1990-91	Daily cleaned snow depth (mm) with all questionable data removed
6bat	HWC9091D.	6	Winter	1990-91	Daily battery power (volts)
5txnm	HWC9091D.	7	Dark Season	1990-91	Daily maximum, minimum and mean air temperature (°C) from 207F in Gill screen
5wsxwd	HWC9091D.	8	Dark Season	1990-91	Daily maximum wind speed (Km/hr) and direction of that maximum speed (deg)
5rad	HWC9091D.	9	Dark Season	1990-91	Daily total incomming solar radiation (KJ/m^2) from Eppley pyranometer
4txn	HWC9091D.	10	Nov-Feb	1990-91	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
octtm	HWC9091D.	11	October	1990-91	Daily mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
octtxn	HWC9091D.	12	October	1990-91	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
novtxn	HWC9091D.	13	November	1990-91	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
novsndc	HWC9091D.	14	November	1990-91	Daily cleaned snow depth (mm) with all questionable data removed
dectm	HWC9091D.	15	December	1990-91	Daily mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
dectxn	HWC9091D.	16	December	1990-91	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
decwsxwd	HWC9091D.	17	December	1990-91	Daily maximum wind speed (Km/hr) and direction of that maximum speed (deg)
decsndc	HWC9091D.	18	December	1990-91	Daily cleaned snow depth (mm) with all questionable data removed

TABLE:7

HWC(AWS):Hot Weather Creek HWC(AWS)Daily Plots

Daily Plots

Winter 1990-91: October 1990 - March 1991

[file:HWC9091D.WQF]

name:	Figure no.		Season/ Month	Year	Figure Caption
jantm	HWC9091D.	19	January	1990-91	Daily mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
jantxn	HWC9091D.	20	January	1990-91	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
janwsxwd	HWC9091D.	21	January	1990-91	Daily maximum wind speed (Km/hr) and direction of that maximum speed (deg)
febtm	HWC9091D.	22	February	1990-91	Daily mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
febtxn	HWC9091D.	23	February	1990-91	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
febwsxwd	HWC9091D.	24	February	1990-91	Daily maximum wind speed (Km/hr) and direction of that maximum speed (deg)
febsndc	HWC9091D.	25	February	1990-91	Daily cleaned snow depth (mm) with all questionable data removed
martm	HWC9091D.	26	March	1990-91	Daily mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
martxn	HWC9091D.	27	March	1990-91	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
marwsxwd	HWC9091D.	28	March	1990-91	Daily maximum wind speed (Km/hr) and direction of that maximum speed (deg)
marrad	HWC9091D.	28b	March	1990-91	Daily total incomming solar radiation (KJ/m^2) from Eppley pyranometer
marsndc	HWC9091D.	30	March	1990-91	Daily cleaned snow depth (mm) with all questionable data removed
6radtm	HWC9091D.	31	Winter	1990-91	Daily total incomming solar radiation (KJ/m^2) from Eppley pyranometer and mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
6battm	HWC9091D.	32	Winter	1990-91	Daily battery power (volts) and mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
octwsxwd	HWC9091D.	33	October	190-91	Daily maximum wind speed (Km/hr) and direction of that maximum speed (deg)

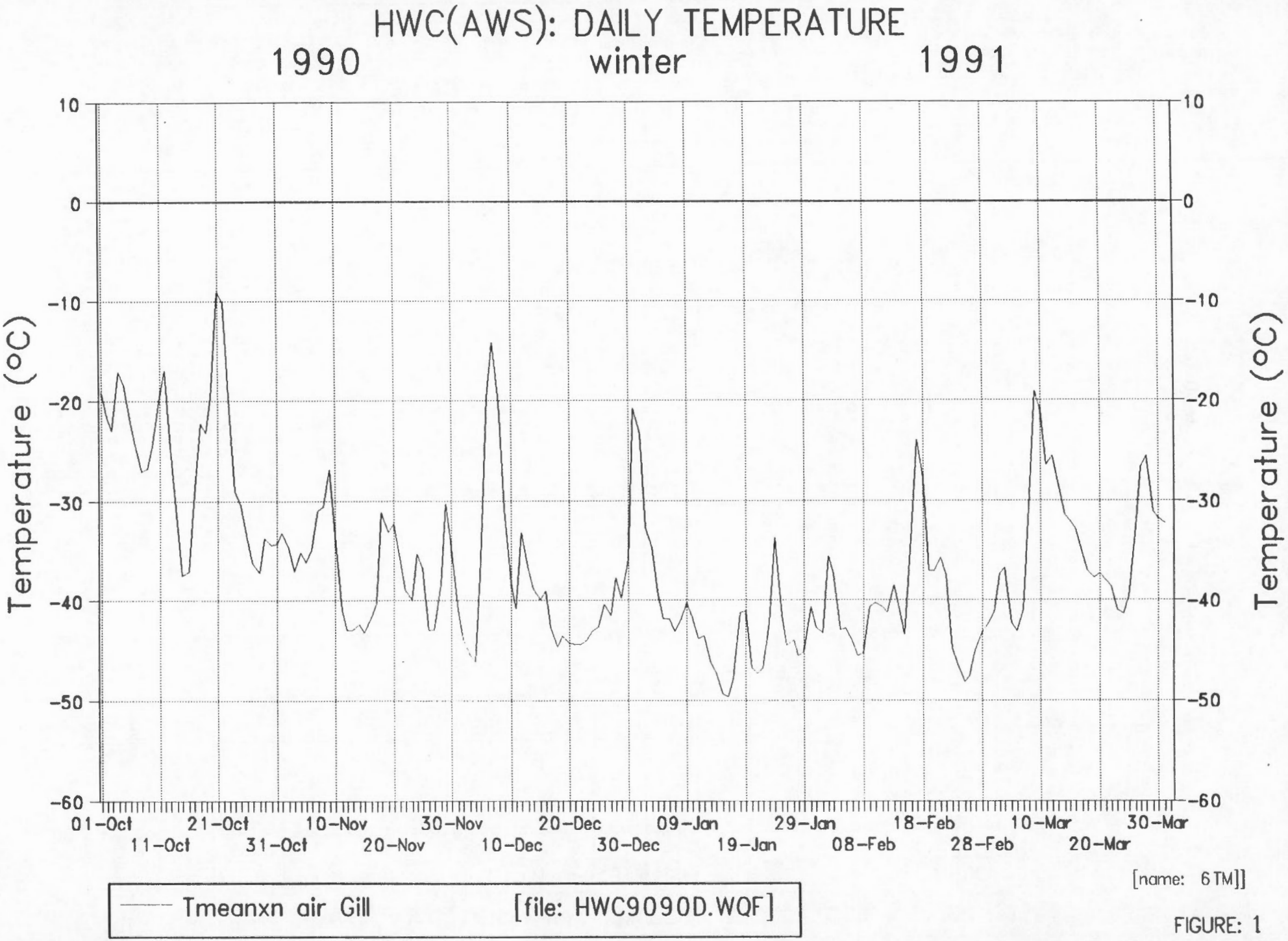

HWC(AWS): DAILY TEMPERATURE
1990 winter 1991
Temperature (°C)
10
0
-10
-20
-30
-40
-50
-60
01-Oct
11-Oct
21-Oct
31-Oct
10-Nov
20-Nov
30-Nov
10-Dec
20-Dec
30-Dec
09-Jan
19-Jan
29-Jan
08-Feb
18-Feb
28-Feb
10-Mar
20-Mar
30-Mar
[name: 6TM]]
Tmeanxn air Gill
[file: HWC9090D.WQF]

FIGURE: 1

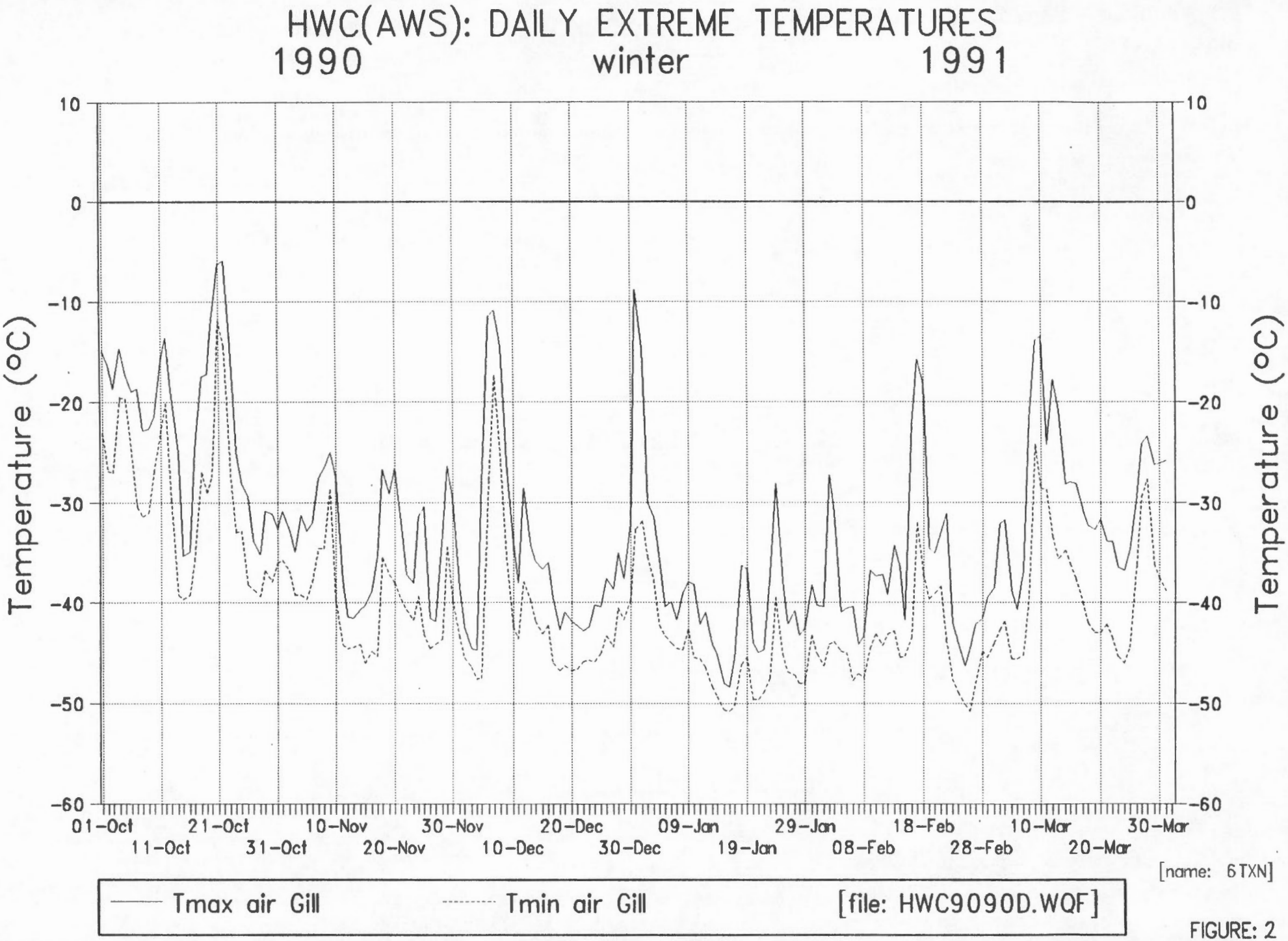

HWC(AWS): DAILY EXTREME TEMPERATURES
1990 winter 1991
Temperature (°C)
10
0
-10
-20
-30
-40
-50
-60
01-Oct
11-Oct
21-Oct
31-Oct
10-Nov
20-Nov
30-Nov
10-Dec
20-Dec
30-Dec
09-Jan
19-Jan
29-Jan
08-Feb
18-Feb
28-Feb
10-Mar
20-Mar
30-Mar
[name: 6TXN]
Tmax air Gill
Tmin air Gill
[file: HWC9090D.WQF]

FIGURE: 2

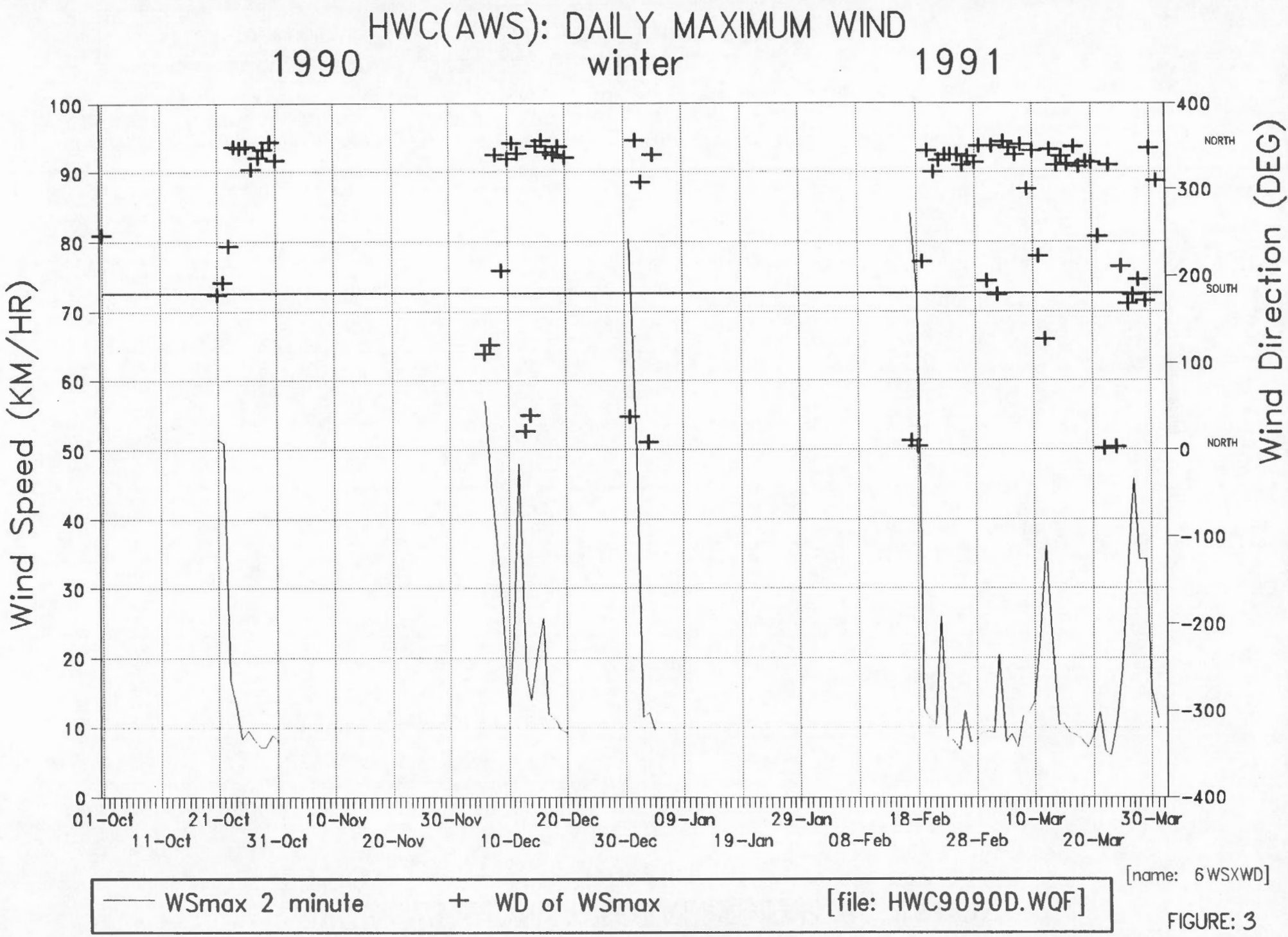

HWC(AWS): DAILY MAXIMUM WIND
1990
winter
1991
Wind Speed (KM/HR)
Wind Direction (DEG)
NORTH
SOUTH
NORTH
01-Oct
11-Oct
21-Oct
31-Oct
10-Nov
20-Nov
30-Nov
10-Dec
20-Dec
30-Dec
09-Jan
19-Jan
29-Jan
08-Feb
18-Feb
28-Feb
10-Mar
20-Mar
30-Mar
WSmax 2 minute
WD of WSmax
[file: HWC9090D.WQF]
[name: 6WSXWD]

FIGURE: 3

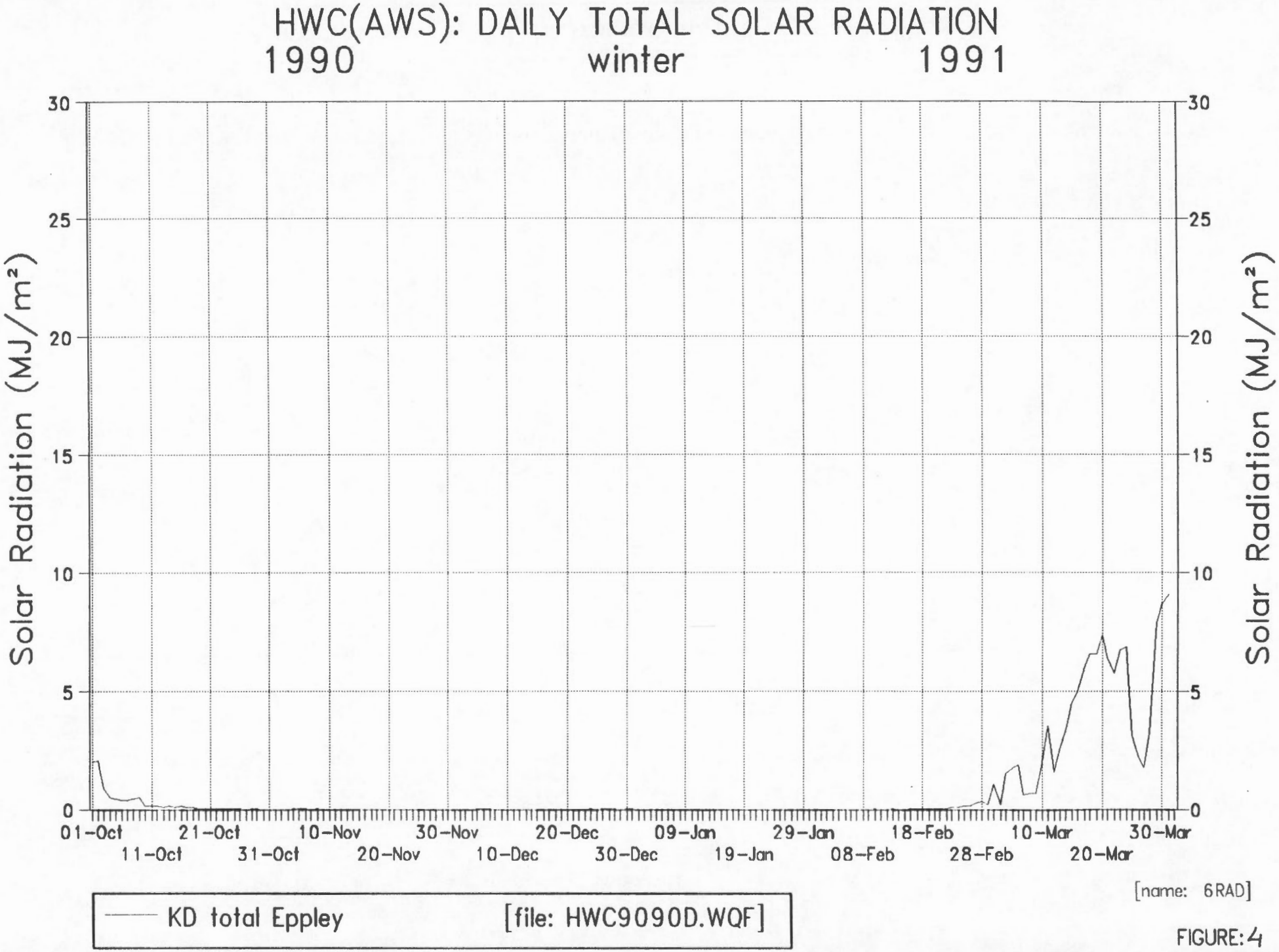

HWC(AWS): DAILY TOTAL SOLAR RADIATION
1990 winter 1991
Solar Radiation (MJ/m²)
30
25
20
15
10
5
0
01-Oct
11-Oct
21-Oct
31-Oct
10-Nov
20-Nov
30-Nov
10-Dec
20-Dec
30-Dec
09-Jan
19-Jan
29-Jan
08-Feb
18-Feb
28-Feb
10-Mar
20-Mar
30-Mar
[name: 6RAD]
KD total Eppley
[file: HWC9090D.WQF]

FIGURE: 4

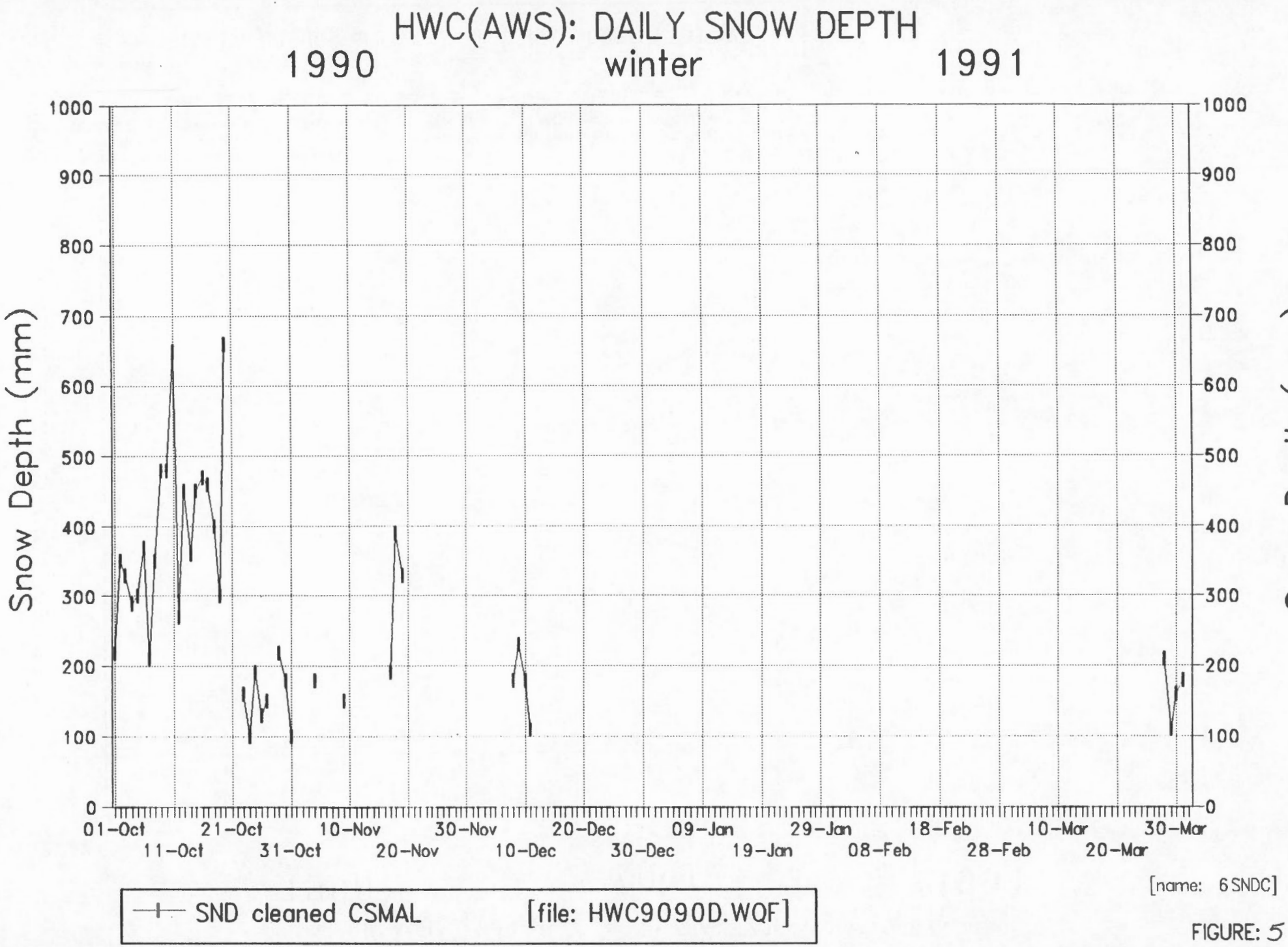

HWC(AWS): DAILY SNOW DEPTH
1990 winter 1991
Snow Depth (mm)
1000
900
800
700
600
500
400
300
200
100
0
01-Oct
11-Oct
21-Oct
31-Oct
10-Nov
20-Nov
30-Nov
10-Dec
20-Dec
30-Dec
09-Jan
19-Jan
29-Jan
08-Feb
18-Feb
28-Feb
10-Mar
20-Mar
30-Mar
SND cleaned CSMAL
[file: HWC9090D.WQF]
[name: 6SNDC]

FIGURE: 5

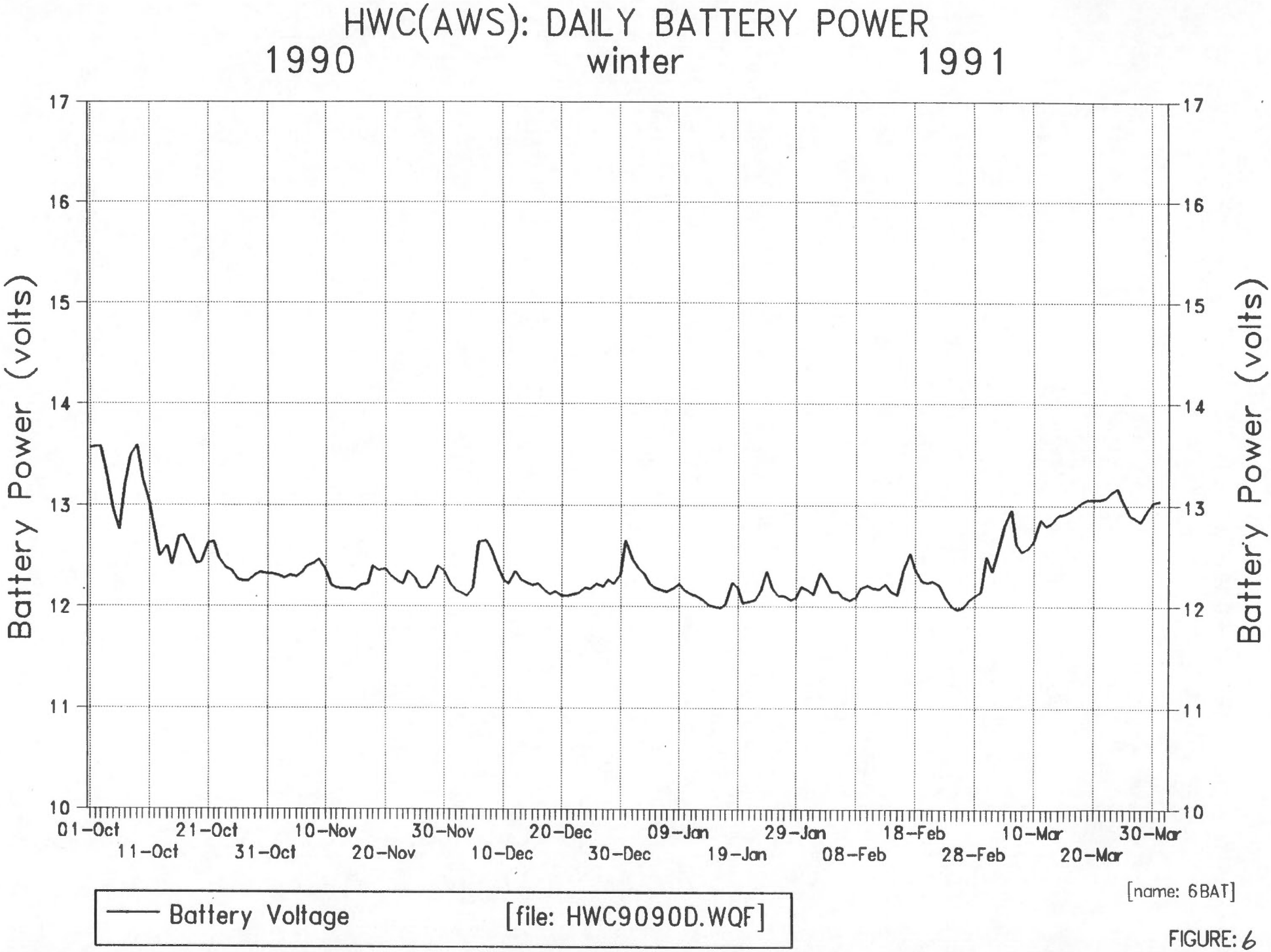
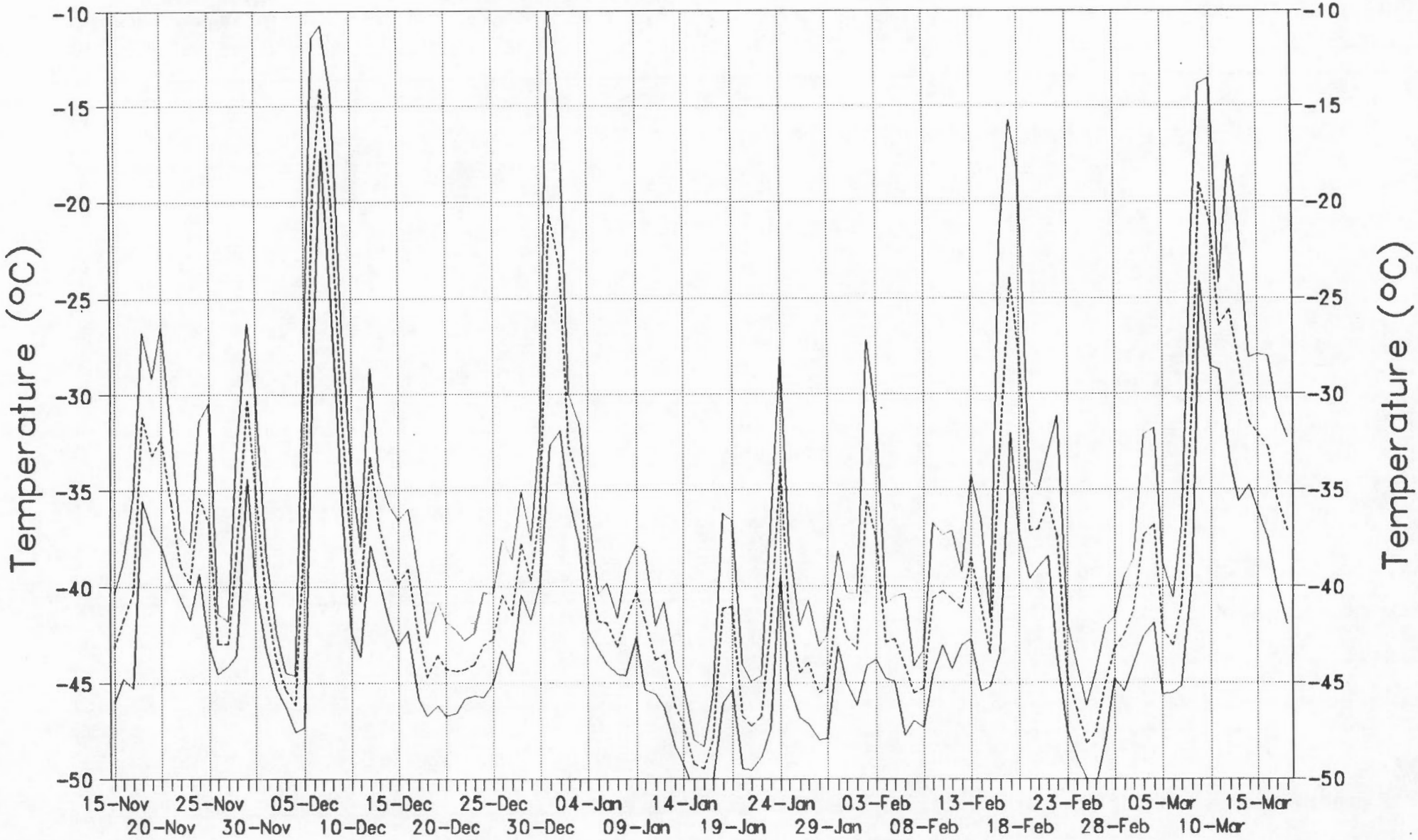

HWC(AWS): DAILY BATTERY POWER
1990
winter
1991
Battery Power (volts)
17
16
15
14
13
12
11
10
01-Oct
11-Oct
21-Oct
31-Oct
10-Nov
20-Nov
30-Nov
10-Dec
20-Dec
30-Dec
09-Jan
19-Jan
29-Jan
08-Feb
18-Feb
28-Feb
10-Mar
20-Mar
30-Mar
Battery Voltage
[file: HWC9090D.WQF]
[name: 6BAT]

FIGURE: 6

HWC(AWS): DAILY TEMPERATURES
Dark Season 1990–1991

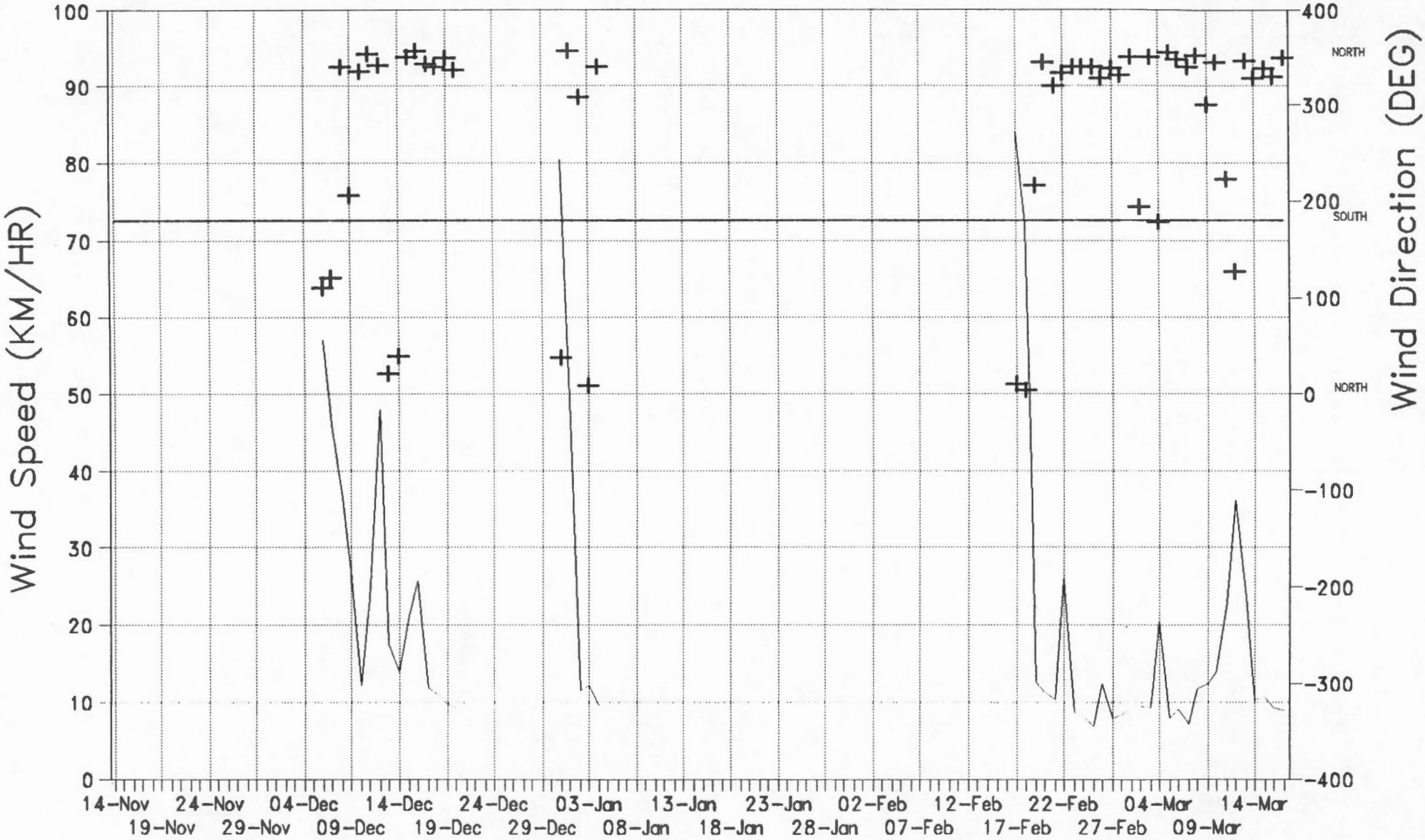


[name: 5TXNM]

Tmax air Gill — Tmin air Gill ------- Tmeanxn air Gill [file: HWC9090D.WQF]

FIGURE: 7

HWC(AWS): DAILY MAXIMUM WIND
Dark Season 1990–1991

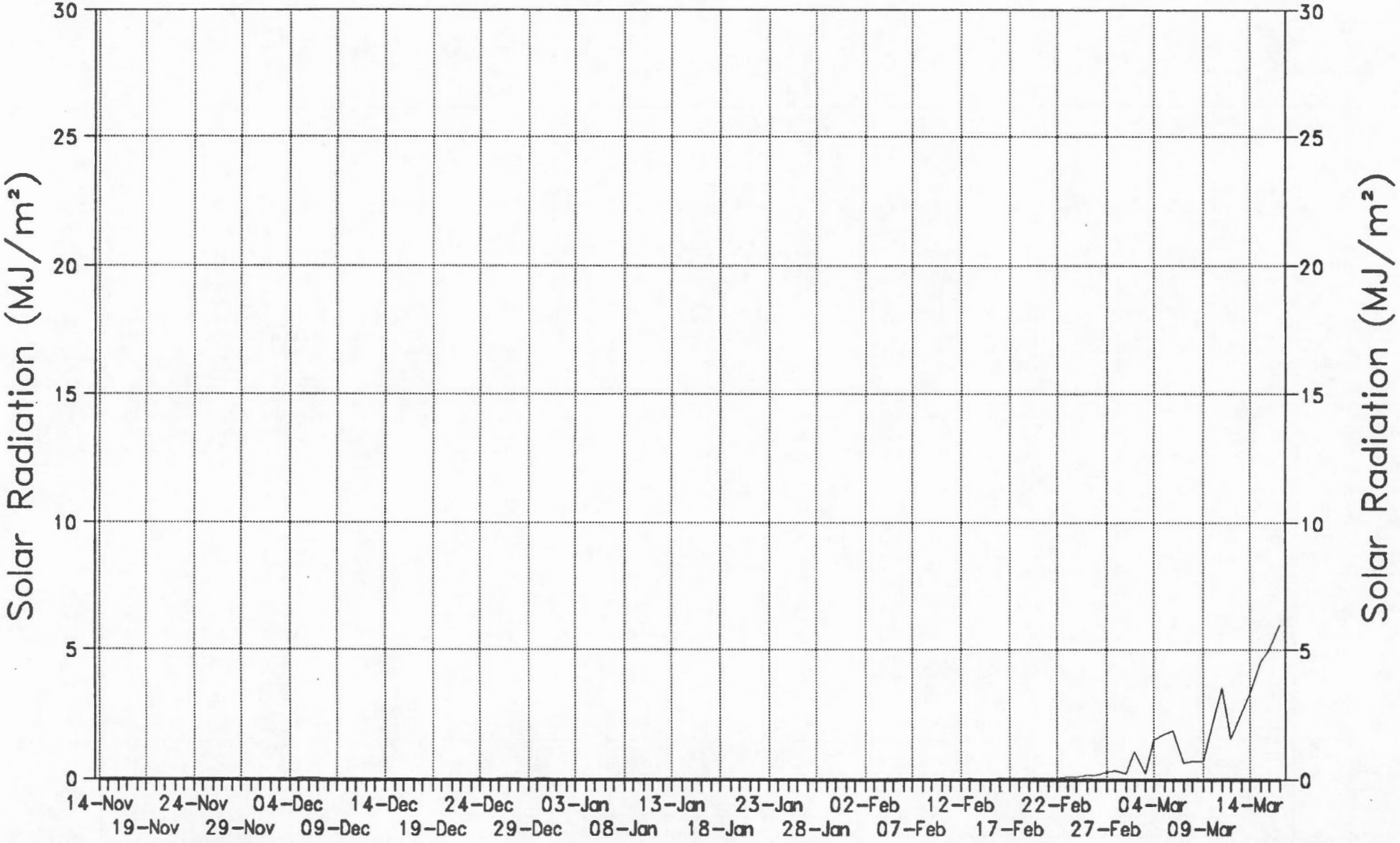


WSmax 2 minute + WD of WSmax [file: HWC9090D.WQF]

[name: 5WSXWD]

FIGURE: 8

HWC(AWS): DAILY TOTAL SOLAR RADIATION
Dark Season 1990–1991

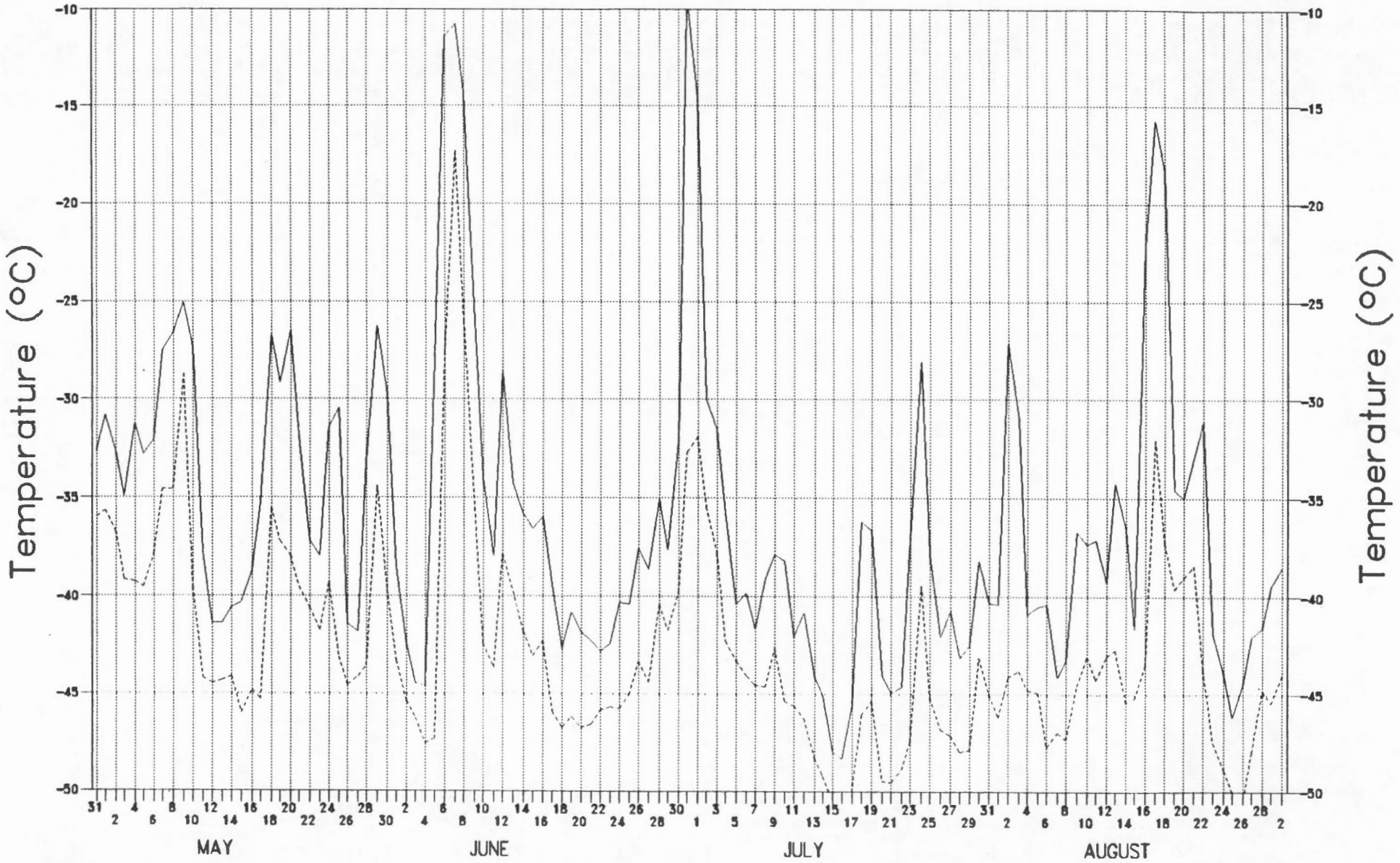


KD total Eppley [file:HWC9091D.WQF]

[name: 5RAD]

FIGURE: 9

HWC(AWS): DAILY EXTREME TEMPERATURES
November – February 1990–1991

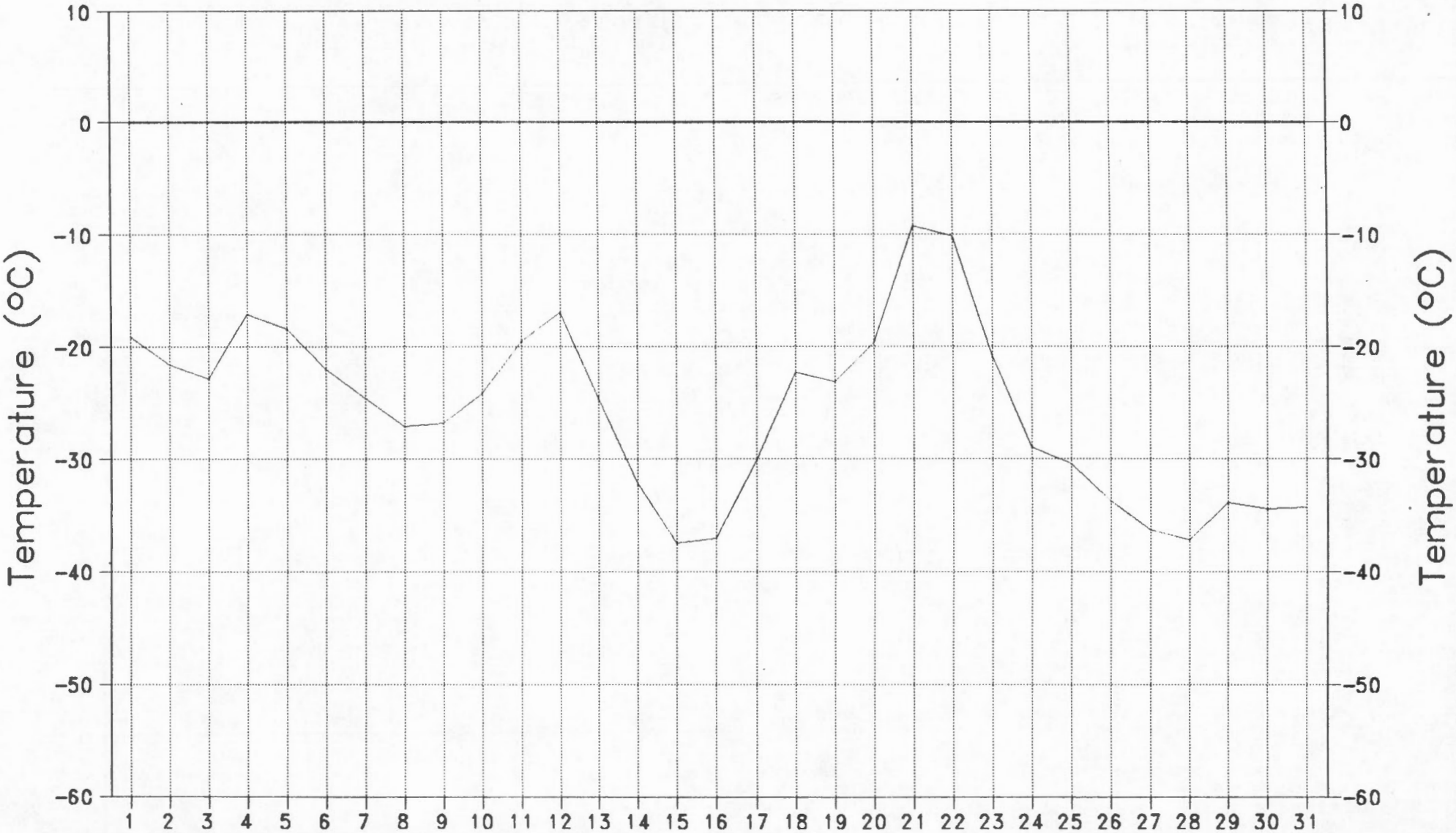


[name: 4TXN]

Tmax air Gill — Tmin air Gill [file:HWC9091D.WQF]

FIGURE: 10

HWC(AWS): DAILY TEMPERATURE
October 1990



[name: OCTTM]

Tmeanxn air Gill [file:HWC9091D.WQF]

FIGURE: 11

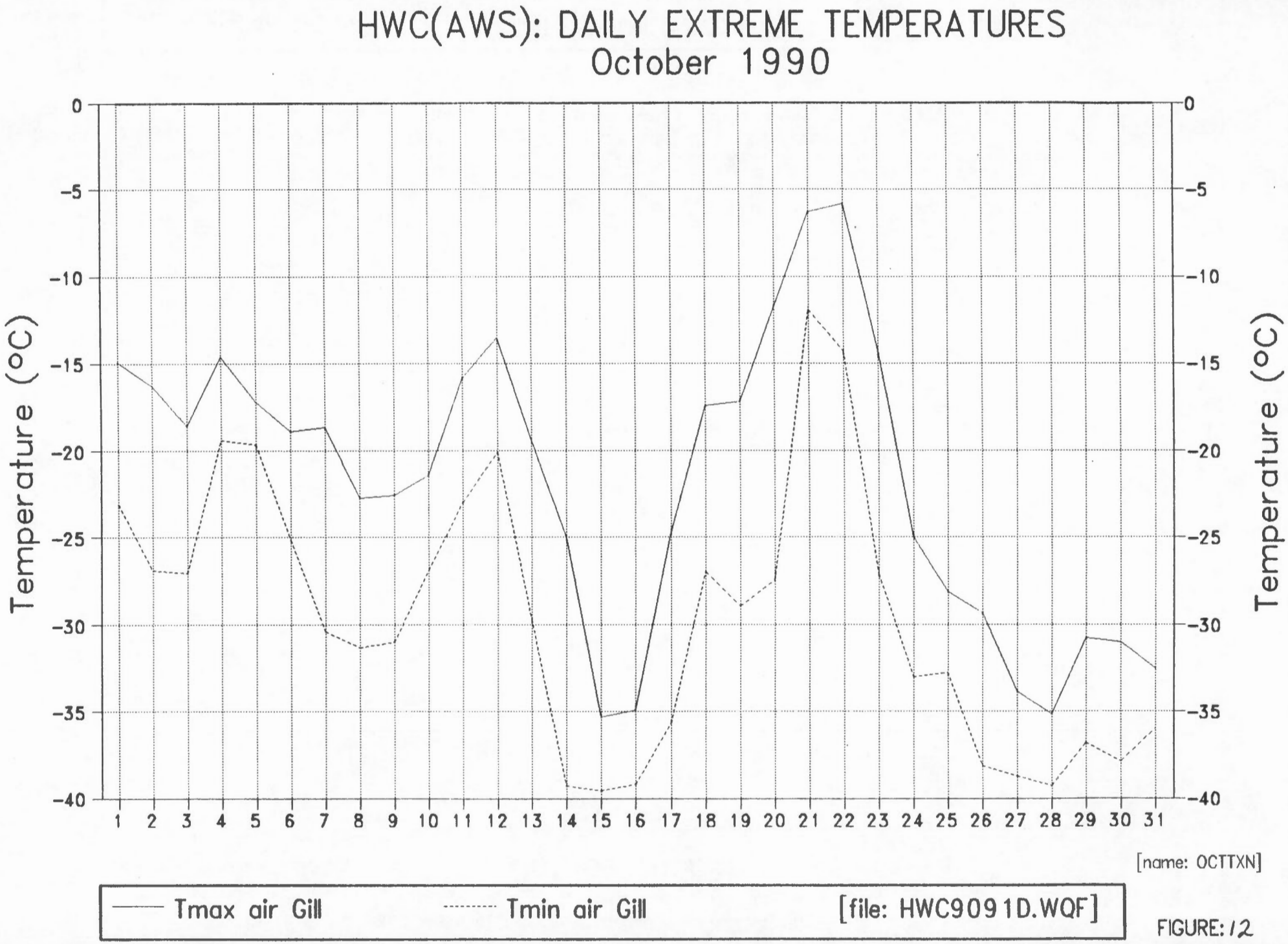

HWC(AWS): DAILY EXTREME TEMPERATURES
October 1990
Temperature (°C)
0
-5
-10
-15
-20
-25
-30
-35
-40
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
[name: OCTTXN]
Tmax air Gill
Tmin air Gill
[file: HWC9091D.WQF]

FIGURE: 12

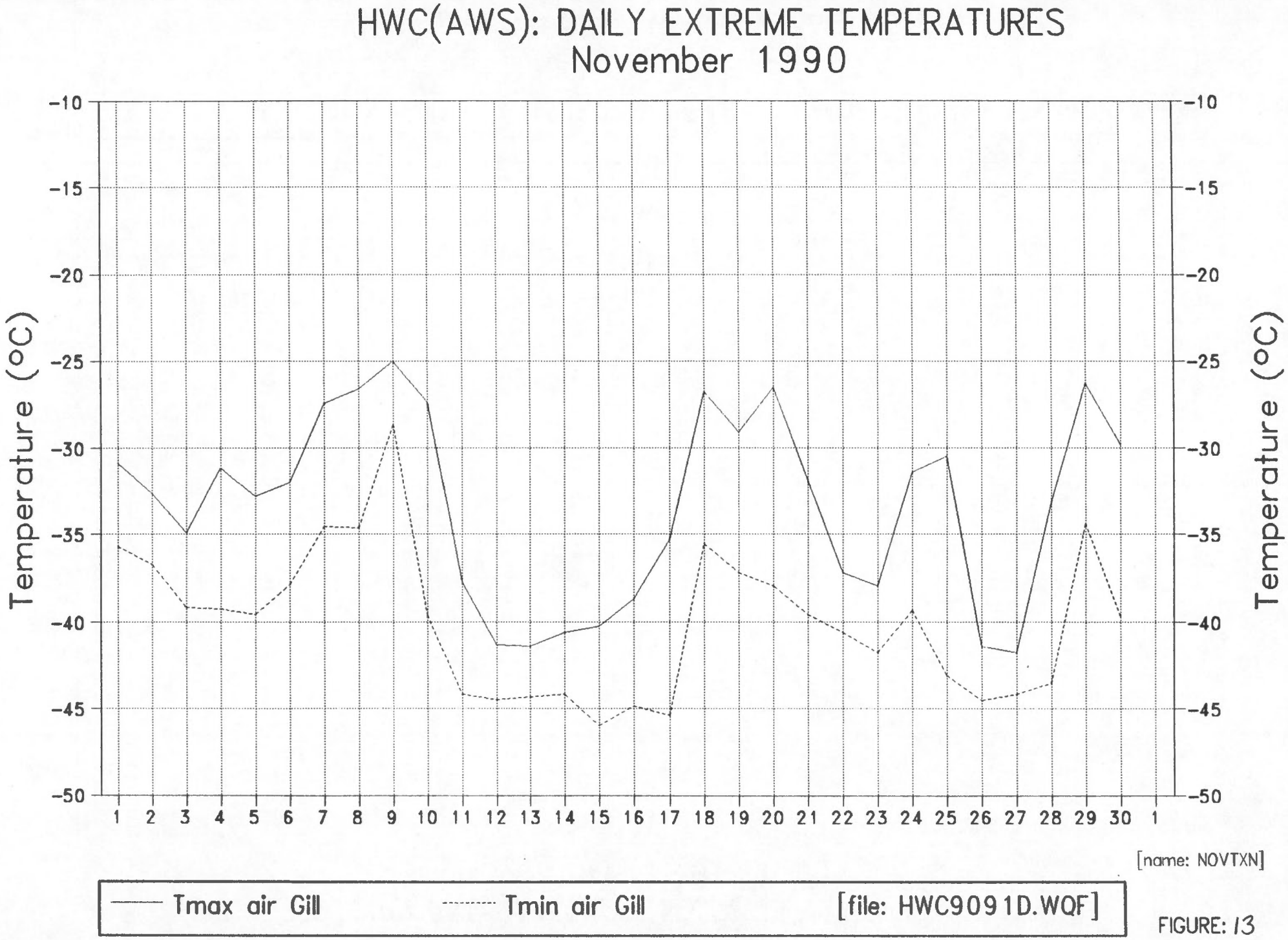
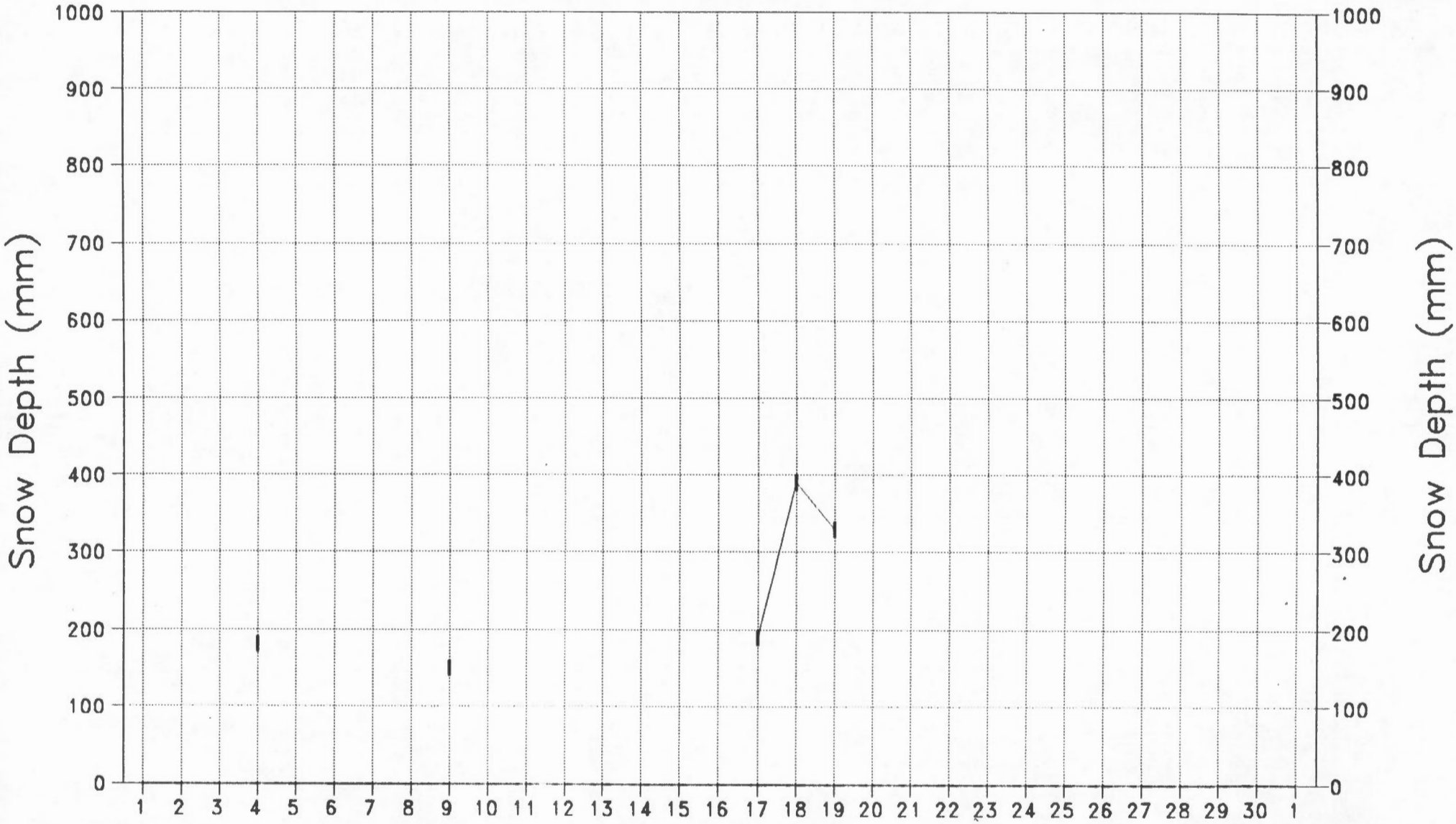

HWC(AWS): DAILY EXTREME TEMPERATURES
November 1990
Temperature (°C)
-10
-15
-20
-25
-30
-35
-40
-45
-50
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 1
[name: NOVTXN]
Tmax air Gill
Tmin air Gill
[file: HWC9091D.WQF]

FIGURE: 13

HWC(AWS): DAILY SNOW DEPTH
November 1990



[name: NOVSNDC]

SND cleaned CSMAL [file: HWC9091D.WQF]

FIGURE: 14

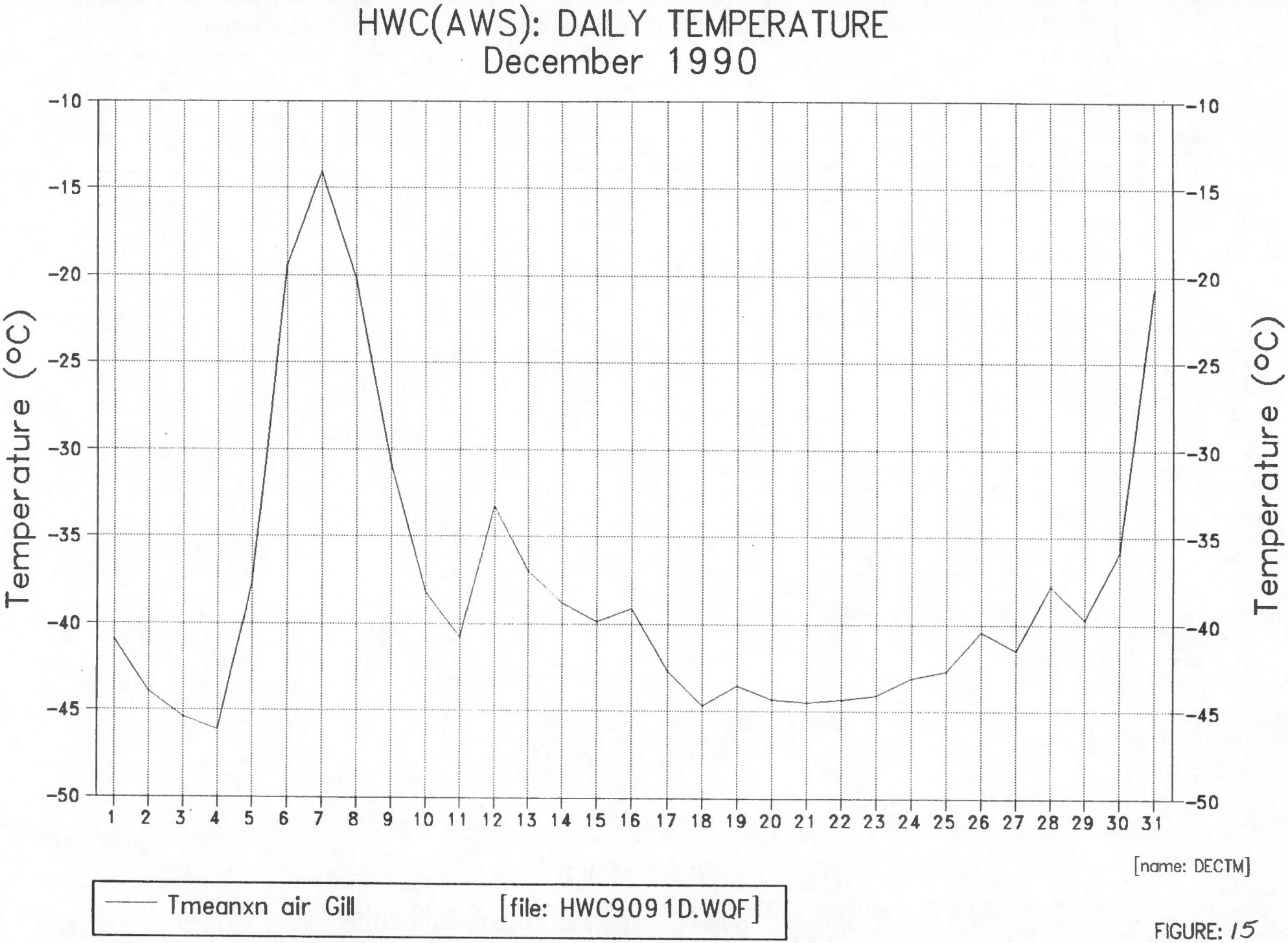
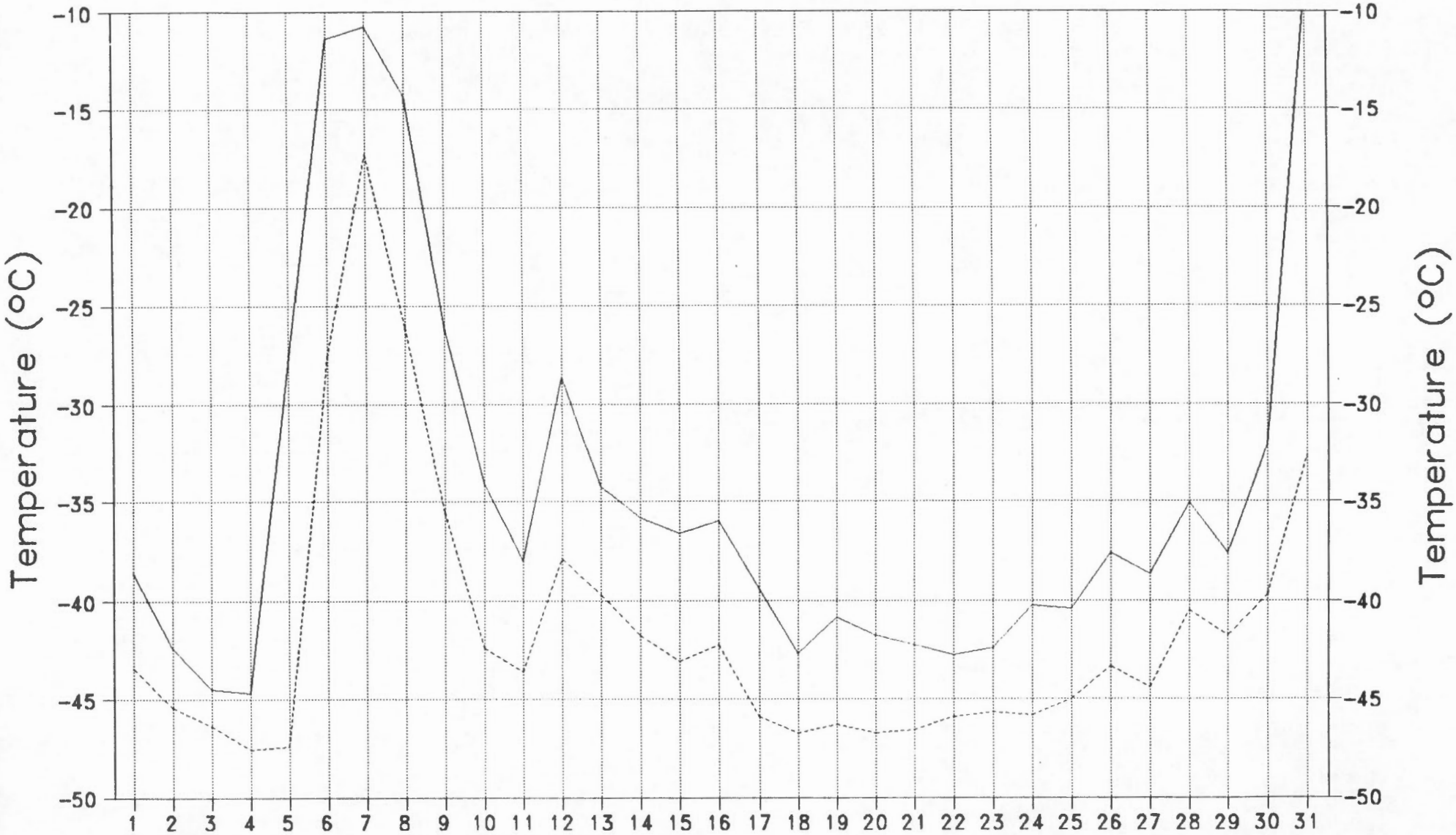

HWC(AWS): DAILY TEMPERATURE
December 1990
Temperature (°C)
-10
-15
-20
-25
-30
-35
-40
-45
-50
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
[name: DECTM]
Tmeanxn air Gill
[file: HWC9091D.WQF]

FIGURE: 15

HWC(AWS): DAILY EXTREME TEMPERATURES
December 1990

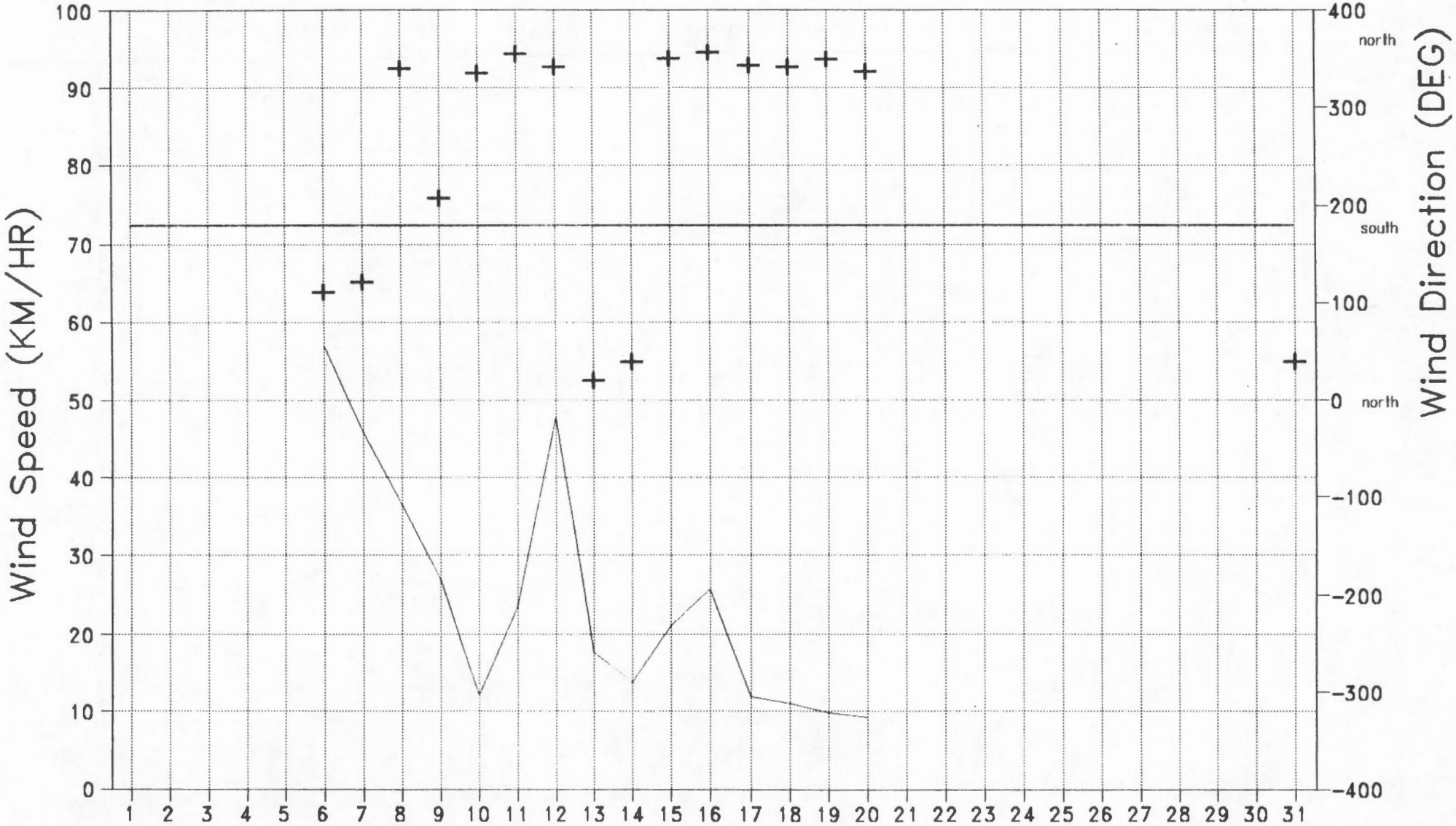


[name: DECTXN]

Tmax air Gill — Tmin air Gill [file: HWC9091D.WQF]

FIGURE: 16

HWC(AWS): DAILY MAXIMUM WIND
December 1990



[name: DECWSXWD]

WSmax 2 minute + WD of WSmax [file: HWC9091D.WQF]

FIGURE: 17

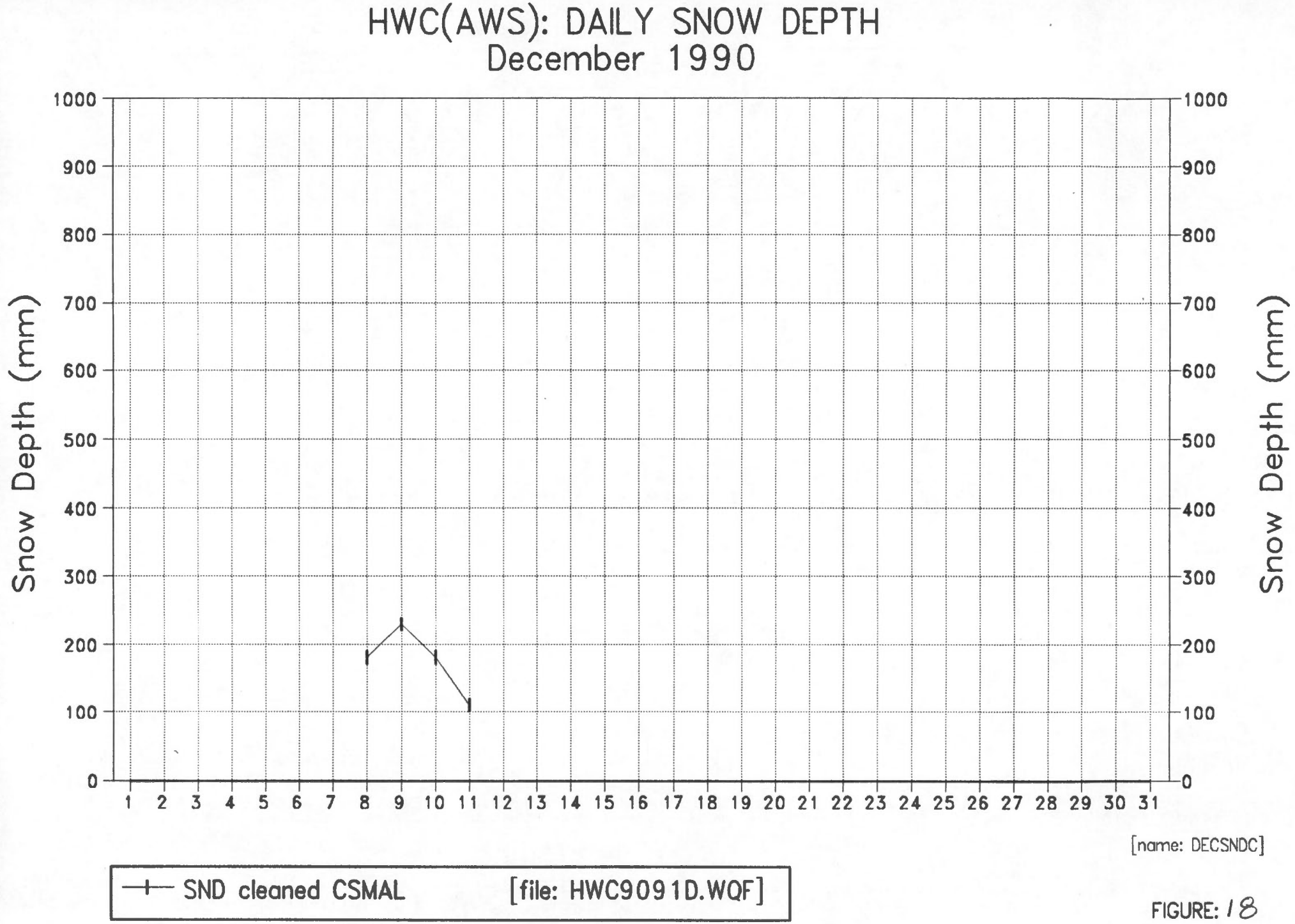

HWC(AWS): DAILY SNOW DEPTH
December 1990
Snow Depth (mm)
1000
900
800
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
[name: DECSNDC]
SND cleaned CSMAL
[file: HWC9091D.WQF]

FIGURE: 18

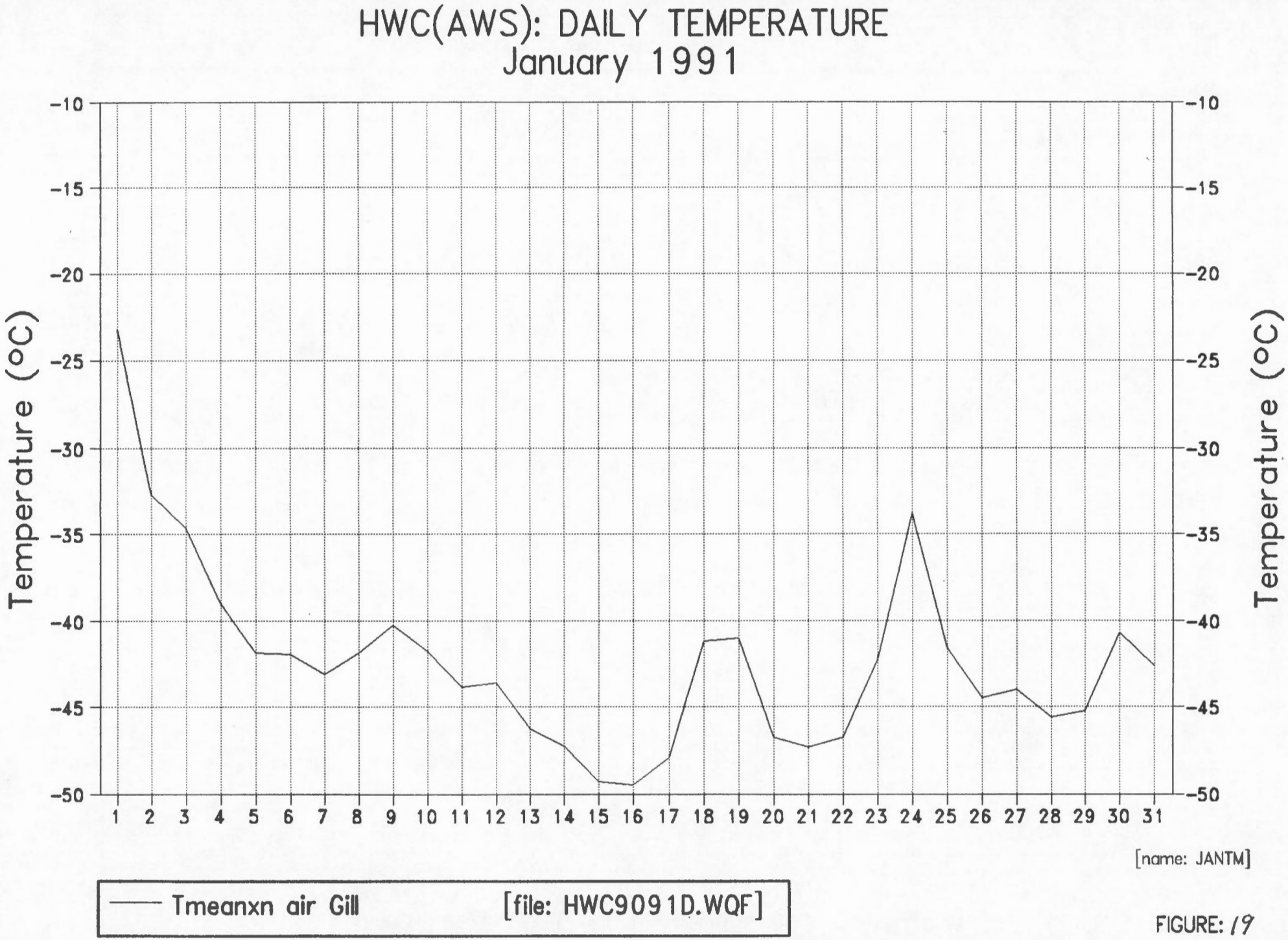

HWC(AWS): DAILY TEMPERATURE
January 1991
Temperature (°C)
-10
-15
-20
-25
-30
-35
-40
-45
-50
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
[name: JANTM]
Tmeanxn air Gill
[file: HWC9091D.WQF]

FIGURE: 19

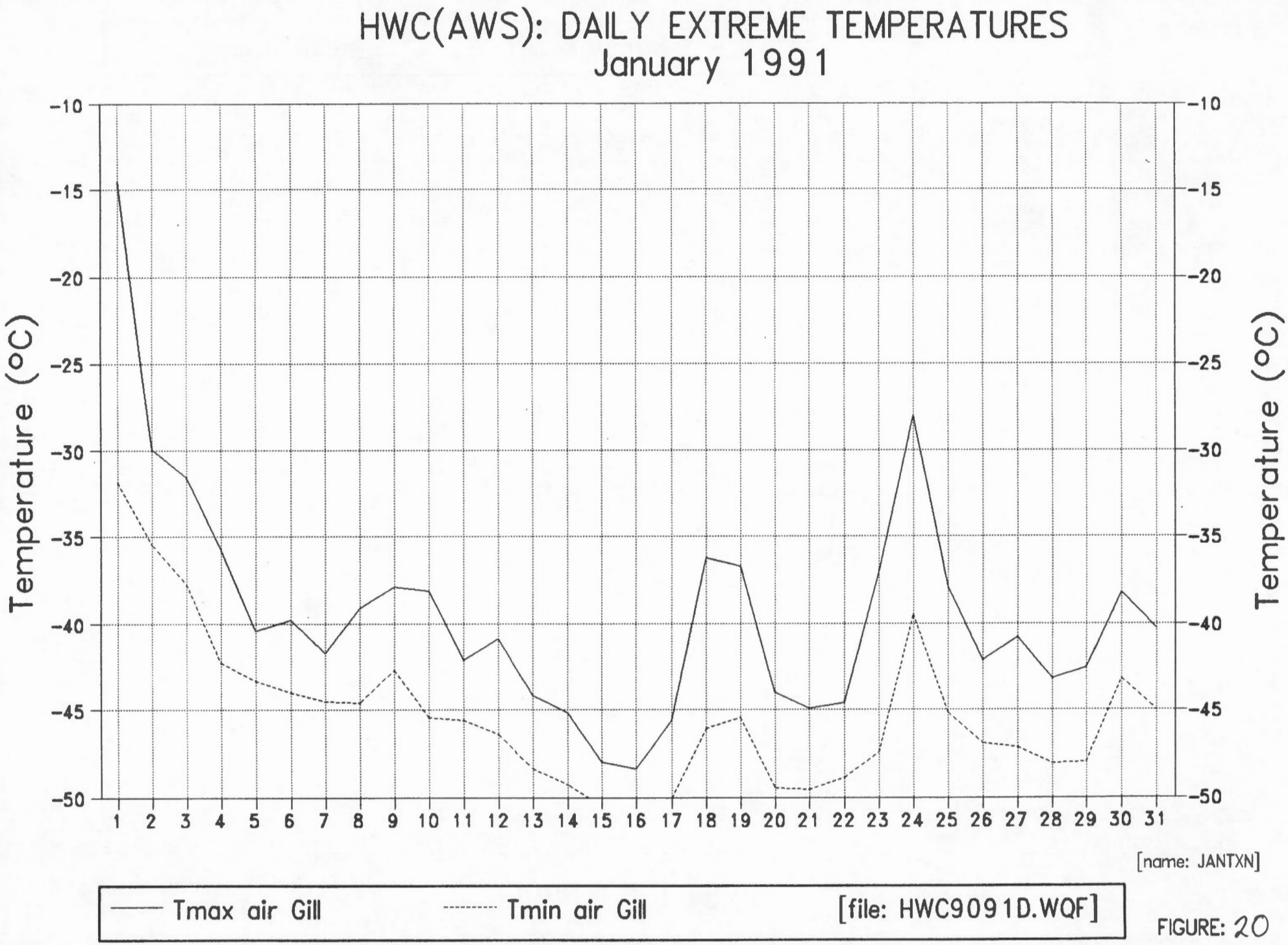
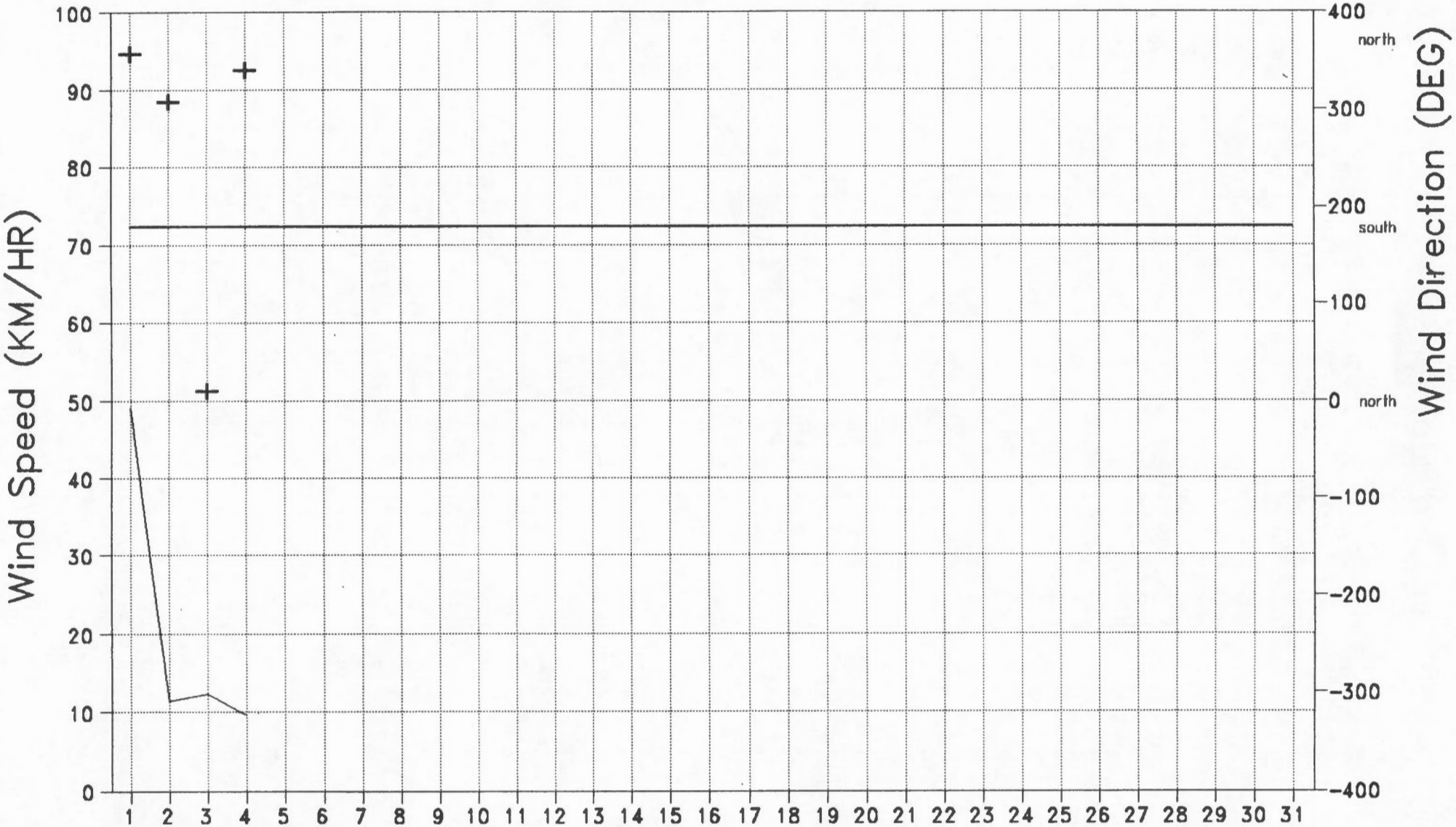

HWC(AWS): DAILY EXTREME TEMPERATURES
January 1991
Temperature (°C)
-10
-15
-20
-25
-30
-35
-40
-45
-50
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
[name: JANTXN]
Tmax air Gill
Tmin air Gill
[file: HWC9091D.WQF]

FIGURE: 20

HWC(AWS): DAILY MAXIMUM WIND
January 1991

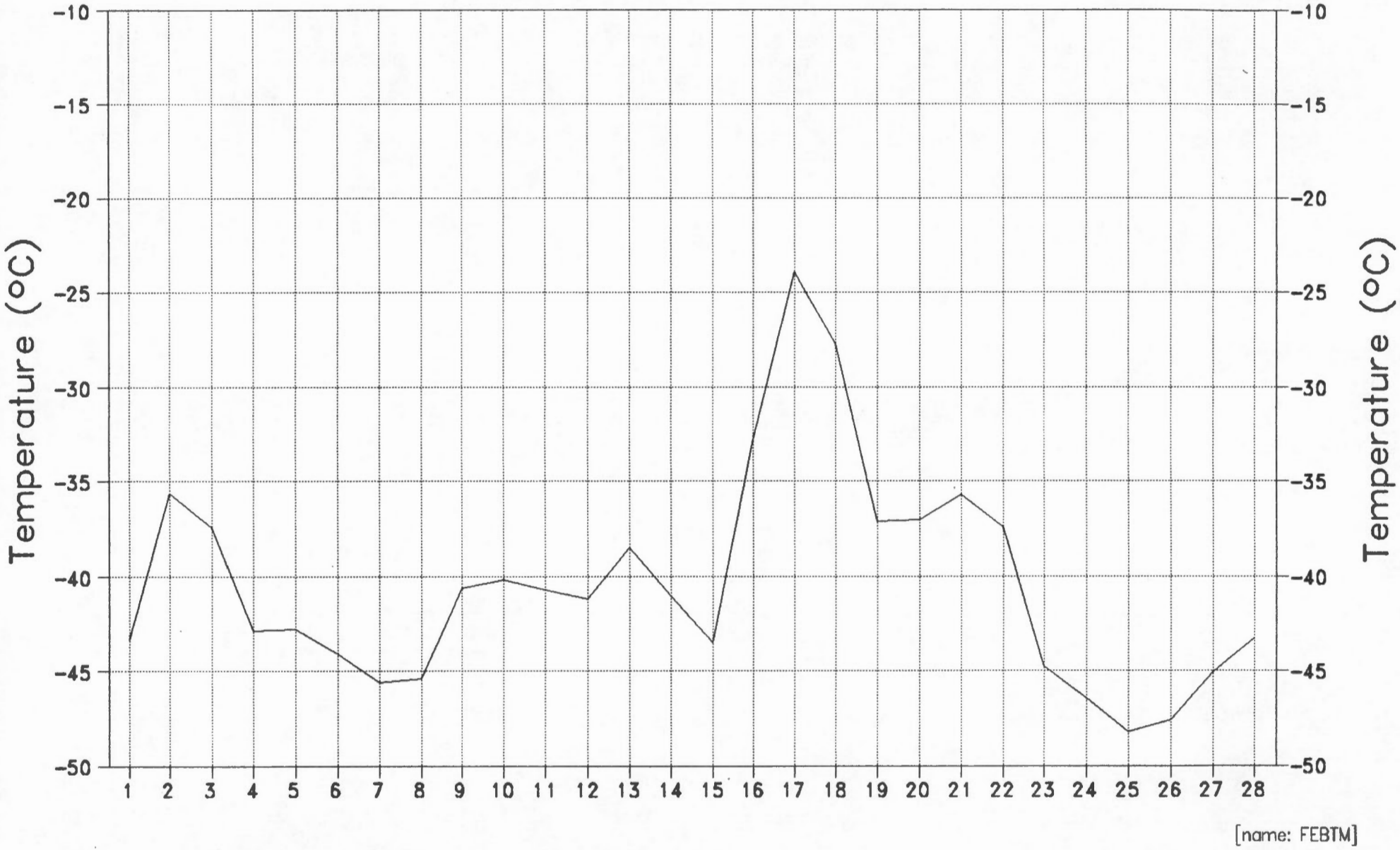


[name: JANWSXWD]

—— WSmax 2 minute + WD of WSmax [file: HWC9091D.WQF]

FIGURE: 21

HWC(AWS): DAILY TEMPERATURE
February 1991



Tmeanxn air Gill [file: HWC9091D.WQF]

FIGURE: 22

HWC(AWS): DAILY EXTREME TEMPERATURES
February 1991

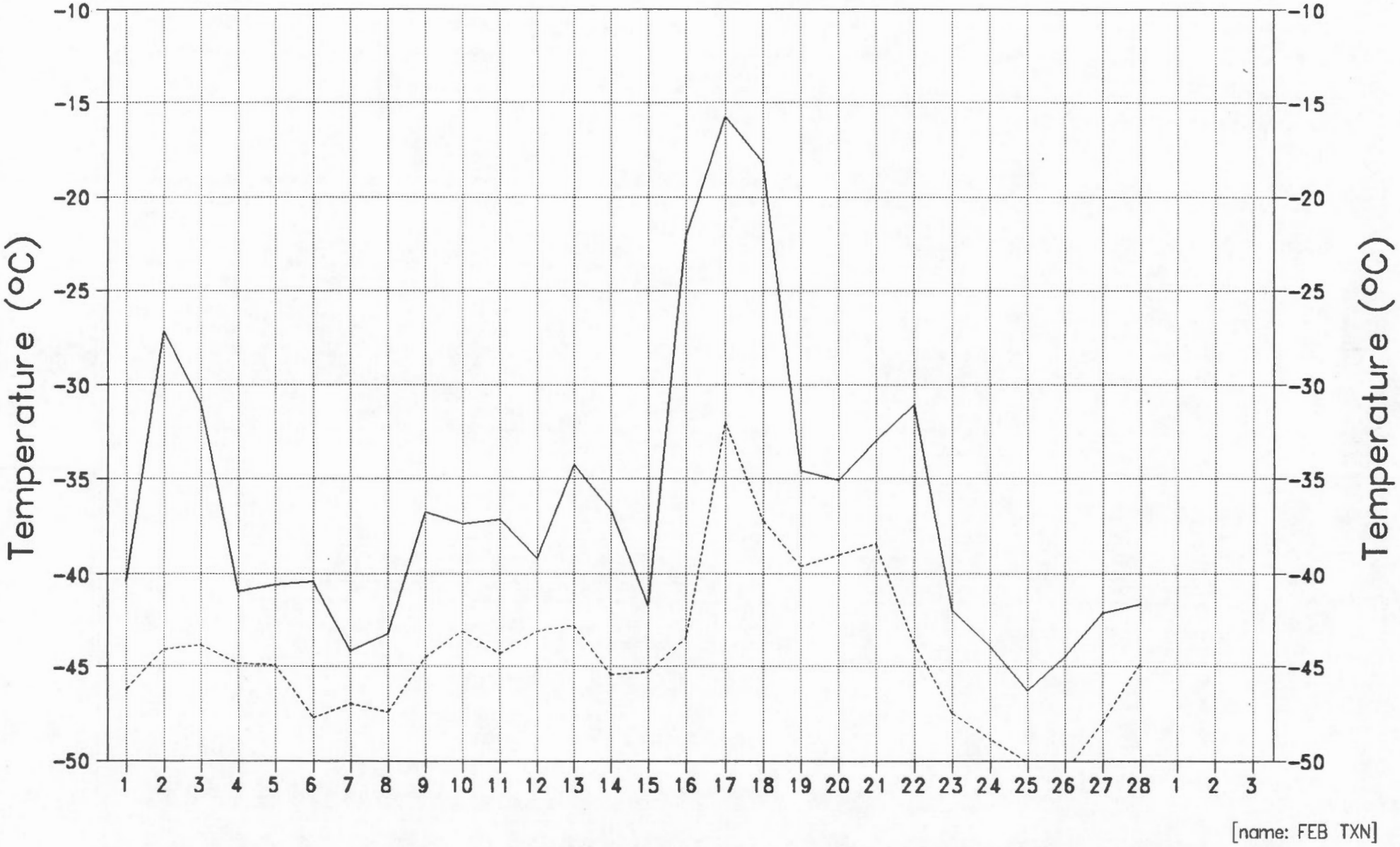
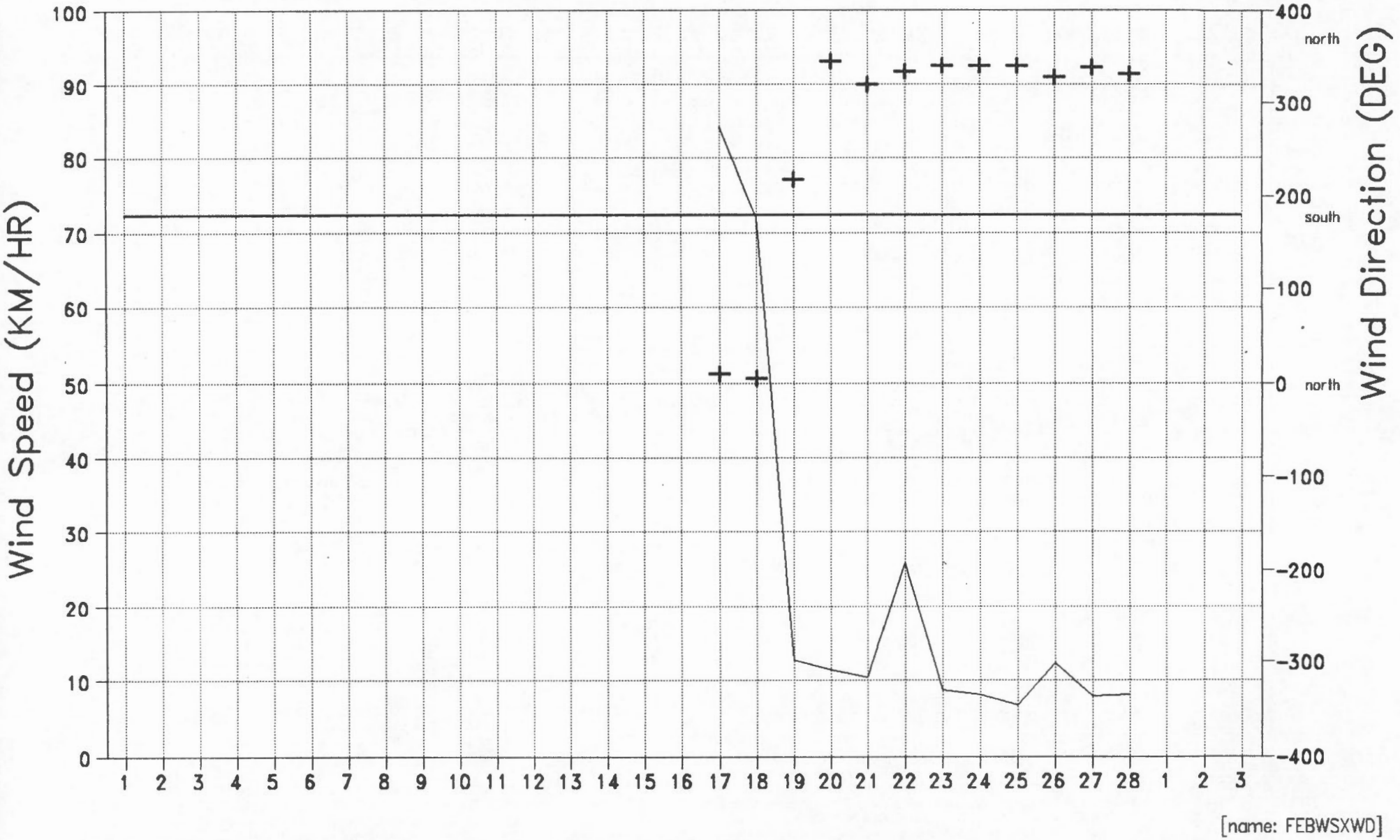


FIGURE: 23

HWC(AWS): DAILY MAXIMUM WIND
February 1991



WSmax 2 minute + WD of WSmax [file: HWC9091D.WQF]

FIGURE: 24

HWC(AWS): DAILY SNOW DEPTH
February 1991

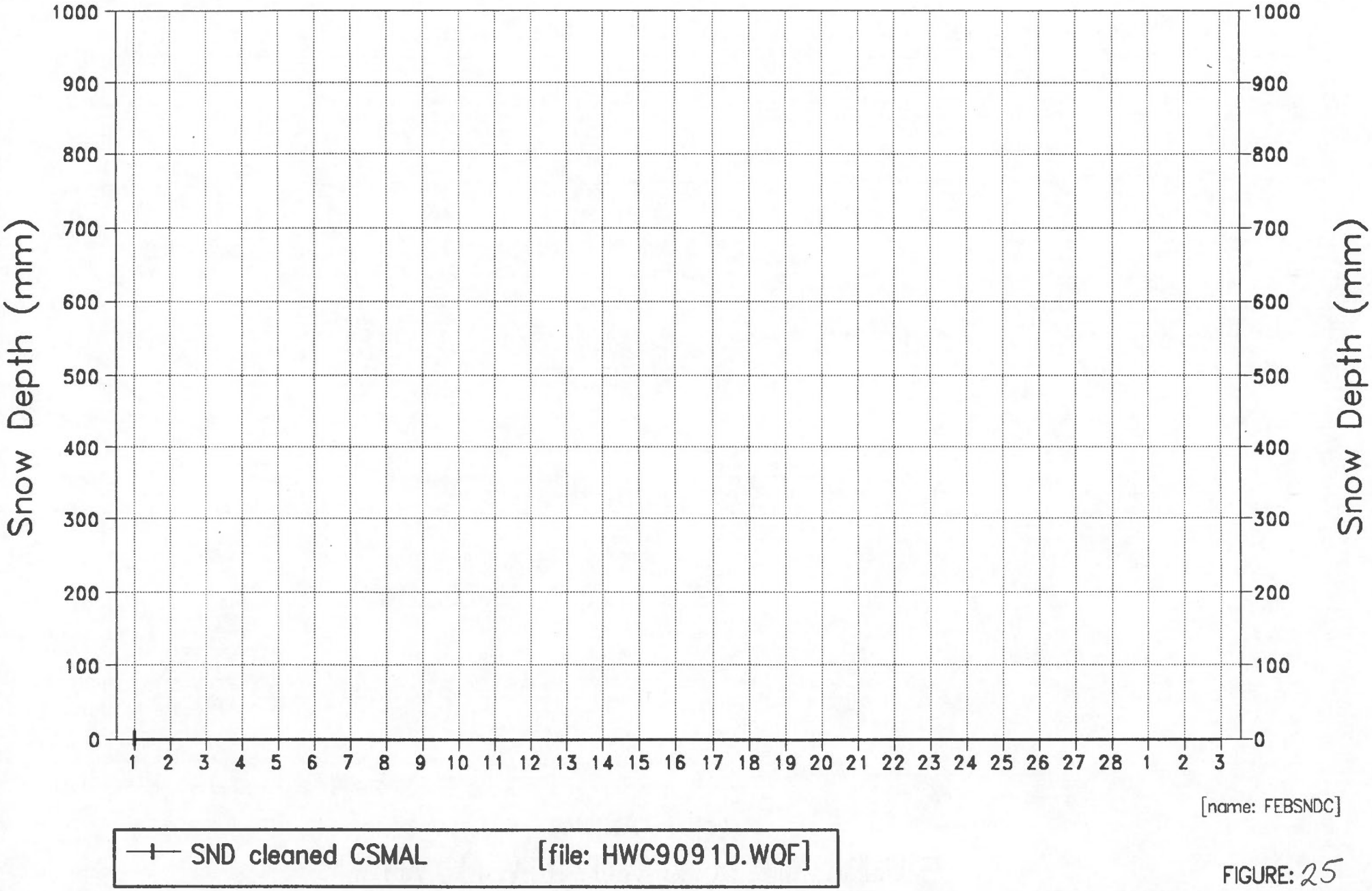


FIGURE: 25

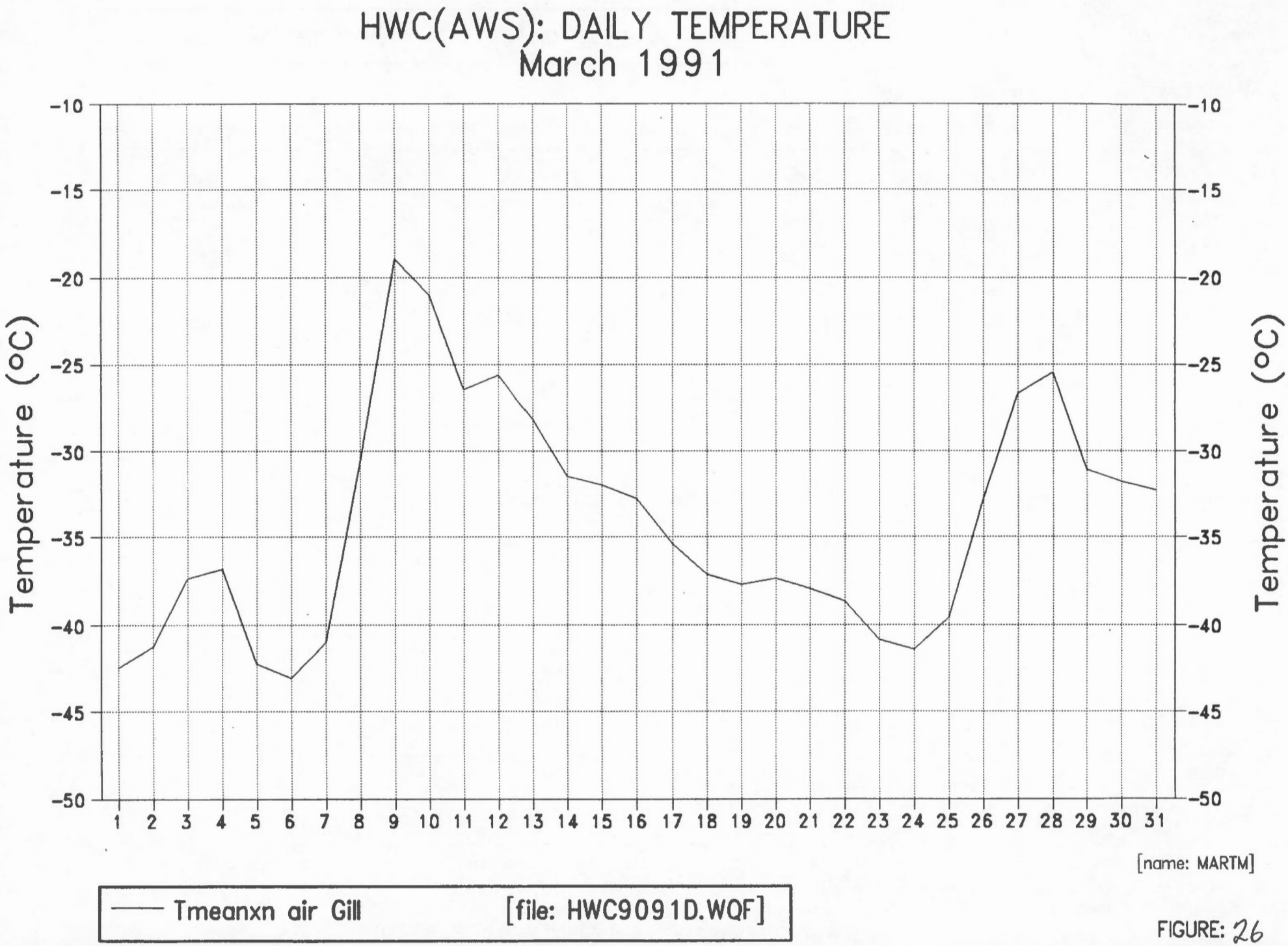

HWC(AWS): DAILY TEMPERATURE
March 1991
Temperature (°C)
-10
-15
-20
-25
-30
-35
-40
-45
-50
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
[name: MARTM]
Tmeanxn air Gill
[file: HWC9091D.WQF]

FIGURE: 26

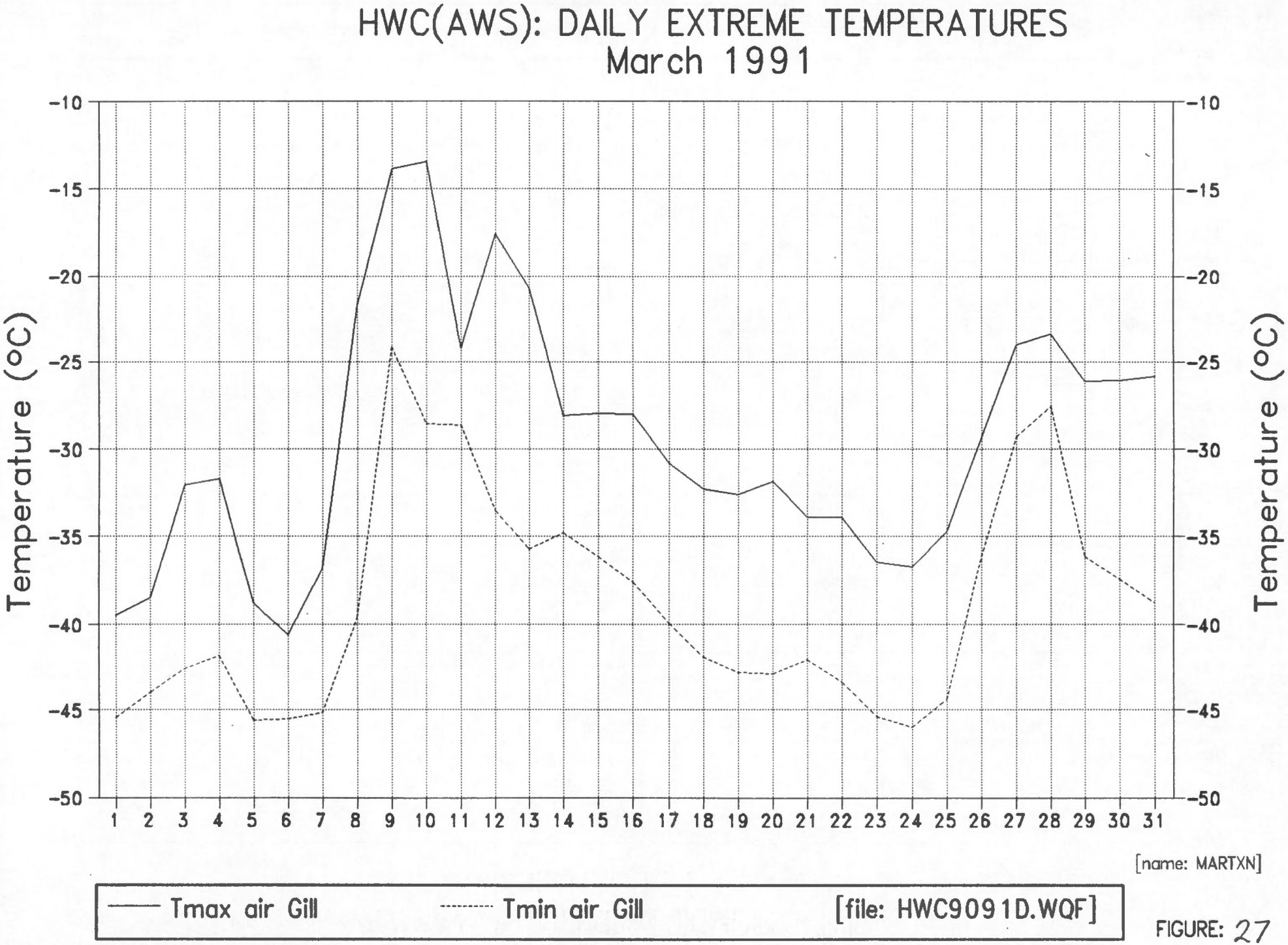

HWC(AWS): DAILY EXTREME TEMPERATURES
March 1991
Temperature (°C)
-10
-15
-20
-25
-30
-35
-40
-45
-50
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
[name: MARTXN]
Tmax air Gill
Tmin air Gill
[file: HWC9091D.WQF]

FIGURE: 27

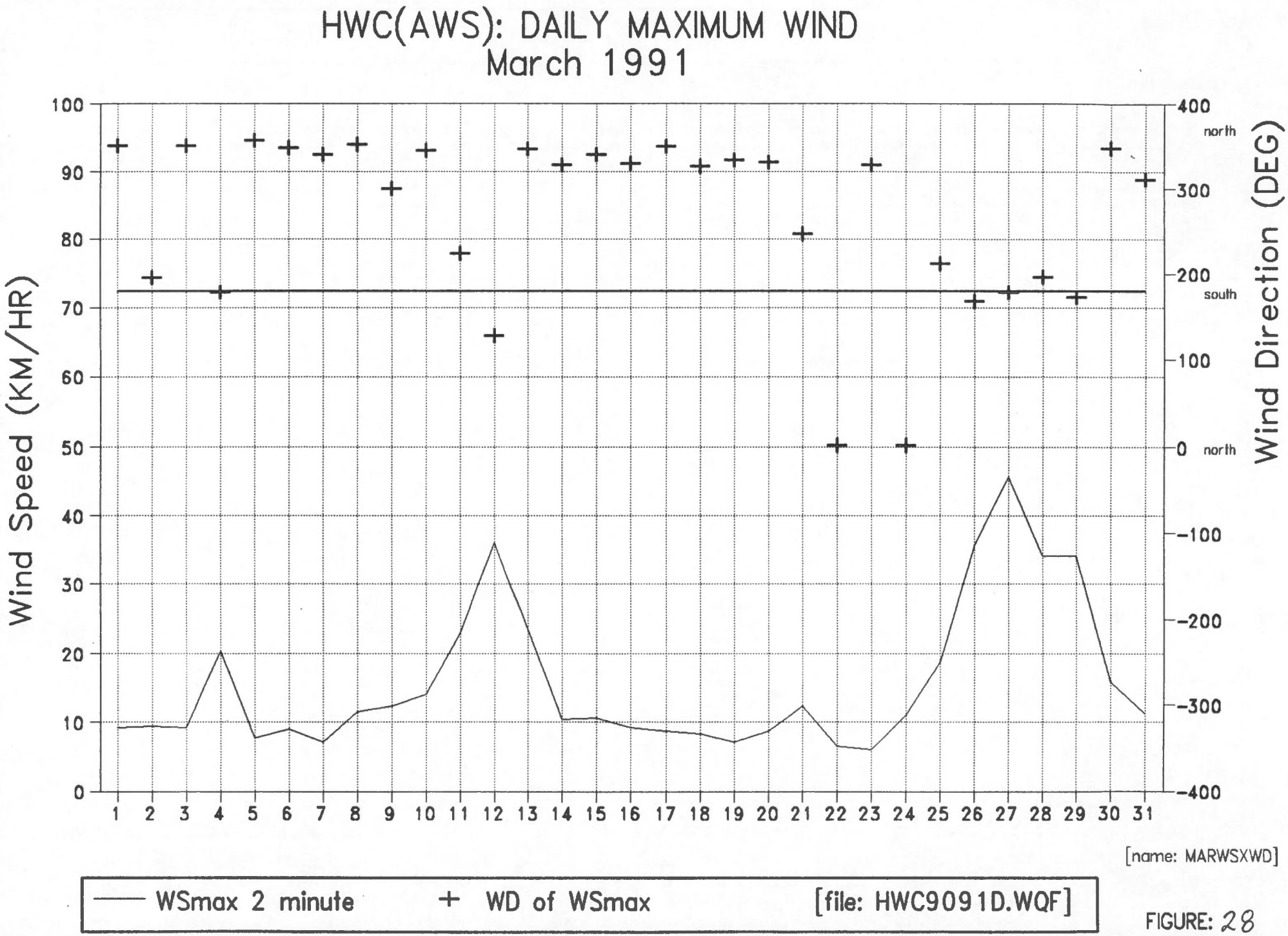
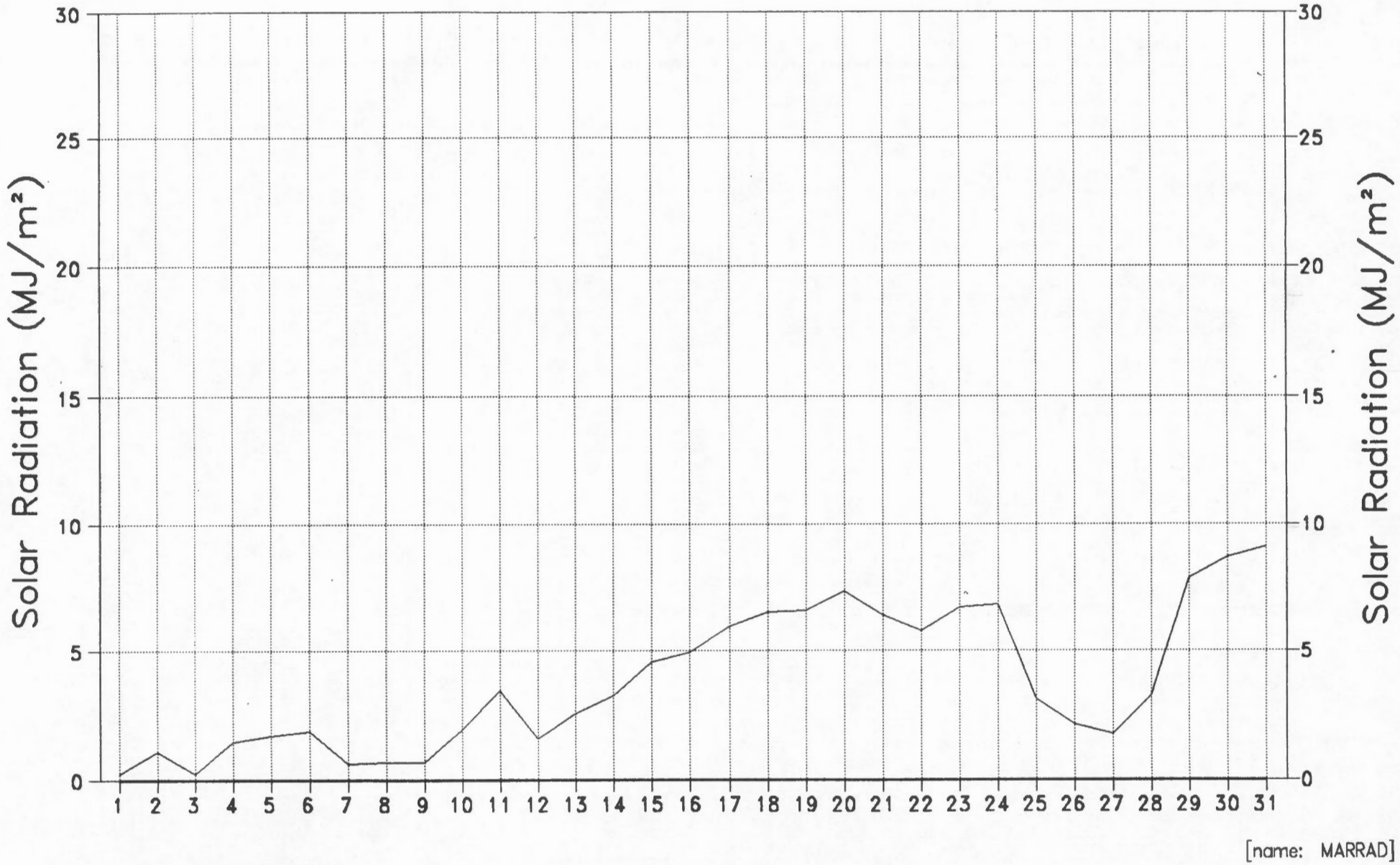

HWC(AWS): DAILY MAXIMUM WIND
March 1991
Wind Speed (KM/HR)
Wind Direction (DEG)
north
south
north
[name: MARWSXWD]
WSmax 2 minute
WD of WSmax
[file: HWC9091D.WQF]

FIGURE: 28

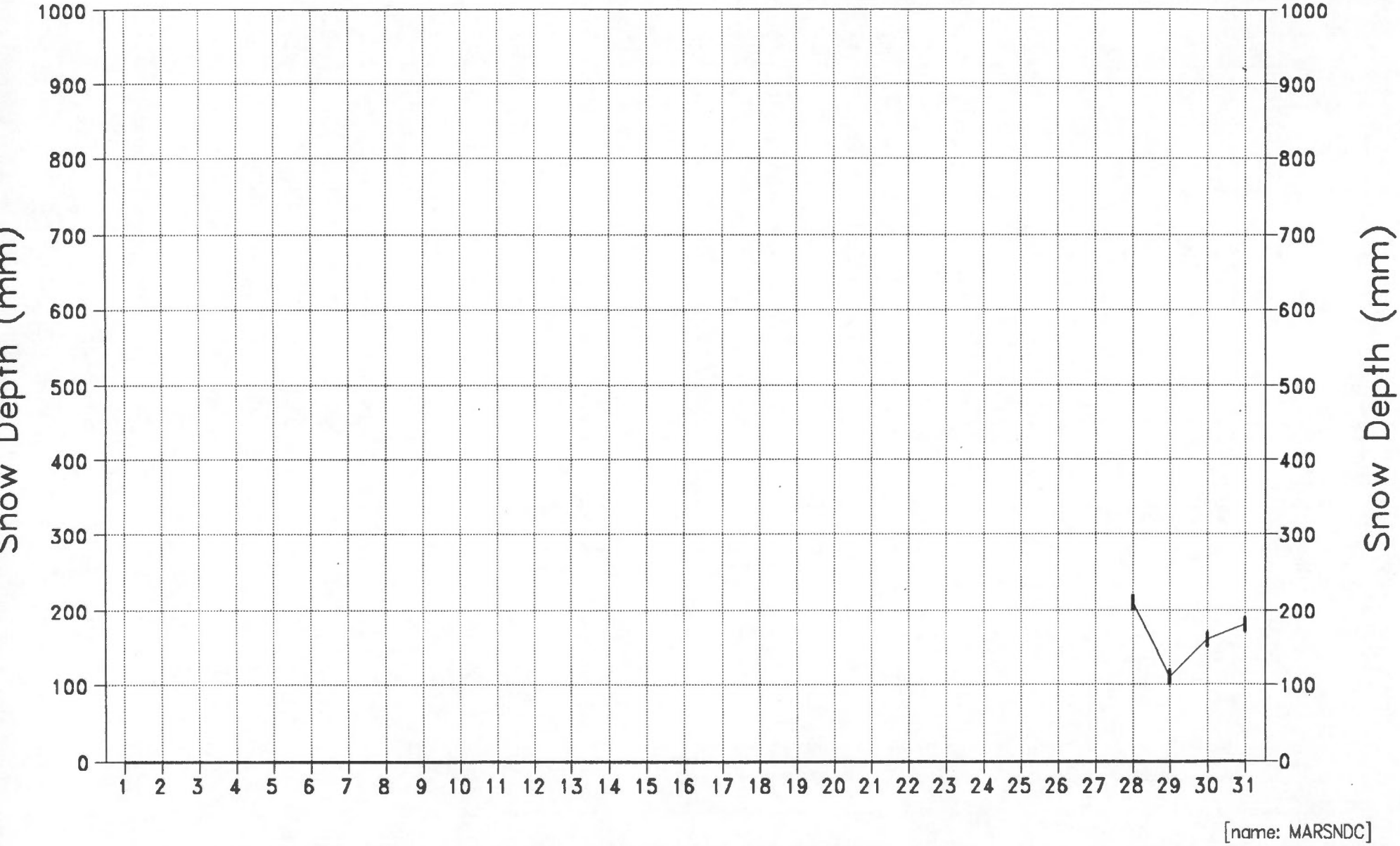
HWC(AWS): DAILY TOTAL SOLAR RADIATION
March 1991



KD total Eppley [file: HWC9091D.WQF]

FIGURE: 28b

HWC(AWS): DAILY SNOW DEPTH
March 1991



SND cleaned CSMAL [file: HWC9091D.WQF]

FIGURE: 30

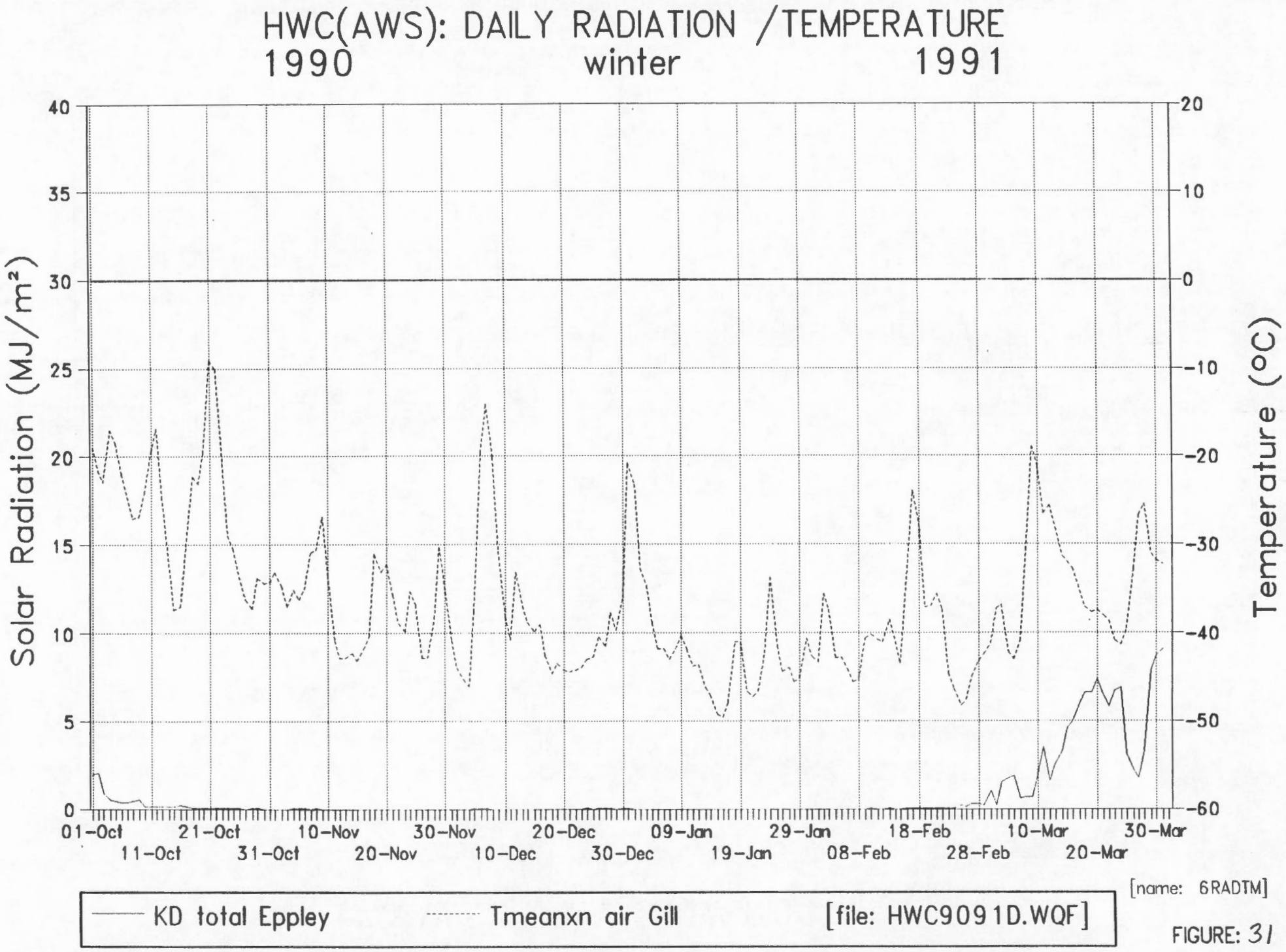

HWC(AWS): DAILY RADIATION /TEMPERATURE
1990 winter 1991
Solar Radiation (MJ/m²)
Temperature (°C)
40
35
30
25
20
15
10
5
0
20
10
0
-10
-20
-30
-40
-50
-60
01-Oct
11-Oct
21-Oct
31-Oct
10-Nov
20-Nov
30-Nov
10-Dec
20-Dec
30-Dec
09-Jan
19-Jan
29-Jan
08-Feb
18-Feb
28-Feb
10-Mar
20-Mar
30-Mar
KD total Eppley
Tmeanxn air Gill
[file: HWC9091D.WQF]
[name: 6RADTM]

FIGURE: 31

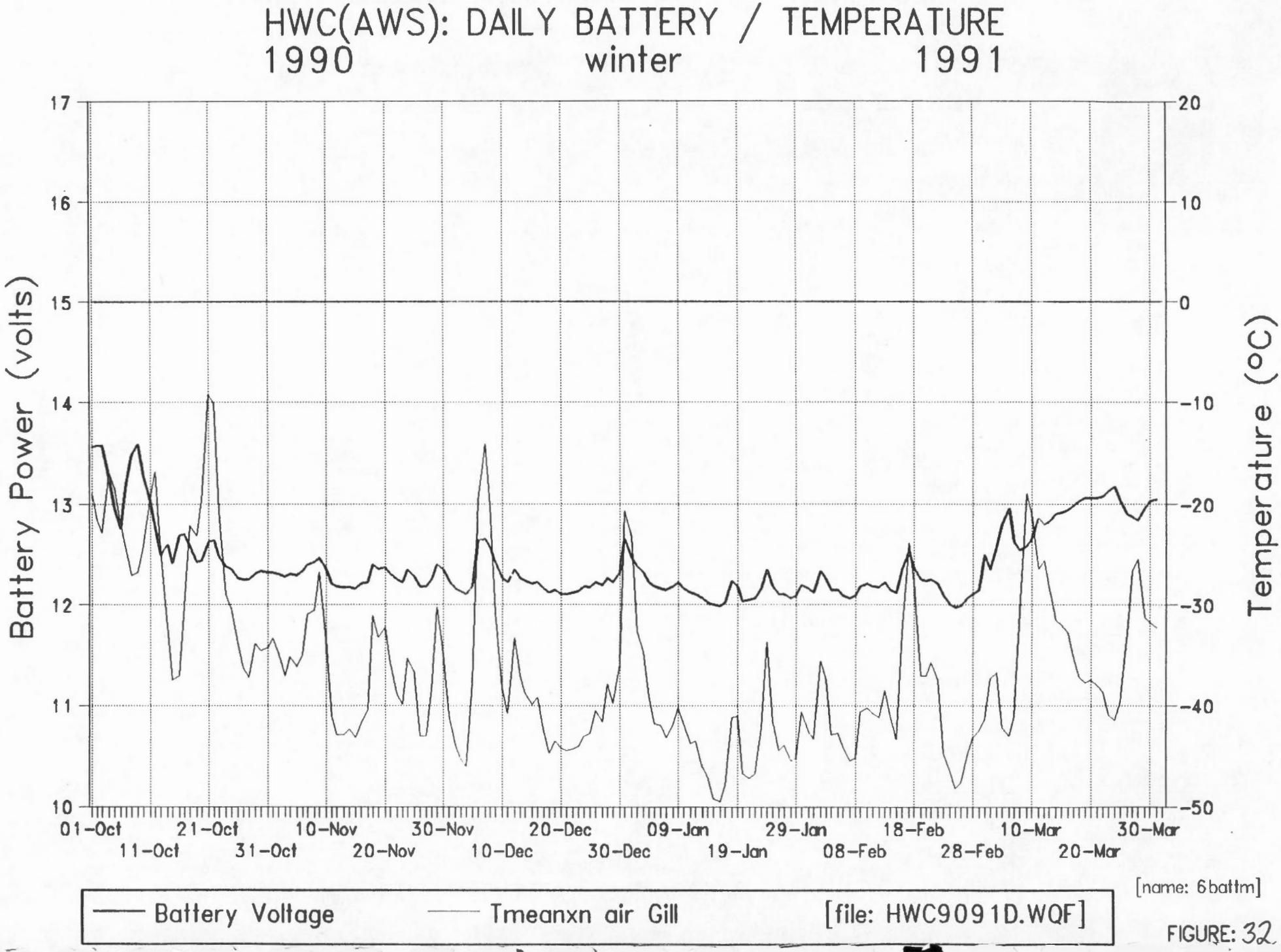
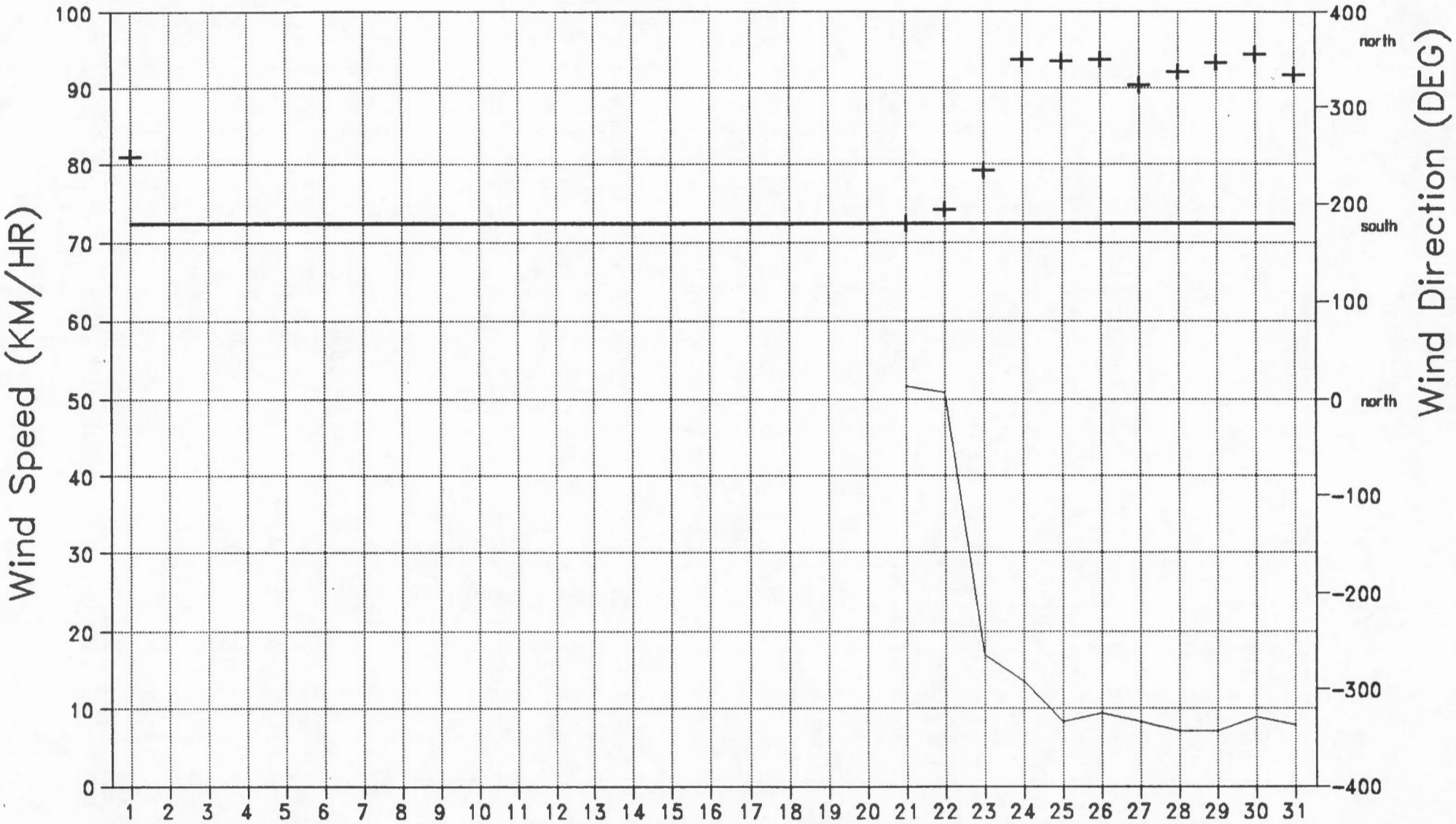

HWC(AWS): DAILY BATTERY / TEMPERATURE
1990 winter 1991
Battery Power (volts)
Temperature (oC)
17
16
15
14
13
12
11
10
20
10
0
-10
-20
-30
-40
-50
01-Oct
11-Oct
21-Oct
31-Oct
10-Nov
20-Nov
30-Nov
10-Dec
20-Dec
30-Dec
09-Jan
19-Jan
29-Jan
08-Feb
18-Feb
28-Feb
10-Mar
20-Mar
30-Mar
Battery Voltage
Tmeanxn air Gill
[file: HWC9091D.WQF]
[name: 6battm]

FIGURE: 32

HWC(AWS): DAILY MAXIMUM WIND
October 1990



[name: OCTWSXWD]

WSmax 2 minute + WD of WSmax [file:HWC9091D.WQF]

FIGURE: 33

TABLE: 8

HWC(AWS): Hot Weather Creek (Automatic Weather Station) Site

April 1991 - September 1991

Daily Values

name:	Figure no.		Season/ Month	Year	Figure Caption
6tm	HWC9091D.	1	Summer	1991:	Daily mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
6txn	HWC9091D.	2	Summer	1991:	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
6wsxwd	HWC9091D.	3	Summer	1991:	Daily maximum wind speed (Km/HR) and direction of that maximum speed (deg)
6rad	HWC9091D.	4	Summer	1991:	Daily total incomming solar radiation (KJ/m2) from Epply pryanometer
6sndc	HWC9091D.	5	Summer	1991:	Daily cleaned snow depth (mm): all spurious data removed
6bat	HWC9091D.	6	Summer	1991:	Daily battery Power (volts)
5txnm	HWC9091D.	7	Melt Season	1991:	Daily Maximum, minimum and mean temperature (°C) 207F in Gill screen
5wsxwd	HWC9091D.	8	Melt Season	1991:	Daily maximum wind speed (Km/HR) and direction of that maximum speed (deg)
5rad	HWC9091D.	9	Melt Season	1991:	Daily total incomming solar radiation (KJ/m^2) from Epply pryanometer
4txn	HWC9091D.	10	May-Aug	1991:	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
aprtm	HWC9091D.	11	April	1991:	Daily mean air temperature (øC) [(Tmax + Tmin)/2] from 207F in Gill screen
aprtxn	HWC9091D.	12	April	1991:	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
aprwsxwd	HWC9091D.	13	April	1991:	Daily maximum wind speed (Km/HR) and direction of that maximum speed (deg)
aprrad	HWC9091D.	14	April	1991:	Daily total incomming solar radiation (KJ/m^2) from Epply pryanometer
aprsndc	HWC9091D.	15	April	1991:	Daily cleaned snow depth (mm): all spurious data removed
maytm	HWC9091D.	16	May	1991:	Daily mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
maytxn	HWC9091D.	17	May	1991:	Daily maximum and minimum air temperature (°C) from 207F in Gill screen

TABLE: 8

HWC(AWS): Hot Weather Creek (Automatic Weather Station) Site

April 1991 - September 1991

Daily Values

name:	Figure no.		Season/ Month	Year	Figure Caption
maywsxwd	HWC9091D.	18	May	1991:	Daily maximum wind speed (Km/HR) and direction of that maximum speed (deg)
mayrad	HWC9091D.	19	May	1991:	Daily total incomming solar radiation (KJ/m^2) from Epply pryanometer
matsndc	HWC9091D.	20	May	1991:	Daily cleaned snow depth (mm): all spurious data removed
juntm	HWC9091D.	21	June	1991:	Daily mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
juntxn	HWC9091D.	22	June	1991:	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
junwsxwd	HWC9091D.	23	June	1991:	Daily maximum wind speed (Km/HR) and direction of that maximum speed (deg)
junrad	HWC9091D.	24	June	1991:	Daily total incomming solar radiation (KJ/m^2) from Epply pryanometer
junsndc	HWC9091D.	25	June	1991:	Daily cleaned snow depth (mm): all spurious data removed
jultm	HWC9091D.	26	July	1991:	Daily mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
jultxn	HWC9091D.	27	July	1991:	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
julwsxwd	HWC9091D.	28	July	1991:	Daily maximum wind speed (Km/HR) and direction of that maximum speed (deg)
julrad	HWC9091D.	29	July	1991:	Daily total incomming solar radiation (KJ/m^2) from Epply pryanometer
julsndc	HWC9091D.	30	July	1991:	Daily cleaned snow depth (mm): all spurious data removed
augtm	HWC9091D.	31	August	1991:	Daily mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
augtxn	HWC9091D.	32	August	1991:	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
augwsxwd	HWC9091D.	33	August	1991:	Daily maximum wind speed (Km/HR) and direction of that maximum speed (deg)
augrad	HWC9091D.	34	August	1991:	Daily total incomming solar radiation (KJ/m^2) from Epply pryanometer

TABLE: 8					
HWC(AWS): Hot Weather Creek (Automatic Weather Station) Site					
April 1991 - September 1991					
Daily Values					
name:	Figure no.		Season/ Month	Year	Figure Caption
augsndc	HWC9091D.	35	August	1991:	Daily cleaned snow depth (mm): all spurious data removed
septm	HWC9091D.	36	September	1991:	Daily mean air temperature (°C) [(Tmax + Tmin)/2] from 207F in Gill screen
septxn	HWC9091D.	37	September	1991:	Daily maximum and minimum air temperature (°C) from 207F in Gill screen
sepwsxwd	HWC9091D.	38	September	1991:	Daily maximum wind speed (Km/HR) and direction of that maximum speed (deg)
seprad	HWC9091D.	39	September	1991:	Daily total incomming solar radiation (KJ/m^2) from Epply pryanometer
sepsndc	HWC9091D.	40	September	1991:	Daily cleaned snow depth (mm): all spurious data removed
6radtm	HWC9091D.	41	Summer	1991:	Daily total incomming solar radiation (MJ/m^2) and mean air temperature (øC) in Gill screen.
6battm	HWC9091D.	42	Summer	1991:	Daily Battery Power (volts) and mean air temperature (°C) from 207F in Gill screen
4radtm	HWC9091D.	43	May-Aug	1991:	Daily total incomming solar radiation (MJ/m^2) and mean air temperature (°C) in Gill screen.

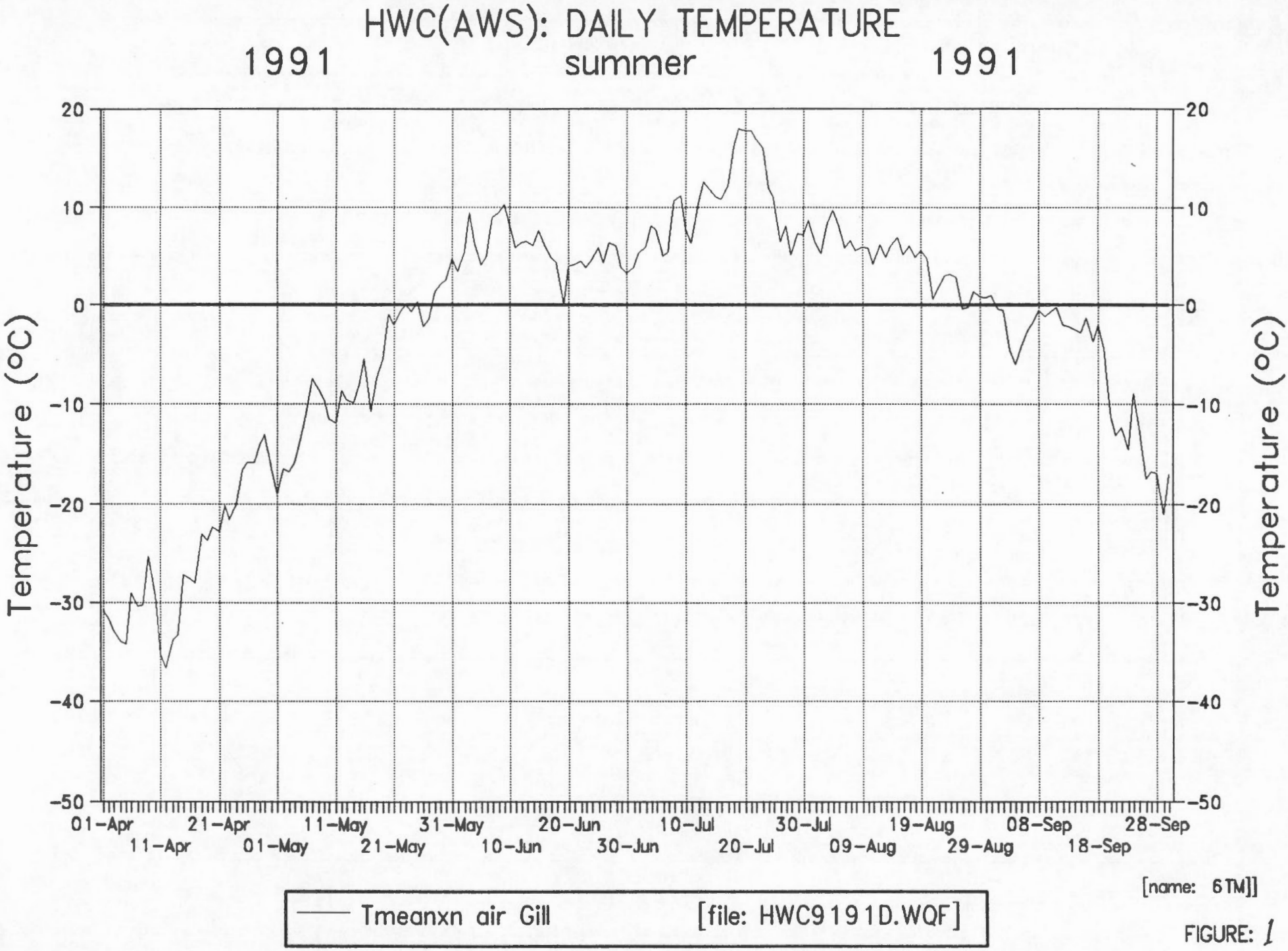

HWC(AWS): DAILY TEMPERATURE
1991 summer 1991
Temperature (°C)
20
10
0
-10
-20
-30
-40
-50
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
Tmeanxn air Gill
[file: HWC9191D.WQF]
[name: 6TM]]

FIGURE: 1

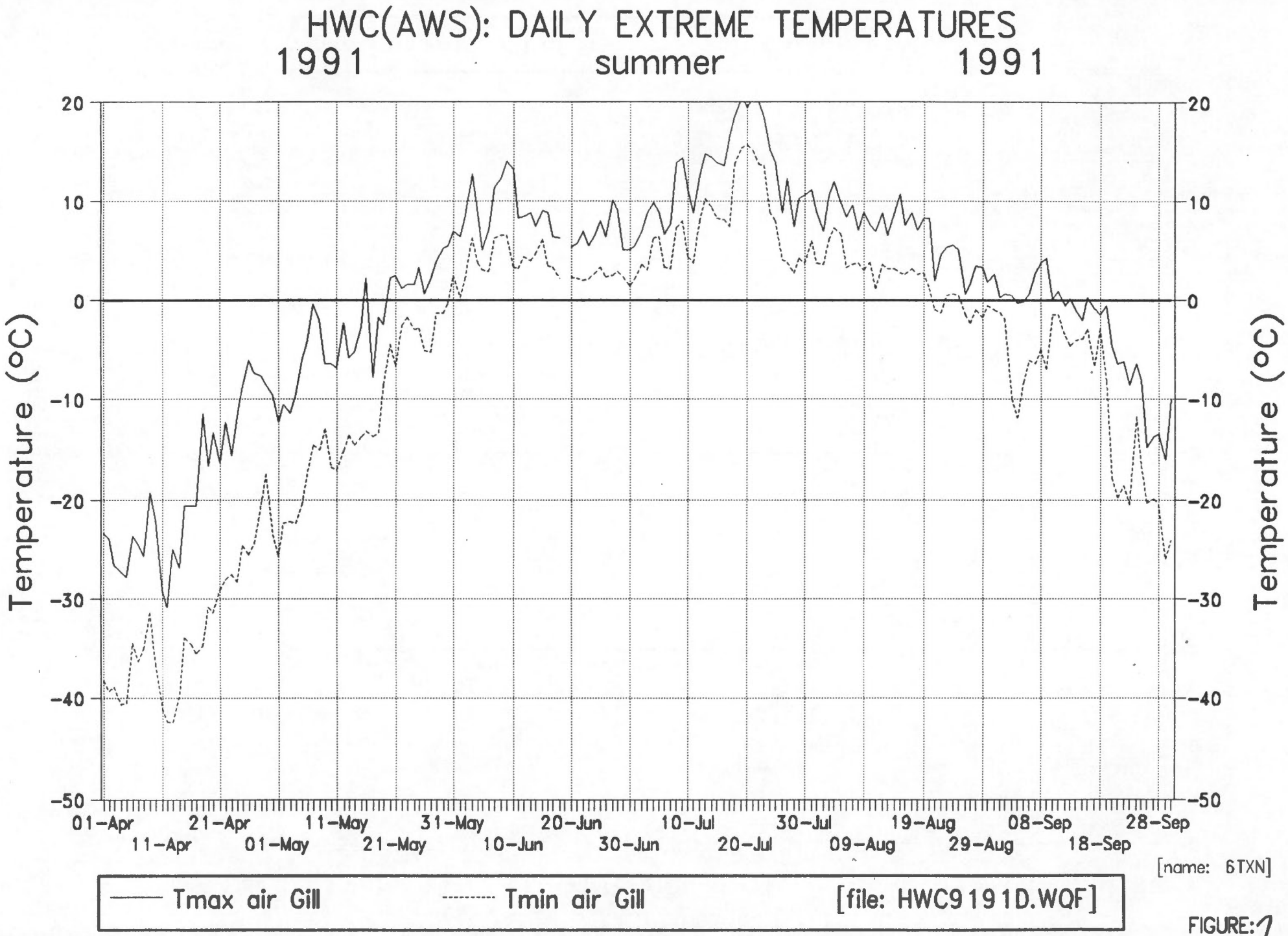

HWC(AWS): DAILY EXTREME TEMPERATURES
1991 summer 1991
Temperature (°C)
20
10
0
-10
-20
-30
-40
-50
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
[name: 6TXN]
Tmax air Gill
Tmin air Gill
[file: HWC9191D.WQF]

FIGURE: 2

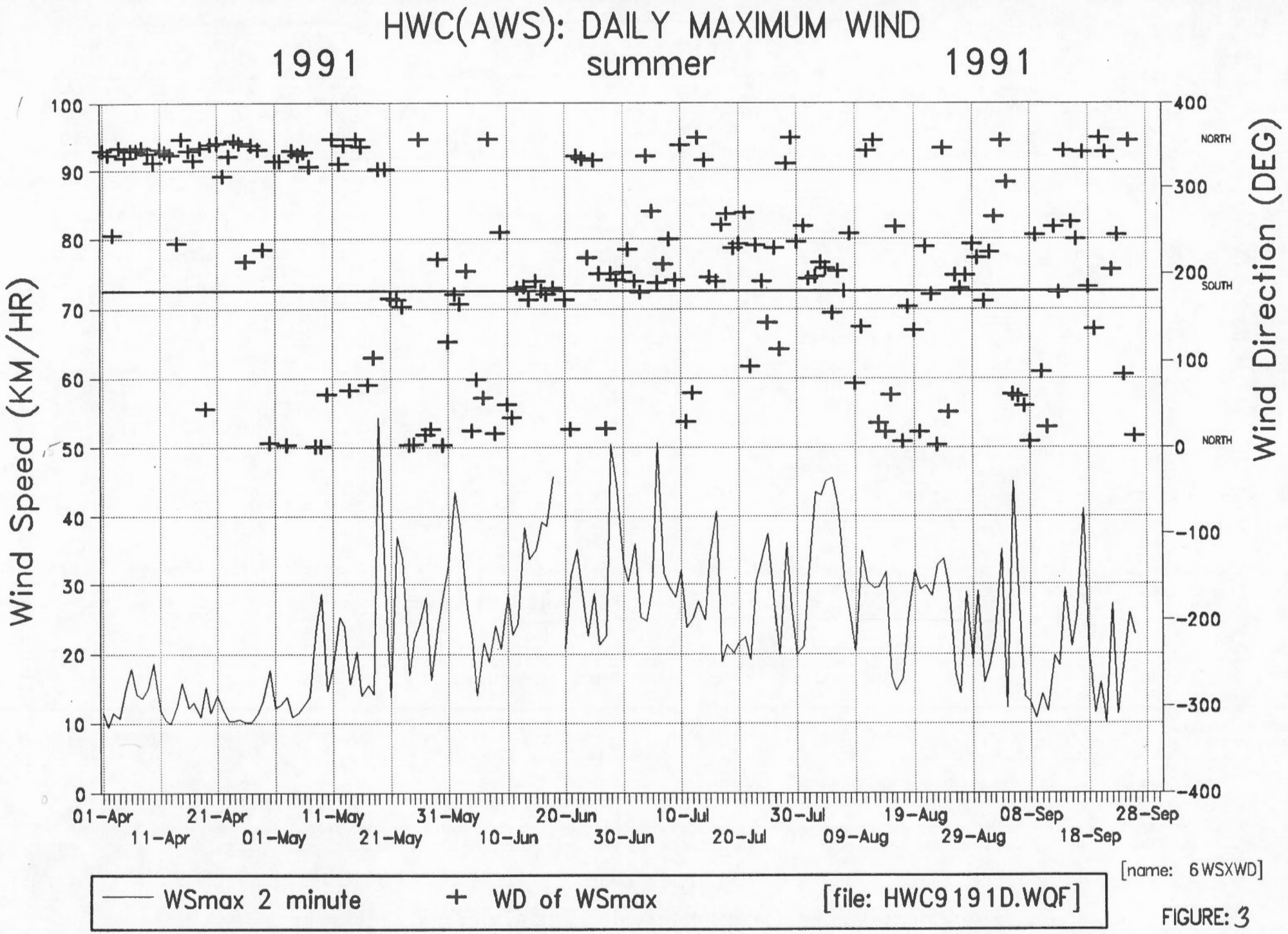

HWC(AWS): DAILY MAXIMUM WIND
1991 summer 1991
Wind Speed (KM/HR)
Wind Direction (DEG)
NORTH
SOUTH
NORTH
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
WSmax 2 minute
WD of WSmax
[file: HWC9191D.WQF]
[name: 6WSXWD]

FIGURE: 3

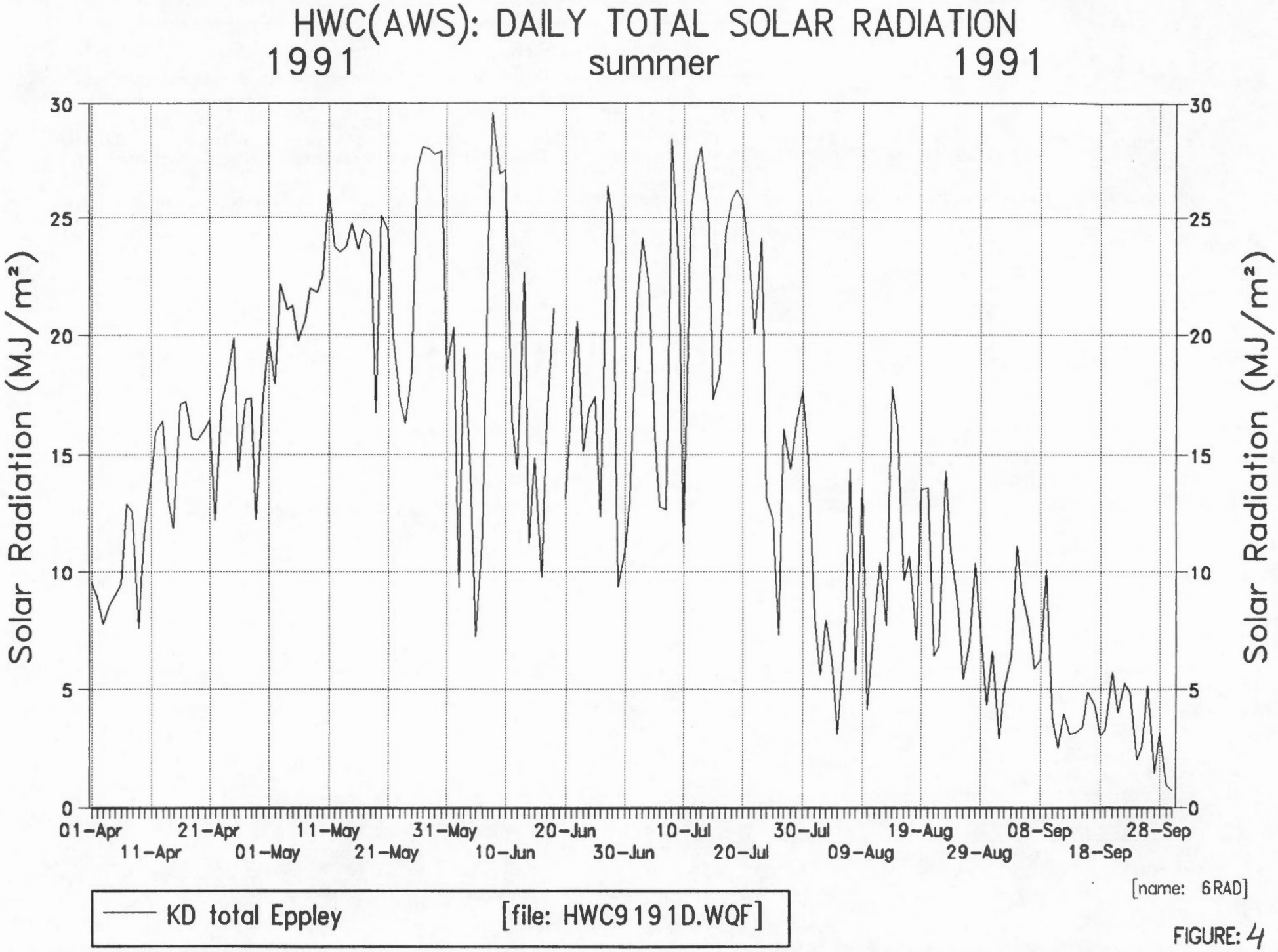

HWC(AWS): DAILY TOTAL SOLAR RADIATION
1991 summer 1991
Solar Radiation (MJ/m²)
30
25
20
15
10
5
0
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
KD total Eppley
[file: HWC9191D.WQF]
[name: 6RAD]

FIGURE: 4

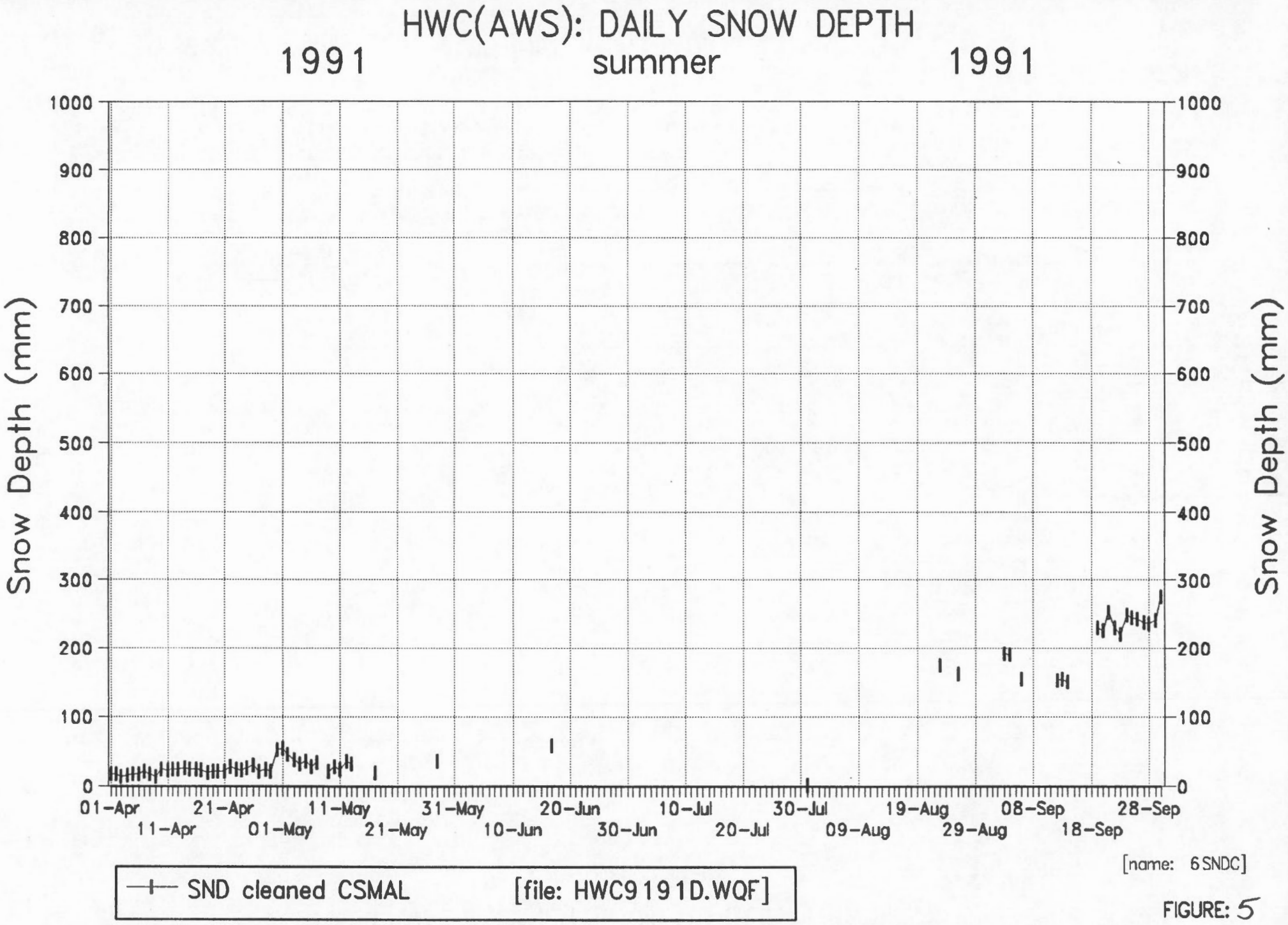

HWC(AWS): DAILY SNOW DEPTH
1991 summer 1991
Snow Depth (mm)
1000
900
800
700
600
500
400
300
200
100
0
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
[name: 6SNDC]
SND cleaned CSMAL
[file: HWC9191D.WQF]

FIGURE: 5

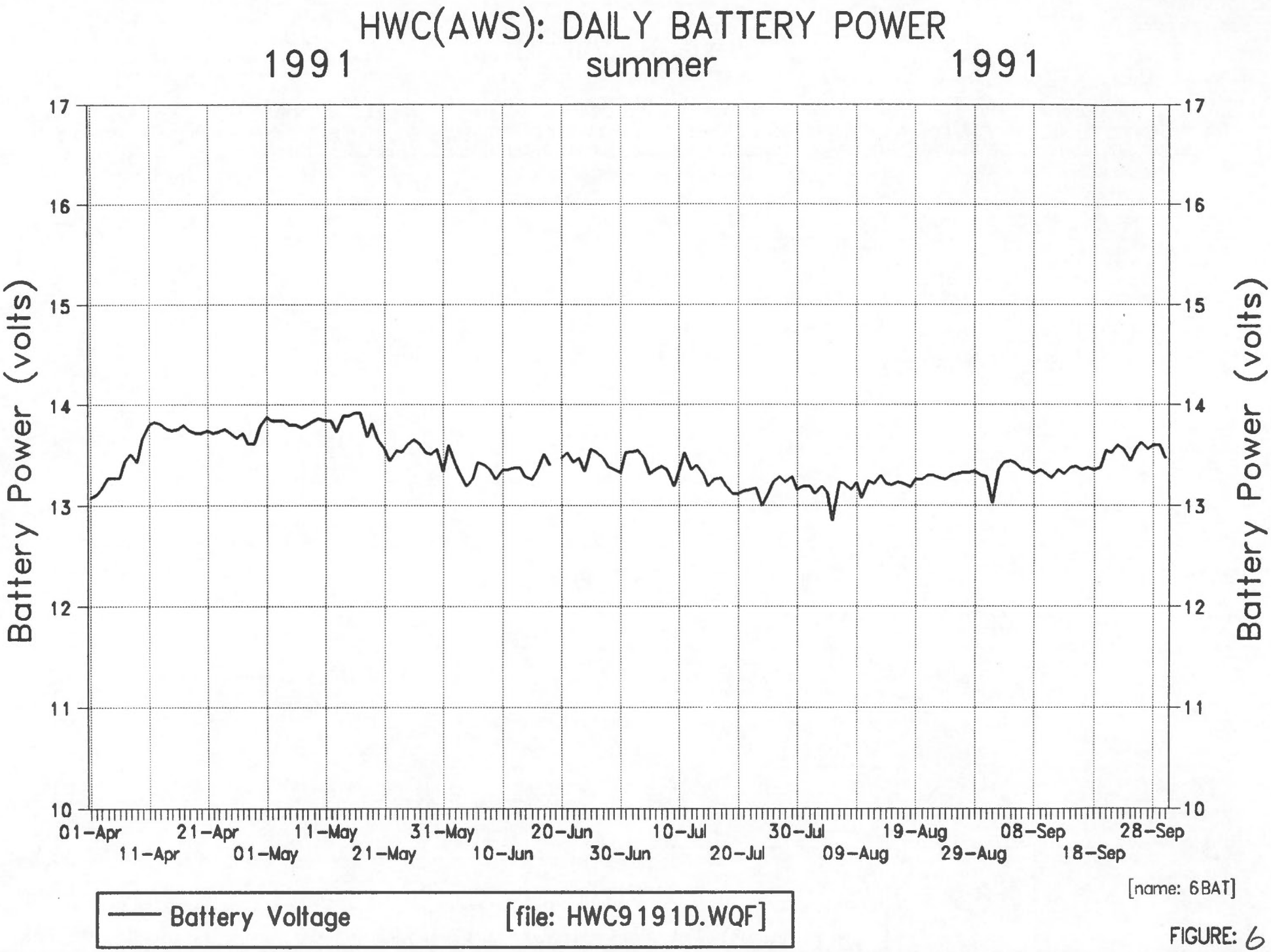
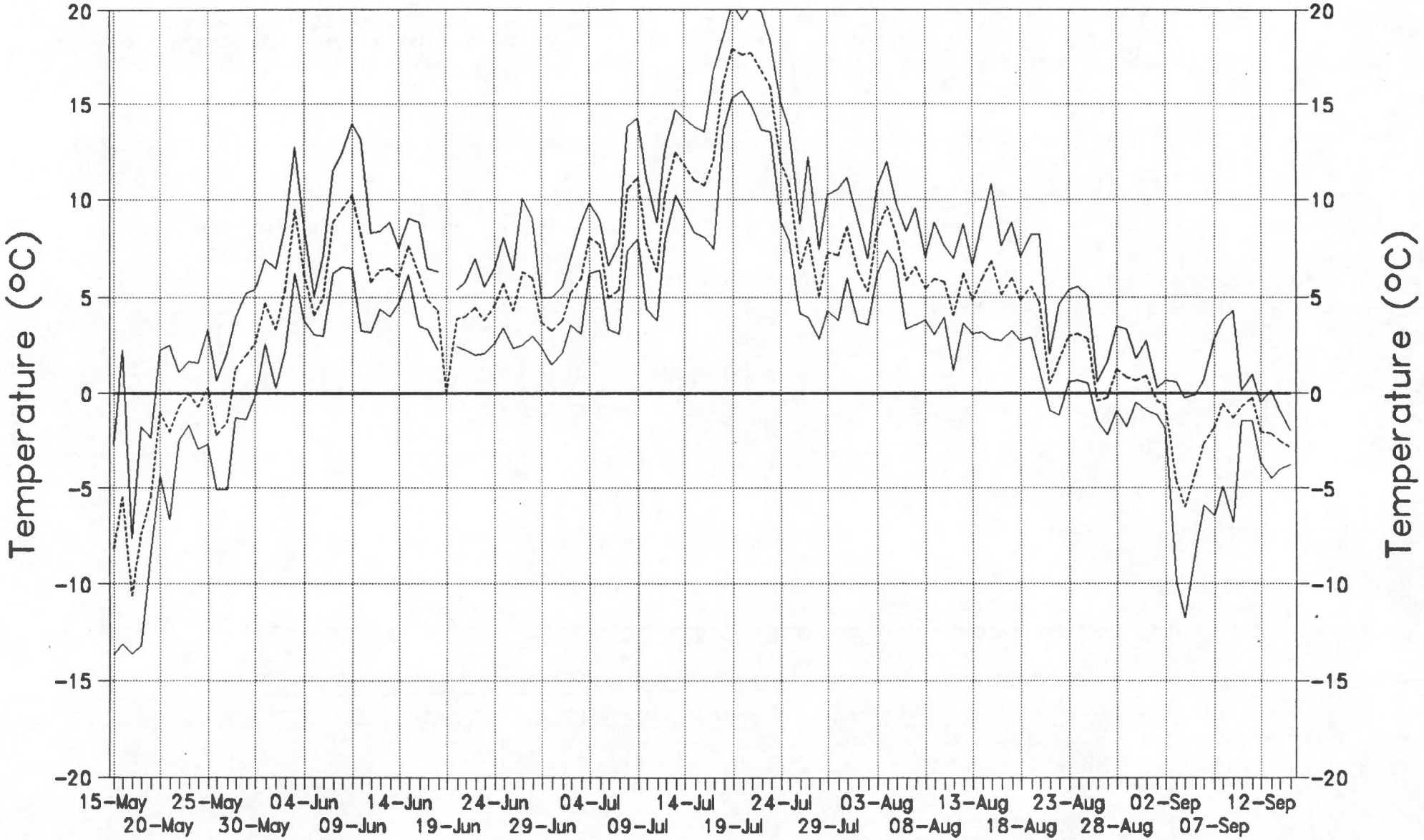

HWC(AWS): DAILY BATTERY POWER
1991 summer 1991
Battery Power (volts)
17
16
15
14
13
12
11
10
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
[name: 6BAT]
Battery Voltage
[file: HWC9191D.WQF]

FIGURE: 6

HWC(AWS): DAILY TEMPERATURES
Melt Season 1990

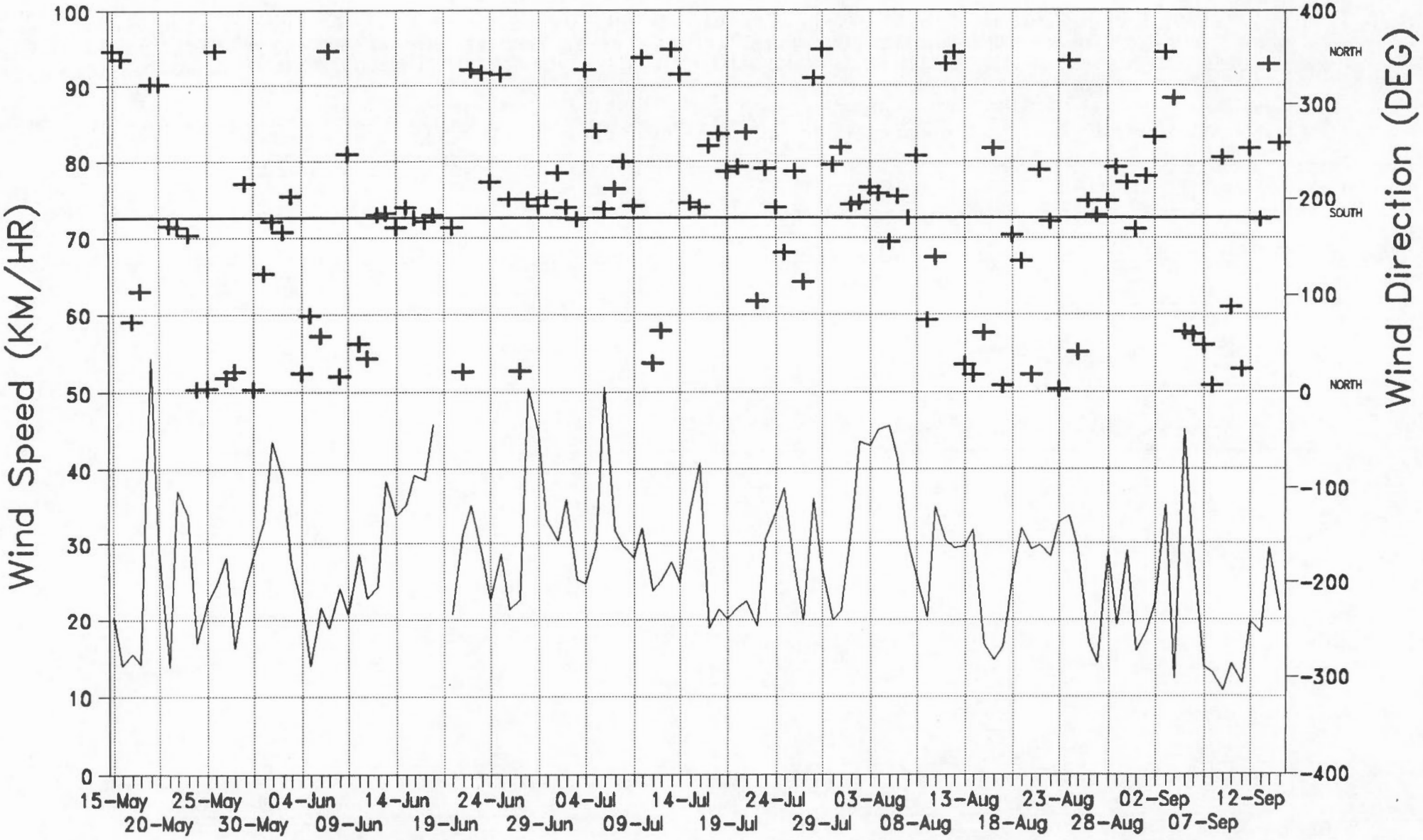


[name: 5TXNM]

Tmax air Gil — Tmin air Gil ---------- Tmeanxn air Gil

FIGURE: 7

HWC(AWS): DAILY MAXIMUM WIND
Melt Season 1991



[name: 5WSXWD]

—— WSmax 2 minute + WD of WSmax [file: HWC9191D.WQF]

FIGURE: 8

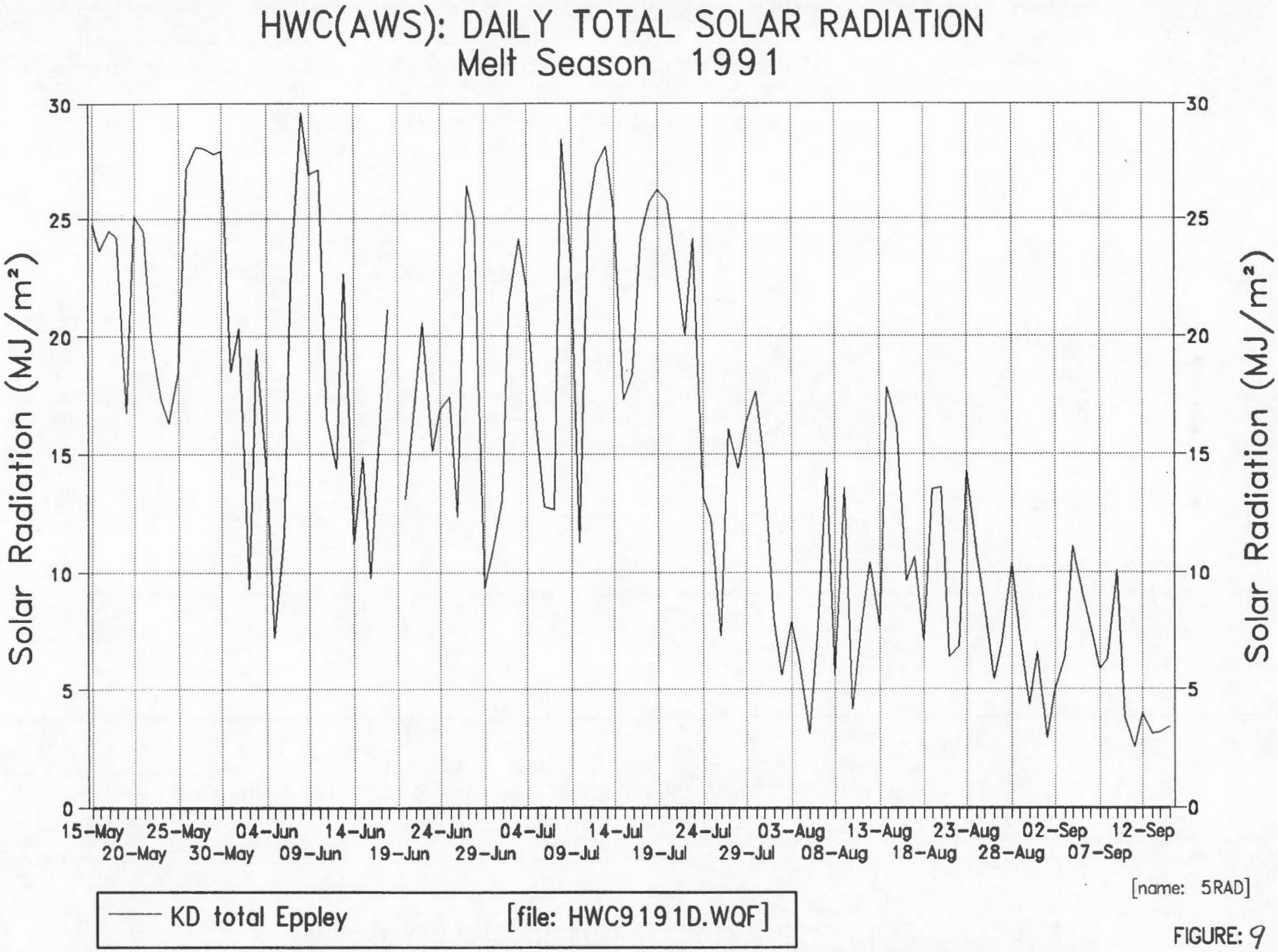
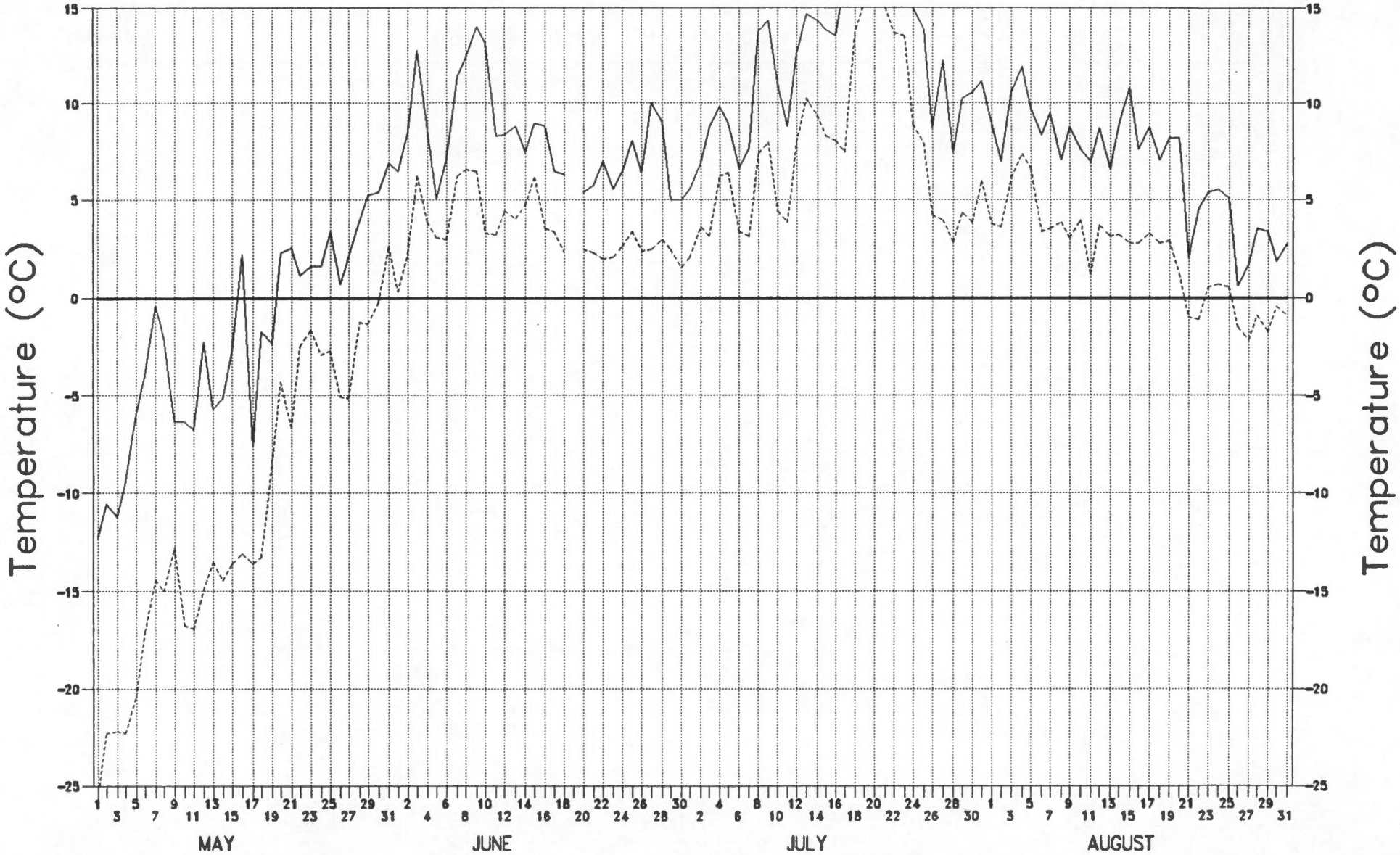

HWC(AWS): DAILY TOTAL SOLAR RADIATION
Melt Season 1991
Solar Radiation (MJ/m²)
30
25
20
15
10
5
0
15-May
20-May
25-May
30-May
04-Jun
09-Jun
14-Jun
19-Jun
24-Jun
29-Jun
04-Jul
09-Jul
14-Jul
19-Jul
24-Jul
29-Jul
03-Aug
08-Aug
13-Aug
18-Aug
23-Aug
28-Aug
02-Sep
07-Sep
12-Sep
[name: 5RAD]
KD total Eppley
[file: HWC9191D.WQF]

FIGURE: 9

HWC(AWS): DAILY EXTREME TEMPERATURES
May – August 1991



[name: 4TXN]

Tmax air Gill Tmin air Gill [file: HWC9191D.WQF]

FIGURE: 10

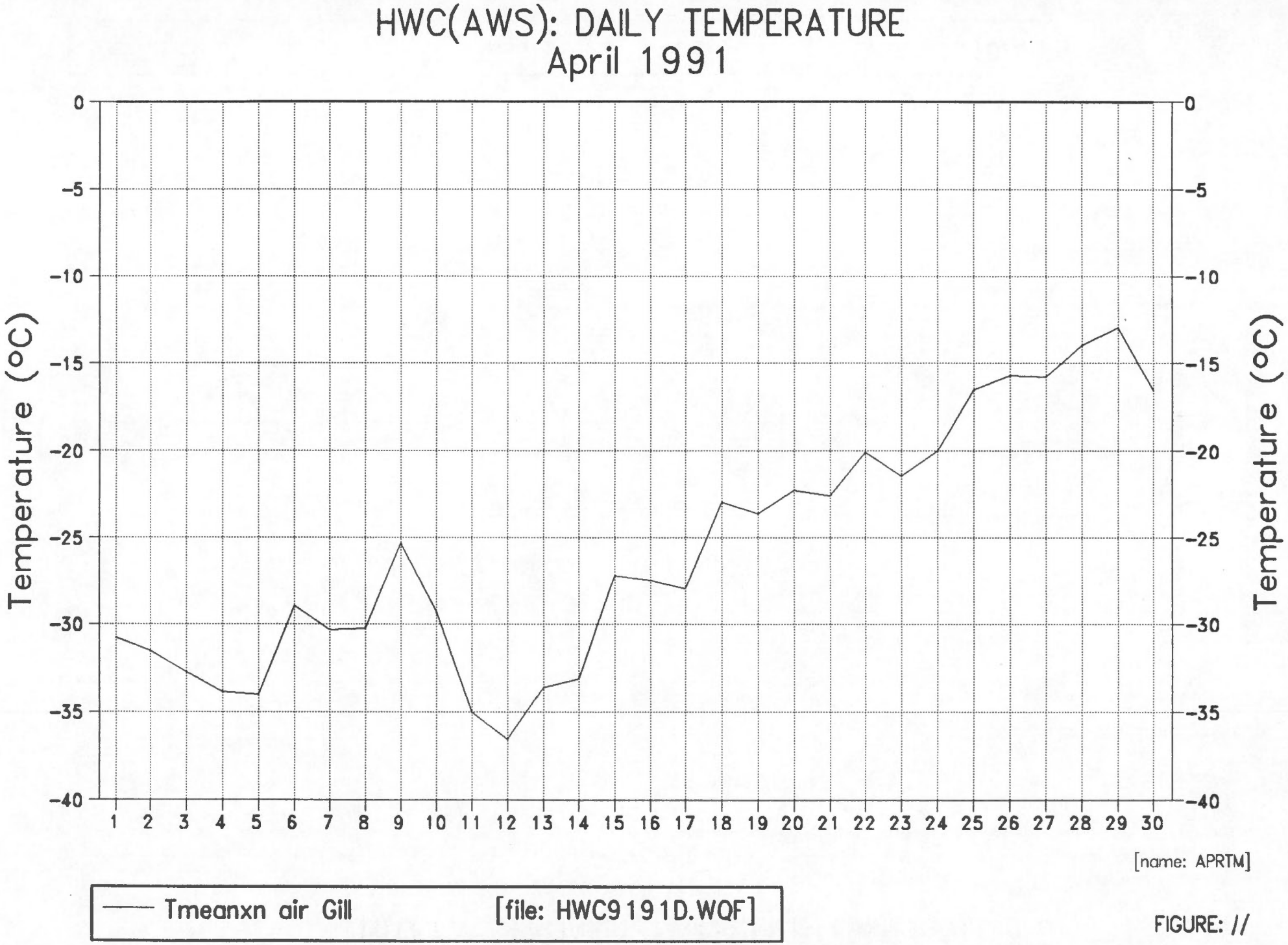
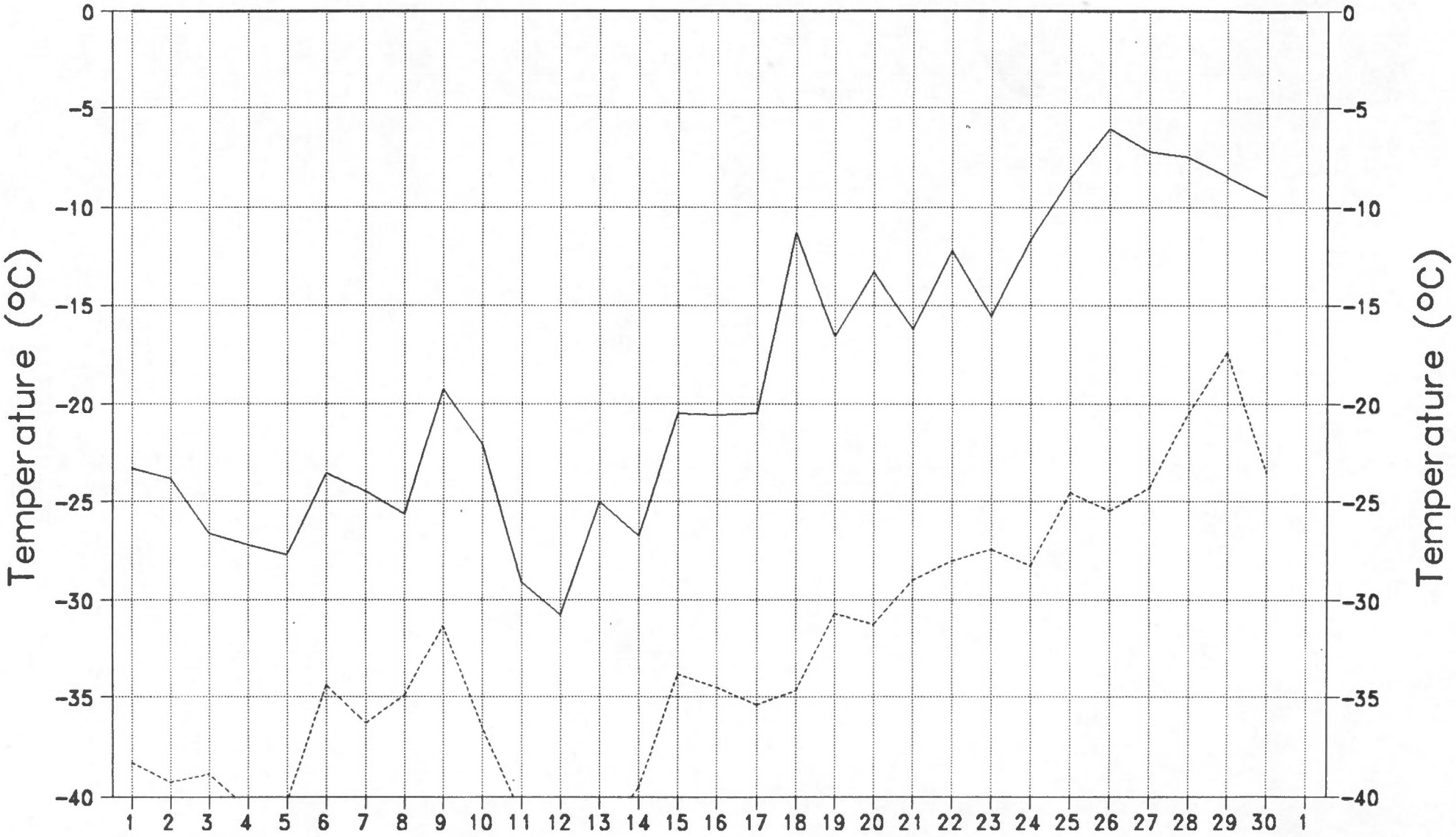

HWC(AWS): DAILY TEMPERATURE
April 1991
Temperature (oC)
0
-5
-10
-15
-20
-25
-30
-35
-40
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
[name: APRTM]
Tmeanxn air Gill
[file: HWC9191D.WQF]

FIGURE: //

HWC(AWS): DAILY EXTREME TEMPERATURES
April 1991

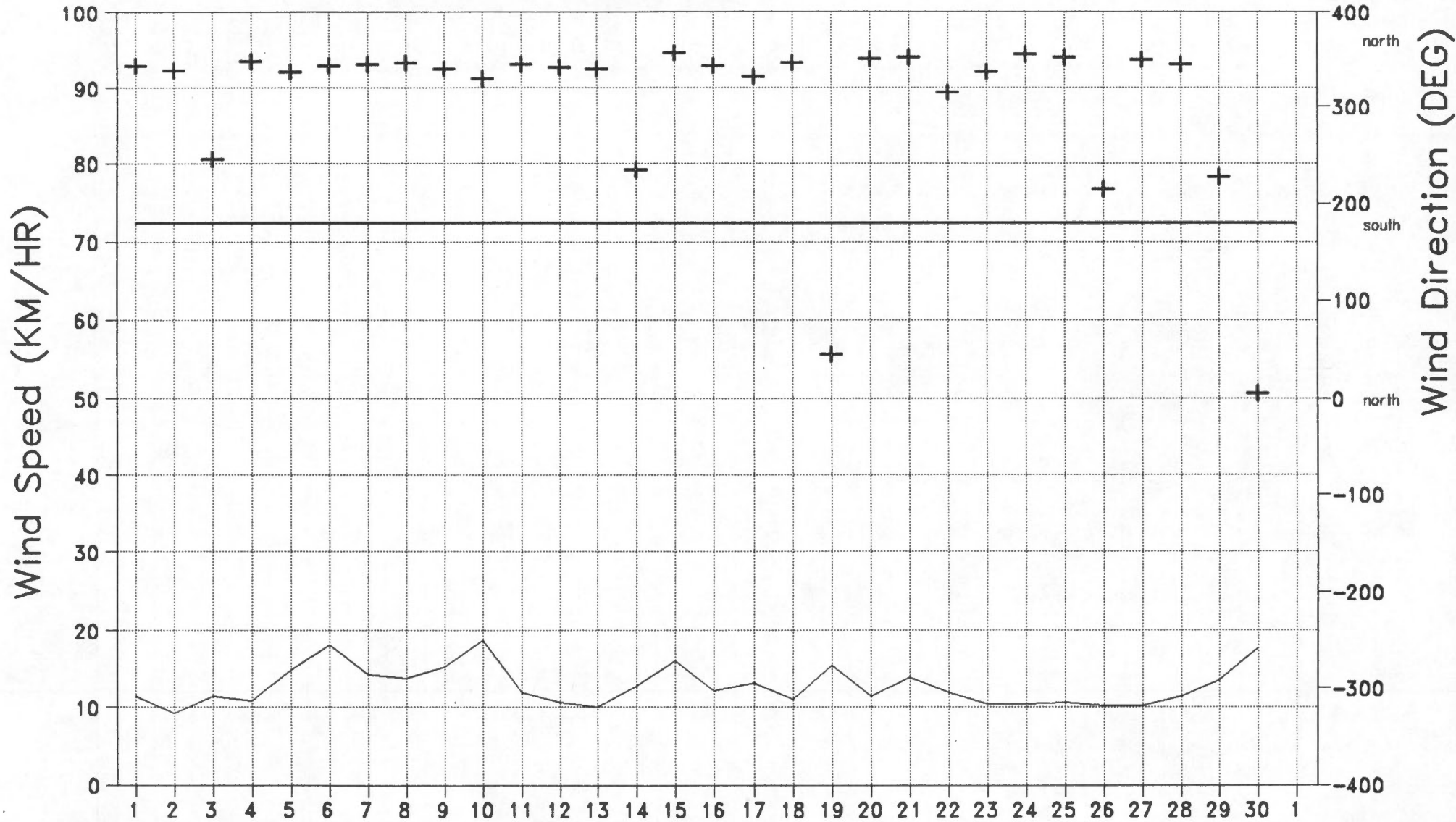


[name: APRTXN]

Tmax air Gill — Tmin air Gill [file: HWC9191D.WQF]

FIGURE: 12

HWC(AWS): DAILY MAXIMUM WIND
April 1991

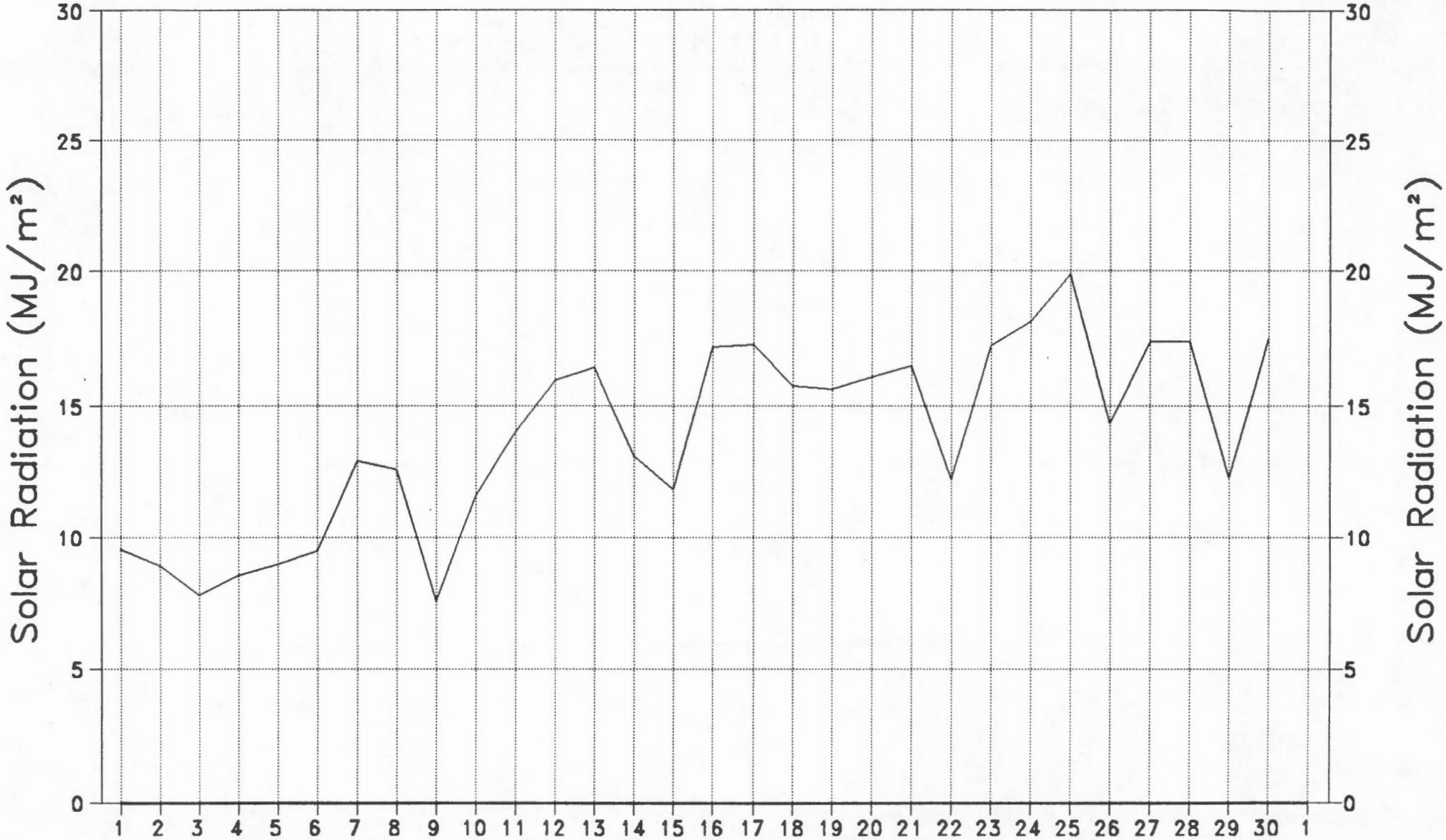


[name: APRWSXWD]

WSmax 2 minute + WD of WSmax [file: HWC9191D.WQF]

FIGURE: 13

HWC(AWS): DAILY TOTAL SOLAR RADIATION
April 1991

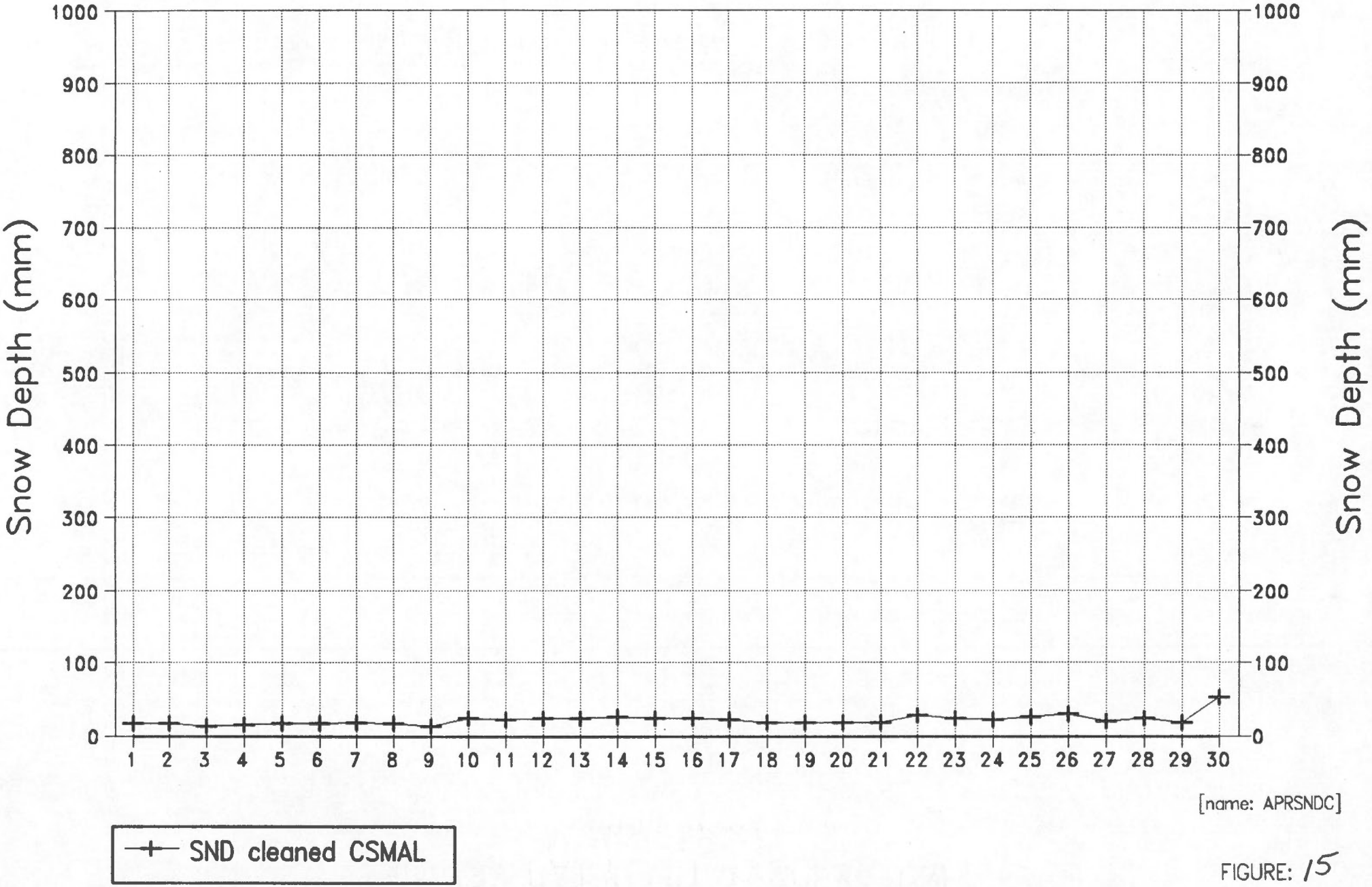


[name: APPRAD]

KD total Eppley [file: HWC9191D.WQF]

FIGURE: 14

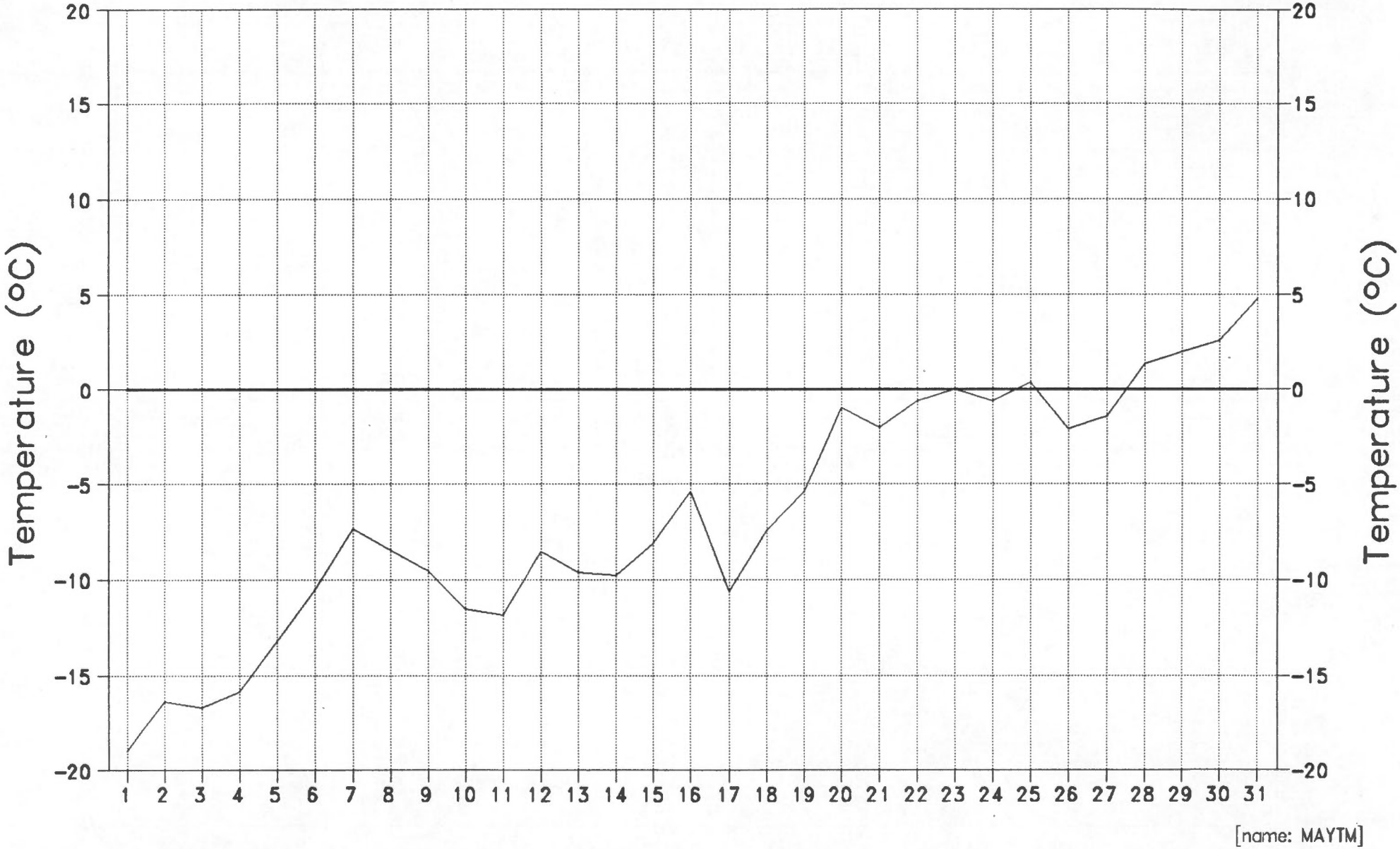
HWC(AWS): DAILY SNOW DEPTH
April 1990



[name: APRSNDC]

FIGURE: 15

HWC(AWS): DAILY TEMPERATURE
May 1991



Tmeanxn air Gill [file: HWC9191D.WQF]

FIGURE: 16

HWC(AWS): DAILY EXTREME TEMPERATURES
May 1991

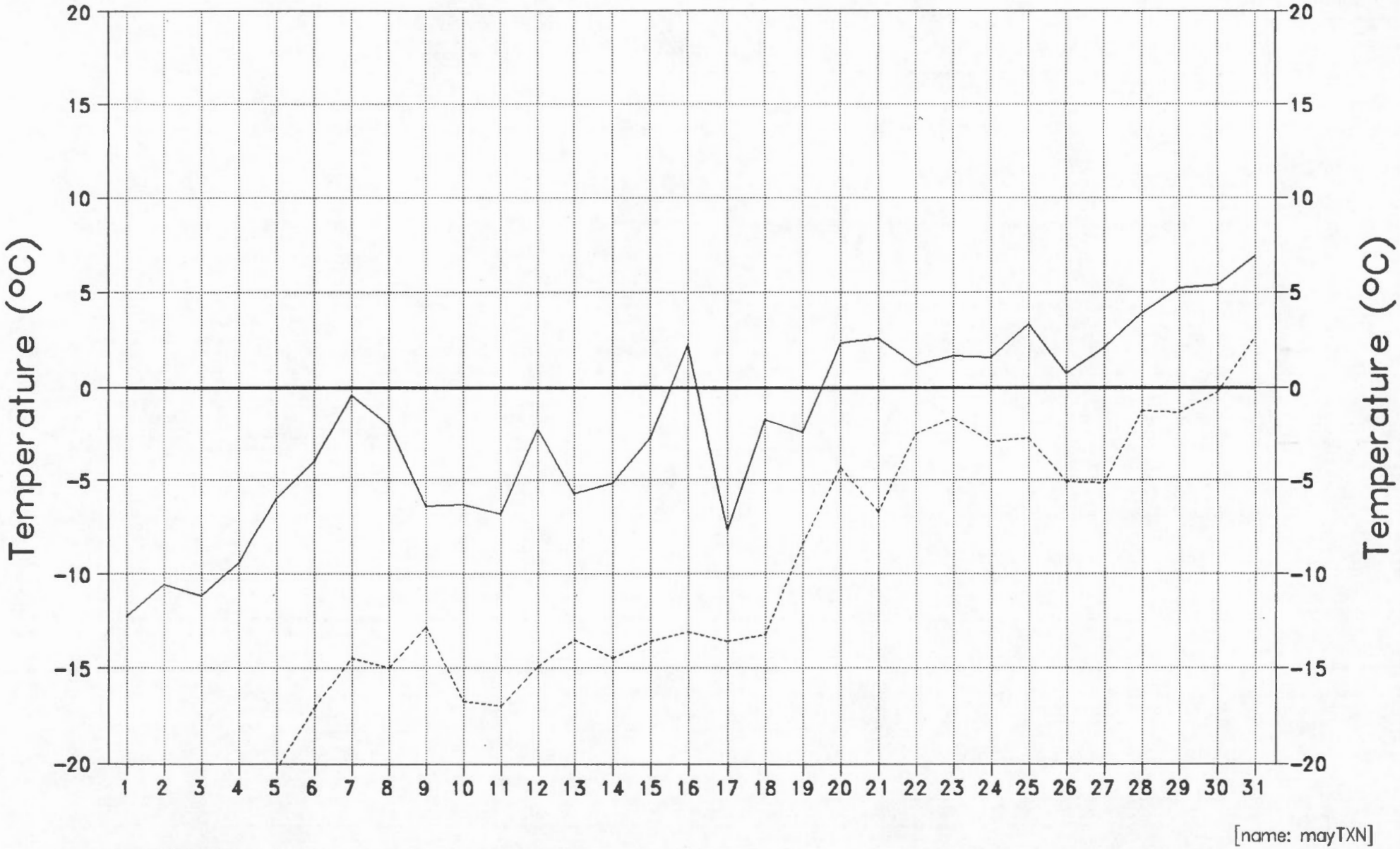
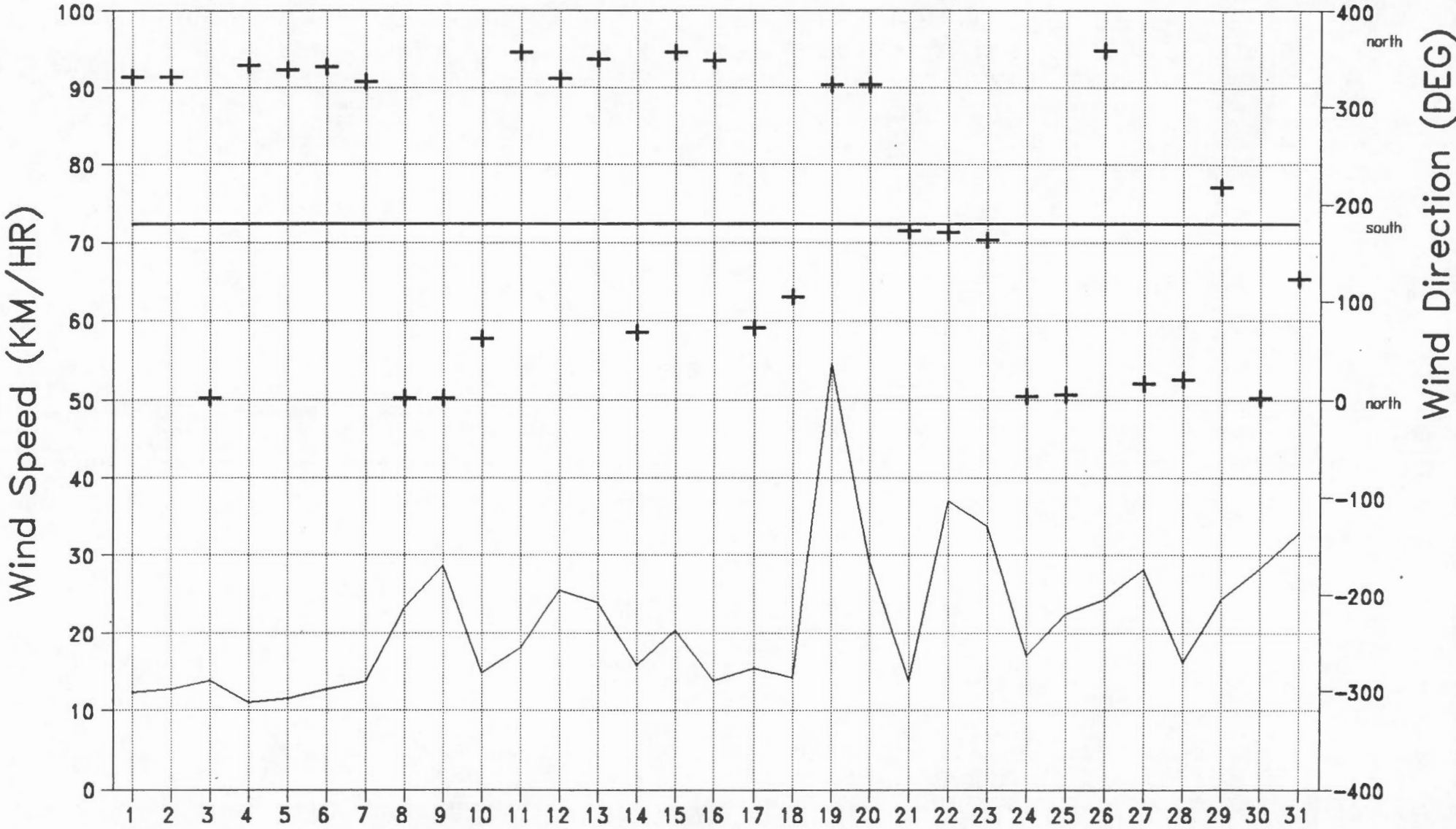


FIGURE: 17

HWC(AWS): DAILY MAXIMUM WIND

MAY 1991

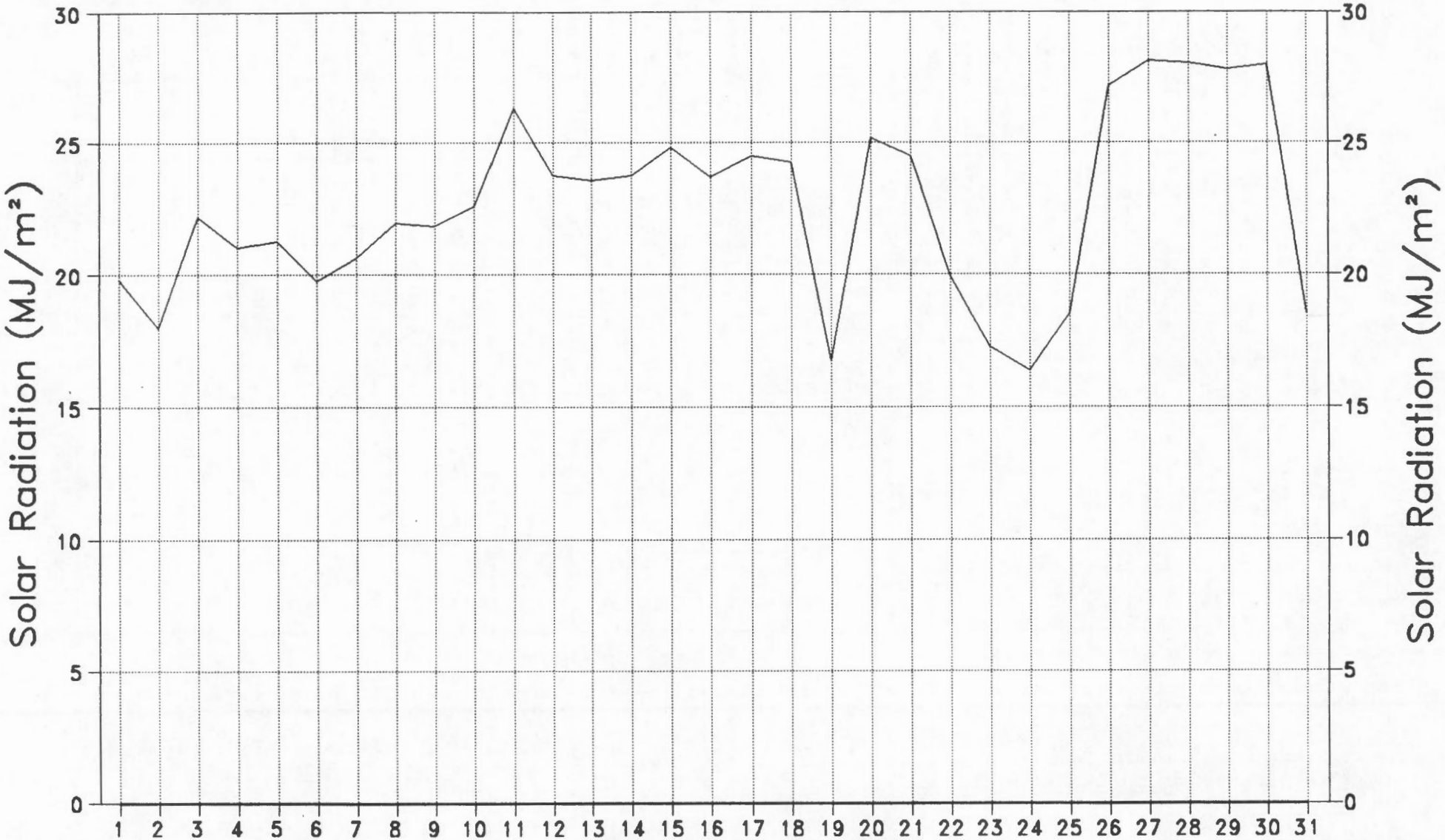


[name: MAYWSXWD]

WSmax 2 minute + WD of WSmax [file: HWC9191D.WQF]

FIGURE: 18

HWC(AWS): DAILY TOTAL SOLAR RADIATION
May 1991

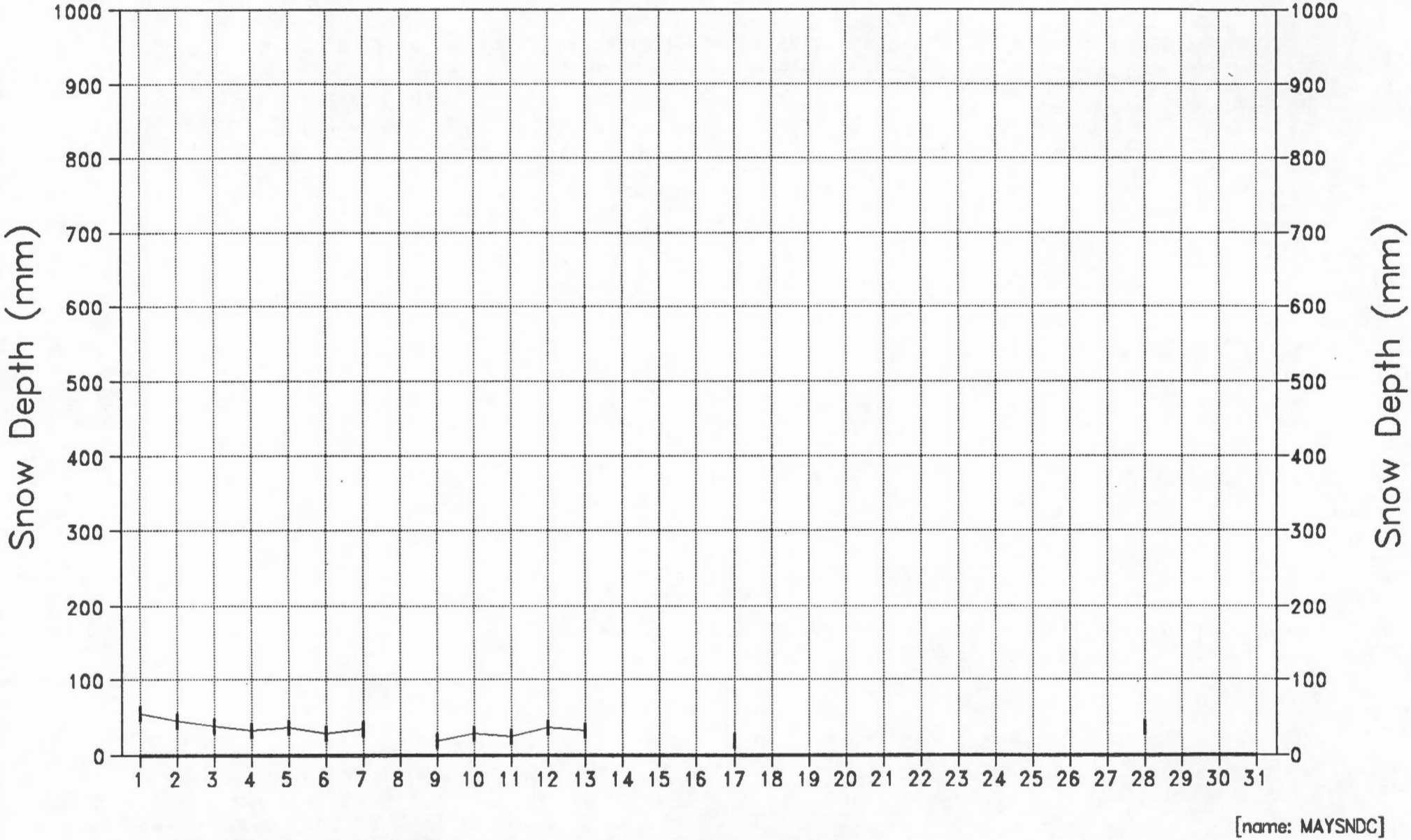


[name: MAYRAD]

KD total Eppley [file: HWC9191D.WQF]

FIGURE: 19

HWC(AWS): DAILY SNOW DEPTH
May 1991



SND cleaned CSMAL [file: HWC9191D.WQF]

FIGURE: 20

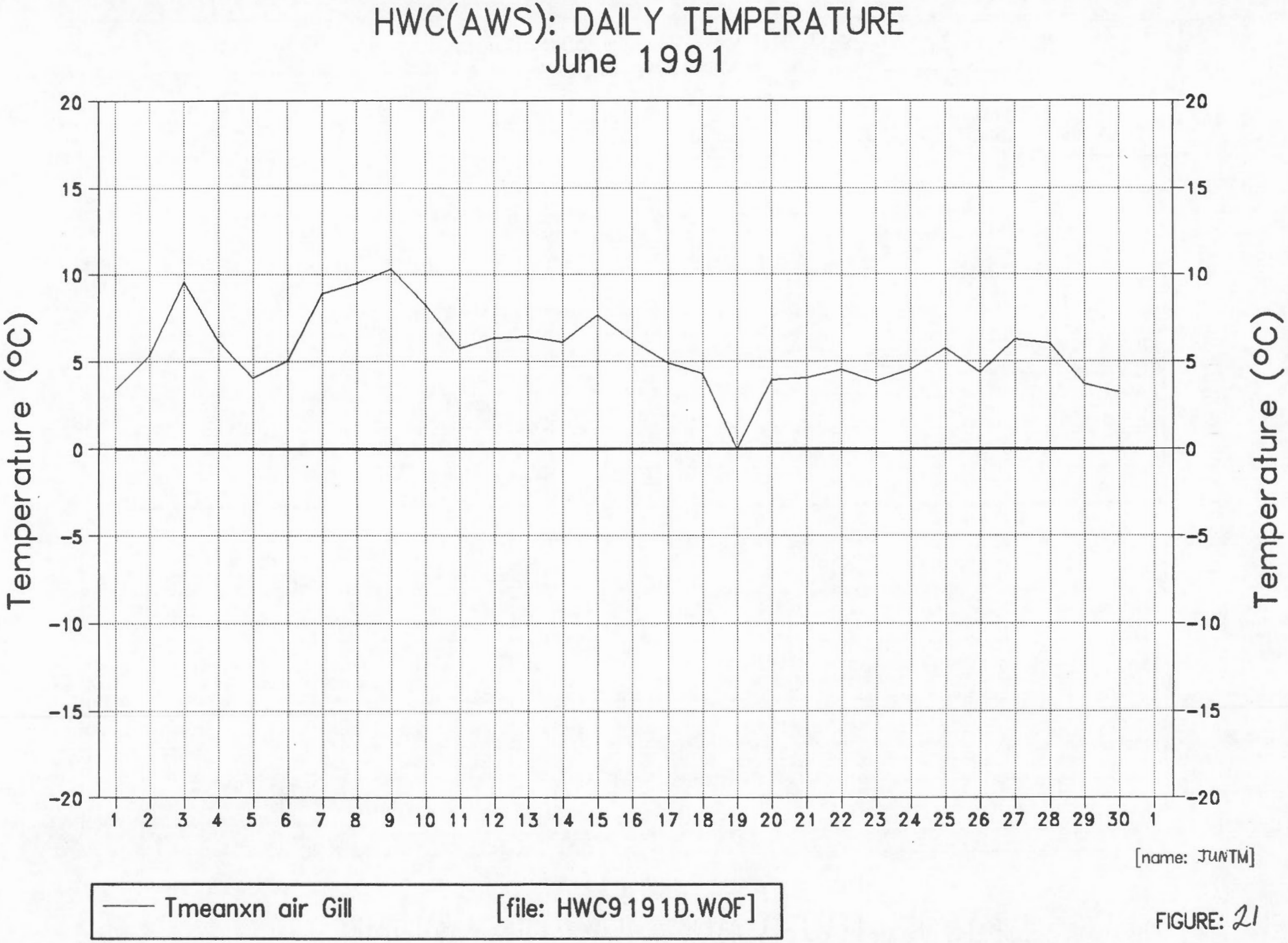

HWC(AWS): DAILY TEMPERATURE
June 1991
Temperature (°C)
20
15
10
5
0
-5
-10
-15
-20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 1
[name: JUNTM]
Tmeanxn air Gill
[file: HWC9191D.WQF]

FIGURE: 21

HWC(AWS): DAILY EXTREME TEMPERATURES
June 1991

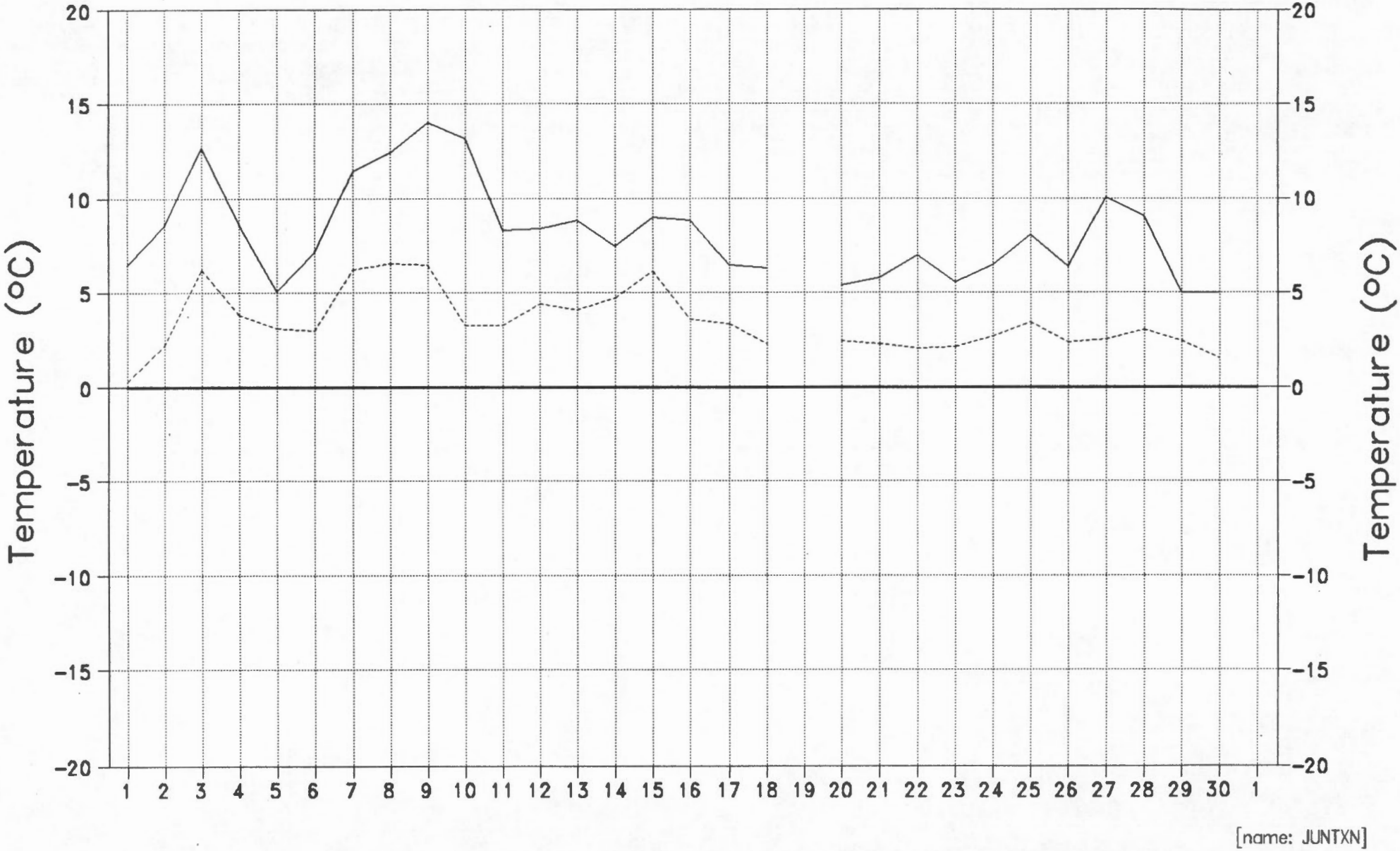


FIGURE: 22

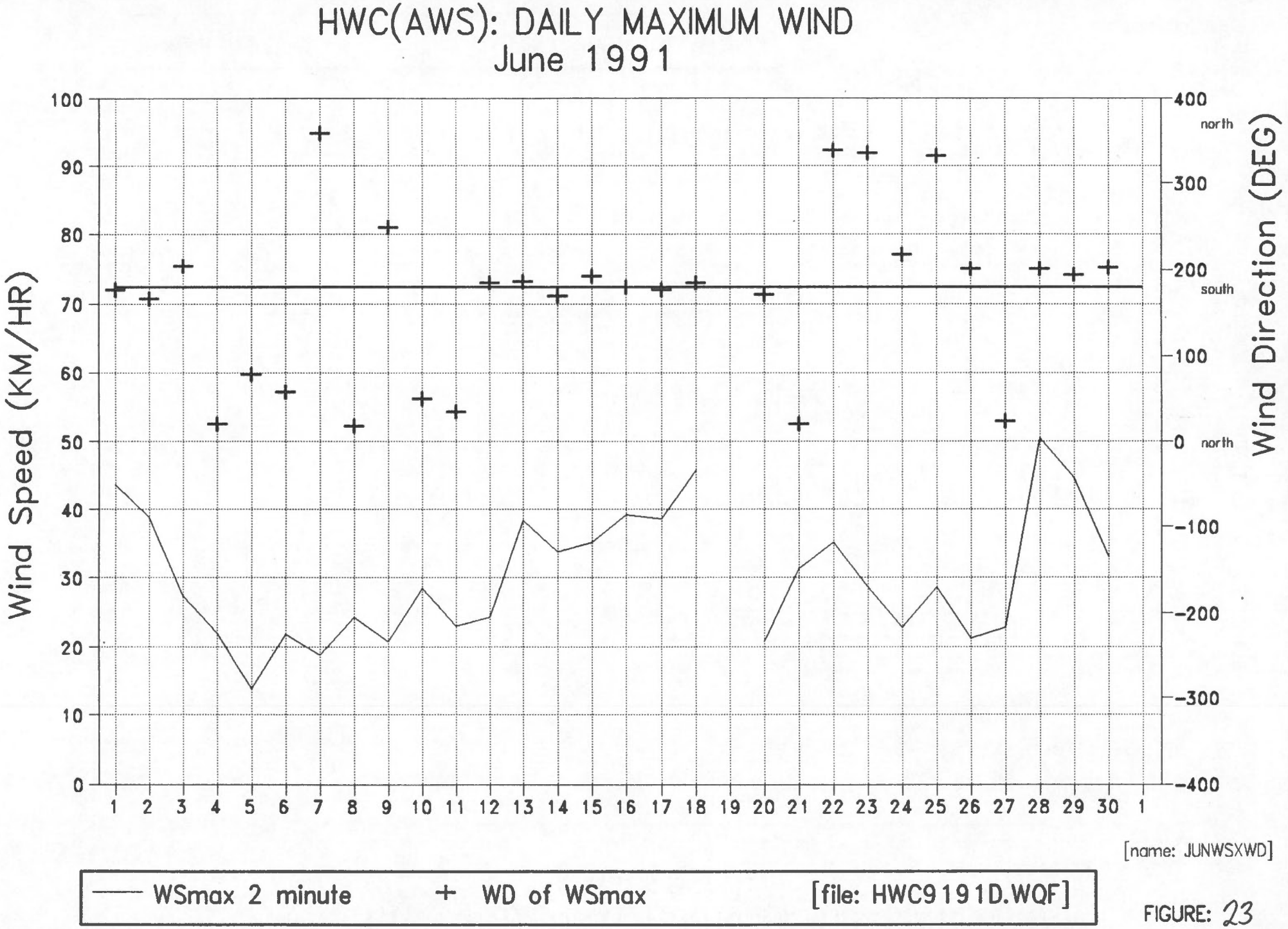

HWC(AWS): DAILY MAXIMUM WIND
June 1991
Wind Speed (KM/HR)
Wind Direction (DEG)
north
south
north
[name: JUNWSXWD]
WSmax 2 minute
WD of WSmax
[file: HWC9191D.WQF]

FIGURE: 23

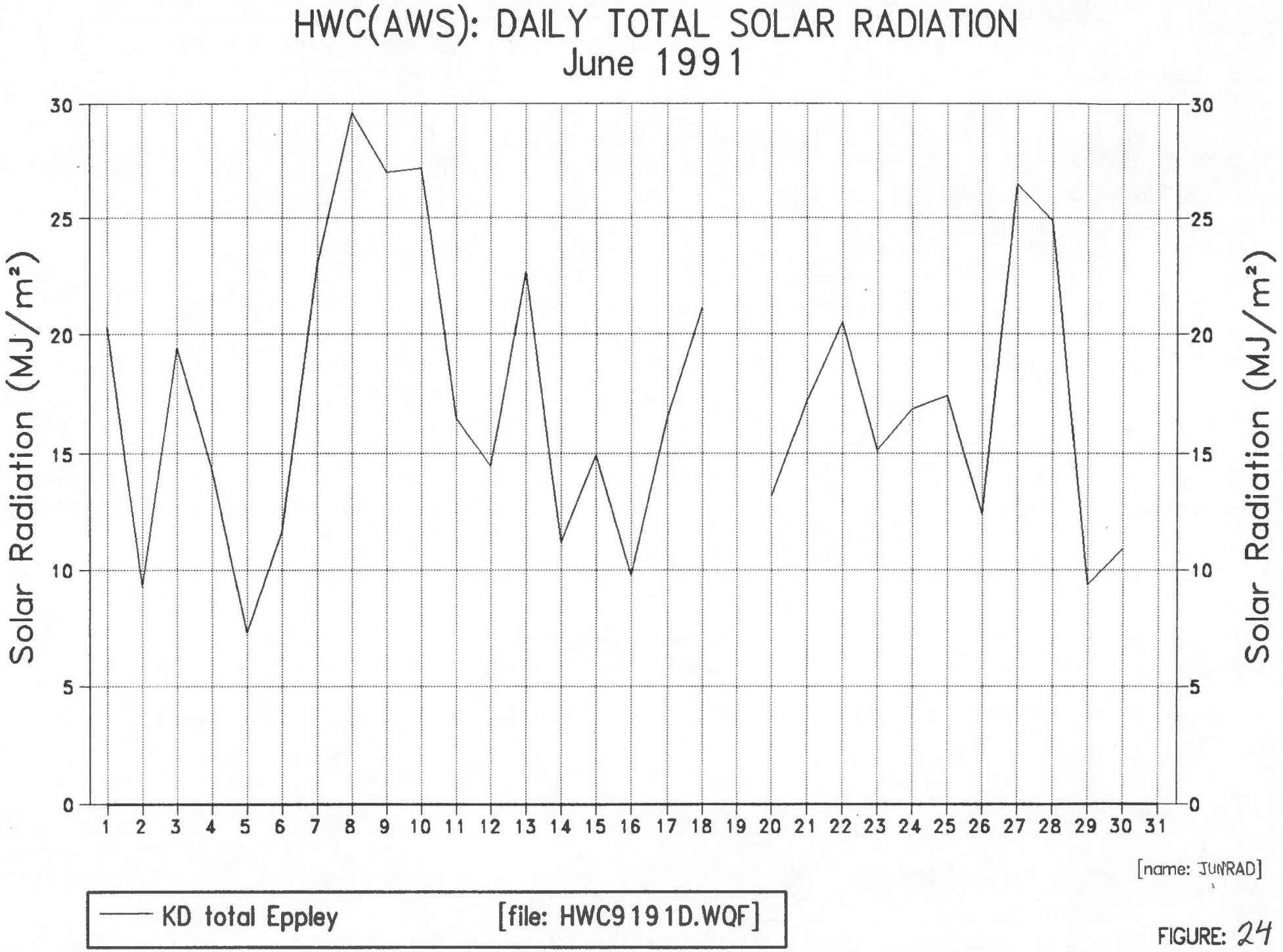

HWC(AWS): DAILY TOTAL SOLAR RADIATION
June 1991
Solar Radiation (MJ/m²)
0
5
10
15
20
25
30
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
[name: JUNRAD]
KD total Eppley
[file: HWC9191D.WQF]

FIGURE: 24

HWC(AWS): DAILY SNOW DEPTH
June 1991

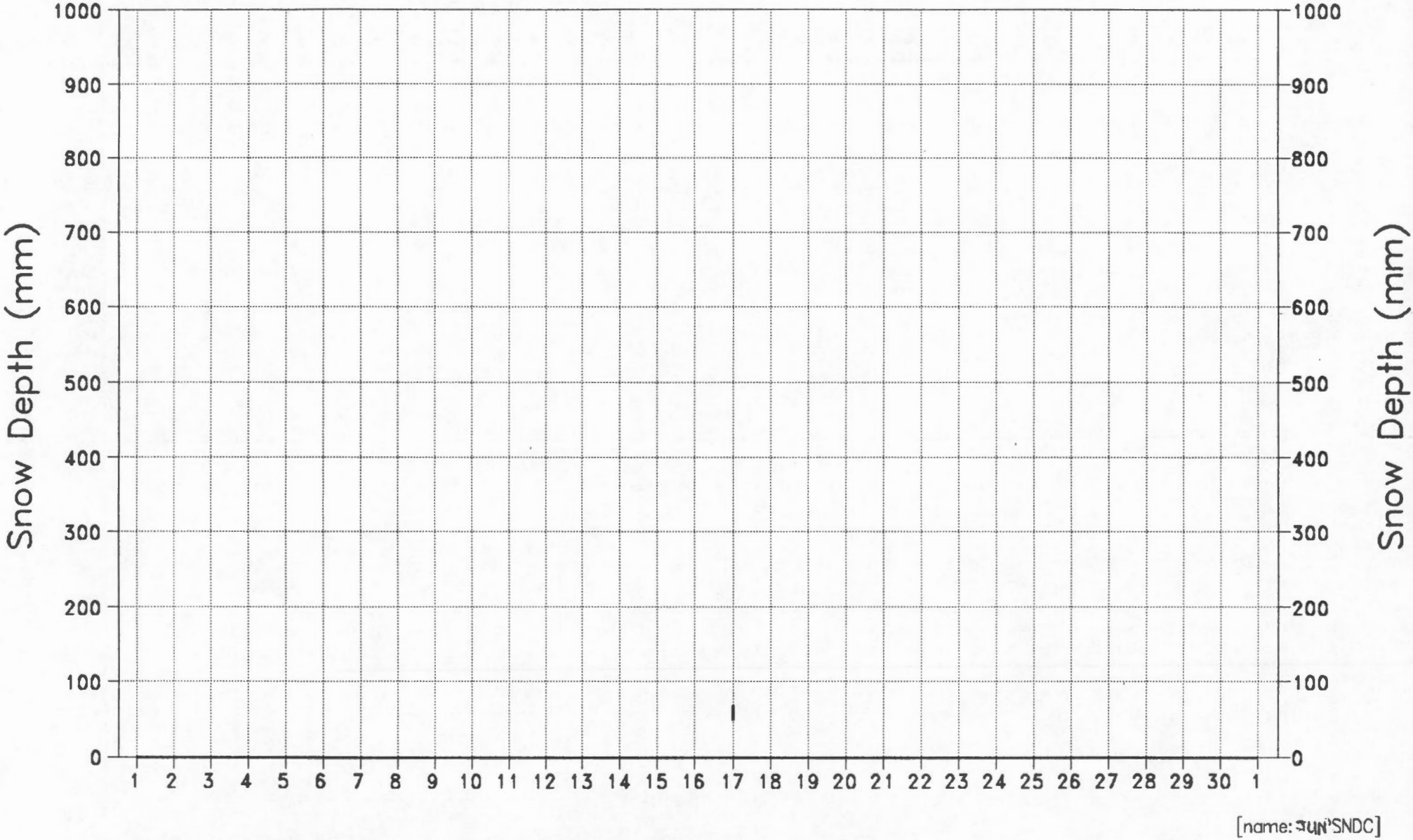


FIGURE: 25

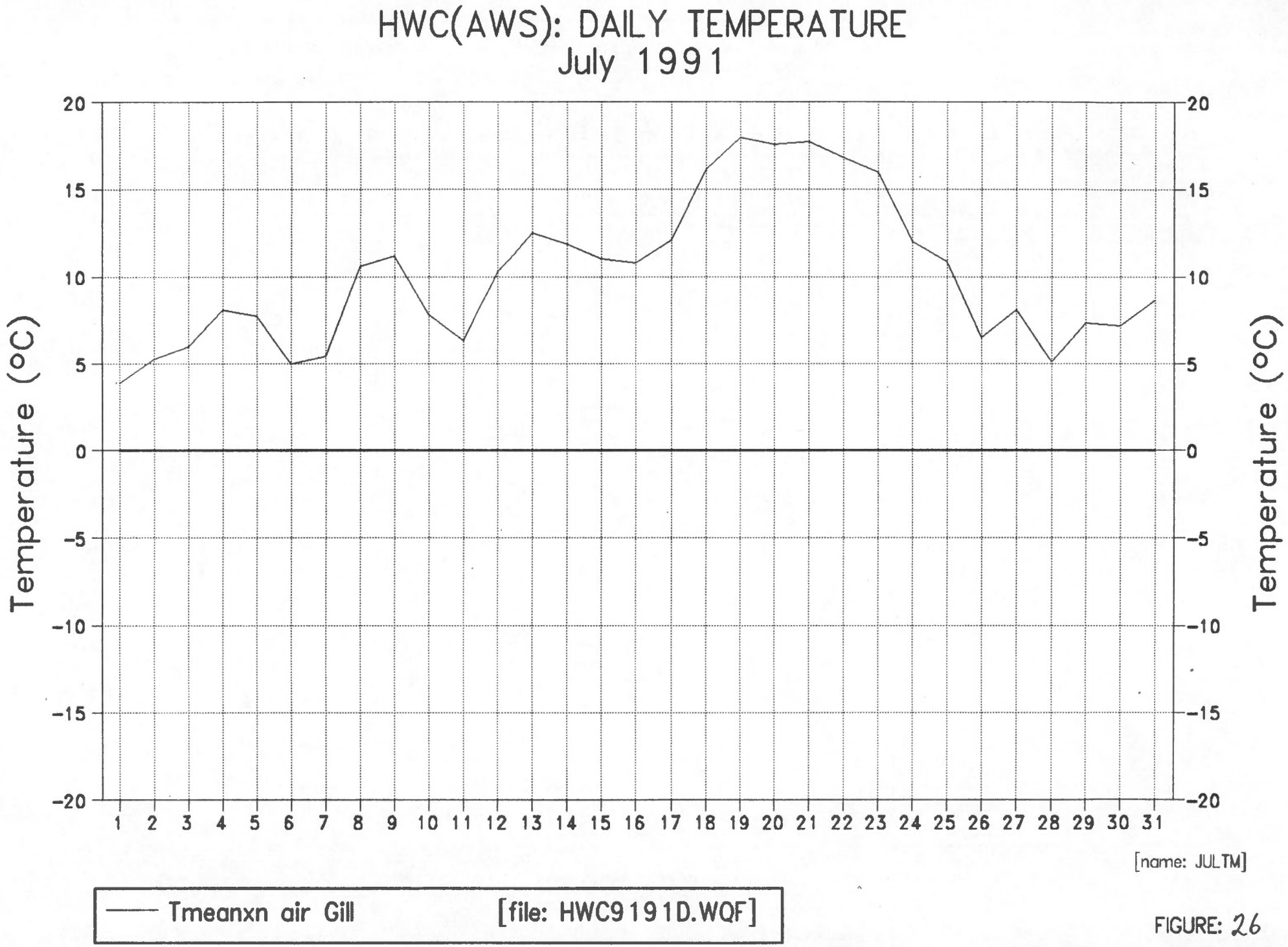

HWC(AWS): DAILY TEMPERATURE
July 1991
Temperature (°C)
20
15
10
5
0
-5
-10
-15
-20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
[name: JULTM]
Tmeanxn air Gill
[file: HWC9191D.WQF]

FIGURE: 26

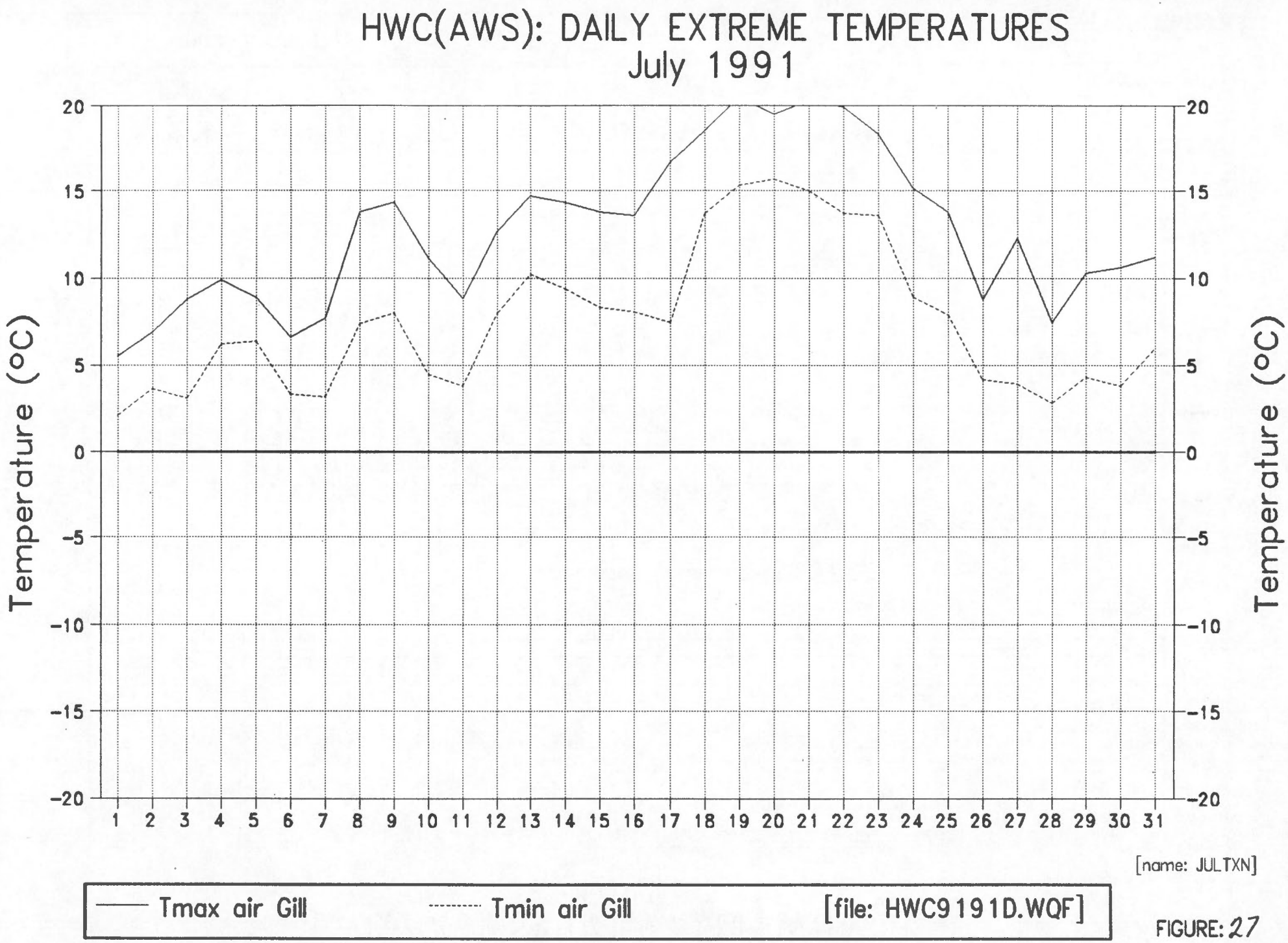
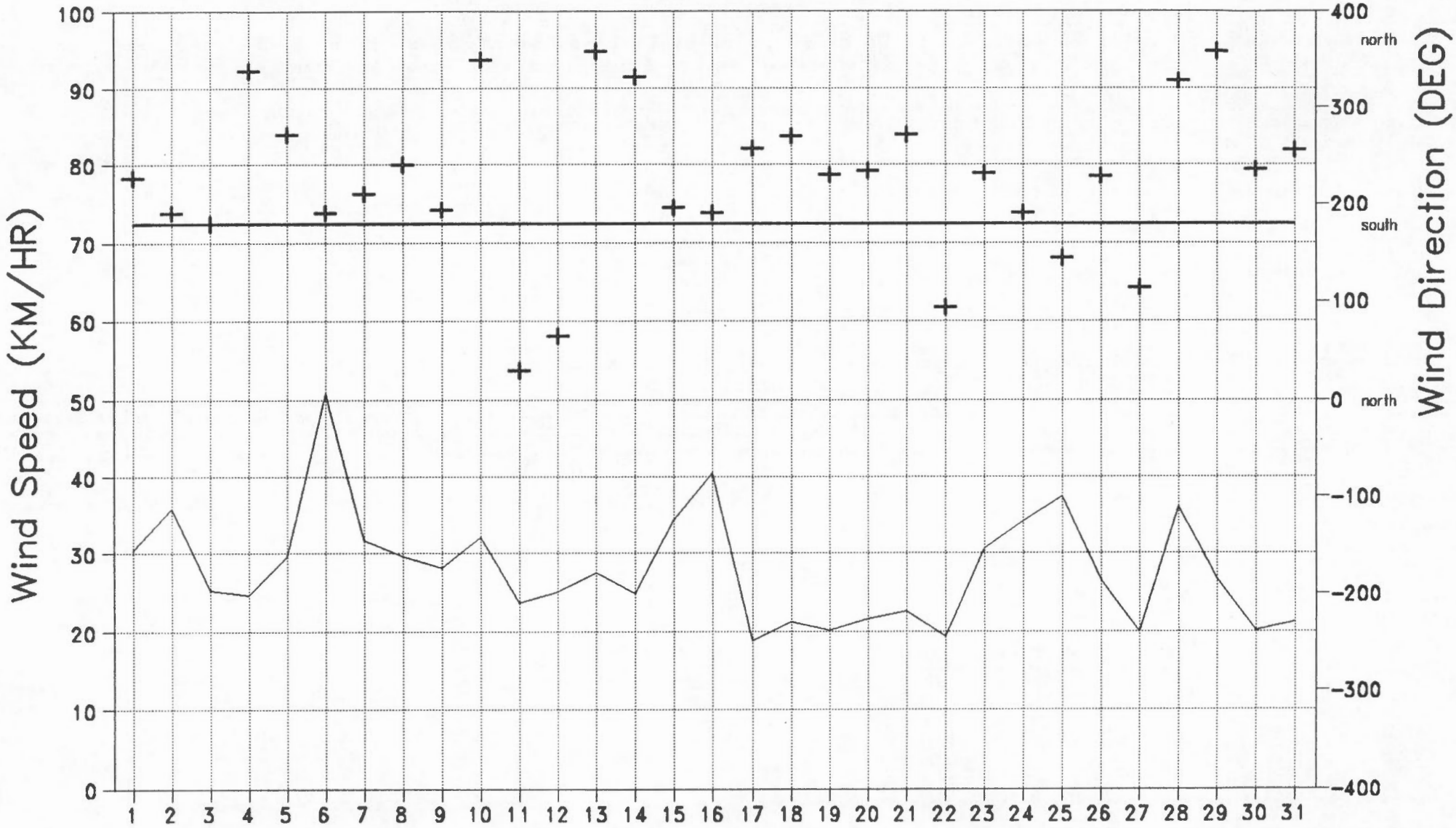

HWC(AWS): DAILY EXTREME TEMPERATURES
July 1991
Temperature (°C)
20
15
10
5
0
-5
-10
-15
-20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
[name: JULTXN]
Tmax air Gill
Tmin air Gill
[file: HWC9191D.WQF]

FIGURE: 27

HWC(AWS): DAILY MAXIMUM WIND
July 1991



[name: JULWSXWD]

—— WSmax 2 minute + WD of WSmax [file: HWC9191D.WQF]

FIGURE: 28

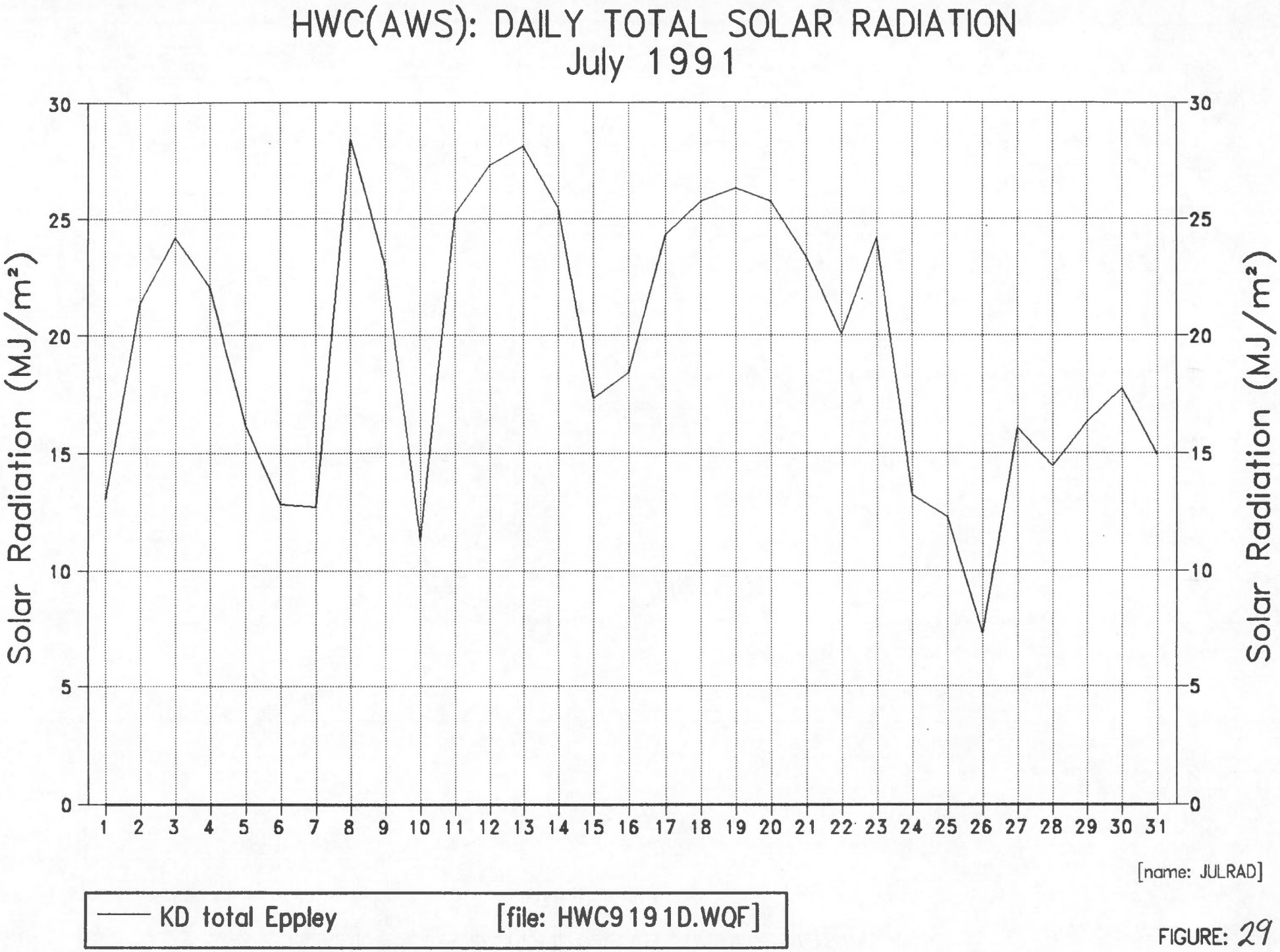
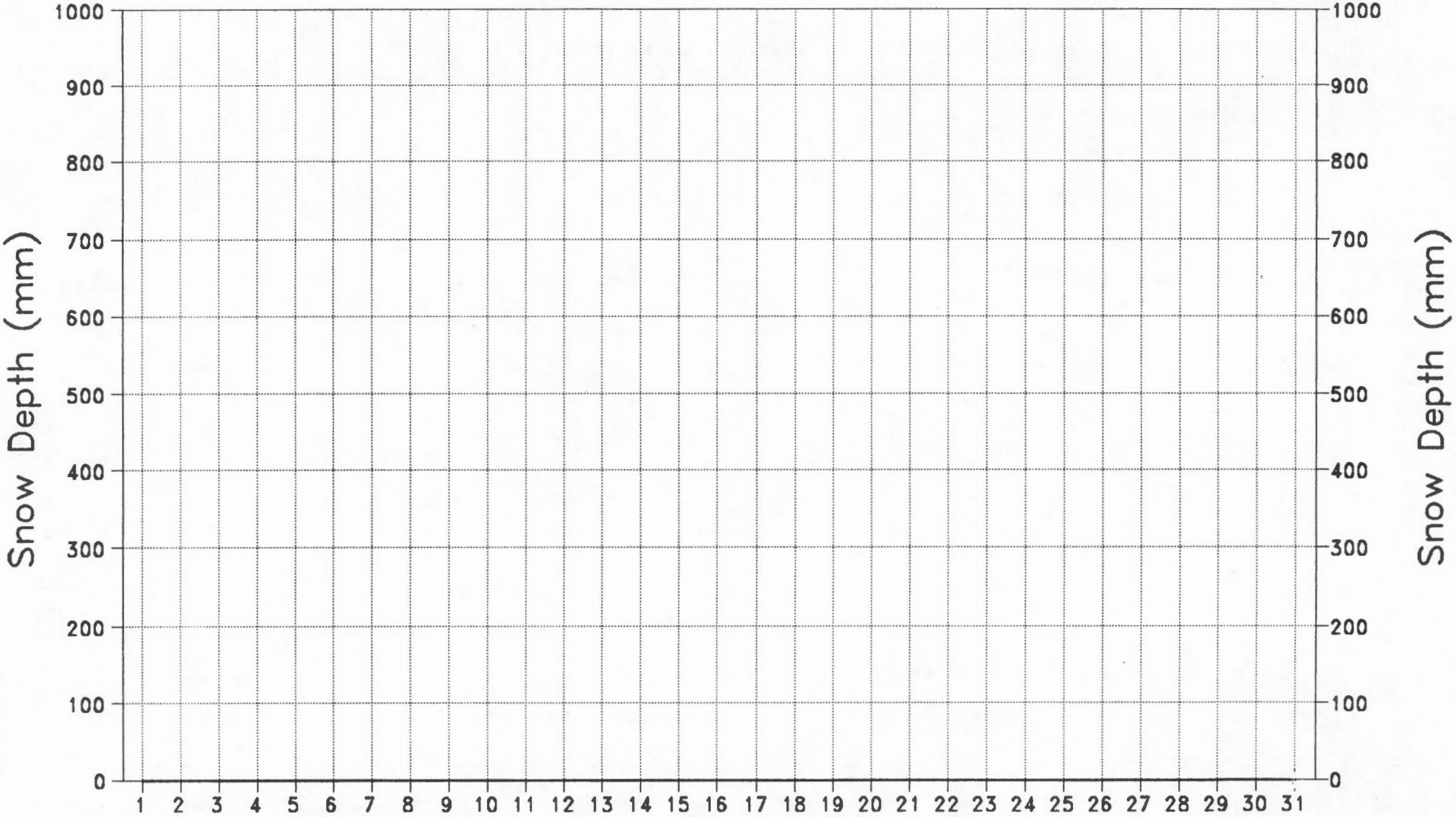

HWC(AWS): DAILY TOTAL SOLAR RADIATION
July 1991
Solar Radiation (MJ/m²)
0
5
10
15
20
25
30
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
[name: JULRAD]
KD total Eppley
[file: HWC9191D.WQF]

FIGURE: 29

HWC(AWS): DAILY SNOW DEPTH
July 1991



[name: JULSNDC]

SND cleaned CSMAL [file: HWC9191D.WQF]

FIGURE: 30

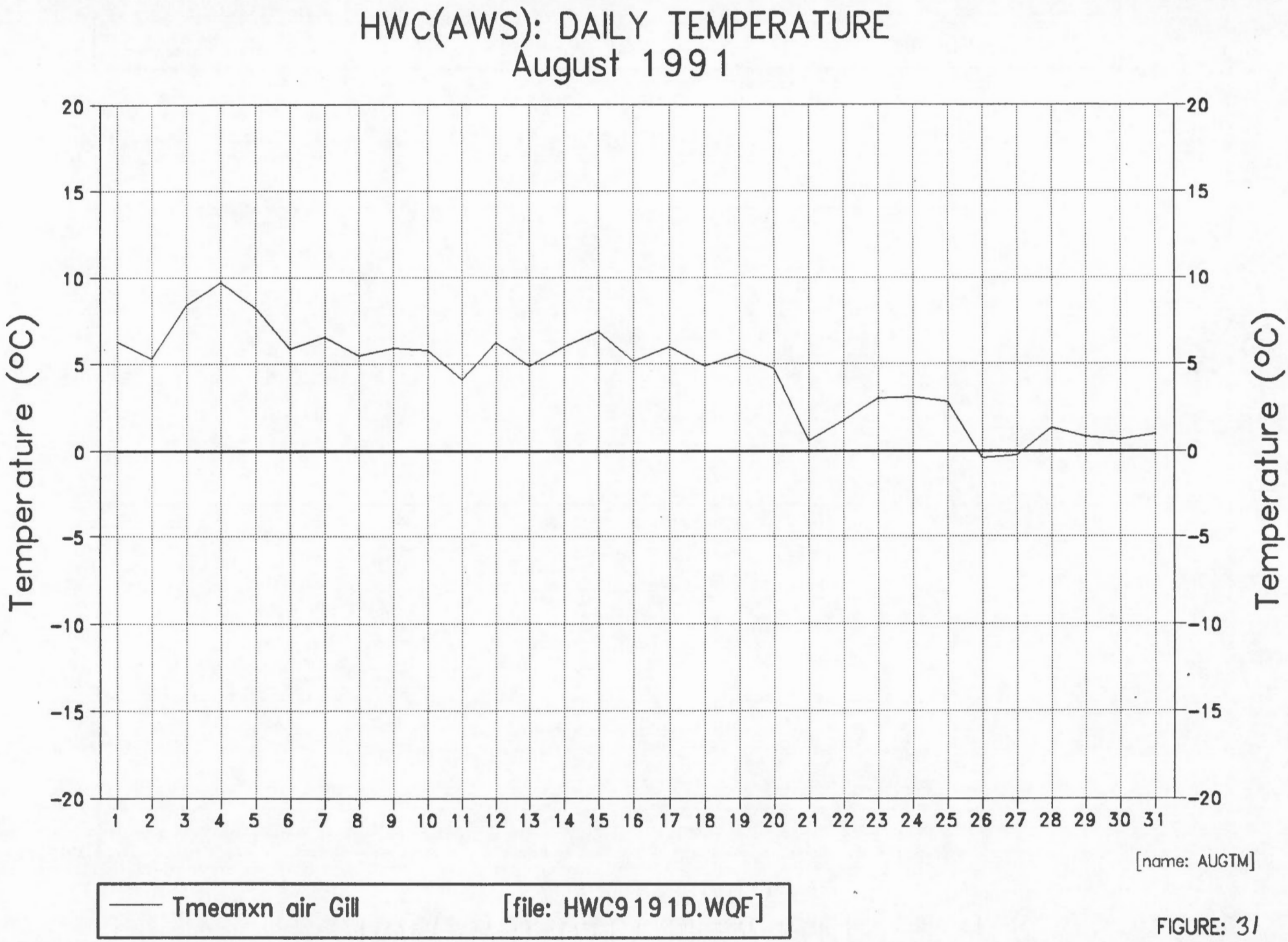

HWC(AWS): DAILY TEMPERATURE
August 1991
Temperature (°C)
20
15
10
5
0
-5
-10
-15
-20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
[name: AUGTM]
Tmeanxn air Gill
[file: HWC9191D.WQF]

FIGURE: 31

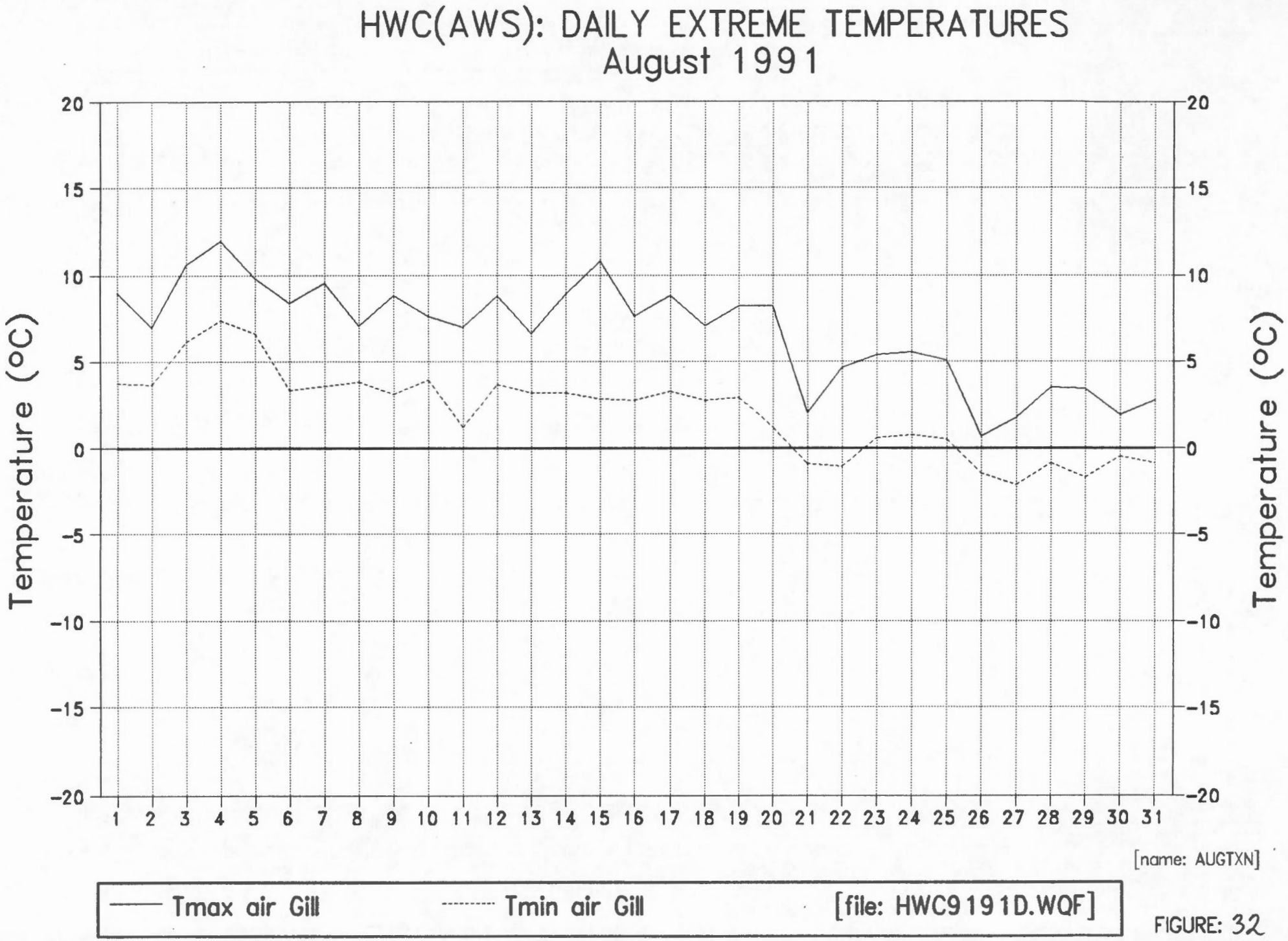

HWC(AWS): DAILY EXTREME TEMPERATURES
August 1991
Temperature (°C)
20
15
10
5
0
-5
-10
-15
-20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
[name: AUGTXN]
Tmax air Gill
Tmin air Gill
[file: HWC9191D.WQF]

FIGURE: 32

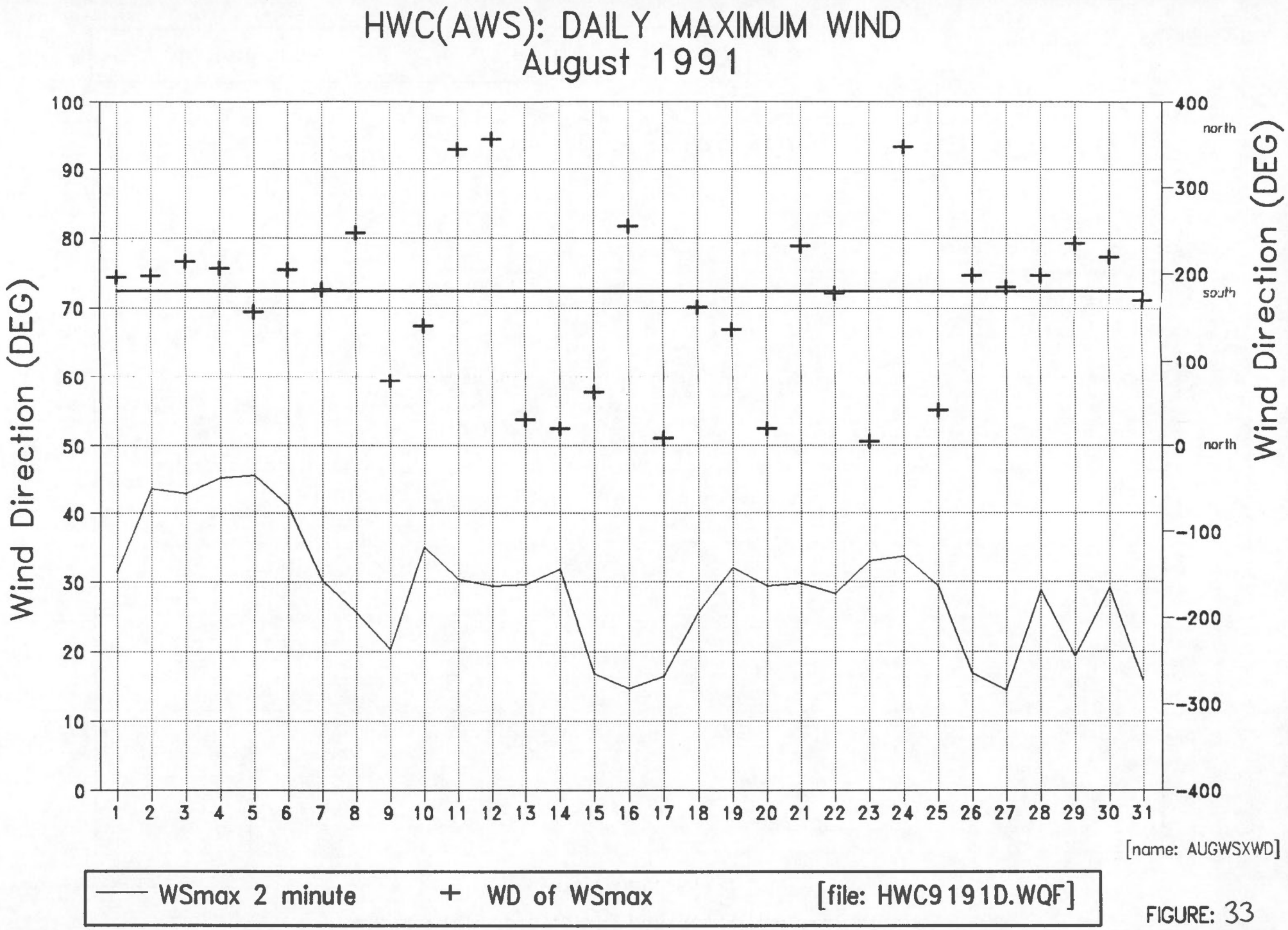

HWC(AWS): DAILY MAXIMUM WIND
August 1991
Wind Direction (DEG)
100
90
80
70
60
50
40
30
20
10
0
400
north
300
200
south
100
0
north
-100
-200
-300
-400
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
[name: AUGWSXWD]
WSmax 2 minute
WD of WSmax
[file: HWC9191D.WQF]

FIGURE: 33

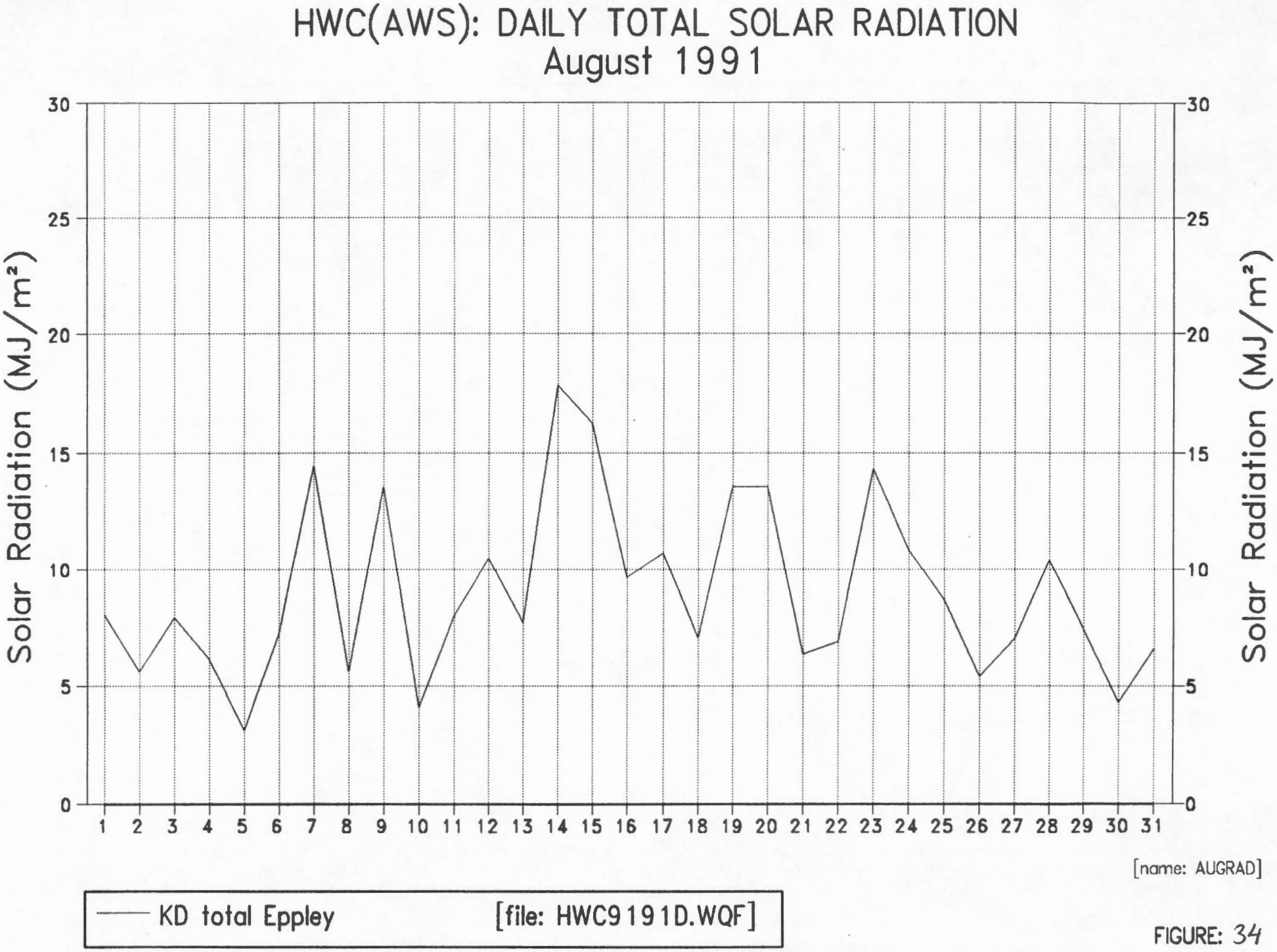

HWC(AWS): DAILY TOTAL SOLAR RADIATION
August 1991
Solar Radiation (MJ/m²)
0
5
10
15
20
25
30
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
[name: AUGRAD]
KD total Eppley
[file: HWC9191D.WQF]

FIGURE: 34

HWC(AWS): DAILY SNOW DEPTH
August 1991

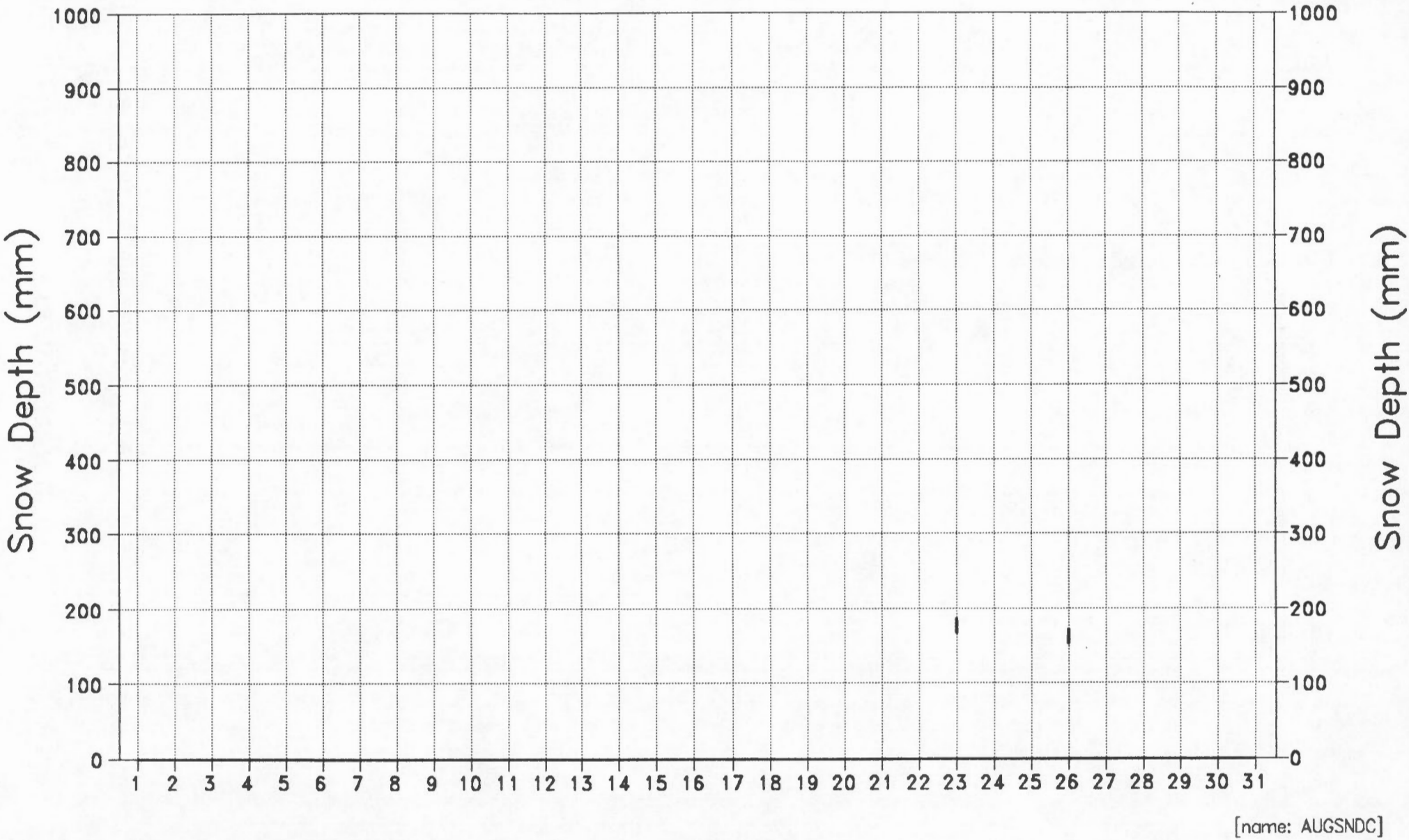


FIGURE: 35

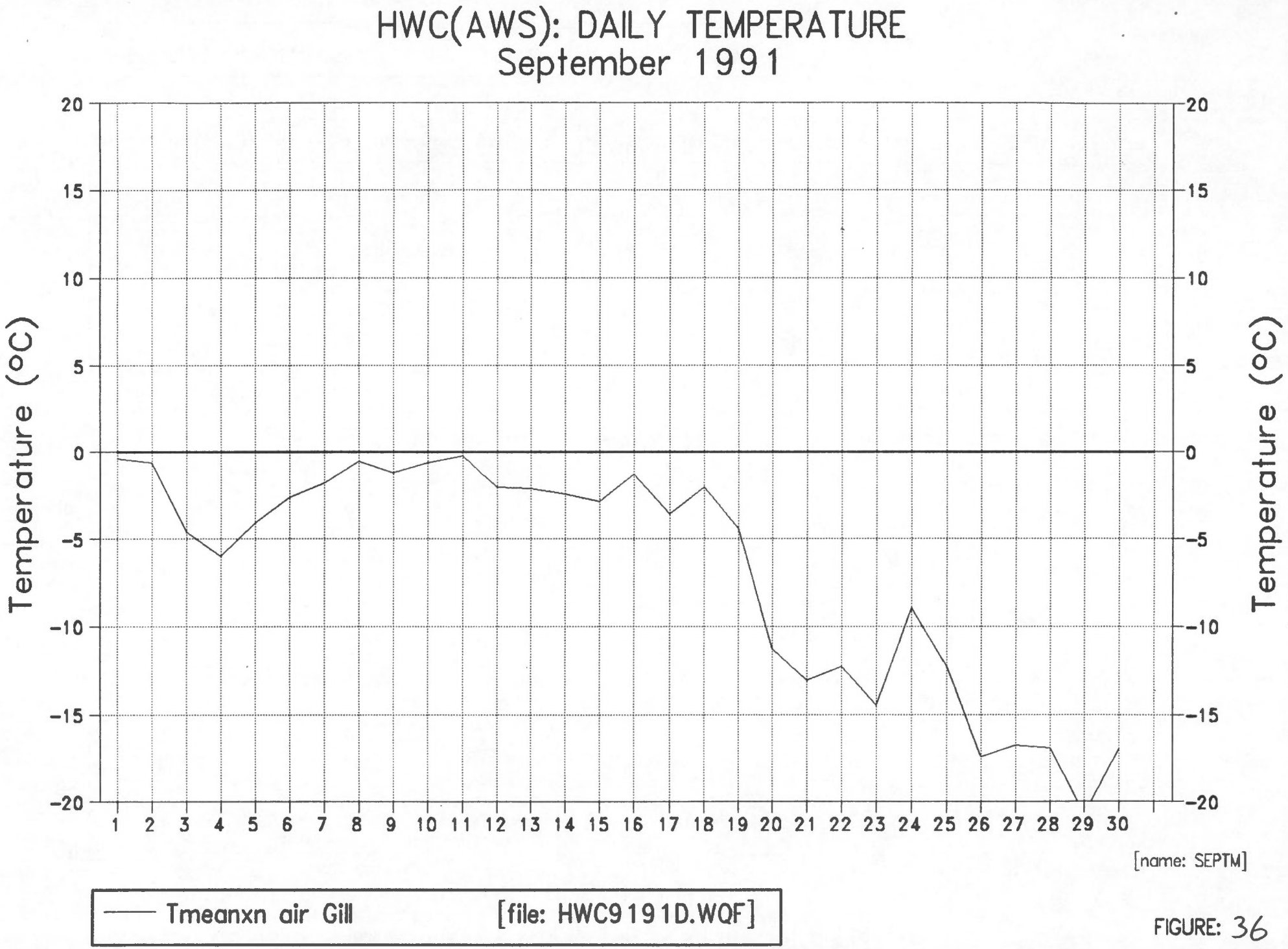

HWC(AWS): DAILY TEMPERATURE
September 1991
Temperature (°C)
20
15
10
5
0
-5
-10
-15
-20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
[name: SEPTM]
Tmeanxn air Gill
[file: HWC9191D.WQF]

FIGURE: 36

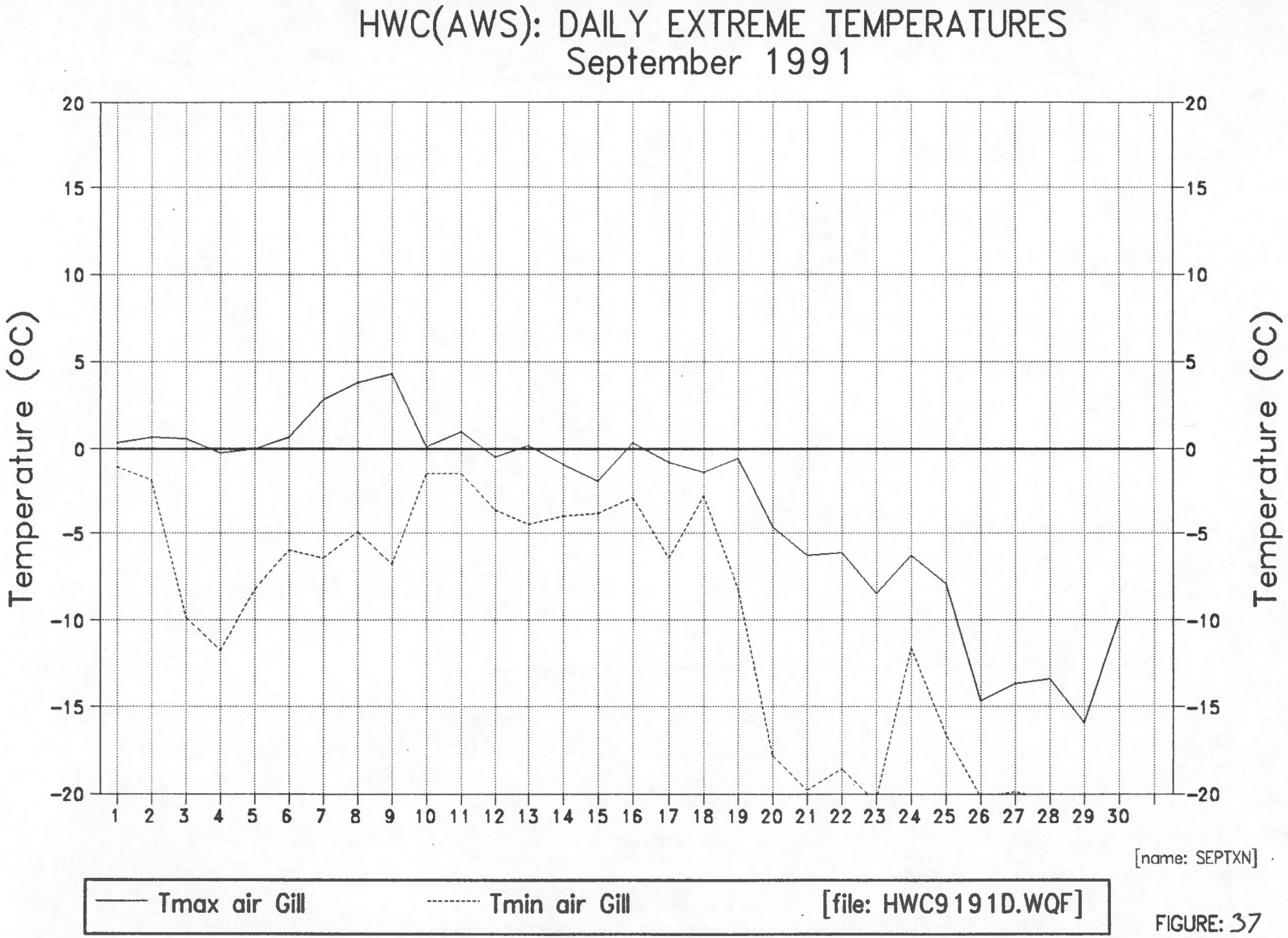

HWC(AWS): DAILY EXTREME TEMPERATURES
September 1991
Temperature (°C)
20
15
10
5
0
-5
-10
-15
-20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
[name: SEPTXN]
Tmax air Gill
Tmin air Gill
[file: HWC9191D.WQF]

FIGURE: 37

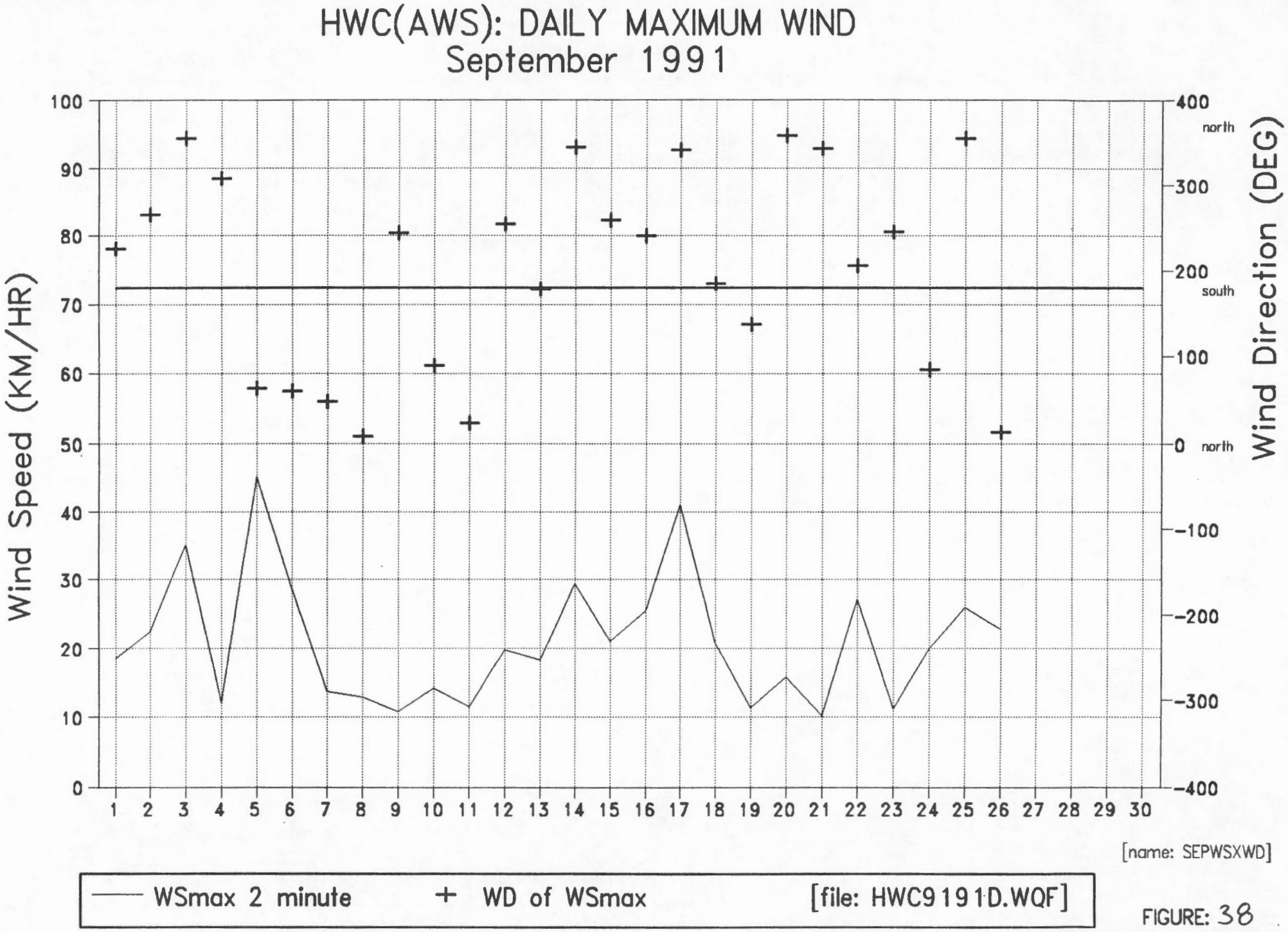

HWC(AWS): DAILY MAXIMUM WIND
September 1991
Wind Speed (KM/HR)
Wind Direction (DEG)
100
90
80
70
60
50
40
30
20
10
0
400
north
300
200
south
100
0
north
-100
-200
-300
-400
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
[name: SEPWSXWD]
WSmax 2 minute
WD of WSmax
[file: HWC9191D.WQF]

FIGURE: 38

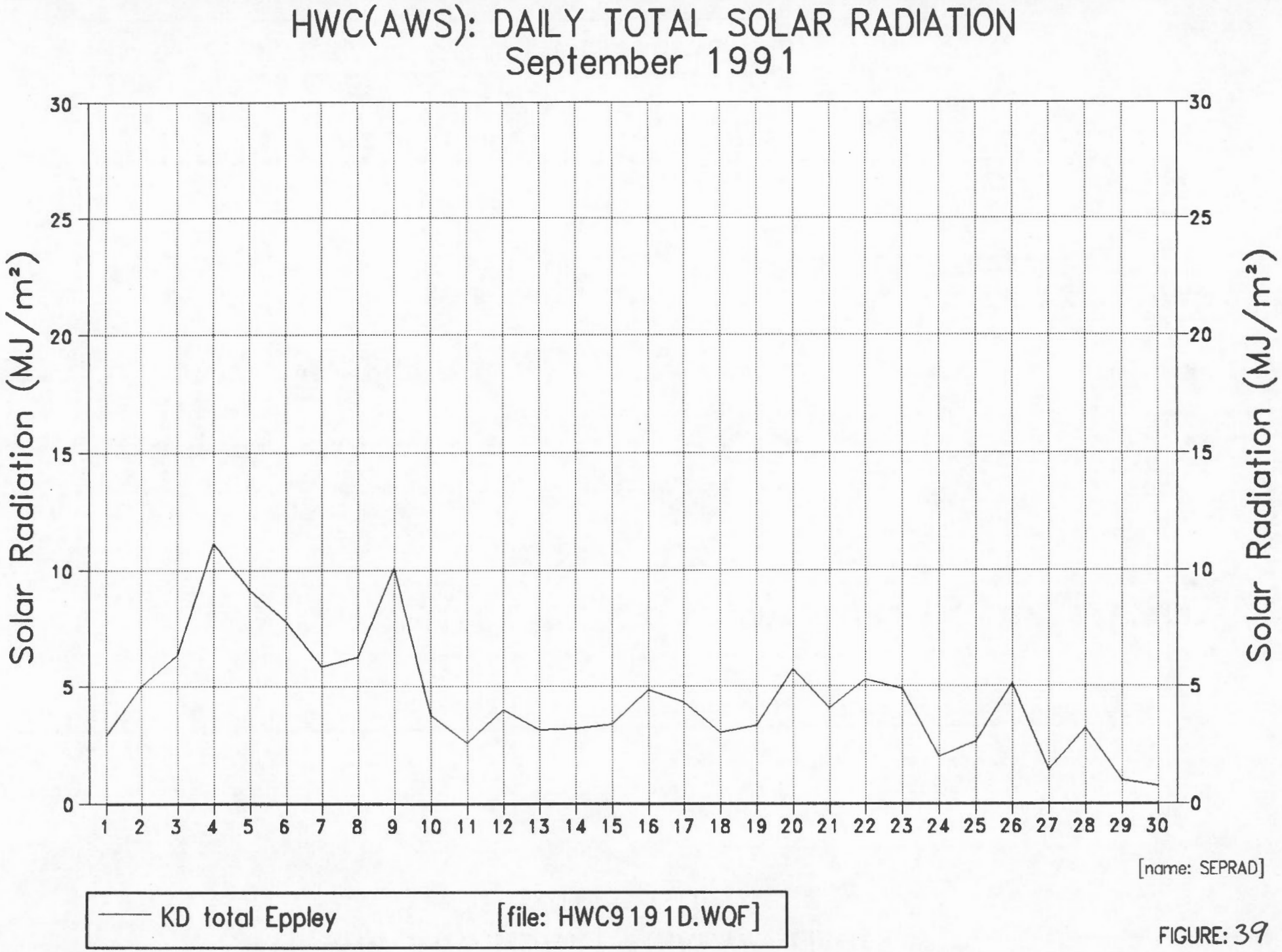

HWC(AWS): DAILY TOTAL SOLAR RADIATION
September 1991
Solar Radiation (MJ/m²)
0
5
10
15
20
25
30
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
[name: SEPRAD]
KD total Eppley
[file: HWC9191D.WQF]

FIGURE: 39

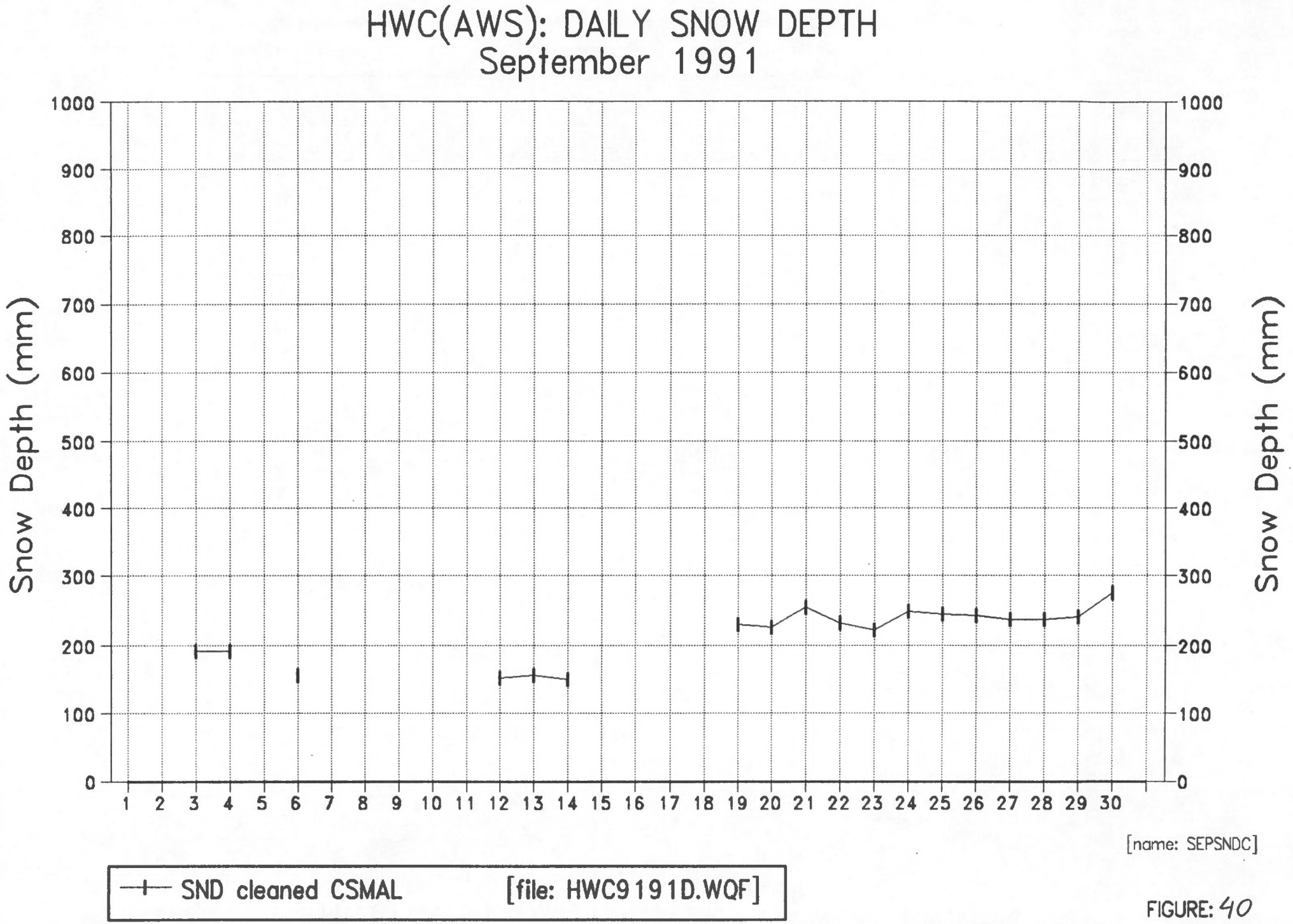

HWC(AWS): DAILY SNOW DEPTH
September 1991
Snow Depth (mm)
1000
900
800
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
[name: SEPSNDC]
SND cleaned CSMAL
[file: HWC9191D.WQF]

FIGURE: 40

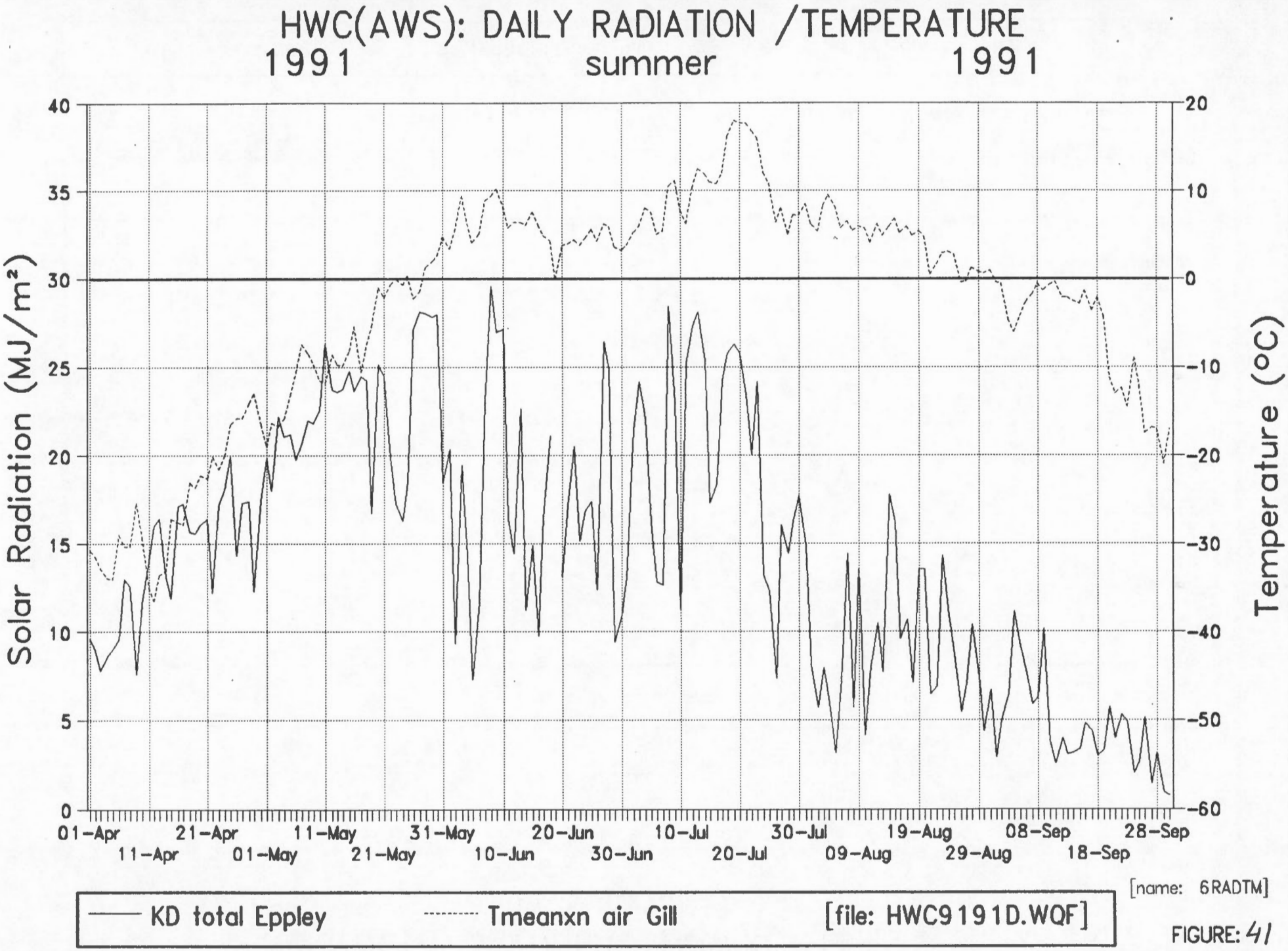

HWC(AWS): DAILY RADIATION /TEMPERATURE
1991 summer 1991
Solar Radiation (MJ/m²)
Temperature (°C)
40
35
30
25
20
15
10
5
0
20
10
0
-10
-20
-30
-40
-50
-60
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
KD total Eppley
Tmeanxn air Gill
[file: HWC9191D.WQF]
[name: 6RADTM]

FIGURE: 41

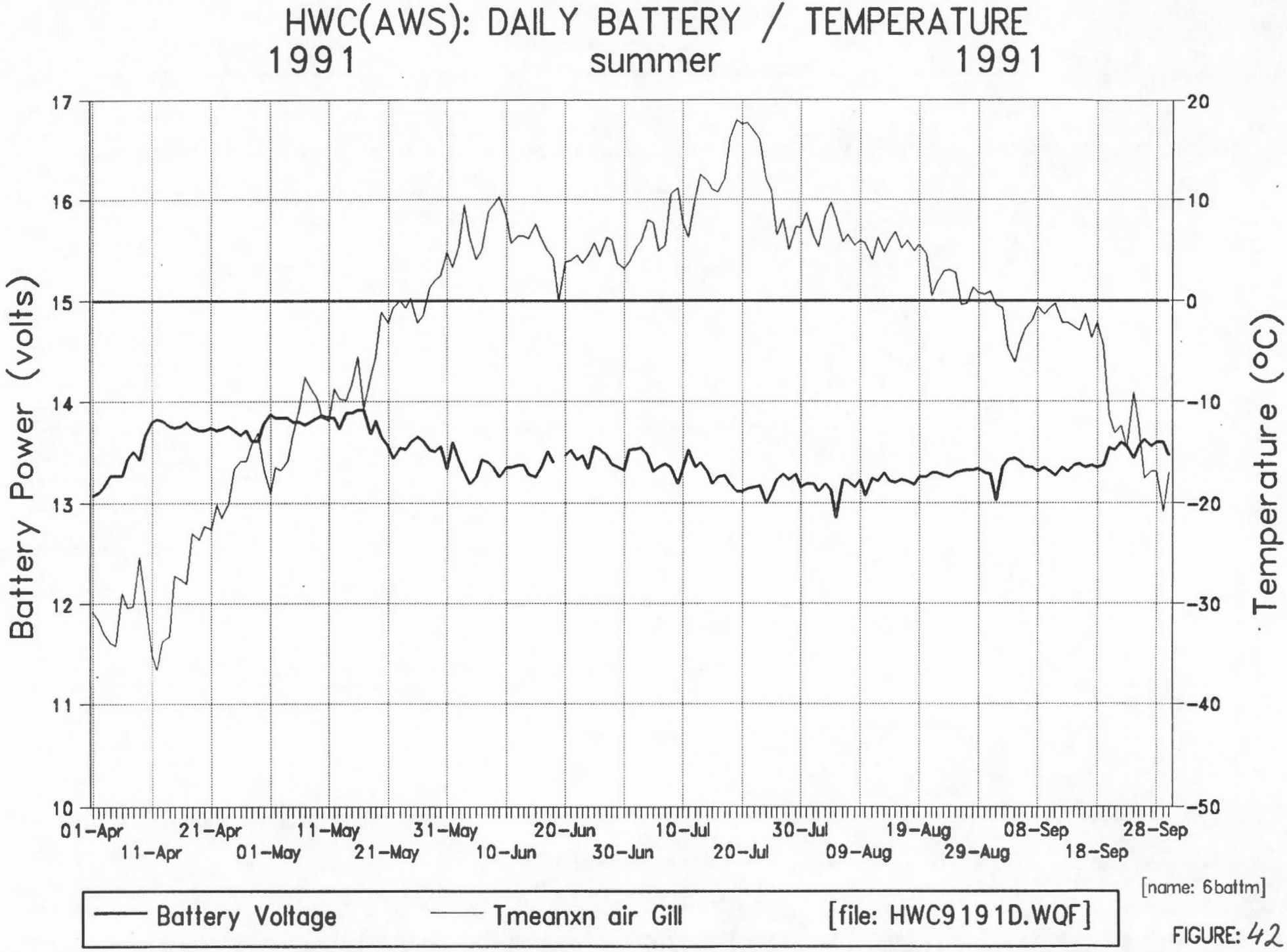
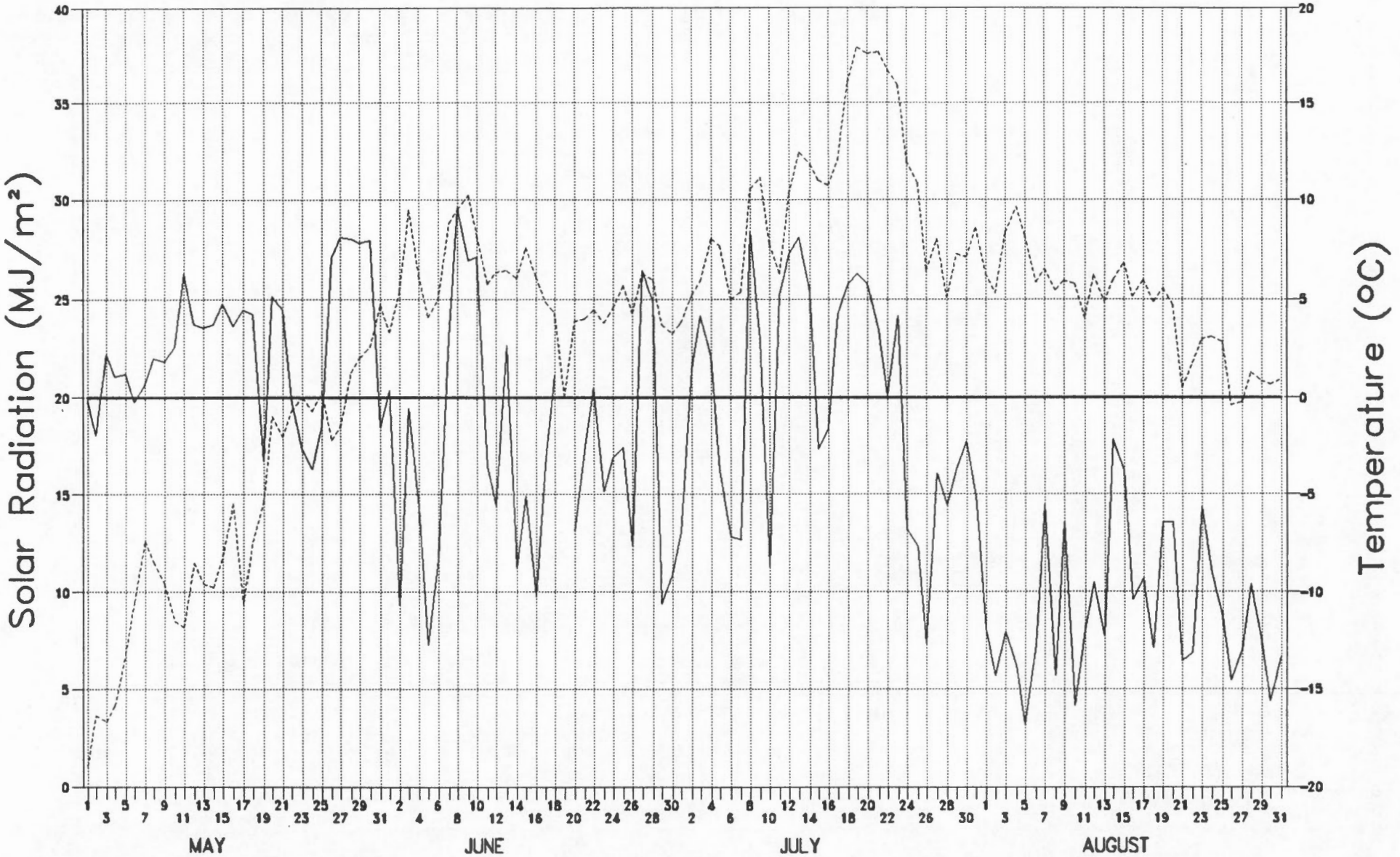

HWC(AWS): DAILY BATTERY / TEMPERATURE
1991 summer 1991
Battery Power (volts)
Temperature (°C)
17
16
15
14
13
12
11
10
20
10
0
-10
-20
-30
-40
-50
01-Apr
11-Apr
21-Apr
01-May
11-May
21-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
30-Jul
09-Aug
19-Aug
29-Aug
08-Sep
18-Sep
28-Sep
Battery Voltage
Tmeanxn air Gill
[file: HWC9191D.WQF]
[name: 6battm]

FIGURE: 42

HWC(AWS): DAILY RADIATION /TEMPERATURE
May – August 1991

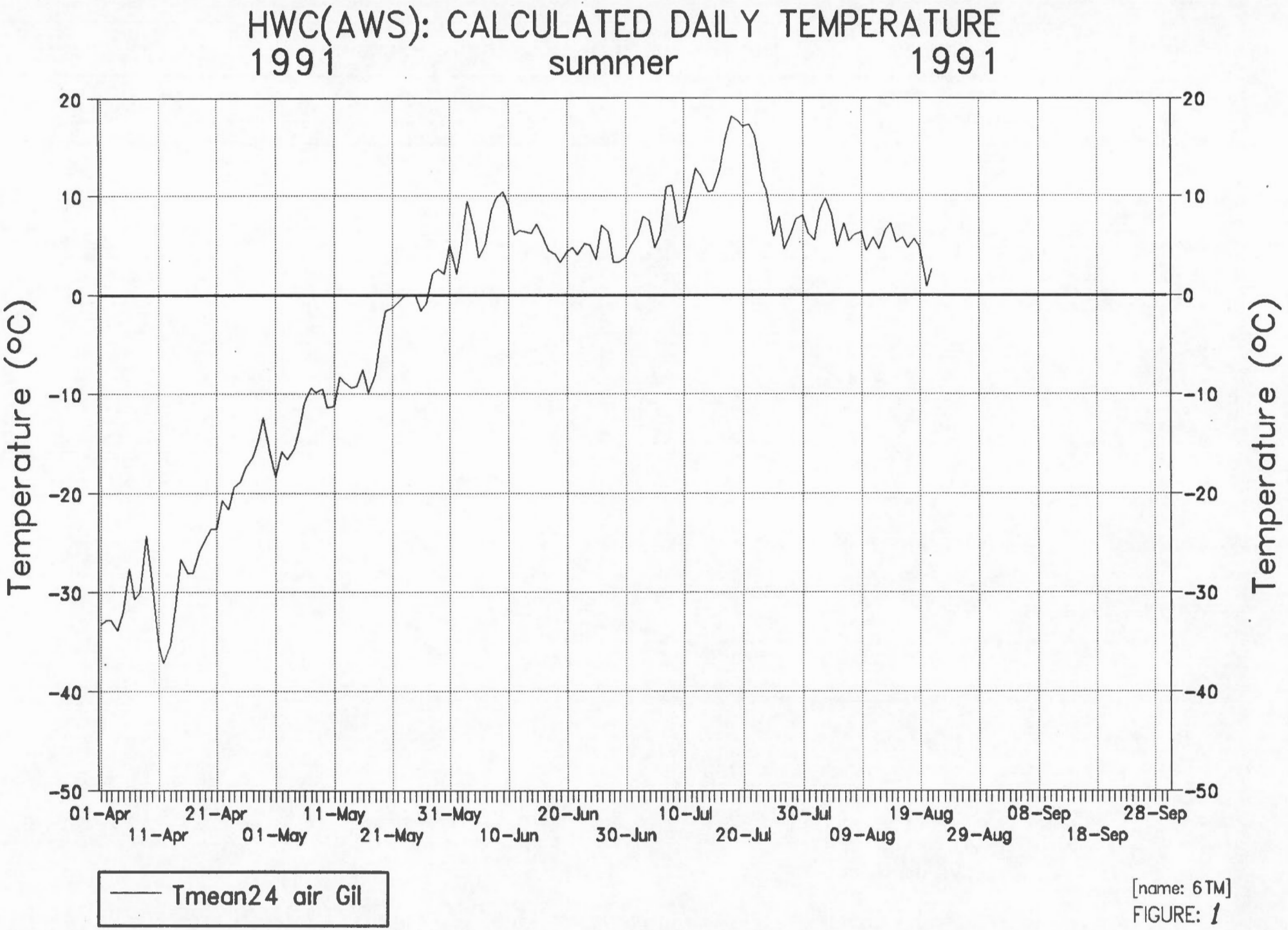


[name: 4RADTM]

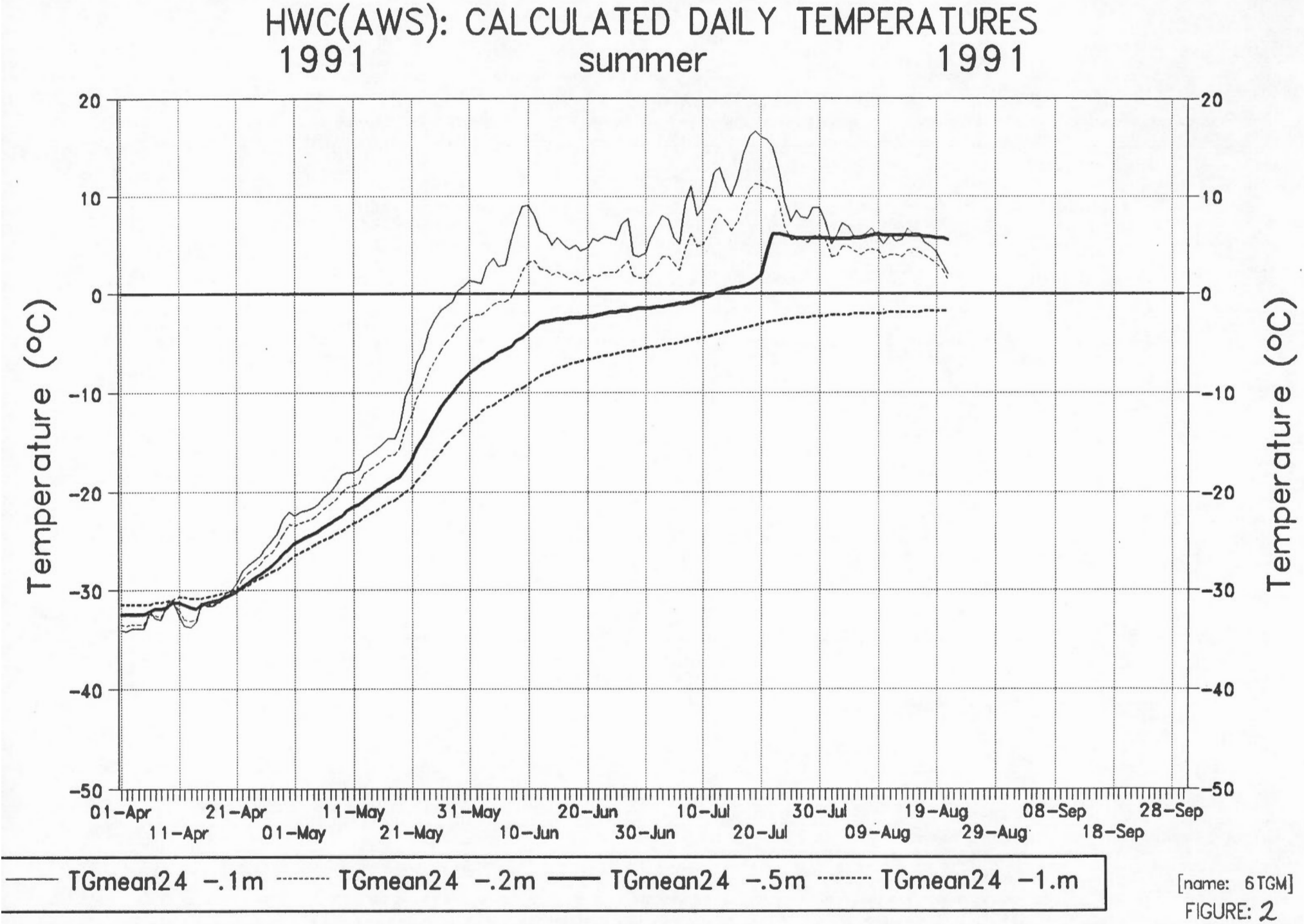
—— KD total Eppley ------- Tmeanxn air Gill [file: HWC9191D.WQF]

FIGURE: 43

TABLE: 9					
HWC(AWS): Hot Weather Creek (Automatic Weather Station) Site					
April 1991 - September 1991					
Calculated Values					
File: HWC9191C.WQF					
name:	Figure no.		Season/ Month	Year(s)	Figure Caption
6tm	HWC9191C.	1	Summer	1991	Calculated mean air temperature (°C) from 24 hourly spot observations [Gill Shield]
6tgm	HWC9191C.	2	Summer	1991	Calculated mean ground temperatures (°C) from 24 hourly spot values at various depths
6rhm	HWC9191C.	3	Summer	1991	Calculated mean relative humidity (%) from 24 spot hourly values
6wsm	HWC9191C.	4	Summer	1991	Calculated mean wind speed from 24 hourly 2-minute values
6tg-.1m	HWC9191C.	5	Summer	1991	Calculated mean air temperature and 10cm ground temperature (°C) form 24 hourly values
6twsm	HWC9191C.	6	Summer	1991	Calculated mean air temperature (°C) and wind speed from 24 hourly values
ltm	HWC9191C.	7	Melt Season	1991	Calculated mean air temperature (°C) from 24 hourly spot observations [Gill Shield]
ltag	HWC9191C.	8	Melt Season	1991	Calculated mean ground temperatures (°C) from 24 hourly spot values at various depths
4tm	HWC9191C.	9	May - Auaust	1991	Calculated mean air temperature (°C) from 24 hourly spot observations [Gill Shield]
jultm	HWC9191C.	10	July	1991	Calculated mean air temperature (°C) from 24 hourly spot observations [Gill Shield]
jultgm	HWC9191C.	11	July	1991	Calculated mean ground temperatures (°C) from 24 hourly spot values at various depths
julwsm	HWC9191C.	12	July	1991	Calculated mean wind speed from 24 hourly 2-minute values
augtm	HWC9191C.	13	August	1991	Calculated mean air temperature (°C) from 24 hourly spot observations [Gill Shield]
augtgm	HWC9191C.	14	August	1991	Calculated mean ground temperatures (°C) from 24 hourly spot values at various depths
augwsm	HWC9191C.	15	August	1991	Calculated mean wind speed from 24 hourly 2-minute values

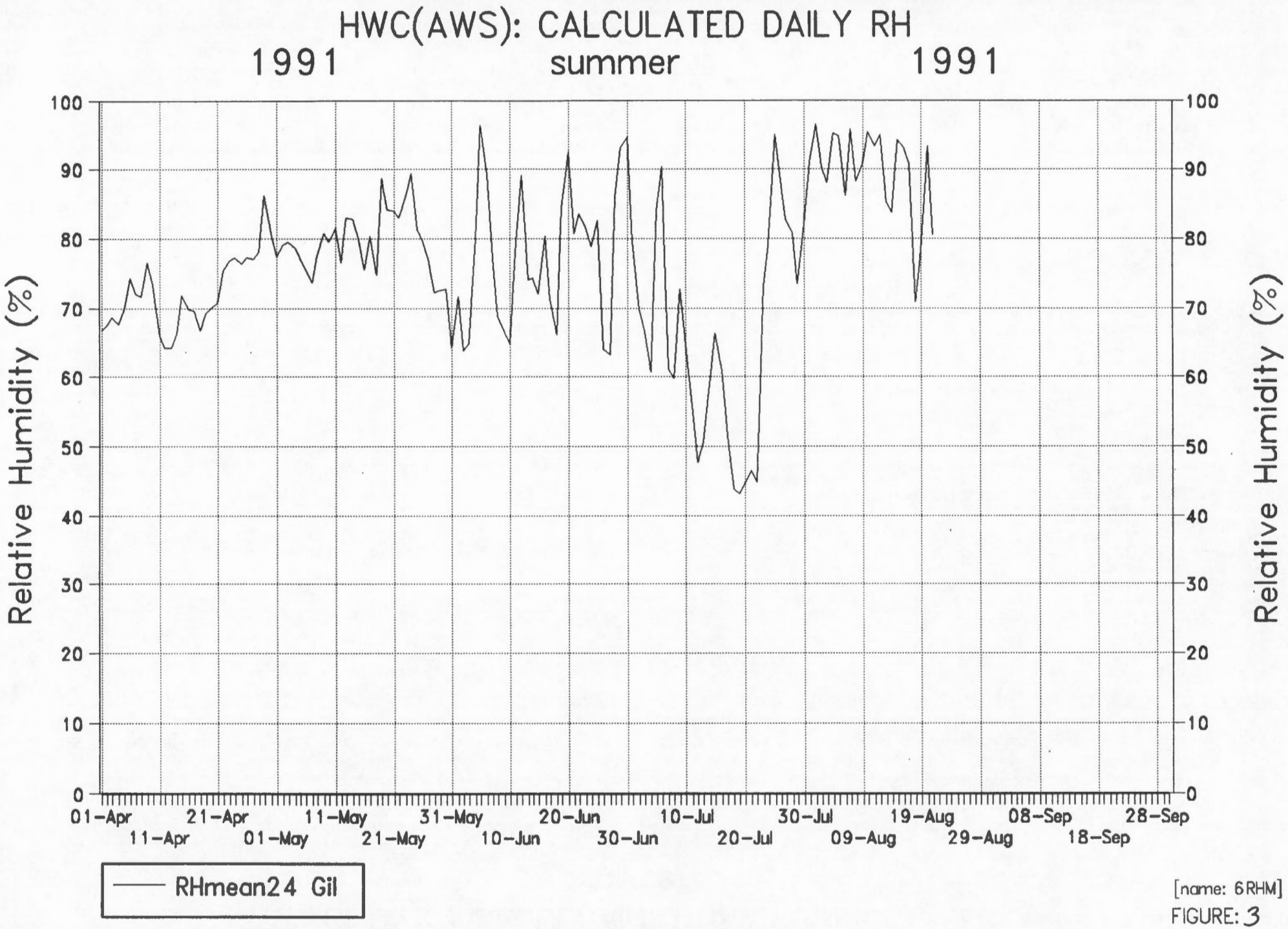


[name: 6TM]
FIGURE: 1



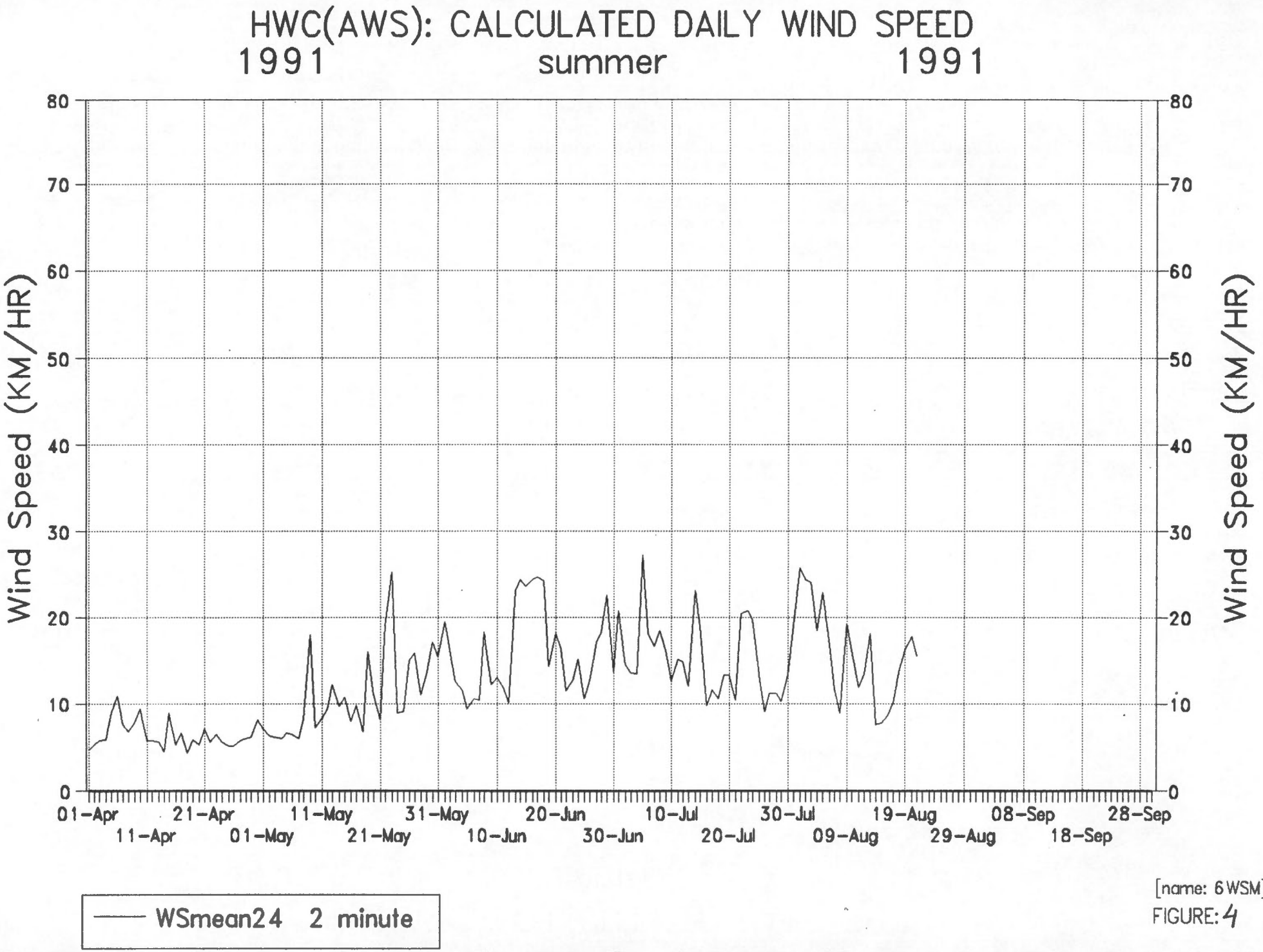
[name: 6TGM]

FIGURE: 2



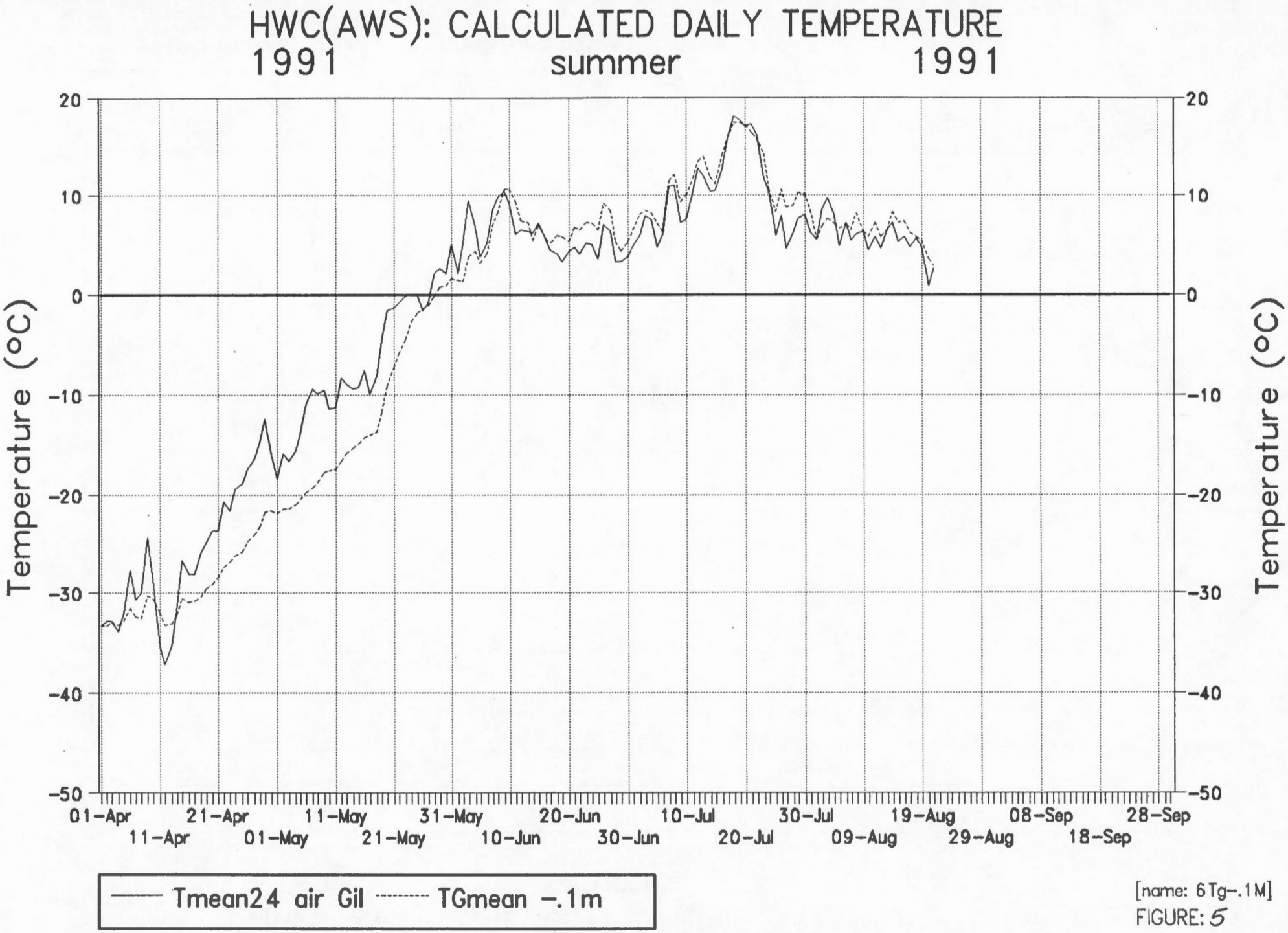
[name: 6RHM]

FIGURE: 3

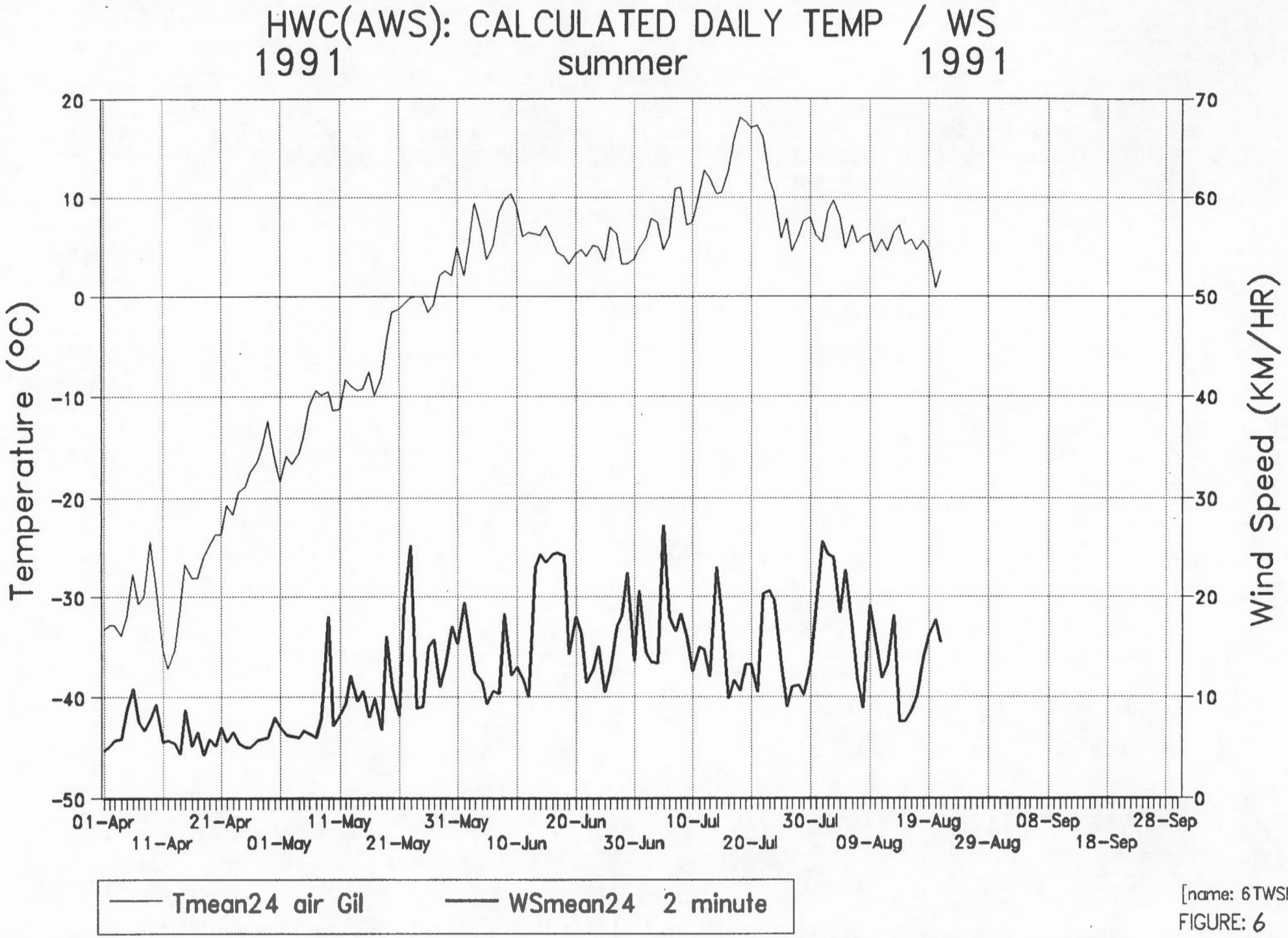


[name: 6WSM]

FIGURE: 4

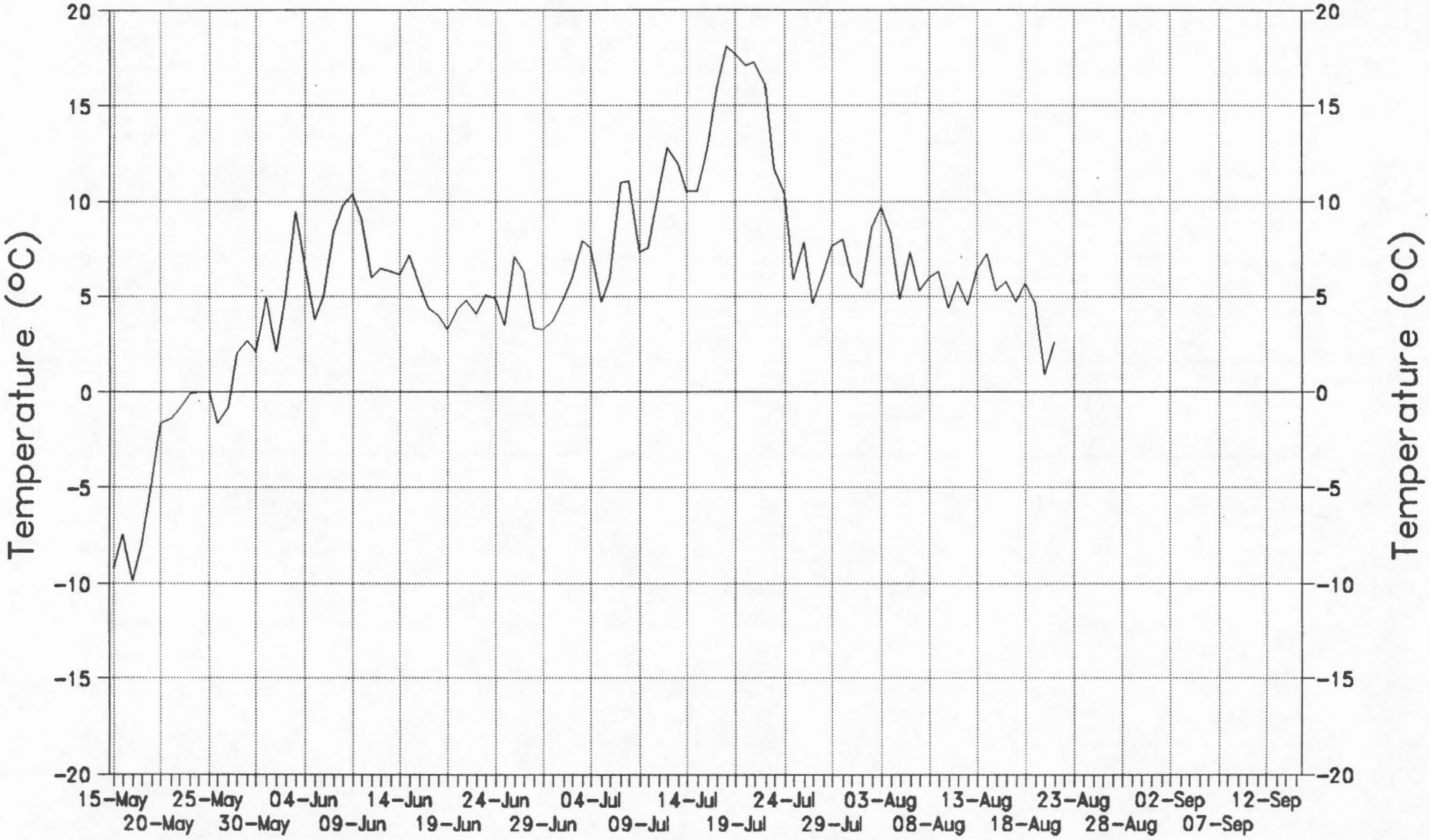


[name: 6Tg-.1M]
FIGURE: 5



[name: 6TWSM]
FIGURE: 6

HWC(AWS): CALCULATED DAILY TEMPERATURE
Melt Season 1991



[name: LTM]

FIGURE: 7

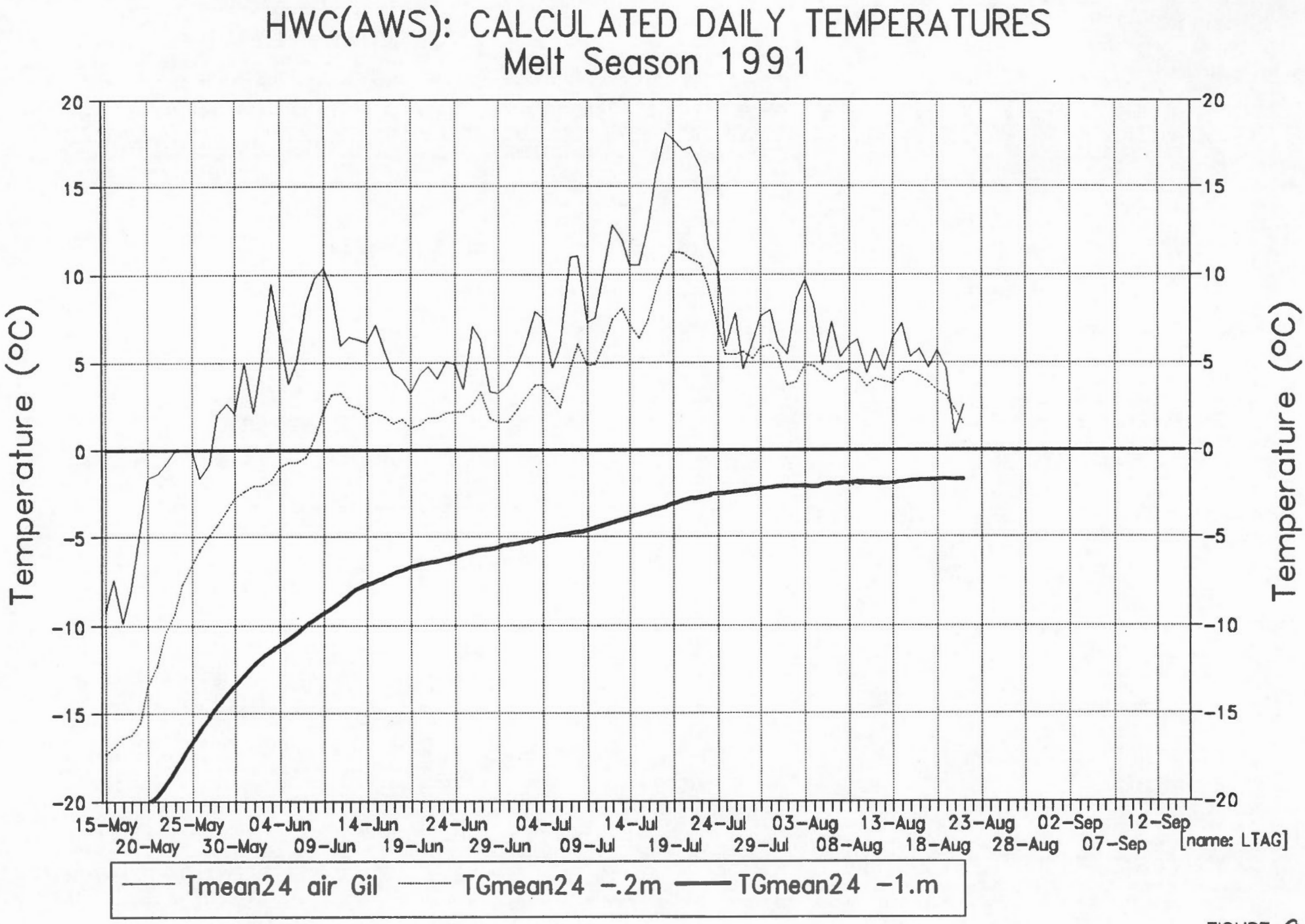
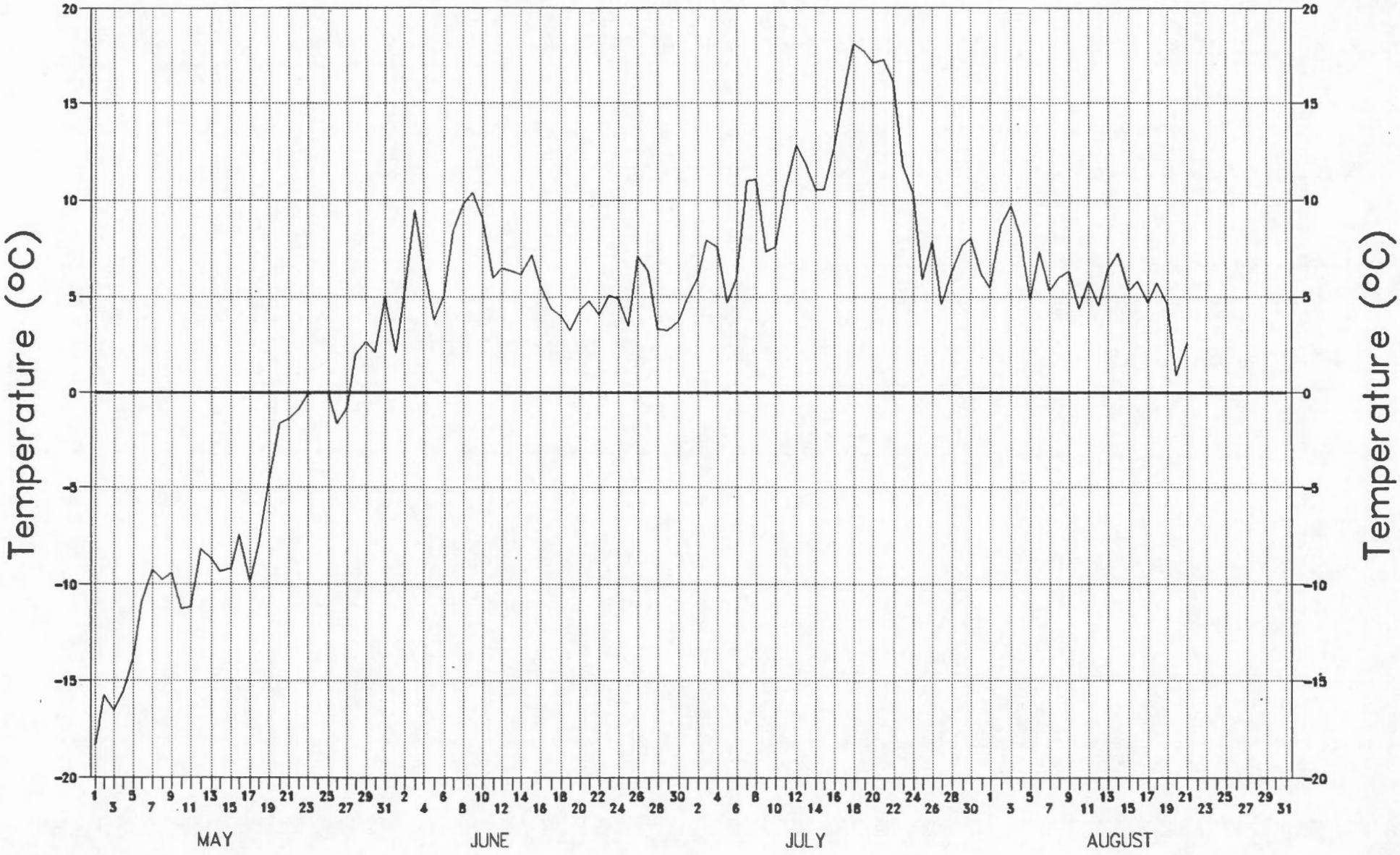

HWC(AWS): CALCULATED DAILY TEMPERATURES
Melt Season 1991
Temperature (°C)
20
15
10
5
0
-5
-10
-15
-20
15-May
20-May
25-May
30-May
04-Jun
09-Jun
14-Jun
19-Jun
24-Jun
29-Jun
04-Jul
09-Jul
14-Jul
19-Jul
24-Jul
29-Jul
03-Aug
08-Aug
13-Aug
18-Aug
23-Aug
28-Aug
02-Sep
07-Sep
12-Sep
[name: LTAG]
Tmean24 air Gil
TGmean24 -.2m
TGmean24 -1.m

FIGURE: 8

HWC(AWS): CALCULATED DAILY TEMPERATURES
May – August 1991



[name: 4TM]

Tmean24 air Gil

FIGURE: 9

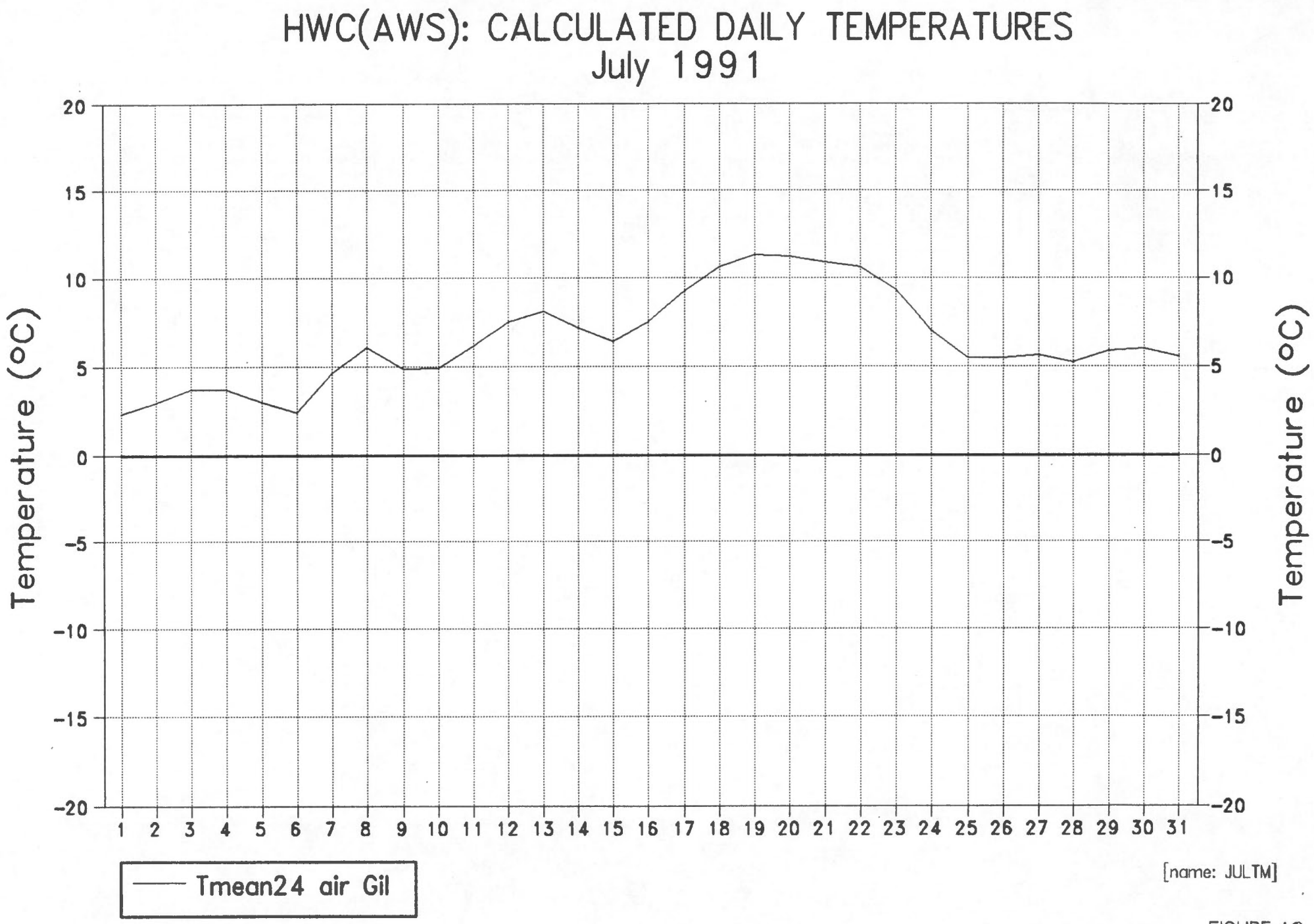

HWC(AWS): CALCULATED DAILY TEMPERATURES
July 1991
Temperature (°C)
20
15
10
5
0
-5
-10
-15
-20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Tmean24 air Gil
[name: JULTM]

FIGURE: 10

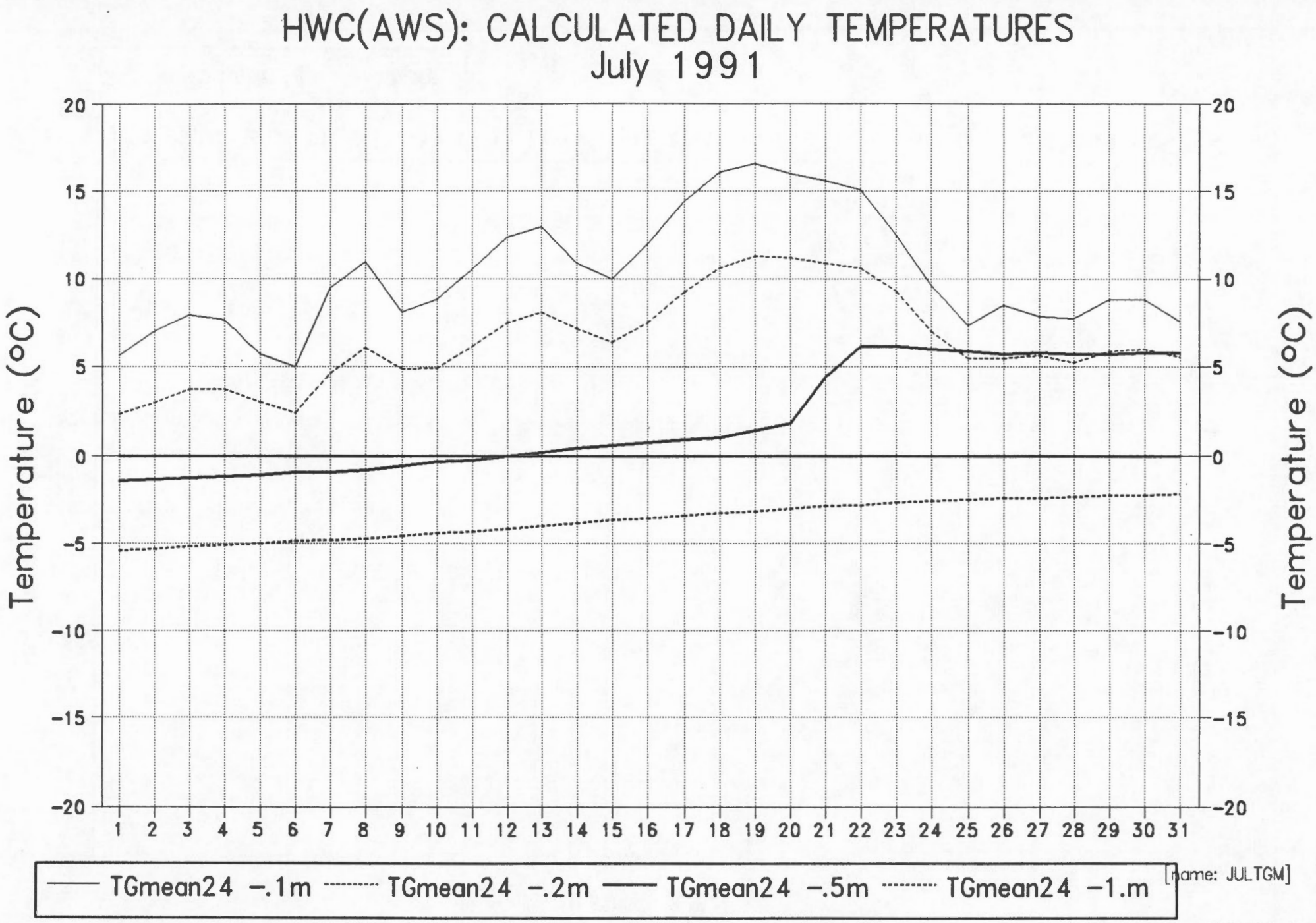

HWC(AWS): CALCULATED DAILY TEMPERATURES
July 1991
Temperature (°C)
20
15
10
5
0
-5
-10
-15
-20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
TGmean24 -.1m
TGmean24 -.2m
TGmean24 -.5m
TGmean24 -1.m
[name: JULTGM]

FIGURE: 11

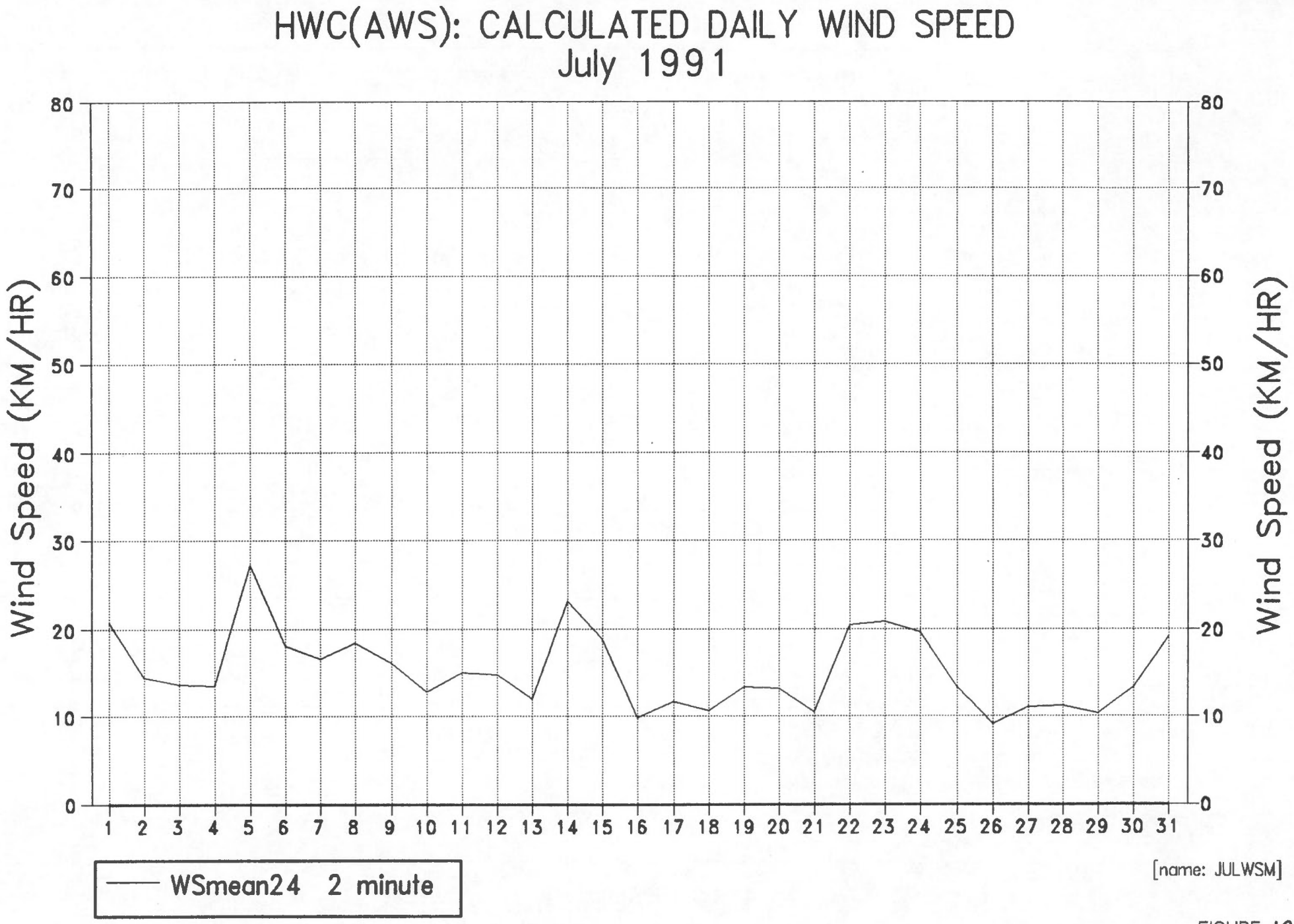

HWC(AWS): CALCULATED DAILY WIND SPEED
July 1991
Wind Speed (KM/HR)
0
10
20
30
40
50
60
70
80
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
WSmean24 2 minute
[name: JULWSM]

FIGURE: 12

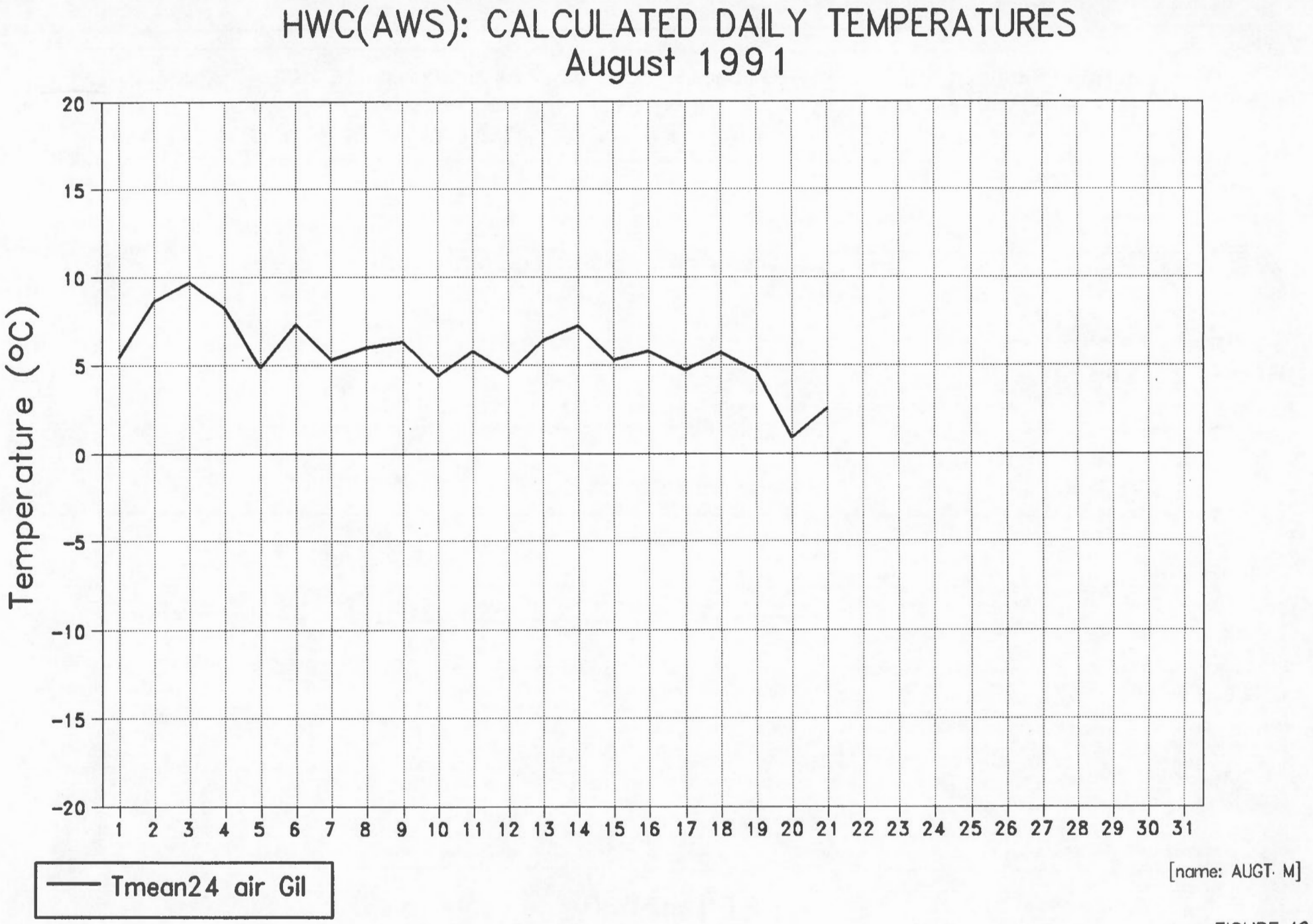

HWC(AWS): CALCULATED DAILY TEMPERATURES
August 1991
Temperature (°C)
20
15
10
5
0
-5
-10
-15
-20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Tmean24 air Gil
[name: AUGT. M]

FIGURE: 13

HWC(AWS): CALCULATED DAILY TEMPERATURES
August 1991

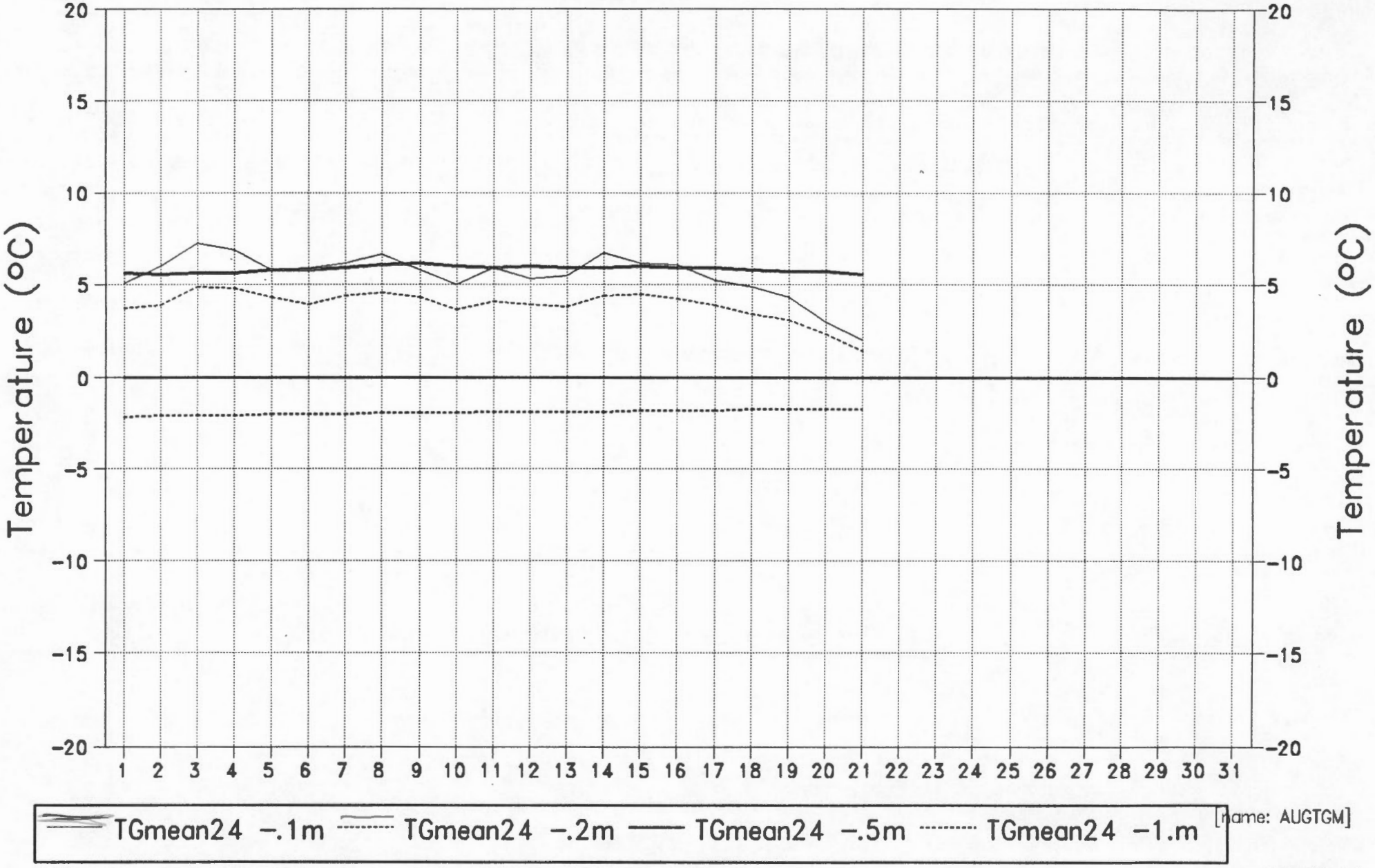


FIGURE: 14

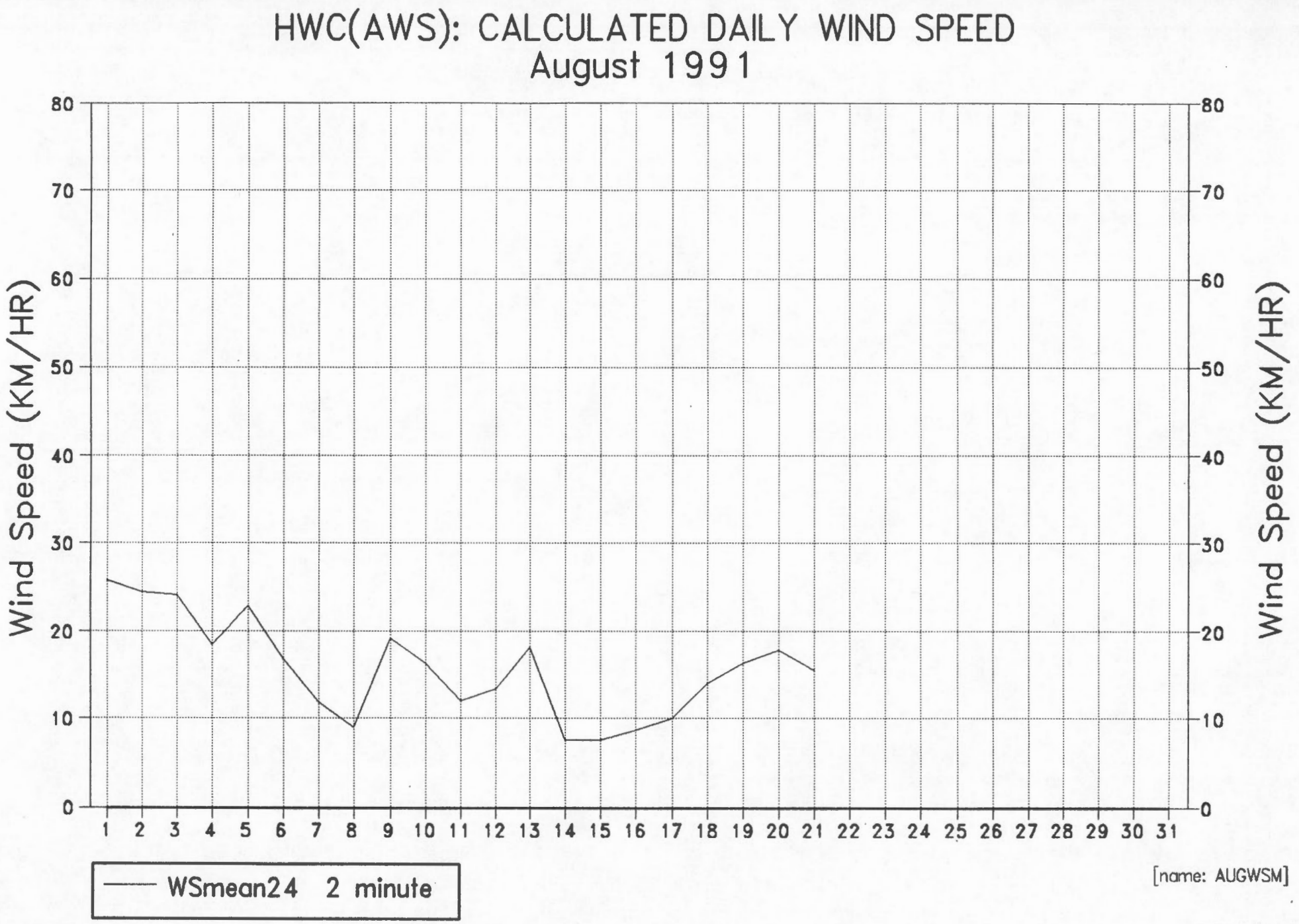

HWC(AWS): CALCULATED DAILY WIND SPEED
August 1991
Wind Speed (KM/HR)
0
10
20
30
40
50
60
70
80
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
WSmean24 2 minute
[name: AUGWSM]

FIGURE: 15

TABLE: 10

HWC(AWS): Hot Weather Creek (Automatic Weather Station) Site

July 1991

Hourly Values

name:	Figure no.		Month	Year	Figure Caption
tm	HWC9107H	1	July	1991	Houly air temperature sampled value from Gill shield
tgm	HWC9107H.	2	July	1991	Hourly ground temperature (°C) sampled value from various depths
rhm	HWC9107H.	3	July	1991	Hourly relative humidity (%) sampled value from Gill shield
trhm	HWC9107H.	4	July	1991	Hourly temperature and relative humidity sampled values from Gill shield
kd	HWC9107H.	5	July	1991	Hourly total imcomming solar radiation (MJ/m^2)
kdtm	HWC9107H.	6	July	1991	Hourly total imcomming solar radiation (MJ/m^2) and temp.
ws2	HWC9107H.	7	July	1991	Hourly wind speed (KM/HR) 2-minute values
wswd2	HWC9107H.	8	July	1991	Hourly wind speed (KM/HR) and wind direction (degrees) 2-minute values
ws2tm	HWC9107H.	9	July	1991	Hourly wind speed (KM/HR) 2-minute values amd temperature (°C) sampled values

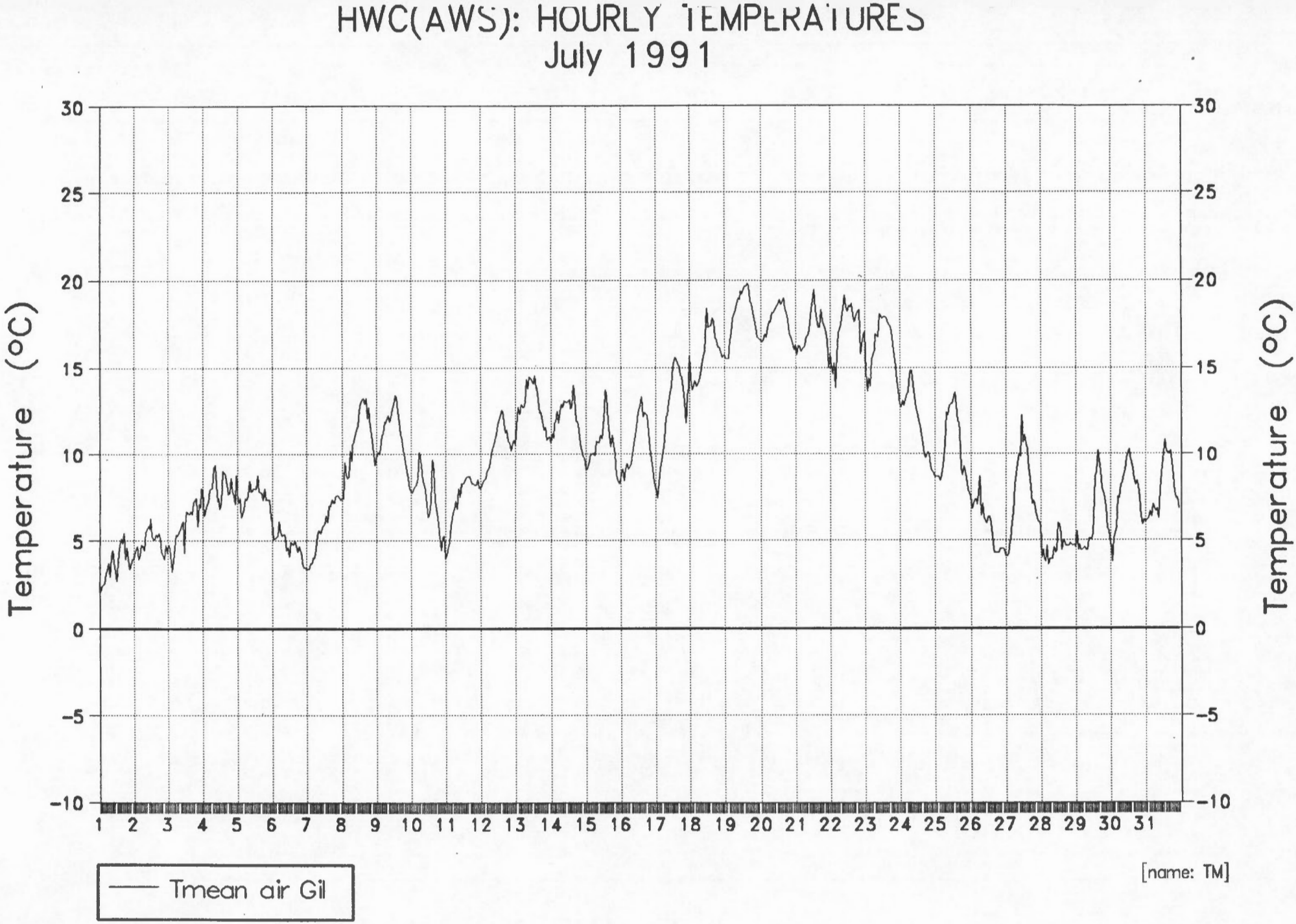
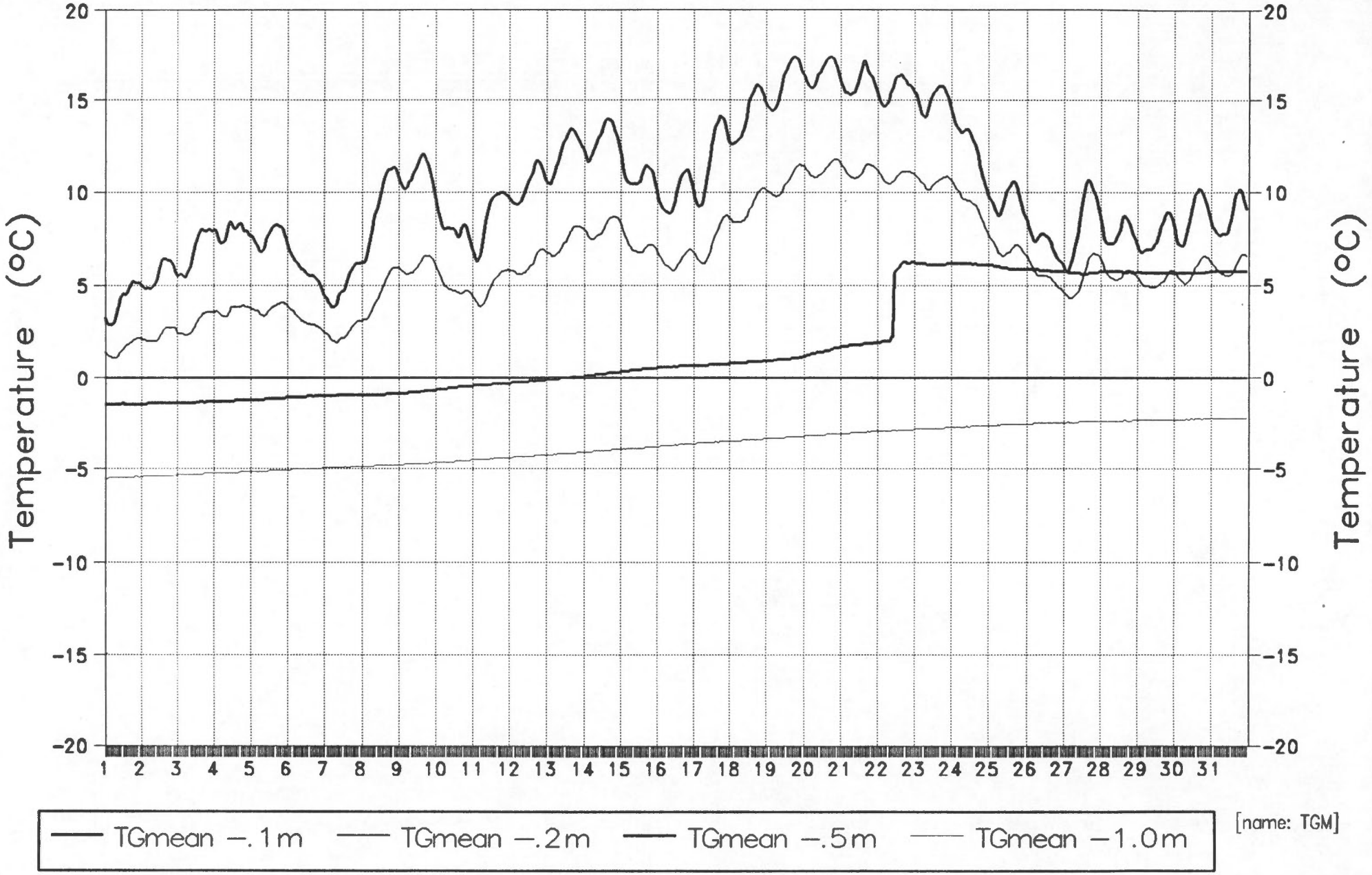

HWC(AWS): HOURLY TEMPERATURES
July 1991
Temperature (°C)
30
25
20
15
10
5
0
-5
-10
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Tmean air Gil
[name: TM]

FIGURE: *1*

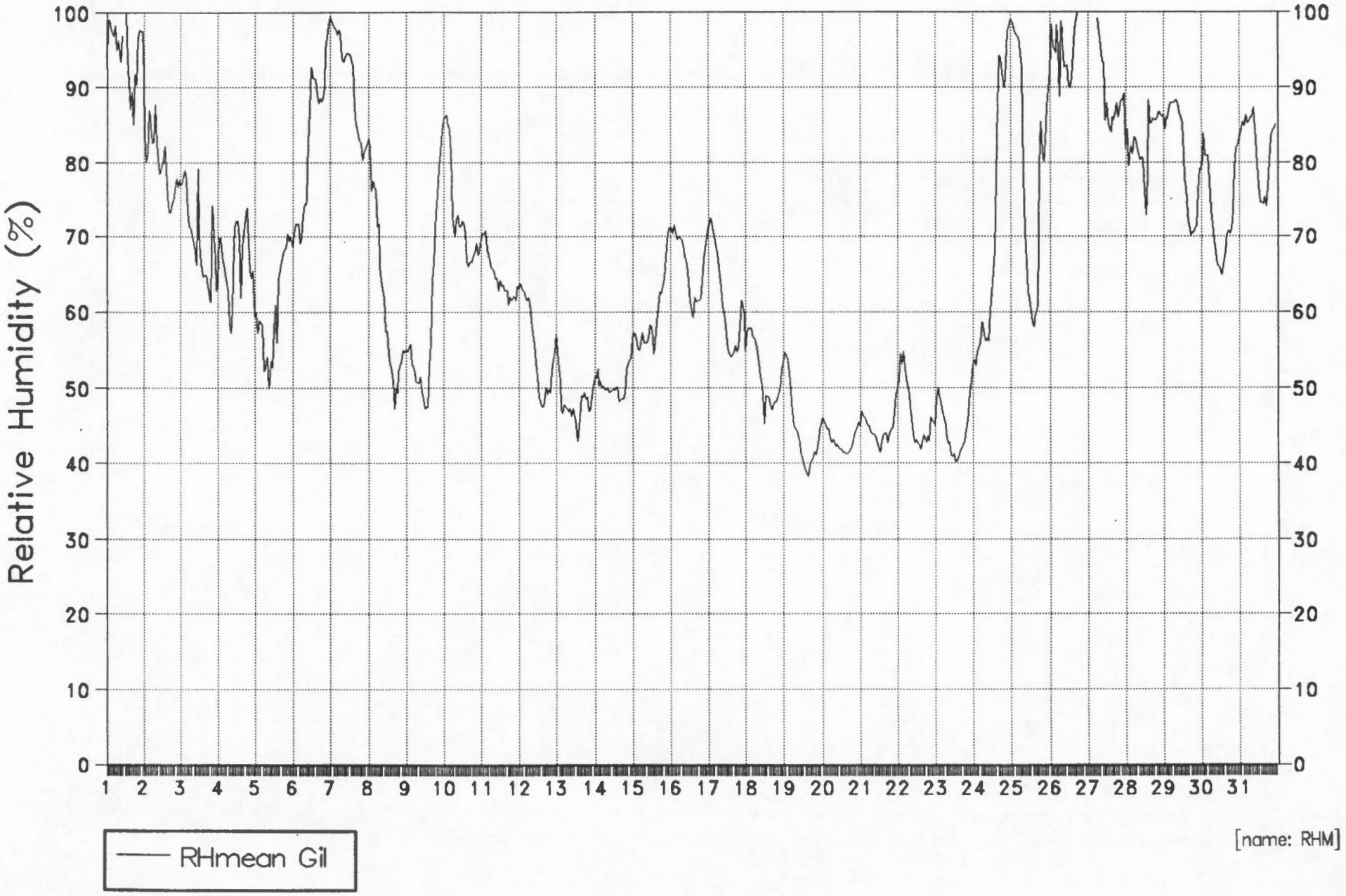
HWC(AWS): HOURLY TEMPERATURES
July 1991



[name: TGM]

FIGURE: 2

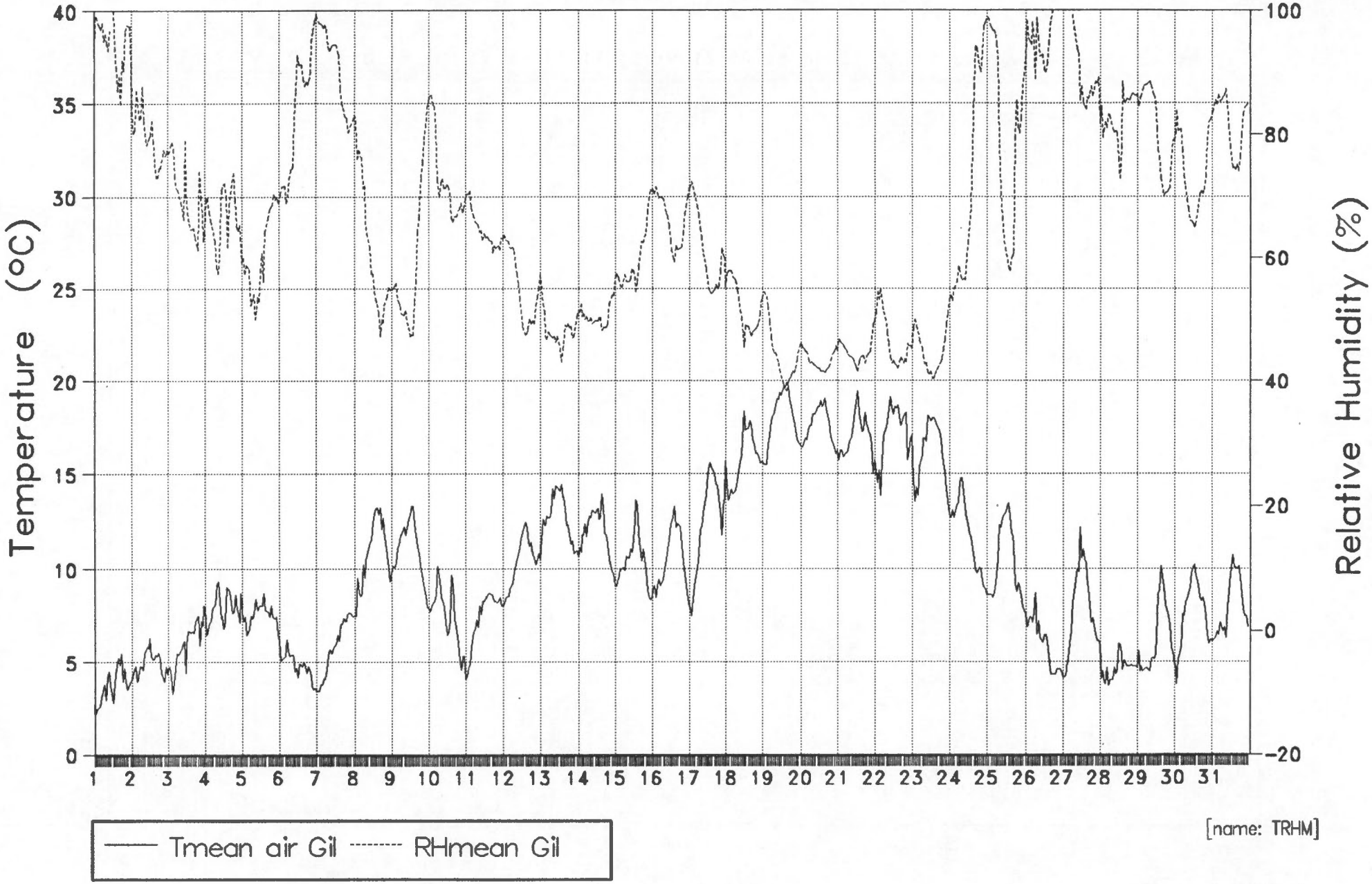
HWC(AWS): HOURLY RELATIVE HUMIDITY
July 1991



[name: RHM]

FIGURE: 3

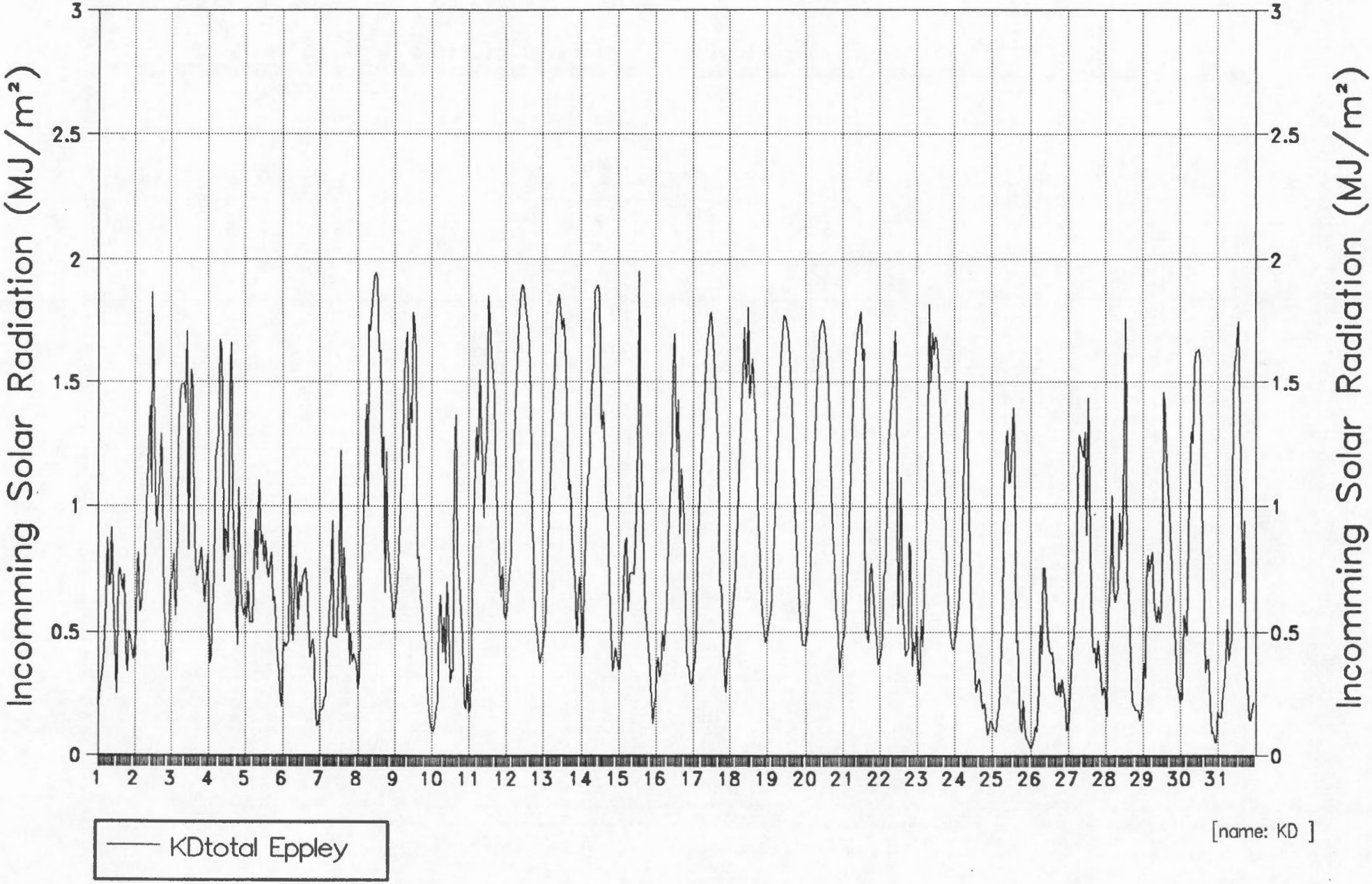
HWC(AWS): HOURLY TEMP / RH
July 1991



[name: TRHM]

FIGURE: 4

HWC(AWS): HOURLY SOLAR RADIATION
July 1991



[name: KD]

FIGURE: 5

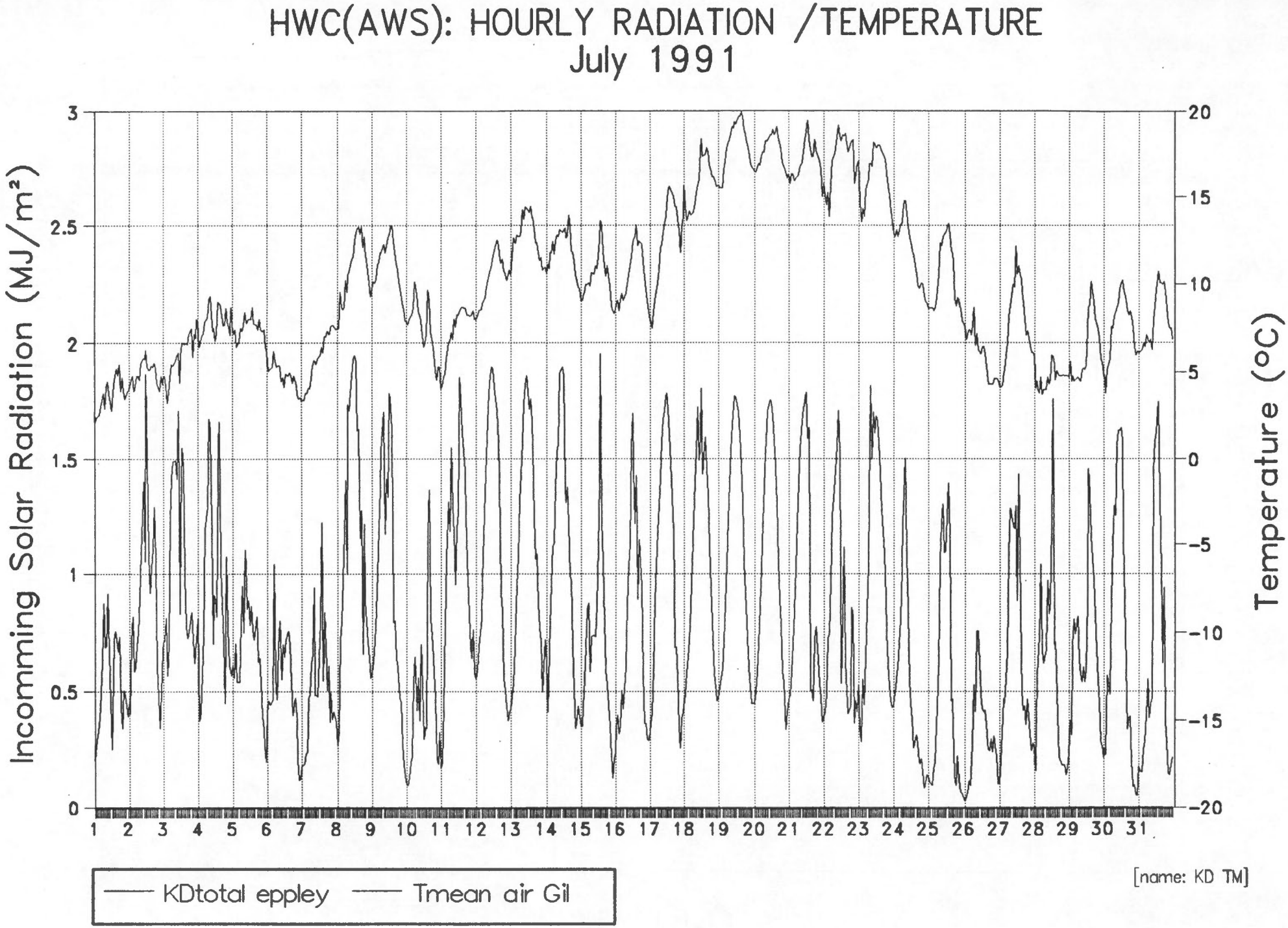
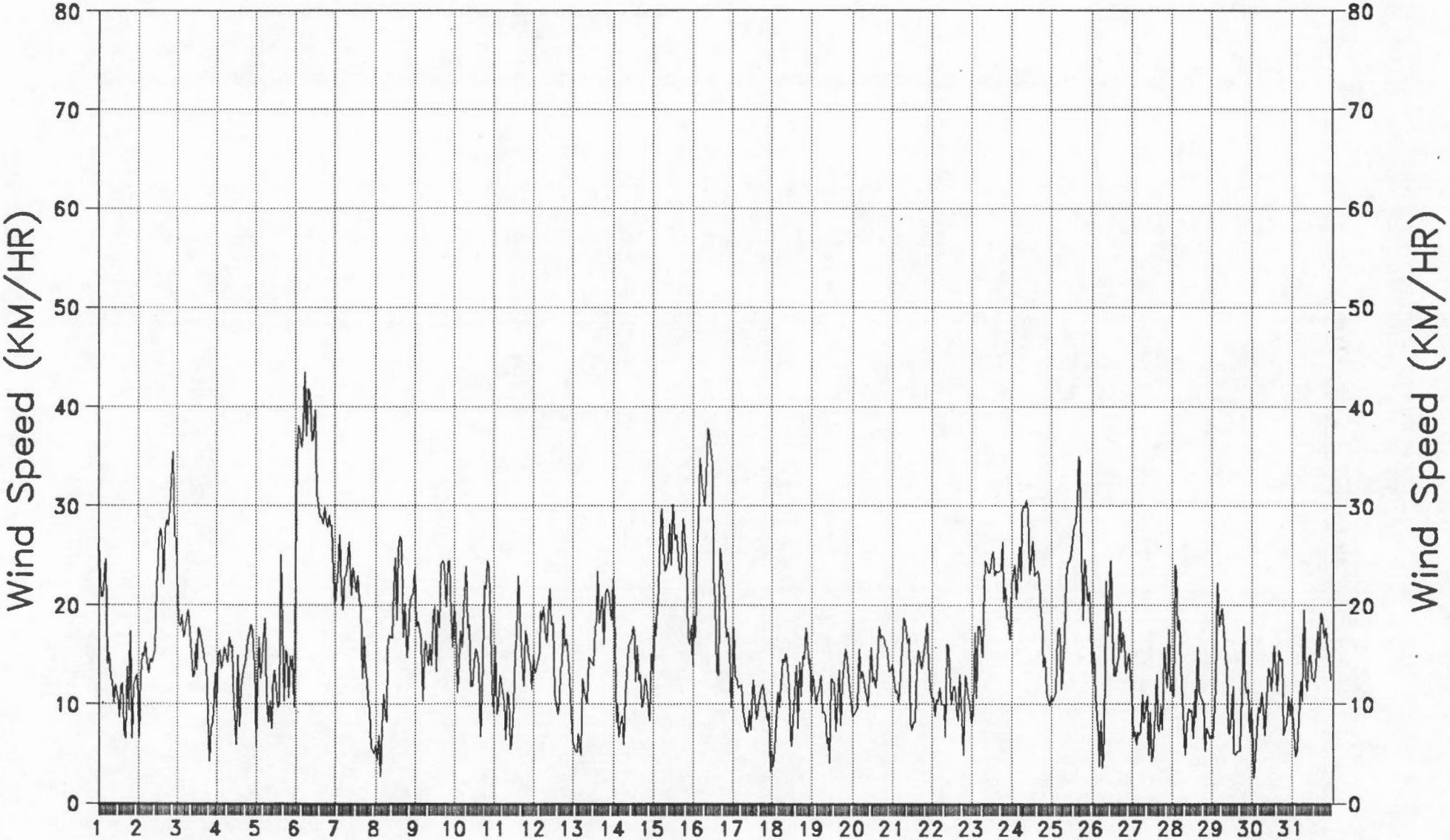

HWC(AWS): HOURLY RADIATION /TEMPERATURE
July 1991
Incomming Solar Radiation (MJ/m²)
Temperature (°C)
3
2.5
2
1.5
1
0.5
0
20
15
10
5
0
-5
-10
-15
-20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
KDtotal eppley
Tmean air Gil
[name: KD TM]

FIGURE: 6

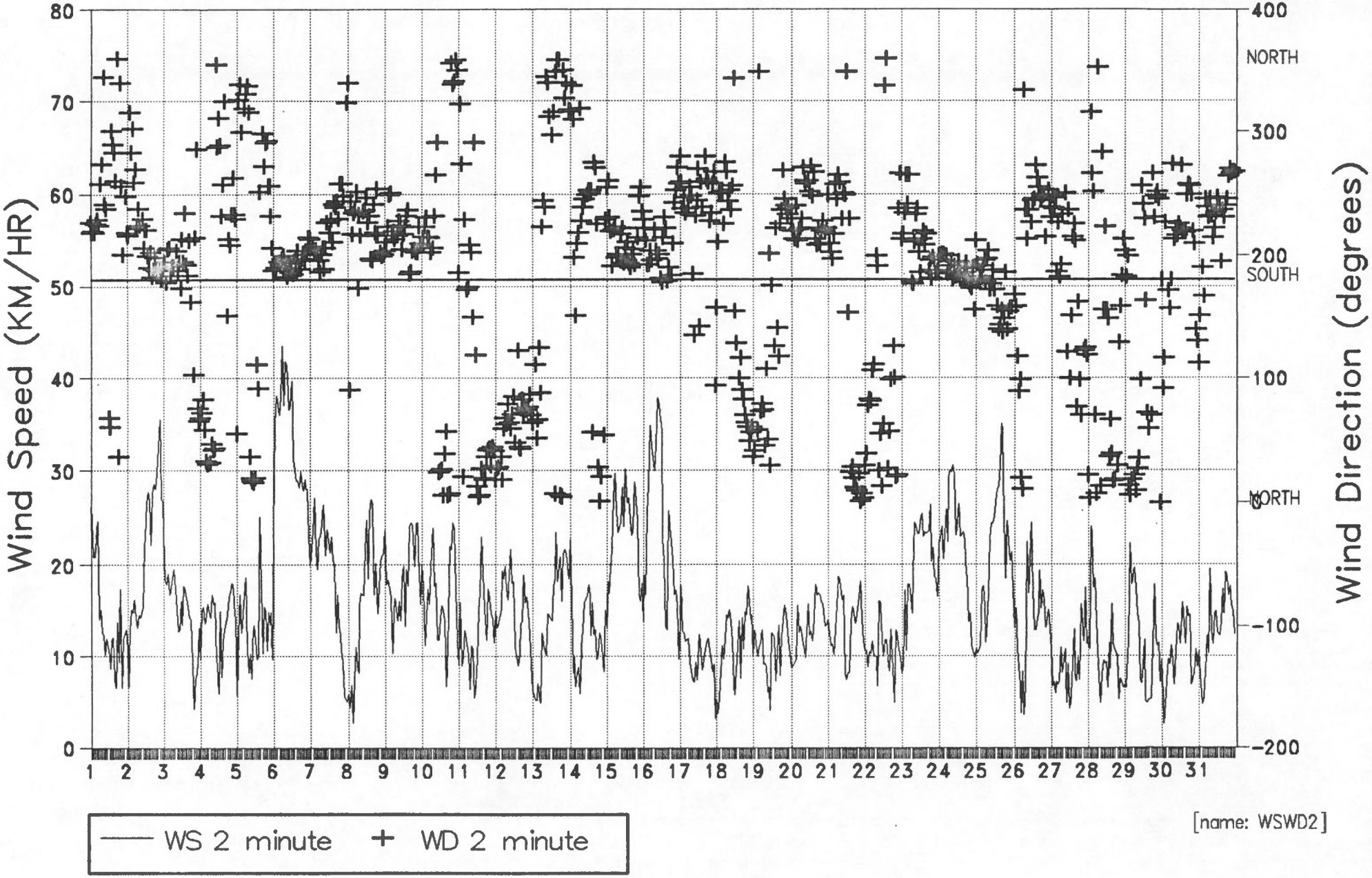
HWC(AWS): HOURLY WIND SPEED
July 1991



[name: WS2]

FIGURE: 7

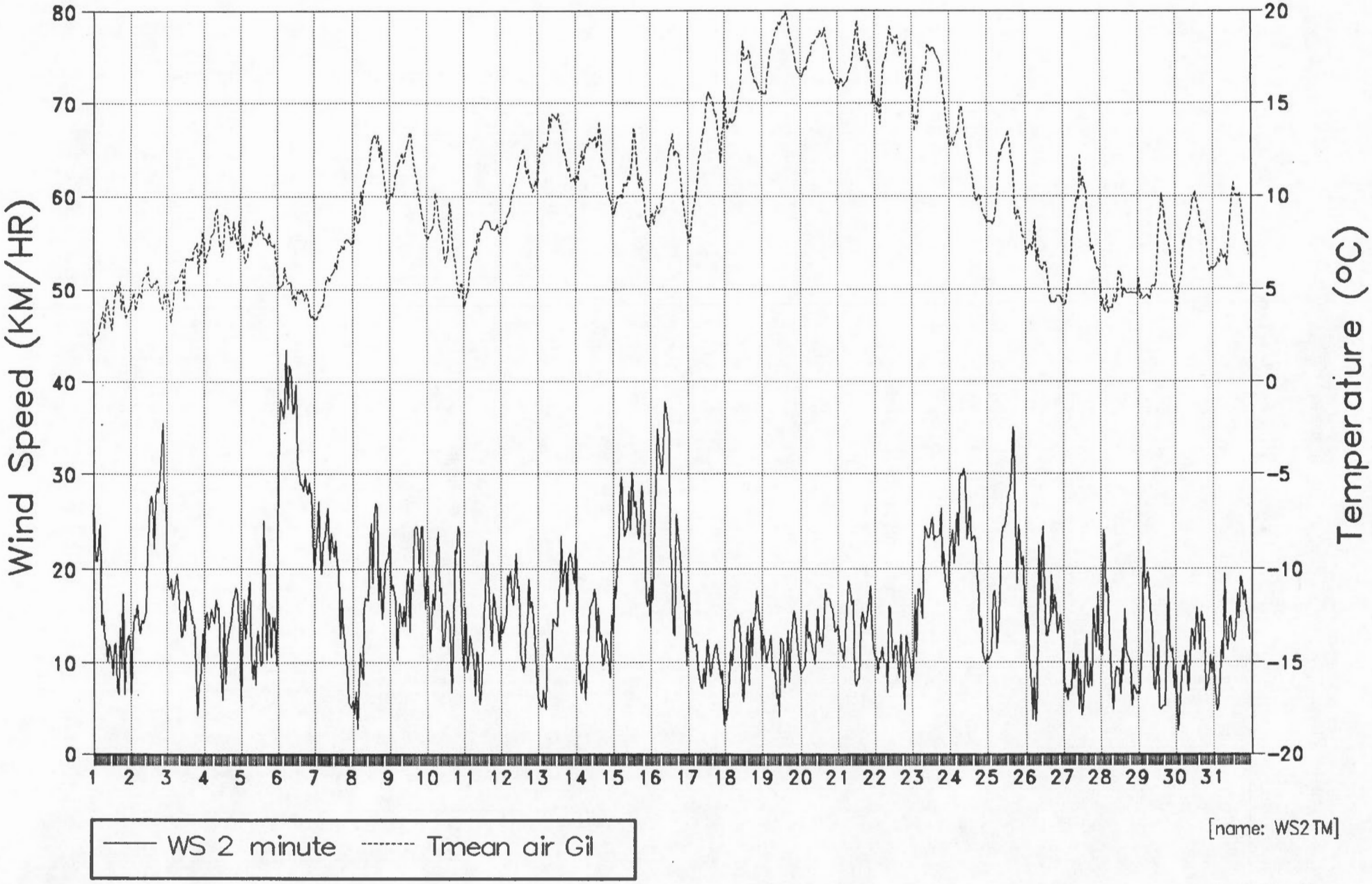
HWC(AWS): HOURLY WIND SPEED/DIRECTION
July 1991



[name: WSWD2]

FIGURE: 8

HWC(AWS): HOURLY WIND SPEED / TEMP
July 1991



[name: WS2TM]

FIGURE: 9