新庄雪氷防災研究支所における気象観測（1984/85年～1994/95年11冬期）

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Meteorological Data for the Winter Season Observed at the Shinjo Branch of Snow and Ice Studies, NIED (1984/85 Winter to 1994/95 Winter)

By

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Abstract

This report contains data of wind direction and speed, air temperature, global solar radiation and precipitation collected over eleven winters from 1984/85 to 1994/95. The data was measured at observational fields which form part of the Shinjo Branch of Snow and Ice Studies, National Research Institute for Earth Science and Disaster Prevention. All data was carefully checked and corrected using computational analysis.

The observation site (38°47′N, 140°19′E, 127m A.S.L.) is located in the center of the Shinjo Basin, Japan, which is 50km away from the west coast facing the Sea of Japan.

キーワード：気象(meteorological condition)，風速(wind speed)，風向(wind direction)，気温(air temperature)，全天日射量(global solar radiation)，降水量(precipitation)，新庄(Shinjo)

1．はじめに

1984年11月から1995年4月までの11冬期間，山形県新庄市十日町高壇1400番地にある防災科学技術研究所新庄雪氷防災研究支所構内において測定してきた気象要素のうち，風速，風向，気温，全天日射量および降水量の測定結果を報告する．この期間中に，新庄支所から新庄雪氷防災研究支所へ，および国立防災科学技術センターから防災科学技術研究所へ改称されたが，本資料ではそれぞれの新名称を用いることとする．ただし，新庄支所と略記することもある．

気象観測は，1974年11月以来降積雪観測および積雪断面観測とともに行っているもので，本資料とあわせると，1994/95年冬期までの気象・降積雪観測データがすべて刊行されたことになる．それらの一覧を表1に示す．

2．測定場所および方法

当支所は新庄盆地のほぼ中央部の北緯38°47′，東経140°19′に位置し，標高は127mである（図1）．図2に当支所構内における気象観測露場の位置を示す．図中の第1気象観測露場の北側に隣接して4階建ての建物が建築されたため，1987年に新たに第2気象観測露場を設け，順次計測器を移設しつつ気象観測を行った．気象観測露場の広さは，第1が12m×20m，第2が12m×17mである．なお，第1気象観測露場は，阿部ほか（1985a）で気象観測露場Bと称したものと同じである．第1，2気象観測露場の計測器の配置をそれぞれ図3a，3bに示す．また，第2気象観測露場の全景を写真1に，使用した感部の種類および取付位置を表2に示す．この中で気温の感部だけは，積雪深の増減に伴って人力で感部を昇降できる機構になっており，地上気象観測法（気象庁，1971）にしたがい，感部の高さが地上あるいは雪面上約1.5mになるように調節した．これ以外の感部には昇降機構がなく，感部の地上高は一定である．また，全天日射計の感部については，その側に着雪防止用のブロアーを取り付けてある．しかし，それでも湿った降雪があったときには着雪が見られたので，その場合には人為的に除去した．なお，表2中の（　）内は日付を表し，例えば7/23は7月23日を意味する．

3．記録およびデータのチェック

風向と風速は10分平均値を記録した．気温は瞬間値を記録したが白金抵抗温度計の感部の時定数は1分程度である．全天日射量および降水量はともに積算値を記録した．

各気象データの記録方法は以下のように期間によって異なるが，いずれの期間もアナログ記録を並行して行っ

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Table 1　収録冬期と印刷物一覧
List of all data observed at the Shinjo Branch.

分類	気象観測	降積雪観測	積雪断面観測
測定項目	風向，風速，気温，日射量，降水量	天気，積雪深，新積雪深，新積雪密度他	雪質，雪温，密度，硬度，含水率他
収録冬期と印刷物	*1.*1974/75～1983/84年冬期：研究資料105号(1985a)[5]. *2.*1984/85～1994/95年冬期：本報(1997).	*1.*1974/75～1983/84年冬期：研究資料106号(1985b)[6]. *2.*1984/85年～1994/95年冬期：研究資料175号(1996b)[3].	*1.*1973/74年冬期：研究速報13号(1975)[8]. *2.*1974/75年冬期：研究資料33号(1978)[9]. *3.*1975/76～1979/80年冬期：研究資料70号(1982)[10]. *4.*1980/81～1987/88年冬期：研究資料131号(1988)[4]. *5.*1988/89～1994/95年冬期：研究資料171号(1996a)[2].

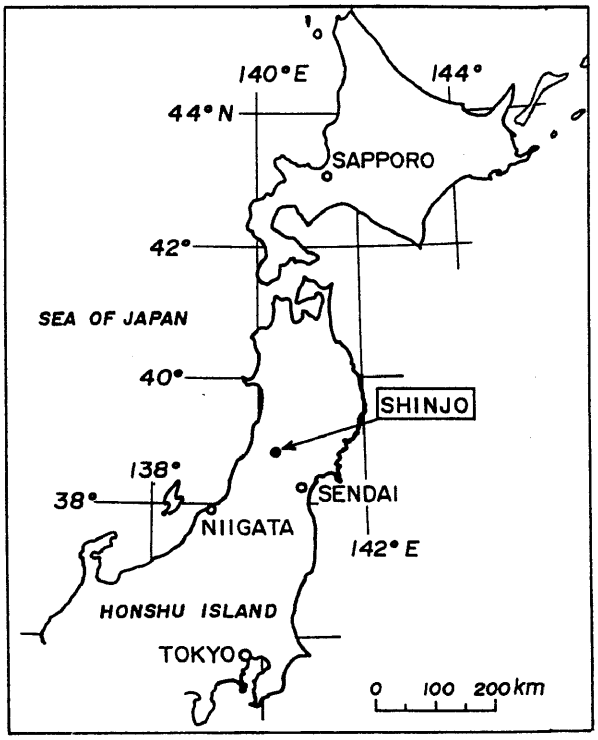

Fig.1　新庄雪氷防災研究支所位置図
Location of the Shinjo Branch of Snow and Ice Studies, NIED.

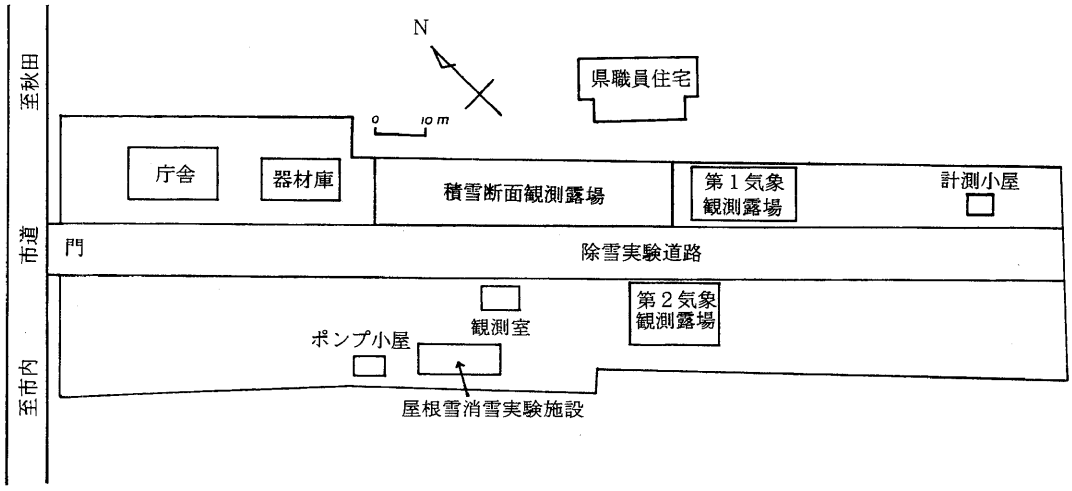

Fig.2　第１および第２気象観測露場
Observation fields No.1 and No.2.

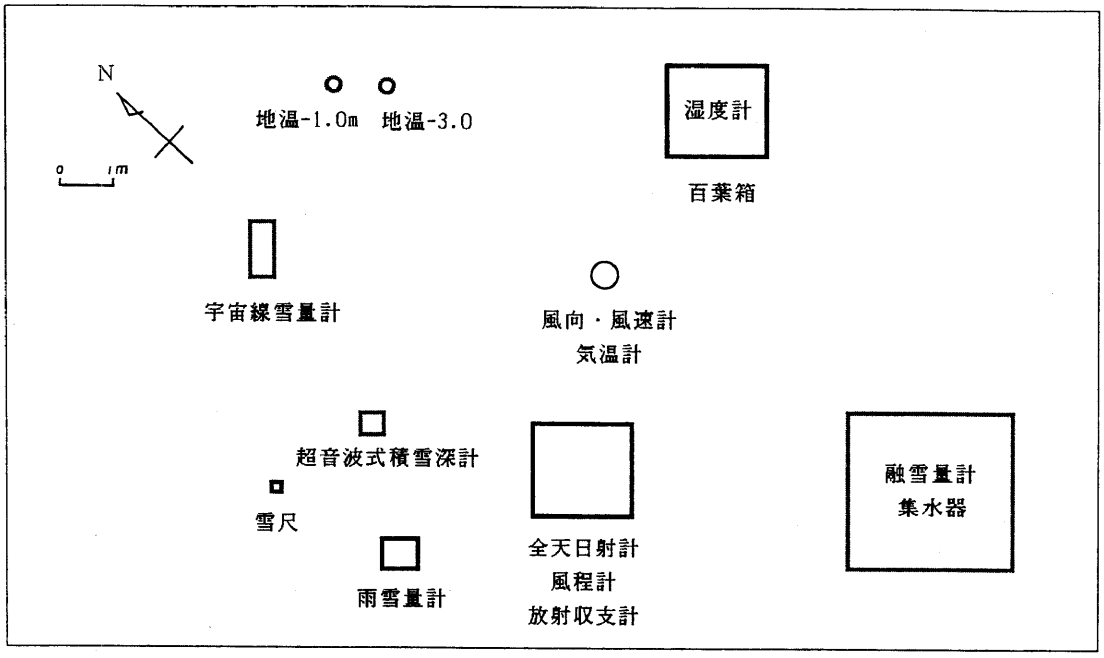

Fig.3a　第１気象観測露場の計測器配置図
Horizontal distribution of meteorological instruments in observation field No.1.

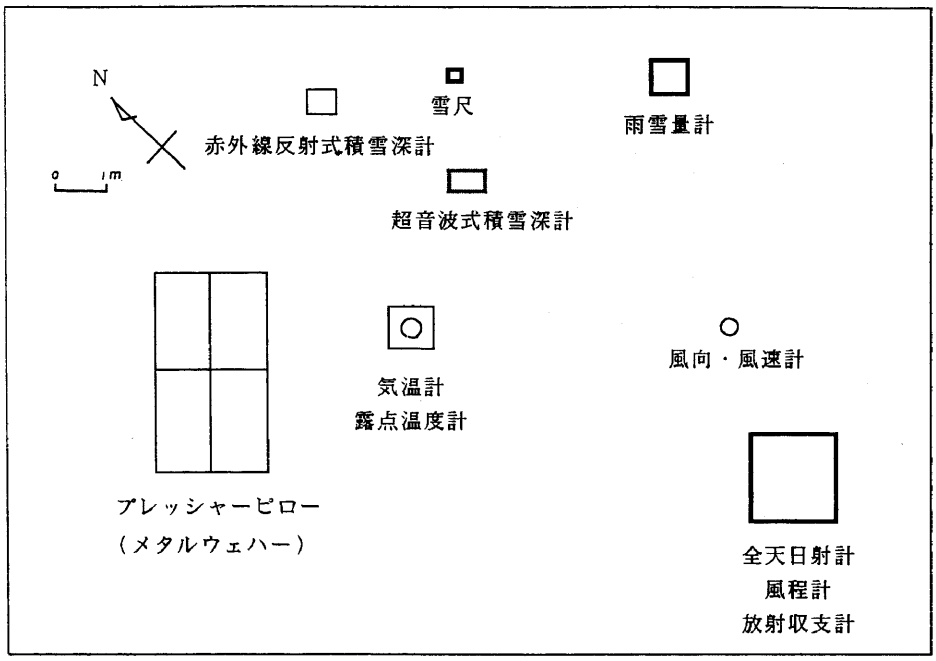

Fig.3b　第2気象観測露場の計測器配置図
Horizontal distribution of meteorological instruments in observation field No.2.

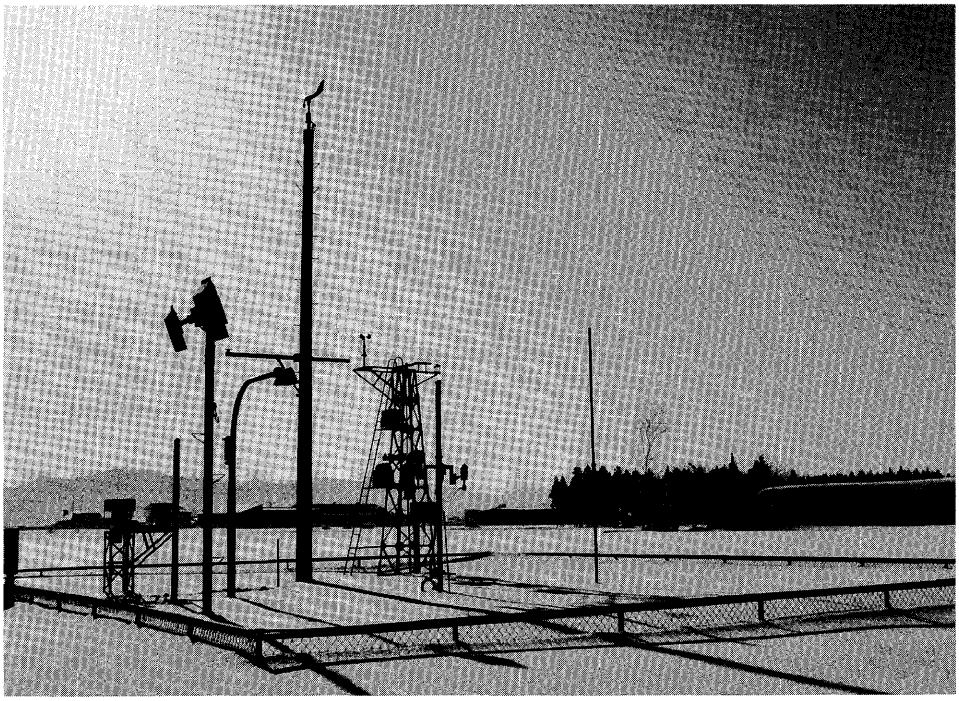

Photo 1　第2気象観測露場の全景
Observation field No.2.

Table 2 感部の種類および取付位置一覧
Sensor type and position of meteorological instruments.

項目＼冬期	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95
風速	風車型風向・風速計										
	地上高10.2m										
	第１気象観測露場					第２気象観測露場					
風向	風車型風向・風速計										
	地上高10.2m										
	第１気象観測露場					第２気象観測露場					
気温	白金抵抗温度計（通風シェルター有）										
	雪面上約1.5m										
	第１気象観測露場					第２気象観測露場					
全天日射量											↓(1/18)感部を更新
	熱電推式全天日射計										
	除雪ブロアー付地上高5.5m										
	第１気象観測露場					第２気象観測露場					
降水量	溢水式雨雪量計（１パルス0.5mm）										
	風よけ有,地上高2.25m										
	第１気象観測露場					第２気象観測露場					
											↓(2/5)変換器を更新
	転倒升型雨雪量計（１パルス0.5mm）										
	風よけ無,地上高2.25m										
	第１気象観測露場					第２気象観測露場					
その他											

ていた．

(1) 1984/85年～1990/91年冬期

デジタル処理装置を使用して10分毎に紙テープに記録した．このデータの読み取りと処理はミニコンピュータで行い，結果をフロッピーディスクに書き込んだ．記録と処理のブロックダイヤグラムは阿部ほか（1985a）の図３に示されている．

(2) 1991/92年～1993/94年冬期

上記のデジタル処理装置の紙テープパンチャーが故障したため，アナログ記録装置から毎正時の値の読み取りを行い，パーソナルコンピュータで表計算ソフトウェア（ロータス社，Lotus1-2-3）を使用して物理量への変換等を行った．

(3) 1994/95年冬期

データロガー（横河ウェザック製，メモリーカードロガーM-812）をパーソナルコンピュータ（日本電気製，PC9821Xe）で制御し，15分毎のデータをフロッピーディスクとハードディスクに記録した．このデータ収集システムの関連資料を付録に示した．

以上のいずれの記録方法の場合でも，各種の統計処理を行う前に図4.1～図4.65に示すように毎正時の気象データの時系列をXYプロッターで作図した（図４中の記号は表３を参照）．これらの図から読み取りや入力の誤り，不良データを判定し，アナログ記録と照合して可能な限り訂正した．

本資料に収録した気象データの期間を表４に示した．1992/93年冬期以外は，それぞれの冬期における積雪期間が含まれている．ただし，ここでの積雪期間とはその冬における積雪の初日と終日の間の期間のことである．なお，1992/93年冬期は３月中に消雪した後，４月上旬に数cmの降雪が２日あった．

1991/92年～1994/95年冬期については，風向と風速のアナログ記録から着雪のため風向風速計のプロペラが回転しなくなったと判断されたときの風速は，原則として欠測とした．ただし，風向のアナログ記録より風速が非常に弱いと判断されたときには，風速を０とし，風向を静穏とした．

降水量は溢水式および転倒升型雨雪量計で測定した．降雪の場合の捕捉率は溢水式の方が優れているといわれているが，本資料では二つの雨雪量計の記録から動作状況を判断し，表５に示す雨雪量計のデータを収録している．

4．統計処理の方法

本資料における統計処理には，毎正時のデータを用いて行った日統計処理と，１ヶ月間のデータを用いて行った月統計処理がある．日統計処理は日界が０時と９時のそれぞれについて行った．９時の日界を設けた理由は，当支所で行われている降雪の深さおよびその密度等の測定時刻が９時となっており，これらの測定結果との対応を図ったためである．なお，日界９時の場合の日付は，当日10時から翌日９時までの24コのデータを当日の分として取り扱った．

表６には，各気象要素毎の統計内容を示してあるが，これらは次の4.1および4.2に説明する方法によって求めた．

Table 3　図4および表7中の記号の説明
List of symbols used in Figure 4 and Table 7.

記　　号	内　　容
WS	風速（単位：m/s）
WD	風向*，16方位（東回り，1が北北東，16が北）
AT	気温（単位：℃）
SR	全天日射量（単位：MJ/m^2）
PR	降水量（単位：mm）
DATE	日付
MEAN	平均値
MAX	最大値
MIN	最小値
MOST FREQ NO	最多風向とその出現数
TOTL	合計値
DN	データ数

（＊：風速が 0.2 m／s 以下の静穏のときの風向は0とする）

Table 4　データの収録期間
Period covered by the data.

No.	冬期＼月	11	12	1	2	3	4
1	1984 ／ 85	1～30(30)	1～31(31)	1～31(31)	1～28(28)	1～31(31)	1～30(30)
2	1985 ／ 86	1～30(30)	1～31(31)	1～31(31)	1～28(28)	1～31(31)	1～30(30)
3	1986 ／ 87	1～30(30)	1～31(31)	1～31(31)	1～28(28)	1～31(31)	1～30(30)
4	1987 ／ 88	1～30(30)	1～31(31)	1～31(31)	1～29(29)	1～31(31)	1～30(30)
5	1988 ／ 89	1～30(30)	1～31(31)	1～31(31)	1～28(28)	1～31(31)	1～30(30)
6	1989 ／ 90	1～30(30)	1～31(31)	1～31(31)	1～28(28)	1～31(31)	1～30(30)
7	1990 ／ 91	1～30(30)	1～31(31)	1～31(31)	1～28(28)	1～31(31)	1～26(30)
8	1991 ／ 92	27～30(30)	1～31(31)	1～31(31)	1～29(29)	1～31(31)	1～13(30)
9	1992 ／ 93	26～30(30)	1～31(31)	1～31(31)	1～28(28)	1～31(31)	
10	1993 ／ 94	25～30(30)	1～31(31)	1～31(31)	1～28(28)	1～31(31)	1～9(30)
11	1994 ／ 95	23～30(30)	1～31(31)	1～31(31)	1～28(28)	1～31(31)	1～6(30)

（例として 1～26(30) は全日数30日のうち，1日から 26日までの期間のデータを収録したことを表す）

Table 5 本資料に収録した降水量を測定した雨雪量計感部
Type of rainfall gauge used to collect the data in this report.

冬 期	型式
1984/85	溢水式
1985/86	転倒升型
1986/87	転倒升型
1987/88	溢水式
1988/89	溢水式 (11月) 転倒升型 (12月～4月)
1989/90	溢水式
1990/91	溢水式
1991/92	溢水式
1992/93	転倒升型
1993/94	溢水式
1994/95	溢水式

4.1 日統計処理

(1) 日平均値は,毎正時のデータ24個の平均値である.

(2) 日最大値は,毎正時のデータ24個のうちの最大値である.

(3) 日最小値は,毎正時のデータ24個のうちの最小値である.

(4) 日合計値は,毎正時の前1時間積算値24個の合計値である.

(5) 1984/85年～1990/91年冬期の日界0時の日統計処理は，前述のデジタル処理装置が1分毎のデータに基づいて行う（風向を除く）ので，その結果をそのまま採用した.

(6) 日最多風向は，毎正時の風向24個のうち最も多く出現した風向である．1991/92年～1994/95年冬期は，日最多風向が複数個出現した場合，それぞれの風向の両隣の風向頻度も加えて最多風向を決めたが，それでも決まらない場合はそれぞれを併記した．1984/85年～1990/91年冬期については，両隣の風向頻度は考慮しなかった．このようにして求めた日最多風向が複数個ある場合は，最大3個まで採用することにした.

(7) 毎正時の24個のデータのうち1個でも欠測がある場合は，不明とした.

4.2 月統計処理

(1) 月平均，月最大，月最小および月合計値は，上で求まった日界0時の日統計値のうち，不明な値を除いたものについての平均，最大，最小および合計値である．なお，これらについては，用いたデータ数を明記することにした.

(2) 月最多風向は，1ヶ月間の毎正時の風向から求めた風向別（静穏は除く）出現頻度が最大のものである.

5．結果

表7.1～7.65に11冬期の風速，風向，気温，全天日射量および降水量の統計処理の結果を示す．これらの表中の記号の説明は表3に示してある．なお，月最多風向は表7には示さず，表9にまとめてある.

以下に，本表を使用する際に注意すべきことがらを各気象要素毎に述べておく.

(1)風速

1984/85年～1990/91年冬期の日界0時の統計値については，前述した通りデジタル処理装置が1分毎に計測したデータに基づいて日統計処理を行うので，それによって得られた結果は，1時間毎のデータに基づいて得られたものと比べて統計値本来の定義に近いと考えられる．特に，風速は時間変化が激しいので，1時間毎の風速の最大値がその日の日最大風速と一致する保証はない．したがって，上記以外の毎正時の風速から求めた日最大風速は，真の値よりも小さめと考えられる.

3.で述べたように，1991/92年～1994/95年冬期についてはそれ以前とは異なり，アナログ記録から風向風速計への着雪を判断し，風速を欠測扱いした場合がある．このため，日統計値の不明日数がそれ以前よりやや増えている.

(2)風向

16方位（東回り，1が北北東，16が北）で表示してある．また，風速が0.2m/s以下の場合は静穏とみなしており，毎正時の風向が全て静穏となった場合の最多風向の欄は空白とした.

(3)気温

日最大風速と同様のことが，日最高気温と日最低気温についても言える.

(4)全天日射量

1981年にWMOによる日射スケールの改正が行われたので，本資料でもこれに準拠し全て新スケールで表示してある.

(5)降水量

期間によって収録データの雨雪量計の種類が異なっている（表5参照）．また，雨雪量計が2台とも動作不良となったため，1991/92年冬期は12月15日から欠測となった.

(6)共通

不明なデータは×印で表示した.

Table 6 統計内容一覧
List of daily and monthly statistical values for the meteorological elements.

項 目	日 統 計	月 統 計
風 速	日平均,日最大	月平均,月最大,月最小
風 向	日最多風向とその出現数	月最多風向*
気 温	日平均,日最高,日最低	月平均,月最高,月最低
全天日射量	日合計	月合計,月平均,月最大,月最小
降 水 量	日合計	月合計

*：表9のみに示した.

Table 7.1　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

NOVEMBER 1984

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	1.3	3.9	3 6 (3)	7.4	10.0	4.5	2.35	52.0
2	2.4	6.7	13 15 (5)	4.9	8.5	1.5	6.55	13.5
3	1.6	4.8	1 (7)	5.7	10.7	2.7	5.40	1.0
4	0.5	2.8	1 2 13(2)	5.5	10.4	2.8	4.55	0.5
5	1.1	5.5	12 14 (3)	7.3	13.9	3.1	3.80	4.5
6	1.0	3.8	16 (5)	10.3	17.4	3.9	12.35	0.5
7	0.3	2.6	2 (3)	6.6	14.6	1.5	6.30	0.0
8	0.6	2.6	1 2 9(2)	10.0	18.7	4.8	10.50	0.5
9	1.5	5.3	13 (5)	8.7	15.7	1.2	7.00	0.5
10	0.8	4.7	15 (5)	5.5	12.2	-1.5	11.65	0.0
11	0.8	4.5	12 (4)	6.7	9.9	4.3	3.40	6.0
12	3.6	7.1	13 (8)	3.9	7.9	0.0	5.70	1.0
13	2.8	6.0	14 15 16(5)	2.0	4.5	0.0	3.25	2.0
14	1.9	5.1	13 (6)	2.9	6.8	-2.7	10.35	0.5
15	0.2	1.6	8 10 12(1)	0.7	2.7	-2.3	1.60	17.5
16	1.0	4.6	12 13 (3)	4.3	10.8	-1.5	10.20	0.0
17	0.4	2.7	10 (3)	1.9	9.1	-3.2	3.20	0.0
18	1.8	5.1	15 (6)	4.6	8.2	-2.7	7.60	0.0
19	0.7	3.9	15 (4)	1.5	6.0	-3.5	5.45	0.0
20	0.4	2.6	16 (3)	3.0	5.1	1.8	4.15	1.5
21	0.6	3.3	1 2 4(2)	4.7	9.1	1.1	7.10	2.0
22	2.2	6.3	13 15 (4)	4.6	8.1	1.9	7.95	2.0
23	0.4	1.9	16 (3)	1.7	9.6	-3.5	9.80	0.0
24	0.6	3.2	11 12 15(3)	1.6	6.7	-3.6	1.15	10.5
25	2.5	5.7	14 (8)	2.7	5.3	0.7	2.75	0.0
26	0.7	4.0	15 (4)	1.4	6.9	-3.4	7.00	0.0
27	2.9	7.6	14 (7)	-0.4	3.4	-3.2	1.85	7.5
28	2.5	5.8	13 (7)	1.8	4.3	-0.9	4.90	0.0
29	0.7	2.9	15 (5)	2.9	7.1	-1.1	4.80	0.0
30	0.6	2.7	4 12 (3)	5.2	10.4	1.9	3.45	4.5
TOTL							176.10	128.0
MEAN	1.3	4.3		4.3	9.1	0.2	5.87	
MAX	3.6	7.6		10.3	18.7	4.8	12.35	
MIN	0.2	1.6		-0.4	2.7	-3.6	1.15	
DN	30	30		30	30	30	30	30

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	1.7	3.4	6 15 (3)	7.4	10.0	3.3	2.35	55.0
2	2.5	5.6	1 (7)	4.5	7.3	2.1	7.50	9.5
3	1.1	4.0	1 (4)	5.6	10.7	3.1	4.75	1.0
4	0.2	1.8	2 (2)	5.3	10.3	3.0	4.30	0.5
5	1.5	4.9	15 (4)	9.3	13.9	4.5	5.20	4.0
6	0.6	1.5	2 3 (3)	8.1	17.1	1.7	11.25	0.5
7	0.3	2.2	2 (3)	7.9	14.3	4.9	6.70	0.0
8	0.6	1.9	1 13 (3)	10.5	18.5	6.0	10.30	0.5
9	1.3	4.4	13 14 (4)	6.2	15.1	-1.5	8.00	0.5
10	0.9	3.6	15 (4)	7.1	11.9	4.4	9.95	3.5
11	2.1	3.9	13 (6)	7.3	9.8	5.1	3.50	2.5
12	3.7	6.3	14 15 (7)	1.9	6.2	0.0	5.75	1.5
13	2.3	4.5	13 15 16(5)	2.8	5.1	1.2	4.10	2.0
14	1.0	3.7	13 (4)	1.2	6.4	-2.4	9.40	0.0
15	0.3	2.4	10 12 13(1)	2.4	7.8	0.9	2.70	17.5
16	1.0	3.9	2 12 13(3)	2.2	10.3	-3.1	9.25	0.0
17	0.9	2.7	15 (4)	5.1	9.0	0.2	3.40	0.0
18	1.2	4.6	12 (5)	1.3	7.8	-3.3	8.05	0.0
19	0.9	3.1	15 16 (4)	3.2	5.8	1.9	4.90	1.0
20	0.3	1.6	16 (3)	3.0	4.9	1.3	4.30	0.5
21	0.7	1.9	1 4 (3)	5.2	9.1	2.6	6.75	3.5
22	2.1	5.7	13 (4)	2.9	7.8	-2.7	9.05	0.5
23	0.5	1.5	11 (3)	1.4	9.3	-3.4	8.45	0.0
24	1.5	4.4	15 (7)	3.8	6.4	0.1	1.45	10.5
25	1.5	4.3	14 (6)	1.5	3.6	0.1	2.95	0.0
26	1.0	2.9	14 (4)	0.7	6.8	-3.2	6.65	2.5
27	4.2	7.1	13 (9)	0.7	3.3	-1.0	2.10	5.0
28	1.3	5.1	13 (4)	1.4	4.0	-0.8	4.95	0.0
29	0.9	2.2	8 15 (3)	4.3	6.9	2.5	4.45	2.0
30	0.4	1.2	4 (3)	4.8	9.9	1.9	3.60	3.0
TOTL							176.05	127.0
MEAN	1.3	3.5		4.3	9.0	1.0	5.87	
MAX	4.2	7.1		10.5	18.5	6.0	11.25	
MIN	0.2	1.2		0.7	3.3	-3.4	1.45	
DN	30	30		30	30	30	30	30

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

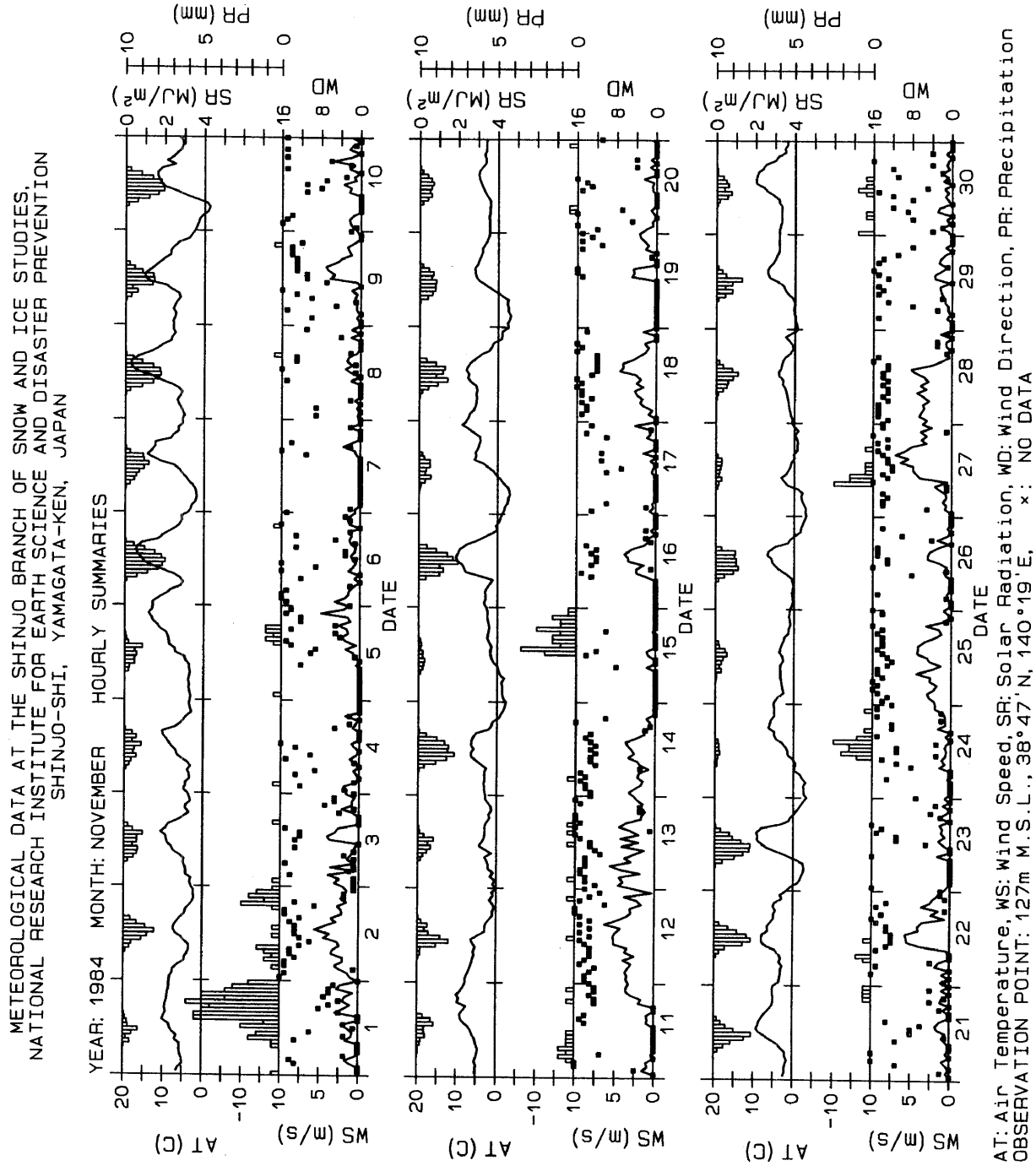

Fig.4.1 気象変化図

Seasonal variations in meteorological data.

Table 7.2 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

DECEMBER 1984

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	0.6	44.0	4 (3)	3.5	8.3	0.4	4.65	1.0
2	1.8	6.4	12 13 (5)	4.7	9.1	1.4	4.40	8.0
3	1.9	5.7	13 (6)	4.2	5.3	2.5	2.00	4.5
4	0.7	2.9	11 (3)	4.3	10.3	-0.1	8.40	0.0
5	0.7	4.3	11 12 (4)	4.2	13.0	-1.0	4.50	15.0
6	2.5	6.8	14 (8)	1.1	5.5	-0.3	5.15	2.0
7	0.7	3.5	11 (3)	1.7	4.3	-0.5	4.80	0.0
8	0.6	3.3	16 (4)	4.0	6.5	0.2	5.05	3.0
9	1.1	3.5	14 (7)	4.7	9.1	-1.8	7.60	0.0
10	0.4	2.7	2 (2)	3.1	10.4	-2.8	7.50	1.0
11	0.3	2.8	1 15 (2)	7.1	8.5	5.4	1.75	7.5
12	1.2	4.8	14 (9)	8.7	10.9	7.2	2.75	1.0
13	3.0	6.4	13 (7)	4.6	7.5	-0.8	4.80	0.5
14	1.6	6.2	15 (5)	1.6	5.6	-1.2	1.50	14.0
15	4.1	7.3	13 (11)	-1.3	1.0	-2.8	7.30	2.5
16	1.6	5.0	15 (4)	-0.3	1.3	-1.6	4.85	0.0
17	0.7	3.4	6 (5)	0.2	3.5	-1.5	7.85	6.5
18	1.3	5.7	7 9 (3)	0.3	2.3	-0.4	1.25	12.0
19	2.2	5.7	14 15 (5)	0.0	2.0	-1.1	4.65	4.5
20	1.2	3.6	2 (5)	-1.5	2.6	-7.4	6.15	1.5
21	1.3	6.7	11 (4)	-0.5	2.8	-4.7	3.30	23.5
22	1.5	4.8	15 (6)	-2.6	0.1	-9.9	6.35	5.5
23	1.9	8.0	2 6 (4)	-5.4	0.1	-13.6	8.40	4.0
24	1.9	4.5	15 (10)	-4.0	-0.7	-7.5	4.70	10.0
25	3.0	7.6	13 14 (6)	-6.6	-4.7	-8.8	6.50	5.5
26	1.9	6.1	13 (6)	-4.6	-2.8	-6.3	3.30	15.5
27	3.9	7.9	13 (9)	-3.2	-1.9	-4.4	5.80	2.0
28	0.7	5.2	8 (3)	-3.8	-2.5	-4.4	3.10	16.5
29	1.8	5.8	13 (6)	-4.5	-2.9	-8.9	4.80	3.0
30	1.4	6.8	6 (5)	-4.1	-1.3	-6.4	5.75	2.0
31	0.1	1.5	15 (2)	-4.1	-1.9	-7.7	6.00	4.0
TOTL							154.90	176.0
MEAN	1.5	6.4		0.4	3.6	-2.9	5.00	
MAX	4.1	44.0		8.7	13.0	7.2	8.40	
MIN	0.1	1.5		-6.6	-4.7	-13.6	1.25	
DN	31	31		31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	0.8	2.4	16 (4)	4.2	8.3	1.4	5.30	3.0
2	2.5	4.9	13 (10)	4.3	7.8	3.0	3.60	7.0
3	1.0	2.5	11 (3)	4.2	5.1	2.3	2.30	3.0
4	0.5	2.2	1 9 12(2)	2.9	10.1	-1.0	8.15	0.0
5	2.2	5.4	12 (6)	5.3	12.8	0.0	4.50	17.0
6	1.2	4.9	14 (6)	0.3	2.4	-0.5	5.45	0.0
7	0.7	2.9	11 (3)	2.4	4.1	0.5	5.25	0.0
8	1.0	3.0	14 (7)	5.5	6.4	3.2	5.00	3.0
9	0.7	2.7	13 14 (3)	1.7	8.7	-2.7	7.25	0.0
10	0.6	2.1	1 (3)	6.3	10.2	0.7	7.10	2.5
11	0.3	1.3	15 (2)	7.7	8.8	6.9	1.75	6.5
12	2.8	5.8	14 (12)	8.0	10.8	4.7	2.85	1.0
13	1.6	4.7	1 (4)	2.2	7.4	-1.1	4.60	3.0
14	3.4	6.5	13 (8)	1.4	5.0	-2.4	1.90	12.5
15	3.3	5.7	13 (8)	-1.1	0.0	-2.6	7.30	1.0
16	0.6	2.1	15 16 (3)	-0.5	1.1	-1.4	5.00	5.5
17	0.5	2.8	6 (5)	0.6	3.0	-0.3	7.40	1.0
18	2.5	5.7	7 9 15(3)	0.6	1.8	-0.4	1.50	14.0
19	1.7	3.8	16 (5)	-0.7	1.0	-3.4	4.65	4.0
20	1.2	2.9	2 13 (4)	-1.9	2.2	-6.1	6.25	11.5
21	0.8	3.9	11 (3)	-0.1	2.7	-2.2	3.35	17.5
22	1.7	3.8	15 (6)	-5.9	-1.1	-12.2	6.90	0.0
23	2.5	7.5	1 6 (4)	-2.3	0.0	-7.1	7.70	9.0
24	1.9	3.8	15 (9)	-6.3	-2.8	-8.8	4.80	8.5
25	2.9	5.2	14 (6)	-5.9	-4.8	-6.5	6.40	6.0
26	2.7	5.9	13 (8)	-3.8	-3.2	-5.1	3.20	12.5
27	2.5	6.3	13 (5)	-3.1	-2.0	-4.3	5.75	11.0
28	1.3	3.8	13 (5)	-4.0	-2.9	-5.0	3.25	8.5
29	1.2	3.7	6 (5)	-4.8	-3.1	-6.7	4.60	1.5
30	1.2	5.2	12 (3)	-4.3	-1.4	-7.2	6.05	2.5
31	0.3	2.1	16 (3)	-3.0	-1.2	-4.3	6.10	3.5
TOTL							155.20	176.0
MEAN	1.6	4.0		0.3	3.1	-2.2	5.01	
MAX	3.4	7.5		8.0	12.8	6.9	8.15	
MIN	0.3	1.3		-6.3	-4.8	-12.2	1.50	
DN	31	31		31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

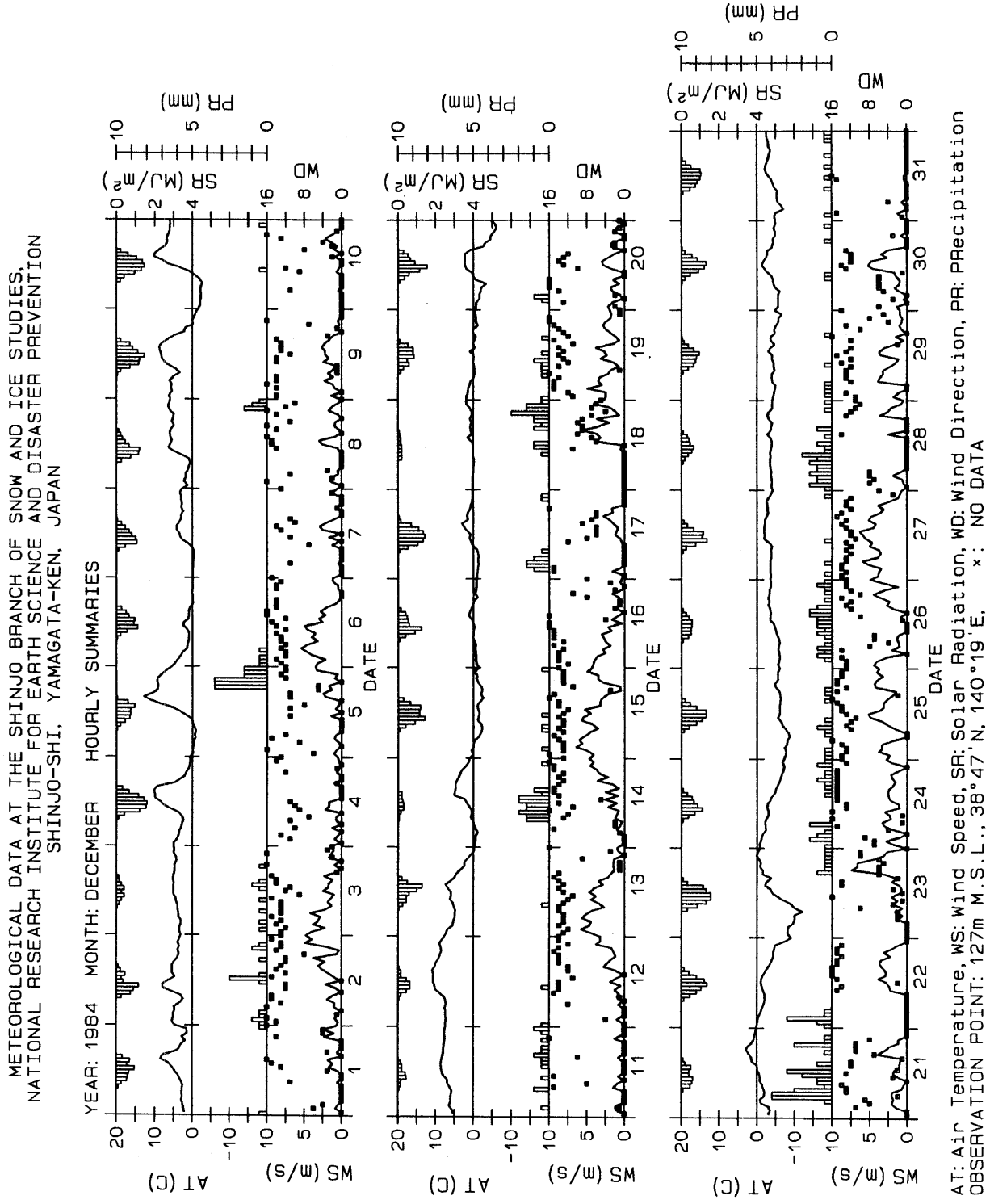

Fig.4.2 気象変化図

Seasonal variations in meteorological data.

Table 7.3　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

JANUARY　1985

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	2.1	6.1	14	(7)	-1.5	0.8	-5.4	6.65	0.5
2	2.1	5.9	15	(8)	-2.9	-0.3	-7.3	7.95	0.5
3	0.1	1.4	8	(2)	-5.1	-2.6	-9.3	6.55	1.5
4	0.9	5.4	16	(7)	-4.2	-1.4	-7.9	4.95	3.0
5	0.7	4.8	15	(2)	-6.3	-4.2	-10.0	4.25	15.0
6	2.5	6.1	14	(7)	-5.4	-4.3	-6.6	4.65	4.0
7	0.9	3.9	1 16	(4)	-5.2	-2.4	-8.9	6.90	2.5
8	0.1	2.0	2 15	(2)	-3.5	-2.2	-5.2	5.95	7.5
9	0.2	2.2	2	(2)	-4.1	0.1	-9.3	7.45	1.5
10	1.0	3.7	4 16	(4)	-1.8	2.3	-8.3	6.35	11.5
11	2.2	5.0	14	(6)	-1.5	1.4	-11.3	5.50	1.5
12	2.3	8.5	6	(6)	-4.5	2.7	-12.9	6.50	1.0
13	1.7	9.4	13	(4)	-3.1	2.5	-5.3	4.60	11.0
14	0.6	6.6	13	(3)	-6.2	-5.3	-6.8	4.75	10.0
15	3.6	9.6	7	(5)	-4.7	-0.9	-7.3	9.35	3.0
16	4.1	8.4	13	(9)	-3.8	0.0	-6.3	3.95	16.5
17	3.5	7.4	13 14	(7)	-6.8	-5.2	-8.5	7.35	6.5
18	2.0	4.0	16	(8)	-4.9	-3.3	-7.7	5.85	1.5
19	0.7	2.5	1	(4)	-4.9	-0.6	-8.4	11.70	0.0
20	1.7	6.7	16	(4)	-2.2	2.5	-7.8	4.05	9.5
21	4.2	7.8	13	(7)	-2.0	0.4	-3.6	5.95	4.5
22	2.0	5.4	16	(6)	-1.2	2.5	-5.2	6.55	0.5
23	3.5	7.9	14	(9)	-1.4	1.5	-3.4	7.45	1.0
24	3.2	5.9	14	(10)	-3.8	-2.0	-5.5	9.10	0.0
25	3.9	7.5	14	(9)	-5.7	-4.1	-6.8	7.90	0.5
26	3.9	7.7	14	(7)	-6.7	-5.6	-8.2	7.15	1.5
27	1.4	4.9	1 3 15	(3)	-6.1	-1.7	-11.7	10.75	0.0
28	2.8	6.0	13	(11)	-2.4	0.7	-6.2	4.75	6.5
29	1.5	5.1	12	(4)	-4.2	-1.8	-8.7	7.60	5.5
30	1.3	6.4	12	(5)	-6.2	-3.7	-7.9	6.80	10.5
31	2.2	6.4	14	(6)	-2.5	-0.1	-5.8	7.45	11.5
TOTL								206.70	150.0
MEAN	2.0	5.8			-4.0	-1.1	-7.5	6.67	
MAX	4.2	9.6			-1.2	2.7	-3.4	11.70	
MIN	0.1	1.4			-6.8	-5.6	-12.9	3.95	
DN	31	31			31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	2.7	5.7	14	(9)	-1.0	0.4	-2.4	6.50	0.5
2	1.4	3.4	15	(7)	-5.0	-1.1	-8.5	8.30	0.5
3	0.1	1.3	16	(2)	-3.8	-2.8	-5.8	6.15	1.5
4	1.2	4.8	16	(6)	-5.6	-2.1	-9.5	4.90	7.0
5	1.5	4.5	14 15	(4)	-5.5	-4.4	-6.1	4.15	12.0
6	1.7	5.4	1	(5)	-5.8	-4.4	-7.5	4.95	2.5
7	0.6	2.9	2 16	(3)	-4.3	-2.5	-5.2	6.70	8.5
8	0.3	1.6	2 15	(2)	-3.5	-2.2	-4.4	6.15	2.5
9	0.4	1.7	2 16	(3)	-4.5	0.0	-8.3	7.15	0.5
10	1.9	4.5	14 15	(5)	0.4	2.1	-3.6	6.45	13.0
11	1.3	3.8	13	(5)	-5.7	0.4	-11.8	5.50	0.0
12	3.4	6.6	6	(6)	-1.0	2.6	-7.0	6.50	6.5
13	0.4	1.9	11	(3)	-4.7	-3.2	-6.3	4.65	9.5
14	2.4	7.0	13	(7)	-6.4	-5.9	-7.3	4.90	8.5
15	3.1	7.5	6 7	(5)	-2.7	-0.3	-5.9	9.10	11.5
16	4.7	6.6	13	(11)	-5.7	-3.2	-7.2	3.95	6.5
17	2.5	4.9	1 16	(5)	-6.5	-4.9	-8.2	7.45	6.5
18	1.6	3.1	16	(5)	-4.7	-3.4	-6.0	6.05	0.5
19	0.6	2.8	16	(5)	-5.0	-0.7	-7.7	11.40	0.0
20	3.3	6.4	14	(5)	-0.5	2.2	-4.1	4.00	11.0
21	3.2	4.6	13 16	(5)	-3.0	-2.0	-4.6	6.25	3.0
22	2.1	4.0	16	(4)	-0.1	2.3	-2.9	6.40	1.0
23	3.4	6.3	14	(11)	-2.6	0.2	-4.1	7.85	0.5
24	3.6	5.7	14	(9)	-4.5	-2.4	-5.9	8.90	0.0
25	4.2	7.7	14	(9)	-6.1	-4.9	-6.8	7.80	1.5
26	3.1	7.3	1	(6)	-7.2	-5.6	-10.9	7.50	0.5
27	1.0	4.8	3 8	(3)	-4.5	0.0	-8.0	10.15	0.0
28	2.7	5.1	13	(11)	-2.6	0.2	-4.7	4.85	8.0
29	1.1	4.8	12	(3)	-5.3	-1.9	-7.8	7.60	6.5
30	2.5	6.0	13	(8)	-5.3	-1.8	-6.9	7.75	11.0
31	1.7	5.4	6	(7)	-0.8	1.6	-2.4	6.45	12.5
TOTL								206.40	153.5
MEAN	2.1	4.8			-4.0	-1.5	-6.4	6.66	
MAX	4.7	7.7			0.4	2.6	-2.4	11.40	
MIN	0.1	1.3			-7.2	-5.9	-11.8	3.95	
DN	31	31			31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

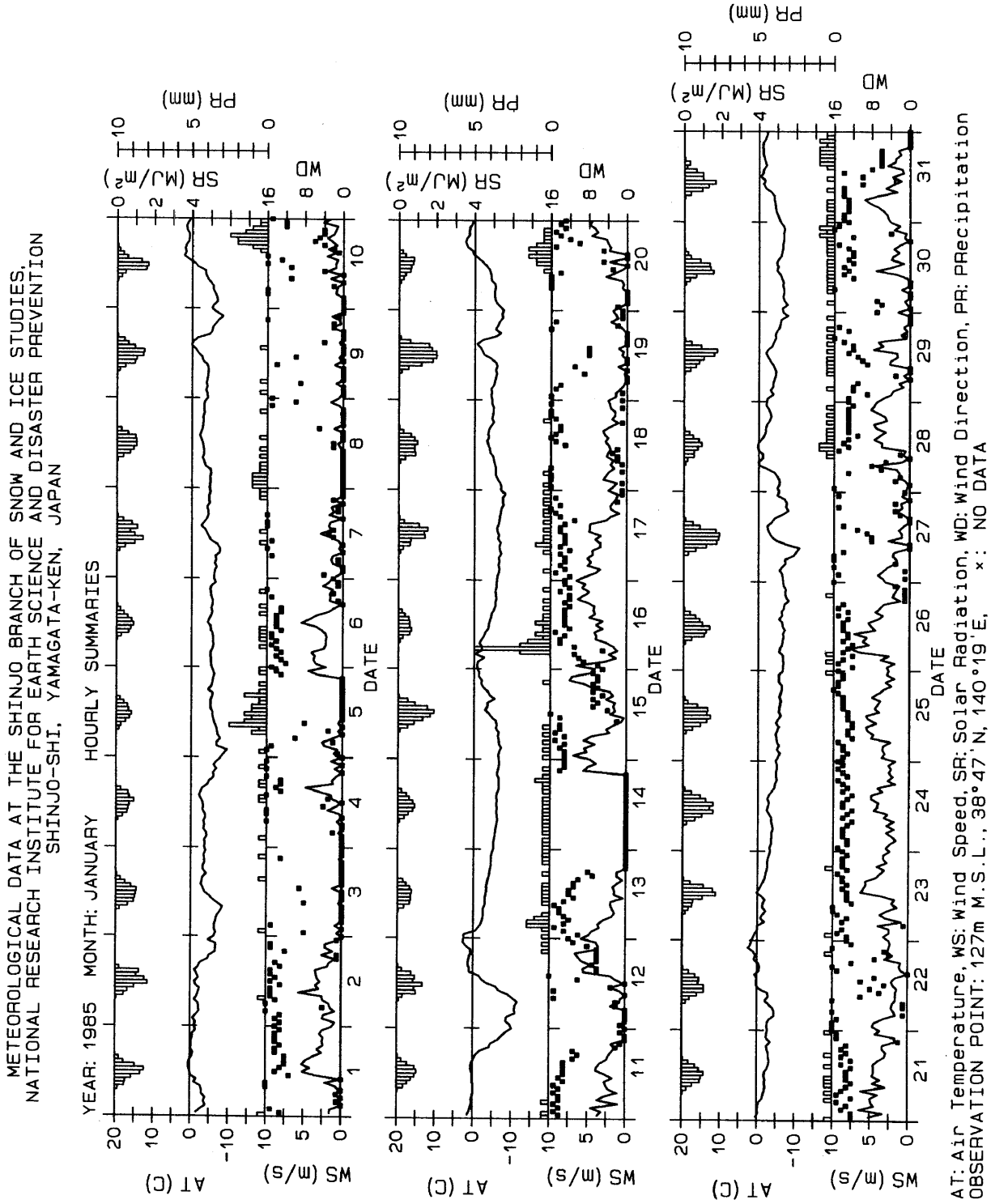

Fig.4.3 気象変化図

Seasonal variations in meteorological data.

Table 7.4　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

FEBRUARY 1985

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.5	6.8	5 (5)	0.5	2.8	-2.7	2.95	22.5
2	2.5	6.4	15 (5)	-2.9	-0.6	-11.1	7.95	4.5
3	1.1	4.2	1 15 (4)	-4.8	0.6	-12.8	4.30	9.5
4	1.2	3.9	1 (6)	-3.8	2.0	-13.7	9.40	3.5
5	0.4	3.1	1 16 (3)	-4.1	1.0	-10.9	9.25	1.5
6	0.6	2.9	2 (4)	-2.5	4.0	-9.9	12.40	0.0
7	0.7	2.7	2 10 14(2)	-1.6	3.9	-7.7	6.40	0.5
8	0.8	3.0	7 9 15(3)	-4.4	2.3	-12.2	14.25	0.0
9	5.8	11.2	6 (7)	1.2	5.4	-4.0	2.35	13.0
10	2.0	6.0	13 (6)	2.9	5.9	0.6	7.80	3.5
11	4.5	8.5	13 (10)	-0.4	1.4	-1.7	6.10	8.0
12	2.4	6.6	13 (7)	-0.9	2.8	-6.8	11.50	0.5
13	1.2	5.0	14 (5)	-1.0	1.8	-4.5	4.80	4.5
14	2.7	6.9	14 (8)	-3.0	-1.4	-4.9	7.85	3.0
15	5.0	8.4	13 (10)	-2.6	-0.9	-4.9	8.45	1.5
16	3.2	6.9	13 (7)	-0.3	2.7	-2.4	12.35	0.5
17	2.5	5.8	12 13 (6)	0.0	2.0	-2.0	8.85	4.5
18	1.2	4.5	15 (4)	0.8	2.8	-2.0	8.20	1.0
19	1.5	8.3	4 (3)	0.4	4.2	-3.3	7.55	0.0
20	4.2	9.7	5 (6)	4.1	6.4	1.1	4.70	5.5
21	1.7	5.6	12 (6)	0.1	3.7	-3.9	6.05	24.5
22	3.7	9.1	12 (8)	-2.2	-0.1	-4.2	6.75	13.5
23	5.0	9.6	13 (10)	-0.3	1.4	-1.8	7.80	5.0
24	2.3	7.5	14 (5)	-0.7	1.7	-4.0	7.50	9.5
25	2.4	5.9	12 (7)	-0.5	1.5	-2.5	12.50	5.0
26	2.1	5.2	16 (5)	-1.2	1.4	-4.8	10.65	4.0
27	2.4	5.6	15 (8)	-1.3	1.0	-4.6	14.60	0.5
28	0.1	2.2	1 2 10(1)	-4.5	-1.7	-9.8	6.05	5.0
TOTL							229.30	154.5
MEAN	2.3	6.1		-1.2	2.1	-5.4	8.19	
MAX	5.8	11.2		4.1	6.4	1.1	14.60	
MIN	0.1	2.2		-4.8	-1.7	-13.7	2.35	
DN	28	28		28	28	28	28	28

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.5	4.0	12 13 14(3)	-0.2	2.5	-3.3	2.85	22.0
2	2.0	5.9	1 (6)	-5.5	-0.8	-11.1	8.00	1.5
3	1.3	2.9	2 15 (4)	-4.7	0.5	-12.3	5.40	11.0
4	1.2	2.8	1 (7)	-3.5	1.7	-10.2	9.00	2.5
5	0.3	1.7	16 (3)	-2.9	0.7	-8.8	9.20	0.5
6	0.7	2.5	2 (4)	-1.8	3.9	-6.2	11.80	0.5
7	0.8	2.6	2 15 (3)	-3.9	3.3	-12.0	7.65	0.0
8	2.3	6.9	4 (4)	-1.1	2.3	-5.4	12.95	0.5
9	4.7	9.1	6 (7)	2.3	5.5	0.6	2.80	13.5
10	2.6	5.5	13 (8)	1.9	5.8	-0.7	7.55	7.5
11	4.6	7.2	13 (12)	-0.9	0.0	-1.6	6.45	3.5
12	1.4	3.9	2 (4)	-1.6	2.7	-5.4	11.45	0.0
13	1.5	3.6	14 (8)	-0.8	1.6	-2.9	5.00	4.5
14	4.0	6.1	12 (9)	-3.8	-2.4	-4.7	7.55	4.0
15	5.0	8.4	13 (11)	-1.4	0.1	-2.4	8.40	0.5
16	2.1	3.8	14 (5)	-0.4	2.3	-2.2	12.45	2.0
17	2.6	4.5	13 (7)	0.6	1.9	-0.5	8.80	3.5
18	0.6	2.1	15 16 (3)	-0.1	2.7	-2.6	8.15	0.5
19	3.8	8.2	5 (6)	3.0	5.1	-0.8	7.55	0.0
20	2.2	7.3	3 6 7(3)	3.3	6.3	1.0	4.65	9.5
21	1.8	5.0	12 (7)	-2.0	0.6	-4.2	5.95	26.0
22	5.6	8.9	12 (10)	-1.2	-0.2	-2.5	6.95	12.0
23	3.1	6.6	13 (6)	-0.7	0.9	-3.8	8.05	1.5
24	2.7	6.7	12 13 (6)	-0.3	1.2	-1.1	7.70	12.0
25	2.1	5.0	14 (6)	-1.2	1.0	-3.7	12.40	5.5
26	2.7	4.4	13 16 (5)	-1.0	1.2	-2.6	10.85	1.0
27	1.3	4.5	15 (6)	-3.5	0.5	-9.0	14.20	0.5
28	0.5	4.3	4 16 (2)	-1.9	0.9	-4.1	6.50	5.0
TOTL							230.25	151.0
MEAN	2.3	5.2		-1.2	1.9	-4.4	8.22	
MAX	5.6	9.1		3.3	6.3	1.0	14.20	
MIN	0.3	1.7		-5.5	-2.4	-12.3	2.80	
DN	28	28		28	28	28	28	28

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

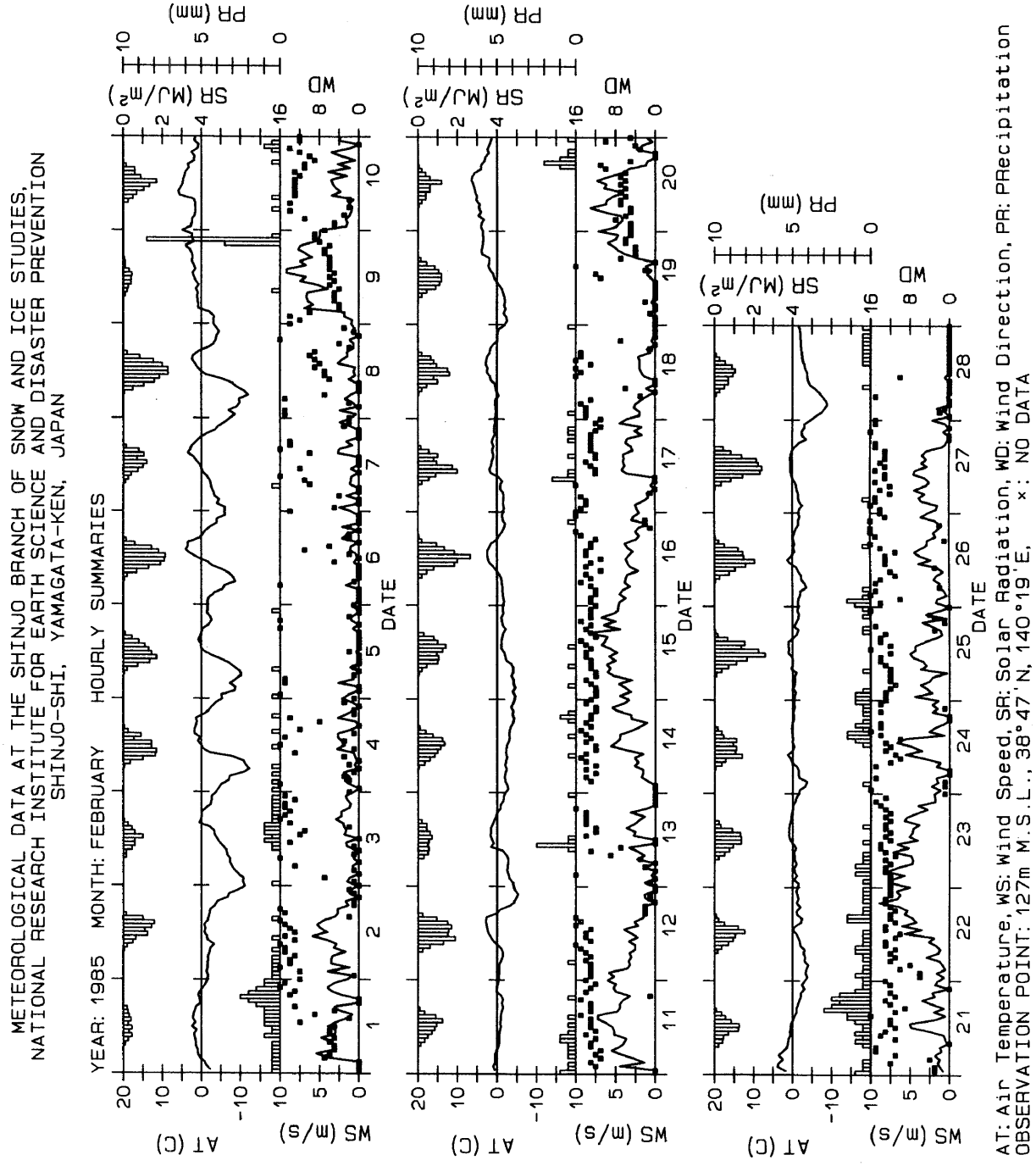

Fig.4.4 気象変化図

Seasonal variations in meteorological data.

Table 7.5　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

MARCH　1985

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.9	5.9	13 15 16(3)	0.8	4.2	-1.8	10.05	2.0
2	0.7	3.4	15 (3)	2.4	3.9	0.5	4.50	0.5
3	2.7	7.4	14 (7)	0.0	2.9	-3.3	14.45	3.0
4	2.2	6.2	15 (6)	-1.7	1.7	-5.4	11.50	2.0
5	1.9	6.4	12 (5)	1.1	7.2	-2.5	9.05	1.0
6	2.1	5.0	15 (6)	-1.6	0.9	-4.5	11.65	1.0
7	0.6	2.7	1 (4)	-1.8	2.1	-6.5	5.25	7.0
8	2.4	8.4	1 (4)	2.7	5.8	0.6	11.85	2.0
9	2.0	4.4	13 (7)	1.5	4.3	-1.1	7.15	12.0
10	2.9	6.4	13 (10)	-2.9	-1.0	-5.5	14.95	4.0
11	0.3	2.3	13 (3)	-3.8	-1.0	-7.9	7.10	9.0
12	0.8	3.9	14 (7)	0.2	2.8	-2.6	10.45	6.5
13	1.4	4.4	1 6 (3)	1.3	6.3	-5.1	14.15	0.5
14	0.8	3.0	13 (4)	-0.2	2.0	-2.7	5.00	2.5
15	1.3	5.0	14 (6)	-0.4	2.3	-2.8	14.15	0.5
16	0.9	5.1	1 (4)	-0.7	5.8	-8.2	19.70	0.0
17	0.3	1.9	1 3 (3)	0.7	5.3	-4.6	11.80	0.5
18	1.5	4.5	11 (7)	3.1	7.3	-1.5	17.20	0.5
19	0.5	3.3	15 (3)	0.2	4.6	-3.9	7.55	0.5
20	0.6	2.8	11 (4)	1.5	5.9	-1.1	16.35	0.0
21	0.3	2.0	1 16 (3)	1.5	3.8	-1.8	6.95	2.0
22	1.6	4.8	13 (8)	1.6	4.8	-2.5	21.30	1.0
23	1.0	3.2	1 (6)	0.8	6.0	-5.3	20.90	0.0
24	0.6	2.6	2 3 (3)	-0.4	7.9	-8.2	21.20	0.5
25	1.9	7.2	6 (5)	2.8	9.7	-5.0	18.85	0.0
26	2.6	8.2	13 14 15(3)	4.3	7.9	-2.0	10.10	12.0
27	3.4	8.0	7 (8)	0.8	4.7	-5.0	5.15	10.0
28	1.2	5.6	15 (5)	3.5	5.4	0.9	6.40	2.0
29	0.5	2.4	1 (3)	3.9	9.0	0.8	13.70	0.0
30	1.4	4.9	2 16 (3)	2.0	5.4	0.0	11.80	4.0
31	1.2	3.7	9 (5)	0.8	2.7	-0.9	9.10	8.5
TOTL							369.30	95.0
MEAN	1.4	4.7		0.8	4.5	-3.2	11.91	
MAX	3.4	8.4		4.3	9.7	0.9	21.30	
MIN	0.3	1.9		-3.8	-1.0	-8.2	4.50	
DN	31	31		31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.0	2.8	15 (6)	2.2	3.5	0.6	9.35	2.0
2	0.5	1.9	2 12 13(2)	1.6	3.4	0.2	5.25	2.5
3	3.4	6.3	14 (8)	-1.2	2.5	-3.2	14.40	1.5
4	1.4	4.6	12 (3)	-1.0	3.9	-4.4	11.80	1.0
5	2.0	4.8	12 13 16(4)	0.4	6.3	-4.0	9.35	1.5
6	1.4	4.3	14 (5)	-2.5	0.4	-6.1	10.60	0.5
7	1.0	2.5	1 (4)	0.7	2.9	-2.7	5.65	7.5
8	2.5	7.2	1 5 6(3)	2.9	5.6	1.2	11.70	12.5
9	2.8	3.8	13 (10)	-0.4	2.1	-3.6	7.40	4.0
10	1.7	5.1	13 (7)	-4.2	-1.6	-7.2	14.60	1.5
11	0.2	1.3	3 14 (2)	-1.9	1.2	-3.8	7.45	11.5
12	1.1	3.3	14 (6)	-0.1	2.7	-3.8	10.65	3.5
13	1.3	3.7	1 (4)	1.8	6.2	-1.3	13.50	0.5
14	0.9	2.6	14 (8)	-0.8	1.9	-2.7	6.25	2.5
15	1.3	4.0	13 (5)	-1.4	2.2	-7.5	15.00	0.5
16	0.7	4.8	1 3 5(2)	0.1	5.3	-4.2	19.15	0.0
17	0.4	1.7	16 (4)	2.5	5.1	0.9	10.15	0.5
18	1.3	3.7	11 (7)	1.5	6.8	-3.0	18.15	0.5
19	0.4	2.1	12 15 (2)	1.3	4.5	-0.5	7.10	0.5
20	0.9	2.7	11 (4)	1.3	5.7	-1.4	16.30	0.0
21	0.4	1.6	3 13 16(2)	2.0	3.7	-0.8	8.65	3.0
22	1.9	4.0	13 (6)	1.1	4.6	-2.3	21.65	0.0
23	0.3	1.3	2 (2)	-1.1	5.9	-8.1	21.05	0.5
24	1.1	2.3	2 (4)	0.8	7.7	-3.8	20.75	0.0
25	2.7	6.4	6 (7)	6.0	9.4	2.1	16.45	11.0
26	1.8	4.5	14 (4)	1.0	6.3	-4.8	11.20	1.0
27	3.5	6.6	7 (8)	3.1	5.2	0.5	3.85	11.5
28	0.5	2.0	3 14 15(2)	2.7	4.7	0.9	7.65	0.5
29	0.9	3.4	1 2 15(3)	4.2	8.8	1.7	13.25	1.0
30	1.7	4.5	9 (4)	1.4	4.7	-0.8	12.75	4.0
31	1.2	3.3	1 (4)	0.9	2.6	-0.6	9.40	8.0
TOTL							370.45	95.0
MEAN	1.4	3.6		0.8	4.3	-2.3	11.95	
MAX	3.5	7.2		6.0	9.4	2.1	21.65	
MIN	0.2	1.3		-4.2	-1.6	-8.1	3.85	
DN	31	31		31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

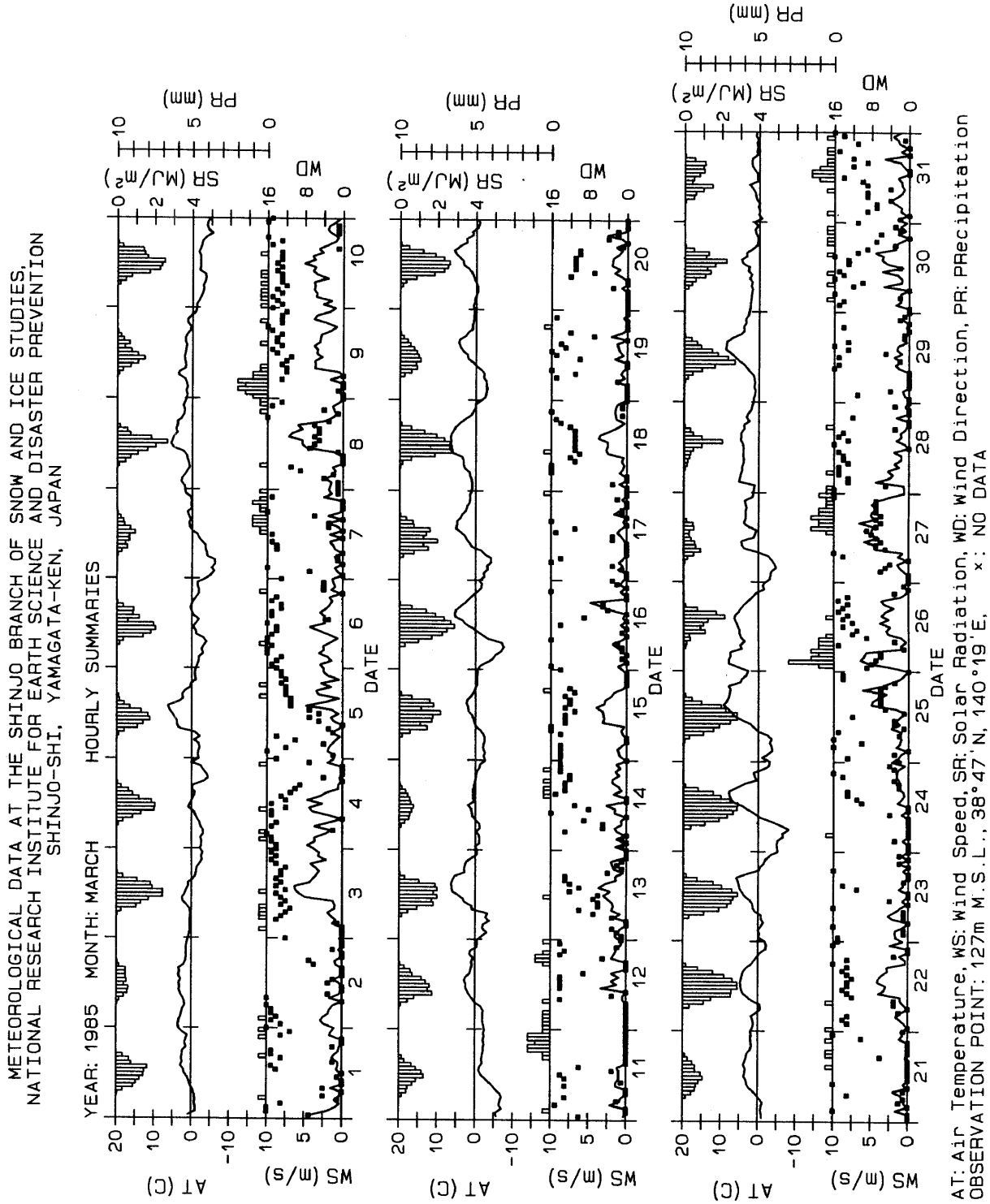

Fig.4.5 気象変化図

Seasonal variations in meteorological data.

Table 7.6　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

APRIL　1985

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	2.1	6.7	13 (5)	2.6	5.8	-1.0	12.05	1.5
2	0.7	2.8	12 (2)	5.1	12.3	-0.6	22.40	0.5
3	0.4	2.5	1 15 (2)	5.3	15.8	-1.6	19.45	0.0
4	1.0	4.8	2 15 (4)	5.6	7.8	2.9	3.65	8.0
5	2.4	5.7	12 (8)	5.7	7.6	3.6	4.85	9.5
6	3.4	6.6	12 13 (8)	7.5	11.5	3.0	23.20	1.5
7	0.3	1.6	2 13 14(2)	5.7	10.4	1.2	9.10	0.0
8	2.1	6.8	6 (5)	9.4	15.7	4.2	16.45	0.0
9	1.0	4.1	15 (4)	9.6	17.3	4.4	18.50	0.0
10	0.6	2.8	16 (4)	9.5	20.0	0.9	19.50	0.0
11	0.8	5.6	1 13 14(2)	9.2	14.3	4.5	9.65	0.0
12	4.5	9.0	7 (14)	6.9	8.8	4.0	6.60	0.0
13	2.6	8.0	6 (5)	7.4	13.0	2.7	15.05	0.0
14	2.8	8.2	4 5 (4)	7.8	18.4	0.1	22.35	0.0
15	3.7	7.9	5 (9)	6.0	7.4	4.9	4.50	3.0
16	1.0	3.3	12 (5)	6.4	8.4	4.9	3.30	1.5
17	1.3	3.1	1 15 16(4)	6.1	8.3	3.7	5.60	0.5
18	1.0	4.2	8 10 (4)	8.5	14.3	3.8	16.45	0.5
19	3.5	8.4	4 (8)	10.5	15.6	5.9	22.55	0.0
20	1.4	4.6	12 (5)	7.8	10.2	4.5	3.80	8.5
21	1.6	4.5	14 (9)	8.5	12.7	3.7	9.25	0.5
22	2.4	6.7	5 (7)	10.1	18.4	1.1	24.30	0.5
23	1.8	6.1	5 13 (4)	12.8	17.7	9.3	13.45	11.0
24	2.1	8.2	13 (6)	9.7	14.4	6.9	4.95	4.0
25	2.7	6.0	13 (6)	10.1	14.8	4.0	21.65	0.5
26	0.7	5.5	1 9 13(2)	12.9	22.6	2.9	17.45	0.0
27	1.8	5.8	15 (8)	10.9	15.3	5.2	3.60	0.0
28	0.9	3.8	14 (3)	9.6	17.2	2.7	20.95	0.0
29	1.5	5.5	13 14 (4)	11.4	20.6	2.4	25.25	0.0
30	0.6	2.1	1 15 (3)	12.6	22.2	2.7	23.00	0.0
TOTL							422.85	51.5
MEAN	1.8	5.4		8.4	14.0	3.2	14.10	
MAX	4.5	9.0		12.9	22.6	9.3	25.25	
MIN	0.3	1.6		2.6	5.8	-1.6	3.30	
DN	30	30		30	30	30	30	30

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	1.6	5.3	12 (5)	3.4	5.5	-0.6	13.35	1.5
2	0.4	2.1	4 10 (2)	4.5	11.9	-1.3	22.05	0.0
3	0.5	2.2	1 15 (3)	6.7	15.5	3.5	16.90	0.5
4	1.4	3.6	2 15 (4)	6.4	7.6	5.2	3.60	8.0
5	3.0	5.1	12 (14)	5.7	9.1	4.1	7.55	10.5
6	1.7	5.3	13 (6)	6.0	11.0	1.4	21.90	0.0
7	0.6	2.0	13 (5)	7.0	10.2	4.3	8.85	0.0
8	1.7	6.1	6 (5)	9.4	15.6	4.4	16.45	0.0
9	1.0	3.6	15 (4)	8.4	16.6	1.0	19.65	0.0
10	0.6	2.5	16 (4)	10.7	19.6	4.7	18.40	0.0
11	2.4	7.2	7 (5)	9.9	14.0	7.2	8.95	0.0
12	3.7	7.5	7 (11)	5.8	8.6	3.1	7.05	0.0
13	2.0	7.0	6 (4)	6.2	11.8	0.4	16.45	0.0
14	5.1	7.3	5 (8)	9.4	18.0	4.9	20.70	0.0
15	1.8	7.6	5 (6)	6.0	7.6	5.1	4.75	4.0
16	1.5	2.7	12 (5)	6.2	8.3	4.7	2.55	0.5
17	0.8	2.8	16 (4)	6.1	8.1	3.7	7.90	0.5
18	1.0	3.1	10 (4)	9.8	14.2	6.4	17.30	0.5
19	3.8	7.9	4 (8)	9.8	14.9	4.8	18.95	0.0
20	1.7	4.2	12 (5)	8.4	10.2	7.0	4.10	9.0
21	1.0	2.4	14 (6)	6.9	12.4	1.4	12.90	0.0
22	2.4	6.3	5 (7)	12.6	17.9	9.3	20.45	9.0
23	1.5	4.9	5 (4)	13.0	17.4	9.5	14.40	2.5
24	3.4	6.2	13 (10)	9.0	13.5	6.9	6.70	4.0
25	1.4	4.6	1 12 (3)	8.7	14.3	3.0	22.30	0.5
26	1.6	5.2	13 15 (4)	15.7	21.7	10.4	13.80	0.0
27	1.2	3.5	16 (6)	8.0	12.8	3.2	7.30	0.0
28	0.9	3.3	2 3 10(2)	9.9	16.5	2.5	22.05	0.0
29	1.5	5.2	13 (5)	11.7	20.3	3.4	24.45	0.0
30	X	X	X (X)	X	X	X	X	X
TOTL							401.75	51.0
MEAN	1.8	4.7		8.3	13.3	4.3	13.85	
MAX	5.1	7.9		15.7	21.7	10.4	24.45	
MIN	0.4	2.0		3.4	5.5	-1.3	2.55	
DN	29	29		29	29	29	29	29

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

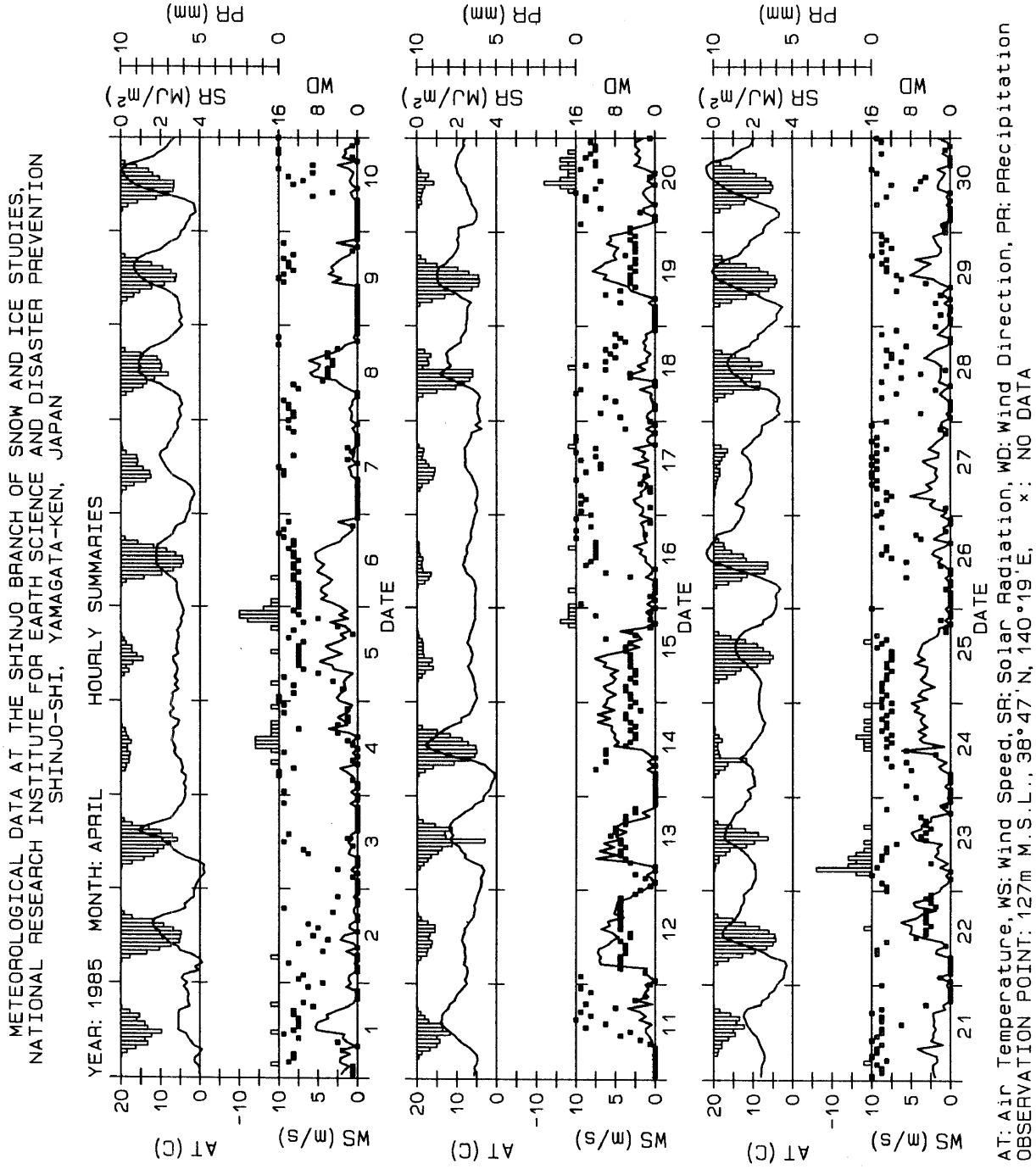

Fig.4.6 気象変化図

Seasonal variations in meteorological data.

Table 7.7　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

NOVEMBER 1985

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	0.3	2.5	15 (4)	10.1	11.6	8.4	1.55	X
2	3.3	8.4	13 (9)	9.0	11.7	5.8	7.25	X
3	1.3	5.8	13 (4)	7.4	12.3	1.6	5.90	X
4	0.5	2.3	14 (4)	5.2	14.5	0.0	10.45	X
5	0.7	3.4	15 (3)	9.8	16.5	5.8	7.00	X
6	0.4	2.8	13 (3)	9.8	12.7	6.3	2.75	X
7	0.7	5.6	6 (2)	13.9	18.4	10.8	4.25	X
8	0.9	3.4	13 14 (4)	14.7	18.5	9.5	4.80	X
9	0.8	3.1	13 (5)	10.9	18.3	6.4	9.55	X
10	1.1	5.1	14 (4)	10.8	14.1	6.3	2.00	X
11	1.1	5.3	6 (3)	9.7	13.2	7.7	3.70	X
12	1.1	5.5	9 11 (3)	6.0	7.8	3.9	1.85	20.5
13	1.4	5.6	6 14 (3)	2.2	4.6	0.3	2.35	22.5
14	0.4	3.6	14 16 (2)	0.8	1.6	0.1	2.20	25.5
15	1.5	5.6	3 16 (3)	2.6	4.5	0.2	3.30	11.0
16	1.2	4.3	7 (5)	5.5	8.6	3.6	4.35	20.5
17	2.1	7.7	6 (6)	5.1	7.6	2.8	2.90	18.0
18	1.2	4.1	7 (4)	3.7	5.4	0.9	2.60	32.0
19	1.0	4.6	13 (4)	1.7	4.2	0.0	3.90	12.0
20	0.3	1.7	14 16 (3)	3.4	8.2	0.6	8.80	0.0
21	0.4	2.2	12 (3)	6.2	10.6	2.6	4.30	2.0
22	0.6	2.4	4 8 16(2)	11.4	16.5	8.3	7.50	0.0
23	1.7	6.6	15 (8)	9.8	14.2	7.7	3.00	10.0
24	1.9	4.6	15 (8)	4.5	7.8	0.9	2.70	1.0
25	1.3	5.8	13 (4)	0.0	0.8	-0.7	1.90	16.5
26	3.7	8.1	13 (11)	1.1	3.0	-0.1	4.85	8.5
27	1.6	5.7	6 (5)	0.5	3.0	-4.5	2.15	10.5
28	1.0	4.3	2 15 16(3)	1.6	8.4	-4.2	3.55	6.0
29	2.6	7.0	13 (7)	1.0	6.0	-1.5	3.25	10.0
30	0.3	22.0	9 12 (2)	-0.4	0.4	-2.0	4.75	11.0
TOTL							129.40	237.5
MEAN	1.2	5.3		5.9	9.5	2.9	4.31	
MAX	3.7	22.0		14.7	18.5	10.8	10.45	
MIN	0.3	1.7		-0.4	0.4	-4.5	1.55	
DN	30	30		30	30	30	30	19

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	1.1	5.0	15 (5)	10.7	11.5	9.6	1.95	X
2	2.8	6.2	13 (6)	7.7	10.8	5.8	8.20	X
3	1.1	4.1	13 (4)	5.1	11.4	0.1	5.30	X
4	0.6	1.8	14 (3)	7.6	14.1	3.8	10.45	X
5	0.6	2.4	1 14 15(2)	9.8	16.2	6.4	6.50	X
6	0.4	1.8	13 (4)	11.4	12.2	9.5	2.80	X
7	0.7	4.6	6 12 14(2)	15.0	18.0	12.7	4.50	X
8	1.1	3.0	13 15 (4)	12.2	18.5	6.5	5.65	X
9	1.1	3.6	13 (7)	11.1	18.0	6.4	8.45	X
10	0.8	4.2	6 (4)	11.2	13.9	9.4	2.15	X
11	1.3	3.3	3 (3)	8.5	12.9	6.0	3.40	14.5
12	1.4	3.9	5 6 7(3)	4.7	6.9	1.3	1.85	29.0
13	0.6	2.1	8 11 (2)	1.2	2.6	0.2	2.40	14.5
14	0.6	2.3	4 6 14(2)	0.8	1.9	0.2	2.25	27.0
15	1.5	3.6	3 16 (4)	4.0	7.0	2.6	3.75	5.0
16	1.1	3.1	7 (4)	5.1	8.4	3.0	4.20	21.5
17	2.5	7.4	6 (7)	5.7	7.3	4.2	2.55	36.0
18	0.6	1.9	15 (3)	1.9	5.0	0.0	2.50	23.0
19	1.2	3.6	1 13 15(3)	2.0	4.1	0.6	4.65	1.0
20	0.4	1.1	15 (3)	4.2	7.8	2.2	8.20	2.0
21	0.3	0.9	8 12 (3)	8.5	10.5	5.0	4.40	0.0
22	0.6	1.9	16 (4)	11.1	16.3	8.0	7.25	0.0
23	2.5	6.1	15 (11)	9.0	13.9	5.6	3.30	10.0
24	1.3	3.5	15 (6)	2.2	7.0	-0.2	2.40	3.0
25	2.4	5.0	13 (10)	0.1	0.9	-0.5	2.15	19.0
26	3.3	6.4	13 (8)	1.2	2.9	0.1	4.60	7.5
27	0.8	2.2	6 (3)	-0.5	2.6	-4.1	2.45	7.0
28	2.3	5.7	14 15 (5)	3.4	7.7	1.0	3.25	7.0
29	1.0	4.6	13 (5)	-0.6	2.9	-1.5	3.65	12.5
30	0.2	1.6	9 12 (2)	-0.8	0.2	-2.5	4.75	7.5
TOTL							129.90	247.0
MEAN	1.2	3.6		5.8	9.1	3.4	4.33	
MAX	3.3	7.4		15.0	18.5	12.7	10.45	
MIN	0.2	0.9		-0.8	0.2	-4.1	1.85	
DN	30	30		30	30	30	30	20

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

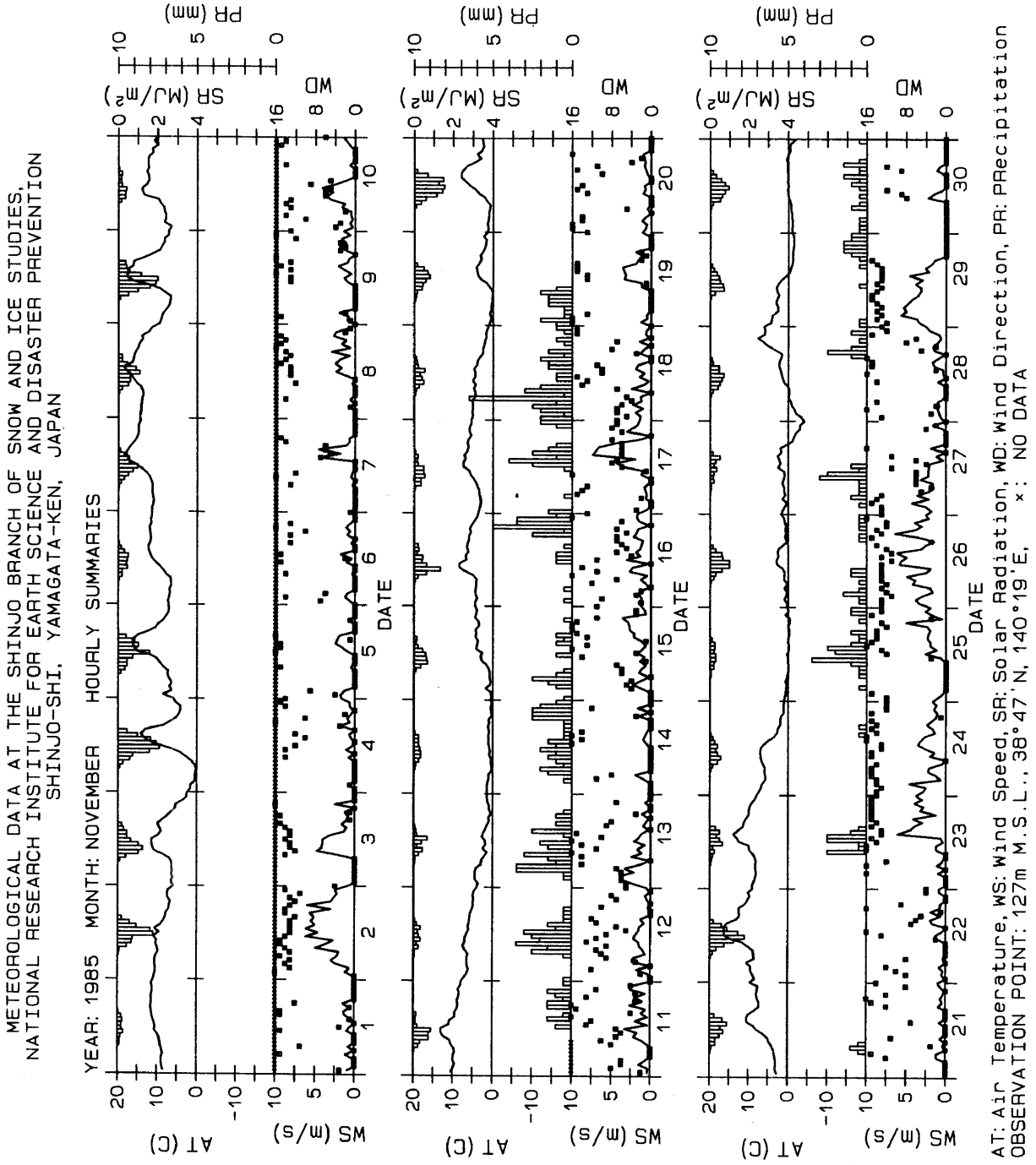

Fig.4.7 気象変化図

Seasonal variations in meteorological data.

Table 7.8　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

DECEMBER 1985

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	1.3	6.8	6 (3)	0.0	2.9	-3.4	5.30	16.0
2	1.0	5.5	7 (3)	1.5	4.5	0.1	4.00	18.5
3	0.9	3.9	2 13 14(3)	1.9	4.6	-2.1	3.75	0.0
4	0.6	3.7	15 (3)	0.7	6.2	-2.1	3.90	2.5
5	1.4	4.0	15 (7)	3.1	5.5	0.7	4.10	X
6	2.0	5.5	14 16 (5)	2.6	6.5	-0.2	3.35	11.5
7	0.8	4.0	1 4 (3)	0.4	2.9	-1.3	3.35	0.0
8	0.6	3.6	14 (3)	1.2	3.7	-1.4	3.35	X
9	2.0	5.7	16 (5)	0.7	3.2	-2.6	3.25	X
10	2.8	6.9	13 (10)	-3.2	-2.4	-4.0	4.15	X
11	1.0	4.8	11 (4)	-2.6	-0.6	-7.6	4.85	5.5
12	0.2	2.1	1 11 (2)	-3.3	-0.1	-7.6	7.10	1.0
13	1.4	5.9	6 (6)	0.0	3.9	-4.6	8.25	13.0
14	1.1	6.5	14 (4)	-0.4	0.5	-3.4	4.05	5.5
15	1.1	4.9	14 16 (4)	-4.8	-2.2	-8.6	6.15	7.5
16	0.7	3.1	7 (4)	-5.0	-2.7	-10.0	5.80	6.0
17	0.6	3.8	3 7 (2)	-3.9	-1.1	-7.0	8.05	4.5
18	1.7	6.9	3 15 (4)	-2.0	-0.7	-4.1	3.85	10.0
19	0.6	3.7	6 (4)	-0.3	1.5	-2.3	7.55	6.0
20	1.8	6.0	13 (8)	-1.8	-0.5	-4.6	5.45	6.5
21	2.5	6.9	14 (6)	-1.8	0.2	-5.5	4.80	1.5
22	0.3	2.2	1 7 13(2)	-2.1	-0.2	-4.9	5.30	0.5
23	0.5	2.5	14 (6)	0.3	2.9	-1.5	5.65	4.5
24	4.3	9.5	13 14 (11)	-2.2	0.0	-4.2	5.60	3.5
25	0.8	4.5	11 14 (2)	-2.2	0.0	-6.5	4.65	4.5
26	1.2	4.9	13 (4)	-0.2	2.2	-5.0	4.15	1.0
27	2.7	8.0	14 (6)	-0.5	2.7	-1.9	4.00	8.0
28	2.2	5.7	14 (7)	0.2	2.1	-1.9	5.20	0.5
29	0.6	2.5	2 (3)	-1.4	2.3	-6.3	8.70	2.5
30	1.0	5.5	12 (4)	4.2	7.6	0.9	5.40	0.5
31	3.0	9.5	13 (10)	2.8	10.1	-2.1	3.15	2.0
TOTL							156.20	143.0
MEAN	1.4	5.1		-0.6	2.1	-3.7	5.04	
MAX	4.3	9.5		4.2	10.1	0.9	8.70	
MIN	0.2	2.1		-5.0	-2.7	-10.0	3.15	
DN	31	31		31	31	31	31	27

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	1.9	6.7	6 8 (3)	1.1	2.5	-0.1	5.50	30.0
2	1.1	3.2	14 (5)	2.5	4.3	1.0	3.65	4.5
3	0.3	1.8	2 (2)	0.1	3.2	-1.8	3.60	0.0
4	1.3	2.9	15 (9)	2.6	5.6	-0.3	3.75	3.0
5	1.3	3.9	13 (5)	3.1	6.3	0.6	4.15	X
6	1.4	3.2	16 (5)	1.1	4.2	-1.2	3.45	0.0
7	1.1	3.9	1 16 (3)	0.6	2.8	-1.3	3.40	0.0
8	0.8	5.0	16 (4)	1.9	3.6	0.9	3.30	X
9	2.1	4.5	13 14 (5)	-1.3	3.0	-3.9	3.20	X
10	2.7	5.1	13 (8)	-2.8	-1.9	-3.7	4.25	X
11	0.5	3.2	7 (3)	-3.3	-0.7	-7.6	5.40	1.5
12	0.5	3.6	1 7 11(2)	-2.5	-0.1	-5.4	7.10	0.5
13	1.0	4.9	6 (5)	1.0	3.7	-0.4	7.85	16.0
14	1.8	5.1	16 (6)	-2.7	0.2	-7.9	4.25	2.5
15	0.4	2.6	14 (4)	-4.8	-2.4	-7.0	6.05	10.5
16	0.7	3.0	7 (5)	-5.0	-2.7	-9.5	5.70	3.5
17	1.4	4.0	15 (4)	-2.6	-1.4	-4.9	7.95	7.5
18	1.3	3.1	6 (7)	-1.3	-0.2	-2.2	4.10	7.5
19	0.0	0.8	9 (1)	-0.6	1.2	-2.8	7.30	8.0
20	3.0	5.3	13 (11)	-2.2	-1.1	-4.6	5.50	4.5
21	1.4	4.1	1 (4)	-2.0	-0.1	-4.6	4.85	0.5
22	0.2	1.0	1 (2)	-1.0	0.0	-2.4	5.20	4.0
23	2.3	8.1	14 (11)	0.1	2.8	-3.5	5.55	4.0
24	3.0	7.1	13 14 (8)	-3.0	-1.9	-5.7	5.90	1.5
25	0.8	4.0	11 16 (2)	-1.5	0.0	-4.1	4.30	4.5
26	1.2	3.7	13 (3)	0.1	1.9	-1.6	4.05	6.5
27	3.5	6.0	14 (7)	-0.5	1.3	-1.6	4.10	1.5
28	1.3	4.1	14 (6)	-0.8	1.9	-5.1	5.55	0.5
29	1.0	3.2	12 (3)	1.8	6.9	-2.9	8.30	2.5
30	1.9	8.9	13 (5)	4.1	9.6	1.7	5.35	2.5
31	1.8	5.3	13 (5)	1.0	3.4	-1.9	3.25	5.5
TOTL							155.85	133.0
MEAN	1.4	4.2		-0.5	1.8	-3.0	5.03	
MAX	3.5	8.9		4.1	9.6	1.7	8.30	
MIN	0.0	0.8		-5.0	-2.7	-9.5	3.20	
DN	31	31		31	31	31	31	27

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

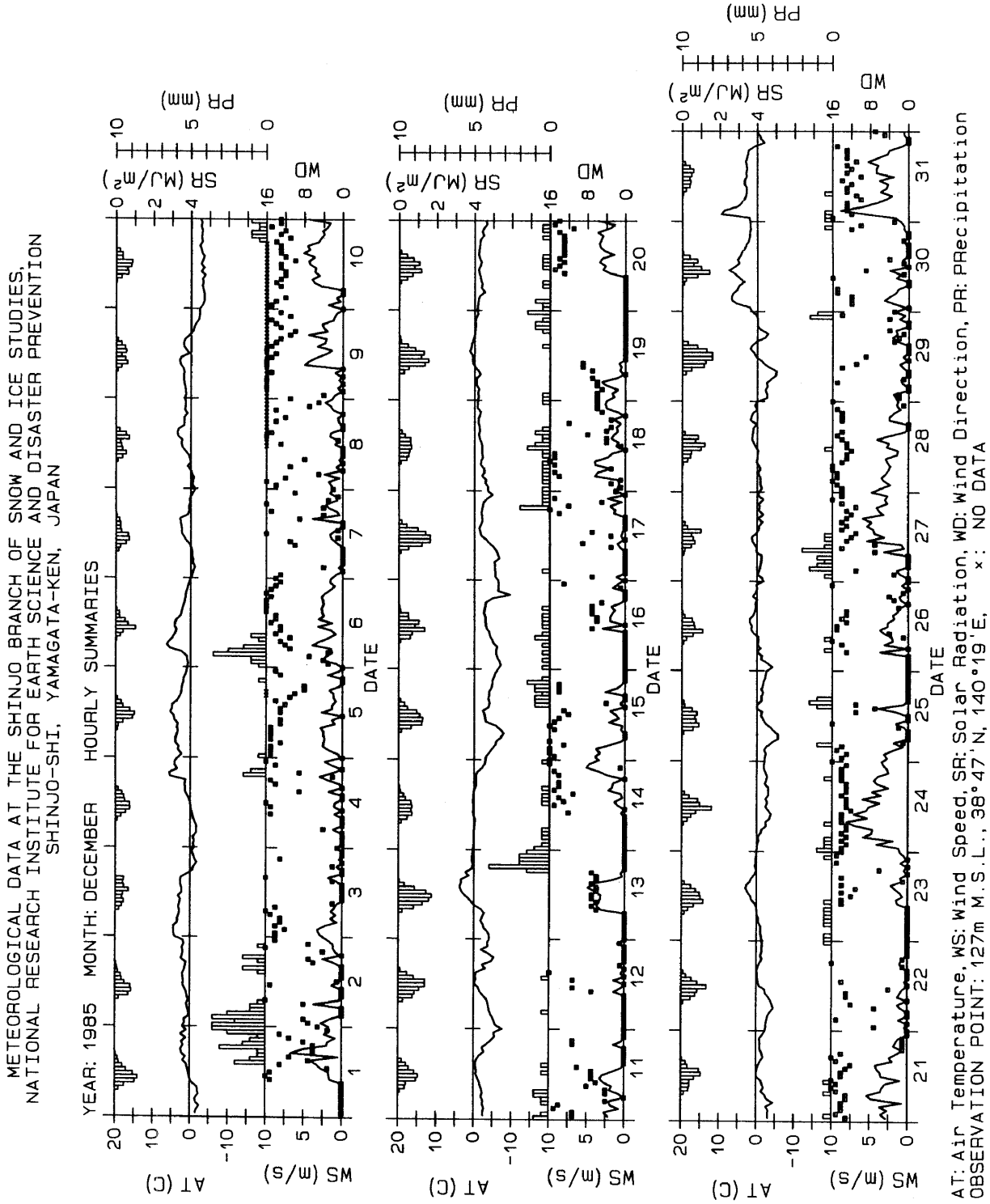

Fig.4.8 気象変化図

Seasonal variations in meteorological data.

Table 7.9　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

JANUARY　1986

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.6	4.4	4	(3)	0.3	3.0	-0.8	4.10	23.5
2	1.3	5.6	13 14	(4)	-2.2	0.1	-5.0	3.80	9.0
3	0.3	2.3	1	(2)	-3.5	-0.7	-6.9	6.25	5.0
4	0.4	1.9	1	(3)	-1.7	1.5	-5.7	3.30	1.5
5	1.5	5.1	13	(5)	-2.1	1.4	-5.0	5.65	11.5
6	2.2	5.8	6	(5)	-3.7	-1.6	-5.4	3.45	16.5
7	0.8	4.2	6	(4)	-0.2	0.7	-2.3	3.35	31.5
8	0.5	3.7	10 12	(3)	0.1	1.9	-1.5	7.05	3.5
9	2.6	6.5	13	(7)	-1.2	1.6	-3.4	3.85	6.0
10	2.7	6.5	12	(8)	-1.8	0.1	-3.7	6.50	2.5
11	1.2	3.7	2	(4)	-3.6	-1.3	-10.7	5.25	4.0
12	1.7	4.8	14	(5)	-3.1	-1.2	-8.9	7.65	4.5
13	1.3	5.6	13	(6)	-3.4	-0.4	-6.8	5.10	4.5
14	4.8	8.5	13	(12)	-3.9	-2.9	-4.7	3.30	5.5
15	3.5	7.4	14	(11)	-1.1	0.8	-3.6	6.30	1.0
16	0.4	2.3	2	(3)	-4.6	0.5	-11.5	10.55	0.0
17	0.3	2.1	10	(2)	-4.5	0.4	-10.6	6.70	1.5
18	2.5	5.5	14	(8)	0.4	2.9	-1.7	6.05	2.5
19	1.3	3.5	13	(5)	-0.4	2.3	-2.3	7.35	0.0
20	1.1	4.4	15	(7)	-2.3	0.5	-7.6	4.95	2.5
21	1.9	4.6	14	(6)	-3.8	-2.1	-5.7	5.85	1.0
22	2.4	7.7	13	(7)	-5.9	-3.0	-8.4	4.10	5.5
23	3.7	8.1	14	(9)	-5.5	-3.9	-7.4	5.45	6.0
24	2.3	6.1	12	(7)	-5.1	-3.1	-6.5	7.00	7.5
25	4.7	8.2	13	(10)	-4.2	-2.5	-5.3	7.70	0.5
26	2.5	6.7	14	(10)	-5.1	-3.8	-6.3	6.20	1.5
27	2.8	7.8	14	(6)	-5.3	-3.7	-6.6	5.40	6.0
28	3.3	10.2	14	(4)	-4.7	-0.9	-12.2	4.20	5.5
29	1.8	5.0	16	(6)	-3.1	-1.0	-5.5	5.10	1.0
30	0.7	2.5	16	(4)	-5.1	-2.5	-9.9	5.45	9.5
31	1.0	5.0	14	(4)	-2.5	0.6	-7.1	8.40	4.0
TOTL								175.35	184.5
MEAN	1.9	5.3			-3.0	-0.5	-6.1	5.66	
MAX	4.8	10.2			0.4	3.0	-0.8	10.55	
MIN	0.3	1.9			-5.9	-3.9	-12.2	3.30	
DN	31	31			31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.5	4.4	4 12	(2)	0.1	2.6	-1.4	4.15	21.5
2	1.3	4.6	13 14	(4)	-3.1	-0.2	-5.0	3.80	10.5
3	0.4	2.3	1	(4)	-3.8	-1.1	-6.1	6.30	0.0
4	0.6	2.0	12 15	(3)	-0.2	1.3	-2.9	3.30	5.5
5	1.9	5.1	6 13	(5)	-3.8	-1.9	-5.1	5.60	14.0
6	1.7	4.3	13 14	(3)	-2.3	0.1	-3.8	3.30	28.0
7	0.5	2.0	5	(3)	0.1	0.6	-1.2	3.70	15.5
8	1.4	3.6	9 12	(3)	0.0	1.5	-1.2	6.80	5.5
9	2.7	5.6	13	(9)	-1.9	-0.2	-3.2	4.00	3.0
10	2.2	4.8	12	(8)	-2.3	-0.3	-4.1	6.65	3.5
11	1.6	4.0	9 13	(3)	-3.7	-1.5	-8.2	5.00	6.5
12	1.4	3.9	14	(5)	-3.8	-1.3	-6.8	7.95	0.0
13	3.1	6.9	13	(8)	-2.8	-0.6	-5.6	4.65	5.5
14	4.7	7.0	13	(12)	-3.5	-1.7	-4.3	3.45	5.5
15	1.8	5.3	13	(7)	-2.7	0.5	-10.7	7.05	0.0
16	0.4	1.8	2	(3)	-5.3	-0.2	-10.3	9.90	0.0
17	0.8	3.7	13	(3)	-0.7	2.1	-6.3	6.80	3.5
18	2.5	4.6	14	(8)	-0.4	2.6	-1.9	6.05	0.5
19	0.7	2.1	13 15	(4)	-1.6	2.0	-6.5	7.35	0.0
20	1.8	3.6	15	(9)	-1.9	0.4	-4.4	5.05	2.5
21	1.0	3.6	14	(3)	-4.7	-2.5	-6.0	5.70	5.5
22	4.4	7.2	13	(11)	-6.1	-3.4	-8.2	4.20	1.0
23	2.7	5.7	14	(10)	-5.4	-4.4	-6.4	5.35	7.5
24	2.9	7.0	12	(6)	-4.4	-3.3	-6.1	7.60	6.5
25	4.3	7.3	13	(10)	-4.6	-2.7	-5.6	7.00	0.0
26	1.8	3.8	14	(7)	-5.2	-4.0	-5.8	6.10	6.5
27	3.2	6.4	14	(5)	-5.8	-4.2	-11.3	6.15	1.5
28	2.7	8.5	14	(4)	-3.9	-1.0	-4.8	3.60	6.0
29	1.8	3.7	16	(6)	-4.2	-1.3	-8.7	5.40	0.0
30	0.3	2.1	14	(2)	-3.5	-2.2	-6.1	5.40	10.5
31	1.1	4.2	14	(4)	-2.7	0.2	-5.6	8.25	5.0
TOTL								175.60	181.0
MEAN	1.9	4.6			-3.0	-0.8	-5.6	5.66	
MAX	4.7	8.5			0.1	2.6	-1.2	9.90	
MIN	0.3	1.8			-6.1	-4.4	-11.3	3.30	
DN	31	31			31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

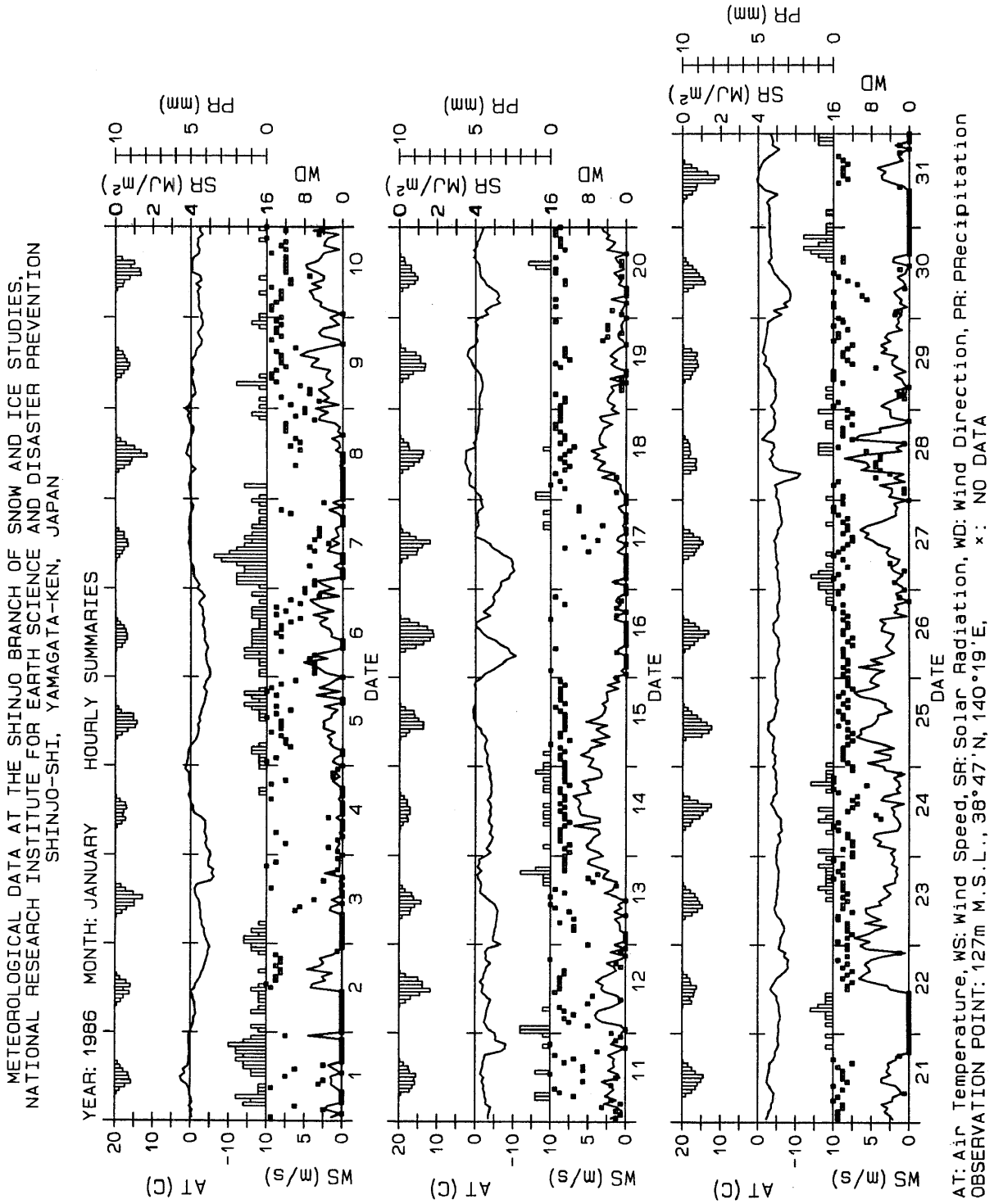

Fig.4.9 気象変化図

Seasonal variations in meteorological data.

Table 7.10　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

FEBRUARY 1986

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.2	5.7	12 13 (3)	-4.4	-1.4	-10.5	8.20	5.5
2	0.5	3.5	12 (2)	-8.1	-3.1	-15.1	7.00	3.5
3	2.3	10.4	13 (5)	-3.3	-0.9	-9.2	4.65	10.5
4	1.5	4.4	13 14 (4)	-4.6	-2.2	-7.7	9.20	2.5
5	1.1	4.3	2 13 (3)	-5.8	-3.1	-10.8	8.00	2.5
6	1.7	4.9	16 (5)	-5.7	-2.5	-9.6	5.95	1.5
7	0.8	2.7	16 (5)	-5.9	-2.8	-10.4	8.35	1.5
8	0.6	2.9	6 11 13(2)	-5.9	-2.8	-13.5	8.20	X
9	1.6	6.4	13 (7)	-3.9	-1.7	-6.4	5.75	7.5
10	1.5	4.1	1 (4)	-4.8	-2.9	-6.6	8.60	4.5
11	0.4	2.5	1 (4)	-3.7	-1.4	-6.1	9.10	2.5
12	2.2	5.5	15 (7)	-1.5	1.1	-4.9	9.75	0.0
13	0.9	3.8	3 (4)	-0.1	3.1	-4.2	9.25	10.0
14	0.7	3.7	10 (3)	0.8	4.5	-2.4	6.70	5.0
15	0.5	4.5	11 (2)	-0.1	0.8	-1.4	5.20	4.0
16	2.2	5.3	13 (7)	-3.7	-1.4	-7.6	9.45	8.0
17	2.9	6.7	13 14 (4)	-2.8	-0.4	-4.2	10.60	5.5
18	2.4	8.7	6 (5)	-2.8	0.6	-11.0	10.75	0.0
19	3.8	8.2	6 (9)	-1.0	0.4	-2.6	7.10	0.5
20	0.9	5.1	12 (5)	-2.4	0.3	-10.1	7.40	16.5
21	2.1	6.4	13 14 (5)	-2.7	-1.0	-3.5	6.95	13.5
22	0.6	3.7	1 (3)	-3.3	-0.3	-8.5	11.70	3.0
23	1.9	8.7	6 (5)	-0.6	4.5	-4.9	11.40	9.5
24	1.5	5.5	12 (4)	-2.4	0.3	-4.5	13.80	8.0
25	1.5	5.0	14 (4)	-4.0	-2.2	-9.1	6.50	8.5
26	2.2	5.8	12 (6)	-2.0	0.0	-3.8	8.40	7.0
27	1.7	7.7	4 (5)	-3.3	2.4	-12.6	15.35	0.0
28	0.9	3.7	12 (4)	-1.2	1.0	-7.4	8.65	9.0
TOTL							241.95	150.0
MEAN	1.5	5.3		-3.2	-0.4	-7.5	8.64	
MAX	3.8	10.4		0.8	4.5	-1.4	15.35	
MIN	0.4	2.5		-8.1	-3.1	-15.1	4.65	
DN	28	28		28	28	28	28	27

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.4	5.4	12 (4)	-7.2	-1.6	-13.8	8.05	3.5
2	1.6	9.4	6 (4)	-4.7	-1.1	-8.5	6.85	10.0
3	1.8	4.2	13 (7)	-4.3	-1.9	-7.5	5.20	5.0
4	1.0	3.5	12 14 (3)	-5.1	-2.5	-9.1	9.35	2.0
5	1.3	3.3	1 2 13(3)	-6.5	-3.4	-9.2	7.65	3.0
6	2.0	4.2	16 (9)	-4.9	-2.8	-7.5	6.00	1.5
7	0.4	1.8	2 8 (3)	-6.9	-3.0	-10.2	8.90	1.0
8	0.6	1.6	6 (3)	-3.9	-2.6	-6.8	7.95	X
9	1.9	4.3	13 (7)	-4.8	-2.5	-6.3	5.80	9.0
10	1.0	3.6	13 (3)	-4.4	-3.4	-5.0	8.20	4.0
11	1.1	2.2	15 16 (6)	-3.3	-1.8	-4.9	9.30	0.0
12	2.3	5.4	13 14 15(4)	-0.9	0.7	-3.3	9.90	0.0
13	0.5	1.6	3 (3)	0.9	3.0	-0.7	8.65	14.5
14	0.6	2.4	10 (3)	0.5	4.0	-1.9	7.00	0.5
15	1.3	4.2	13 (4)	-1.4	0.8	-6.2	5.30	5.0
16	2.1	5.2	11 (7)	-3.6	-1.8	-4.5	9.95	12.5
17	2.5	5.2	1 15 (4)	-3.6	-0.7	-9.5	10.80	0.0
18	3.9	8.0	6 (10)	-1.1	0.5	-3.2	10.30	0.0
19	2.1	6.5	6 (4)	-2.2	0.1	-8.1	7.10	2.0
20	1.5	4.3	12 (4)	-1.9	0.0	-3.3	6.95	21.5
21	2.1	5.1	13 14 (5)	-3.2	-1.4	-6.6	7.85	7.5
22	0.9	4.4	3 5 13(2)	-2.9	-0.6	-5.3	11.20	5.0
23	1.8	6.1	6 (5)	-0.4	4.4	-3.3	11.45	11.0
24	1.4	4.2	12 (3)	-3.2	0.1	-8.1	13.40	8.5
25	2.0	4.8	13 (6)	-3.4	-1.6	-4.8	6.65	8.0
26	1.4	4.7	15 (5)	-4.2	-0.1	-12.1	9.25	3.0
27	1.6	7.0	4 (5)	-0.3	2.0	-5.5	14.35	6.5
28	1.1	2.5	12 (4)	-3.5	0.9	-9.2	9.25	2.5
TOTL							242.60	147.0
MEAN	1.6	4.5		-3.2	-0.6	-6.6	8.66	
MAX	3.9	9.4		0.9	4.4	-0.7	14.35	
MIN	0.4	1.6		-7.2	-3.4	-13.8	5.20	
DN	28	28		28	28	28	28	27

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

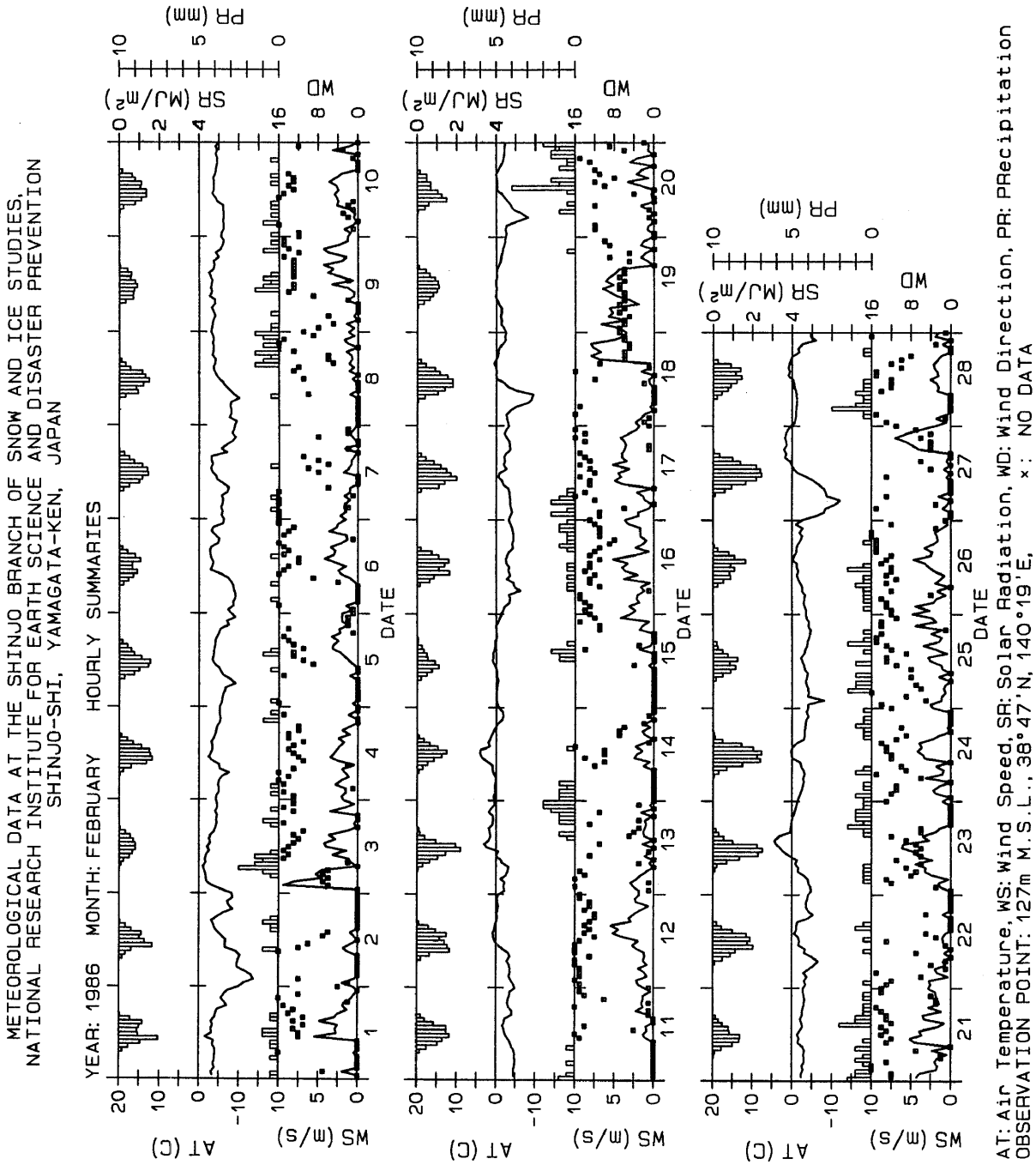

Fig.4.10 気象変化図

Seasonal variations in meteorological data.

Table 7.11　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

MARCH　1986

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST	WD(1-16) FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.8	6.7	12	(6)	-2.9	1.7	-10.1	11.40	3.0
2	1.3	4.0	8 9 10	(3)	-0.4	1.3	-3.5	8.50	16.0
3	2.8	7.6	15	(6)	-1.7	0.9	-6.2	9.65	6.5
4	1.2	3.7	1	(6)	-3.7	0.3	-8.2	17.55	2.0
5	1.1	4.5	1	(4)	-3.8	1.6	-12.0	6.15	3.0
6	0.6	3.2	2	(3)	-2.2	4.1	-9.3	16.20	0.0
7	1.5	5.5	14	(4)	-0.1	4.6	-7.1	12.80	0.0
8	1.5	4.6	16	(5)	0.2	4.5	-6.0	16.45	0.0
9	0.5	3.6	1 2	(3)	-1.5	7.3	-10.3	17.65	0.0
10	1.0	4.4	14	(4)	1.3	4.8	-2.9	3.40	1.5
11	1.4	4.3	14 15	(3)	2.3	3.8	0.0	7.60	1.0
12	1.2	33.9	15	(5)	1.0	2.8	-0.1	7.15	3.0
13	1.0	3.3	1 2	(3)	0.8	2.7	-1.8	7.80	8.0
14	3.5	10.5	5	(6)	0.6	5.0	-4.6	16.15	0.0
15	6.5	9.9	5	(15)	3.1	5.0	1.0	16.80	0.0
16	2.7	7.2	13	(6)	2.0	4.8	-0.1	3.80	7.5
17	4.7	8.2	13	(9)	0.3	1.6	-1.3	10.85	2.0
18	2.9	6.9	14	(7)	1.3	4.3	-4.0	16.90	0.0
19	2.4	8.2	5	(4)	0.8	4.2	-4.1	7.00	9.0
20	3.4	7.9	13	(9)	1.7	3.7	0.4	5.20	20.0
21	3.5	6.4	13	(13)	1.5	3.9	-1.4	12.60	0.5
22	1.2	7.2	1 5 6	(2)	1.5	6.0	-3.0	19.05	0.0
23	2.9	9.3	6	(5)	1.0	3.2	0.0	3.45	6.0
24	3.6	6.7	13	(8)	2.1	4.5	0.0	13.35	1.0
25	3.1	6.3	14	(8)	2.5	5.1	0.5	14.85	0.5
26	1.1	4.7	6 16	(3)	3.0	7.4	-1.3	19.20	2.5
27	1.1	3.4	3 4	(3)	2.5	8.3	-4.5	14.20	0.0
28	3.0	7.5	6	(6)	3.5	5.8	1.6	11.90	0.0
29	0.8	4.7	1 3 10	(3)	2.8	7.1	-0.2	14.40	0.0
30	0.5	2.7	4	(3)	2.5	9.1	-2.5	18.00	3.5
31	2.1	6.5	13	(10)	2.7	5.2	0.4	9.30	7.5
TOTL								369.30	104.0
MEAN	2.1	6.9			0.8	4.3	-3.2	11.91	
MAX	6.5	33.9			3.5	9.1	1.6	19.20	
MIN	0.5	2.7			-3.8	0.3	-12.0	3.40	
DN	31	31			31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST	WD(1-16) FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.0	4.2	12	(6)	-0.8	1.5	-2.3	11.40	11.0
2	1.4	4.2	15	(4)	0.1	1.3	-0.5	7.75	12.0
3	2.8	7.5	1 15	(5)	-3.9	0.2	-7.6	10.50	4.0
4	0.9	2.4	4	(4)	-4.7	0.0	-11.6	17.40	0.5
5	1.0	2.8	1 15	(4)	-2.6	1.0	-7.1	6.25	3.0
6	0.6	3.2	2	(3)	-1.9	3.6	-6.0	17.00	0.0
7	2.2	4.2	14 15	(6)	1.2	4.4	-3.1	12.90	0.0
8	1.0	3.1	13	(3)	-2.4	4.4	-9.2	16.80	0.0
9	0.7	2.6	2 16	(3)	0.9	6.2	-2.7	15.90	0.0
10	1.9	3.3	14	(6)	2.9	4.5	1.5	3.40	1.5
11	0.8	3.7	3 9 14	(2)	1.4	3.6	0.0	8.80	1.5
12	1.4	3.1	15	(6)	1.1	2.2	0.1	5.90	6.5
13	0.8	2.4	15	(4)	-0.4	2.4	-3.8	8.95	4.0
14	5.8	9.8	5	(13)	2.2	4.8	0.8	17.05	0.0
15	4.7	8.7	5	(9)	3.3	4.9	1.2	14.35	0.5
16	3.8	6.9	13	(10)	1.2	3.7	-1.1	4.45	8.0
17	4.7	7.4	13	(8)	0.6	3.1	-0.7	12.80	1.0
18	2.1	6.1	13 14	(5)	0.5	4.1	-3.5	15.05	0.0
19	2.3	7.6	5	(3)	1.9	3.9	0.6	6.40	21.0
20	4.7	7.5	13	(14)	1.5	3.1	0.4	6.30	8.5
21	2.1	5.2	13	(8)	0.7	3.4	-2.7	13.15	0.0
22	3.2	7.4	6	(6)	2.7	5.7	0.3	17.75	0.0
23	1.9	6.4	14	(4)	0.5	2.4	0.0	4.55	6.5
24	3.9	5.6	13	(11)	2.7	4.5	0.8	14.25	0.5
25	2.2	4.4	14	(9)	2.2	4.4	-1.0	15.20	0.5
26	1.0	4.7	4 6	(3)	1.8	7.3	-4.3	17.55	2.5
27	1.2	2.6	2	(3)	4.8	8.0	-0.3	15.35	0.0
28	3.2	6.5	6	(7)	2.6	5.8	0.8	10.95	0.0
29	0.4	1.5	1 2 10	(2)	1.9	6.7	-1.6	14.85	0.0
30	1.0	2.8	13	(4)	4.0	8.2	1.6	16.45	7.5
31	2.1	4.9	13	(7)	2.5	4.8	0.9	11.05	5.0
TOTL								370.45	105.5
MEAN	2.2	4.9			0.9	4.0	-1.9	11.95	
MAX	5.8	9.8			4.8	8.2	1.6	17.75	
MIN	0.4	1.5			-4.7	0.0	-11.6	3.40	
DN	31	31			31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

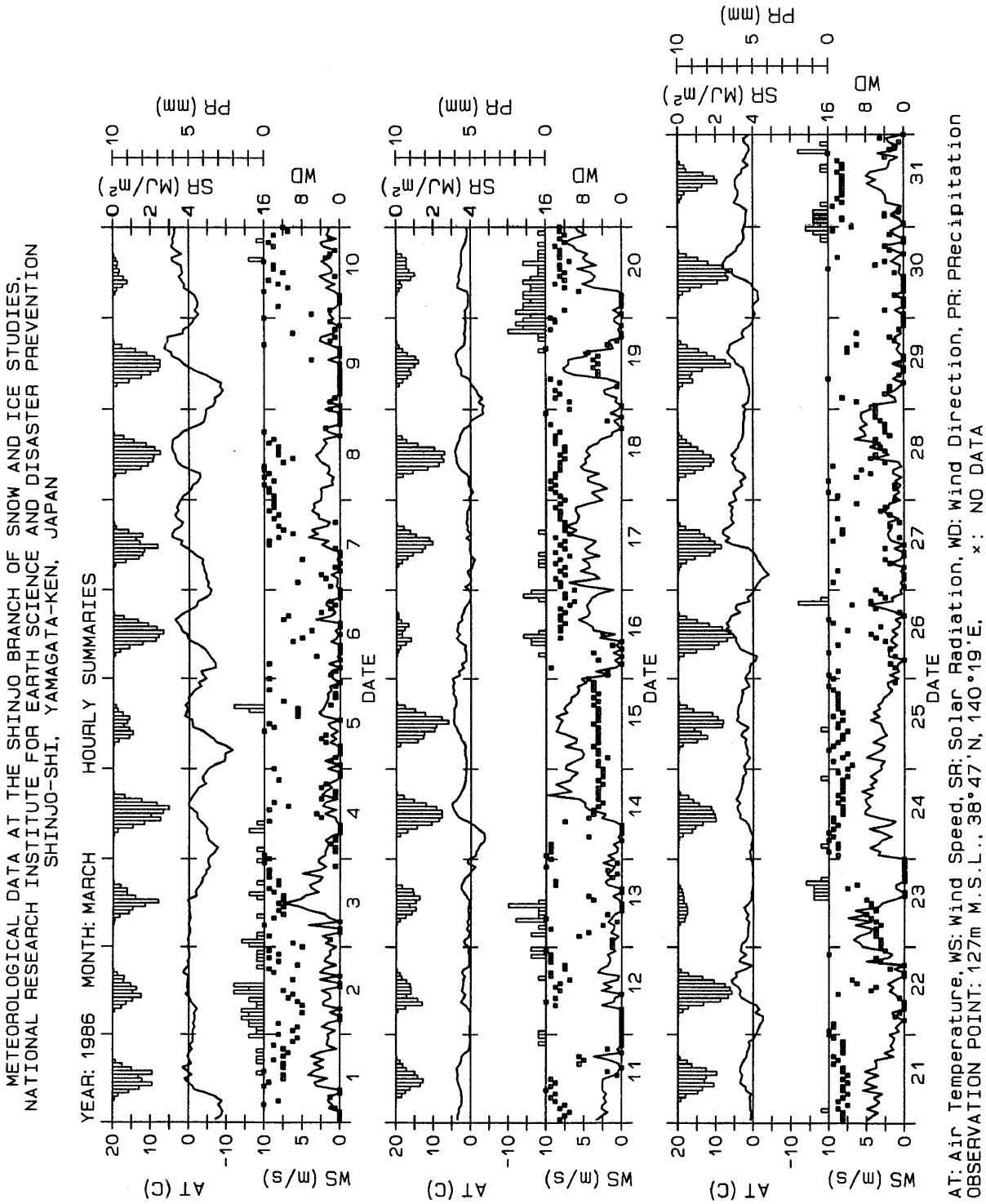

Fig.4.11 気象変化図

Seasonal variations in meteorological data.

Table 7.12　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

APRIL　1986

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	1.7	4.8	13 (6)	3.2	6.9	-2.9	14.50	1.5
2	1.2	5.2	12 (4)	1.6	7.4	-4.7	12.25	0.0
3	0.5	2.1	16 (6)	2.1	8.2	-2.2	17.20	0.0
4	0.5	3.9	11 (2)	2.8	6.4	0.4	8.60	4.5
5	2.9	8.6	12 (9)	5.2	7.9	1.3	14.95	3.0
6	2.2	5.7	12 (7)	4.2	7.4	0.0	11.10	7.0
7	2.5	7.4	13 (7)	2.1	5.2	-1.2	13.30	1.0
8	1.8	5.8	15 (7)	5.2	9.7	0.0	19.40	0.0
9	1.0	3.7	1 10 12(2)	6.2	14.4	-2.1	12.80	0.0
10	0.6	4.4	3 16 (3)	4.2	8.6	1.6	4.85	5.5
11	1.4	5.5	12 (5)	4.7	8.1	0.6	5.80	2.0
12	4.5	9.3	12 (8)	5.2	7.6	0.6	14.90	1.0
13	1.6	4.9	16 (5)	8.1	13.8	3.1	21.30	0.0
14	0.8	3.4	2 (6)	6.1	12.5	0.0	23.10	0.0
15	2.7	8.9	5 (5)	5.5	11.7	-0.3	6.15	14.0
16	3.4	7.6	13 14 (8)	4.3	7.4	0.8	18.05	1.5
17	2.1	6.2	7 8 (4)	6.1	13.8	-0.1	23.35	0.0
18	0.3	2.2	1 3 16(2)	7.6	17.6	0.8	15.35	0.0
19	3.6	8.7	6 (7)	10.7	17.7	1.2	20.95	0.0
20	5.8	8.6	5 (16)	13.6	16.7	12.1	18.55	0.0
21	1.4	6.1	14 (4)	10.8	13.2	7.7	5.55	0.5
22	5.4	9.9	5 (9)	12.3	17.3	6.3	15.40	3.5
23	1.3	4.4	14 (8)	10.5	12.7	8.9	4.15	17.5
24	1.2	3.9	16 (5)	12.0	17.8	7.1	20.80	0.0
25	0.9	5.9	13 14 15(3)	11.4	20.1	6.0	13.45	3.5
26	1.0	4.5	15 (5)	10.2	11.6	8.6	3.20	9.0
27	1.3	5.6	1 12 (3)	12.6	18.6	8.3	15.05	21.5
28	2.5	5.2	13 14 (6)	8.7	11.0	7.2	10.85	4.0
29	1.3	4.5	12 (5)	8.9	15.5	3.7	22.05	0.0
30	0.6	3.6	12 (3)	9.4	19.7	1.7	21.05	0.0
TOTL							428.00	100.5
MEAN	1.9	5.7		7.2	12.2	2.5	14.27	
MAX	5.8	9.9		13.6	20.1	12.1	23.35	
MIN	0.3	2.1		1.6	5.2	-4.7	3.20	
DN	30	30		30	30	30	30	30

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	1.5	4.0	13 (5)	1.4	6.8	-4.3	13.80	0.0
2	1.0	4.0	12 (5)	2.0	7.3	-2.2	13.75	0.0
3	0.8	2.8	16 (6)	3.1	7.9	0.5	14.80	1.0
4	0.6	5.0	2 (2)	3.7	6.5	1.6	8.85	6.5
5	3.7	6.8	12 (13)	5.4	7.8	1.0	14.55	6.5
6	1.5	4.5	13 (5)	2.7	7.1	-1.1	12.85	1.0
7	2.9	6.6	13 14 (7)	3.2	5.6	1.0	13.05	0.5
8	1.2	4.7	16 (5)	4.4	10.6	-1.8	18.95	0.0
9	1.0	2.7	16 (3)	6.6	14.1	1.9	11.95	0.0
10	0.8	2.3	1 12 (4)	5.6	8.3	3.7	5.60	5.5
11	2.8	6.9	12 (7)	3.7	7.4	0.6	6.45	3.0
12	3.1	8.1	11 (7)	5.8	7.6	4.1	16.80	0.0
13	1.6	4.3	16 (5)	7.5	13.2	1.0	21.60	0.0
14	0.6	2.2	2 3 (5)	4.9	12.4	-0.3	19.90	0.0
15	3.8	8.0	5 (5)	7.1	11.0	4.2	8.85	15.5
16	2.5	6.2	14 (6)	3.1	6.6	0.0	18.60	0.0
17	1.4	5.6	7 8 16(3)	6.1	13.6	0.9	21.10	0.0
18	0.4	1.7	3 (3)	8.4	17.3	1.4	17.25	0.0
19	5.6	7.5	6 (11)	14.2	17.1	12.3	20.55	0.0
20	4.7	7.5	5 (13)	12.6	16.4	8.2	16.60	0.0
21	1.7	8.5	14 (4)	10.3	15.6	6.3	6.80	0.5
22	5.1	9.4	5 (9)	12.5	16.8	9.0	12.75	21.0
23	1.3	3.3	14 15 (6)	10.1	12.5	7.2	7.25	0.0
24	1.0	2.9	13 (3)	11.5	17.0	6.2	19.85	0.0
25	1.2	3.9	15 (5)	12.5	19.5	9.8	12.05	4.5
26	0.9	4.2	15 (5)	9.6	11.6	8.3	3.75	15.0
27	2.0	5.1	12 (5)	12.5	18.3	7.2	14.00	18.5
28	1.7	4.3	15 (4)	7.6	10.4	3.7	13.15	0.0
29	1.1	4.5	12 (4)	7.8	15.1	2.0	21.20	0.0
30	X	X	X (X)	X	X	X	X	X
TOTL							406.65	99.0
MEAN	2.0	5.1		7.1	11.8	3.2	14.02	
MAX	5.6	9.4		14.2	19.5	12.3	21.60	
MIN	0.4	1.7		1.4	5.6	-4.3	3.75	
DN	29	29		29	29	29	29	29

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

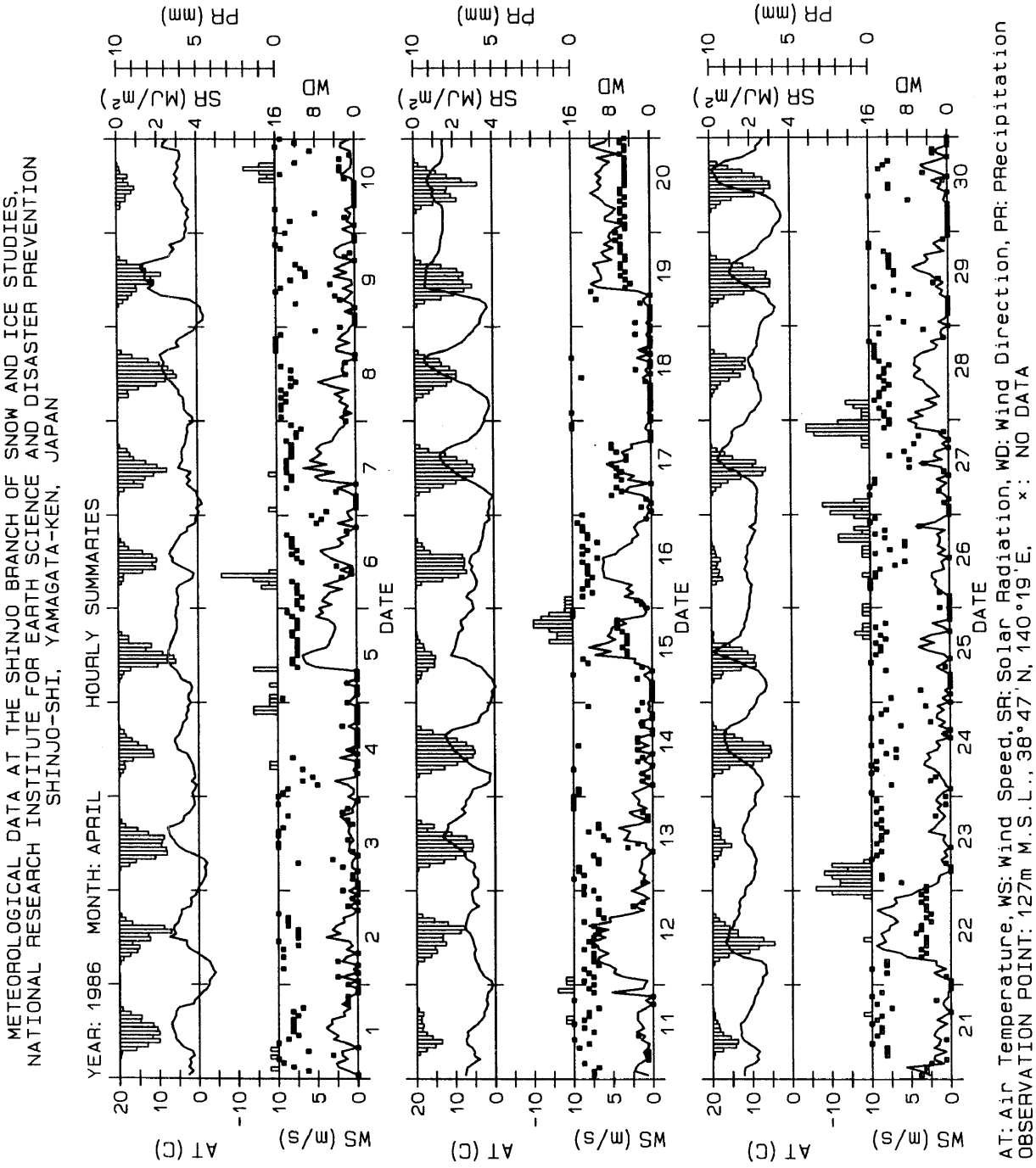

Fig.4.12 気象変化図

Seasonal variations in meteorological data.

Table 7.13　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

NOVEMBER 1986

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.3	2.7	10 (4)	4.3	13.7	-1.0	9.20	0.0
2	0.4	2.8	13 (3)	7.7	16.8	2.3	9.25	3.0
3	1.3	5.7	5 (6)	9.1	18.4	2.3	9.50	0.0
4	1.2	4.3	16 (5)	9.2	12.3	6.0	2.85	8.5
5	0.7	2.7	10 11 15(3)	7.3	11.9	2.3	7.05	1.0
6	0.6	3.1	1 13 15(2)	6.5	10.1	0.5	2.80	1.5
7	0.6	4.2	3 (4)	3.9	7.9	-0.1	4.00	0.0
8	2.0	7.2	14 (6)	7.7	11.1	5.2	3.90	11.0
9	2.0	7.7	5 (4)	7.0	11.9	1.8	7.85	8.0
10	1.5	7.6	13 (4)	7.6	10.6	5.1	3.05	23.5
11	4.2	10.0	12 (9)	4.3	6.6	1.7	3.75	21.5
12	1.8	4.6	12 (5)	6.0	10.4	-0.5	5.90	0.5
13	0.4	2.6	9 15 (2)	3.2	6.9	-0.9	3.35	0.5
14	1.1	4.2	13 (6)	9.9	16.7	5.3	4.95	5.5
15	3.3	6.9	13 (8)	3.7	7.9	0.9	4.30	7.0
16	3.6	9.9	13 (9)	1.5	3.9	0.0	2.10	8.0
17	0.8	3.9	12 13 (3)	3.6	6.0	0.0	1.70	0.0
18	1.5	5.0	13 (5)	3.8	8.9	-1.1	4.70	1.5
19	1.4	4.6	14 15 (4)	4.3	8.8	-0.1	6.20	0.0
20	0.5	3.0	13 15 (3)	3.0	7.6	-1.0	5.10	0.0
21	0.6	2.6	15 (5)	2.3	7.4	-1.5	3.35	0.0
22	2.6	7.3	15 (5)	4.0	9.4	-1.4	7.00	10.5
23	2.5	5.9	15 (7)	3.5	7.5	-1.8	4.25	0.0
24	0.4	2.1	14 16 (3)	-0.4	1.3	-3.8	1.50	5.5
25	1.6	7.8	13 (6)	4.5	11.3	1.3	1.05	14.0
26	5.2	8.6	13 14 (9)	1.1	3.9	-0.5	2.95	5.5
27	1.3	6.2	7 15 (3)	0.1	1.5	-1.5	3.55	1.0
28	0.7	3.3	4 (3)	2.1	5.4	-0.1	6.20	1.0
29	1.1	3.6	15 (5)	0.8	5.6	-1.7	2.55	10.0
30	1.2	6.7	6 (4)	0.9	5.1	-1.9	4.20	2.0
TOTL							138.10	150.5
MEAN	1.5	5.2		4.4	8.9	0.5	4.60	
MAX	5.2	10.0		9.9	18.4	6.0	9.50	
MIN	0.3	2.1		-0.4	1.3	-3.8	1.05	
DN	30	30		30	30	30	30	30

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.4	1.2	10 11 (3)	6.2	13.3	2.0	9.35	2.5
2	0.4	1.8	13 (3)	7.4	16.2	2.3	9.40	0.5
3	1.7	5.0	5 (6)	10.9	18.3	6.7	8.70	7.0
4	1.0	3.0	11 13 15(3)	7.8	11.5	3.2	4.55	1.5
5	0.6	1.7	8 10 (3)	7.9	11.4	5.3	5.45	2.5
6	0.5	2.6	13 (3)	4.3	10.0	0.1	3.10	0.0
7	1.0	2.3	3 15 (4)	6.6	9.0	3.9	4.15	10.5
8	1.6	4.1	13 14 (5)	6.5	11.0	2.3	4.85	0.5
9	2.1	6.0	5 (5)	7.6	11.8	5.1	6.50	10.5
10	2.3	7.0	13 (6)	6.8	10.5	2.3	3.50	33.5
11	3.7	7.6	12 (7)	4.7	9.0	3.6	4.25	9.5
12	1.0	3.7	12 (5)	4.1	9.7	-0.4	5.15	0.0
13	0.5	1.8	9 12 15(2)	5.4	7.2	3.4	3.15	1.0
14	2.1	4.4	13 (7)	9.4	16.0	3.4	5.60	5.0
15	4.0	8.8	13 (11)	2.4	5.0	0.9	3.65	12.5
16	2.5	6.4	13 (7)	2.4	4.8	0.0	2.00	2.5
17	0.5	2.4	2 11 (2)	2.3	5.9	-0.4	1.90	1.5
18	1.7	4.9	13 (5)	5.2	8.5	2.7	5.00	0.0
19	1.2	3.1	14 15 (3)	2.9	8.4	-0.9	6.40	0.0
20	0.9	2.3	15 (5)	3.1	7.3	-0.5	4.80	0.0
21	0.6	3.7	15 (4)	2.4	7.2	-1.2	3.40	10.5
22	3.4	6.7	14 (7)	5.4	8.8	4.1	6.55	0.0
23	1.5	5.0	14 15 (5)	0.9	7.1	-3.1	4.30	0.0
24	0.4	1.8	1 13 16(2)	1.2	2.7	-0.6	1.30	8.0
25	3.8	7.2	13 (7)	4.4	11.2	1.1	1.50	14.0
26	3.5	7.1	13 (7)	0.3	1.9	-1.0	2.75	3.0
27	0.7	1.6	9 15 (3)	0.3	1.1	-0.1	3.80	1.5
28	0.9	2.6	15 (5)	3.0	5.2	0.3	5.85	5.5
29	0.6	3.4	12 13 14(2)	-0.5	1.5	-1.6	2.95	5.0
30	1.7	5.5	6 (6)	2.7	5.4	0.3	3.75	15.5
TOTL							137.60	164.0
MEAN	1.6	4.2		4.5	8.6	1.4	4.59	
MAX	4.0	8.8		10.9	18.3	6.7	9.40	
MIN	0.4	1.2		-0.5	1.1	-3.1	1.30	
DN	30	30		30	30	30	30	30

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

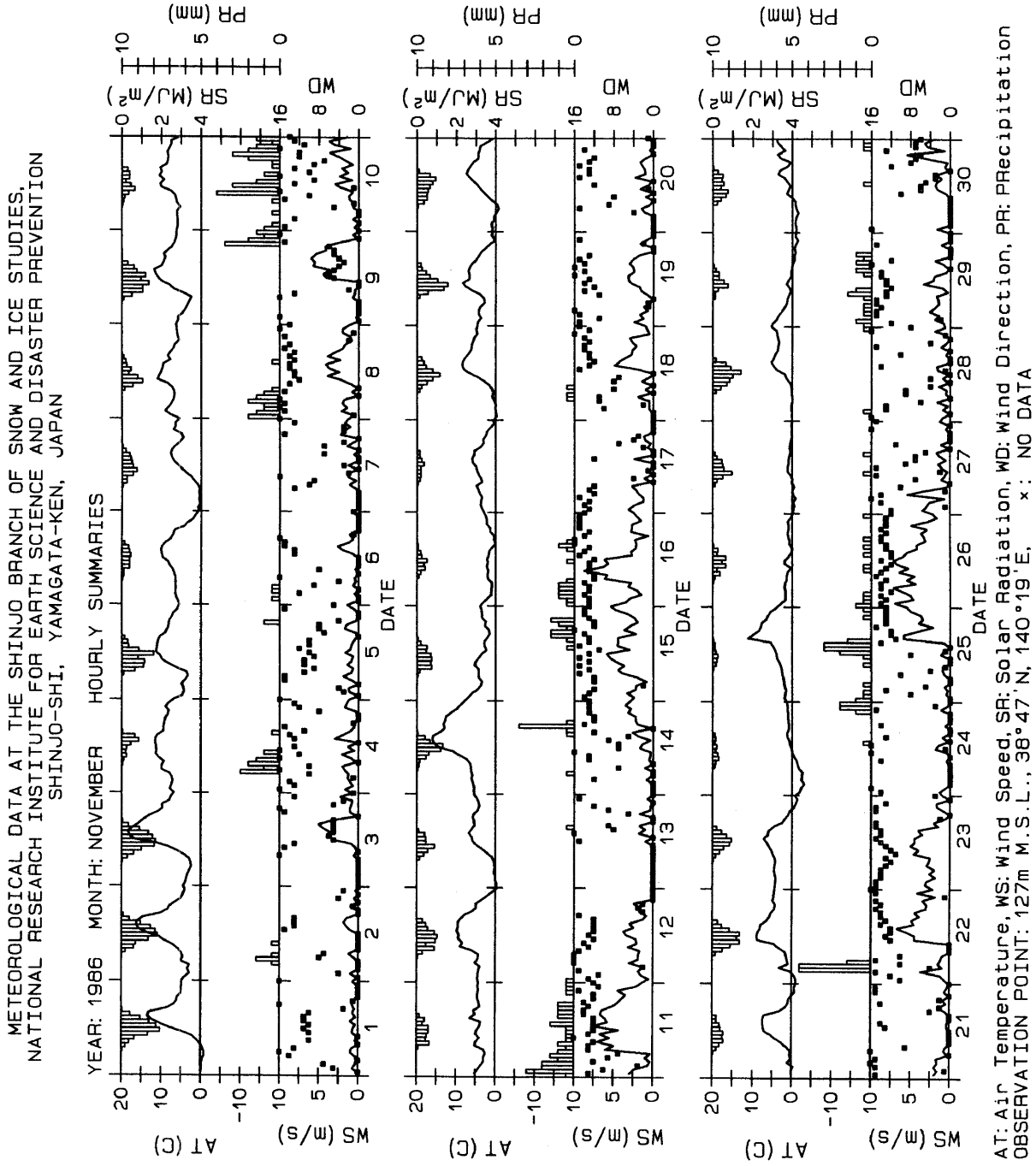

Fig.4.13 気象変化図

Seasonal variations in meteorological data.

Table 7.14　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

DECEMBER 1986

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.9	7.2	13 (7)	3.8	5.8	2.3	0.90	15.0
2	2.7	5.4	13 (6)	3.0	5.6	-1.5	4.00	0.0
3	1.6	7.5	6 (6)	2.0	7.1	-2.8	5.55	0.0
4	1.1	5.3	13 (3)	3.1	6.1	0.0	1.30	15.5
5	2.1	5.5	14 (10)	3.7	5.3	2.1	2.25	3.5
6	1.1	4.5	13 (5)	5.0	8.0	1.5	5.05	0.0
7	2.3	6.7	13 (5)	4.0	7.2	1.6	1.50	15.5
8	2.0	5.3	14 (8)	4.2	7.3	2.3	3.10	0.0
9	2.2	6.1	12 13 14(4)	7.0	11.6	0.2	6.70	0.0
10	0.9	6.4	1 13 16(3)	2.3	7.6	-2.8	4.45	10.5
11	3.9	9.1	13 (10)	4.8	7.3	1.0	5.10	8.0
12	1.2	3.7	16 (7)	3.8	8.2	-0.2	1.65	5.5
13	1.1	4.0	16 (4)	3.1	7.4	-1.4	6.95	0.0
14	0.1	1.3	8 12 13(1)	1.2	4.1	-2.8	3.15	0.0
15	1.0	4.0	15 (5)	3.9	6.0	1.8	2.40	0.0
16	4.2	6.6	14 (11)	1.8	3.2	0.1	2.70	0.0
17	2.7	6.4	14 (8)	0.1	3.1	-4.3	5.55	0.0
18	0.4	2.9	14 16 (3)	-1.5	2.0	-6.0	4.15	0.5
19	1.6	4.8	13 (7)	4.8	11.0	0.3	1.15	7.0
20	3.4	6.8	13 (11)	0.5	4.8	-1.6	3.85	1.5
21	1.6	5.9	6 (6)	2.3	6.5	-0.5	4.20	14.5
22	3.6	6.9	13 (9)	-1.6	1.5	-3.3	4.00	2.0
23	1.5	4.5	16 (10)	1.9	4.6	-1.8	4.25	0.0
24	2.0	5.9	13 (6)	3.8	6.3	0.1	1.00	18.0
25	0.8	4.5	14 (5)	2.5	5.0	-0.1	3.05	4.0
26	3.5	7.5	13 (11)	-1.2	2.9	-3.4	2.55	5.5
27	2.5	7.5	14 (5)	-2.4	-1.1	-3.5	3.30	1.0
28	0.2	2.0	14 (2)	-3.4	-0.3	-7.2	3.85	2.5
29	1.6	6.6	13 (4)	-1.3	0.9	-3.4	4.55	3.5
30	0.9	3.6	14 (5)	-0.8	0.5	-2.8	3.95	4.0
31	1.5	7.0	13 (4)	0.6	5.1	-1.5	1.40	38.5
TOTL							107.55	176.0
MEAN	1.9	5.5		2.0	5.2	-1.2	3.47	
MAX	4.2	9.1		7.0	11.6	2.3	6.95	
MIN	0.1	1.3		-3.4	-1.1	-7.2	0.90	
DN	31	31		31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	3.8	5.8	13 (9)	3.7	4.9	2.9	1.30	1.5
2	1.6	5.3	14 (4)	1.0	5.5	-2.7	4.00	0.0
3	1.6	5.4	6 (6)	3.3	7.1	0.0	5.20	0.0
4	1.6	4.9	13 14 (4)	3.7	5.7	2.2	1.20	17.5
5	2.0	3.4	14 (8)	4.2	6.4	3.2	2.90	1.5
6	0.7	2.8	15 (3)	4.3	7.5	1.7	4.45	3.0
7	2.9	5.7	14 (9)	4.2	6.7	2.6	1.50	12.5
8	2.0	4.9	1 (7)	5.4	9.2	3.0	3.55	0.0
9	1.4	5.5	14 (4)	3.9	11.4	-2.7	6.50	0.0
10	3.0	8.4	13 (8)	4.8	7.4	-0.2	4.40	18.5
11	1.9	6.9	13 (6)	3.5	7.2	0.0	5.10	0.0
12	2.0	3.3	16 (7)	4.5	7.6	0.3	2.20	5.5
13	0.5	1.6	3 (3)	1.5	7.1	-2.4	6.45	0.0
14	0.3	1.5	15 (3)	3.0	4.0	0.6	2.85	0.0
15	2.5	5.9	14 (8)	3.5	6.0	1.0	2.65	0.0
16	4.0	5.3	14 (10)	1.7	2.9	0.0	2.80	0.0
17	1.2	5.1	14 15 (3)	-2.3	2.2	-5.8	5.60	0.0
18	0.5	1.4	14 16 (3)	1.0	3.1	-2.2	3.75	6.0
19	3.0	4.7	13 (14)	4.7	9.9	-0.7	1.25	2.5
20	1.9	5.4	13 (4)	0.2	2.0	-1.6	3.90	0.5
21	3.0	5.2	6 13 (5)	1.9	6.4	-2.2	4.55	14.5
22	2.6	6.4	13 (7)	-1.5	1.4	-3.1	3.85	2.0
23	1.5	4.1	16 (10)	3.1	4.6	1.4	3.90	13.5
24	1.6	4.1	13 (6)	2.9	6.0	0.0	1.10	4.5
25	1.6	3.5	14 (8)	2.3	4.8	-1.0	3.10	5.5
26	4.3	6.7	13 (10)	-2.3	-0.4	-3.2	2.55	5.0
27	1.0	3.5	13 14 (3)	-3.3	-1.2	-6.3	3.40	0.0
28	0.4	2.5	13 16 (2)	-2.1	-0.2	-5.1	3.90	4.5
29	1.3	5.4	14 (3)	-1.3	0.5	-2.7	4.50	5.0
30	1.1	3.2	14 16 (4)	-0.5	0.4	-1.4	3.95	1.5
31	4.1	8.5	13 (9)	1.2	4.9	-1.1	1.55	39.5
TOTL							107.90	164.5
MEAN	2.0	4.7		1.9	4.9	-0.8	3.48	
MAX	4.3	8.5		5.4	11.4	3.2	6.50	
MIN	0.3	1.4		-3.3	-1.2	-6.3	1.10	
DN	31	31		31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

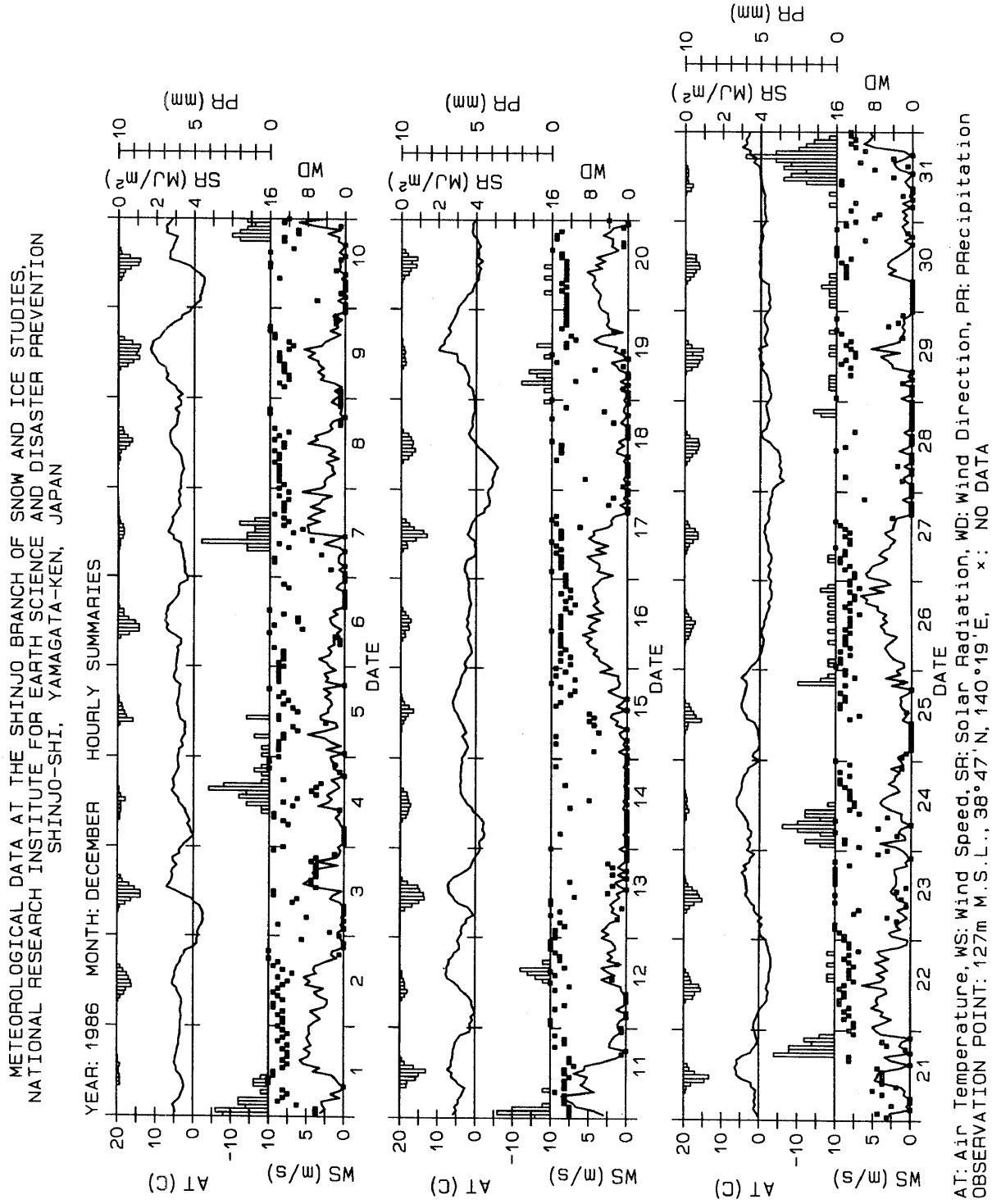

Fig.4.14 気象変化図

Seasonal variations in meteorological data.

Table 7.15　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

JANUARY　1987

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	5.3	9.5	13	(9)	-1.7	2.9	-4.6	3.80	4.5
2	2.0	5.4	7 16	(4)	-2.8	-0.7	-4.8	5.50	2.0
3	2.4	9.4	13	(5)	-0.1	4.5	-3.5	5.45	8.0
4	5.2	9.6	13	(11)	-2.5	0.6	-5.0	3.25	0.0
5	1.0	4.5	15 16	(4)	-4.5	-1.6	-8.8	5.15	0.0
6	0.7	4.4	14	(4)	-3.7	0.0	-9.2	6.45	5.0
7	1.0	4.1	7	(4)	-1.7	0.6	-6.5	4.75	1.5
8	1.9	7.6	13	(5)	0.4	4.4	-2.9	3.95	5.5
9	3.3	6.4	13	(10)	-2.1	3.2	-5.1	2.40	19.5
10	4.2	7.8	13	(13)	-5.8	-4.8	-7.4	2.20	6.5
11	1.7	4.4	7	(5)	-4.7	-2.5	-9.9	5.20	7.0
12	0.9	5.4	8	(5)	-2.1	1.3	-5.0	5.20	0.0
13	1.4	6.0	13	(6)	-0.8	1.2	-2.6	3.85	4.5
14	2.5	8.8	15	(6)	-2.4	1.3	-4.7	4.05	8.5
15	2.7	7.5	14	(9)	0.0	1.6	-1.6	6.40	1.0
16	0.3	1.7	3 15	(2)	-1.9	1.0	-7.8	3.30	0.0
17	3.3	8.8	11	(7)	2.3	7.1	-2.4	3.20	12.5
18	3.6	8.4	13	(7)	-1.5	0.3	-7.3	3.20	3.5
19	1.2	4.2	13 14	(6)	-4.6	-3.0	-7.6	4.55	6.0
20	2.4	5.2	13	(7)	-5.8	-4.9	-6.3	4.70	6.5
21	1.3	3.8	1 15	(5)	-4.1	-1.5	-6.1	7.55	1.0
22	1.7	4.2	1 15 16	(4)	-1.5	2.6	-9.0	7.50	0.0
23	0.2	2.5	2 12	(2)	-5.4	-0.6	-11.2	2.50	4.0
24	2.3	5.3	14	(9)	1.8	4.0	-0.8	3.85	15.5
25	2.4	6.0	13	(5)	-4.3	-0.8	-6.8	4.65	4.5
26	2.2	5.4	14 16	(5)	-3.7	-0.5	-8.5	5.35	4.0
27	2.7	5.1	15	(7)	-0.5	1.6	-2.8	4.35	1.0
28	2.6	5.3	13	(8)	2.4	4.5	0.3	5.60	0.0
29	1.1	4.6	1	(3)	4.4	8.0	1.1	4.85	2.0
30	3.0	6.6	14	(8)	0.6	6.5	-3.7	4.35	7.0
31	2.4	4.9	13	(9)	-3.7	-1.8	-5.4	5.00	4.0
TOTL								142.10	145.0
MEAN	2.2	5.9			-1.9	1.1	-5.4	4.58	
MAX	5.3	9.6			4.4	8.0	1.1	7.55	
MIN	0.2	1.7			-5.8	-4.9	-11.2	2.20	
DN	31	31			31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	3.8	6.3	14	(7)	-3.6	-2.1	-4.7	3.90	3.5
2	1.2	3.6	7	(5)	-2.1	-1.0	-2.7	5.35	5.0
3	4.4	8.7	13	(9)	0.3	4.2	-2.6	5.20	4.0
4	3.7	8.6	13	(7)	-4.0	-2.0	-5.1	3.40	0.0
5	0.4	2.2	1 15	(2)	-5.6	-1.7	-8.7	5.30	0.0
6	1.0	3.5	14	(4)	-2.0	-0.1	-5.3	6.35	6.5
7	1.0	2.5	1 7	(4)	-1.0	0.4	-2.8	4.70	2.5
8	2.6	7.1	13	(7)	1.2	4.3	-1.9	3.75	17.0
9	3.6	5.8	13	(15)	-4.5	-2.2	-5.8	2.45	8.5
10	3.8	7.1	13	(6)	-6.2	-4.8	-8.5	2.30	7.5
11	0.8	2.5	7	(3)	-3.6	-2.9	-4.4	5.35	3.0
12	0.9	4.3	8	(4)	-1.1	0.2	-2.7	5.20	2.0
13	2.3	4.6	13	(9)	-1.8	1.1	-4.4	3.85	2.5
14	2.7	5.2	13	(6)	-1.1	1.3	-3.5	4.15	9.5
15	1.4	3.9	14	(6)	-1.0	1.3	-5.6	6.10	0.0
16	0.9	3.3	14	(3)	-0.4	4.2	-4.1	3.20	0.5
17	4.9	6.7	11	(8)	1.7	6.6	-2.1	3.15	15.0
18	2.1	7.3	14	(6)	-3.0	-0.2	-6.6	3.50	2.0
19	1.9	4.3	13	(9)	-4.9	-3.1	-6.1	4.55	7.5
20	2.2	3.2	15	(6)	-5.7	-4.6	-6.2	5.10	3.5
21	1.4	2.9	15	(6)	-2.5	0.3	-5.0	7.10	1.0
22	1.1	3.2	1	(4)	-4.5	2.6	-10.4	7.40	0.0
23	0.6	3.2	15	(3)	-1.0	3.4	-6.8	2.55	18.0
24	2.3	4.2	14	(9)	-0.4	3.3	-4.5	3.95	2.0
25	2.2	5.6	12 13	(5)	-5.2	-3.2	-6.7	4.90	7.0
26	2.8	4.3	15	(9)	-2.2	-0.6	-4.2	5.10	1.0
27	2.6	3.8	14	(8)	0.6	1.6	-1.7	4.70	1.0
28	2.1	4.6	13 14	(5)	2.9	4.4	1.2	5.05	0.5
29	1.9	4.1	12	(4)	5.3	7.3	1.7	4.90	7.0
30	2.9	5.6	14	(11)	-2.4	0.5	-4.2	4.80	1.5
31	2.6	3.3	14	(10)	-4.7	-2.0	-6.4	4.70	6.5
TOTL								142.00	145.5
MEAN	2.2	4.7			-2.0	0.5	-4.5	4.58	
MAX	4.9	8.7			5.3	7.3	1.7	7.40	
MIN	0.4	2.2			-6.2	-4.8	-10.4	2.30	
DN	31	31			31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

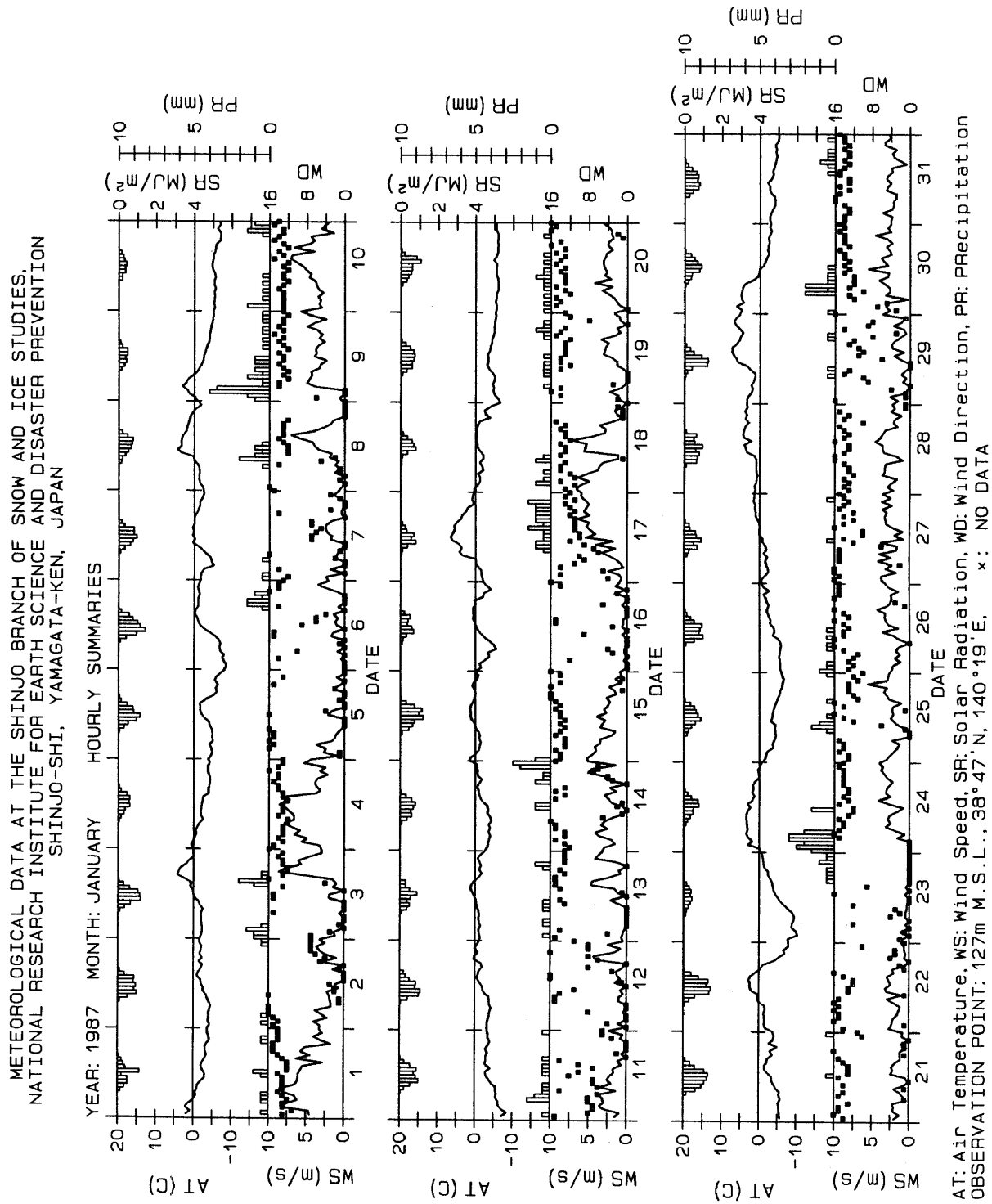

Fig.4.15 気象変化図

Seasonal variations in meteorological data.

Table 7.16 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

FEBRUARY 1987

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	2.1	4.9	14 (8)	-4.8	-2.9	-6.5	5.80	3.5
2	2.4	7.7	4 5 6(3)	-4.1	0.0	-13.8	8.75	0.0
3	2.1	7.2	15 16 (6)	-2.4	-0.1	-5.4	4.15	7.5
4	4.2	7.9	14 (9)	-1.1	1.2	-4.1	7.40	1.5
5	3.8	6.9	13 (8)	0.9	2.5	-1.3	5.40	0.0
6	2.1	5.9	13 (8)	1.3	3.4	-3.6	11.45	0.0
7	1.1	5.8	5 9 11(2)	0.6	6.1	-4.9	4.70	2.0
8	2.6	5.9	12 (6)	1.9	5.0	-5.9	11.65	0.0
9	1.0	4.0	11 (5)	-1.1	8.3	-9.8	5.45	0.0
10	1.4	4.6	2 13 14(3)	7.0	11.3	2.1	6.60	0.0
11	1.0	2.9	1 (4)	5.1	9.8	1.4	1.55	32.0
12	2.0	5.8	14 (6)	1.3	4.6	-2.0	2.15	12.5
13	1.4	4.0	15 (6)	-2.1	-0.1	-6.6	5.50	0.0
14	4.6	10.3	13 (10)	-1.3	2.4	-5.3	3.30	11.5
15	3.7	6.9	13 (10)	-4.1	-2.7	-5.7	6.90	0.0
16	3.4	8.6	13 (11)	-4.1	-3.1	-5.2	6.15	5.0
17	1.6	4.6	15 (4)	-2.8	0.6	-7.3	6.80	1.0
18	0.5	2.4	3 16 (3)	-3.2	1.4	-8.1	9.95	0.0
19	1.9	5.1	15 (6)	-3.5	-1.5	-4.6	7.25	1.5
20	1.1	5.4	13 (4)	-3.9	-0.7	-7.0	9.50	2.0
21	1.0	3.2	1 (5)	-3.0	0.7	-8.7	9.80	0.0
22	0.8	5.5	6 (4)	-4.6	2.4	-12.2	10.15	0.0
23	0.6	5.4	15 (4)	-2.4	2.8	-10.1	7.05	0.0
24	1.9	7.8	6 (6)	2.6	7.8	-3.2	11.60	7.0
25	4.0	8.6	13 (9)	-0.5	3.7	-4.1	4.80	1.5
26	5.3	9.1	12 (11)	-2.7	-1.2	-4.3	5.10	2.5
27	3.8	8.9	13 (9)	-2.1	-0.6	-3.9	6.05	2.0
28	0.8	3.8	1 (3)	-2.3	0.0	-8.2	9.60	7.5
TOTL							194.55	100.5
MEAN	2.2	6.0		-1.3	2.2	-5.7	6.95	
MAX	5.3	10.3		7.0	11.3	2.1	11.65	
MIN	0.5	2.4		-4.8	-3.1	-13.8	1.55	
DN	28	28		28	28	28	28	28

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	1.2	3.8	1 (5)	-5.5	-3.1	-12.3	6.25	1.0
2	2.2	6.4	4 6 (3)	-1.9	-0.3	-6.4	8.30	5.0
3	3.6	6.5	15 16 (7)	-2.2	0.4	-4.5	4.15	3.0
4	4.1	6.9	13 (9)	-0.4	1.3	-1.8	7.40	1.0
5	3.4	5.7	13 (11)	1.1	2.2	0.4	5.85	0.0
6	1.1	4.5	12 14 (3)	-0.2	3.2	-4.0	10.95	0.0
7	1.9	4.0	14 (5)	2.8	4.8	-1.6	5.60	2.0
8	1.8	5.3	12 (4)	-2.0	4.8	-8.9	11.80	0.0
9	1.5	3.4	11 (5)	4.2	8.3	-2.3	4.85	0.0
10	1.1	2.5	14 (4)	5.6	10.9	2.0	6.00	3.0
11	1.0	2.2	3 (3)	5.2	9.0	2.8	1.70	35.5
12	2.5	4.1	14 (7)	-0.7	2.9	-2.2	2.45	6.0
13	1.8	9.8	15 (4)	-1.8	1.8	-6.3	5.05	11.0
14	5.1	7.4	13 (11)	-2.9	2.3	-5.5	3.60	0.5
15	3.3	4.7	13 (11)	-3.9	-2.8	-5.0	6.80	2.5
16	3.2	6.3	13 (9)	-3.8	-2.8	-5.2	6.55	3.5
17	1.1	2.9	3 (4)	-3.9	0.5	-7.2	6.65	0.0
18	0.9	4.0	13 16 (3)	-2.2	1.3	-4.6	10.05	0.5
19	1.2	3.5	14 15 (5)	-4.1	-1.7	-5.6	7.15	2.0
20	1.7	4.4	13 16 (4)	-3.5	-0.9	-6.3	9.80	1.0
21	0.8	3.0	4 (5)	-5.3	0.6	-11.1	10.20	0.0
22	0.7	4.2	6 (4)	-3.5	2.0	-8.4	9.75	0.0
23	1.2	5.0	6 (7)	1.2	3.4	-1.7	7.65	7.0
24	1.9	6.5	16 (3)	2.4	7.0	-2.5	10.50	1.0
25	5.0	6.5	13 (10)	-2.4	0.3	-3.9	5.25	1.0
26	5.1	7.8	12 (10)	-2.5	-1.6	-3.8	4.90	2.0
27	2.0	5.8	4 13 (4)	-2.1	-0.9	-2.9	6.45	7.5
28	0.8	2.4	1 (3)	-3.3	0.0	-7.2	9.70	2.0
TOTL							195.35	98.0
MEAN	2.2	5.0		-1.3	1.9	-4.5	6.98	
MAX	5.1	9.8		5.6	10.9	2.8	11.80	
MIN	0.7	2.2		-5.5	-3.1	-12.3	1.70	
DN	28	28		28	28	28	28	28

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

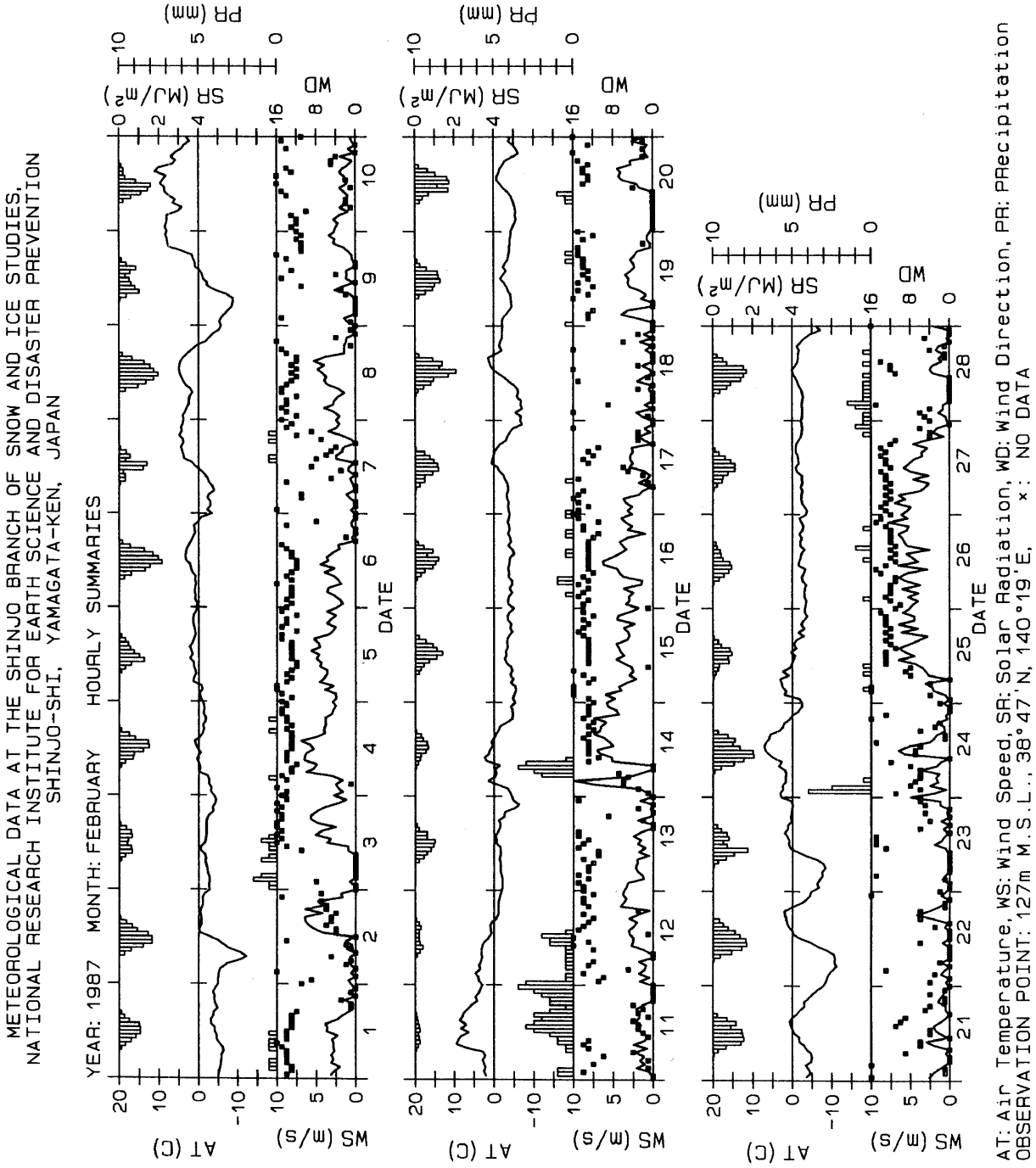

Fig.4.16 気象変化図

Seasonal variations in meteorological data.

Table 7.17　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

MARCH　1987

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	0.9	5.1	13 14	(4)	-3.0	1.3	-7.0	10.55	0.0
2	1.6	6.1	12	(4)	-3.0	0.9	-7.9	9.50	6.5
3	2.2	6.4	13	(7)	0.2	3.7	-4.9	7.25	8.5
4	1.6	5.2	16	(5)	1.8	3.7	0.2	6.50	0.5
5	1.9	7.4	12	(5)	2.5	7.6	-0.2	4.95	14.0
6	2.1	6.0	15	(5)	-2.8	0.0	-4.7	6.00	8.5
7	1.4	4.7	1 16	(4)	-2.7	-0.1	-6.6	10.45	0.0
8	1.0	4.1	16	(4)	-2.6	2.8	-11.9	11.55	0.0
9	1.7	7.9	13	(5)	1.0	5.1	-2.7	10.15	6.0
10	2.7	6.8	12	(6)	-1.5	1.1	-3.8	11.60	1.0
11	0.3	1.8	13	(3)	-1.8	0.9	-4.6	8.85	0.0
12	0.9	3.7	12	(4)	1.2	6.5	-3.5	14.65	0.5
13	1.0	5.4	16	(4)	0.7	6.6	-6.5	9.40	0.0
14	1.5	6.9	13	(4)	3.7	7.0	1.3	5.85	6.0
15	3.3	7.8	13	(12)	0.0	2.0	-1.5	9.45	0.0
16	2.8	8.3	13	(10)	-0.3	0.9	-1.7	11.60	6.5
17	1.1	4.7	16	(4)	2.2	6.0	-2.0	16.20	0.0
18	1.2	5.7	13	(4)	2.6	7.6	0.0	14.10	6.0
19	1.8	7.4	1 4 6	(3)	3.8	8.1	0.3	11.50	1.0
20	2.8	8.1	15	(6)	2.8	4.4	0.5	3.30	10.5
21	1.6	7.8	5 6	(3)	3.3	7.8	1.0	16.50	0.0
22	X	X	X	(X)	X	X	X	X	0.0
23	X	X	X	(X)	X	X	X	X	0.5
24	X	X	X	(X)	X	X	X	X	11.0
25	X	X	X	(X)	X	X	X	X	3.0
26	X	X	X	(X)	X	X	X	X	5.0
27	X	X	X	(X)	X	X	X	X	13.0
28	X	X	X	(X)	X	X	X	X	3.5
29	0.4	2.0	1	(3)	4.7	14.3	-2.7	17.85	0.0
30	0.9	7.9	3 10	(3)	6.3	14.2	-2.6	14.05	1.5
31	4.6	9.0	13	(9)	1.3	9.0	-2.5	11.75	4.0
TOTL								253.55	117.0
MEAN	1.7	6.1			0.8	5.1	-3.1	10.56	
MAX	4.6	9.0			6.3	14.3	1.3	17.85	
MIN	0.3	1.8			-3.0	-0.1	-11.9	3.30	
DN	24	24			24	24	24	24	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	1.3	3.5	14	(4)	-2.8	0.5	-6.3	10.60	3.0
2	2.0	4.6	13	(5)	-2.0	0.7	-4.1	9.45	5.5
3	2.2	6.0	13	(4)	2.0	3.7	0.5	6.95	6.5
4	1.1	3.3	16	(3)	1.1	3.2	-0.2	5.85	1.0
5	1.6	5.5	12	(5)	1.6	7.1	-2.7	5.55	20.0
6	2.8	4.5	15	(6)	-3.7	-1.8	-5.1	7.35	2.0
7	0.6	1.6	1 2 7	(2)	-4.2	-0.3	-10.1	9.40	0.0
8	0.9	3.5	16	(4)	0.9	2.4	-2.8	11.40	3.5
9	2.7	5.8	13	(8)	0.0	4.6	-3.1	10.80	3.5
10	1.6	5.5	11 12	(4)	-2.0	0.5	-3.9	11.00	0.0
11	0.4	1.6	16	(3)	-0.9	0.8	-3.6	9.30	0.5
12	0.8	3.6	12	(4)	0.1	6.0	-5.6	15.05	0.0
13	1.0	4.7	4 14 16	(3)	3.2	6.2	1.0	8.60	0.0
14	3.4	6.0	13	(10)	2.9	6.5	-0.2	6.05	6.0
15	2.2	6.9	13	(6)	-0.3	0.9	-1.5	9.10	6.0
16	2.8	7.3	13	(10)	-0.2	1.8	-1.6	13.10	0.5
17	0.6	1.8	4 13 14	(2)	2.3	5.8	0.1	14.70	5.5
18	1.3	4.7	13	(5)	3.0	7.6	0.4	14.35	1.0
19	3.3	7.5	6	(7)	4.3	7.5	0.9	10.80	7.5
20	1.6	7.6	15	(6)	2.4	4.1	0.8	5.30	3.5
21	X	X	X	(X)	X	X	X	X	0.0
22	X	X	X	(X)	X	X	X	X	0.0
23	X	X	X	(X)	X	X	X	X	3.0
24	X	X	X	(X)	X	X	X	X	9.5
25	X	X	X	(X)	X	X	X	X	2.0
26	X	X	X	(X)	X	X	X	X	10.5
27	X	X	X	(X)	X	X	X	X	11.0
28	X	X	X	(X)	X	X	X	X	0.0
29	0.6	1.6	1	(3)	5.0	14.0	-2.0	17.70	0.0
30	3.0	7.3	12 13 14	(3)	8.0	13.6	1.1	13.10	5.5
31	3.5	6.6	13	(10)	-0.3	2.8	-2.1	11.75	0.0
TOTL								237.25	117.0
MEAN	1.8	4.8			0.9	4.3	-2.2	10.32	
MAX	3.5	7.6			8.0	14.0	1.1	17.70	
MIN	0.4	1.6			-4.2	-1.8	-10.1	5.30	
DN	23	23			23	23	23	23	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

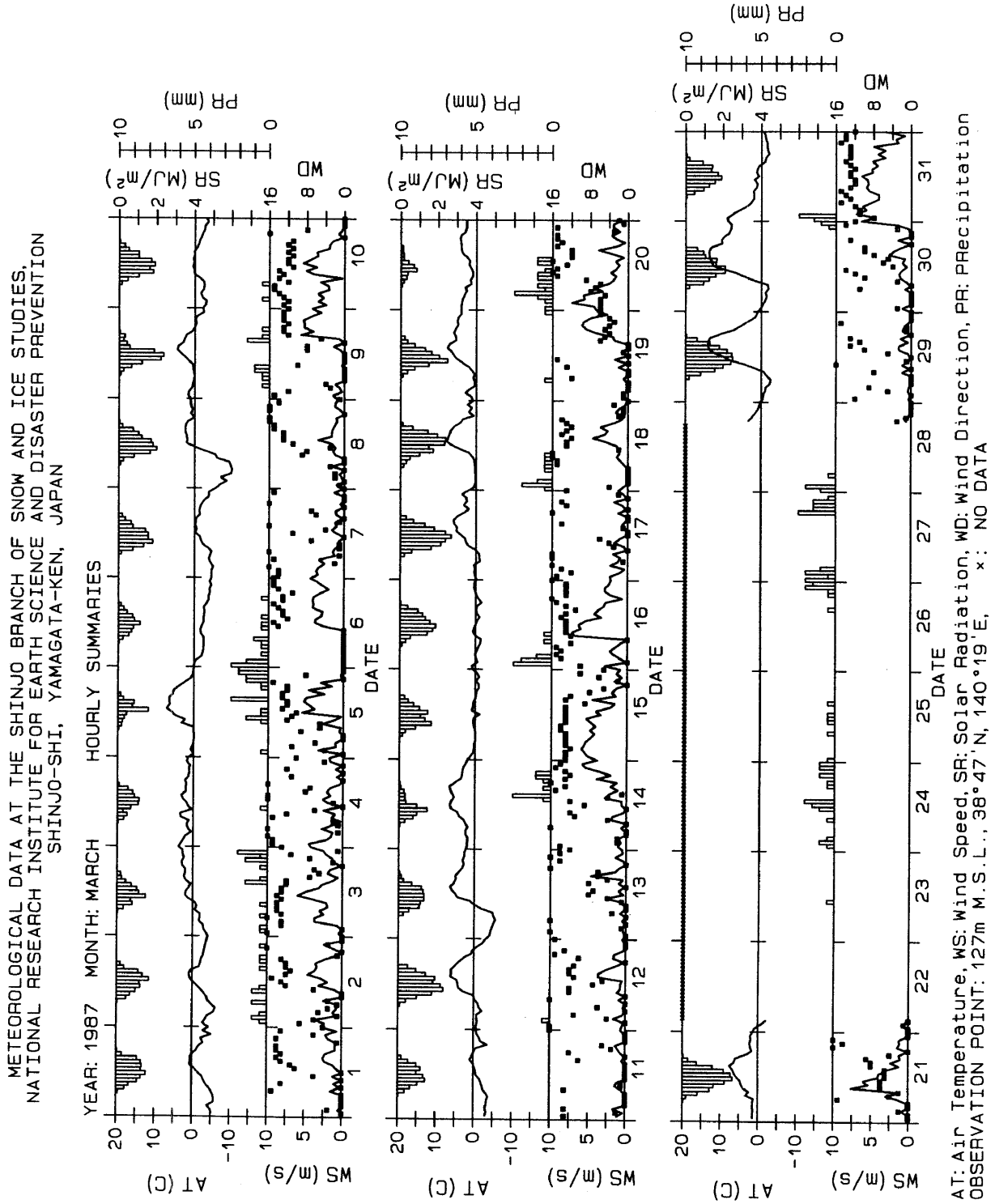

Fig.4.17 気象変化図

Seasonal variations in meteorological data.

Table 7.18　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

APRIL　1987

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.3	7.3	1 12 13(4)	1.1	5.2	-1.6	5.85	1.5
2	0.6	3.2	13 16 (3)	2.4	8.7	-2.4	10.35	0.0
3	1.1	4.9	1 3 (3)	4.4	12.1	-1.1	15.35	0.0
4	2.7	7.0	13 (6)	6.4	10.7	-0.3	10.85	8.5
5	2.1	5.1	13 14 (5)	8.7	14.2	1.6	16.60	0.0
6	1.6	9.1	4 5 (3)	8.0	17.9	-0.6	17.60	0.0
7	2.2	8.0	6 (5)	8.5	11.4	6.3	4.45	13.5
8	2.7	6.1	13 (9)	7.7	10.9	2.1	2.65	1.0
9	0.4	2.4	1 13 (2)	8.8	18.1	2.0	13.90	0.0
10	0.9	5.1	15 (4)	9.8	12.0	7.2	3.20	7.5
11	3.4	7.8	13 (8)	4.1	11.0	0.6	10.60	2.0
12	3.4	7.2	13 (13)	1.5	5.5	-1.7	11.55	1.0
13	3.0	6.8	13 (7)	-0.2	3.4	-2.4	15.25	1.5
14	1.0	4.8	4 6 7(2)	0.9	5.4	-2.0	9.00	1.0
15	1.2	4.9	13 (4)	3.2	11.9	-3.5	17.95	0.0
16	1.5	5.6	8 (4)	8.2	17.4	-0.3	20.90	0.0
17	0.8	4.1	3 13 (3)	9.1	18.7	0.7	18.25	0.0
18	1.2	5.3	1 (3)	10.7	21.6	0.9	17.30	0.0
19	0.8	3.4	12 14 (3)	11.7	20.5	3.4	15.60	0.0
20	0.8	4.3	15 (4)	12.6	22.1	2.9	17.20	0.0
21	2.6	8.2	6 (5)	16.1	27.6	5.2	17.50	0.0
22	3.1	8.4	15 (5)	13.1	19.1	5.1	9.50	0.0
23	0.9	3.6	11 (3)	11.2	20.1	1.8	15.35	1.0
24	4.1	7.9	13 (9)	7.6	11.4	3.0	12.10	3.0
25	3.3	6.8	13 (10)	4.5	7.6	1.5	21.25	0.0
26	1.2	3.6	16 (5)	3.5	5.2	2.0	3.75	3.5
27	2.2	4.8	13 15 (5)	6.0	11.9	0.0	23.00	0.0
28	1.5	5.4	12 (4)	8.0	17.5	-2.6	22.35	0.0
29	0.5	3.2	2 12 (3)	11.6	23.7	0.6	21.55	0.0
30	0.9	4.6	2 (4)	14.1	26.7	2.6	21.50	0.0
TOTL							422.25	45.0
MEAN	1.8	5.6		7.4	14.3	1.0	14.07	
MAX	4.1	9.1		16.1	27.6	7.2	23.00	
MIN	0.4	2.4		-0.2	3.4	-3.5	2.65	
DN	30	30		30	30	30	30	30

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.4	5.3	1 (4)	0.6	5.1	-2.2	5.30	1.5
2	0.7	2.4	16 (4)	3.1	8.5	-0.8	11.70	0.0
3	1.9	4.9	1 3 (3)	5.6	11.5	0.1	13.95	8.5
4	2.7	6.0	13 (8)	8.0	10.2	6.2	10.85	0.0
5	1.6	4.6	14 (4)	6.3	14.0	-0.3	18.65	0.0
6	2.8	7.1	4 (5)	10.4	17.4	6.6	16.10	0.0
7	2.3	5.1	13 (8)	9.0	10.9	7.4	3.45	14.0
8	1.5	4.6	14 16 (4)	5.5	8.4	2.1	3.00	0.5
9	0.6	2.1	1 10 13(2)	10.5	17.7	5.6	14.15	0.0
10	2.0	4.4	14 (6)	8.6	11.8	3.5	2.80	9.5
11	3.2	6.3	13 (12)	3.0	5.9	0.7	13.40	0.0
12	3.1	5.4	13 (9)	0.0	4.7	-2.2	10.20	2.5
13	2.3	5.8	13 (4)	0.3	3.0	-1.3	14.60	0.0
14	0.8	3.7	7 10 13(2)	0.1	4.8	-3.4	8.80	1.0
15	1.1	3.6	13 (4)	5.1	11.0	0.3	20.35	0.0
16	1.4	4.0	5 8 9(2)	8.6	17.3	0.9	20.15	0.0
17	0.9	3.5	13 (3)	9.2	18.1	1.1	18.30	0.0
18	1.3	5.2	1 9 10(2)	11.9	21.6	4.2	17.65	0.0
19	0.8	2.2	14 (3)	11.7	20.2	3.7	15.55	0.0
20	0.9	3.3	3 15 (3)	13.2	21.7	5.5	17.20	0.0
21	4.3	7.8	5 6 (5)	19.4	27.1	14.1	14.35	0.0
22	1.8	5.1	14 (4)	8.6	14.6	2.2	12.10	0.0
23	1.7	6.3	11 (5)	13.1	20.1	6.9	13.50	3.5
24	4.5	7.6	13 (12)	5.2	9.0	1.7	15.40	0.5
25	2.1	5.9	13 (8)	4.3	6.7	2.1	17.90	0.0
26	2.0	3.4	16 (8)	3.8	6.9	1.6	7.50	3.5
27	1.5	4.0	13 (5)	5.0	11.7	-2.0	22.75	0.0
28	1.2	4.1	12 (4)	9.2	17.4	0.8	22.05	0.0
29	0.5	2.2	2 12 15(3)	12.6	23.4	3.0	21.55	0.0
30	X	X	X (X)	X	X	X	X	X
TOTL							403.25	45.0
MEAN	1.8	4.7		7.3	13.1	2.3	13.91	
MAX	4.5	7.8		19.4	27.1	14.1	22.75	
MIN	0.5	2.1		0.0	3.0	-3.4	2.80	
DN	29	29		29	29	29	29	29

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

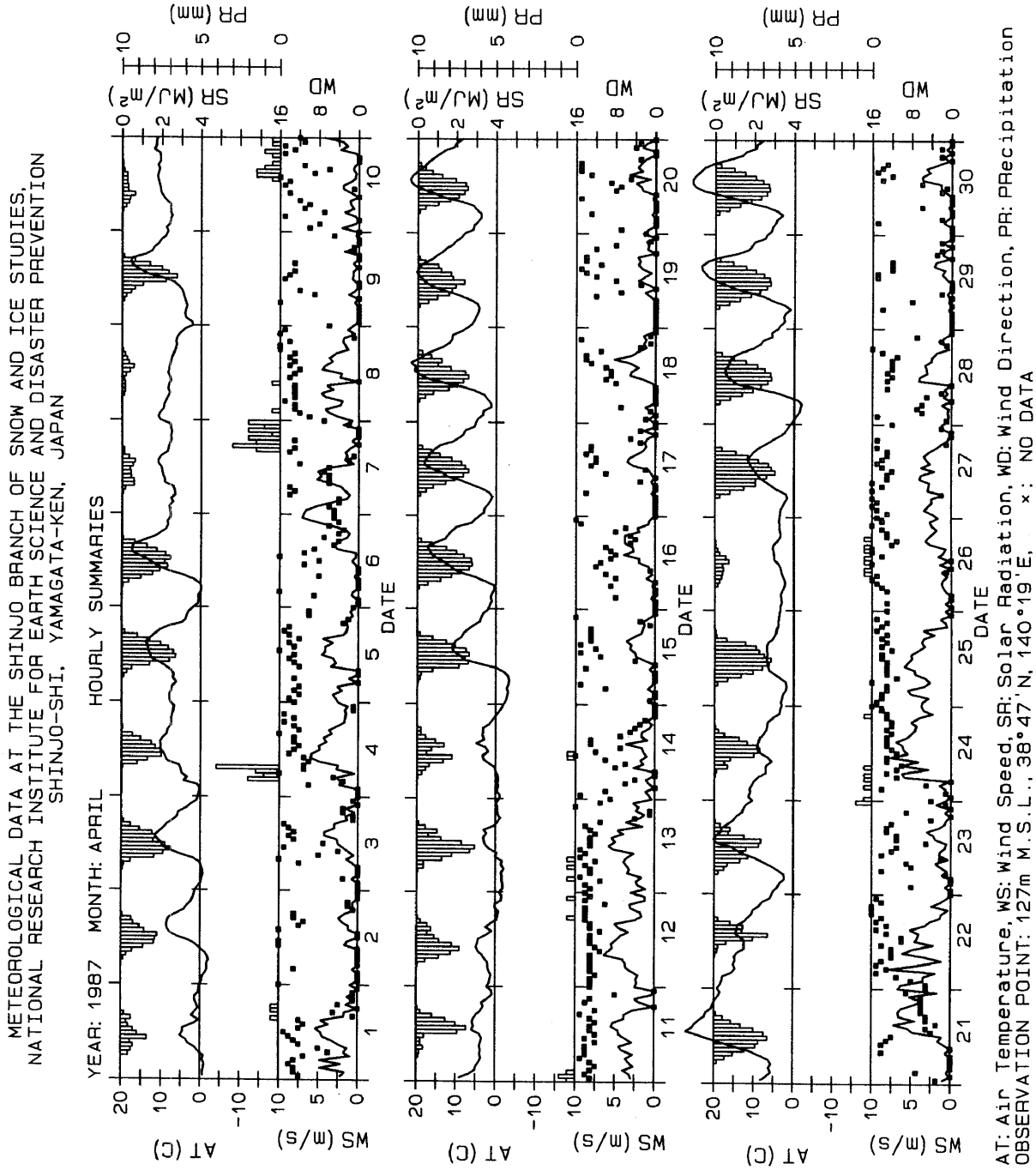

Fig.4.18 気象変化図

Seasonal variations in meteorological data.

Table 7.19 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

NOVEMBER 1987

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.0	5.1	1 4 10(2)	6.5	13.6	-0.5	13.00	0.0
2	0.6	2.5	16 (4)	7.8	10.2	3.1	2.65	37.0
3	0.8	3.7	14 (3)	13.8	17.0	10.2	1.20	44.0
4	0.7	2.9	12 14 (4)	11.5	14.2	7.8	4.85	0.5
5	2.8	7.0	6 (4)	10.6	15.1	6.4	4.45	10.5
6	2.3	7.7	12 14 (4)	6.2	7.7	4.5	3.55	7.0
7	0.7	3.6	6 (4)	6.0	11.4	2.4	6.60	0.0
8	1.9	7.0	13 16 (4)	7.5	12.3	4.6	8.15	1.0
9	1.8	5.6	5 6 15(3)	6.8	14.2	-0.5	11.80	0.0
10	0.5	3.6	1 16 (2)	6.9	9.3	3.5	3.65	6.5
11	0.4	3.2	14 16 (3)	8.6	14.6	6.3	4.10	0.5
12	0.3	2.1	8 13 14(2)	8.7	13.1	6.0	4.95	0.5
13	1.8	5.8	15 (7)	6.8	10.5	0.1	2.80	15.0
14	0.4	2.4	2 (3)	2.2	10.1	-2.7	10.45	0.0
15	0.2	1.6	2 5 10(2)	2.3	6.9	-2.6	4.95	0.0
16	1.1	5.9	7 (2)	6.4	16.6	-0.8	7.90	0.5
17	2.2	6.6	13 14 16(4)	6.8	10.0	-0.3	4.45	15.0
18	1.2	4.8	1 8 (3)	4.9	13.0	-1.4	10.25	0.0
19	4.4	8.1	13 (10)	5.7	9.6	3.5	6.75	8.0
20	2.2	5.3	13 (7)	3.7	8.3	-2.3	7.20	0.0
21	0.6	3.9	12 15 (3)	3.1	10.2	-3.0	4.00	7.5
22	2.6	6.5	13 (6)	5.7	9.1	0.1	5.70	0.5
23	2.8	7.1	7 (6)	7.6	13.0	0.0	7.40	7.0
24	4.6	8.3	12 (8)	2.6	10.2	0.0	4.90	9.0
25	3.1	5.5	14 (10)	4.2	6.2	1.9	3.35	0.0
26	0.9	4.4	7 14 (4)	5.6	8.3	2.9	3.15	0.5
27	1.4	4.0	13 (6)	3.8	6.5	0.8	1.70	5.5
28	2.7	6.2	14 (7)	0.9	2.4	-1.1	3.50	0.5
29	2.5	7.8	13 (5)	-0.9	0.5	-4.1	3.10	4.0
30	0.6	3.8	13 (4)	-1.3	2.6	-6.2	4.30	3.0
TOTL							164.80	183.5
MEAN	1.6	5.1		5.7	10.2	1.3	5.49	
MAX	4.6	8.3		13.8	17.0	10.2	13.00	
MIN	0.2	1.6		-1.3	0.5	-6.2	1.20	
DN	30	30		30	30	30	30	30

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.1	4.2	14 (3)	7.6	13.4	3.7	11.60	0.0
2	0.8	2.1	16 (3)	10.1	13.2	7.6	2.20	60.0
3	1.1	2.8	14 (7)	14.3	16.7	11.3	1.50	21.0
4	1.5	5.9	6 12 16(3)	11.1	13.9	8.2	5.45	0.5
5	2.9	5.8	12 (5)	8.7	14.3	5.3	3.85	14.5
6	1.1	3.6	10 11 (3)	5.1	7.5	2.4	3.55	3.0
7	0.7	2.7	6 (3)	7.1	11.0	4.4	6.40	0.5
8	1.9	6.4	16 (5)	6.0	12.2	-0.3	9.60	0.5
9	1.6	5.3	5 6 (3)	7.8	13.9	4.1	11.10	1.0
10	0.5	3.3	16 (4)	7.7	9.0	6.4	2.85	5.5
11	0.4	1.5	14 (3)	8.5	14.1	6.0	4.25	0.5
12	0.9	2.8	12 15 (3)	9.9	12.7	6.8	4.90	15.0
13	1.4	4.6	15 (6)	2.7	8.9	-2.3	3.45	0.5
14	0.5	2.2	2 (4)	2.1	9.8	-2.3	10.15	0.0
15	0.3	1.3	1 10 (2)	3.0	6.9	-0.8	4.95	0.0
16	1.5	5.5	7 13 (3)	9.4	16.3	4.4	7.95	14.5
17	1.8	5.8	14 16 (4)	3.5	9.0	-1.3	5.15	1.0
18	2.3	6.0	1 13 (3)	7.6	12.9	4.0	10.00	7.5
19	4.1	7.5	13 (10)	4.8	7.2	4.2	5.95	0.5
20	1.2	4.8	13 (4)	1.4	7.8	-2.2	7.05	0.5
21	1.0	3.1	1 (5)	5.7	8.0	1.0	4.50	7.0
22	2.3	5.7	13 (5)	4.6	8.6	0.3	5.85	0.5
23	4.0	6.0	7 12 (5)	8.5	12.5	1.8	7.05	12.5
24	4.0	7.7	13 (8)	1.8	3.4	0.0	4.50	3.5
25	2.2	5.0	14 (11)	5.0	5.7	4.1	3.55	0.5
26	0.7	2.2	7 (4)	5.4	8.1	3.8	3.10	2.0
27	2.0	3.1	14 (8)	2.4	6.3	0.5	1.75	3.5
28	3.9	6.4	14 (8)	0.5	2.0	-1.5	3.70	1.5
29	0.8	3.4	13 (4)	-1.6	0.3	-3.2	2.75	4.5
30	0.5	2.5	13 14 (3)	-2.5	2.1	-6.6	5.65	2.5
TOTL							164.30	184.5
MEAN	1.6	4.3		5.6	9.6	2.3	5.48	
MAX	4.1	7.7		14.3	16.7	11.3	11.60	
MIN	0.3	1.3		-2.5	0.3	-6.6	1.50	
DN	30	30		30	30	30	30	30

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

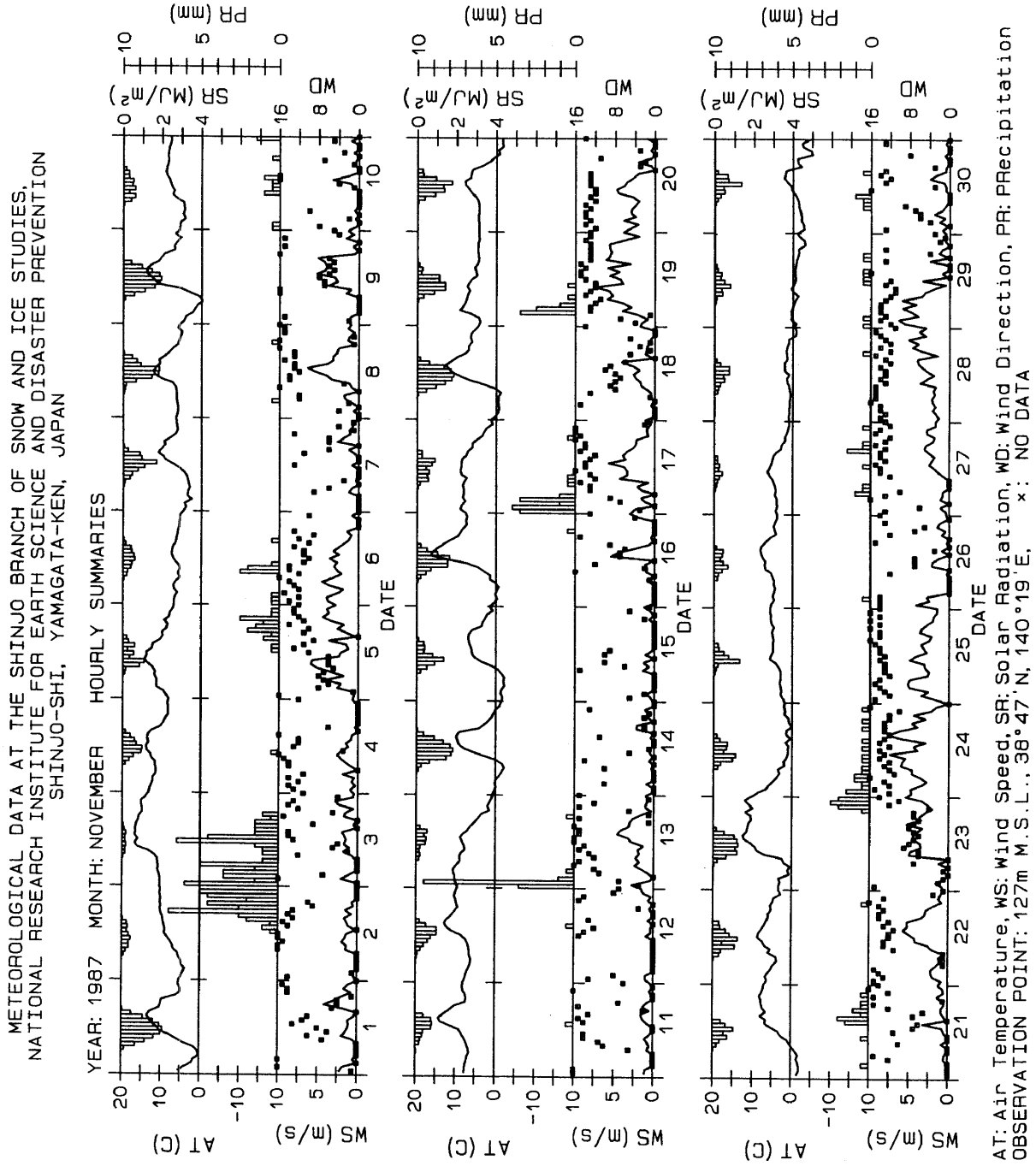

Fig.4.19 気象変化図

Seasonal variations in meteorological data.

Table 7.20　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

DECEMBER 1987

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	1.5	5.5	7 14 (3)	-0.6	4.2	-8.3	8.70	2.5
2	3.4	8.2	13 (7)	0.1	2.2	-2.1	6.05	6.0
3	2.7	9.1	6 (6)	0.3	3.1	-1.8	5.35	11.0
4	1.1	4.7	14 (6)	-1.1	0.4	-2.2	1.60	10.0
5	0.3	3.2	7 (3)	-1.4	0.4	-4.3	4.95	3.0
6	0.7	3.2	14 (5)	-1.9	0.3	-4.1	3.35	0.0
7	0.3	2.7	2 12 (2)	-3.4	1.4	-8.5	10.10	0.5
8	0.1	1.4	4 (2)	-4.4	-2.4	-8.8	5.15	0.0
9	0.3	2.6	6 13 15(2)	-2.2	0.4	-6.5	3.30	0.0
10	0.1	1.6	4 11 12(2)	0.7	5.7	-1.4	6.95	0.0
11	0.5	2.6	6 12 13(2)	1.2	4.0	-0.7	2.05	1.0
12	0.8	3.7	14 (7)	1.6	4.0	0.2	4.25	0.0
13	0.6	2.2	14 (5)	0.1	2.4	-2.3	3.65	0.0
14	0.4	1.8	13 14 (3)	-0.1	2.7	-2.2	5.25	0.0
15	0.7	3.5	11 (4)	0.5	4.8	-3.8	1.65	2.0
16	2.0	5.6	8 14 (4)	3.0	5.1	-0.1	0.95	16.0
17	5.0	10.4	13 (14)	-2.0	2.2	-5.0	3.45	12.5
18	1.2	4.9	14 (6)	-1.8	0.7	-6.2	5.70	0.0
19	0.2	2.0	1 12 (1)	-3.1	0.3	-7.7	3.95	3.5
20	0.3	2.2	13 (4)	0.8	2.9	-1.0	5.25	3.0
21	1.4	4.9	14 (5)	-1.2	0.7	-5.7	4.10	3.0
22	1.0	4.0	14 (5)	1.5	5.3	-2.7	7.40	7.5
23	0.7	3.5	4 14 (2)	2.1	5.4	-0.1	3.90	10.0
24	0.6	3.1	4 9 10(2)	2.9	9.0	-0.5	3.30	3.0
25	2.0	7.9	9 (6)	9.9	13.5	6.2	7.00	6.5
26	1.3	6.9	13 (6)	6.6	11.2	0.6	6.50	1.5
27	1.4	5.5	13 (6)	8.9	14.0	-0.2	3.10	0.0
28	1.1	4.0	5 10 11(3)	10.8	15.3	6.4	5.05	0.0
29	1.3	3.7	12 (4)	10.2	13.4	4.4	3.50	0.0
30	3.4	9.7	13 (9)	2.4	9.3	-4.5	1.20	9.5
31	3.1	9.8	13 (7)	-2.4	-0.9	-4.4	4.15	0.5
TOTL							140.85	112.5
MEAN	1.3	4.6		1.2	4.5	-2.5	4.54	
MAX	5.0	10.4		10.8	15.3	6.4	10.10	
MIN	0.1	1.4		-4.4	-2.4	-8.8	0.95	
DN	31	31		31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	2.5	6.4	5 7 14(3)	1.6	3.6	0.2	7.50	4.5
2	2.6	7.0	13 (5)	-0.8	0.7	-2.0	6.25	4.0
3	2.1	7.0	6 (6)	0.4	2.7	-1.3	5.00	14.0
4	1.2	3.4	14 (6)	-1.6	-1.0	-2.1	1.70	9.0
5	0.1	0.8	14 (2)	-1.8	0.2	-3.8	4.95	0.0
6	0.8	2.7	13 (4)	-2.6	0.2	-7.5	4.65	0.5
7	0.2	1.4	12 (2)	-3.5	1.2	-7.1	9.00	0.0
8	0.2	0.9	14 15 (2)	-4.1	-2.3	-6.3	5.15	0.0
9	0.4	1.6	11 13 (2)	-0.5	0.2	-2.2	3.30	0.0
10	0.3	1.5	6 (2)	1.0	5.3	-1.3	6.75	0.0
11	0.6	1.9	14 (5)	1.6	3.6	0.4	2.15	1.0
12	0.8	2.6	13 (5)	1.1	4.0	-1.9	4.35	0.0
13	0.7	1.9	14 (6)	0.0	2.3	-1.7	3.55	0.0
14	0.3	2.7	2 (2)	-0.3	2.4	-3.5	5.10	0.0
15	1.4	4.1	11 (4)	2.3	5.0	0.4	1.60	7.5
16	2.5	7.4	13 (9)	2.1	5.0	-1.5	0.90	21.0
17	4.5	8.9	14 (11)	-3.1	-0.9	-4.9	3.75	2.0
18	0.3	2.4	3 4 5(1)	-3.4	0.6	-7.3	5.90	0.0
19	0.2	1.3	1 6 12(1)	-0.6	2.1	-3.8	4.30	5.5
20	0.2	0.9	13 (3)	-0.3	2.5	-4.2	4.70	1.0
21	1.8	4.2	14 (7)	-0.2	1.0	-2.2	4.50	3.0
22	1.2	3.2	14 (4)	1.9	5.2	0.4	6.75	17.0
23	0.4	1.9	4 11 14(2)	1.7	5.3	-0.3	3.90	1.0
24	0.8	2.3	9 14 (3)	6.1	8.9	1.2	3.60	2.5
25	2.3	5.4	9 15 (5)	9.4	13.4	5.3	6.80	8.0
26	0.7	3.0	13 (4)	5.7	11.2	0.0	6.50	0.0
27	1.4	4.0	13 (6)	10.5	13.7	7.1	3.40	0.0
28	1.4	4.0	10 11 12(3)	12.4	15.2	9.2	4.70	0.0
29	1.0	3.2	6 (4)	7.3	12.9	4.4	3.35	1.0
30	5.2	8.6	13 (10)	-1.0	9.2	-4.5	1.15	8.5
31	1.1	5.1	13 14 (4)	-3.1	-1.1	-9.3	4.65	0.5
TOTL							139.85	111.5
MEAN	1.3	3.6		1.2	4.3	-1.6	4.51	
MAX	5.2	8.9		12.4	15.2	9.2	9.00	
MIN	0.1	0.8		-4.1	-2.3	-9.3	0.90	
DN	31	31		31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

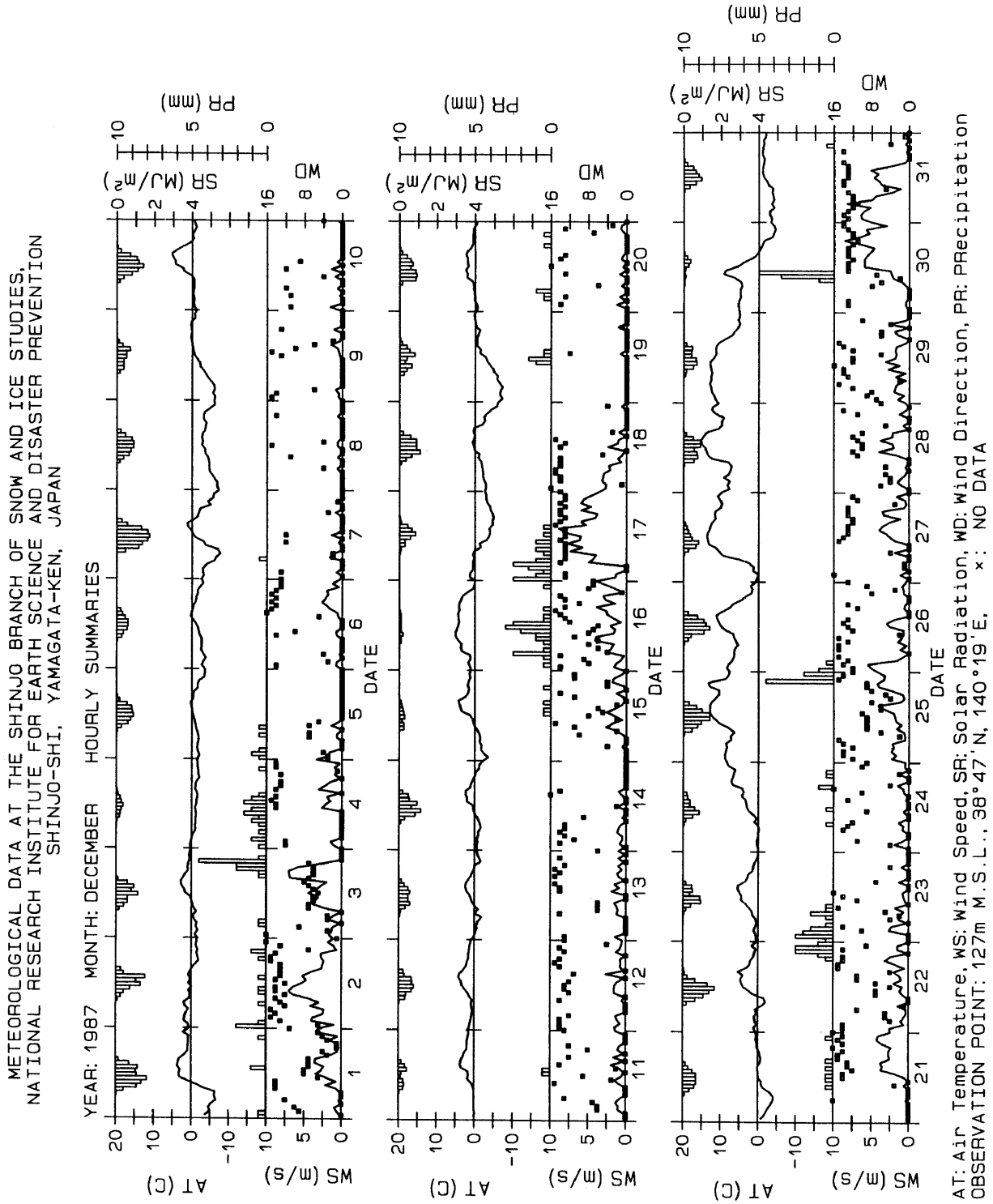

Fig.4.20 気象変化図

Seasonal variations in meteorological data.

Table 7.21　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

JANUARY　1988

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.4	2.3	13 (3)	-2.3	3.6	-9.3	6.85	0.0
2	0.8	3.1	13 (5)	3.1	5.7	0.4	2.95	4.0
3	1.2	4.5	14 (6)	0.2	2.7	-1.6	4.30	0.0
4	0.5	4.9	13 (5)	-0.4	2.6	-2.9	2.35	9.0
5	1.6	6.1	14 (6)	-1.2	0.2	-2.6	5.90	1.0
6	0.9	4.7	12 13 (3)	-1.8	0.7	-5.2	7.00	4.5
7	0.2	2.2	3 11 12(2)	-2.2	0.1	-6.1	X	0.0
8	0.3	3.3	2 3 6(1)	0.9	5.3	-0.7	4.70	13.5
9	2.8	8.2	13 (8)	-0.5	1.5	-4.0	2.80	9.0
10	3.8	8.1	13 (15)	-3.7	-2.6	-4.6	X	9.0
11	3.6	8.4	13 (8)	-2.0	0.1	-3.9	X	8.5
12	1.5	5.9	13 (6)	1.0	4.3	-3.7	5.15	0.5
13	0.5	2.5	3 (4)	-0.8	4.0	-4.7	4.55	3.0
14	0.5	3.2	4 (4)	1.9	5.0	-0.3	6.10	0.5
15	1.7	4.3	13 (7)	4.3	8.1	0.9	2.05	2.0
16	1.7	4.8	13 (7)	0.4	2.7	-1.7	6.15	4.5
17	1.4	5.3	14 (4)	-0.7	1.6	-4.8	4.70	2.0
18	2.4	9.4	13 (7)	-2.6	-0.6	-5.0	X	11.0
19	1.3	5.3	13 (5)	-1.1	1.9	-7.7	5.40	0.0
20	0.4	2.2	4 10 13(2)	-3.5	2.6	-10.2	X	0.0
21	2.2	7.4	5 (5)	2.9	8.0	-4.5	5.95	4.5
22	0.7	3.1	2 (5)	4.7	10.9	1.6	4.45	2.0
23	1.3	7.0	11 13 (3)	1.1	7.4	-3.0	2.15	29.5
24	1.8	5.7	12 (6)	-3.5	-2.5	-4.4	X	13.5
25	0.1	4.4	2 3 15(2)	-2.5	0.4	-4.4	4.90	26.0
26	1.2	5.7	14 (5)	-2.0	0.3	-3.3	6.05	14.0
27	1.5	4.4	13 (4)	-2.8	-0.5	-8.0	7.75	4.5
28	3.1	9.3	13 (9)	-2.0	0.9	-4.1	7.10	15.5
29	1.5	6.4	14 (6)	-1.3	2.2	-3.7	1.90	58.0
30	2.4	6.7	14 (7)	-2.4	-1.1	-3.2	5.10	4.0
31	0.6	3.3	13 (4)	-2.2	-0.6	-3.5	7.95	6.0
TOTL							124.25	259.5
MEAN	1.4	5.2		-0.7	2.4	-3.8	4.97	
MAX	3.8	9.4		4.7	10.9	1.6	7.95	
MIN	0.1	2.2		-3.7	-2.6	-10.2	1.90	
DN	31	31		31	31	31	25	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.6	1.8	13 (4)	1.4	5.4	-5.4	7.15	3.0
2	0.9	2.4	13 14 (6)	1.4	4.4	-0.6	2.45	1.0
3	0.9	3.9	13 14 (3)	-0.5	2.6	-2.8	4.45	0.0
4	1.6	5.8	13 (6)	0.1	2.4	-1.4	2.10	10.0
5	0.8	4.7	14 (3)	-1.8	0.0	-3.7	6.40	4.5
6	0.9	4.0	13 (4)	-2.4	0.4	-5.4	X	0.0
7	0.2	0.9	3 11 (2)	-0.8	0.1	-3.5	5.30	1.0
8	0.5	2.2	13 (2)	1.4	4.9	0.0	4.75	18.5
9	4.2	6.9	13 (12)	-2.2	0.1	-4.5	2.90	4.5
10	3.1	6.0	13 (11)	-3.6	-2.7	-4.3	X	13.0
11	3.6	5.7	13 (11)	-0.2	2.1	-2.3	X	3.5
12	0.5	1.7	2 3 13(2)	-0.8	4.1	-4.7	5.15	0.0
13	0.6	2.2	3 4 (4)	1.1	3.0	-1.2	4.25	3.0
14	0.8	2.3	4 5 (3)	3.5	8.1	0.4	5.95	2.0
15	2.1	3.8	13 (9)	2.5	5.9	0.2	2.80	0.5
16	1.2	4.6	13 (5)	0.0	2.6	-1.6	5.75	4.5
17	1.0	4.8	13 (4)	-1.2	1.4	-3.7	4.55	8.5
18	3.1	7.1	13 14 (7)	-2.6	-0.1	-5.0	X	4.5
19	0.8	3.4	13 (4)	-3.6	1.9	-9.5	X	0.0
20	0.5	2.1	4 13 15(2)	-0.9	1.4	-5.8	X	0.0
21	2.3	6.5	5 (6)	4.5	7.5	-0.2	5.60	4.5
22	1.4	6.9	2 11 (4)	5.4	10.1	2.1	4.10	10.5
23	0.9	4.3	13 (4)	-2.1	0.8	-3.5	2.30	26.0
24	1.3	4.4	12 13 (4)	-3.6	-2.4	-4.4	X	21.0
25	0.4	2.7	2 3 13(2)	-1.9	0.0	-3.0	4.95	23.5
26	1.7	3.9	13 14 (6)	-2.7	-1.5	-5.9	6.25	4.5
27	1.5	5.8	12 13 (3)	-2.3	0.3	-4.0	7.70	17.0
28	2.3	6.1	13 (7)	-2.4	-0.4	-3.7	6.70	34.0
29	3.1	5.9	14 (9)	-1.0	2.1	-3.0	2.00	26.5
30	0.7	4.8	12 14 (3)	-2.8	-1.3	-3.5	5.50	8.5
31	0.8	2.9	13 (5)	-2.6	-0.8	-5.8	X	1.5
TOTL							109.05	259.5
MEAN	1.4	4.2		-0.7	2.0	-3.2	4.74	
MAX	4.2	7.1		5.4	10.1	2.1	7.70	
MIN	0.2	0.9		-3.6	-2.7	-9.5	2.00	
DN	31	31		31	31	31	23	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

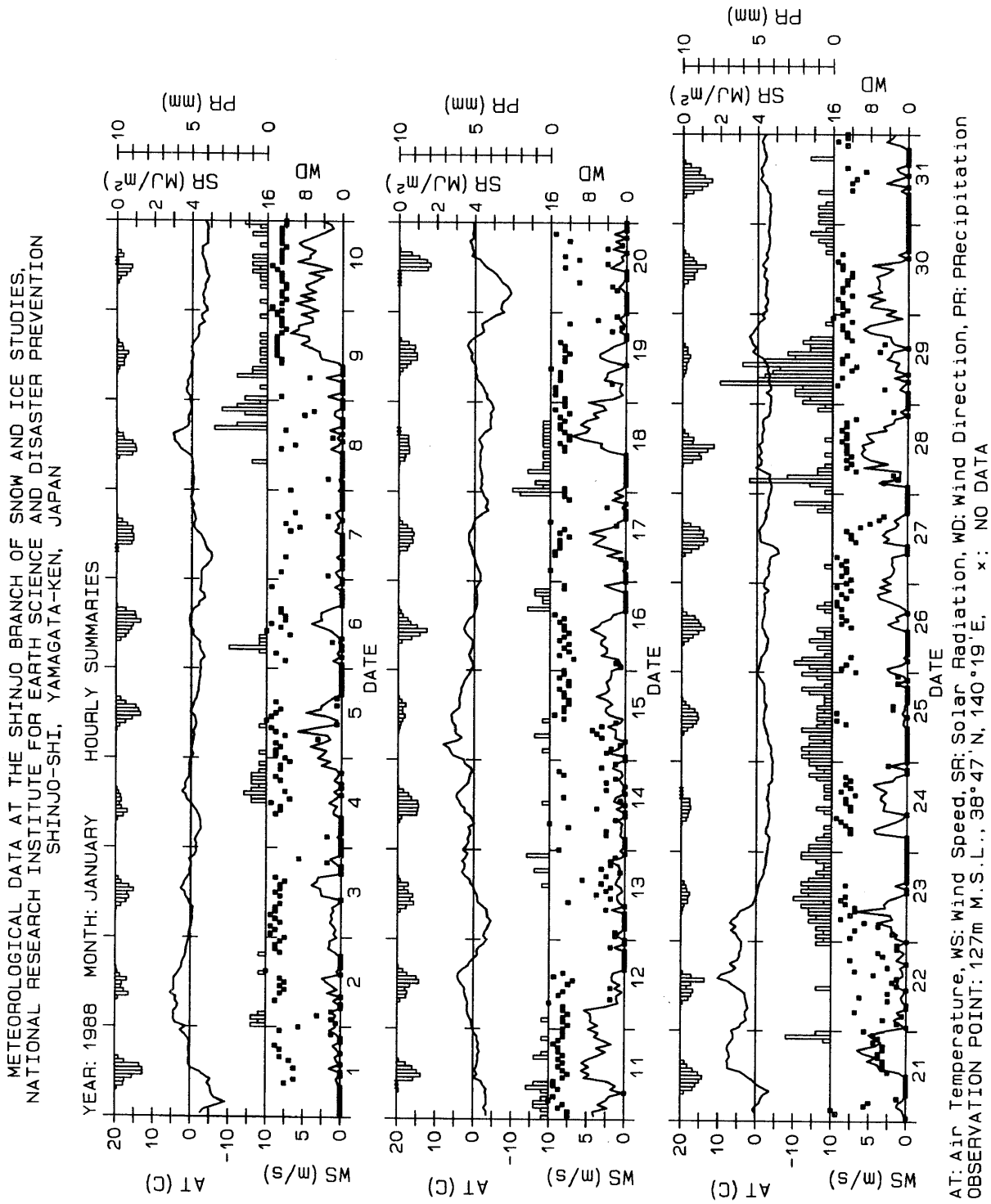

Fig.4.21 気象変化図

Seasonal variations in meteorological data.

Table 7.22　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

FEBRUARY 1988

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST	WD(1-16) FREQ	WD(1-16) NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.6	2.9	2		(3)	-4.0	0.1	-8.6	X	0.0
2	1.7	7.1	13		(5)	-3.0	4.1	-10.4	X	13.0
3	4.6	9.5	13		(17)	-6.4	-4.5	-7.9	X	9.0
4	2.4	7.8	13		(8)	-3.6	-0.8	-7.3	X	15.0
5	0.8	5.0	13		(4)	-0.1	6.2	-2.9	3.15	36.5
6	1.6	4.2	X		(X)	0.7	3.8	-3.0	X	0.0
7	3.4	8.0	13		(8)	-4.2	-2.3	-5.7	5.00	4.0
8	1.8	5.5	12	13	(7)	-3.3	-0.9	-6.2	6.90	12.0
9	1.3	4.5	14		(4)	-2.1	0.7	-5.7	6.65	2.5
10	1.2	6.3	14		(6)	-3.8	-1.0	-9.1	7.70	5.5
11	1.1	5.0	13		(6)	-3.6	-1.2	-9.5	7.25	4.0
12	0.9	7.4	6		(4)	-3.9	0.1	-9.6	11.45	1.5
13	2.5	6.7	13		(6)	-1.7	1.1	-3.2	9.45	7.0
14	3.0	6.6	13		(11)	-4.7	-2.7	-7.7	9.25	2.0
15	1.4	5.4	14	15	(4)	-6.2	-3.2	-12.3	X	5.0
16	2.6	8.0	13		(10)	-5.3	-2.9	-7.4	X	4.5
17	0.7	3.5	12		(4)	-5.4	-2.8	-9.3	X	1.5
18	1.5	5.6	13		(5)	-4.3	-0.8	-8.2	X	3.0
19	1.7	5.7	13		(7)	-3.8	-2.2	-6.5	X	15.0
20	2.1	6.5	13		(7)	-1.6	0.8	-2.9	9.90	6.0
21	2.4	5.8	13		(6)	-5.4	-2.3	-12.1	X	1.5
22	0.1	2.0	2	10 11	(1)	-6.7	-1.0	-11.6	X	0.0
23	0.6	3.6	15		(5)	-3.2	0.9	-8.9	5.80	3.0
24	2.2	5.8	13		(9)	-1.4	0.9	-3.4	10.35	0.0
25	1.2	4.8	14		(5)	-1.2	1.5	-3.4	14.90	0.0
26	1.4	4.6	13		(6)	-1.2	1.6	-4.5	14.95	0.5
27	2.6	6.4	13		(7)	-1.8	0.8	-4.6	11.55	0.0
28	3.3	9.4	14		(10)	-2.1	1.6	-4.1	X	5.5
29	1.9	6.0	13		(6)	-0.8	1.7	-3.2	11.20	1.5
TOTL									145.45	159.0
MEAN	1.8	5.8				-3.2	-0.1	-6.9	9.09	
MAX	4.6	9.5				0.7	6.2	-2.9	14.95	
MIN	0.1	2.0				-6.7	-4.5	-12.3	3.15	
DN	29	29				29	29	29	16	29

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST	WD(1-16) FREQ	WD(1-16) NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.6	2.1	2		(4)	-5.1	-0.4	-8.9	X	0.0
2	3.1	6.7	13		(12)	-2.4	3.4	-6.5	X	17.5
3	4.9	7.3	13		(17)	-6.6	-4.2	-7.7	X	8.0
4	0.8	6.0	12		(3)	-2.2	-0.9	-3.1	X	13.0
5	X	X	X		(X)	X	X	X	X	35.0
6	1.4	4.0	13	14	(6)	-1.3	2.1	-4.9	X	0.0
7	3.1	7.0	13		(8)	-4.6	-3.5	-5.5	5.45	10.0
8	2.4	4.4	12		(8)	-2.4	-1.4	-3.3	6.80	8.5
9	0.7	2.6	11		(3)	-3.2	0.7	-6.7	6.65	0.5
10	1.3	4.5	13	14	(5)	-3.2	-1.3	-4.3	7.55	8.0
11	1.1	3.8	13		(7)	-5.0	-1.3	-9.5	7.70	1.0
12	2.1	6.0	6	13	(4)	-1.3	0.5	-4.6	11.30	4.0
13	2.5	6.5	13		(8)	-3.0	-1.2	-5.6	9.30	6.0
14	1.6	4.8	13	14	(5)	-6.5	-3.6	-11.1	X	1.0
15	2.0	3.9	13		(7)	-4.7	-3.7	-6.0	X	5.5
16	2.0	6.7	13		(6)	-6.1	-3.7	-8.8	X	3.5
17	0.7	2.2	12	14	(3)	-4.7	-2.9	-7.5	X	2.0
18	1.9	4.4	13		(9)	-4.1	-1.1	-5.9	X	5.0
19	1.8	5.1	5		(5)	-2.7	-1.3	-4.6	X	17.0
20	2.8	4.4	13		(9)	-2.4	-0.2	-4.6	10.00	2.5
21	1.3	5.0	12	13	(3)	-8.0	-3.4	-11.5	X	0.5
22	0.3	1.4	3		(2)	-5.3	-1.5	-7.7	X	0.5
23	0.9	2.4	15		(6)	-1.5	0.7	-4.0	5.85	2.5
24	2.0	4.7	13		(7)	-1.5	0.5	-3.0	11.15	0.0
25	1.2	3.4	14		(7)	-1.5	1.1	-4.0	15.35	0.5
26	1.4	3.5	13	14	(6)	-1.4	1.3	-4.3	14.20	0.0
27	3.1	6.0	14		(8)	-1.9	0.6	-3.8	X	2.5
28	3.7	7.6	13		(9)	-1.6	0.7	-3.0	11.10	4.5
29	1.0	3.7	12	13	(3)	-0.5	1.6	-2.0	10.05	0.0
TOTL									132.45	159.0
MEAN	1.9	4.6				-3.4	-0.8	-5.8	9.46	
MAX	4.9	7.6				-0.5	3.4	-2.0	15.35	
MIN	0.3	1.4				-8.0	-4.2	-11.5	5.45	
DN	28	28				28	28	28	14	29

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

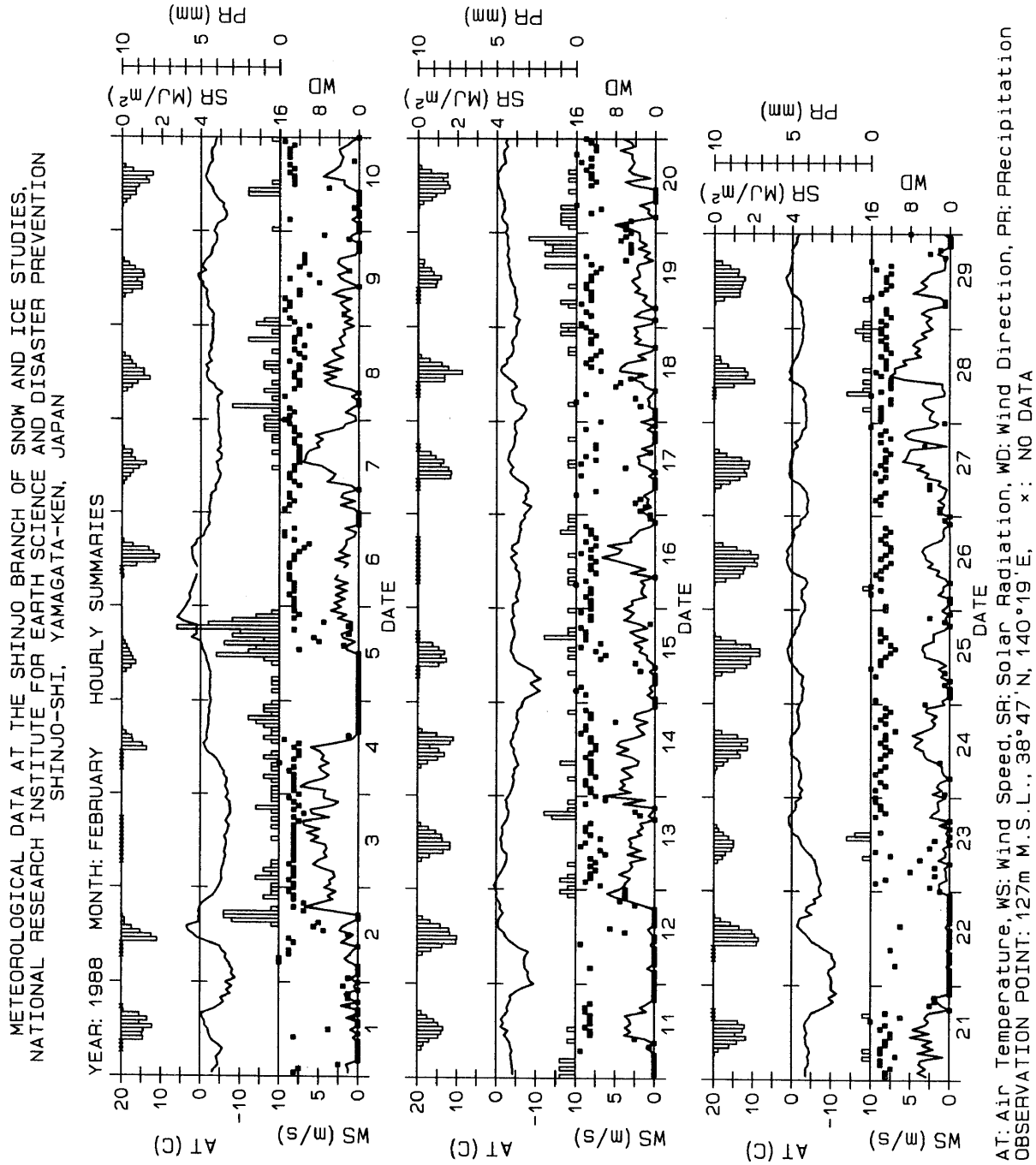

Fig.4.22 気象変化図

Seasonal variations in meteorological data.

Table 7.23　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

MARCH　1988

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.3	2.0	12 (2)	-0.4	1.2	-2.3	7.50	1.5
2	1.4	5.9	6 (5)	0.9	3.0	-0.4	8.65	1.5
3	1.5	6.9	12 (6)	-0.1	1.3	-2.3	7.00	10.0
4	2.6	6.1	13 (6)	-1.9	0.8	-6.1	13.45	0.5
5	0.5	3.3	3 12 13(2)	-0.9	3.0	-5.3	12.40	0.0
6	1.0	6.4	7 14 (3)	-1.6	1.4	-7.7	7.25	3.5
7	2.6	7.9	12 (5)	-1.4	0.8	-5.4	7.35	12.0
8	1.9	5.7	12 (5)	-2.4	-0.3	-5.0	13.25	4.0
9	2.2	6.2	13 (7)	-3.1	0.0	-7.6	10.70	1.0
10	1.5	6.4	13 (5)	-1.1	3.6	-8.0	13.45	3.5
11	0.4	2.4	2 (3)	-0.5	7.4	-9.5	15.75	0.0
12	2.7	8.2	13 (7)	2.6	6.5	0.4	3.15	8.5
13	2.8	6.3	12 (8)	5.0	8.7	-1.7	15.05	0.0
14	0.5	3.0	3 4 (2)	3.2	12.2	-4.1	17.10	0.5
15	4.6	10.6	14 (8)	0.3	4.8	-6.4	8.95	4.0
16	4.4	7.7	13 (13)	-1.1	1.6	-6.1	14.75	0.5
17	0.4	2.7	3 (3)	1.7	5.2	-0.9	13.65	0.0
18	0.3	2.3	2 (3)	1.5	3.7	-0.3	5.60	6.0
19	1.5	4.6	13 (6)	2.3	5.3	-1.0	9.05	3.5
20	2.3	5.7	13 (8)	1.2	3.7	-3.1	11.35	0.0
21	2.4	8.0	4 5 (5)	1.1	6.2	-5.2	17.35	0.0
22	5.5	11.9	5 (8)	4.5	7.3	2.5	3.40	5.0
23	1.5	4.6	13 (7)	3.5	5.8	1.5	7.35	0.0
24	4.1	7.8	13 (10)	0.6	2.7	-1.8	15.05	1.0
25	0.3	2.1	2 (4)	0.9	6.2	-6.4	17.95	0.0
26	0.7	4.4	6 (5)	1.3	5.8	-4.3	9.65	0.0
27	1.2	5.4	12 13 (3)	1.9	6.0	-0.7	14.90	0.0
28	0.4	2.2	1 2 10(2)	2.5	7.5	-3.3	19.40	0.0
29	0.5	3.4	11 (3)	4.1	10.1	-2.6	20.75	0.0
30	3.0	6.7	5 (8)	2.4	5.9	-2.4	20.30	0.0
31	2.9	7.1	5 (10)	1.8	4.9	-2.6	19.35	0.0
TOTL							380.85	66.5
MEAN	1.9	5.6		0.9	4.6	-3.5	12.29	
MAX	5.5	11.9		5.0	12.2	2.5	20.75	
MIN	0.3	2.0		-3.1	-0.3	-9.5	3.15	
DN	31	31		31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.6	4.0	12 (3)	0.3	1.8	-0.7	7.80	2.0
2	1.0	4.9	6 (4)	1.0	2.7	0.0	8.75	7.5
3	3.1	6.2	12 13 (8)	-1.4	1.1	-3.6	7.95	3.5
4	1.6	4.9	14 (4)	-2.3	0.1	-5.3	12.85	0.5
5	0.4	2.3	3 (3)	-0.3	3.0	-4.0	12.40	0.0
6	1.6	4.9	7 14 (4)	-1.6	1.0	-5.2	6.80	11.0
7	3.1	6.0	12 (9)	-1.4	0.8	-3.5	8.20	5.0
8	1.6	5.7	14 (4)	-2.7	-0.6	-4.4	12.20	4.0
9	1.3	4.1	13 (5)	-3.6	-0.2	-6.4	11.10	4.0
10	1.4	4.8	13 (5)	-1.6	3.4	-8.7	14.90	0.0
11	0.6	2.3	1 3 6(2)	2.3	6.8	-0.3	13.65	4.0
12	3.8	7.2	13 (9)	4.0	6.5	1.9	4.45	4.5
13	1.6	5.3	12 (5)	2.7	8.5	-3.2	15.20	0.5
14	1.1	4.1	14 (4)	4.7	10.6	2.1	15.65	3.5
15	6.1	9.0	13 (13)	-2.4	3.2	-6.3	10.05	0.5
16	2.5	6.0	12 13 (7)	0.7	2.2	-2.5	14.70	0.5
17	0.2	1.6	3 (2)	1.5	4.9	-0.9	12.65	2.0
18	0.7	2.7	2 (5)	1.8	3.3	-0.8	7.50	4.0
19	1.9	3.6	13 (9)	2.3	4.5	0.3	7.55	3.5
20	1.7	5.1	13 (5)	-0.4	3.6	-5.2	13.25	0.0
21	4.6	9.6	5 (7)	3.7	5.8	1.4	15.60	0.0
22	3.4	8.8	5 (6)	4.3	6.9	1.5	3.40	5.0
23	2.8	6.9	13 (13)	2.4	5.4	-0.7	8.15	1.0
24	2.4	6.2	13 14 (4)	-0.3	2.1	-5.0	16.25	0.0
25	0.4	2.0	2 (3)	1.3	5.8	-3.8	17.05	0.0
26	0.8	3.2	6 (5)	2.1	5.0	-0.7	8.45	0.0
27	1.1	3.7	12 13 (3)	1.4	5.4	-2.4	17.00	0.0
28	0.3	1.9	5 10 14(2)	2.9	7.3	-1.5	19.55	0.0
29	0.5	2.7	11 12 (3)	4.0	10.0	-2.2	20.55	0.0
30	4.6	6.1	5 (13)	2.8	5.7	0.3	19.40	0.0
31	1.3	5.4	5 (5)	0.2	4.7	-4.6	20.70	0.0
TOTL							383.70	66.5
MEAN	1.9	4.9		0.9	4.2	-2.4	12.38	
MAX	6.1	9.6		4.7	10.6	2.1	20.70	
MIN	0.2	1.6		-3.6	-0.6	-8.7	3.40	
DN	31	31		31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

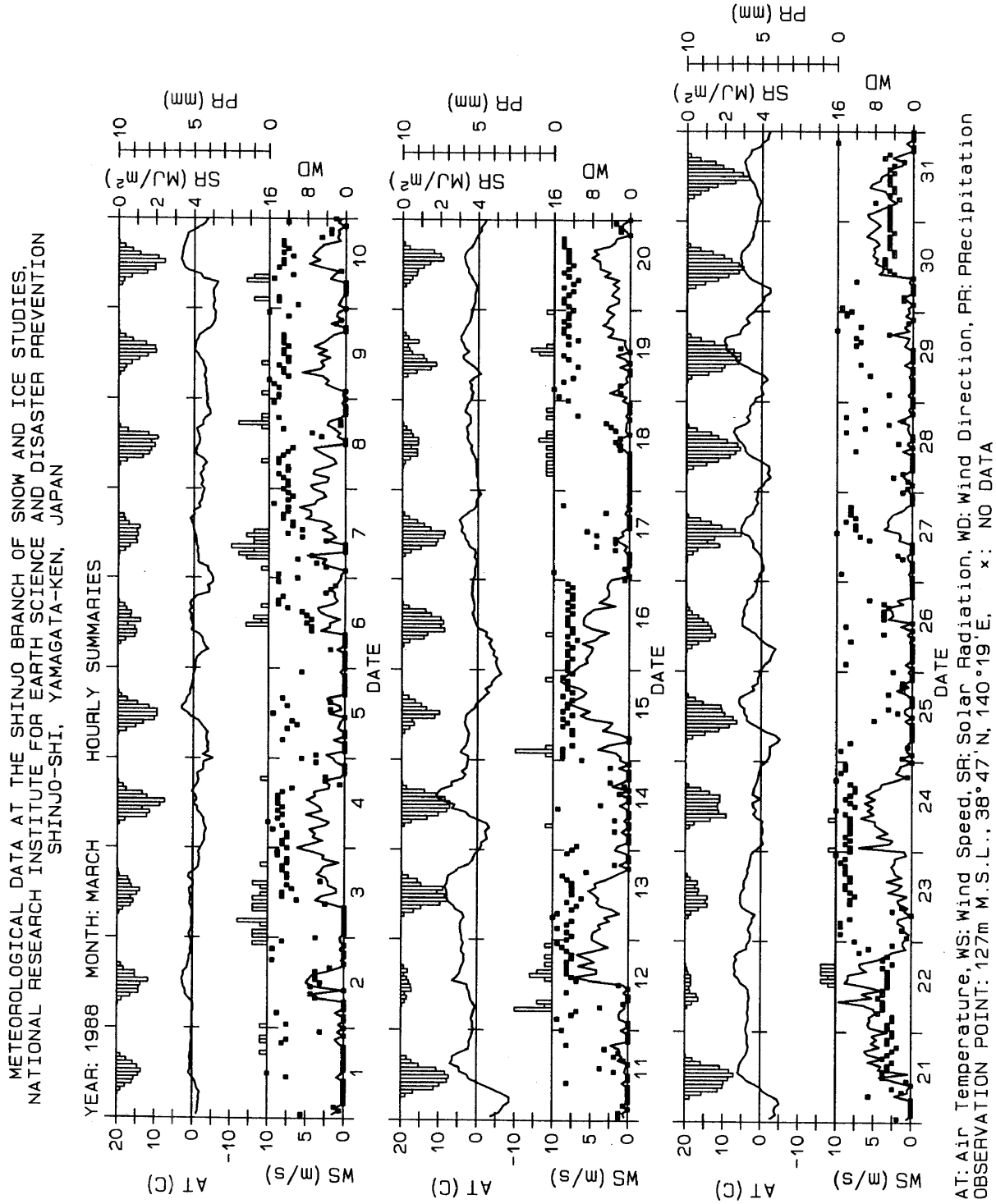

Fig.4.23 気象変化図

Seasonal variations in meteorological data.

Table 7.24　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

APRIL　1988

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST	WD(1-16) FREQ	WD(1-16) NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.4	4.8	2	3	5(3)	1.2	6.8	-5.0	21.50	0.0
2	0.3	2.7	10	15	(2)	3.4	10.6	-3.3	20.10	0.0
3	0.5	3.2	3	12	(3)	5.0	13.4	-2.1	20.15	0.0
4	0.8	3.2	10		(5)	4.3	10.9	-1.4	18.25	0.0
5	1.2	5.6	4	5	6(3)	5.2	12.2	-0.8	13.05	3.0
6	2.5	7.3	13		(9)	4.9	7.7	2.5	13.50	6.5
7	1.8	6.0	12		(4)	4.7	8.5	1.3	17.30	0.5
8	2.2	5.3	6		(6)	2.1	4.5	-0.1	7.80	0.0
9	1.2	5.5	12		(5)	2.1	8.8	-2.9	16.65	0.0
10	0.7	3.5	11		(3)	2.9	8.8	-3.0	11.95	0.5
11	0.6	3.8	5	9	12(2)	5.8	14.9	-0.1	15.80	0.0
12	1.6	5.7	6		(4)	8.3	17.1	-0.6	12.15	0.0
13	1.0	3.3	12		(4)	9.9	13.4	7.2	7.80	9.5
14	1.8	6.5	13		(5)	9.2	18.8	4.3	17.55	1.0
15	1.1	6.5	10	12	(3)	2.2	7.8	0.1	4.65	27.0
16	1.6	5.8	13		(4)	4.6	10.1	-0.9	21.35	0.5
17	0.4	2.4	3	7	11(2)	7.2	18.6	-2.3	23.10	0.0
18	4.6	11.3	5		(7)	10.3	18.8	0.0	19.70	2.0
19	3.6	10.3	5		(6)	10.4	14.2	5.1	6.65	10.0
20	1.8	6.1	14		(7)	9.1	14.2	5.2	16.30	0.0
21	1.7	6.0	6		(6)	10.0	17.1	4.0	18.50	4.5
22	1.3	3.7	14		(7)	7.5	10.6	6.0	3.15	15.5
23	2.1	5.9	13		(9)	8.0	11.9	5.0	21.45	1.0
24	2.0	6.4	2	12	14(4)	5.5	8.5	3.1	12.45	3.0
25	0.8	4.5	15		(4)	6.1	9.2	3.0	8.15	2.0
26	1.8	7.7	X		(X)	11.8	18.8	4.5	X	0.0
27	1.8	5.3	X		(X)	14.6	21.6	7.1	22.80	0.5
28	0.9	4.8	13		(4)	14.4	24.8	3.3	23.05	0.0
29	1.3	6.6	14		(3)	12.4	17.1	6.7	6.05	20.5
30	1.7	5.4	14	15	(4)	12.2	15.0	7.3	7.55	6.5
TOTL									428.45	114.0
MEAN	1.5	5.5				7.2	13.2	1.8	14.77	
MAX	4.6	11.3				14.6	24.8	7.3	23.10	
MIN	0.3	2.4				1.2	4.5	-5.0	3.15	
DN	30	30				30	30	30	29	30

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST	WD(1-16) FREQ	WD(1-16) NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.2	4.2	2	3	5(3)	2.0	6.6	-2.7	21.35	0.0
2	0.3	1.7	10		(2)	3.7	10.5	-1.2	19.70	0.0
3	0.7	3.2	10	12	(3)	5.3	13.0	-1.4	18.70	0.0
4	0.8	2.6	10	12	(3)	4.5	10.8	-0.4	19.20	0.0
5	1.6	5.3	4		(4)	6.6	12.0	3.0	11.30	9.5
6	2.5	5.9	13		(10)	4.2	7.1	1.3	16.30	0.5
7	2.5	5.6	6		(5)	4.3	8.1	0.4	14.40	0.0
8	1.2	3.9	6		(5)	0.6	4.0	-2.7	9.40	0.0
9	1.2	5.1	12		(5)	2.4	8.5	-2.9	17.40	0.0
10	0.8	3.3	11		(3)	3.4	8.3	0.0	10.90	0.5
11	0.7	2.3	4	9	12(2)	6.1	14.6	0.0	16.40	0.0
12	2.1	5.4	6		(5)	11.0	16.8	7.4	10.40	7.5
13	0.9	1.9	2	13	(3)	9.3	13.3	4.5	9.05	2.0
14	2.1	5.6	10	13	(4)	7.9	18.6	1.0	16.40	1.5
15	0.8	4.3	12	16	(3)	1.5	6.5	-0.5	6.60	26.5
16	1.5	5.1	13		(4)	3.9	9.9	-2.1	22.10	0.5
17	0.9	5.8	2		(4)	9.0	18.1	0.5	24.00	0.0
18	7.0	10.1	5		(13)	13.6	18.5	8.8	16.45	4.0
19	1.1	2.8	13	14	(3)	8.1	12.2	5.3	6.10	8.0
20	1.9	5.5	13	14	(6)	9.1	13.6	4.0	19.40	0.0
21	2.1	5.6	6		(6)	10.1	16.7	6.4	15.20	20.0
22	1.7	3.2	14		(6)	7.2	10.1	5.1	6.30	1.0
23	1.8	4.5	13		(8)	7.6	11.7	3.8	19.45	2.5
24	1.9	5.1	12		(4)	5.1	7.6	3.2	13.60	0.5
25	0.8	3.7	15		(4)	6.6	10.1	4.7	8.45	2.0
26	2.1	6.4	X		(X)	14.2	18.0	9.3	X	0.0
27	X	X	X		(X)	12.6	21.3	3.8	22.60	0.5
28	0.7	3.4	13		(4)	15.3	24.6	6.9	20.65	0.0
29	1.7	5.5	14		(4)	13.6	17.1	11.3	4.30	27.0
30	X	X	X		(X)	X	X	X	X	X
TOTL									416.10	114.0
MEAN	1.6	4.5				7.2	12.7	2.6	14.86	
MAX	7.0	10.1				15.3	24.6	11.3	24.00	
MIN	0.3	1.7				0.6	4.0	-2.9	4.30	
DN	28	28				29	29	29	28	29

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

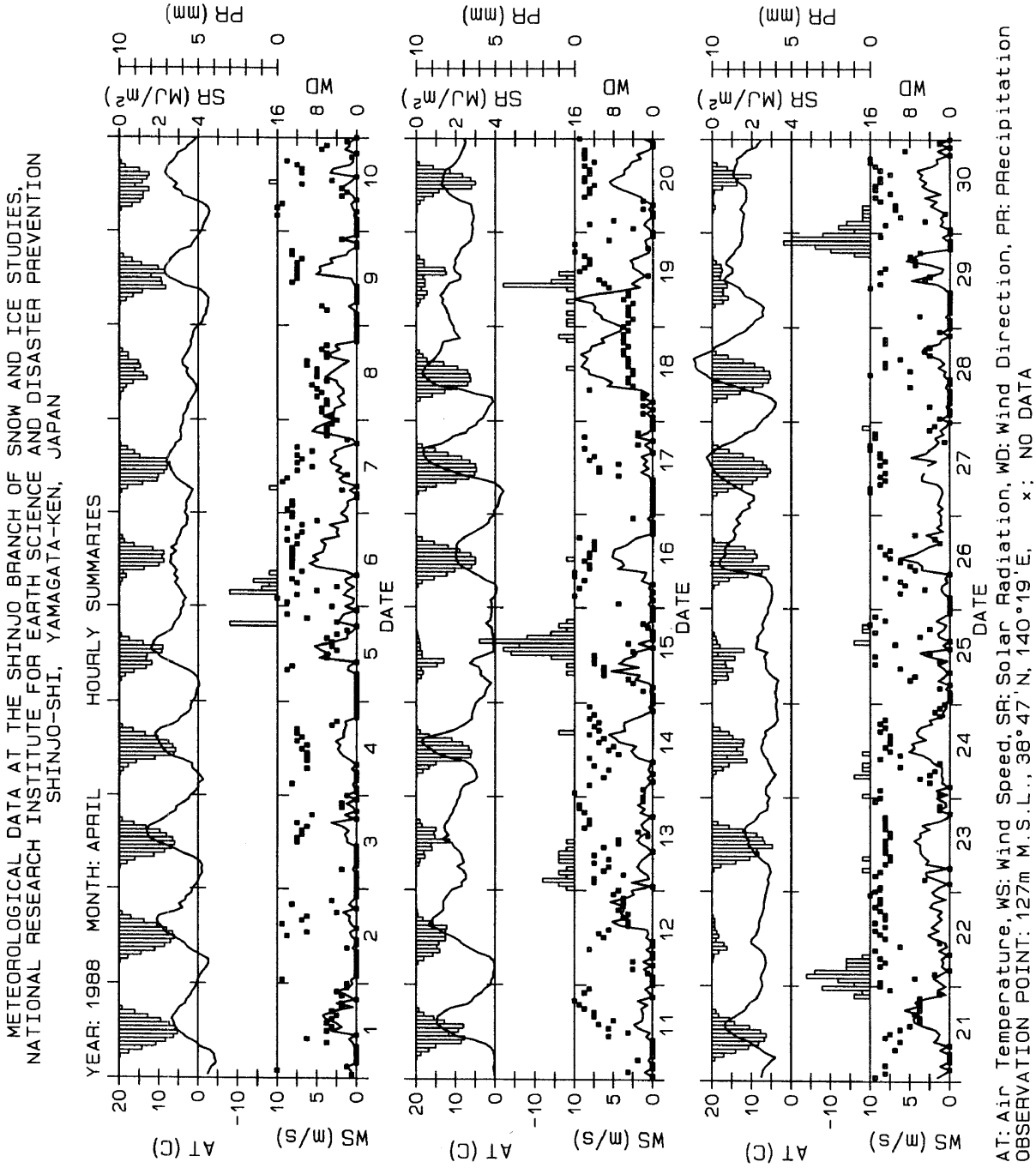

Fig.4.24 気象変化図

Seasonal variations in meteorological data.

Table 7.25　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

NOVEMBER 1988

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.4	2.6	14 (2)	6.6	14.5	1.9	X	1.5
2	1.2	5.2	14 (6)	6.6	10.2	2.8	X	21.5
3	2.1	7.8	14 (6)	4.5	6.1	2.3	X	26.5
4	1.7	5.2	13 14 (6)	6.7	10.9	1.9	X	0.5
5	1.5	6.2	15 (4)	4.5	8.4	1.0	X	18.5
6	2.2	5.4	15 (7)	7.7	13.1	2.3	X	1.0
7	3.0	7.9	14 (10)	6.0	9.9	2.9	X	7.0
8	2.0	4.9	15 (6)	4.6	9.3	-1.6	X	0.5
9	0.3	2.0	15 (2)	1.6	10.7	-3.2	X	0.0
10	1.4	7.3	14 (4)	2.8	8.4	-1.3	X	18.0
11	1.4	6.7	13 (4)	0.7	3.3	-0.2	X	21.5
12	1.6	5.8	1 (3)	3.9	10.1	-0.9	X	11.0
13	1.8	7.0	6 (5)	9.2	12.9	6.8	X	14.5
14	3.1	7.2	14 (9)	6.0	9.7	4.0	X	6.5
15	1.1	4.2	12 (5)	3.7	5.6	1.6	3.20	0.0
16	1.3	5.1	14 (5)	3.3	6.0	-0.8	4.20	11.5
17	0.9	3.2	13 (5)	3.6	7.1	0.2	3.60	0.0
18	2.2	7.3	6 (5)	3.3	7.7	0.0	8.40	0.5
19	0.4	2.4	5 16 (3)	3.6	6.7	1.8	4.45	4.5
20	0.4	2.1	9 (3)	3.5	6.9	-1.6	5.85	0.5
21	0.4	4.6	15 (2)	-0.2	2.7	-2.8	3.55	3.5
22	0.9	4.6	2 (4)	2.3	8.8	-1.4	8.60	0.0
23	0.9	6.6	16 (4)	1.9	8.8	-3.6	6.90	0.0
24	1.2	5.4	15 (5)	5.8	9.3	3.4	1.10	2.0
25	0.7	3.6	10 (4)	0.9	3.5	0.0	2.70	21.5
26	2.7	6.7	6 (10)	0.7	1.8	0.0	1.75	53.5
27	0.3	1.9	1 3 4(2)	-0.3	1.0	-1.6	6.70	4.0
28	0.3	1.8	15 16 (3)	-1.6	-0.5	-3.0	5.40	0.5
29	0.1	1.6	5 (2)	-0.4	2.6	-1.8	6.00	0.0
30	0.7	2.5	3 6 16(2)	1.0	3.9	-1.7	5.60	0.0
TOTL							78.00	250.5
MEAN	1.3	4.8		3.4	7.3	0.2	4.87	
MAX	3.1	7.9		9.2	14.5	6.8	8.60	
MIN	0.1	1.6		-1.6	-0.5	-3.6	1.10	
DN	30	30		30	30	30	16	30

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.8	2.5	14 (4)	7.2	14.0	3.0	X	8.0
2	1.5	3.8	14 (5)	6.8	9.9	3.8	X	33.5
3	2.5	4.7	13 14 (8)	5.2	9.4	2.7	X	8.5
4	0.8	3.4	14 (3)	4.9	10.7	1.3	X	0.0
5	2.4	4.6	15 (8)	6.3	10.1	4.7	X	19.0
6	1.7	4.7	14 (5)	7.3	12.7	2.5	X	7.5
7	3.5	6.9	14 (10)	5.5	8.9	3.0	X	0.5
8	1.3	4.1	12 13 15(3)	2.0	9.0	-2.9	X	0.0
9	0.7	3.0	4 (3)	3.3	10.6	-1.2	X	6.0
10	1.0	4.9	14 (3)	2.1	7.7	0.0	X	24.0
11	2.0	6.0	13 14 (4)	1.0	3.0	-0.2	X	14.0
12	1.5	4.3	6 (4)	7.0	10.1	0.8	X	15.5
13	2.1	6.1	5 13 14(4)	8.6	12.2	4.7	X	10.5
14	2.5	6.7	14 (6)	4.6	7.1	2.2	X	1.5
15	1.4	2.8	12 (6)	3.1	4.7	-0.5	4.05	0.0
16	1.2	2.4	16 (5)	3.6	5.3	1.3	3.30	11.5
17	0.7	3.3	13 (4)	2.6	7.0	0.1	3.85	0.0
18	1.8	6.8	6 (5)	3.9	7.4	1.9	8.00	4.5
19	0.5	1.8	5 16 (3)	4.0	6.5	2.7	4.95	1.0
20	0.3	1.7	4 9 (2)	1.4	6.9	-2.7	5.60	0.0
21	0.5	1.8	8 10 (3)	0.8	2.7	-0.5	3.80	3.5
22	1.0	4.1	2 (4)	1.1	8.3	-3.6	8.50	0.0
23	1.1	4.5	16 (4)	5.1	8.2	-1.1	6.25	0.5
24	1.2	3.5	10 (5)	4.4	9.1	0.2	1.15	6.0
25	1.2	5.6	7 (4)	0.4	0.8	0.0	2.80	30.5
26	2.0	5.7	6 (8)	0.3	1.8	-1.5	2.45	44.0
27	0.4	1.1	16 (3)	-1.1	0.5	-2.9	6.40	0.0
28	0.2	0.9	15 (4)	-1.2	-0.6	-1.8	5.20	0.5
29	0.4	2.1	3 5 (3)	-0.1	2.1	-1.5	6.40	0.0
30	0.6	1.9	1 (3)	1.4	3.5	0.2	5.50	5.0
TOTL							78.20	255.5
MEAN	1.3	3.9		3.4	7.0	0.5	4.89	
MAX	3.5	6.9		8.6	14.0	4.7	8.50	
MIN	0.2	0.9		-1.2	-0.6	-3.6	1.15	
DN	30	30		30	30	30	16	30

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

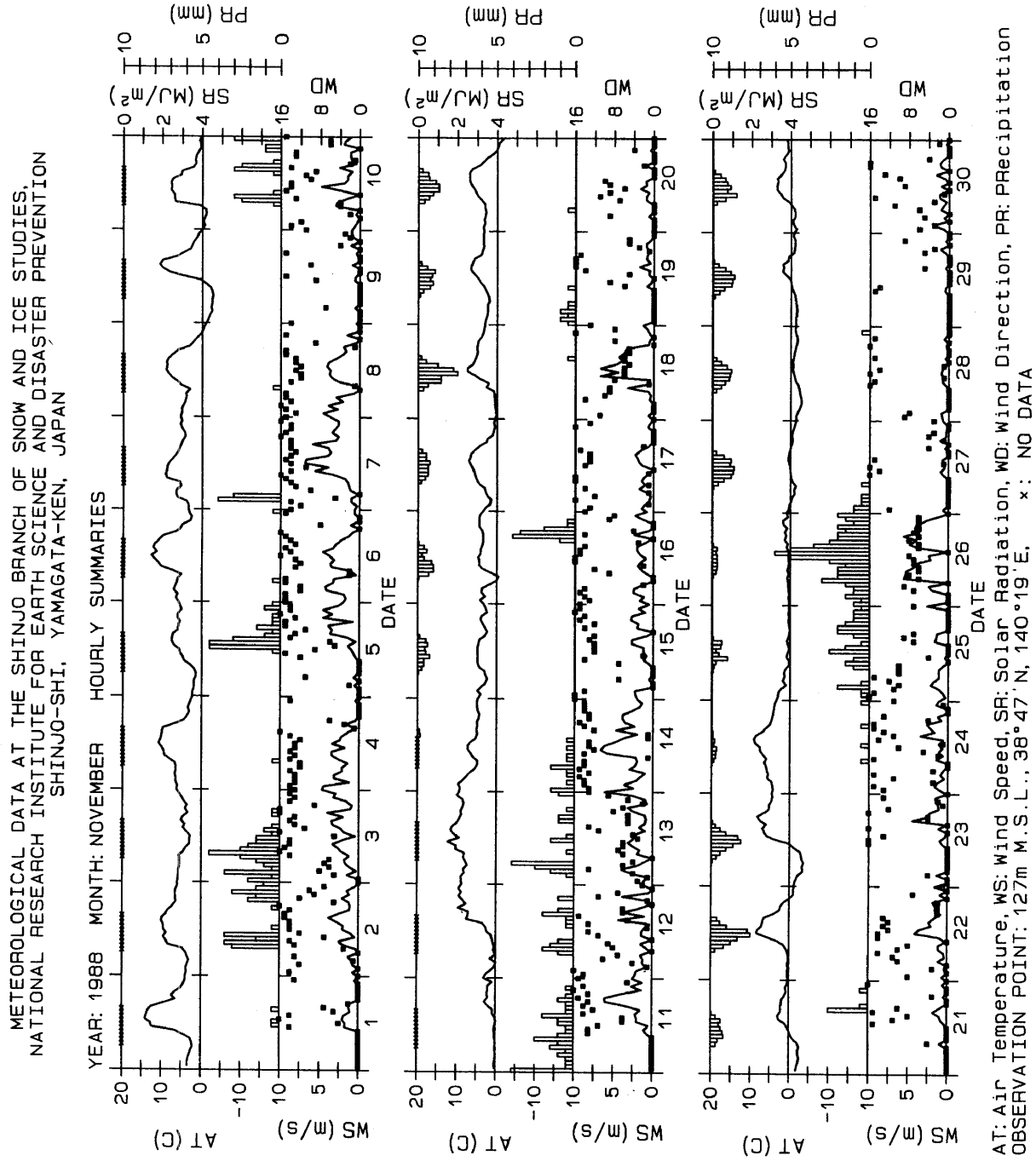

Fig.4.25 気象変化図

Seasonal variations in meteorological data.

Table 7.26 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

DECEMBER 1988

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.0	3.6	4 8 (3)	1.5	3.4	0.1	4.40	16.5
2	2.0	6.1	14 (10)	2.7	4.8	0.6	8.25	0.0
3	0.4	2.8	2 3 (2)	1.5	7.0	-3.2	10.60	0.0
4	0.1	1.5	8 16 (2)	-1.1	3.3	-5.4	6.70	0.0
5	1.6	6.8	14 (5)	1.4	3.5	-0.1	2.50	10.5
6	3.0	8.5	14 (9)	2.0	4.4	-1.1	6.20	1.0
7	0.8	2.8	1 14 (4)	5.2	10.2	1.5	4.90	0.0
8	0.4	2.5	3 5 15(2)	4.6	9.5	1.0	6.15	0.0
9	0.8	3.7	13 (5)	2.9	9.1	0.2	2.70	2.5
10	X	X	X (X)	X	X	X	X	X
11	X	X	X (X)	X	X	X	X	X
12	0.5	2.9	1 (3)	1.2	3.1	0.2	4.70	6.5
13	0.2	2.1	5 9 15(2)	-0.4	1.0	-3.2	4.90	0.0
14	1.0	5.7	8 10 11(2)	0.1	5.2	-3.6	3.45	10.0
15	2.2	6.6	11 (5)	0.9	3.5	-0.8	2.75	21.5
16	0.4	5.2	12 13 14(2)	-1.1	-0.5	-2.4	2.55	32.5
17	3.4	8.2	13 (8)	-1.7	0.3	-3.3	4.45	4.0
18	1.9	5.6	16 (7)	1.6	3.8	-0.5	2.65	21.0
19	1.0	4.9	2 3 16(3)	1.8	3.7	-1.1	4.90	0.5
20	2.5	8.2	13 (6)	1.8	4.4	0.0	2.10	13.5
21	4.2	7.8	14 (8)	0.0	1.6	-2.6	7.10	0.0
22	3.8	7.1	13 14 (9)	-1.7	0.0	-3.2	4.10	1.0
23	1.5	3.7	15 (5)	1.3	3.6	-1.8	4.45	0.0
24	0.5	3.9	2 3 14(2)	0.3	2.9	-4.2	3.40	12.0
25	1.6	5.6	14 (7)	-0.8	1.6	-2.6	6.95	7.0
26	3.3	7.2	15 (8)	0.0	1.2	-2.3	4.20	0.5
27	0.7	2.5	5 8 (3)	-1.1	1.4	-6.1	3.95	2.5
28	3.4	7.7	14 (9)	-2.3	0.6	-5.0	6.25	6.0
29	2.7	5.8	14 (6)	-2.0	0.3	-4.7	6.55	1.5
30	2.7	6.0	13 (6)	0.1	1.5	-2.4	8.15	0.0
31	0.8	4.2	15 (4)	0.6	5.1	-5.5	5.10	0.0
TOTL							145.05	170.5
MEAN	1.7	5.1		0.7	3.4	-2.1	5.00	
MAX	4.2	8.5		5.2	10.2	1.5	10.60	
MIN	0.1	1.5		-2.3	-0.5	-6.1	2.10	
DN	29	29		29	29	29	29	29

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.4	4.3	14 (6)	2.1	3.4	0.5	4.40	11.5
2	1.2	6.1	13 (5)	2.1	4.4	-0.4	8.85	0.0
3	0.4	2.4	2 3 (2)	-0.4	6.8	-5.3	10.05	0.0
4	0.3	1.4	8 16 (2)	0.9	3.2	-3.1	6.45	0.0
5	3.3	6.0	14 (11)	1.3	3.5	-0.9	2.50	10.5
6	1.7	5.4	14 (4)	3.0	4.7	1.6	6.05	1.0
7	0.6	1.6	1 (5)	5.2	9.8	2.5	4.65	0.0
8	0.3	1.8	4 15 (2)	3.8	9.4	0.3	6.25	0.0
9	1.0	2.3	11 (5)	2.8	8.8	-0.2	2.95	3.5
10	X	X	X (X)	X	X	X	X	X
11	0.9	2.4	4 5 (3)	0.8	1.6	0.1	3.35	X
12	0.4	1.7	4 (2)	0.9	2.6	-0.1	4.85	0.0
13	0.3	1.6	3 15 (2)	-1.5	0.9	-3.5	4.85	0.0
14	1.6	3.9	5 10 11(3)	1.7	4.9	-0.7	3.25	20.0
15	1.8	4.7	11 12 14(4)	0.0	1.9	-1.3	2.90	33.5
16	2.4	6.7	13 (5)	-1.5	-0.6	-3.1	2.70	12.0
17	2.2	4.0	13 16 (5)	-0.7	1.1	-2.5	4.25	10.5
18	1.8	4.0	16 (5)	2.0	3.7	-0.4	2.90	13.0
19	0.6	2.6	2 4 (3)	1.3	3.5	0.0	4.85	5.0
20	3.8	5.8	13 (9)	1.8	4.2	-0.1	2.30	9.0
21	4.3	6.9	13 (8)	-1.1	1.0	-2.9	6.90	0.5
22	2.8	5.1	14 (7)	-1.0	0.8	-2.2	4.05	0.5
23	0.8	2.4	14 (5)	0.9	3.6	-3.2	4.45	0.0
24	0.4	2.1	2 3 15(2)	0.9	2.6	-0.8	3.50	18.5
25	2.8	4.2	14 (11)	-0.9	1.0	-2.3	6.75	1.0
26	2.3	5.2	15 (7)	-0.2	0.9	-1.4	4.25	1.5
27	1.3	4.5	14 (4)	-1.3	1.4	-4.1	3.90	4.5
28	4.0	6.3	14 (10)	-3.3	-0.5	-5.0	6.35	4.0
29	2.5	4.6	15 (8)	-0.4	0.9	-1.9	6.50	0.0
30	1.7	4.6	13 (6)	-1.0	1.3	-4.8	8.05	0.0
31	0.9	2.7	15 (4)	1.5	4.8	-1.3	5.30	0.0
TOTL							148.35	160.0
MEAN	1.7	3.9		0.7	3.2	-1.5	4.95	
MAX	4.3	6.9		5.2	9.8	2.5	10.05	
MIN	0.3	1.4		-3.3	-0.6	-5.3	2.30	
DN	30	30		30	30	30	30	29

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

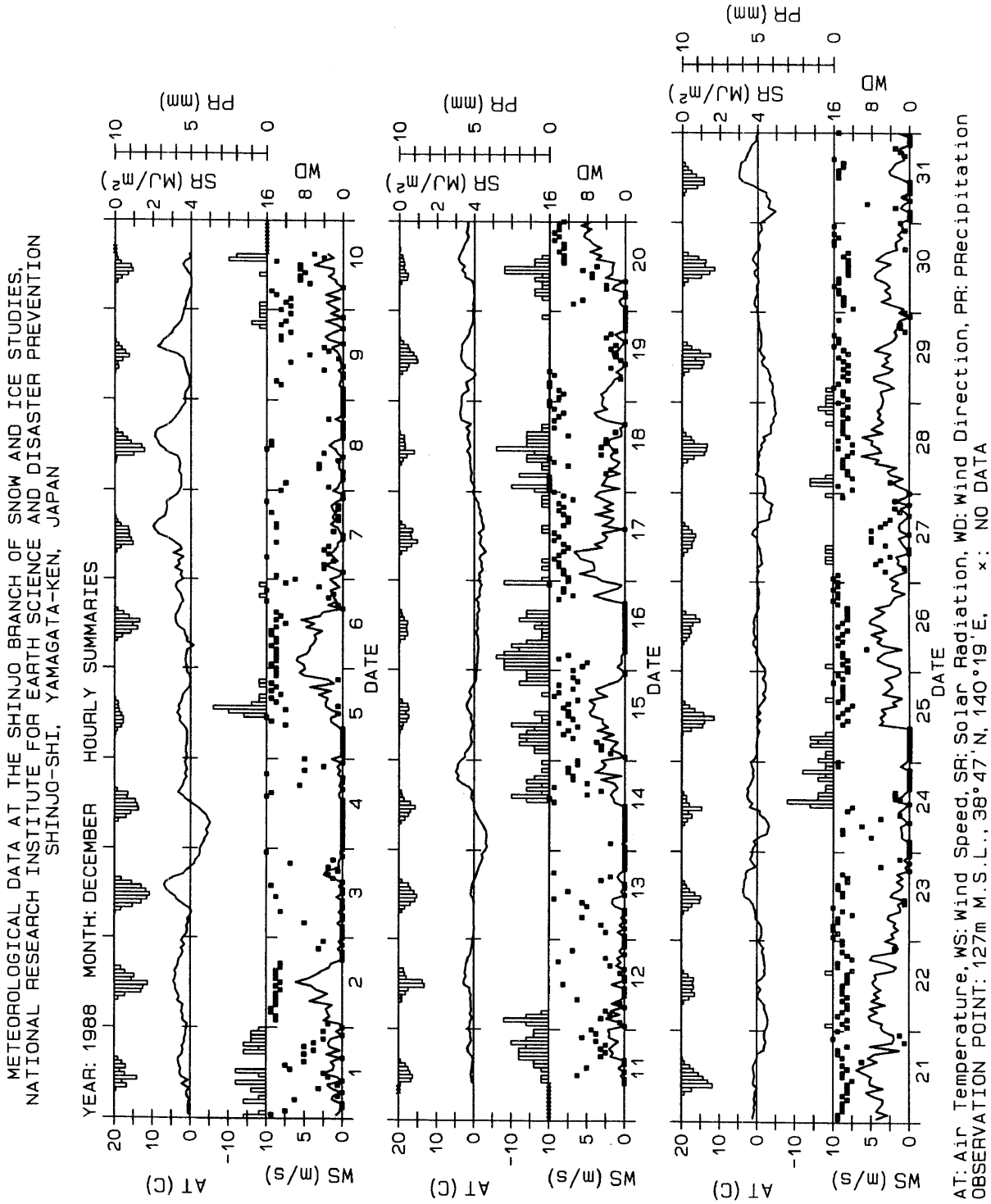

Fig.4.26 気象変化図

Seasonal variations in meteorological data.

Table 7.27　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

JANUARY　1989

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.7	7.7	13 (7)	0.2	3.0	-1.5	2.60	7.0
2	2.6	6.6	14 (7)	2.4	5.5	-0.6	7.00	0.0
3	1.0	5.6	13 (3)	0.0	2.4	-3.4	4.00	4.5
4	2.1	5.2	14 (8)	-0.8	0.4	-4.3	5.45	2.0
5	3.4	6.8	14 (11)	0.2	2.3	-2.2	5.15	1.0
6	2.8	5.5	14 (8)	2.6	5.3	-4.5	6.85	0.0
7	0.3	2.3	16 (2)	-1.6	2.4	-6.9	6.60	0.0
8	0.3	2.0	1 2 3(1)	0.5	2.4	-3.3	2.85	0.0
9	3.7	9.4	6 (8)	2.2	6.1	-3.3	8.55	0.0
10	2.0	6.6	6 (6)	4.0	6.5	1.6	X	0.0
11	0.3	1.9	7 15 (2)	2.2	5.7	0.3	X	0.0
12	0.3	1.6	5 (2)	1.8	3.2	0.7	X	8.0
13	0.3	2.0	11 (4)	0.0	1.1	-1.4	X	2.0
14	1.4	5.7	14 (4)	-1.5	1.1	-3.9	X	2.0
15	1.3	4.9	2 (6)	-3.7	-0.6	-5.6	10.10	0.0
16	0.5	2.7	12 15 (2)	-2.0	1.6	-4.9	7.10	4.0
17	0.3	2.1	1 2 14(2)	-0.2	2.9	-5.8	8.70	0.0
18	0.2	2.1	2 4 5(1)	-3.1	2.9	-7.6	9.55	0.0
19	0.2	1.6	16 (2)	0.1	1.5	-2.3	2.65	15.5
20	0.7	4.1	3 15 (3)	1.7	3.4	0.5	1.85	18.5
21	2.7	5.6	14 (8)	3.1	6.1	0.3	7.50	2.0
22	3.1	7.6	14 (12)	-1.4	1.6	-5.7	7.60	0.0
23	4.0	11.4	6 (11)	-1.4	2.8	-7.3	2.90	3.0
24	1.0	5.0	15 (6)	0.6	1.9	-0.3	6.15	7.5
25	1.2	5.4	9 14 16(3)	-1.4	1.2	-7.7	7.90	2.5
26	0.5	2.3	1 16 (3)	-1.9	5.1	-7.8	10.00	0.0
27	1.0	4.7	13 14 (4)	-0.5	3.3	-2.6	3.85	17.5
28	3.7	7.6	14 (9)	-4.2	-1.5	-6.0	6.15	11.0
29	4.1	7.1	13 (9)	-1.8	1.1	-5.4	5.65	4.5
30	2.4	6.7	14 (9)	-1.1	2.7	-8.9	12.60	0.0
31	0.4	2.0	3 4 (3)	-3.7	2.7	-10.5	11.10	0.0
TOTL							170.40	112.5
MEAN	1.6	4.9		-0.3	2.8	-3.9	6.55	
MAX	4.1	11.4		4.0	6.5	1.6	12.60	
MIN	0.2	1.6		-4.2	-1.5	-10.5	1.85	
DN	31	31		31	31	31	26	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	4.2	6.2	13 (9)	1.2	3.1	-0.4	2.95	7.0
2	1.3	3.4	12 (4)	1.3	5.1	-2.7	6.60	0.5
3	1.5	5.6	13 14 (4)	0.0	2.3	-2.8	4.25	6.0
4	2.3	3.8	14 (8)	-0.7	0.3	-1.9	5.75	0.0
5	3.6	5.2	14 (12)	1.6	2.9	0.0	4.45	1.0
6	1.4	3.8	14 16 (5)	-0.2	5.3	-5.8	7.10	0.0
7	0.2	0.9	16 (2)	0.4	1.9	-2.5	6.20	0.0
8	0.3	1.5	1 9 (2)	-0.1	2.0	-2.9	3.30	0.0
9	4.5	8.0	6 (10)	4.1	5.9	0.4	X	0.0
10	1.1	6.0	6 (4)	3.0	6.3	0.6	X	0.0
11	0.2	1.2	7 15 (2)	2.3	5.2	1.0	X	8.0
12	0.4	1.2	5 (2)	1.4	3.0	0.0	X	1.0
13	0.2	1.0	11 (3)	-0.6	1.0	-3.0	X	1.5
14	1.9	4.2	13 14 15(4)	-2.8	0.5	-5.3	X	1.5
15	0.9	2.4	2 (4)	-3.6	-0.8	-4.9	10.15	0.0
16	0.4	1.8	12 15 (2)	-0.8	1.1	-4.1	7.40	4.0
17	0.4	1.7	1 2 14(2)	-2.0	2.7	-7.4	8.50	0.0
18	0.2	1.8	2 4 8(1)	-1.2	2.7	-4.7	9.15	5.5
19	0.2	1.4	3 16 (2)	0.9	1.4	0.5	2.70	12.5
20	1.0	3.7	13 (4)	2.8	4.6	1.4	2.65	18.0
21	3.7	5.5	14 (12)	1.1	5.3	-2.4	6.80	0.0
22	1.8	5.0	14 (7)	-3.4	0.6	-7.0	7.55	0.0
23	3.8	11.0	6 (11)	0.9	2.5	-2.0	2.85	9.0
24	1.6	3.9	15 (6)	0.1	1.8	-2.8	6.40	3.5
25	0.6	1.7	9 (3)	-3.2	1.1	-6.8	8.20	0.5
26	0.6	2.2	16 (4)	-0.3	3.7	-3.5	9.45	2.0
27	1.7	3.9	14 (7)	-1.2	1.8	-4.1	3.70	23.5
28	4.3	6.1	14 (10)	-4.6	-2.9	-5.9	6.45	3.5
29	3.8	6.2	13 14 (9)	-0.3	0.6	-2.3	6.05	4.0
30	1.3	5.7	14 (4)	-4.5	2.7	-10.0	12.45	0.0
31	0.4	1.6	4 (3)	0.0	2.1	-5.5	10.90	X
TOTL							161.95	112.5
MEAN	1.6	3.8		-0.3	2.4	-3.1	6.48	
MAX	4.5	11.0		4.1	6.3	1.4	12.45	
MIN	0.2	0.9		-4.6	-2.9	-10.0	2.65	
DN	31	31		31	31	31	25	30

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

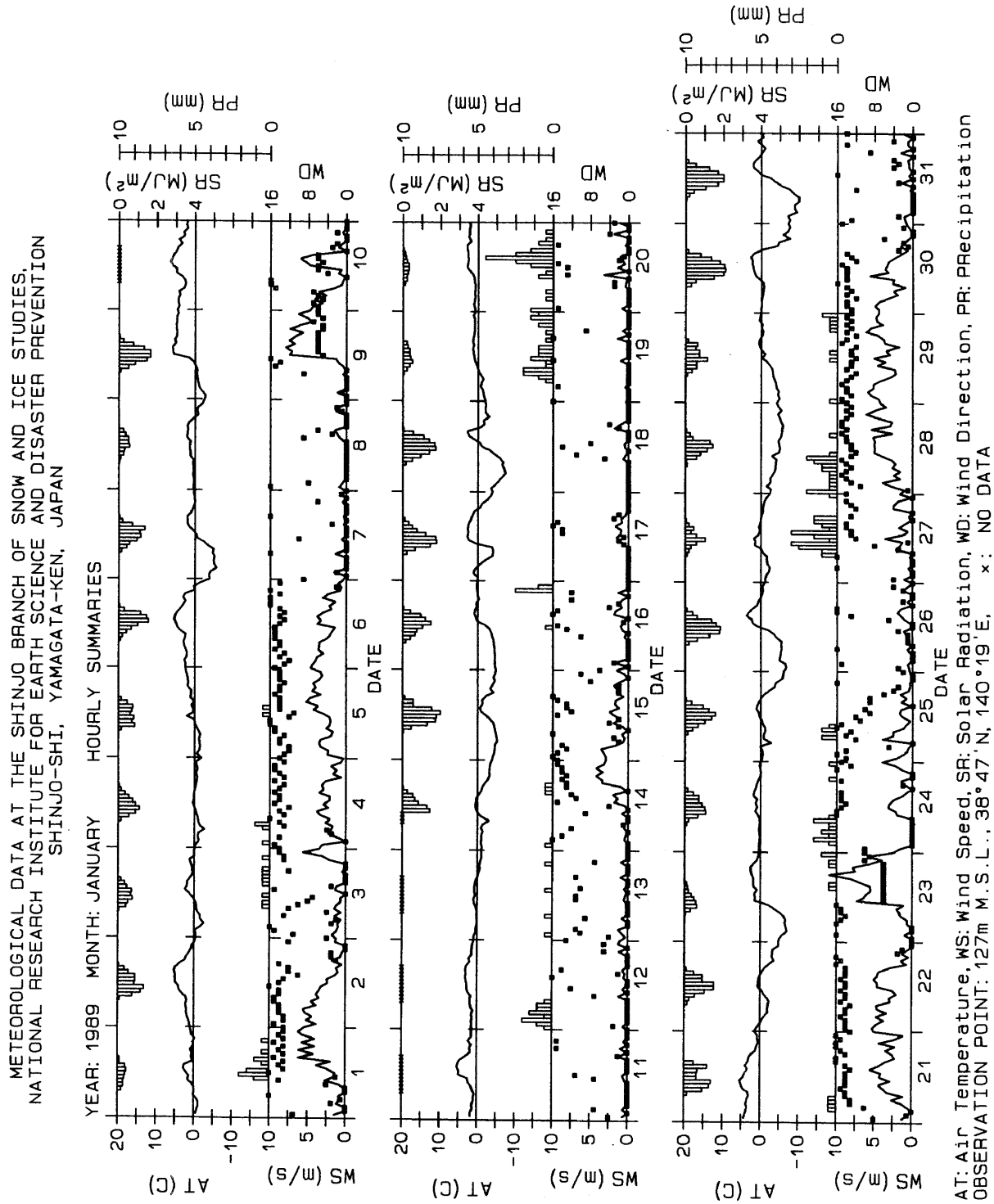

Fig.4.27 気象変化図

Seasonal variations in meteorological data.

Table 7.28　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

FEBRUARY 1989

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	0.6	3.7	15 (3)	0.2	2.7	-2.3	5.45	7.5
2	1.7	5.4	13 14 (5)	-2.1	0.0	-3.7	6.15	9.0
3	2.8	6.3	14 (11)	-3.5	-2.4	-4.3	7.75	6.5
4	2.6	5.7	14 (9)	-1.3	1.9	-4.4	7.60	2.0
5	2.4	5.9	15 (8)	1.9	3.3	0.0	5.05	0.0
6	1.3	3.7	16 (5)	1.1	3.0	-1.7	3.50	5.5
7	1.5	5.3	13 (5)	2.6	5.3	-1.9	9.40	0.0
8	0.3	2.0	1 7 10(1)	0.0	4.3	-4.5	7.70	0.0
9	0.2	2.0	2 4 (2)	1.0	3.0	0.0	5.10	10.0
10	0.8	4.2	13 14 (3)	0.5	2.9	-2.4	7.75	0.5
11	1.2	4.7	16 (4)	-1.4	1.9	-6.5	10.35	9.5
12	0.3	1.9	9 (2)	-1.7	0.4	-3.9	9.60	3.0
13	0.9	3.9	1 16 (4)	-0.5	2.8	-2.6	10.45	0.0
14	2.9	7.5	13 15 (5)	1.1	4.4	-4.1	16.15	0.0
15	0.2	2.3	6 (2)	-2.1	5.6	-8.7	15.05	0.0
16	0.5	2.0	2 (3)	3.2	5.4	0.1	3.25	16.0
17	0.6	2.2	10 12 (3)	2.3	5.1	0.7	9.60	0.5
18	0.5	4.7	15 (4)	1.1	2.7	0.4	5.45	1.5
19	1.3	5.1	15 (4)	1.9	4.5	-0.4	10.55	0.0
20	1.4	4.8	7 8 (4)	2.3	6.9	-3.9	11.00	6.5
21	2.5	5.4	13 (8)	2.6	5.7	-0.1	9.40	0.5
22	2.2	5.8	14 (9)	-0.9	1.4	-3.4	10.20	0.0
23	1.0	2.7	15 (4)	-1.4	3.2	-6.5	16.10	0.0
24	0.3	1.6	1 3 9(1)	-1.8	2.6	-6.1	7.10	0.0
25	0.2	4.7	1 6 8(1)	-1.6	1.5	-6.3	4.20	13.5
26	1.6	4.8	13 14 15(4)	0.7	2.3	-0.6	10.10	9.0
27	1.0	5.5	3 (7)	-0.1	3.6	-4.5	11.20	0.0
28	1.6	6.4	7 (5)	1.6	8.3	-6.0	11.00	0.5
TOTL							246.20	101.5
MEAN	1.2	4.3		0.2	3.3	-3.1	8.79	
MAX	2.9	7.5		3.2	8.3	0.7	16.15	
MIN	0.2	1.6		-3.5	-2.4	-8.7	3.25	
DN	28	28		28	28	28	28	28

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	1.0	2.9	13 14 (4)	-0.7	1.5	-2.4	5.60	X
2	2.1	4.4	13 14 16(5)	-2.8	-0.3	-4.2	6.05	12.5
3	2.8	5.7	14 (11)	-3.3	-2.6	-4.2	8.25	1.0
4	2.6	4.9	14 (10)	0.2	1.6	-2.0	7.25	1.5
5	1.8	3.8	13 (5)	2.2	3.1	0.8	4.80	0.5
6	1.4	2.7	16 (7)	1.1	2.5	-1.5	3.95	5.0
7	1.1	3.5	13 (6)	0.9	5.1	-3.9	9.45	0.0
8	0.2	1.9	1 7 10(1)	1.1	3.2	-0.4	7.05	8.0
9	0.3	1.3	2 4 14(2)	0.8	2.8	-0.6	5.60	2.0
10	1.5	4.4	6 13 14(3)	0.2	2.7	-2.9	7.80	5.5
11	0.7	2.9	10 (3)	-2.0	1.4	-5.1	10.25	7.0
12	0.2	1.2	12 (2)	-1.3	0.3	-2.5	9.80	0.5
13	1.7	3.7	16 (7)	0.2	3.0	-2.1	10.85	0.0
14	1.9	6.5	13 (4)	-1.5	4.2	-8.7	16.30	0.0
15	0.4	1.8	3 4 5(2)	1.7	4.6	-3.6	14.05	9.0
16	0.4	1.2	2 (3)	2.6	5.1	0.9	3.40	7.5
17	0.7	2.1	12 (3)	2.1	4.8	0.5	9.25	0.0
18	0.4	1.2	15 (5)	1.1	2.1	0.2	5.95	1.5
19	1.2	3.6	13 (4)	1.1	4.3	-3.0	11.30	0.0
20	2.7	4.4	7 8 13(4)	4.1	6.9	1.4	10.65	7.0
21	2.0	5.4	14 (6)	1.1	4.3	-1.5	9.70	0.0
22	2.1	4.5	13 14 (5)	-1.8	0.8	-3.6	10.55	0.0
23	0.6	2.2	1 2 4(1)	-2.2	3.0	-6.2	14.95	0.0
24	0.3	1.4	1 (2)	-1.7	2.4	-5.6	7.15	0.0
25	0.4	3.5	6 8 11(1)	0.1	1.1	-1.4	4.25	22.0
26	2.0	4.0	13 14 15(4)	0.2	2.1	-2.4	10.85	0.5
27	0.6	1.7	3 (6)	-1.2	3.2	-5.2	10.85	0.0
28	1.8	4.9	7 (5)	4.1	8.2	0.4	10.15	18.5
TOTL							246.05	109.5
MEAN	1.2	3.3		0.2	2.9	-2.5	8.79	
MAX	2.8	6.5		4.1	8.2	1.4	16.30	
MIN	0.2	1.2		-3.3	-2.6	-8.7	3.40	
DN	28	28		28	28	28	28	27

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

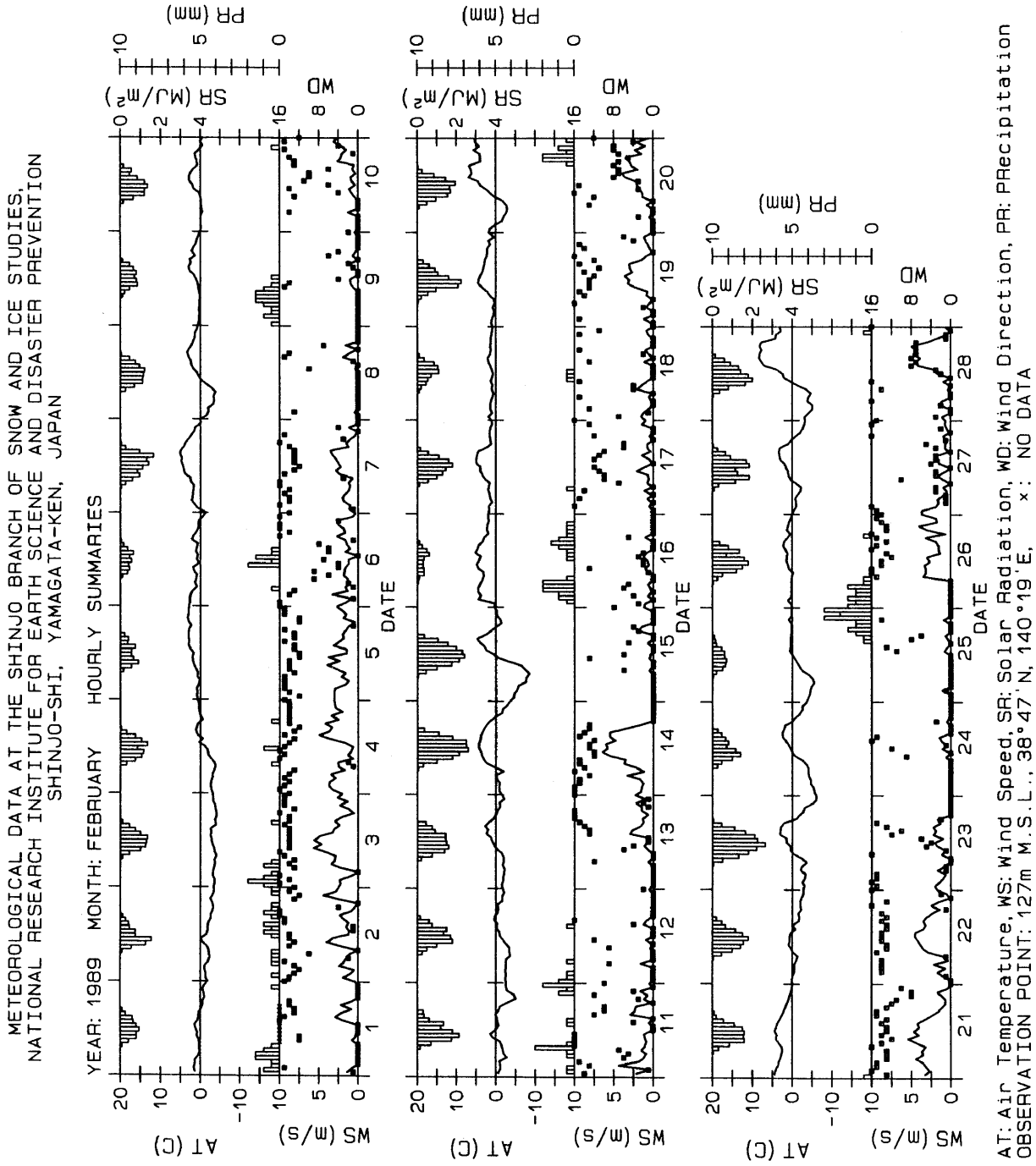

Fig.4.28 気象変化図

Seasonal variations in meteorological data.

Table 7.29 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

MARCH 1989

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.1	8.0	14 (9)	2.6	6.3	0.0	2.90	20.0
2	1.9	7.4	2 15 (5)	2.0	7.4	-3.3	17.40	0.0
3	2.1	6.3	6 (4)	2.7	7.5	-3.5	11.10	0.0
4	0.9	3.7	11 (4)	4.5	7.9	1.8	4.50	2.0
5	1.1	2.8	13 (6)	2.7	4.1	0.5	4.85	0.0
6	0.9	4.0	12 (5)	1.0	4.1	-1.9	11.05	3.0
7	0.7	3.9	14 (3)	-0.1	5.9	-4.8	12.35	0.0
8	1.6	5.9	15 (7)	0.0	4.3	-2.9	13.00	0.0
9	1.0	3.9	4 (4)	-0.1	3.8	-2.8	13.20	1.5
10	0.9	4.1	1 4 (3)	1.5	5.9	-3.8	14.75	7.0
11	2.1	6.7	8 10 12(4)	5.2	10.9	0.0	14.75	3.5
12	1.4	5.6	14 (4)	6.3	11.1	1.7	15.90	0.0
13	0.5	2.9	2 11 (3)	5.9	14.9	-0.5	13.20	0.0
14	1.2	5.8	12 (5)	7.1	12.4	3.6	12.45	3.5
15	2.6	6.7	13 (8)	4.8	7.7	2.1	14.80	5.0
16	2.5	6.9	14 (6)	3.2	8.3	0.2	17.85	0.5
17	3.3	7.1	13 14 (6)	1.0	5.2	-1.3	11.50	2.0
18	4.7	7.9	14 (10)	1.1	2.7	-0.7	8.55	0.0
19	3.1	6.0	13 14 (9)	2.8	5.5	0.5	8.00	0.0
20	2.2	6.6	13 14 (7)	3.5	6.6	0.7	10.05	1.0
21	0.6	3.4	2 (3)	3.9	5.3	2.4	4.90	3.0
22	0.8	2.5	7 10 (3)	3.0	5.7	0.3	8.80	1.0
23	0.9	3.5	12 13 (4)	3.6	8.3	0.1	11.15	0.5
24	3.0	8.1	5 (9)	5.0	10.9	0.8	14.70	0.0
25	4.0	8.2	13 (9)	4.0	6.2	2.2	5.85	16.0
26	3.0	7.2	14 (9)	4.7	8.8	-1.5	18.55	0.0
27	2.6	7.5	6 (6)	4.6	11.5	-3.3	17.50	0.0
28	1.4	5.7	5 6 7(3)	5.6	9.3	3.9	6.90	1.5
29	1.8	6.1	12 (4)	4.6	9.5	0.4	10.65	0.0
30	0.6	3.0	10 16 (2)	4.2	12.4	-2.7	21.15	0.0
31	2.4	7.6	6 (7)	6.4	14.2	-1.9	8.80	0.0
TOTL							361.10	71.0
MEAN	1.9	5.6		3.5	7.9	-0.4	11.65	
MAX	4.7	8.2		7.1	14.9	3.9	21.15	
MIN	0.5	2.5		-0.1	2.7	-4.8	2.90	
DN	31	31		31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.5	7.0	14 (8)	1.1	6.1	-3.1	4.85	2.0
2	1.9	6.5	16 (5)	2.4	7.3	-2.5	17.30	0.0
3	1.7	4.8	4 6 (4)	4.2	7.3	2.4	9.50	1.0
4	1.2	3.4	14 (5)	4.4	7.2	2.0	5.25	1.0
5	0.8	2.6	13 15 (4)	1.7	4.1	0.0	4.25	2.5
6	0.9	3.3	15 (4)	-0.4	4.1	-4.4	11.70	0.5
7	0.9	3.6	15 (5)	0.7	5.5	-2.6	12.05	0.0
8	1.7	5.2	14 15 (6)	-0.3	4.1	-2.7	14.00	1.0
9	0.6	2.6	4 (3)	0.3	3.2	-3.1	13.05	7.5
10	1.5	4.1	5 (4)	2.7	6.1	0.2	14.70	0.5
11	2.0	6.3	10 11 (4)	6.3	10.5	3.3	15.30	3.0
12	0.9	4.4	11 13 14(3)	4.4	10.9	-0.4	14.70	0.0
13	0.7	2.8	2 4 (3)	7.5	14.0	3.7	13.15	2.0
14	1.7	3.8	12 (5)	7.3	12.3	4.4	12.60	6.0
15	2.5	6.1	13 (10)	3.6	6.8	0.8	15.30	1.0
16	2.1	5.7	14 (7)	2.7	7.3	-1.1	17.60	0.0
17	4.7	7.1	13 (10)	1.1	4.1	-0.5	11.45	2.0
18	3.6	7.0	14 (13)	1.4	2.6	0.0	8.20	0.0
19	2.6	5.5	13 (9)	2.9	5.2	0.9	8.55	0.5
20	1.8	5.3	13 14 (5)	4.2	6.4	3.0	9.45	2.0
21	0.8	2.1	13 (3)	3.0	5.3	0.4	4.85	2.5
22	0.7	2.2	2 7 8(2)	3.0	5.6	0.4	9.70	0.5
23	0.8	3.0	13 (5)	4.0	7.7	0.9	10.90	0.0
24	3.8	7.5	5 (9)	5.7	10.0	3.2	13.50	12.0
25	4.3	6.3	14 (10)	4.0	6.6	2.9	8.55	4.0
26	1.7	5.6	13 (6)	2.5	8.4	-2.9	18.20	0.0
27	3.2	6.5	6 (8)	7.2	11.3	4.0	16.00	0.0
28	1.4	3.6	5 7 (3)	5.0	8.9	2.0	8.30	1.5
29	1.4	4.5	12 (4)	3.0	9.0	-2.4	11.10	0.0
30	0.7	2.5	16 (3)	4.6	12.0	-1.1	19.55	0.0
31	2.5	6.5	6 (7)	8.6	12.9	3.0	9.70	0.0
TOTL							363.30	53.0
MEAN	1.9	4.8		3.5	7.5	0.3	11.72	
MAX	4.7	7.5		8.6	14.0	4.4	19.55	
MIN	0.6	2.1		-0.4	2.6	-4.4	4.25	
DN	31	31		31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

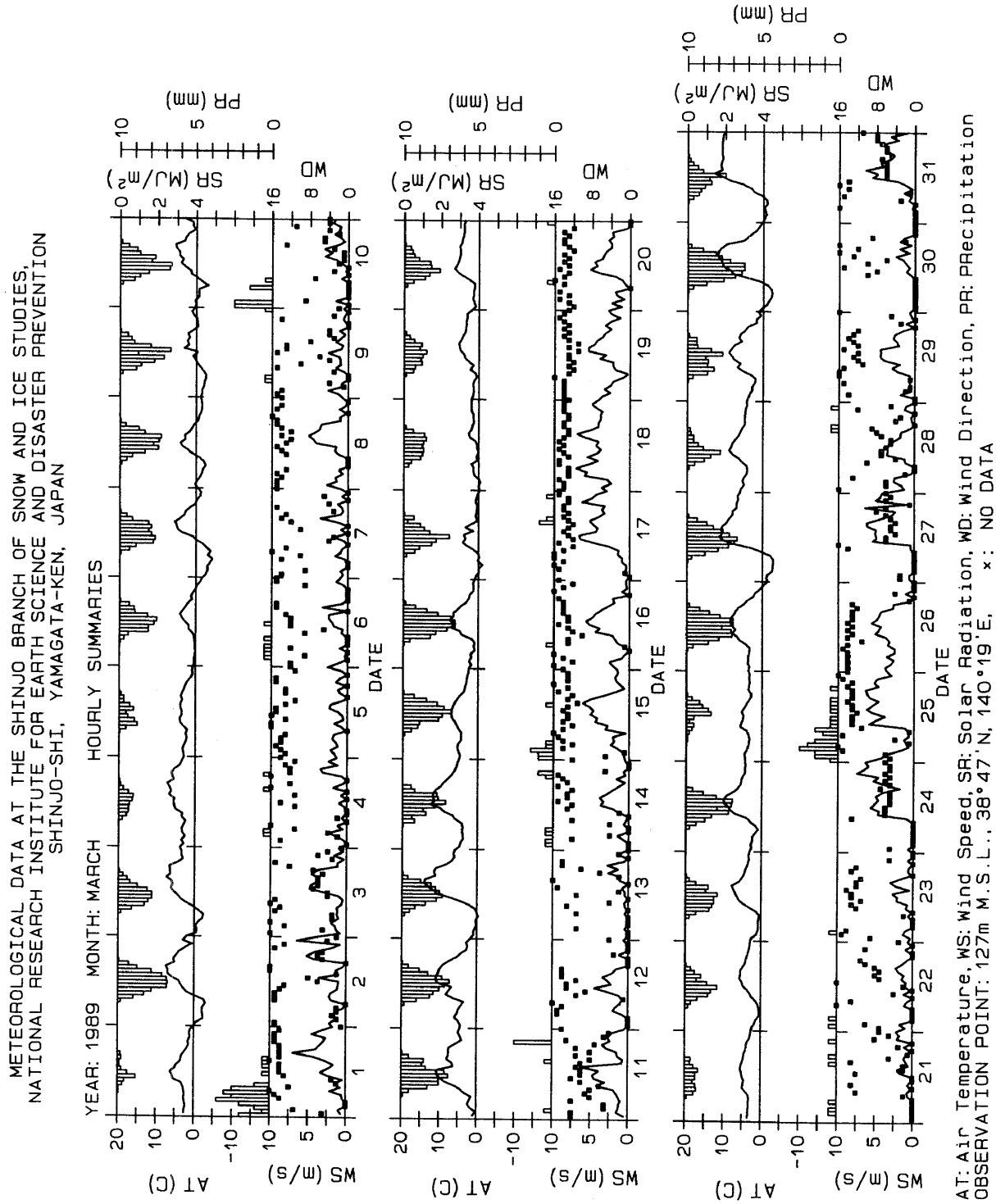

Fig.4.29 気象変化図

Seasonal variations in meteorological data.

Table 7.30　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

APRIL　1989

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	3.1	9.1	12 (5)	8.5	17.0	2.2	15.60	1.5
2	1.8	5.7	13 (6)	6.0	11.8	-0.8	18.45	4.0
3	1.3	5.6	13 (8)	7.7	20.4	-1.6	14.60	0.5
4	4.0	8.1	13 (12)	5.6	8.9	3.2	17.65	0.0
5	X	X	X (X)	X	X	X	X	X
6	X	X	X (X)	X	X	X	X	X
7	X	X	X (X)	X	X	X	X	X
8	0.3	2.6	8 11 16(2)	X	X	X	5.45	21.5
9	2.0	5.2	13 (7)	X	X	X	6.00	8.0
10	X	X	X (X)	X	X	X	X	0.0
11	0.6	4.0	14 (5)	6.6	8.9	3.7	3.55	23.0
12	1.1	2.4	3 15 16(5)	3.1	4.8	1.3	2.35	29.5
13	2.2	5.5	15 16 (5)	7.6	12.5	3.0	8.75	0.0
14	0.5	3.6	3 9 14(2)	9.7	20.7	1.5	20.95	0.0
15	0.4	2.4	14 (3)	12.7	20.8	5.7	14.70	0.0
16	1.2	4.9	12 (6)	12.9	16.9	10.1	4.25	7.0
17	6.0	10.0	12 (9)	8.7	12.7	6.4	2.55	14.5
18	1.6	4.3	14 (7)	10.2	13.9	6.6	4.80	1.5
19	1.8	5.2	14 (5)	11.6	16.7	5.0	21.80	0.0
20	1.4	6.3	14 (5)	9.9	20.3	1.7	22.10	0.0
21	0.9	3.3	13 (4)	8.8	16.5	0.8	25.60	0.0
22	0.8	4.0	15 (4)	11.9	22.1	1.1	21.85	0.0
23	1.0	5.0	5 (4)	15.3	21.1	12.4	11.55	4.5
24	1.4	4.3	15 (4)	12.1	14.6	7.8	7.40	11.0
25	3.6	7.0	15 (9)	6.3	8.0	3.8	10.20	4.0
26	1.1	3.0	16 (5)	7.9	13.2	3.4	20.30	0.0
27	1.5	9.7	1 5 16(3)	8.9	13.2	4.2	8.55	17.5
28	4.3	8.8	14 (11)	5.8	9.8	2.2	13.85	15.0
29	3.0	6.7	13 (8)	7.8	12.8	0.8	19.55	0.0
30	1.2	4.8	14 (4)	10.4	19.2	2.0	27.65	0.0
TOTL							350.05	163.0
MEAN	1.8	5.4		9.0	14.9	3.6	13.46	
MAX	6.0	10.0		15.3	22.1	12.4	27.65	
MIN	0.3	2.4		3.1	4.8	-1.6	2.35	
DN	26	26		24	24	24	26	27

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	3.4	6.4	12 (6)	7.8	16.6	1.7	14.90	5.5
2	1.4	5.3	13 (7)	4.6	11.4	-1.5	18.95	0.0
3	2.9	6.9	13 (11)	9.7	20.3	4.7	14.85	0.5
4	X	X	X (X)	X	X	X	X	X
5	X	X	X (X)	X	X	X	X	X
6	X	X	X (X)	X	X	X	X	X
7	X	X	X (X)	X	X	X	X	X
8	0.9	4.2	13 16 (3)	X	X	X	4.55	29.0
9	1.6	4.1	15 (6)	X	X	X	5.55	0.5
10	X	X	X (X)	X	X	X	X	0.0
11	0.9	2.9	14 (5)	5.4	8.8	3.4	2.95	25.5
12	1.1	2.1	16 (6)	3.4	7.4	1.3	1.95	27.0
13	1.7	4.6	15 (4)	7.0	12.1	1.7	11.15	0.0
14	0.4	1.7	3 9 14(2)	11.3	20.1	5.8	20.85	0.0
15	0.6	1.9	14 (3)	13.9	20.7	10.1	12.60	4.0
16	3.0	8.8	12 (7)	12.5	15.5	7.3	4.10	10.0
17	5.0	8.5	13 (8)	8.6	13.6	6.5	5.35	7.5
18	1.2	3.4	16 (5)	10.5	13.2	8.5	4.25	1.5
19	1.2	4.1	14 (5)	9.6	16.4	2.2	23.55	0.0
20	1.4	4.5	14 (5)	9.7	20.3	0.9	22.30	0.0
21	1.0	2.2	13 (4)	8.9	16.4	1.6	25.85	0.0
22	1.0	3.2	16 (4)	15.8	22.1	11.7	20.60	0.0
23	1.0	4.0	5 (4)	14.8	20.3	11.9	9.95	8.5
24	2.5	6.6	15 (7)	10.0	14.5	7.1	7.85	8.0
25	3.2	6.1	15 (8)	5.3	7.5	3.5	10.85	3.0
26	0.7	2.3	16 (6)	8.3	13.1	4.4	19.80	0.0
27	2.5	7.5	14 (7)	9.4	12.9	3.7	7.10	32.0
28	3.8	7.0	14 (9)	4.8	9.8	1.4	17.50	0.5
29	2.3	5.3	13 (6)	8.2	12.5	2.3	20.05	0.0
30	X	X	X (X)	X	X	X	X	X
TOTL							307.40	163.0
MEAN	1.9	4.7		9.1	14.8	4.6	12.81	
MAX	5.0	8.8		15.8	22.1	11.9	25.85	
MIN	0.4	1.7		3.4	7.4	-1.5	1.95	
DN	24	24		22	22	22	24	25

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

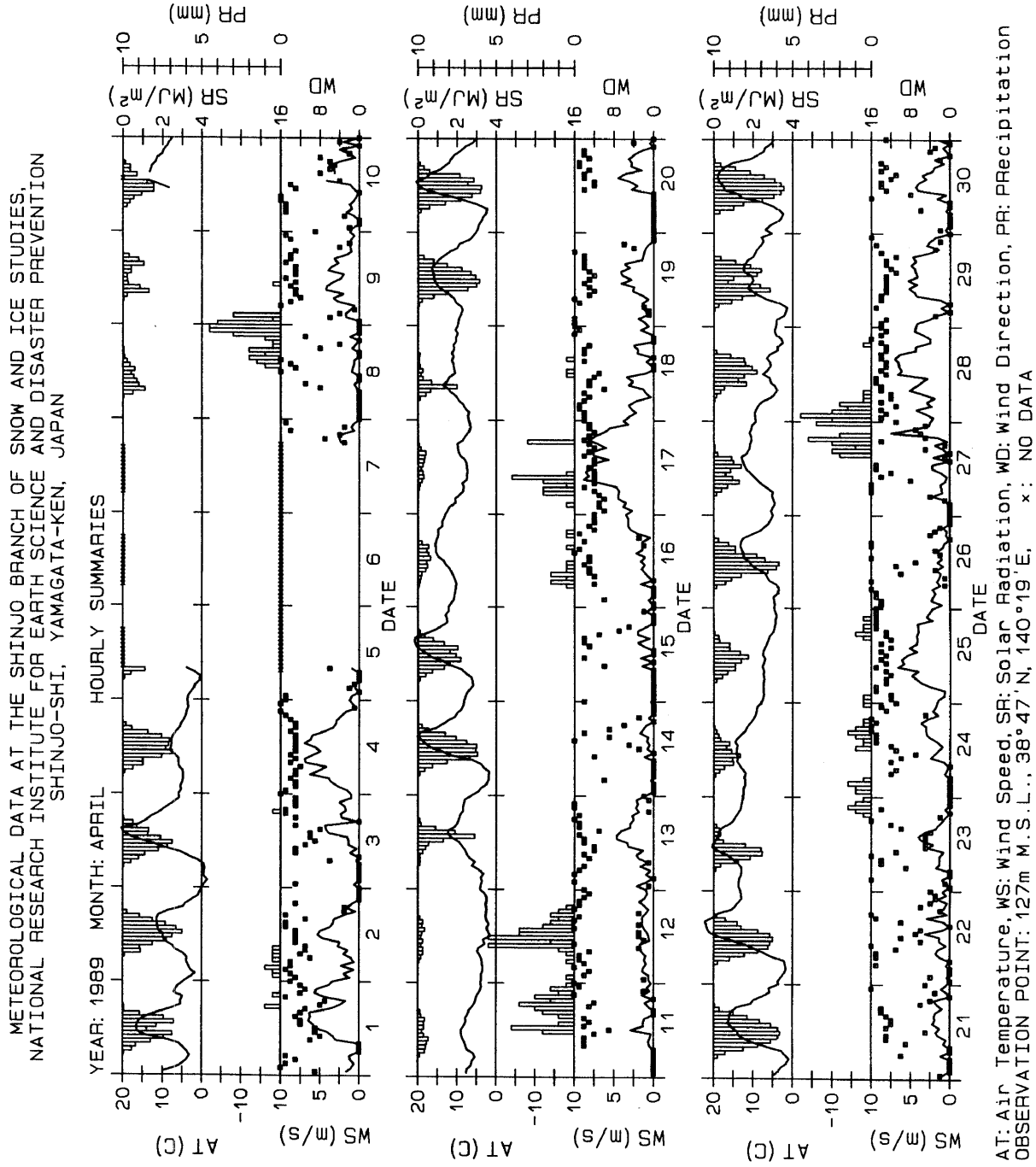

Fig.4.30 気象変化図

Seasonal variations in meteorological data.

Table 7.31　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

NOVEMBER 1989

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.8	4.6	15	(4)	12.7	16.4	10.5	3.30	3.0
2	2.1	5.2	13	(8)	9.9	12.6	4.2	5.65	3.5
3	0.5	3.1	2	(2)	6.9	15.9	0.6	12.45	0.0
4	0.2	1.7	4	(2)	8.7	15.3	4.0	7.45	0.0
5	0.7	5.5	6	(2)	11.6	15.7	7.4	5.90	0.0
6	0.9	4.8	1	(6)	13.1	16.3	9.4	5.10	0.0
7	0.5	2.8	1	(6)	12.9	15.3	10.9	2.05	12.5
8	1.0	5.2	15	(4)	12.7	17.0	8.4	6.30	0.0
9	0.4	2.5	13 14	(2)	13.3	14.7	12.0	1.55	7.0
10	1.0	4.0	12 15	(3)	10.4	15.0	3.1	10.10	0.0
11	0.9	5.5	5	(4)	7.8	14.8	1.3	10.30	0.0
12	2.2	6.8	5	(7)	11.5	16.9	3.9	8.10	0.0
13	0.9	5.2	12 13	(4)	12.7	14.8	10.4	2.90	3.5
14	3.2	6.5	14	(8)	5.7	11.4	3.5	1.95	2.0
15	2.3	5.5	16	(4)	4.8	9.0	2.7	11.60	0.5
16	0.3	1.7	10	(2)	6.8	11.8	3.4	6.90	0.0
17	1.0	5.4	5 6	(4)	7.3	12.8	3.7	5.85	0.0
18	0.3	1.7	13	(3)	7.8	11.5	5.0	5.15	1.0
19	3.4	9.2	12	(8)	5.4	8.3	2.1	2.85	41.5
20	3.5	8.6	13	(10)	6.1	8.1	3.7	3.30	6.5
21	2.0	4.7	15	(7)	8.6	11.5	6.4	8.55	0.0
22	0.8	3.5	14	(4)	7.6	10.8	4.0	3.45	23.0
23	0.7	3.8	1 12 13	(2)	5.5	9.5	1.8	4.85	0.0
24	1.1	5.7	9 15	(3)	6.1	11.1	2.7	6.50	4.0
25	0.9	4.6	10	(3)	6.5	11.4	4.0	6.65	0.5
26	0.4	2.8	1	(3)	5.6	12.2	2.1	6.55	0.5
27	0.3	2.1	13	(3)	3.0	6.6	1.2	3.95	0.0
28	0.7	4.0	12	(5)	5.0	9.6	1.2	3.85	4.0
29	1.2	3.7	13 14 15	(4)	2.3	5.1	0.0	3.45	25.5
30	1.8	7.2	14	(5)	1.2	3.5	0.0	3.05	23.5
TOTL								169.60	162.0
MEAN	1.2	4.6			8.0	12.2	4.5	5.65	
MAX	3.5	9.2			13.3	17.0	12.0	12.45	
MIN	0.2	1.7			1.2	3.5	0.0	1.55	
DN	30	30			30	30	30	30	30

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.2	3.6	14	(4)	12.2	14.9	10.4	3.40	6.5
2	1.5	4.1	13	(6)	6.6	12.2	0.7	6.10	0.0
3	0.4	2.7	2 4	(2)	7.9	15.9	4.1	12.05	0.0
4	0.1	0.6	4 9 14	(1)	10.1	15.1	6.9	7.70	0.0
5	1.2	4.7	1	(5)	12.9	15.6	9.8	5.95	0.0
6	0.4	1.1	15	(3)	13.0	15.9	10.9	4.50	0.0
7	0.7	1.9	1	(6)	12.5	15.2	8.6	2.70	12.5
8	0.8	5.0	15	(3)	13.6	16.5	12.1	5.70	0.0
9	0.6	1.7	13 15	(4)	13.1	14.5	11.0	1.70	7.0
10	0.6	3.2	12	(4)	6.7	14.6	1.5	10.75	0.0
11	0.8	3.2	5	(4)	9.2	14.2	4.2	11.05	0.0
12	2.5	6.5	5	(7)	13.6	16.6	10.6	6.60	0.0
13	1.9	4.9	13	(6)	10.6	14.1	5.0	2.70	5.5
14	2.4	5.1	15	(8)	4.3	6.4	2.9	3.25	0.5
15	1.8	5.0	5	(3)	5.3	8.8	3.1	10.35	0.0
16	0.3	1.2	6 10	(2)	6.9	11.6	4.0	7.10	0.0
17	1.3	4.4	5 6	(3)	8.3	12.7	5.2	6.10	1.0
18	0.7	2.5	13	(3)	7.8	11.2	5.2	4.60	13.0
19	4.8	7.8	12 13	(6)	4.8	6.9	2.7	3.35	34.0
20	2.7	5.5	15	(8)	7.1	9.5	3.8	4.00	1.0
21	1.1	3.8	13 14	(4)	8.0	11.2	4.6	8.00	2.0
22	0.5	2.5	6	(3)	6.6	10.5	2.1	3.55	21.0
23	1.1	3.4	15 16	(3)	5.7	9.2	2.7	4.65	3.5
24	1.1	4.5	15	(3)	6.3	10.4	4.0	6.60	0.5
25	0.7	3.2	10	(4)	6.4	11.1	4.1	6.40	1.0
26	0.4	2.5	1 13	(3)	4.6	12.1	1.3	6.30	0.0
27	0.2	0.8	12 13	(2)	3.1	6.5	1.4	4.15	0.0
28	1.0	2.4	12	(5)	5.6	9.3	2.5	3.85	15.0
29	1.0	3.0	15	(4)	1.2	4.6	0.0	3.20	25.0
30	2.6	6.7	14	(6)	1.7	3.2	0.7	3.15	19.5
TOTL								169.50	168.5
MEAN	1.2	3.6			7.9	11.7	4.9	5.65	
MAX	4.8	7.8			13.6	16.6	12.1	12.05	
MIN	0.1	0.6			1.2	3.2	0.0	1.70	
DN	30	30			30	30	30	30	30

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

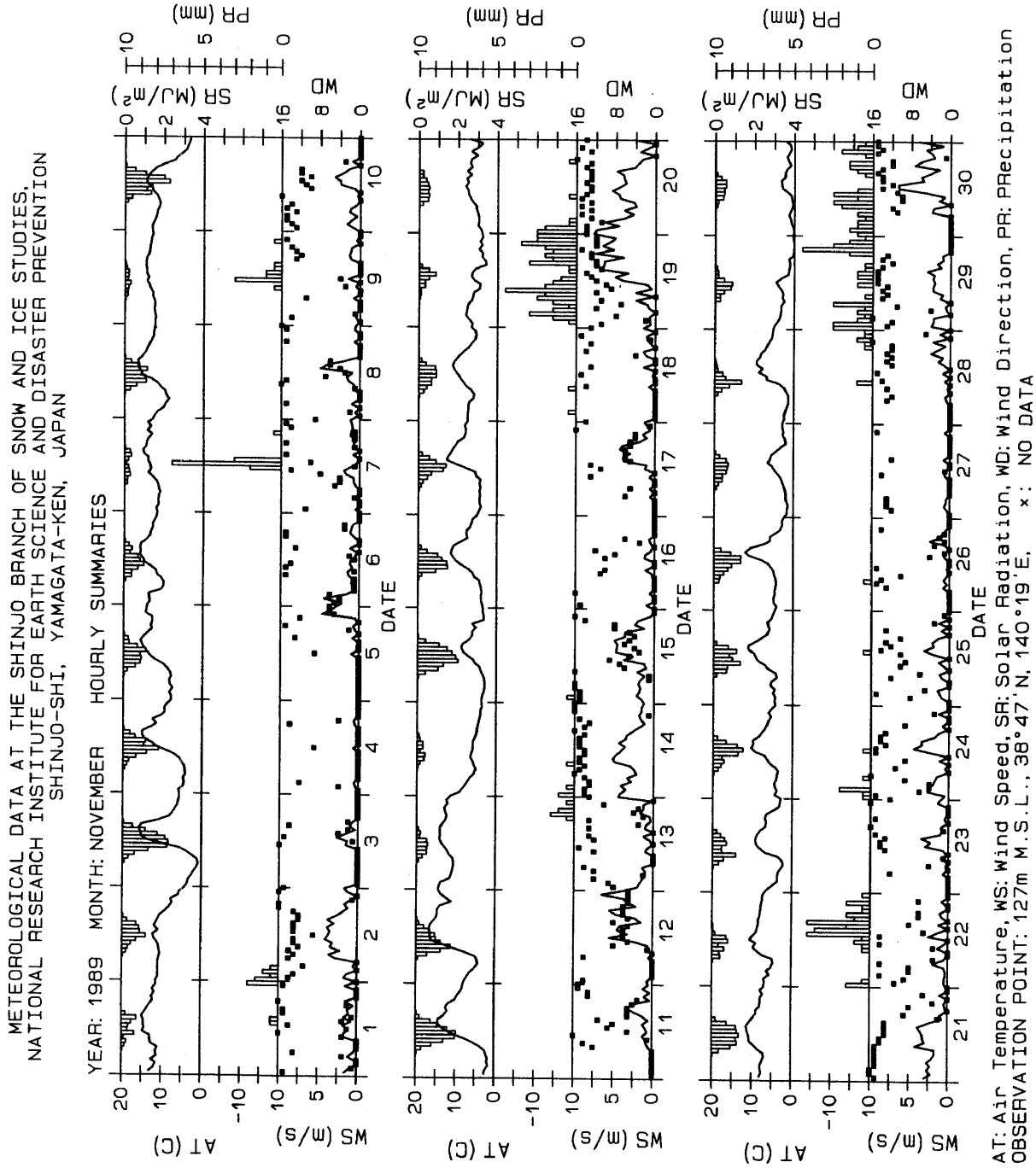

Fig.4.31 気象変化図

Seasonal variations in meteorological data.

Table 7.32　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

DECEMBER 1989

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST	WD(1-16) FREQ	WD(1-16) NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.4	7.1	13	14	(5)	3.7	6.7	0.4	4.65	7.5
2	1.5	5.6	6		(6)	6.1	10.0	2.2	7.45	6.5
3	1.4	5.0	6		(3)	8.3	12.2	2.8	2.25	8.0
4	1.5	5.4	9	13	(5)	6.2	14.6	1.2	6.30	5.0
5	2.4	6.2	14	16	(6)	4.2	6.1	2.7	5.05	0.5
6	1.5	4.6	14		(6)	3.8	5.6	2.6	3.10	1.0
7	1.9	7.5	6		(4)	5.2	10.2	0.5	7.90	2.0
8	2.0	6.4	11		(5)	3.7	6.6	-0.1	2.35	18.5
9	2.2	7.1	12	14	(5)	-0.3	0.9	-1.5	2.50	11.5
10	2.7	7.0	14		(8)	1.0	3.3	-1.8	5.75	10.5
11	1.7	6.2	14	15	(5)	2.5	5.2	-1.4	4.30	12.0
12	3.5	7.6	13	14	(7)	1.0	3.1	-1.3	3.90	2.5
13	1.9	5.5	16		(5)	0.0	2.9	-3.8	5.05	1.5
14	0.3	2.7	14		(2)	-1.3	0.7	-5.3	1.70	18.0
15	2.1	6.3	13	15	(5)	2.9	6.3	0.0	6.65	5.0
16	1.4	5.2	14	16	(4)	5.1	8.7	2.9	4.35	3.0
17	0.6	3.1	4	11	(3)	3.9	7.2	2.5	5.20	5.0
18	3.4	7.5	15		(8)	0.7	3.8	-3.5	6.35	0.5
19	3.9	7.7	14	15	(7)	-3.2	-0.8	-5.8	7.10	1.5
20	3.5	7.6	15		(9)	-0.9	0.8	-3.0	4.30	5.0
21	0.4	2.4	15		(4)	-0.8	1.8	-6.3	6.30	0.0
22	0.6	2.9	3		(4)	1.9	5.5	-2.0	7.00	0.0
23	1.0	2.8	15		(5)	1.3	4.7	-2.7	7.85	0.0
24	0.2	1.7	3		(3)	-0.5	4.1	-4.1	6.85	0.0
25	0.2	2.4	2	3	(2)	1.6	7.4	-1.5	6.60	0.5
26	2.1	6.3	16		(5)	3.1	9.8	-2.8	6.85	0.0
27	1.4	4.6	15		(4)	3.5	6.7	-0.5	4.45	10.5
28	1.0	5.4	14		(3)	0.2	2.4	-0.9	2.35	11.0
29	0.4	2.4	9		(4)	0.3	1.3	-1.5	3.80	4.5
30	1.2	3.9	15		(5)	0.3	2.8	-2.0	5.00	0.5
31	0.6	4.1	9		(3)	-1.0	0.1	-4.2	1.25	25.0
TOTL									154.50	177.0
MEAN	1.6	5.2				2.0	5.2	-1.2	4.98	
MAX	3.9	7.7				8.3	14.6	2.9	7.90	
MIN	0.2	1.7				-3.2	-0.8	-6.3	1.25	
DN	31	31				31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST	WD(1-16) FREQ	WD(1-16) NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.0	6.1	14	15	(5)	4.5	6.4	2.4	4.75	1.0
2	1.6	4.5	6		(5)	7.6	9.9	5.7	7.15	13.0
3	1.0	2.7	6		(3)	5.9	11.4	1.2	2.65	1.5
4	2.3	5.1	9		(5)	7.0	14.4	2.9	6.05	5.0
5	1.9	5.7	14	16	(4)	4.2	5.7	2.9	5.15	1.5
6	1.1	3.9	14		(6)	3.1	5.5	0.9	3.10	0.0
7	2.2	6.1	10		(5)	6.5	10.0	4.0	7.70	12.0
8	1.8	4.7	13		(7)	1.7	6.5	-0.6	2.45	10.0
9	2.3	5.3	14		(7)	-0.5	0.9	-1.8	2.80	10.0
10	2.2	5.6	14	15	(6)	1.4	3.0	-0.9	5.95	12.0
11	3.2	5.8	13	14	(6)	3.1	4.5	1.8	3.95	10.5
12	2.7	5.6	14		(6)	0.2	2.9	-1.2	4.05	4.0
13	0.9	4.3	2	14	15(3)	-1.4	2.9	-4.5	4.65	0.0
14	0.2	2.0	12	14	16(1)	0.1	1.0	-1.4	2.05	22.5
15	3.2	6.1	14		(7)	4.5	6.2	3.2	6.30	0.5
16	0.9	1.9	1	3	14(2)	4.5	7.9	2.5	4.25	4.0
17	1.4	3.2	15		(5)	3.8	6.9	1.5	5.80	4.5
18	4.0	5.6	14	15	(7)	-1.7	3.0	-4.1	6.40	0.5
19	3.8	6.8	15		(9)	-2.4	0.5	-4.4	6.75	3.5
20	2.3	5.9	15		(7)	-1.7	0.1	-5.5	4.65	2.5
21	0.6	2.1	16		(3)	0.8	2.5	-2.2	6.20	0.0
22	1.0	2.7	15		(4)	2.2	5.3	0.6	6.80	0.0
23	0.6	2.4	1	3	10(2)	-0.6	4.4	-4.1	7.80	0.0
24	0.2	1.0	3		(3)	0.7	3.8	-2.0	7.05	0.5
25	0.4	2.4	16		(3)	1.0	6.7	-2.7	6.40	0.0
26	2.2	5.3	6	8	(4)	5.5	9.4	-0.5	6.65	1.5
27	1.8	3.9	15		(6)	1.7	6.2	-0.7	4.60	10.0
28	0.2	1.8	2		(2)	0.4	2.0	0.0	2.15	14.0
29	0.8	2.6	15		(5)	0.3	1.3	-1.0	4.65	0.5
30	0.8	3.6	9	10	(3)	0.0	2.4	-1.5	4.25	2.0
31	0.7	4.0	9		(3)	-1.5	0.0	-3.7	1.15	35.5
TOTL									154.30	182.5
MEAN	1.6	4.2				2.0	5.0	-0.4	4.98	
MAX	4.0	6.8				7.6	14.4	5.7	7.80	
MIN	0.2	1.0				-2.4	0.0	-5.5	1.15	
DN	31	31				31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

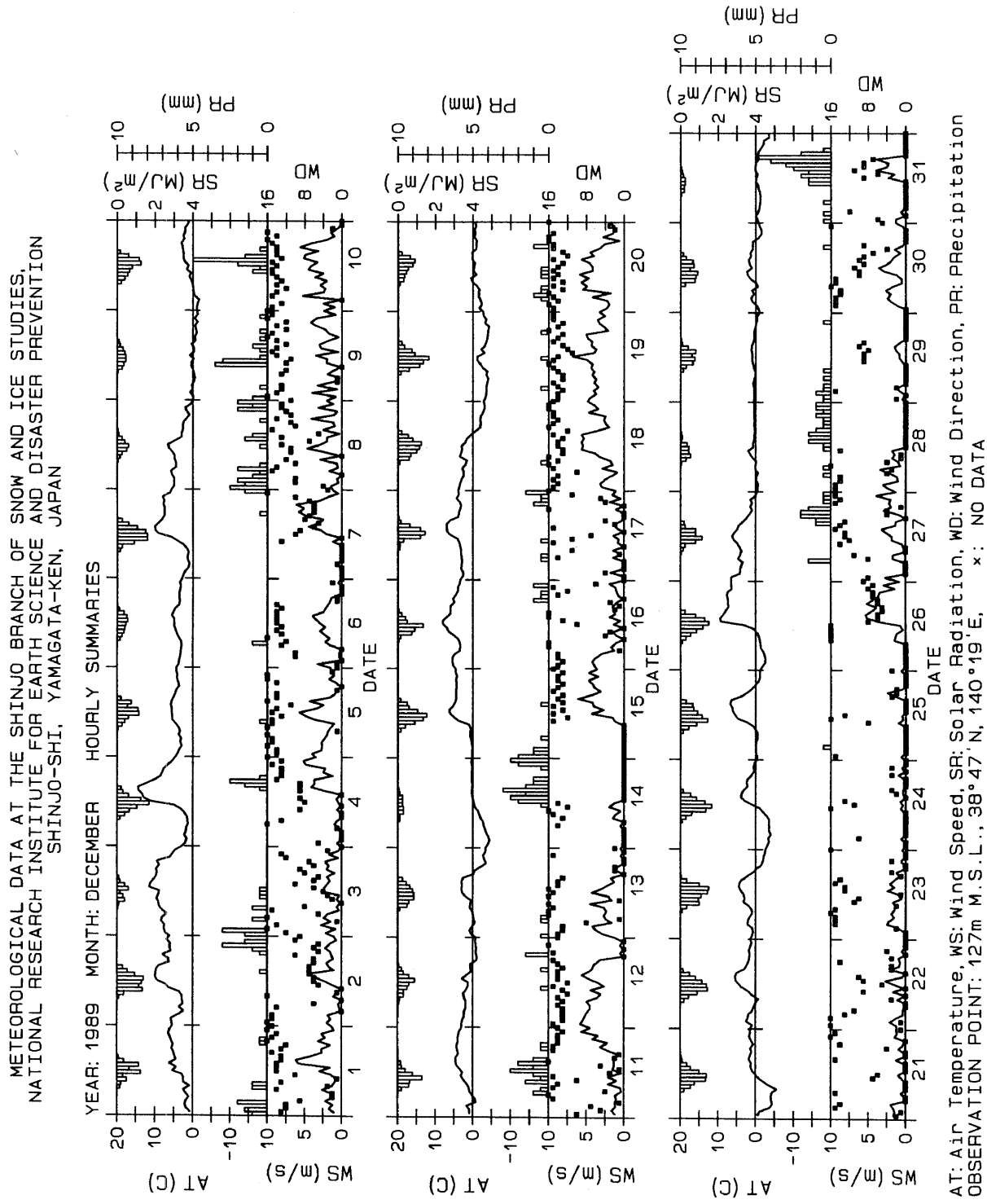

Fig.4.32 気象変化図

Seasonal variations in meteorological data.

Table 7.33 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

JANUARY 1990

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.8	4.4	11 12 (3)	-1.3	1.1	-3.6	2.95	22.5
2	0.9	4.2	7 (6)	-0.2	1.0	-1.6	5.05	22.5
3	0.2	2.4	1 5 11(1)	-1.1	0.2	-3.9	5.65	4.0
4	1.9	5.8	13 15 16(5)	-1.6	1.2	-6.2	8.55	3.0
5	1.6	5.5	16 (4)	0.6	3.4	-2.4	4.75	4.0
6	2.4	8.4	7 12 (4)	1.2	4.1	-1.7	3.05	12.0
7	2.4	5.4	13 (6)	-1.6	-0.4	-2.7	4.45	9.0
8	1.2	3.8	1 (4)	0.9	4.8	-4.1	7.20	0.0
9	0.3	1.9	2 10 13(2)	-3.4	-1.3	-6.4	4.15	0.0
10	0.8	6.5	10 16 (3)	-0.7	7.8	-5.0	2.90	5.0
11	2.7	8.4	15 (6)	2.9	7.3	0.4	5.50	2.5
12	0.6	3.7	3 4 15(3)	1.0	5.1	-2.0	8.35	3.0
13	2.9	7.0	13 14 15(7)	-1.4	1.3	-4.1	5.55	6.5
14	1.2	4.9	15 16 (4)	-2.8	-0.2	-4.4	8.15	4.0
15	0.9	4.1	14 (3)	-3.0	-1.3	-7.4	6.15	8.0
16	0.4	2.0	1 (3)	-7.2	-2.4	-12.5	6.95	0.0
17	1.0	5.7	14 (4)	-5.6	0.7	-13.2	9.65	0.0
18	1.0	5.1	5 (3)	-1.6	3.9	-7.9	3.60	13.5
19	1.3	4.5	16 (6)	0.9	2.8	-1.8	4.45	0.5
20	2.2	5.9	15 (9)	-4.2	-1.4	-9.7	8.65	0.5
21	0.5	3.4	14 (4)	-6.1	-3.6	-13.2	6.90	9.5
22	1.4	7.1	6 (5)	-2.4	2.5	-9.7	8.90	14.0
23	0.9	4.0	13 (5)	-6.5	-2.5	-16.9	8.95	7.5
24	1.1	5.1	16 (5)	-7.0	-3.9	-11.6	X	4.0
25	2.6	6.7	13 (7)	-6.3	-5.2	-7.0	4.10	14.5
26	2.5	6.1	14 (9)	-6.1	-3.8	-7.4	6.95	9.0
27	2.2	6.8	12 13 (4)	-4.9	-2.4	-6.1	8.55	11.0
28	1.3	5.2	13 (5)	-4.0	-1.1	-7.2	8.50	4.5
29	0.1	1.9	2 3 (1)	-5.0	-3.1	-8.5	4.80	6.5
30	2.7	7.5	14 (7)	-2.7	1.0	-4.9	7.35	1.5
31	0.1	1.9	2 16 (1)	-4.6	-2.1	-8.6	10.60	0.5
TOTL							191.30	203.0
MEAN	1.4	5.0		-2.7	0.4	-6.5	6.38	
MAX	2.9	8.4		2.9	7.8	0.4	10.60	
MIN	0.1	1.9		-7.2	-5.2	-16.9	2.90	
DN	31	31		31	31	31	30	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.9	3.7	11 12 (3)	-0.8	0.2	-1.4	2.90	28.0
2	0.9	3.3	7 (6)	-0.3	0.8	-2.8	5.25	6.5
3	0.5	2.3	14 (2)	-1.7	0.0	-5.7	5.90	2.5
4	2.4	5.4	16 (6)	-0.9	1.4	-2.7	8.55	3.5
5	2.1	5.8	7 (4)	1.5	3.3	0.0	4.80	7.5
6	2.1	3.5	12 (5)	-0.2	3.5	-2.6	2.65	16.0
7	2.1	3.7	15 (6)	-0.8	1.6	-2.6	4.90	1.0
8	0.7	2.5	13 14 (3)	-0.8	4.4	-5.2	6.95	0.0
9	0.3	1.2	2 6 (2)	-2.9	-1.4	-5.0	3.95	0.0
10	2.7	6.9	13 (4)	2.2	7.2	-1.3	2.95	7.0
11	1.1	4.5	15 (6)	1.1	4.2	-1.7	6.00	0.5
12	1.3	3.6	15 (6)	1.3	4.8	-0.6	8.35	4.0
13	3.1	6.0	14 (7)	-2.8	0.2	-4.0	5.30	6.5
14	0.2	2.1	12 14 15(1)	-2.7	-0.6	-3.9	8.10	5.5
15	1.2	3.8	15 (4)	-5.3	-1.6	-10.6	6.20	5.5
16	0.3	1.1	1 14 (2)	-7.8	-2.8	-12.3	7.15	0.0
17	1.1	5.3	14 15 16(3)	-3.8	0.5	-6.9	9.30	0.0
18	1.4	3.8	5 15 16(3)	1.2	3.7	-4.3	3.95	14.0
19	1.4	3.6	13 15 (4)	-1.0	2.5	-4.0	4.30	0.0
20	1.5	5.6	15 (5)	-6.4	-2.2	-12.4	9.05	1.5
21	0.5	1.8	14 (3)	-5.0	-3.7	-8.3	7.25	10.0
22	1.7	5.9	6 14 (5)	-1.7	2.2	-4.4	8.45	19.0
23	0.7	3.2	3 13 (6)	-8.9	-3.7	-15.3	8.65	2.5
24	1.5	4.3	1 15 16(3)	-5.8	-4.3	-7.0	X	7.0
25	3.4	5.4	13 (11)	-6.4	-5.3	-7.1	4.20	13.0
26	1.6	5.7	14 (6)	-5.6	-4.6	-6.2	6.90	11.0
27	2.1	5.2	13 (6)	-4.9	-2.5	-6.2	8.95	10.5
28	1.0	4.4	3 (3)	-4.3	-1.2	-7.8	8.25	0.0
29	1.1	5.9	14 (3)	-3.2	0.5	-5.5	4.85	8.0
30	1.5	6.9	14 (4)	-4.3	-1.9	-6.7	7.50	0.5
31	0.1	0.9	2 16 (1)	-4.5	-2.2	-6.1	10.35	1.0
TOTL							191.85	192.0
MEAN	1.4	4.1		-2.8	0.1	-5.5	6.39	
MAX	3.4	6.9		2.2	7.2	0.0	10.35	
MIN	0.1	0.9		-8.9	-5.3	-15.3	2.65	
DN	31	31		31	31	31	30	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

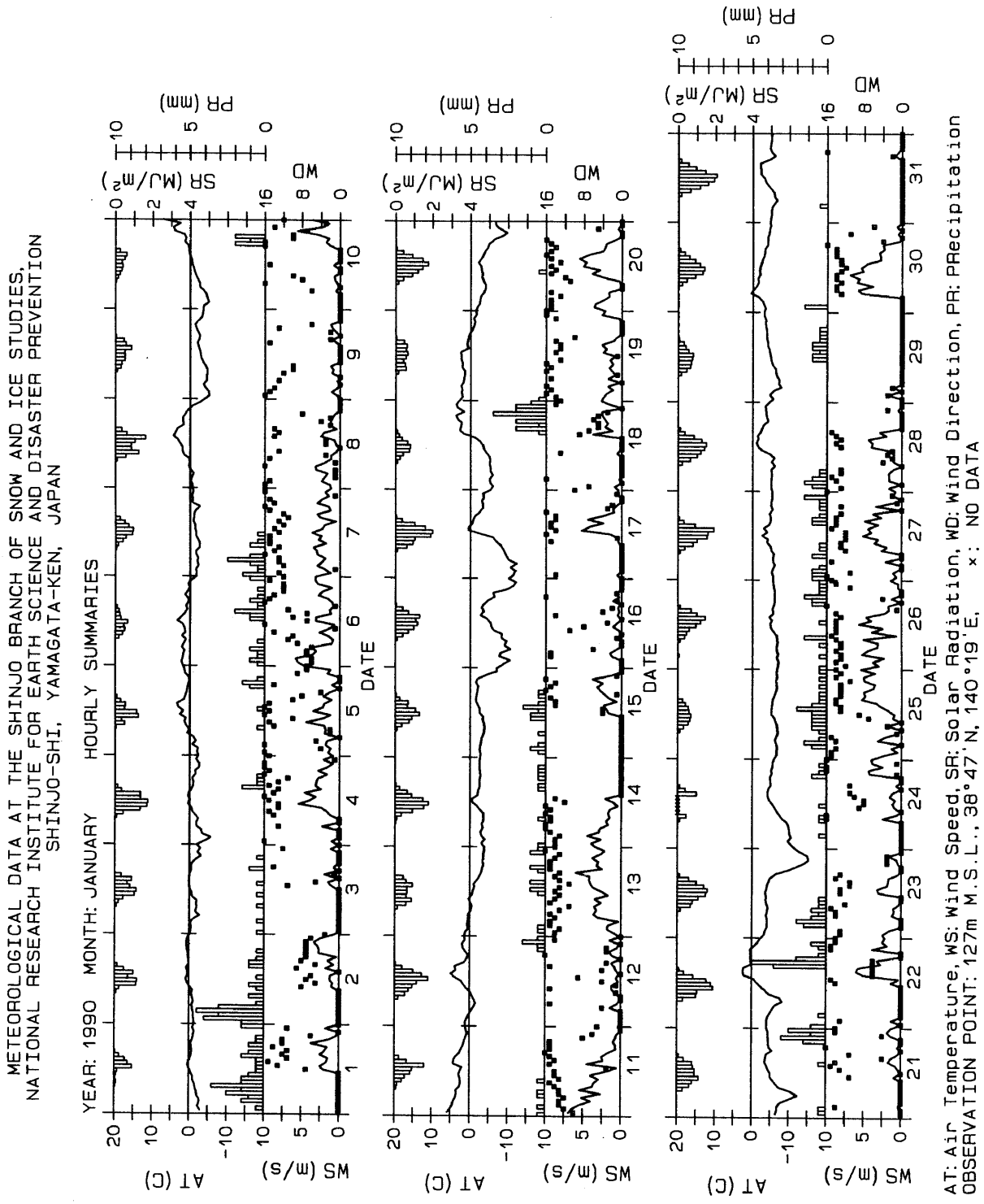

Fig.4.33 気象変化図

Seasonal variations in meteorological data.

Table 7.34　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

FEBRUARY 1990

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.3	2.1	15 16	(2)	-4.7	-1.1	-10.0	8.45	1.0
2	0.3	2.3	2	(3)	-5.9	0.0	-12.5	12.35	0.0
3	0.2	1.9	7	(2)	-5.3	0.2	-12.7	9.15	2.0
4	0.4	2.1	16	(4)	-1.5	2.2	-8.0	10.60	0.0
5	0.6	2.2	12	(3)	-2.4	3.3	-8.7	10.90	0.0
6	0.4	1.8	2	(4)	-1.3	3.5	-7.2	9.85	0.0
7	0.3	1.9	16	(3)	0.4	4.1	-4.0	10.75	0.0
8	1.1	4.0	13 15	(5)	0.0	1.5	-5.0	7.20	0.0
9	0.6	4.1	6	(3)	-2.3	3.3	-8.2	13.30	0.0
10	0.8	5.1	1	(6)	-1.5	5.2	-8.3	11.65	0.0
11	1.1	4.8	1 2 3	(3)	2.7	6.5	0.4	2.95	17.0
12	2.1	6.1	13	(8)	1.3	5.7	-0.6	3.95	18.5
13	4.1	8.0	14	(9)	0.5	2.9	-1.3	9.50	0.0
14	1.8	6.6	5	(4)	0.5	2.9	-2.8	11.35	0.0
15	0.4	5.4	13	(2)	0.7	2.5	-0.9	5.30	0.0
16	0.1	1.4	16	(2)	1.6	3.7	0.2	9.15	3.0
17	1.7	5.7	13 14	(6)	2.7	6.0	0.1	11.55	0.5
18	1.1	6.0	3	(4)	2.8	6.5	-1.6	13.35	0.0
19	6.0	9.8	5	(9)	3.6	5.3	1.3	10.95	1.0
20	2.0	9.3	16	(4)	5.0	7.4	3.1	3.15	17.5
21	2.1	6.0	14	(5)	4.6	6.6	3.0	7.65	9.0
22	0.8	3.4	15	(5)	3.2	7.1	-1.0	13.15	0.5
23	0.7	4.0	4 6 7	(2)	3.1	8.3	-1.0	12.65	1.0
24	0.3	1.7	13 14 16	(2)	3.8	5.8	1.8	2.90	10.0
25	0.3	3.1	3	(2)	4.1	6.3	2.4	5.75	2.5
26	0.2	1.5	2 5	(2)	3.9	6.8	1.5	8.65	0.0
27	1.2	4.0	14	(6)	1.6	4.6	-0.2	10.25	0.0
28	1.2	4.0	15	(8)	0.7	4.6	-3.2	13.55	0.0
TOTL								259.95	83.5
MEAN	1.1	4.2			0.8	4.3	-3.0	9.28	
MAX	6.0	9.8			5.0	8.3	3.1	13.55	
MIN	0.1	1.4			-5.9	-1.1	-12.7	2.90	
DN	28	28			28	28	28	28	28

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.4	2.1	15 16	(2)	-6.2	-1.5	-11.5	9.40	0.0
2	0.2	1.6	2	(3)	-6.4	0.0	-12.7	11.60	0.0
3	0.1	1.1	7	(2)	-2.0	0.2	-8.4	9.30	2.0
4	0.6	1.5	16	(4)	-3.2	2.2	-7.1	10.75	0.0
5	0.7	1.7	4	(3)	-2.0	2.9	-6.9	10.70	0.0
6	0.3	1.3	2	(2)	-0.1	3.3	-3.0	9.75	0.0
7	0.6	2.9	16	(4)	1.5	4.1	-0.1	10.55	0.0
8	0.8	2.9	15	(4)	-2.2	1.4	-7.4	8.15	0.0
9	0.9	3.4	6	(3)	-2.8	3.0	-8.1	13.10	0.0
10	0.9	3.6	1	(6)	1.3	4.7	-3.1	10.65	8.5
11	1.7	4.3	13 14 15	(4)	3.5	5.7	1.1	3.20	14.0
12	3.4	5.6	13	(9)	0.0	1.4	-0.9	4.90	13.0
13	3.1	6.7	14	(7)	0.2	2.6	-2.7	9.05	0.0
14	1.5	5.3	5	(4)	0.8	2.8	-0.8	11.00	0.0
15	0.2	0.9	13	(2)	1.1	2.3	0.2	6.05	1.5
16	0.1	1.3	1 13 15	(1)	1.7	3.4	0.3	8.60	1.5
17	2.0	4.2	14	(6)	3.3	5.4	1.5	11.20	0.5
18	3.0	6.5	5	(5)	3.0	6.2	-1.1	14.00	0.5
19	5.4	8.8	6	(8)	4.3	7.0	3.4	10.10	3.0
20	1.4	4.8	12	(5)	5.1	6.7	4.1	3.30	18.5
21	1.4	4.0	14	(7)	3.6	5.7	1.6	8.15	6.0
22	1.0	3.0	15	(4)	2.3	7.0	-0.9	13.90	0.0
23	0.5	2.7	6 7	(2)	4.0	7.8	2.0	11.20	8.5
24	0.5	1.7	14 16	(3)	4.1	5.8	2.5	3.20	2.5
25	0.3	2.5	3	(3)	3.8	6.1	2.0	6.30	2.5
26	0.2	1.3	2 11 14	(2)	3.2	6.7	0.0	7.90	0.0
27	1.5	3.5	12 14 15	(5)	1.3	4.6	-0.4	10.90	0.0
28	0.9	3.3	15	(6)	-0.8	4.4	-5.4	14.55	0.0
TOTL								261.45	82.5
MEAN	1.2	3.3			0.8	4.0	-2.2	9.34	
MAX	5.4	8.8			5.1	7.8	4.1	14.55	
MIN	0.1	0.9			-6.4	-1.5	-12.7	3.20	
DN	28	28			28	28	28	28	28

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

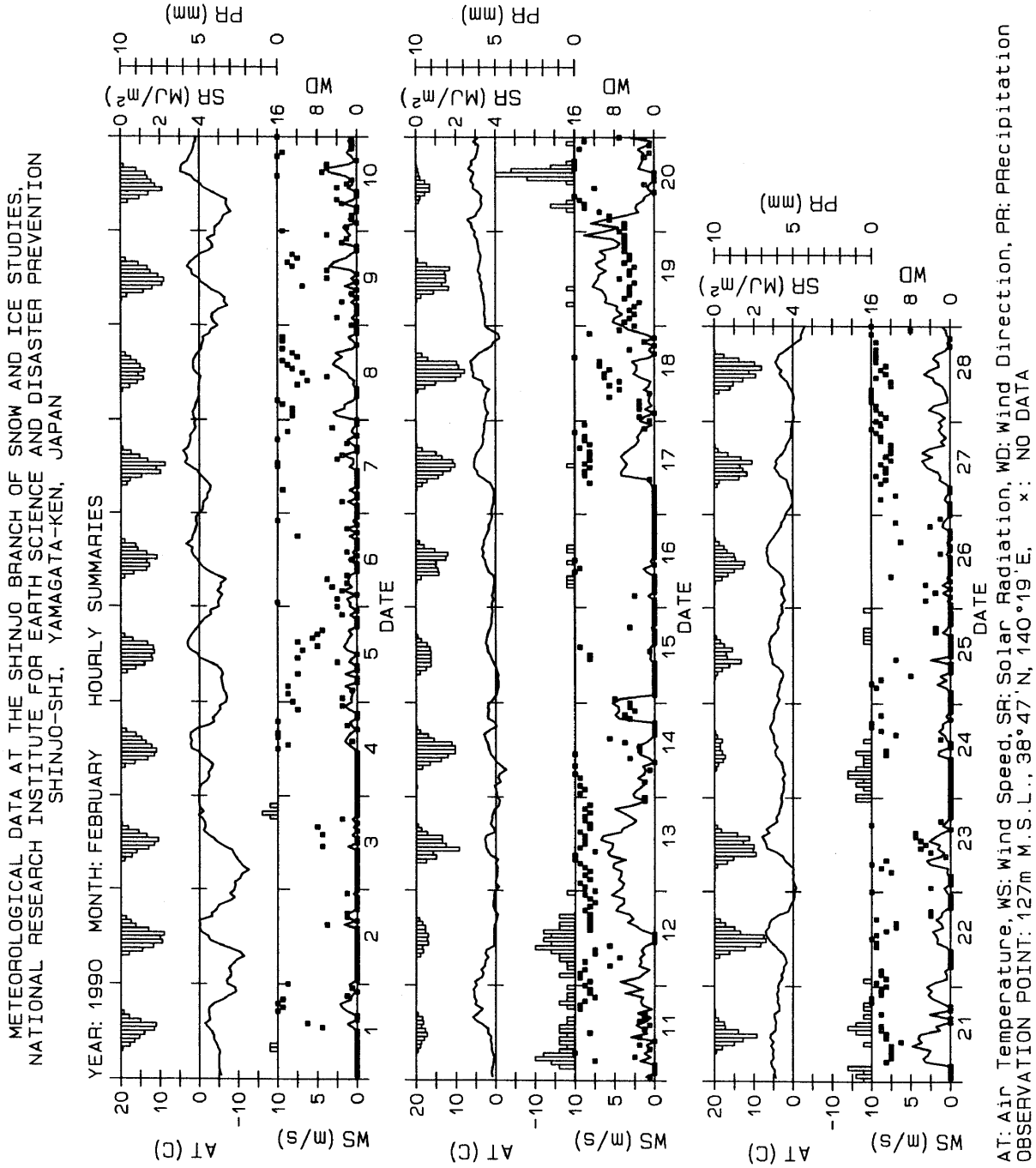

Fig.4.34 気象変化図

Seasonal variations in meteorological data.

Table 7.35 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

MARCH 1990

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.5	2.2	10	(3)	1.0	9.0	-5.4	17.15	0.0
2	2.5	6.8	7	(7)	3.3	5.7	0.2	7.60	0.0
3	2.8	6.1	5	(8)	3.7	5.4	2.2	4.30	0.5
4	1.7	6.3	15	(4)	4.3	8.3	1.8	11.95	5.5
5	1.9	5.7	12 13 14	(4)	2.6	4.4	0.1	2.70	4.0
6	1.5	5.4	13	(5)	2.6	7.4	-1.5	18.40	2.0
7	1.3	5.2	13 15	(4)	0.5	5.4	-2.9	5.50	2.0
8	3.0	6.9	15 16	(7)	0.0	2.3	-1.6	9.10	3.0
9	3.2	6.8	13	(8)	4.7	8.8	1.2	13.45	0.0
10	1.4	5.1	12	(7)	4.9	10.7	-2.0	10.70	0.0
11	0.9	4.2	1 12 14	(3)	7.5	13.3	2.2	16.10	0.0
12	2.6	9.1	13	(6)	4.3	10.4	1.2	3.60	10.5
13	5.4	10.9	13 14	(8)	0.4	2.2	-1.3	11.55	4.0
14	1.2	3.6	15	(4)	3.3	7.8	-1.2	16.50	0.0
15	1.6	6.4	13	(7)	3.4	6.7	1.7	2.85	13.5
16	1.9	5.3	14	(11)	3.8	5.6	1.7	5.75	2.0
17	2.1	6.4	14	(9)	3.2	6.3	-0.5	9.20	0.0
18	0.5	2.6	8 15	(3)	2.8	9.7	-2.7	14.05	0.0
19	2.2	6.5	12 13	(4)	4.8	8.8	-0.2	12.70	0.0
20	3.9	7.6	14	(10)	7.4	10.5	3.9	16.80	1.0
21	3.3	7.8	15	(7)	4.0	7.3	1.5	13.85	0.0
22	1.4	4.8	12 13	(4)	3.5	10.0	-1.7	16.30	0.0
23	0.4	2.4	15	(3)	3.5	10.8	-3.7	13.30	0.0
24	1.0	4.4	15	(5)	4.5	6.0	3.0	1.80	15.5
25	2.6	7.0	14 16	(7)	1.3	5.5	-2.1	13.25	1.0
26	2.0	6.6	13	(7)	0.3	4.1	-2.4	16.60	3.0
27	1.4	5.9	14	(3)	2.4	8.6	-3.7	19.45	0.0
28	1.1	5.0	13	(5)	5.8	13.7	-0.9	21.25	0.0
29	2.4	7.2	6	(5)	6.6	14.3	-0.2	21.90	0.0
30	0.7	4.3	16	(3)	6.5	15.8	-1.5	22.90	0.0
31	0.8	5.0	1 15 16	(2)	6.6	12.0	-0.3	7.40	8.0
TOTL								377.95	75.5
MEAN	1.9	5.8			3.7	8.3	-0.5	12.19	
MAX	5.4	10.9			7.5	15.8	3.9	22.90	
MIN	0.4	2.2			0.0	2.2	-5.4	1.80	
DN	31	31			31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.6	1.5	10 15	(3)	3.1	8.7	0.3	15.65	0.0
2	4.0	5.7	6	(8)	4.2	5.6	3.1	7.75	0.0
3	1.4	6.0	5	(5)	3.6	5.3	2.3	4.70	6.0
4	2.4	4.9	13 16	(5)	4.2	8.1	0.6	11.15	2.5
5	1.5	5.0	12	(4)	2.0	4.3	0.2	4.25	3.5
6	1.6	5.1	13	(5)	1.5	7.2	-2.7	17.25	0.0
7	2.1	6.1	14	(7)	1.1	5.1	-1.0	6.55	3.0
8	3.6	6.3	13 15	(6)	1.2	5.7	-1.0	9.15	2.0
9	1.8	5.5	14	(5)	3.7	8.5	-1.8	13.05	0.0
10	1.7	3.6	12	(6)	6.9	9.9	2.7	11.05	0.0
11	0.8	2.0	12	(3)	6.6	12.6	2.1	15.20	0.0
12	5.3	8.8	13	(9)	3.2	10.0	-0.9	3.80	13.0
13	3.3	7.3	13 14	(6)	0.4	2.9	-0.9	12.75	1.5
14	0.8	2.1	6 8 12	(2)	4.1	7.5	1.8	14.80	0.0
15	2.2	5.3	13	(8)	4.0	6.5	2.3	4.10	13.5
16	1.7	3.1	14	(9)	3.8	5.4	2.3	6.15	2.0
17	1.5	5.6	14	(5)	1.2	6.1	-2.5	8.45	0.0
18	1.1	5.8	16	(4)	4.1	9.5	-0.2	15.10	0.0
19	2.5	6.7	13	(5)	7.2	8.7	5.6	11.05	0.5
20	4.1	6.1	14	(10)	5.6	9.9	2.2	17.30	0.5
21	2.1	7.1	15	(6)	2.8	6.5	-0.7	13.85	0.0
22	1.4	4.2	13 14	(4)	2.5	9.5	-3.6	17.85	0.0
23	0.4	1.6	11	(3)	5.7	10.8	3.0	10.70	8.0
24	1.8	3.2	15	(6)	3.8	6.0	1.0	2.95	8.0
25	2.0	4.1	15	(7)	0.0	4.9	-2.2	14.30	2.5
26	1.7	6.3	13 14	(5)	0.4	3.2	-3.6	17.05	1.0
27	1.3	5.0	4 14	(3)	3.5	8.5	-0.7	19.65	0.0
28	1.1	4.0	13	(6)	6.3	13.1	-0.1	21.10	0.0
29	2.3	6.8	6	(5)	6.4	13.8	-1.4	22.60	0.0
30	0.8	3.9	16	(4)	6.9	15.0	0.1	21.40	0.0
31	0.6	3.3	15	(2)	8.9	11.9	7.3	6.00	11.0
TOTL								376.70	78.5
MEAN	1.9	4.9			3.8	8.1	0.4	12.15	
MAX	5.3	8.8			8.9	15.0	7.3	22.60	
MIN	0.4	1.5			0.0	2.9	-3.6	2.95	
DN	31	31			31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

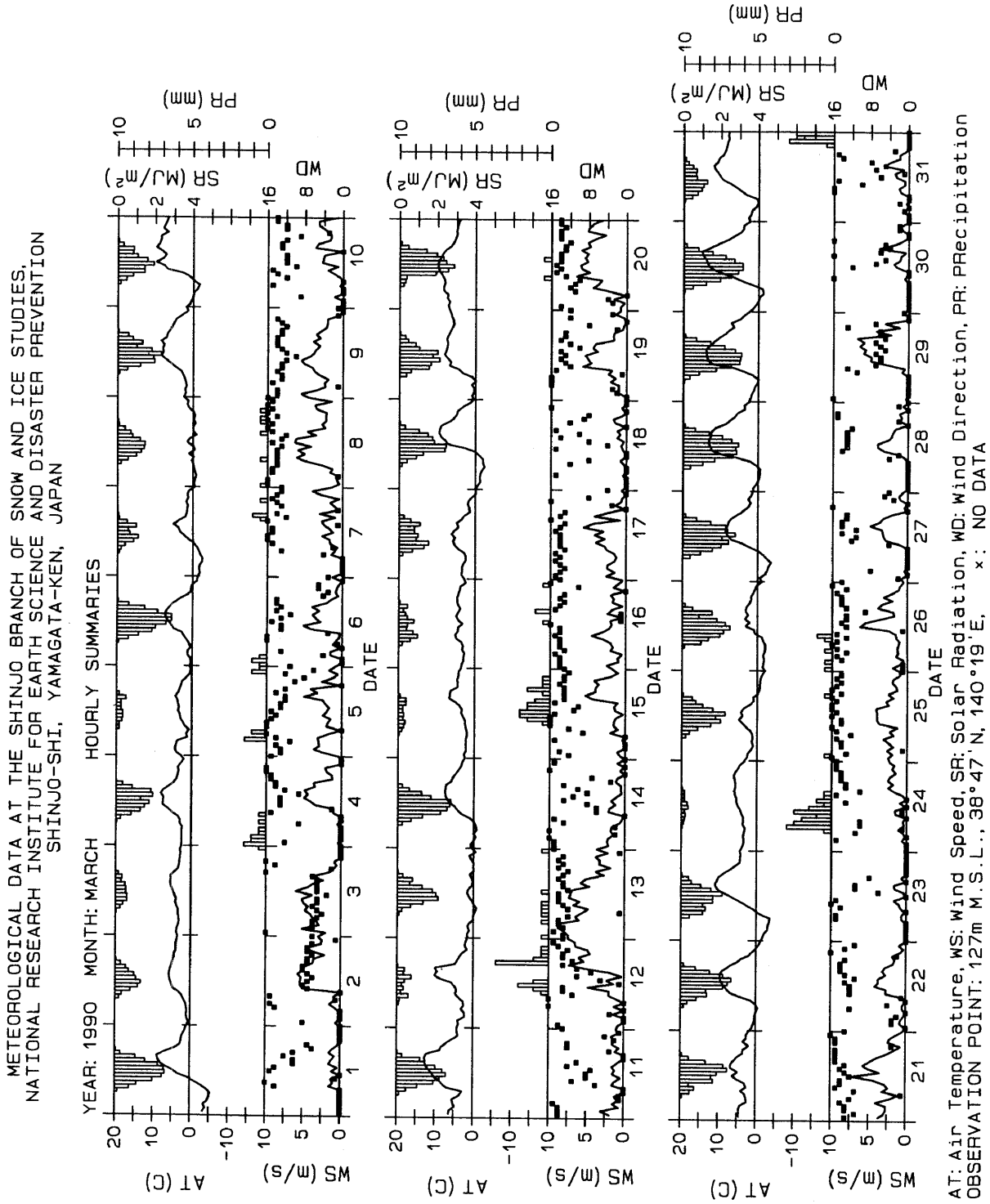

Fig.4.35 気象変化図

Seasonal variations in meteorological data.

Table 7.36　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

APRIL　1990

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	1.2	4.6	13 (5)	9.6	15.7	2.9	18.90	3.5
2	1.8	6.0	14 (5)	7.9	15.8	0.7	23.25	0.0
3	0.9	4.0	9 (3)	9.5	22.6	0.2	19.35	0.0
4	1.3	5.3	16 (6)	8.8	12.1	4.0	4.45	0.5
5	4.1	9.2	13 15 (6)	3.1	6.2	0.1	14.30	2.5
6	2.6	8.4	7 (4)	4.8	9.7	1.2	15.05	2.0
7	1.3	5.0	7 8 (3)	8.1	15.5	-0.9	14.60	0.0
8	2.6	8.0	13 (6)	7.3	10.7	5.3	3.60	8.0
9	4.8	9.0	12 (11)	11.3	15.3	7.4	26.35	1.0
10	2.2	6.6	14 (6)	11.0	17.0	2.1	23.25	0.0
11	1.3	5.5	4 (4)	11.0	22.6	-0.2	25.00	0.0
12	1.3	6.3	4 (3)	13.1	25.0	1.6	25.70	0.0
13	1.6	6.2	6 (5)	11.6	16.3	9.0	8.15	6.5
14	0.5	2.6	14 (3)	10.2	12.2	9.2	5.10	2.5
15	1.2	4.0	10 14 15(3)	8.7	12.1	4.8	4.95	10.0
16	1.7	5.1	6 (8)	5.2	7.3	3.7	6.55	1.0
17	1.2	4.0	7 (4)	5.4	8.3	3.3	9.70	0.5
18	0.8	4.9	12 (3)	5.8	9.9	3.5	11.40	1.5
19	1.8	5.5	14 (6)	6.7	12.5	1.3	20.25	0.0
20	1.7	6.3	5 6 16(3)	7.6	17.6	-1.2	25.65	0.0
21	1.1	4.3	1 3 5(2)	8.5	10.8	5.7	4.10	5.5
22	4.2	8.4	6 (8)	13.3	17.8	5.9	18.80	1.5
23	2.4	7.8	14 (7)	12.2	15.3	8.5	4.60	10.0
24	1.9	6.2	14 (4)	7.3	8.8	3.6	X	7.0
25	1.1	3.7	13 (4)	9.7	16.3	1.7	X	0.0
26	2.5	8.5	7 (4)	12.0	20.5	1.6	X	0.0
27	1.0	4.5	1 8 11(3)	12.6	20.7	5.2	X	0.0
28	1.0	4.1	14 (8)	15.0	23.7	6.9	X	2.0
29	1.8	5.2	13 14 (5)	10.2	12.8	4.9	X	23.5
30	4.6	8.7	13 (10)	9.0	13.7	5.1	X	0.0
TOTL							333.05	89.0
MEAN	1.9	5.9		9.2	14.8	3.6	14.48	
MAX	4.8	9.2		15.0	25.0	9.2	26.35	
MIN	0.5	2.6		3.1	6.2	-1.2	3.60	
DN	30	30		30	30	30	23	30

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	1.2	4.6	13 (4)	7.5	15.1	0.8	21.50	0.5
2	2.0	5.2	14 (6)	7.8	15.2	0.7	21.45	0.0
3	0.8	3.6	9 14 16(2)	11.6	21.5	6.0	18.60	0.0
4	2.6	5.4	13 (6)	6.7	12.0	0.2	5.25	1.0
5	3.4	7.2	13 (5)	2.9	5.3	0.7	14.20	4.0
6	1.9	5.7	1 12 13(3)	4.7	9.5	-0.6	17.70	0.0
7	1.4	3.8	7 8 15(3)	10.2	15.3	6.8	11.05	3.0
8	4.4	8.3	12 (8)	7.9	12.2	5.4	7.50	6.0
9	3.4	7.3	12 (9)	11.6	14.8	6.0	25.75	0.0
10	1.7	6.2	14 (3)	8.2	16.7	0.2	23.75	0.0
11	1.3	5.1	4 (4)	12.2	22.4	2.5	25.05	0.0
12	1.2	5.4	4 (3)	14.8	24.5	9.3	22.00	0.0
13	1.7	4.7	6 (5)	11.6	16.1	9.3	8.55	7.0
14	0.7	2.1	14 15 16(3)	9.9	12.0	8.1	5.80	2.5
15	1.0	2.7	10 (3)	6.9	12.0	3.8	4.80	10.0
16	1.6	4.5	6 (8)	5.0	7.0	3.3	6.50	0.5
17	1.1	3.0	7 (4)	5.5	7.6	3.7	9.50	1.0
18	1.3	4.0	14 (6)	6.2	9.6	3.9	13.90	1.0
19	1.6	5.0	13 (4)	4.9	12.1	-1.0	21.00	0.0
20	1.7	5.7	6 (3)	10.1	17.0	5.8	22.05	0.0
21	1.4	5.1	5 6 14(3)	9.6	14.8	6.1	7.90	5.5
22	4.4	7.6	6 (8)	15.0	16.9	12.4	15.30	9.5
23	2.0	5.0	14 (6)	10.1	15.1	7.5	4.30	3.0
24	1.9	5.9	3 12 13(3)	6.3	11.0	2.8	X	6.0
25	1.2	5.8	13 (5)	9.7	16.0	2.0	X	0.0
26	2.8	7.4	7 (4)	13.1	20.3	5.6	X	0.0
27	1.0	2.2	12 14 16(3)	13.3	20.6	7.3	X	0.0
28	1.4	3.8	14 (6)	15.9	23.4	9.8	X	21.5
29	2.1	5.4	13 (8)	8.8	11.8	5.3	X	4.0
30	X	X	X (X)	X	X	X	X	X
TOTL							333.40	86.0
MEAN	1.9	5.1		9.2	14.8	4.6	14.50	
MAX	4.4	8.3		15.9	24.5	12.4	25.75	
MIN	0.7	2.1		2.9	5.3	-1.0	4.30	
DN	29	29		29	29	29	23	29

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

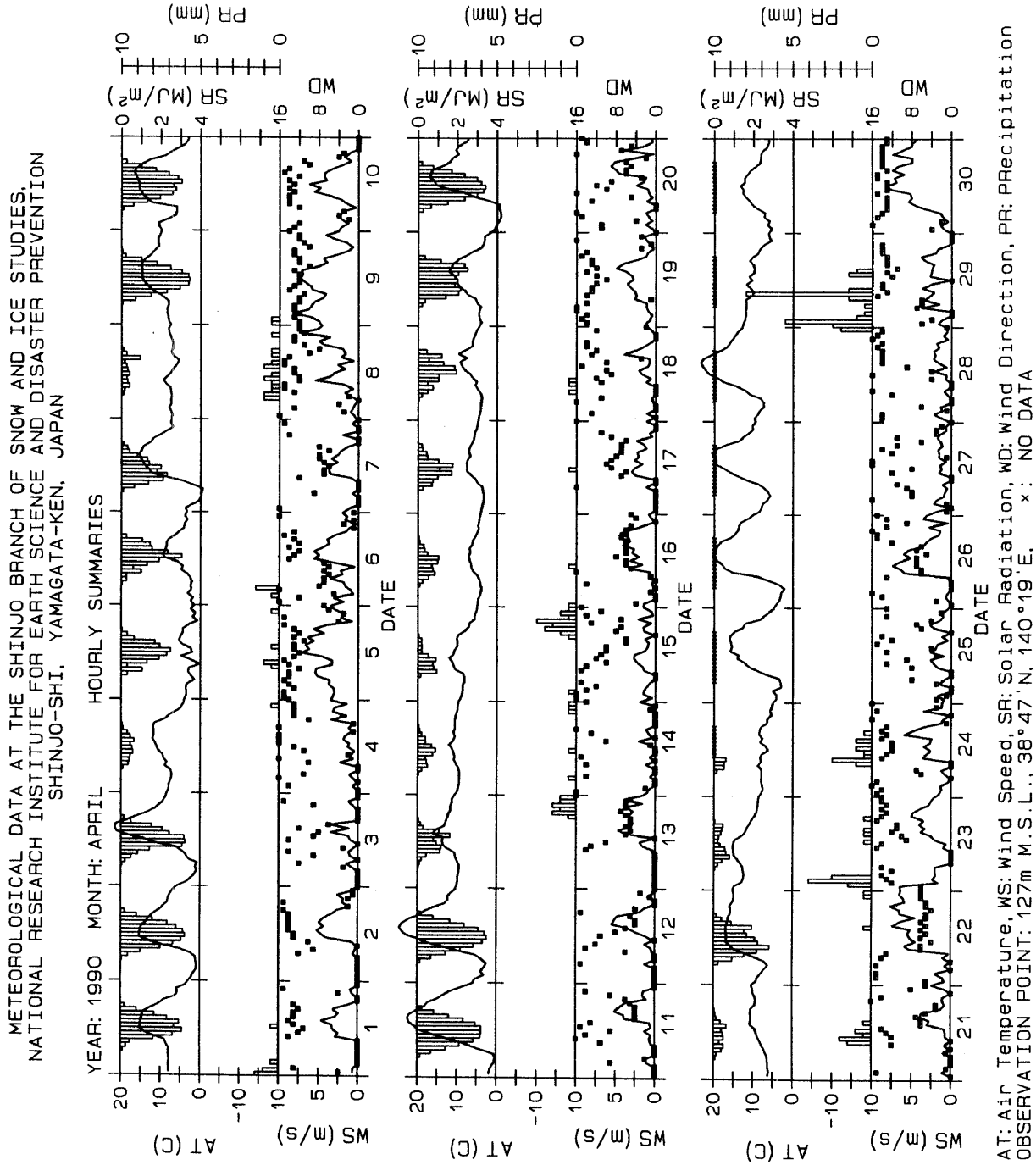

Fig.4.36 気象変化図

Seasonal variations in meteorological data.

Table 7.37 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

NOVEMBER 1990

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.4	2.8	8 (3)	9.8	15.1	6.7	7.20	0.0
2	0.4	2.2	8 (3)	8.9	11.2	6.9	3.10	1.5
3	0.5	2.4	15 (5)	8.8	13.7	6.3	8.65	0.0
4	3.6	12.3	6 (6)	12.9	18.8	6.3	1.90	10.0
5	3.0	7.8	13 (7)	14.3	16.0	12.7	5.20	26.0
6	0.8	4.4	16 (5)	12.3	16.8	8.1	3.35	2.0
7	1.7	6.6	13 (6)	11.0	17.3	7.2	7.30	11.5
8	2.8	6.8	14 (9)	10.6	12.5	9.0	7.70	3.0
9	1.3	4.0	15 (5)	9.5	13.0	5.5	5.00	0.5
10	2.4	6.3	13 (9)	7.6	13.8	0.3	5.05	44.5
11	1.8	6.9	13 (6)	4.1	5.5	1.5	1.90	34.5
12	1.3	5.5	6 14 (4)	8.5	12.8	4.7	2.65	20.0
13	0.3	2.0	16 (2)	8.3	15.4	3.4	7.65	0.0
14	0.3	4.3	4 8 12(1)	7.4	9.5	5.8	3.55	7.0
15	1.0	4.0	15 (5)	7.4	10.6	1.8	2.00	3.5
16	1.0	4.7	16 (5)	6.2	13.4	-1.4	9.70	0.0
17	2.2	5.6	14 (7)	8.8	12.7	0.6	9.55	2.5
18	0.3	2.9	12 (2)	5.9	11.0	0.5	6.95	2.5
19	0.3	2.5	16 (2)	9.2	13.6	7.0	6.75	2.0
20	1.4	5.5	7 (3)	10.7	15.2	5.9	3.80	10.5
21	3.4	7.9	13 (8)	4.1	11.0	1.0	2.95	2.5
22	0.6	2.9	11 14 (3)	3.3	5.9	0.6	3.30	7.5
23	1.6	6.1	13 15 (5)	6.0	10.1	3.6	7.00	2.5
24	0.4	2.1	1 2 16(2)	5.8	10.4	-0.3	3.55	0.0
25	0.2	2.0	14 (2)	2.0	5.7	-0.3	3.55	0.0
26	0.7	4.0	13 (4)	6.5	10.1	1.8	3.30	1.0
27	1.3	5.2	1 4 5(2)	8.9	13.7	2.5	9.85	0.5
28	2.2	6.0	14 (5)	8.8	13.6	4.3	5.55	0.0
29	4.5	9.9	6 (11)	9.6	13.1	5.2	8.60	1.0
30	6.9	16.7	6 (8)	12.4	15.5	10.1	2.00	8.5
TOTL							158.60	205.0
MEAN	1.6	5.4		8.3	12.6	4.2	5.29	
MAX	6.9	16.7		14.3	18.8	12.7	9.85	
MIN	0.2	2.0		2.0	5.5	-1.4	1.90	
DN	30	30		30	30	30	30	30

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.6	1.9	8 (3)	9.1	15.1	6.9	7.35	0.0
2	0.3	1.5	15 (3)	8.8	11.1	6.3	2.95	1.5
3	0.8	2.3	15 (6)	9.1	13.5	6.5	8.45	0.5
4	4.4	9.9	6 (6)	15.6	18.4	11.9	2.60	22.5
5	2.5	6.8	13 (7)	13.3	15.0	10.7	5.05	13.0
6	0.7	2.7	16 (5)	10.8	16.8	7.4	3.05	2.5
7	2.6	4.6	13 (8)	11.9	16.1	9.5	7.35	13.5
8	1.9	5.7	14 (6)	9.5	12.0	5.7	8.25	0.5
9	1.8	5.0	15 (5)	10.9	12.7	9.2	4.25	7.5
10	2.6	5.2	13 (9)	4.3	11.1	0.4	4.75	49.0
11	1.1	2.8	6 (4)	5.7	8.7	3.5	1.90	38.0
12	1.2	3.9	14 (5)	7.7	12.5	3.6	3.35	5.0
13	0.1	0.9	16 (2)	8.7	15.3	5.9	7.10	0.0
14	0.5	2.9	12 (2)	8.0	9.3	6.8	3.60	10.5
15	1.0	2.5	15 16 (7)	4.6	10.2	-1.0	3.15	0.0
16	1.6	4.8	2 13 14(3)	9.9	13.0	6.3	9.00	2.0
17	1.2	4.7	14 (4)	5.4	12.6	0.6	9.20	0.5
18	0.2	1.4	12 (2)	8.0	10.8	5.3	7.45	4.0
19	0.3	2.3	15 16 (2)	9.3	13.4	6.3	6.05	0.5
20	3.0	6.1	14 (6)	10.4	14.6	3.5	4.05	12.0
21	2.0	5.8	13 (7)	2.0	3.7	0.7	2.80	4.5
22	1.0	3.0	15 (4)	4.8	5.5	2.9	3.20	6.0
23	1.3	4.9	16 (5)	6.1	9.2	4.5	7.00	0.5
24	0.1	0.8	2 4 13(1)	3.7	10.1	-0.3	3.80	0.0
25	0.3	1.7	13 (3)	3.4	5.5	1.2	3.25	0.5
26	0.7	2.2	16 (4)	7.5	10.0	2.8	4.45	0.5
27	1.7	5.0	14 (6)	8.6	13.7	4.8	8.95	0.5
28	1.7	5.3	7 15 (3)	9.5	13.2	5.8	6.20	0.0
29	6.2	8.8	6 (15)	11.0	12.8	10.2	7.85	1.0
30	6.7	12.1	5 (7)	14.6	17.7	11.7	2.10	11.0
TOTL							158.50	207.5
MEAN	1.7	4.3		8.4	12.1	5.3	5.28	
MAX	6.7	12.1		15.6	18.4	11.9	9.20	
MIN	0.1	0.8		2.0	3.7	-1.0	1.90	
DN	30	30		30	30	30	30	30

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

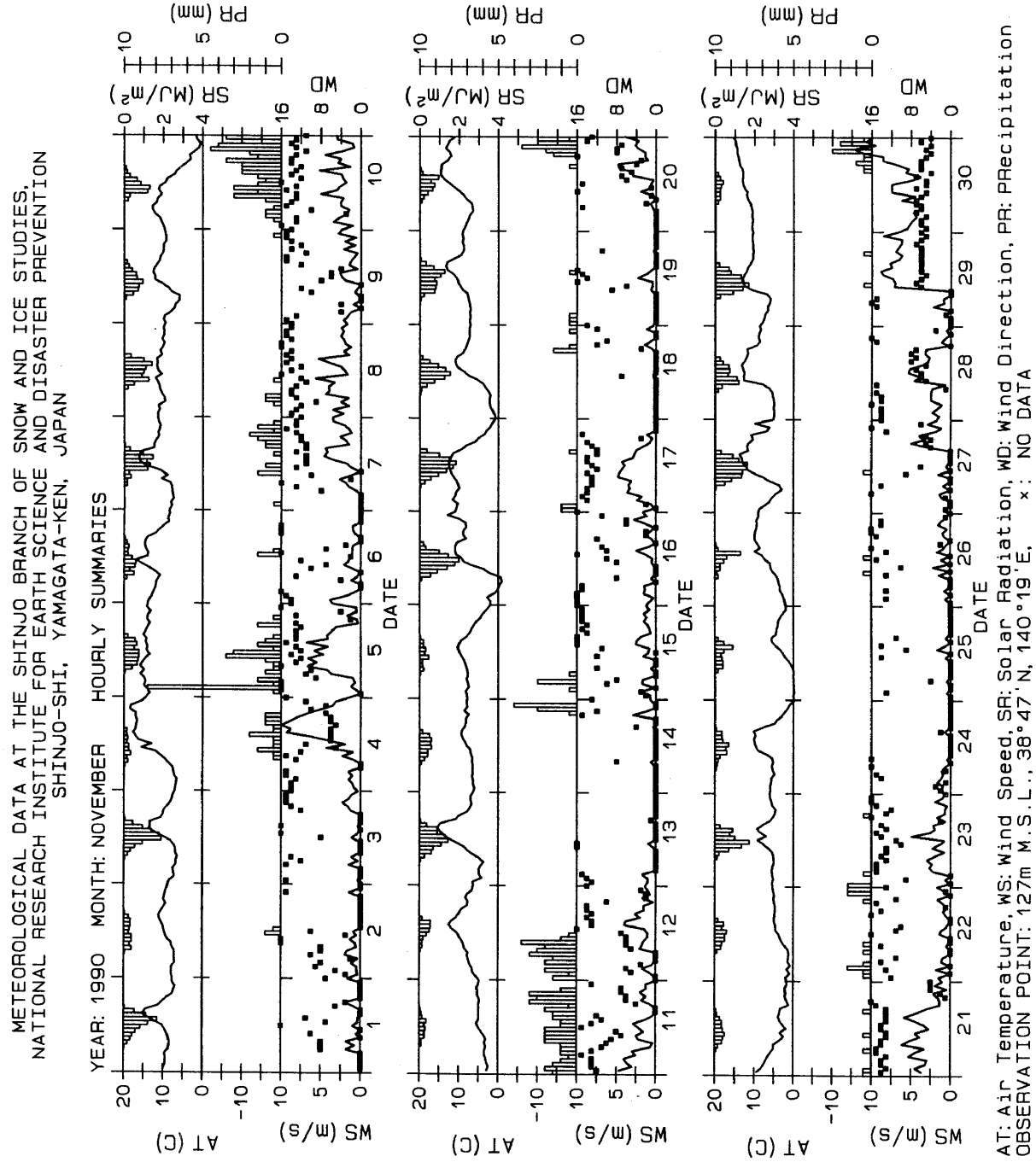

Fig.4.37 気象変化図

Seasonal variations in meteorological data.

Table 7.38 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

DECEMBER 1990

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	3.4	15.6	13 (4)	15.5	19.1	12.0	6.10	4.0
2	2.7	6.2	11 (8)	9.4	12.3	6.1	3.55	14.5
3	2.4	5.7	14 (8)	4.1	7.0	2.3	1.35	31.0
4	2.4	7.2	14 (6)	4.9	6.8	1.8	4.20	1.0
5	1.1	3.7	14 (4)	5.1	9.0	1.2	4.95	5.0
6	0.7	3.0	3 4 11(2)	6.2	12.1	2.5	6.30	9.0
7	0.8	3.6	1 13 (4)	7.9	13.6	1.9	5.45	5.0
8	0.7	3.0	6 (4)	9.5	12.0	6.6	3.60	2.5
9	0.6	4.0	6 9 (2)	9.9	15.6	6.0	5.70	0.5
10	1.0	4.1	14 (5)	8.7	12.5	5.6	3.20	5.0
11	1.6	8.2	8 (3)	5.7	8.6	1.4	3.15	1.0
12	1.5	5.7	14 (6)	5.5	9.4	2.4	3.45	2.0
13	1.4	4.1	16 (6)	4.5	6.8	2.3	3.20	0.5
14	0.8	3.6	5 12 13(2)	1.9	8.1	-2.6	2.55	5.5
15	2.1	5.5	15 (7)	2.4	7.8	1.0	2.00	9.5
16	1.1	6.9	9 (5)	0.7	3.7	-1.8	5.15	6.5
17	1.5	5.2	13 (4)	-0.3	1.4	-3.2	4.00	8.5
18	0.3	1.8	2 (3)	-1.0	0.9	-3.7	5.50	0.0
19	1.2	3.7	16 (8)	1.4	3.0	-0.9	4.10	0.5
20	0.4	2.5	14 (2)	2.0	4.2	0.4	2.75	0.0
21	0.2	1.8	1 4 8(1)	2.9	6.8	-0.1	6.05	0.0
22	0.7	2.8	6 (4)	4.3	7.3	1.5	4.30	3.0
23	1.7	6.9	10 (5)	2.7	7.3	-0.1	1.90	41.5
24	2.4	8.1	13 (7)	0.3	1.3	-0.6	3.50	15.0
25	2.9	7.9	13 (7)	1.4	3.9	-4.4	6.10	4.5
26	0.6	3.1	16 (7)	-1.1	2.6	-7.3	3.35	13.5
27	0.9	5.5	6 (3)	0.5	2.5	-1.0	3.85	8.0
28	0.8	4.7	14 (5)	0.7	2.0	-0.8	3.85	13.5
29	0.6	3.7	1 14 15(2)	-0.1	1.2	-1.4	4.40	3.5
30	1.9	5.3	15 (6)	1.0	3.5	-2.8	5.15	3.0
31	0.9	2.9	1 (4)	1.7	5.1	-1.6	5.65	9.0
TOTL							128.35	226.0
MEAN	1.3	5.0		3.8	7.0	0.7	4.14	
MAX	3.4	15.6		15.5	19.1	12.0	6.30	
MIN	0.2	1.8		-1.1	0.9	-7.3	1.35	
DN	31	31		31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	2.0	4.6	13 (7)	13.3	17.6	9.0	5.85	2.0
2	2.6	5.4	11 (9)	7.3	11.4	3.9	3.45	35.5
3	2.7	4.8	14 (10)	3.7	5.4	2.5	1.55	10.5
4	1.4	4.6	12 15 (4)	4.5	6.6	1.8	4.60	0.0
5	1.0	2.8	14 (4)	5.5	8.4	2.6	4.90	14.0
6	0.4	1.4	4 (3)	6.0	12.0	2.5	6.75	0.5
7	1.0	3.0	1 (4)	9.9	13.2	6.8	5.00	5.5
8	0.6	2.0	6 (2)	9.4	11.4	7.4	3.35	2.0
9	0.7	3.6	1 4 6(2)	9.7	15.4	6.4	5.60	2.0
10	1.0	3.0	14 (5)	7.2	11.2	1.5	3.45	3.0
11	1.9	7.3	15 (4)	6.2	7.9	4.7	2.80	2.5
12	1.9	3.8	14 16 (5)	4.6	8.8	2.7	3.85	0.5
13	0.9	3.3	13 (6)	3.1	6.7	-1.8	3.10	0.5
14	1.6	3.9	15 (4)	3.5	7.8	0.2	2.20	14.5
15	1.4	5.4	15 (5)	1.2	2.3	-0.3	2.45	0.5
16	1.6	3.8	13 (5)	0.2	3.3	-1.8	4.85	11.0
17	0.8	2.8	14 (3)	-0.8	1.1	-3.1	4.05	4.0
18	0.5	2.9	15 (3)	0.0	1.8	-2.3	5.55	0.0
19	1.3	2.8	16 (8)	1.8	2.9	0.8	3.85	0.5
20	0.2	1.1	3 11 14(1)	1.8	4.2	0.0	3.40	0.0
21	0.3	1.7	8 11 12(2)	3.6	6.7	1.7	5.50	0.0
22	1.3	4.0	10 (4)	5.4	7.1	1.7	4.15	19.0
23	0.8	4.0	11 12 (3)	0.6	3.9	-0.1	2.10	36.5
24	4.2	6.8	13 (11)	0.6	1.3	-0.2	3.65	8.0
25	1.5	5.8	2 13 (4)	-0.7	3.7	-6.8	5.85	0.5
26	0.8	4.5	16 (5)	0.8	2.3	-1.3	3.60	16.0
27	0.7	2.6	14 (4)	0.6	2.5	-0.7	3.80	13.0
28	0.7	2.9	14 (3)	0.5	2.0	-0.7	3.65	7.5
29	1.3	3.4	15 (7)	-0.3	1.0	-2.4	4.75	3.0
30	1.6	4.4	1 12 14(4)	1.4	3.3	-1.5	4.90	2.5
31	0.7	2.0	3 (3)	2.0	4.2	0.6	5.75	10.5
TOTL							128.30	225.5
MEAN	1.3	3.7		3.6	6.4	1.1	4.14	
MAX	4.2	7.3		13.3	17.6	9.0	6.75	
MIN	0.2	1.1		-0.8	1.0	-6.8	1.55	
DN	31	31		31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

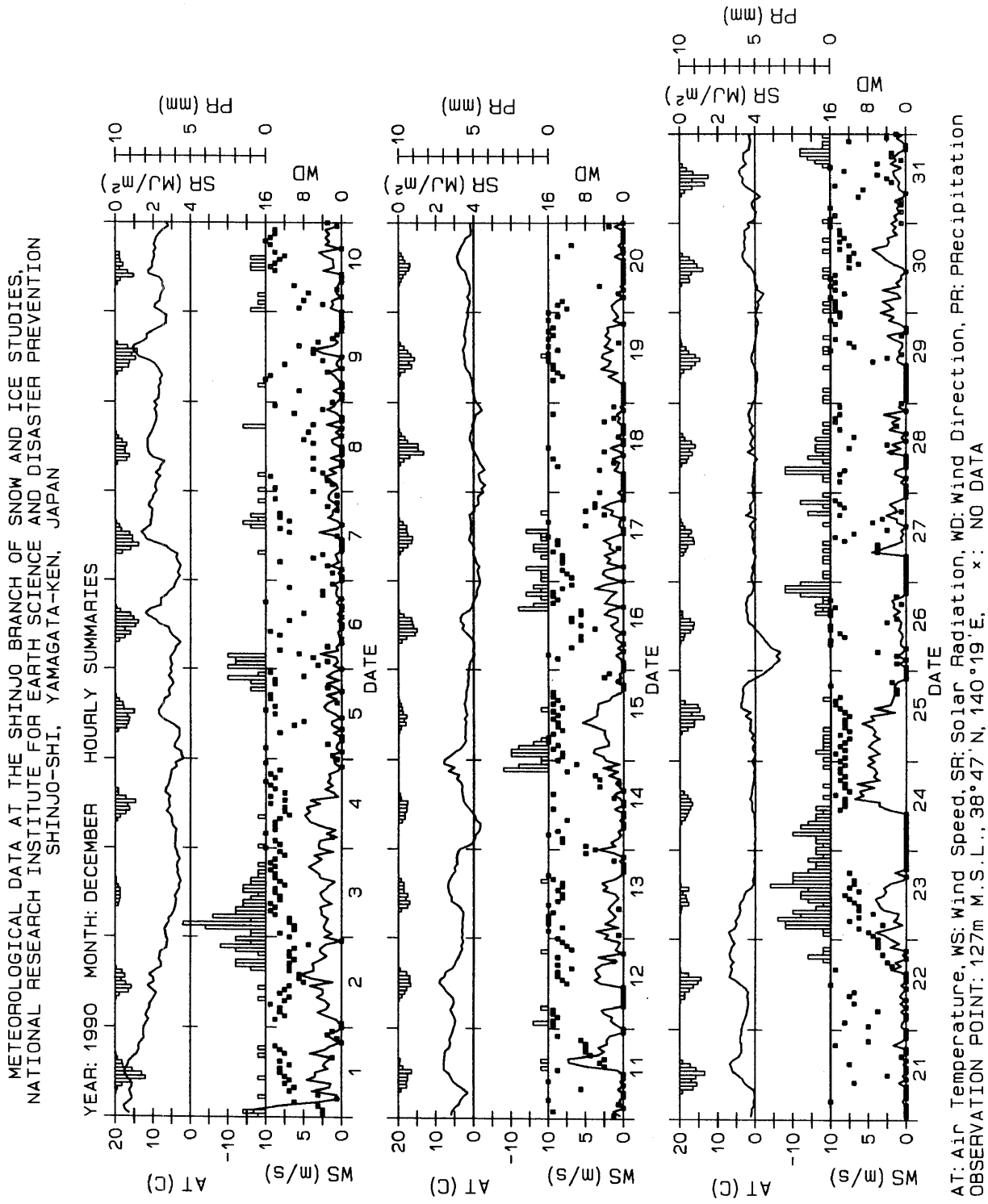

Fig.4.38 気象変化図

Seasonal variations in meteorological data.

Table 7.39 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

JANUARY 1991

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.3	2.0	6 14 (2)	1.6	3.2	0.5	4.70	2.0
2	0.6	3.8	1 (4)	2.0	5.0	0.1	4.25	5.0
3	0.9	3.4	16 (4)	-1.2	1.4	-3.8	6.15	3.0
4	0.1	2.4	8 9 (1)	-2.7	-0.7	-4.1	3.75	24.5
5	0.1	1.8	3 (2)	-1.5	-1.0	-2.0	4.30	21.0
6	2.3	6.7	13 (9)	-1.5	0.2	-2.6	7.15	14.0
7	3.3	6.7	13 (8)	-0.6	1.9	-4.3	4.75	11.5
8	0.9	4.0	16 (4)	-1.4	0.0	-5.2	5.40	4.5
9	1.1	6.2	14 15 (3)	-2.3	1.2	-9.4	6.30	5.0
10	2.4	6.3	14 (8)	1.1	3.3	-0.5	5.25	6.0
11	2.4	6.2	13 14 (6)	0.6	2.4	-0.7	4.90	2.5
12	0.3	2.1	3 (4)	-1.0	3.1	-7.9	8.45	0.0
13	0.3	2.1	3 (4)	-5.9	-1.8	-10.6	7.35	0.0
14	1.3	5.2	13 14 (3)	-1.8	2.7	-7.7	7.30	6.0
15	0.5	3.4	12 (3)	-1.4	0.0	-3.3	5.65	12.0
16	1.3	5.5	2 (3)	-1.9	0.0	-5.9	4.95	9.5
17	1.5	6.4	14 15 (3)	-2.1	2.7	-7.8	5.65	7.0
18	3.1	8.5	12 (6)	-3.0	0.2	-8.4	4.70	16.0
19	0.3	2.5	13 14 (2)	-5.7	-0.2	-12.1	9.15	0.0
20	0.4	2.8	2 3 15(2)	-2.1	2.9	-7.1	6.90	0.5
21	0.1	2.1	1 15 (2)	0.8	2.8	0.0	6.05	1.5
22	1.8	5.4	14 (7)	0.8	3.1	-1.0	6.70	0.0
23	2.4	6.5	14 (6)	-2.7	-0.4	-4.7	9.65	1.0
24	0.8	3.5	3 7 (3)	-1.2	2.4	-3.9	7.10	1.5
25	1.4	5.6	14 (7)	0.5	5.1	-2.9	5.20	9.0
26	3.0	6.7	14 (10)	0.8	2.2	-1.3	7.35	2.5
27	1.4	4.4	1 3 14(3)	-1.0	0.8	-3.1	8.05	4.5
28	1.3	4.6	11 (4)	-3.8	0.0	-11.9	5.90	6.0
29	0.1	2.2	13 15 (1)	-3.4	-1.1	-7.3	6.65	8.0
30	1.4	4.4	14 (9)	-1.4	0.5	-6.5	8.45	6.0
31	1.3	5.9	14 (5)	-0.2	2.1	-4.4	6.65	7.0
TOTL							194.75	197.0
MEAN	1.2	4.5		-1.3	1.4	-4.8	6.28	
MAX	3.3	8.5		2.0	5.1	0.5	9.65	
MIN	0.1	1.8		-5.9	-1.8	-12.1	3.75	
DN	31	31		31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.4	1.3	6 15 16(2)	1.6	2.9	0.7	4.55	1.5
2	0.6	2.6	1 (3)	1.5	4.5	-1.3	4.30	5.5
3	0.8	2.5	16 (4)	-2.6	-0.6	-4.0	6.05	12.5
4	0.1	1.9	8 9 (1)	-1.9	-0.9	-3.2	3.85	19.0
5	0.3	2.4	3 (2)	-1.6	-1.0	-2.1	4.50	22.5
6	3.5	6.7	13 (12)	-1.6	0.2	-3.3	6.90	12.5
7	2.3	4.6	13 (5)	-0.3	1.5	-1.9	5.15	7.0
8	0.7	3.3	12 16 (3)	-2.9	-0.2	-7.0	5.15	4.5
9	1.7	4.3	15 (6)	0.1	1.6	-3.0	6.20	6.5
10	3.0	5.8	13 (9)	0.9	3.0	-0.5	5.20	4.5
11	1.3	5.1	14 (4)	0.1	2.3	-2.6	5.30	1.0
12	0.5	2.1	3 (5)	-3.6	3.0	-10.3	8.50	0.0
13	0.5	2.3	3 (3)	-4.4	-1.9	-7.4	7.20	4.0
14	1.3	5.2	13 14 15(2)	-0.6	2.5	-2.5	7.25	4.0
15	1.0	3.0	12 (3)	-1.5	-0.1	-2.5	5.40	16.5
16	1.1	4.1	2 (4)	-3.5	-0.5	-6.9	5.30	3.0
17	3.0	6.2	14 (7)	-0.6	2.3	-3.9	5.50	13.0
18	1.8	7.4	12 13 (3)	-5.7	-1.4	-11.3	4.95	10.0
19	0.2	0.9	13 (2)	-4.2	-0.5	-6.6	8.75	0.0
20	0.4	1.5	3 (3)	0.1	2.8	-2.9	7.20	1.5
21	0.3	1.9	12 15 (3)	1.0	2.4	0.1	5.85	0.5
22	2.8	5.3	14 (10)	-0.5	3.1	-4.0	7.45	0.5
23	1.5	4.3	14 16 (3)	-2.7	-1.5	-4.2	9.15	2.0
24	0.8	3.3	7 (3)	-1.0	2.0	-2.6	6.70	2.0
25	2.6	5.6	14 (9)	1.8	4.7	0.2	5.25	8.5
26	2.0	4.7	14 (9)	-0.2	2.2	-2.1	7.80	1.5
27	1.6	4.1	1 14 15(3)	-1.7	0.3	-4.1	8.40	5.0
28	0.9	2.6	3 11 (3)	-4.7	-0.4	-9.0	5.45	5.0
29	0.0	0.1	(0)	-2.2	-1.2	-6.0	6.75	11.5
30	2.1	3.8	14 (11)	-0.8	0.2	-4.1	8.55	3.0
31	1.7	4.8	13 (6)	0.5	2.0	-0.9	6.40	8.5
TOTL							194.95	197.0
MEAN	1.3	3.7		-1.3	1.1	-3.8	6.29	
MAX	3.5	7.4		1.8	4.7	0.7	9.15	
MIN	0.0	0.1		-5.7	-1.9	-11.3	3.85	
DN	31	31		31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

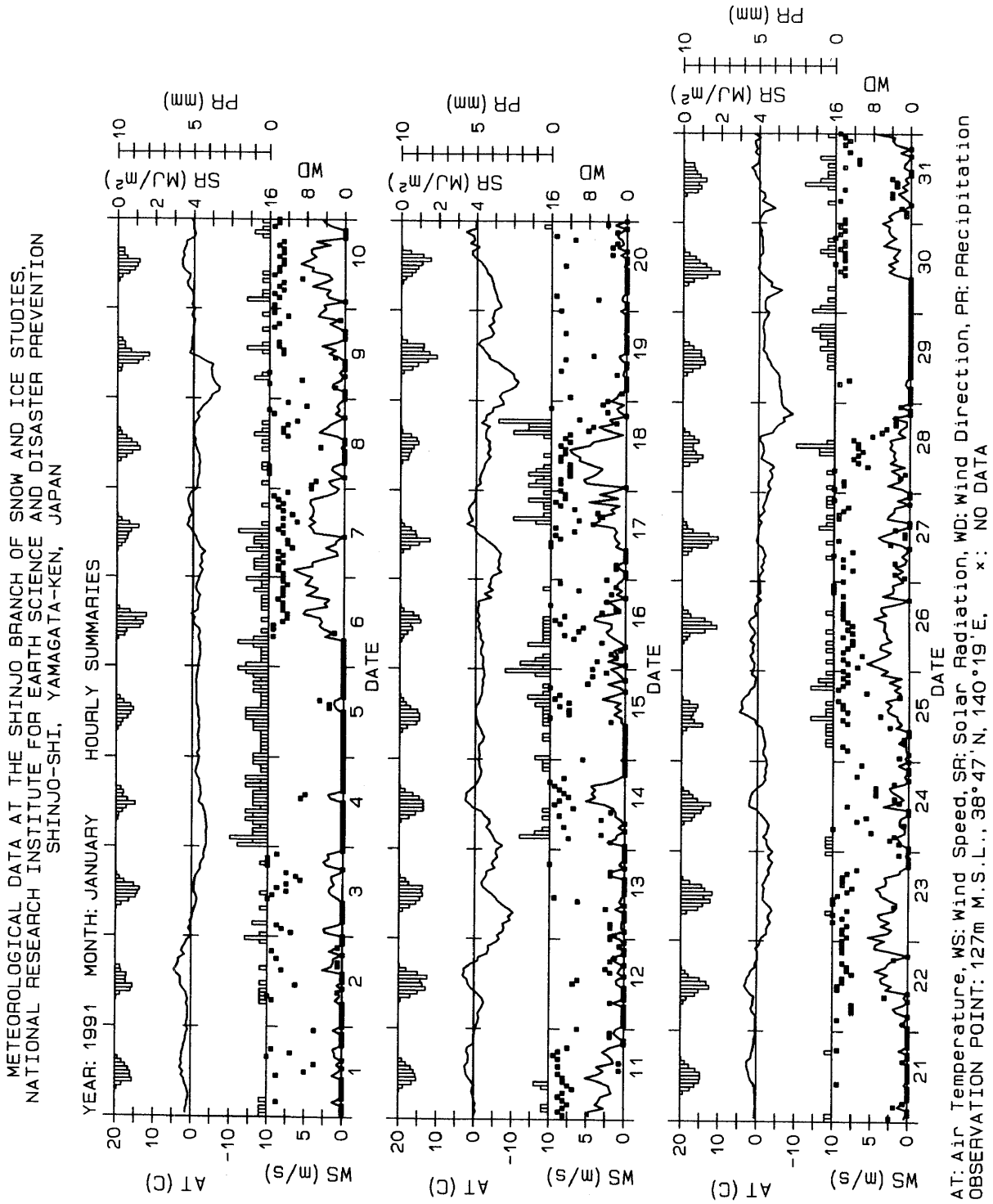

Fig.4.39 気象変化図

Seasonal variations in meteorological data.

Table 7.40　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

FEBRUARY 1991

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	2.0	5.2	13 (11)	-0.5	1.3	-3.1	4.90	6.5
2	1.2	4.7	14 (5)	-2.6	-0.1	-6.7	9.15	9.5
3	1.8	5.8	13 (7)	-1.3	0.6	-2.7	5.40	8.5
4	1.2	4.2	14 (4)	-1.4	1.2	-5.5	8.10	6.5
5	2.7	6.3	13 (7)	-1.9	0.2	-6.4	8.45	11.5
6	1.1	4.7	16 (4)	-1.1	0.0	-2.6	5.25	15.0
7	2.7	7.2	13 14 (5)	-0.4	2.3	-3.5	10.75	1.0
8	0.7	4.3	4 13 (4)	-2.4	-0.3	-6.2	5.60	7.0
9	1.1	3.7	3 (4)	-0.7	2.0	-2.8	9.35	7.0
10	1.0	4.4	9 14 15(3)	-1.5	2.0	-8.4	4.50	3.5
11	0.6	2.1	14 (6)	1.8	5.6	-2.3	7.65	0.5
12	1.7	8.0	14 (4)	-0.3	3.3	-3.0	9.40	6.5
13	2.6	6.3	14 (6)	0.0	2.8	-3.8	9.45	0.5
14	0.6	2.3	14 (3)	-2.6	5.2	-11.0	14.70	0.0
15	6.0	13.6	5 (8)	4.1	8.5	-2.7	6.55	3.5
16	4.5	17.5	15 16 (5)	3.7	9.0	0.0	3.80	17.0
17	2.5	6.4	15 (10)	0.0	2.6	-2.5	8.65	0.0
18	1.5	4.2	15 (5)	-2.6	0.8	-7.4	13.10	1.5
19	4.7	12.8	6 (6)	-1.7	1.5	-4.6	6.55	3.0
20	1.9	9.0	6 (4)	-4.9	-0.2	-12.6	11.55	0.5
21	2.8	6.4	7 8 12(4)	-1.2	1.8	-4.1	9.05	9.5
22	2.0	6.2	9 (5)	-2.0	0.2	-3.7	8.20	12.0
23	0.9	4.1	14 (3)	-4.1	-1.9	-5.9	4.70	12.0
24	0.4	3.6	3 7 (3)	-5.8	-4.2	-8.6	10.55	13.0
25	2.5	7.3	14 15 (5)	-2.3	1.4	-7.0	9.80	6.0
26	3.2	9.0	13 (10)	2.1	4.3	-0.6	8.50	4.5
27	0.9	3.2	2 3 5(3)	2.3	4.5	-0.3	6.60	4.0
28	1.3	5.6	12 13 (4)	0.8	4.5	-1.4	3.30	14.0
TOTL							223.55	184.0
MEAN	2.0	6.4		-0.9	2.1	-4.6	7.98	
MAX	6.0	17.5		4.1	9.0	0.0	14.70	
MIN	0.4	2.1		-5.8	-4.2	-12.6	3.30	
DN	28	28		28	28	28	28	28

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/㎡) TOTL	PR(mm) TOTL
1	1.1	2.9	13 (7)	-2.2	0.4	-5.8	5.65	9.5
2	1.7	4.0	14 (5)	-1.8	-0.2	-3.2	8.25	8.5
3	1.7	4.4	13 (5)	-1.4	0.0	-3.9	5.70	10.5
4	1.3	3.7	14 (5)	-1.9	0.9	-5.5	8.20	8.0
5	2.6	5.4	13 16 (6)	-1.2	0.0	-2.6	8.20	5.5
6	1.3	3.0	15 16 (4)	-1.1	0.2	-2.4	5.85	14.5
7	1.9	4.5	13 14 (5)	-1.2	1.4	-4.3	9.90	0.0
8	1.3	4.3	13 (4)	-1.9	-0.3	-4.3	5.85	13.5
9	0.9	2.4	3 (4)	-1.5	2.0	-6.6	9.75	0.5
10	1.1	4.1	9 14 (3)	0.4	2.3	-1.9	4.05	4.0
11	0.6	1.6	14 (6)	0.9	5.4	-2.3	7.90	1.0
12	2.9	5.9	14 (5)	-0.1	2.8	-1.7	9.45	5.5
13	1.7	5.3	14 (5)	-2.6	2.5	-10.5	10.30	0.5
14	2.1	5.9	6 (5)	1.1	4.7	-2.8	13.95	0.0
15	6.7	12.5	5 (8)	6.0	8.8	3.7	5.80	14.5
16	2.3	5.7	15 (9)	1.0	3.3	-1.0	4.70	6.0
17	2.6	5.0	15 (9)	-1.6	2.5	-6.3	9.30	0.0
18	2.0	8.9	12 (4)	-2.1	0.5	-5.6	12.10	2.0
19	3.5	12.1	6 (5)	-4.2	1.4	-11.8	7.05	2.5
20	2.4	7.9	6 (6)	-2.3	-0.7	-5.9	12.10	1.5
21	2.8	6.2	12 (5)	-1.1	1.7	-2.8	7.95	15.0
22	1.5	3.3	9 (5)	-2.5	0.0	-3.6	8.15	9.5
23	0.4	2.6	14 (3)	-5.6	-3.1	-7.6	5.55	8.5
24	1.1	3.0	3 (5)	-4.9	-2.8	-5.7	9.85	17.0
25	3.5	7.2	14 (7)	-0.1	1.4	-1.4	9.60	4.5
26	2.5	5.8	13 (7)	2.7	3.8	1.8	8.35	3.0
27	0.8	2.0	3 16 (3)	1.2	4.0	-1.2	6.80	2.5
28	2.7	6.3	13 (8)	1.0	4.5	-1.0	4.30	14.5
TOTL							224.60	182.5
MEAN	2.1	5.2		-1.0	1.7	-3.8	8.02	
MAX	6.7	12.5		6.0	8.8	3.7	13.95	
MIN	0.4	1.6		-5.6	-3.1	-11.8	4.05	
DN	28	28		28	28	28	28	28

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

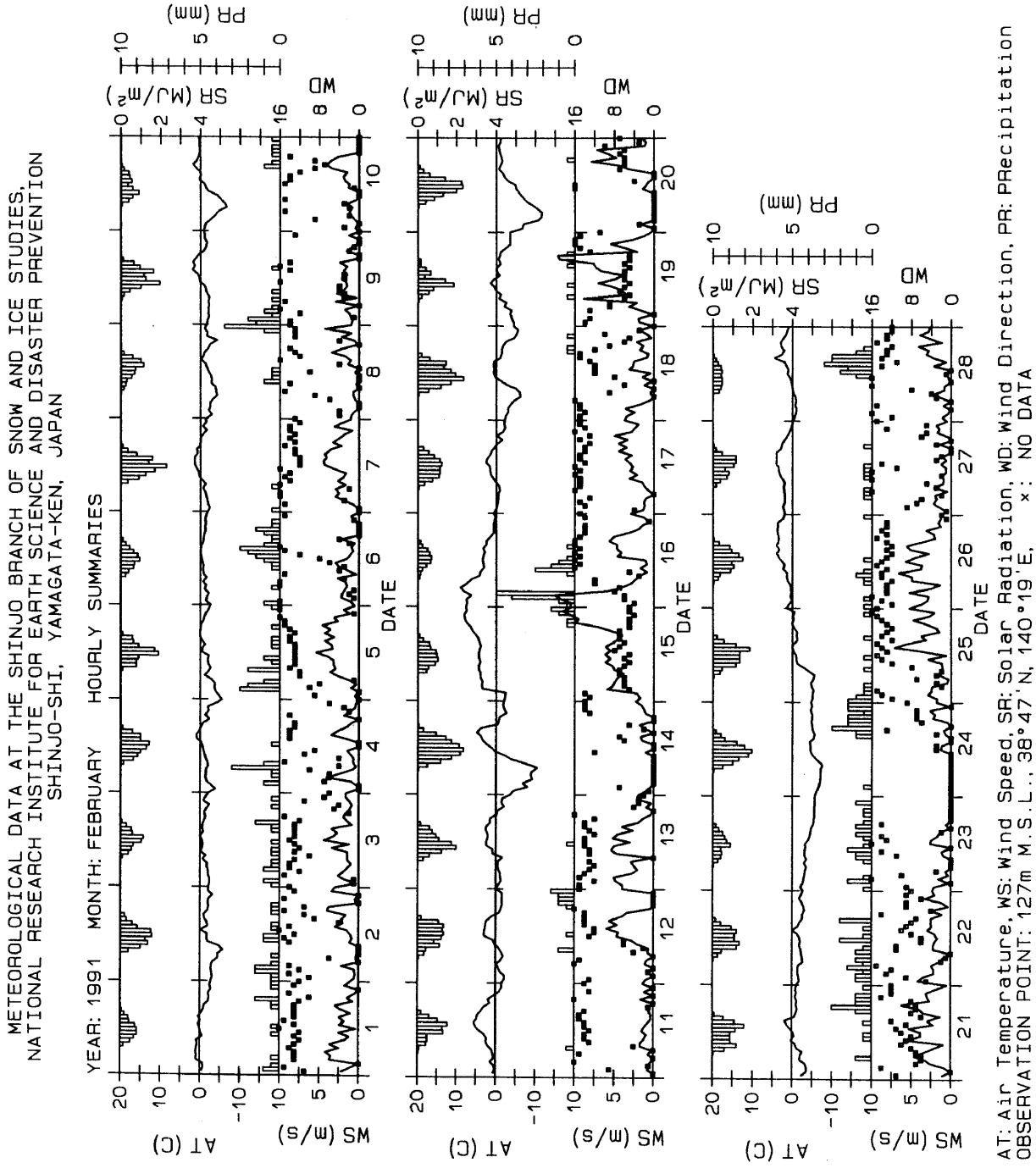

Fig.4.40 気象変化図

Seasonal variations in meteorological data.

Table 7.41 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

MARCH 1991

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	3.4	7.6	13 (7)	-0.8	0.8	-2.3	13.50	0.5
2	1.3	5.3	12 16 (3)	-0.5	3.4	-4.9	14.35	2.0
3	2.7	6.7	15 (8)	0.3	2.9	-4.3	10.70	1.5
4	1.3	4.2	14 (3)	4.2	8.1	1.4	15.85	0.0
5	1.0	3.1	2 4 11(3)	5.5	9.5	-0.7	15.85	0.0
6	1.3	7.4	13 (3)	3.1	10.5	-2.3	14.05	1.0
7	4.5	8.5	13 (9)	-0.1	4.1	-1.6	5.95	1.0
8	1.3	7.6	14 (5)	0.3	2.9	-1.9	12.30	3.5
9	3.1	8.1	14 (6)	2.0	4.8	0.2	5.20	13.0
10	1.8	5.0	12 15 (5)	1.0	3.3	0.0	10.85	4.5
11	0.2	1.8	1 8 10(1)	1.1	2.3	0.0	10.00	3.0
12	1.7	5.6	13 (6)	2.1	5.1	0.3	9.00	1.0
13	1.9	4.2	14 (8)	0.9	2.7	-1.5	16.00	1.0
14	2.3	6.1	14 (7)	-1.6	1.0	-4.2	14.70	3.0
15	2.1	6.4	14 (7)	-2.4	-0.2	-4.8	10.20	3.0
16	0.4	2.2	16 (4)	-1.0	1.4	-4.8	12.85	0.0
17	2.1	7.6	4 12 13(3)	1.3	4.4	-0.1	9.70	5.5
18	1.8	5.9	15 (5)	1.6	5.1	-4.3	15.95	0.0
19	0.4	3.0	2 8 (2)	0.8	11.0	-7.3	19.50	0.0
20	1.9	6.8	13 (6)	3.6	13.5	-3.6	5.10	0.0
21	2.9	6.9	13 (7)	0.5	2.6	-3.5	18.60	0.5
22	0.5	2.5	3 (4)	-0.3	5.1	-8.2	17.80	0.0
23	1.1	5.3	14 (4)	5.0	10.4	1.2	11.60	2.5
24	1.8	4.2	16 (6)	7.0	10.8	0.7	20.90	0.5
25	0.4	2.2	3 5 (3)	3.0	8.2	-1.6	10.75	0.0
26	1.0	4.0	13 (5)	4.0	10.7	-2.1	19.70	0.0
27	4.3	10.8	6 (10)	1.9	4.2	-1.7	4.00	7.0
28	0.3	1.9	15 (2)	3.1	5.5	1.5	3.95	1.0
29	1.5	3.9	14 (5)	3.8	7.2	-0.3	19.45	0.0
30	0.8	3.8	2 (6)	4.6	10.4	-1.7	13.05	1.0
31	2.0	5.8	14 (7)	4.3	6.9	1.0	11.95	2.0
TOTL							393.35	58.0
MEAN	1.7	5.3		1.9	5.8	-2.0	12.69	
MAX	4.5	10.8		7.0	13.5	1.5	20.90	
MIN	0.2	1.8		-2.4	-0.2	-8.2	3.95	
DN	31	31		31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.2	6.0	15 (5)	-1.8	0.5	-4.5	13.85	0.0
2	1.8	5.0	13 14 15(4)	0.1	3.1	-3.5	13.35	2.5
3	2.1	6.4	15 (6)	1.9	3.8	-0.2	11.20	1.0
4	1.3	3.1	13 14 (4)	5.5	8.0	1.6	16.10	0.0
5	0.6	2.4	4 (4)	2.6	9.2	-2.2	15.35	0.0
6	3.4	6.6	13 14 (5)	4.0	10.2	-0.6	13.60	1.0
7	2.5	6.7	13 (8)	-0.9	1.0	-1.7	6.25	1.0
8	2.7	6.9	6 (6)	1.2	2.6	-0.3	11.85	14.5
9	2.2	4.9	14 (6)	1.9	4.6	0.0	6.05	3.5
10	1.1	3.7	12 (3)	0.9	3.3	0.0	10.75	5.0
11	0.3	1.3	12 13 (2)	1.3	2.1	0.5	9.20	1.0
12	2.5	5.0	13 (8)	1.9	4.7	0.2	11.05	1.5
13	1.4	3.7	13 (7)	0.0	2.3	-1.9	15.55	1.5
14	3.0	5.5	14 (9)	-2.4	0.8	-4.1	13.90	4.5
15	1.4	5.0	15 (5)	-2.2	-0.3	-4.6	10.65	0.5
16	0.5	2.4	4 (4)	0.5	1.4	-1.0	11.85	3.0
17	2.9	7.1	15 (7)	1.6	3.0	0.6	10.80	2.5
18	0.8	2.5	13 (3)	-0.9	5.1	-6.6	16.85	0.0
19	0.5	2.0	7 8 (2)	2.2	10.2	-2.9	17.70	0.0
20	3.0	5.4	13 (8)	4.6	12.5	-0.2	5.60	0.0
21	1.9	6.4	13 (5)	-1.9	2.4	-8.1	20.35	0.5
22	1.0	4.7	14 (5)	2.8	6.4	-0.4	16.20	2.0
23	1.5	4.0	16 (7)	6.7	8.5	5.0	13.05	1.0
24	1.2	3.3	13 (5)	4.4	10.7	-1.1	20.40	0.0
25	0.5	2.2	3 (3)	3.5	7.6	0.4	9.75	0.0
26	2.8	9.6	13 (5)	4.0	10.5	-1.8	18.50	1.5
27	2.7	8.2	6 (7)	2.2	3.1	1.5	4.15	6.5
28	0.8	2.8	13 (3)	3.6	5.4	2.5	6.00	0.0
29	1.2	3.6	14 (4)	2.6	6.8	-1.5	20.15	0.0
30	0.8	2.2	2 14 (3)	6.4	10.2	3.4	10.45	2.5
31	1.8	5.0	14 (5)	2.7	6.6	-0.1	12.35	0.5
TOTL							392.85	57.5
MEAN	1.7	4.6		1.9	5.4	-1.0	12.67	
MAX	3.4	9.6		6.7	12.5	5.0	20.40	
MIN	0.3	1.3		-2.4	-0.3	-8.1	4.15	
DN	31	31		31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

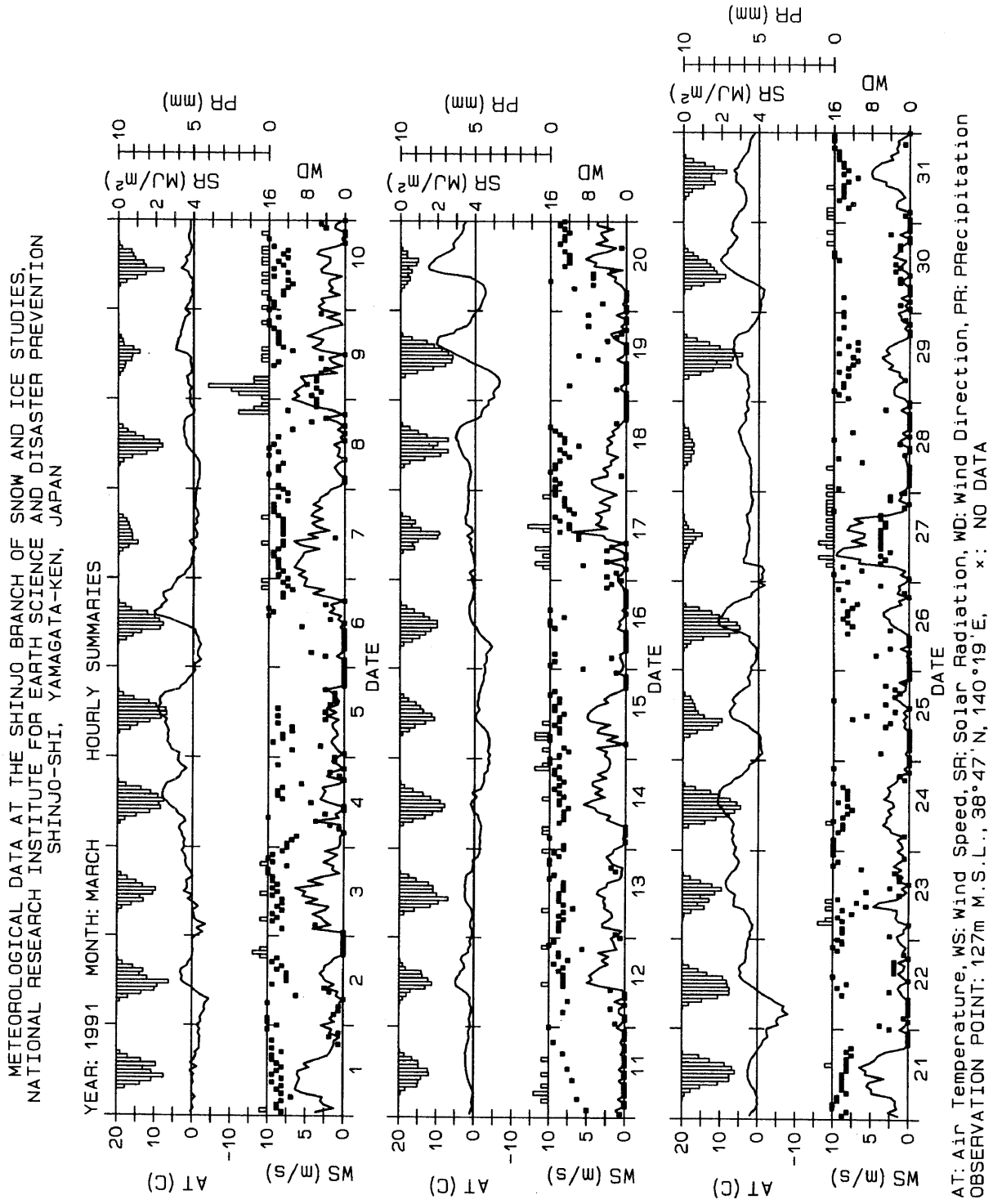

Fig.4.41 気象変化図

Seasonal variations in meteorological data.

Table 7.42 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

APRIL 1991

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.7	4.2	14	(3)	0.7	3.4	-2.0	8.00	1.5
2	1.3	4.8	14	(5)	0.9	6.0	-2.7	18.40	0.0
3	1.0	4.2	14	(6)	1.4	8.1	-4.5	18.90	0.0
4	0.5	3.1	11 15	(2)	3.8	14.4	-4.3	23.65	0.0
5	0.6	3.7	13 14	(3)	6.6	17.8	-2.9	22.95	0.0
6	0.5	3.1	12 13 14	(2)	8.5	16.4	0.0	12.45	0.0
7	2.0	6.5	6	(5)	9.6	14.6	5.9	14.50	0.5
8	5.7	11.3	7	(10)	8.3	10.5	7.2	6.55	6.0
9	1.3	3.8	15	(6)	8.9	11.3	6.7	6.00	2.0
10	1.1	4.5	6	(6)	11.4	19.0	6.3	24.75	0.0
11	1.0	3.7	9	(5)	12.5	22.1	5.9	21.60	0.0
12	2.6	7.2	5	(6)	12.0	20.5	3.2	23.30	0.5
13	2.4	7.7	6	(6)	12.6	19.2	6.2	12.85	0.5
14	2.3	6.0	13	(8)	8.4	12.1	2.9	12.05	0.5
15	1.3	4.7	3 10 12	(3)	8.8	17.1	-0.4	23.85	0.0
16	2.5	7.0	13 15	(5)	11.4	16.9	4.5	26.45	0.0
17	0.9	4.6	8 10 14	(2)	11.7	23.6	0.6	24.90	0.0
18	2.6	8.2	12	(5)	8.9	16.8	4.1	2.10	22.0
19	2.0	5.4	14	(6)	6.4	12.1	1.0	25.15	0.0
20	2.2	6.5	13	(5)	4.1	7.9	-1.1	11.15	0.5
21	1.5	5.1	12 14	(3)	6.8	14.1	-0.6	24.00	0.5
22	2.2	5.3	13	(6)	7.9	13.4	2.4	27.15	0.0
23	0.5	3.1	11	(3)	9.9	21.2	-0.7	24.70	0.0
24	1.5	6.3	5	(5)	13.7	22.6	3.6	21.40	0.0
25	2.7	7.1	5 6	(5)	13.9	18.5	9.5	20.25	1.0
26	1.2	4.2	13	(7)	14.1	21.7	9.2	16.40	0.0
27	X	X	X	(X)	X	X	X	X	X
28	X	X	X	(X)	X	X	X	X	X
29	X	X	X	(X)	X	X	X	X	X
30	X	X	X	(X)	X	X	X	X	X
TOTL								473.45	35.5
MEAN	1.7	5.4			8.6	15.4	2.3	18.21	
MAX	5.7	11.3			14.1	23.6	9.5	27.15	
MIN	0.5	3.1			0.7	3.4	-4.5	2.10	
DN	26	26			26	26	26	26	26

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.7	2.7	4	(3)	0.0	3.0	-2.6	10.50	1.5
2	1.0	3.0	14	(6)	0.4	5.2	-4.1	17.45	0.0
3	1.0	3.9	14	(5)	1.8	7.5	-4.3	20.40	0.0
4	0.6	2.0	1 11 13	(2)	4.6	13.8	-2.3	23.60	0.0
5	0.6	3.3	14	(3)	7.7	17.7	0.4	21.25	0.0
6	0.8	2.3	14	(6)	10.4	16.1	6.0	11.75	0.0
7	4.5	9.0	6	(8)	9.8	14.0	7.4	13.70	1.5
8	3.3	7.8	7	(5)	8.4	10.5	6.7	6.35	6.5
9	1.5	4.0	15	(4)	8.8	11.1	6.5	9.95	0.5
10	1.1	2.7	6	(5)	11.5	18.6	6.2	23.55	0.0
11	0.8	3.1	14 15	(3)	11.8	21.5	3.5	22.35	0.0
12	3.3	6.4	5	(6)	13.2	20.3	6.7	22.95	0.5
13	2.5	7.0	6 13	(5)	12.8	18.3	7.6	9.35	0.5
14	1.8	5.3	1	(4)	5.8	11.2	-0.3	16.15	0.5
15	1.7	3.6	15	(6)	11.4	16.6	6.0	24.05	0.0
16	1.9	6.0	13	(5)	9.2	16.7	1.2	26.50	0.0
17	1.3	6.0	11	(3)	14.0	23.6	7.5	20.55	7.0
18	2.9	6.9	12 13	(5)	6.9	16.7	1.8	5.70	15.0
19	1.7	4.7	14	(6)	5.1	11.5	-1.1	22.30	0.0
20	2.1	5.4	13	(5)	4.8	7.3	0.0	15.10	0.5
21	2.2	3.8	12 14	(5)	8.1	13.2	4.6	24.50	0.5
22	1.2	4.9	13	(6)	6.5	13.2	-0.3	26.50	0.0
23	0.5	2.4	11	(3)	11.5	20.7	3.7	24.50	0.0
24	2.2	6.3	5	(7)	15.9	22.1	10.8	20.65	0.5
25	2.2	7.1	6	(4)	13.2	18.0	9.8	18.00	0.5
26	X	X	X	(X)	X	X	X	X	X
27	X	X	X	(X)	X	X	X	X	X
28	X	X	X	(X)	X	X	X	X	X
29	X	X	X	(X)	X	X	X	X	X
30	X	X	X	(X)	X	X	X	X	X
TOTL								457.65	35.5
MEAN	1.7	4.8			8.5	14.7	3.3	18.31	
MAX	4.5	9.0			15.9	23.6	10.8	26.50	
MIN	0.5	2.0			0.0	3.0	-4.3	5.70	
DN	25	25			25	25	25	25	25

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

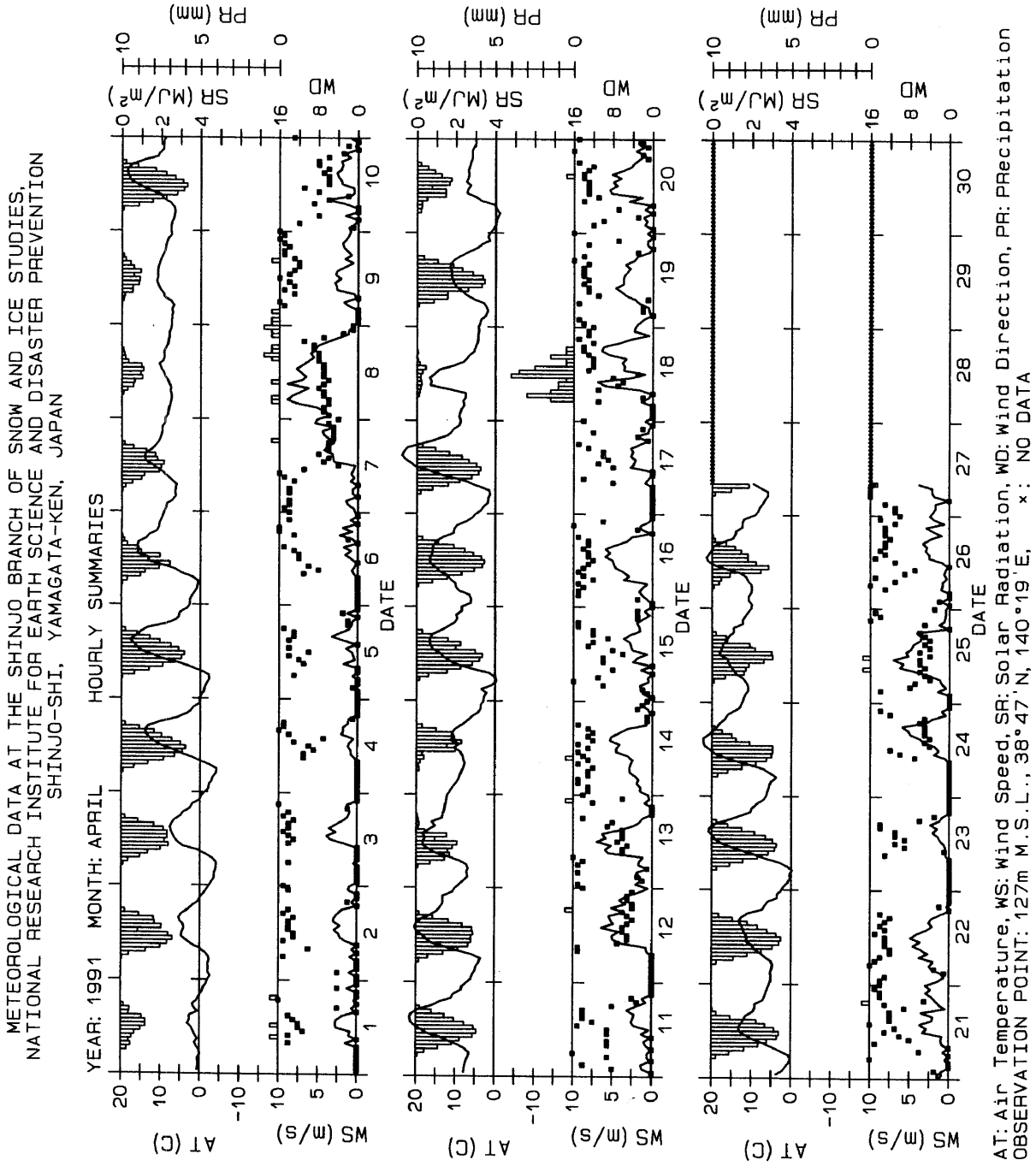

Fig.4.42 気象変化図

Seasonal variations in meteorological data.

Table 7.43 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

NOVEMBER 1991

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	X	X	X	(X)	X	X	X	X	X
2	X	X	X	(X)	X	X	X	X	X
3	X	X	X	(X)	X	X	X	X	X
4	X	X	X	(X)	X	X	X	X	X
5	X	X	X	(X)	X	X	X	X	X
6	X	X	X	(X)	X	X	X	X	X
7	X	X	X	(X)	X	X	X	X	X
8	X	X	X	(X)	X	X	X	X	X
9	X	X	X	(X)	X	X	X	X	X
10	X	X	X	(X)	X	X	X	X	X
11	X	X	X	(X)	X	X	X	X	X
12	X	X	X	(X)	X	X	X	X	X
13	X	X	X	(X)	X	X	X	X	X
14	X	X	X	(X)	X	X	X	X	X
15	X	X	X	(X)	X	X	X	X	X
16	X	X	X	(X)	X	X	X	X	X
17	X	X	X	(X)	X	X	X	X	X
18	X	X	X	(X)	X	X	X	X	X
19	X	X	X	(X)	X	X	X	X	X
20	X	X	X	(X)	X	X	X	X	X
21	X	X	X	(X)	X	X	X	X	X
22	X	X	X	(X)	X	X	X	X	X
23	X	X	X	(X)	X	X	X	X	X
24	X	X	X	(X)	X	X	X	X	X
25	X	X	X	(X)	X	X	X	X	X
26	X	X	X	(X)	X	X	X	X	X
27	X	X	X	(X)	2.7	5.7	-0.7	X	X
28	X	X	X	(X)	6.6	8.3	4.2	2.64	X
29	X	X	X	(X)	7.6	11.3	2.4	4.53	9.0
30	X	X	X	(X)	3.5	5.2	2.4	3.26	0.5
TOTL								10.43	9.5
MEAN	X	X			5.1	7.6	2.1	3.48	
MAX	X	X			7.6	11.3	4.2	4.53	
MIN	X	X			2.7	5.2	-0.7	2.64	
DN	0	0			4	4	4	3	2

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	X	X	X	(X)	X	X	X	X	X
2	X	X	X	(X)	X	X	X	X	X
3	X	X	X	(X)	X	X	X	X	X
4	X	X	X	(X)	X	X	X	X	X
5	X	X	X	(X)	X	X	X	X	X
6	X	X	X	(X)	X	X	X	X	X
7	X	X	X	(X)	X	X	X	X	X
8	X	X	X	(X)	X	X	X	X	X
9	X	X	X	(X)	X	X	X	X	X
10	X	X	X	(X)	X	X	X	X	X
11	X	X	X	(X)	X	X	X	X	X
12	X	X	X	(X)	X	X	X	X	X
13	X	X	X	(X)	X	X	X	X	X
14	X	X	X	(X)	X	X	X	X	X
15	X	X	X	(X)	X	X	X	X	X
16	X	X	X	(X)	X	X	X	X	X
17	X	X	X	(X)	X	X	X	X	X
18	X	X	X	(X)	X	X	X	X	X
19	X	X	X	(X)	X	X	X	X	X
20	X	X	X	(X)	X	X	X	X	X
21	X	X	X	(X)	X	X	X	X	X
22	X	X	X	(X)	X	X	X	X	X
23	X	X	X	(X)	X	X	X	X	X
24	X	X	X	(X)	X	X	X	X	X
25	X	X	X	(X)	X	X	X	X	X
26	X	X	X	(X)	X	X	X	X	X
27	X	X	X	(X)	4.4	5.7	1.3	X	X
28	X	X	X	(X)	8.1	9.1	6.8	2.72	X
29	X	X	X	(X)	5.4	11.3	2.4	4.53	0.0
30	X	X	X	(X)	3.6	5.2	2.5	3.25	0.5
TOTL								10.50	0.5
MEAN	X	X			5.4	7.8	3.2	3.50	
MAX	X	X			8.1	11.3	6.8	4.53	
MIN	X	X			3.6	5.2	1.3	2.72	
DN	0	0			4	4	4	3	2

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

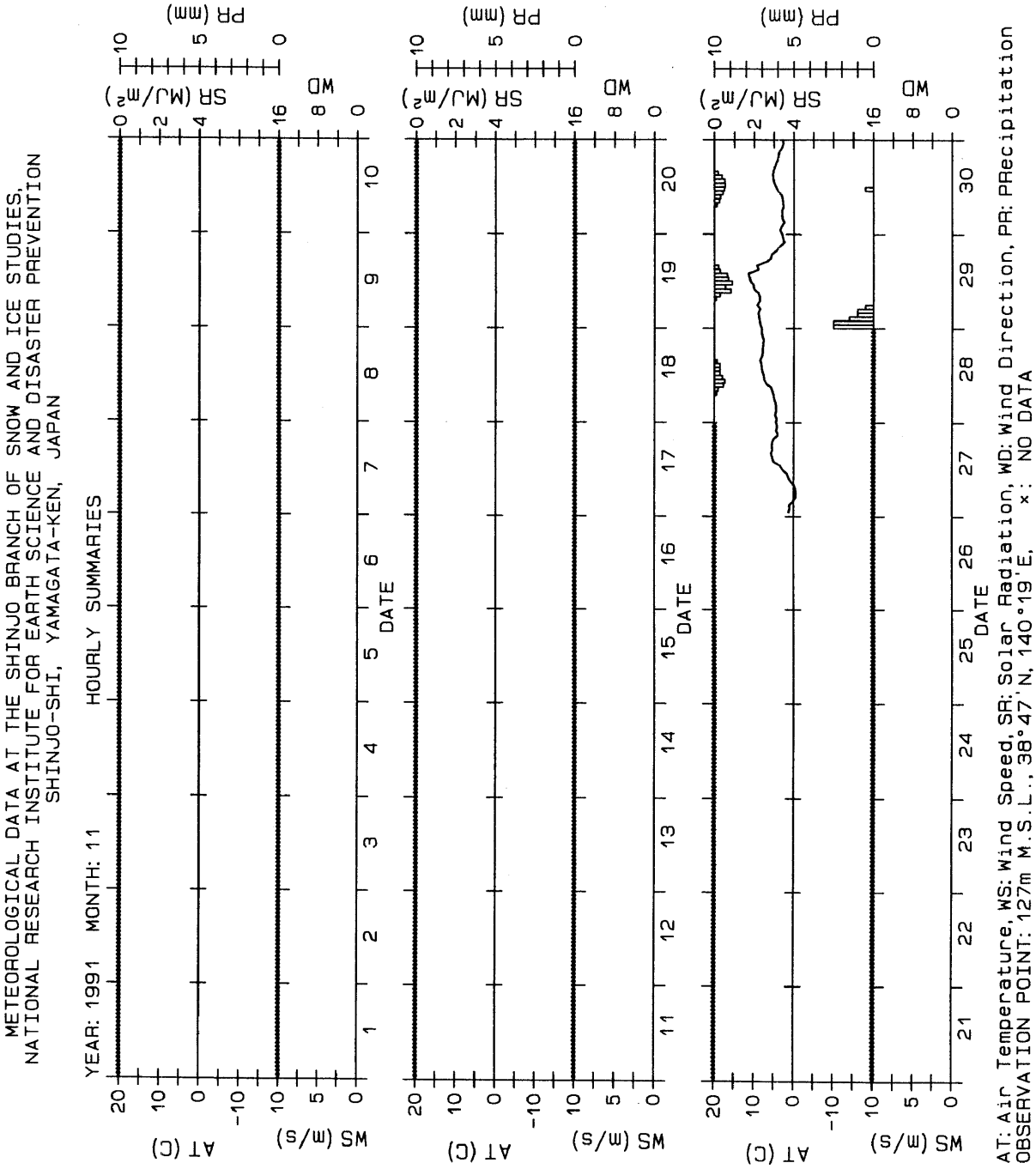

Fig.4.43 気象変化図

Seasonal variations in meteorological data.

Table 7.44 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

DECEMBER 1991

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	X	X	X	(X)	4.4	6.9	2.8	3.89	0.0
2	X	X	X	(X)	4.1	9.4	-1.0	8.39	0.5
3	X	X	X	(X)	1.7	6.8	-2.4	5.01	5.0
4	X	X	X	(X)	4.1	7.3	-0.6	4.82	0.5
5	X	X	X	(X)	3.7	8.5	0.6	X	4.5
6	X	X	X	(X)	X	X	X	2.33	0.0
7	X	X	X	(X)	4.2	11.0	1.2	1.99	0.0
8	1.4	2.3	14	(7)	0.8	2.5	-0.4	1.82	1.5
9	2.7	5.6	13	(7)	0.3	2.4	-1.0	3.82	3.5
10	2.1	6.0	14	(6)	-0.5	1.5	-1.7	4.53	2.0
11	1.6	6.1	15	(5)	0.8	4.5	-1.9	1.50	19.5
12	X	X	14	(7)	-1.4	1.2	-2.5	1.91	12.0
13	2.3	4.7	14	(6)	0.2	2.6	-2.0	3.84	0.5
14	0.9	3.2	13	(4)	0.6	1.0	-0.1	2.43	14.0
15	0.7	1.7	8 12	(3)	0.4	1.8	-1.1	5.32	X
16	0.6	1.3	13	(3)	0.4	1.5	-1.0	3.34	X
17	0.5	1.1	12	(6)	-0.5	0.9	-1.5	2.39	X
18	1.3	4.0	14	(8)	2.3	5.8	-0.8	1.64	X
19	2.7	5.5	14	(7)	1.3	4.3	-1.2	3.04	X
20	1.9	5.9	15	(3)	0.1	2.7	-3.1	6.53	X
21	1.2	2.0	16	(5)	3.2	7.8	0.5	6.77	X
22	1.2	4.1	14	(4)	3.0	9.3	-1.4	9.50	X
23	0.6	1.4	16	(4)	2.0	4.8	-2.0	3.58	X
24	1.2	3.1	14	(6)	4.8	6.9	2.9	1.33	X
25	2.2	3.8	14	(11)	1.8	3.3	-0.9	5.47	X
26	1.2	3.6	14	(6)	0.3	1.9	-0.9	3.67	X
27	X	X	15	(5)	0.7	2.9	-0.8	3.74	X
28	X	X	12	(5)	1.3	3.8	-0.5	2.15	X
29	4.6	7.7	13	(9)	-0.8	1.9	-2.6	4.01	X
30	3.4	5.3	13	(9)	-2.7	-0.2	-5.9	5.03	X
31	3.1	6.2	14	(12)	1.5	3.7	-0.2	6.17	X
TOTL								119.96	63.5
MEAN	1.8	4.0			1.4	4.3	-1.0	4.00	
MAX	4.6	7.7			4.8	11.0	2.9	9.50	
MIN	0.5	1.1			-2.7	-0.2	-5.9	1.33	
DN	21	21			30	30	30	30	14

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	X	X	X	(X)	4.4	6.9	1.2	4.31	0.0
2	X	X	X	(X)	2.3	9.4	-2.4	8.06	0.5
3	X	X	X	(X)	4.0	6.8	-1.1	5.52	5.0
4	X	X	X	(X)	3.1	7.3	-0.6	4.08	4.5
5	X	X	X	(X)	4.1	8.5	2.3	X	0.5
6	X	X	X	(X)	X	X	X	2.98	0.0
7	1.9	4.2	15	(9)	3.0	11.0	-0.4	1.21	0.0
8	1.5	2.3	15	(9)	0.6	2.5	-1.0	2.41	1.5
9	3.1	6.0	13	(8)	0.1	2.4	-1.3	3.64	5.0
10	1.4	4.7	15	(4)	-0.7	1.5	-1.9	4.52	1.0
11	2.2	6.1	13 14	(4)	1.1	4.5	-1.5	1.17	20.5
12	X	X	15	(9)	-1.7	0.0	-2.5	2.20	11.0
13	1.4	4.7	14	(4)	0.7	2.6	-0.1	3.69	3.0
14	0.9	3.2	13	(5)	0.8	1.1	0.5	2.83	X
15	0.7	1.3	12	(3)	0.2	1.8	-1.1	4.95	X
16	0.5	1.3	13	(3)	-0.1	1.5	-1.5	3.21	X
17	0.6	1.2	12	(4)	-0.1	0.9	-1.0	2.35	X
18	1.9	4.2	14	(10)	3.0	5.8	0.7	1.55	X
19	2.2	5.5	16	(6)	-0.2	4.3	-3.1	3.64	X
20	2.0	5.9	14 15	(4)	1.3	2.7	0.0	6.31	X
21	1.0	2.0	16	(5)	3.4	7.8	-1.1	7.35	X
22	1.1	4.1	15	(3)	2.2	9.3	-2.0	8.97	X
23	0.6	1.4	14	(4)	3.8	4.8	1.5	3.10	X
24	1.8	3.5	14	(8)	4.2	6.9	1.9	1.61	X
25	1.6	3.8	14	(8)	0.8	3.3	-0.9	5.40	X
26	1.3	3.6	14	(5)	0.4	1.9	-0.8	3.66	X
27	X	X	8 12	(3)	0.9	2.9	-0.8	3.66	X
28	4.5	8.4	13	(6)	1.3	3.8	-1.3	2.50	X
29	3.3	5.3	13	(9)	-2.4	0.8	-5.9	3.76	X
30	3.8	5.7	14	(16)	-1.0	1.9	-3.3	4.98	X
31	2.0	6.2	14	(4)	1.2	3.7	-0.4	6.19	X
TOTL								119.81	52.5
MEAN	1.8	4.1			1.4	4.3	-0.9	3.99	
MAX	4.5	8.4			4.4	11.0	2.3	8.97	
MIN	0.5	1.2			-2.4	0.0	-5.9	1.17	
DN	23	23			30	30	30	30	13

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

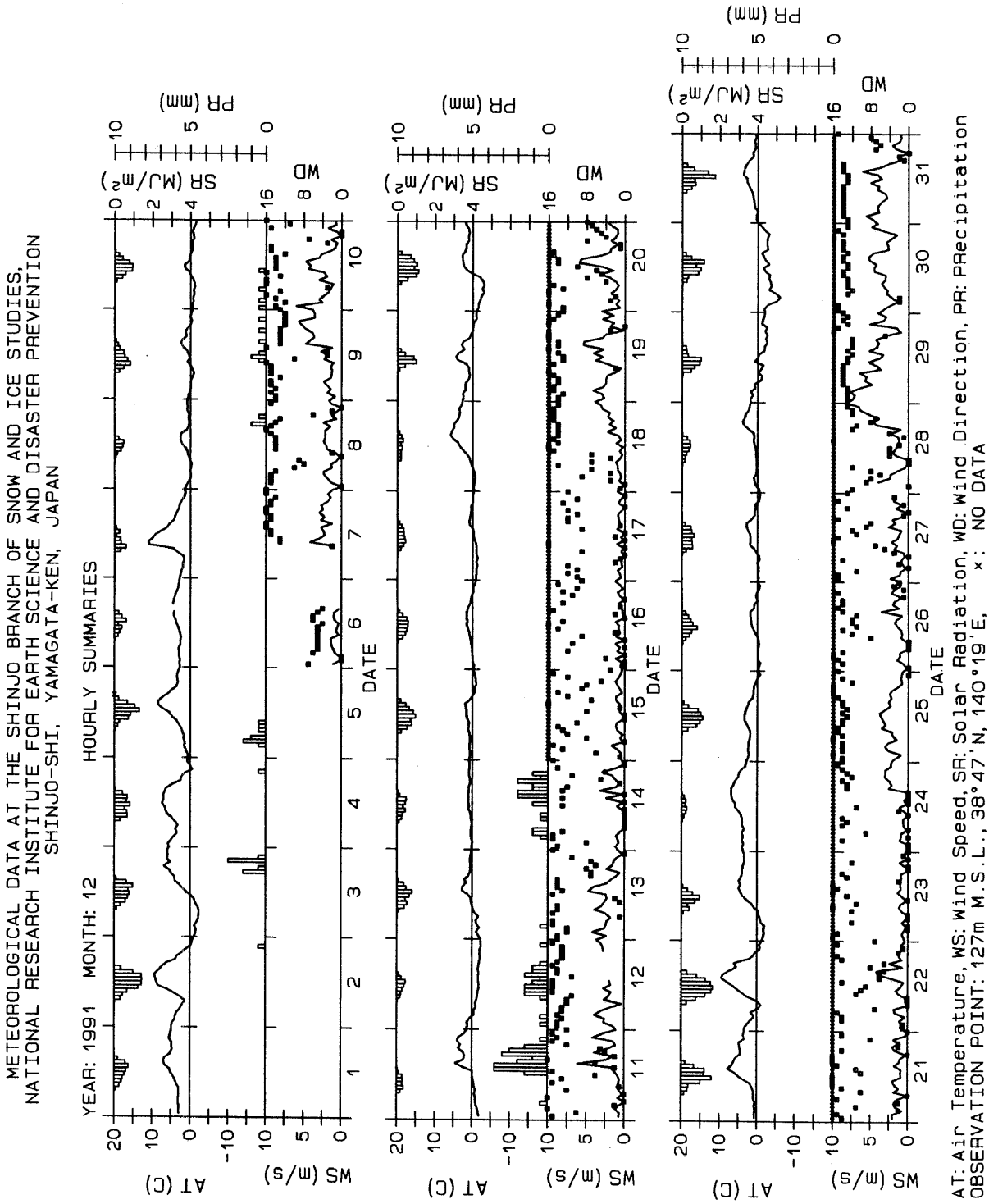

Fig.4.44 気象変化図

Seasonal variations in meteorological data.

Table 7.45 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

JANUARY 1992

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.0	2.2	16 (4)	0.7	1.9	-0.4	4.73	X
2	0.7	1.6	2 (2)	0.0	2.6	-3.7	4.48	X
3	0.8	2.1	5 (4)	1.0	2.8	0.2	4.51	X
4	X	X	14 (8)	1.7	3.5	0.3	5.84	X
5	X	X	14 (5)	1.6	3.8	0.2	4.49	X
6	X	X	16 (4)	0.5	3.2	-2.4	X	X
7	0.7	2.8	3 15 (2)	1.0	3.7	-0.6	4.03	X
8	3.2	7.5	14 (8)	3.9	5.7	1.5	4.12	X
9	0.7	2.2	1 (2)	0.1	1.6	-1.1	X	X
10	2.4	5.6	14 (8)	0.1	2.3	-1.6	6.64	X
11	2.8	5.1	14 (9)	3.0	6.0	-1.1	5.44	X
12	0.9	1.8	13 14 (2)	-0.1	3.9	-3.5	6.02	X
13	1.3	2.4	14 (4)	4.4	7.2	0.3	5.78	X
14	3.1	7.0	14 (11)	-1.5	0.6	-5.0	4.23	X
15	1.4	2.4	15 (7)	-2.0	0.0	-4.5	7.53	X
16	1.2	3.5	16 (4)	-0.3	4.1	-3.7	8.99	X
17	1.3	4.3	15 (4)	-0.7	3.5	-5.1	8.07	X
18	2.1	4.2	14 (6)	-0.6	1.2	-2.0	3.29	X
19	2.5	5.2	12 (6)	-0.4	1.0	-1.9	2.81	X
20	0.9	3.2	14 (6)	-1.0	0.7	-4.8	6.51	X
21	X	X	X (X)	-0.9	3.1	-7.9	9.13	X
22	X	X	14 (3)	-2.2	0.6	-8.0	5.02	X
23	X	X	13 (11)	-1.3	0.3	-3.7	5.44	X
24	2.7	6.0	13 (6)	-3.4	-1.7	-4.9	7.00	X
25	0.6	1.8	16 (4)	-2.6	0.5	-5.6	7.42	X
26	1.5	3.6	1 2 (3)	-0.9	3.1	-8.0	11.46	X
27	2.2	5.7	13 (8)	-3.4	3.1	-9.0	4.13	X
28	3.1	6.6	14 (8)	0.2	2.2	-2.3	3.23	X
29	X	X	13 (3)	-0.7	1.3	-2.4	5.56	X
30	X	X	13 (5)	-1.1	0.5	-3.9	7.14	X
31	0.9	1.9	16 (3)	-1.8	1.0	-3.7	8.49	X
TOTL							171.53	X
MEAN	1.7	3.9		-0.2	2.4	-3.2	5.91	
MAX	3.2	7.5		4.4	7.2	1.5	11.46	
MIN	0.6	1.6		-3.4	-1.7	-9.0	2.81	
DN	23	23		31	31	31	29	0

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.7	2.2	4 (3)	0.1	1.9	-3.7	4.88	X
2	0.9	1.7	2 4 8(2)	0.8	2.6	-1.0	4.34	X
3	1.6	4.6	5 (4)	1.2	2.8	0.3	4.48	X
4	X	X	14 (7)	1.9	3.8	0.2	5.87	X
5	X	X	16 (5)	0.8	3.3	-2.4	4.90	X
6	0.5	1.7	11 (2)	0.7	3.2	-0.6	X	X
7	2.1	7.5	13 (6)	2.7	5.5	0.8	3.77	X
8	2.1	5.0	14 (7)	2.3	5.7	-1.0	4.20	X
9	0.5	2.3	15 (2)	-0.2	1.6	-1.6	X	X
10	3.4	5.6	14 (11)	1.7	4.0	-0.6	6.39	X
11	1.9	5.1	14 (7)	0.9	6.0	-3.5	5.99	X
12	1.2	2.2	15 16 (4)	2.5	5.0	-1.0	5.73	X
13	1.1	2.4	14 (8)	3.0	7.2	0.1	5.68	X
14	3.3	7.0	14 (9)	-3.1	0.4	-5.0	4.49	X
15	1.1	2.4	15 (5)	-1.2	0.0	-2.4	7.41	X
16	1.2	3.5	15 (5)	-1.2	4.1	-5.1	9.45	X
17	1.7	4.3	6 (3)	1.0	3.5	-1.2	7.58	X
18	2.6	5.2	13 (7)	-1.2	-0.3	-2.0	3.13	X
19	1.5	5.1	12 (3)	-0.8	1.0	-4.8	3.10	X
20	1.0	3.2	14 (6)	0.0	0.7	-0.9	6.52	X
21	X	X	X (X)	-2.9	3.1	-8.0	8.97	X
22	X	X	14 (7)	-0.5	0.6	-2.1	4.97	X
23	3.1	6.0	13 (15)	-2.4	0.3	-4.2	5.53	X
24	1.3	4.9	16 (5)	-3.9	-1.7	-5.6	7.16	X
25	1.1	3.6	15 (3)	-0.7	1.1	-3.4	7.93	X
26	1.1	2.7	12 13 (3)	-4.1	3.1	-9.0	11.18	X
27	3.7	6.6	13 (12)	-0.3	3.1	-4.9	3.82	X
28	X	X	14 (4)	-0.5	2.2	-2.4	2.94	X
29	X	X	13 (6)	-0.6	1.3	-2.4	6.40	X
30	1.0	2.0	15 (4)	-1.7	0.5	-3.9	6.84	X
31	X	X	16 (3)	-1.5	1.0	-2.8	8.19	X
TOTL							171.84	X
MEAN	1.7	4.0		-0.2	2.5	-2.7	5.93	
MAX	3.7	7.5		3.0	7.2	0.8	11.18	
MIN	0.5	1.7		-4.1	-1.7	-9.0	2.94	
DN	24	24		31	31	31	29	0

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

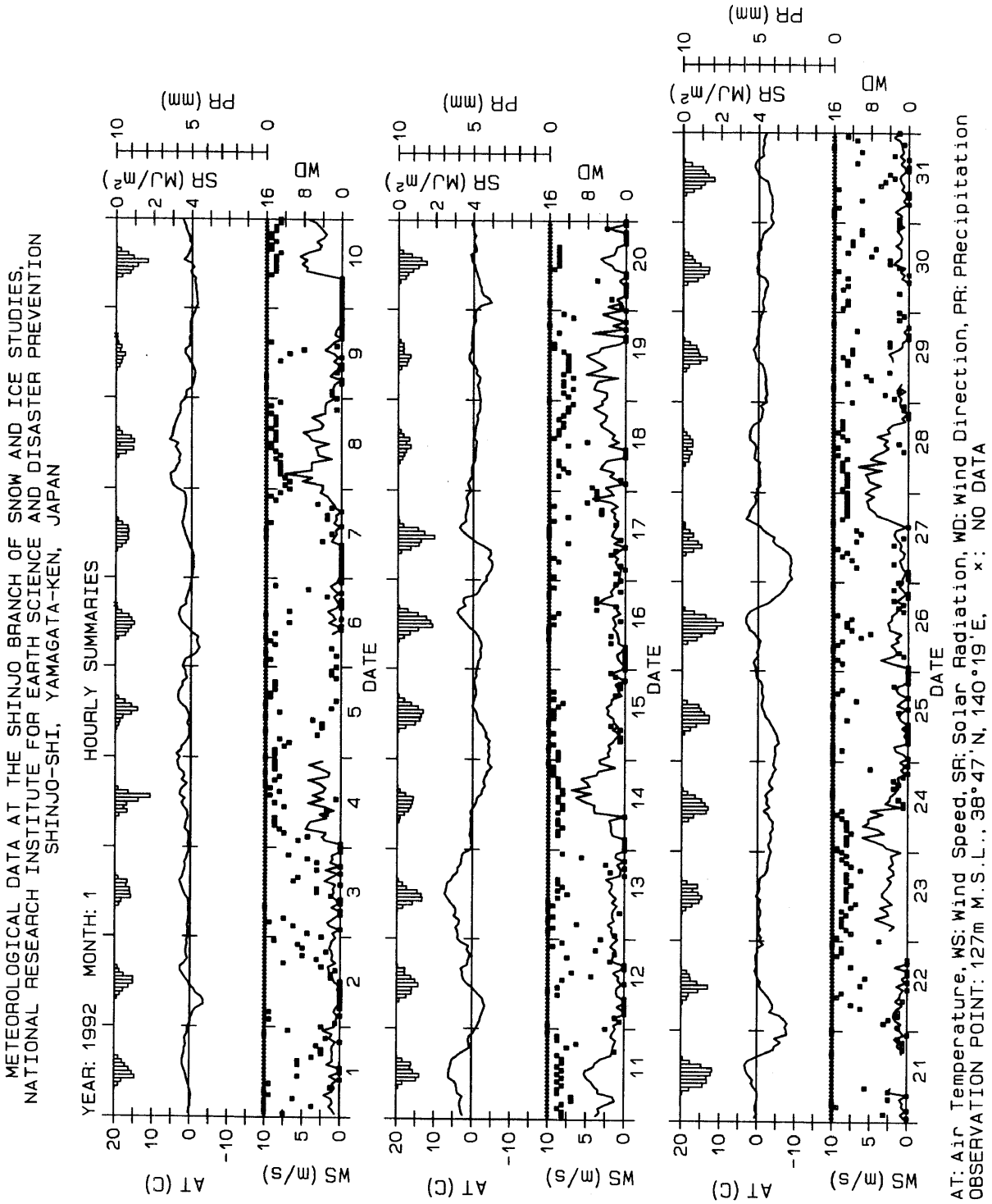

Fig.4.45 気象変化図

Seasonal variations in meteorological data.

Table 7.46　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

FEBRUARY 1992

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	X	X	15	(4)	-2.1	0.5	-5.3	6.32	X
2	2.9	5.3	14	(7)	-0.9	1.0	-3.4	7.47	X
3	1.0	2.1	16	(5)	-0.7	1.6	-4.2	3.62	X
4	1.8	4.6	14	(6)	0.5	2.4	-1.3	4.62	X
5	1.0	2.5	10	(4)	-1.7	-0.8	-2.7	6.42	X
6	0.7	2.0	3	(4)	-2.1	1.0	-5.6	10.70	X
7	1.5	3.5	15	(6)	-2.5	1.8	-6.6	5.75	X
8	1.9	4.7	14	(5)	-2.5	-1.3	-3.5	9.02	X
9	X	X	6	(5)	-2.3	-0.1	-4.2	9.81	X
10	X	X	15	(5)	-2.9	1.7	-10.3	7.81	X
11	X	X	14	(8)	-3.0	-1.5	-4.8	8.73	X
12	1.0	2.1	1	(3)	-3.9	1.7	-10.7	13.46	X
13	0.7	2.6	15	(3)	0.3	3.2	-2.9	11.22	X
14	1.8	6.4	13	(6)	-0.6	1.9	-3.9	9.60	X
15	2.1	4.9	6	(6)	0.9	4.0	-2.1	8.62	X
16	3.2	6.9	13	(10)	-2.2	0.6	-4.3	5.37	X
17	3.1	7.0	13	(10)	-2.1	0.5	-4.6	7.79	X
18	X	X	6	(3)	-3.0	1.5	-9.7	11.85	X
19	X	X	13	(9)	-2.5	0.5	-4.1	10.43	X
20	1.5	4.3	11	(4)	-4.8	-2.8	-8.4	8.42	X
21	1.4	4.2	13	(3)	-4.0	-1.9	-6.8	9.93	X
22	3.7	6.1	11	(9)	-2.1	-0.3	-3.7	10.05	X
23	3.5	7.1	11	(6)	-0.2	2.5	-4.0	10.85	X
24	0.8	2.9	1 2	(2)	-0.8	2.9	-3.7	9.66	X
25	X	X	11	(5)	-0.8	1.6	-2.5	12.26	X
26	2.7	5.1	13	(11)	-0.4	1.9	-2.8	8.14	X
27	2.1	4.2	12	(6)	1.2	6.7	-2.9	6.58	X
28	1.0	2.9	1	(4)	0.5	6.7	-5.6	16.45	X
29	0.7	1.6	15	(2)	0.3	2.0	-3.6	2.64	X
TOTL								253.59	X
MEAN	1.8	4.2			-1.5	1.4	-4.8	8.74	
MAX	3.7	7.1			1.2	6.7	-1.3	16.45	
MIN	0.7	1.6			-4.8	-2.8	-10.7	2.64	
DN	22	22			29	29	29	29	0

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.4	5.3	14	(6)	-2.1	0.5	-5.3	6.42	X
2	2.0	5.3	14	(4)	-0.9	1.0	-4.2	7.63	X
3	1.2	3.1	13	(4)	0.5	1.6	-1.4	3.44	X
4	1.7	4.6	15	(5)	-0.4	2.4	-2.4	4.55	X
5	0.6	2.2	10	(3)	-2.1	-0.8	-3.8	6.89	X
6	1.0	2.0	3	(5)	-2.8	1.0	-6.6	10.17	X
7	1.5	3.5	13	(5)	-1.8	1.8	-3.2	6.35	X
8	2.5	4.7	14	(6)	-2.7	-1.3	-4.2	9.16	X
9	X	X	6	(5)	-3.7	-0.1	-10.3	9.74	X
10	X	X	14	(7)	-1.5	1.7	-4.8	7.70	X
11	1.8	4.8	14	(8)	-4.8	-1.5	-10.7	8.86	X
12	0.8	2.1	1	(3)	-1.4	1.7	-5.9	13.84	X
13	0.8	2.6	15	(3)	0.1	3.2	-3.9	11.29	X
14	2.6	6.4	13	(6)	0.0	1.9	-1.6	9.16	X
15	1.6	4.7	16	(4)	-0.4	4.0	-4.3	8.40	X
16	4.4	7.0	13	(16)	-2.3	0.6	-4.4	5.06	X
17	1.7	4.3	13	(4)	-3.9	0.5	-9.7	8.98	X
18	X	X	13	(5)	-0.4	1.5	-3.5	11.20	X
19	3.3	6.7	14	(9)	-3.8	-2.0	-5.0	10.40	X
20	1.0	2.4	11	(4)	-5.2	-2.8	-8.4	8.70	X
21	2.8	6.1	11 12	(6)	-3.0	-1.9	-4.0	9.87	X
22	3.9	7.1	11	(8)	-1.2	0.5	-2.9	9.75	X
23	2.0	5.5	13	(4)	-1.0	2.5	-4.0	11.04	X
24	X	X	12	(4)	-0.1	2.9	-2.5	10.07	X
25	X	X	14	(5)	-1.2	1.6	-2.8	11.80	X
26	2.3	5.1	13	(9)	-0.5	1.9	-2.9	7.49	X
27	2.0	4.2	12	(6)	1.1	6.7	-5.6	8.36	X
28	0.9	2.9	1	(2)	0.8	6.7	-3.6	14.42	X
29	0.7	2.0	2	(6)	1.6	3.9	0.3	3.86	X
TOTL								254.60	X
MEAN	1.9	4.4			-1.5	1.4	-4.5	8.78	
MAX	4.4	7.1			1.6	6.7	0.3	14.42	
MIN	0.6	2.0			-5.2	-2.8	-10.7	3.44	
DN	24	24			29	29	29	29	0

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

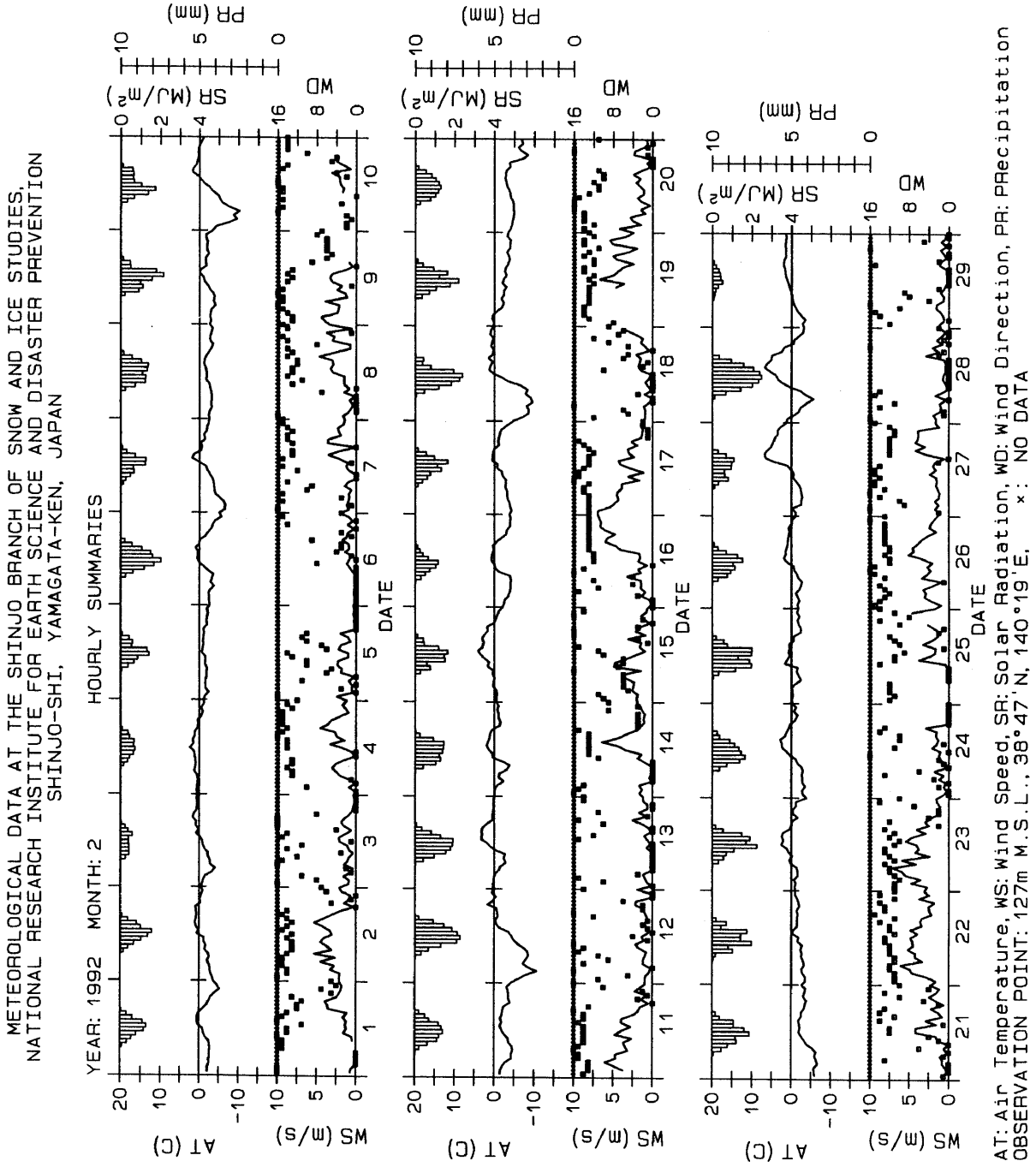

Fig.4.46 気象変化図

Seasonal variations in meteorological data.

Table 7.47　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

MARCH　1992

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST	FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.9	5.2	13		(7)	3.2	6.5	1.1	14.71	X
2	3.5	5.3	13		(9)	-0.6	1.8	-2.5	6.43	X
3	2.2	4.4	14		(7)	-1.5	0.8	-2.8	12.32	X
4	2.7	4.9	13		(9)	0.3	2.6	-3.5	11.05	X
5	2.9	7.8	6		(5)	-1.0	2.5	-6.0	7.17	X
6	1.7	5.1	14		(5)	0.4	2.0	-1.0	10.36	X
7	2.1	5.2	16		(4)	-0.9	1.9	-4.7	13.44	X
8	1.1	2.6	14		(4)	0.6	5.2	-3.4	14.35	X
9	0.7	1.7	1		(4)	1.3	6.5	-2.1	14.39	X
10	1.1	4.3	2		(3)	1.7	8.2	-2.8	15.50	X
11	2.7	6.4	13		(6)	2.5	5.6	-2.9	14.07	X
12	1.3	3.4	1	3	(4)	0.2	6.7	-6.6	17.26	X
13	1.5	3.5	14		(5)	4.6	8.2	0.0	12.22	X
14	1.3	2.6	3		(10)	5.0	9.7	1.1	18.97	X
15	1.0	2.1	16		(5)	2.5	3.7	1.4	3.93	X
16	3.4	6.0	13		(11)	2.7	5.7	-0.7	7.89	X
17	1.9	5.0	5		(6)	0.5	3.8	-2.5	19.37	X
18	4.6	8.4	6		(9)	0.7	1.5	0.1	4.06	X
19	1.4	2.8	13		(4)	2.6	6.5	0.1	14.88	X
20	2.5	5.8	13		(7)	1.8	4.2	-2.5	20.46	X
21	1.5	2.8	14		(7)	-1.8	-1.0	-3.0	5.55	X
22	3.4	6.4	14		(8)	0.0	2.6	-2.5	17.55	X
23	1.4	3.7	4	5	(3)	0.9	5.8	-4.9	17.09	X
24	2.9	7.2	7		(7)	2.8	5.2	0.0	16.06	X
25	1.1	2.0	16		(4)	4.1	6.7	1.9	5.21	X
26	2.1	4.0	13		(11)	5.7	8.3	2.7	14.64	X
27	1.1	2.2	14		(3)	4.5	10.1	0.3	17.43	X
28	X	X	X		(X)	3.5	11.4	-2.3	19.47	X
29	4.0	8.1	5		(9)	7.0	12.0	-0.7	18.37	X
30	1.1	2.3	13		(4)	7.1	8.5	5.4	4.65	X
31	1.1	2.4	14		(5)	6.7	9.2	2.6	5.79	X
TOTL									394.64	X
MEAN	2.1	4.5				2.2	5.6	-1.3	12.73	
MAX	4.6	8.4				7.1	12.0	5.4	20.46	
MIN	0.7	1.7				-1.8	-1.0	-6.6	3.93	
DN	30	30				31	31	31	31	0

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST	FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	4.3	5.3	13		(9)	2.4	6.5	-0.7	14.11	X
2	2.1	4.7	13		(8)	-1.5	0.1	-2.8	7.49	X
3	2.9	4.6	14		(9)	-0.8	1.0	-2.1	11.64	X
4	1.9	4.9	13		(7)	-1.2	2.6	-6.0	11.44	X
5	3.4	7.8	8		(6)	0.7	2.5	-1.0	7.25	X
6	1.1	4.0	15		(5)	-0.4	2.0	-2.7	10.72	X
7	2.3	5.2	14		(4)	-1.3	1.9	-4.7	13.70	X
8	0.9	2.6	16		(3)	1.6	5.2	-0.5	13.36	X
9	0.8	1.7	1		(5)	0.5	6.5	-2.8	14.37	X
10	1.5	4.3	16		(6)	3.4	8.2	0.3	15.52	X
11	2.3	6.4	13		(6)	-0.3	5.6	-6.6	15.30	X
12	1.5	3.4	5		(4)	2.7	6.7	0.0	16.28	X
13	1.6	3.5	3		(6)	5.5	8.2	2.8	13.34	X
14	1.3	2.6	3		(6)	4.1	9.7	1.1	16.95	X
15	1.2	4.9	16		(4)	3.0	5.3	1.6	4.50	X
16	2.8	6.0	13		(11)	0.8	5.7	-2.5	9.30	X
17	3.7	6.9	5		(10)	1.4	3.8	-0.2	17.55	X
18	2.8	8.4	8		(4)	0.6	1.6	0.1	5.14	X
19	1.9	4.0	13		(6)	3.1	6.5	0.5	15.69	X
20	2.0	5.8	13		(4)	0.6	4.2	-2.5	18.15	X
21	2.1	4.6	14		(9)	-1.7	1.1	-3.0	7.46	X
22	2.7	6.4	14		(6)	-0.7	2.6	-4.9	17.78	X
23	1.2	3.7	4		(3)	2.2	5.8	0.0	16.53	X
24	3.1	7.2	7		(7)	3.6	5.2	1.8	14.76	X
25	1.4	2.3	13		(4)	5.3	6.7	4.1	5.92	X
26	1.7	4.0	13		(9)	4.5	8.3	1.1	16.11	X
27	1.1	2.2	X		(X)	3.2	10.1	-2.3	17.10	X
28	X	X	X		(X)	4.5	11.4	-0.7	20.35	X
29	4.0	8.1	5		(9)	8.7	12.0	5.4	15.63	X
30	1.1	2.3	12		(3)	7.2	8.5	5.9	4.58	X
31	1.1	2.4	14		(5)	5.4	9.2	2.5	6.04	X
TOTL									394.06	X
MEAN	2.1	4.7				2.2	5.6	-0.6	12.71	
MAX	4.3	8.4				8.7	12.0	5.9	20.35	
MIN	0.8	1.7				-1.7	0.1	-6.6	4.50	
DN	30	30				31	31	31	31	0

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

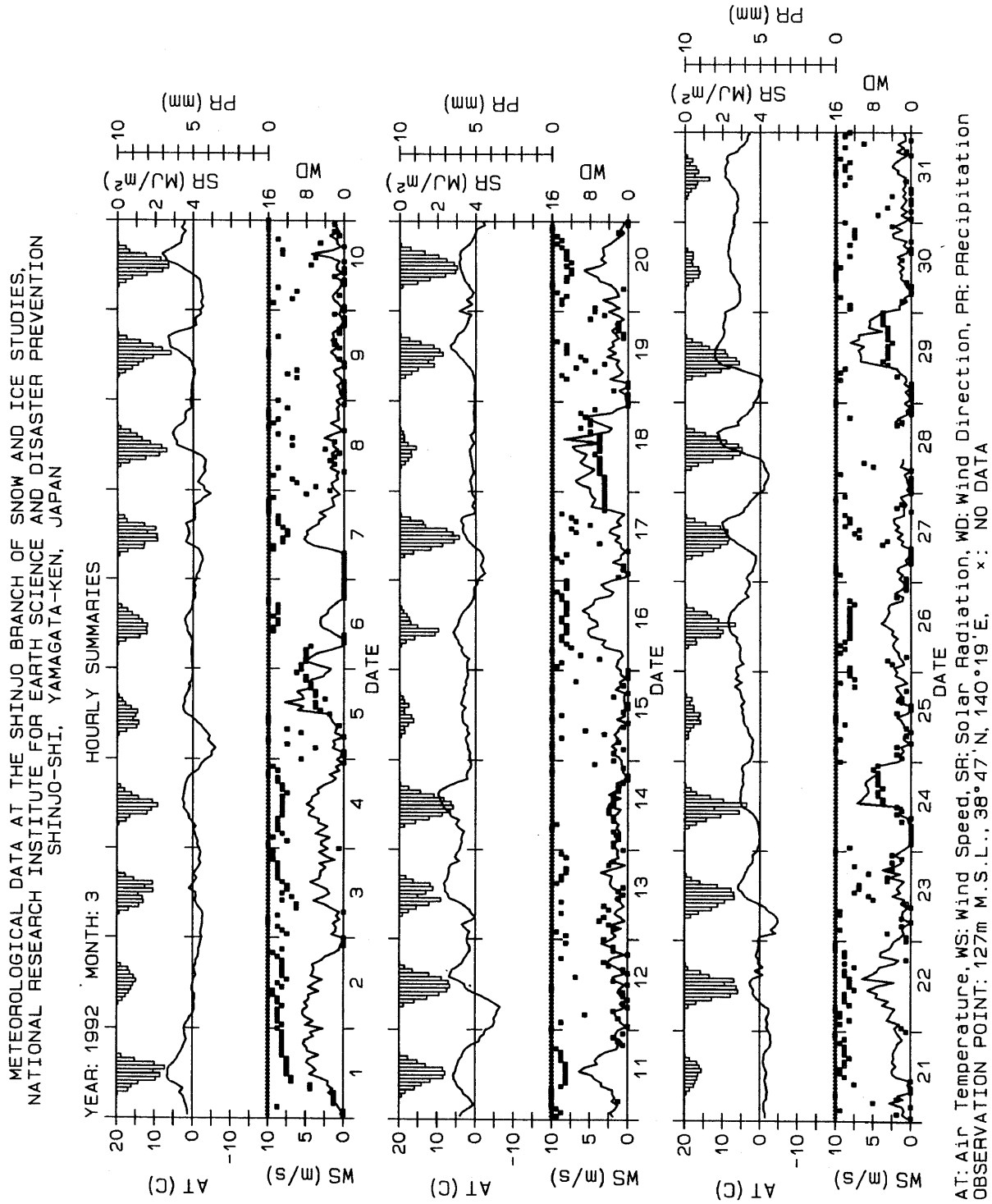

Fig.4.47 気象変化図

Seasonal variations in meteorological data.

Table 7.48 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

APRIL 1992

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.9	2.2	16	(5)	5.8	9.1	2.5	6.94	X
2	1.8	3.8	15	(5)	8.4	10.0	6.2	2.08	X
3	1.5	2.9	16	(6)	9.8	16.0	4.1	21.48	X
4	4.5	8.7	5	(11)	10.2	17.9	1.1	20.62	X
5	2.4	4.9	6	(6)	10.4	12.4	7.7	3.90	X
6	2.2	3.7	14	(8)	9.0	11.4	5.3	6.85	X
7	1.7	3.0	11	(4)	5.9	8.0	1.9	6.30	X
8	2.4	5.5	7	(5)	7.9	15.2	0.9	23.76	X
9	2.7	6.5	13	(4)	11.0	14.1	6.6	12.75	X
10	4.3	11.0	5	(6)	6.1	12.0	1.9	9.88	X
11	4.6	8.2	7	(8)	6.1	8.1	3.9	6.79	X
12	1.7	4.0	6	(4)	6.9	10.8	3.4	13.05	X
13	1.3	3.3	12	(5)	4.7	7.1	2.8	6.50	X
14	1.8	4.7	11 12 13	(3)	4.6	7.5	3.1	12.65	X
15	X	X	X	(X)	X	X	X	X	X
16	X	X	X	(X)	X	X	X	X	X
17	X	X	X	(X)	X	X	X	X	X
18	X	X	X	(X)	X	X	X	X	X
19	X	X	X	(X)	X	X	X	X	X
20	X	X	X	(X)	X	X	X	X	X
21	X	X	X	(X)	X	X	X	X	X
22	X	X	X	(X)	X	X	X	X	X
23	X	X	X	(X)	X	X	X	X	X
24	X	X	X	(X)	X	X	X	X	X
25	X	X	X	(X)	X	X	X	X	X
26	X	X	X	(X)	X	X	X	X	X
27	X	X	X	(X)	X	X	X	X	X
28	X	X	X	(X)	X	X	X	X	X
29	X	X	X	(X)	X	X	X	X	X
30	X	X	X	(X)	X	X	X	X	X
TOTL								153.55	X
MEAN	2.4	5.2			7.6	11.4	3.7	10.97	
MAX	4.6	11.0			11.0	17.9	7.7	23.76	
MIN	0.9	2.2			4.6	7.1	0.9	2.08	
DN	14	14			14	14	14	14	0

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.0	2.2	16	(5)	7.2	9.1	4.6	6.63	X
2	2.1	3.8	15	(7)	8.9	10.0	7.0	4.36	X
3	1.1	2.5	1	(3)	8.1	16.0	1.1	22.36	X
4	5.6	8.7	5	(13)	13.1	17.9	10.5	17.98	X
5	1.7	2.8	15	(4)	9.2	12.4	5.3	3.96	X
6	2.0	3.7	14	(8)	8.6	11.4	5.9	6.59	X
7	2.1	4.2	7	(4)	4.2	8.0	0.9	9.94	X
8	2.1	5.5	7	(4)	11.0	15.2	7.4	19.32	X
9	2.6	6.5	13	(4)	8.2	14.1	1.9	14.85	X
10	6.5	11.0	6	(7)	6.6	12.0	3.9	8.20	X
11	2.4	6.7	7	(4)	6.5	8.1	5.1	7.36	X
12	1.7	4.0	14	(4)	6.0	10.8	2.8	12.86	X
13	1.2	3.3	12	(5)	5.1	7.1	3.8	7.30	X
14	X	X	X	(X)	X	X	X	X	X
15	X	X	X	(X)	X	X	X	X	X
16	X	X	X	(X)	X	X	X	X	X
17	X	X	X	(X)	X	X	X	X	X
18	X	X	X	(X)	X	X	X	X	X
19	X	X	X	(X)	X	X	X	X	X
20	X	X	X	(X)	X	X	X	X	X
21	X	X	X	(X)	X	X	X	X	X
22	X	X	X	(X)	X	X	X	X	X
23	X	X	X	(X)	X	X	X	X	X
24	X	X	X	(X)	X	X	X	X	X
25	X	X	X	(X)	X	X	X	X	X
26	X	X	X	(X)	X	X	X	X	X
27	X	X	X	(X)	X	X	X	X	X
28	X	X	X	(X)	X	X	X	X	X
29	X	X	X	(X)	X	X	X	X	X
30	X	X	X	(X)	X	X	X	X	X
TOTL								141.71	X
MEAN	2.5	5.0			7.9	11.7	4.6	10.90	
MAX	6.5	11.0			13.1	17.9	10.5	22.36	
MIN	1.0	2.2			4.2	7.1	0.9	3.96	
DN	13	13			13	13	13	13	0

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

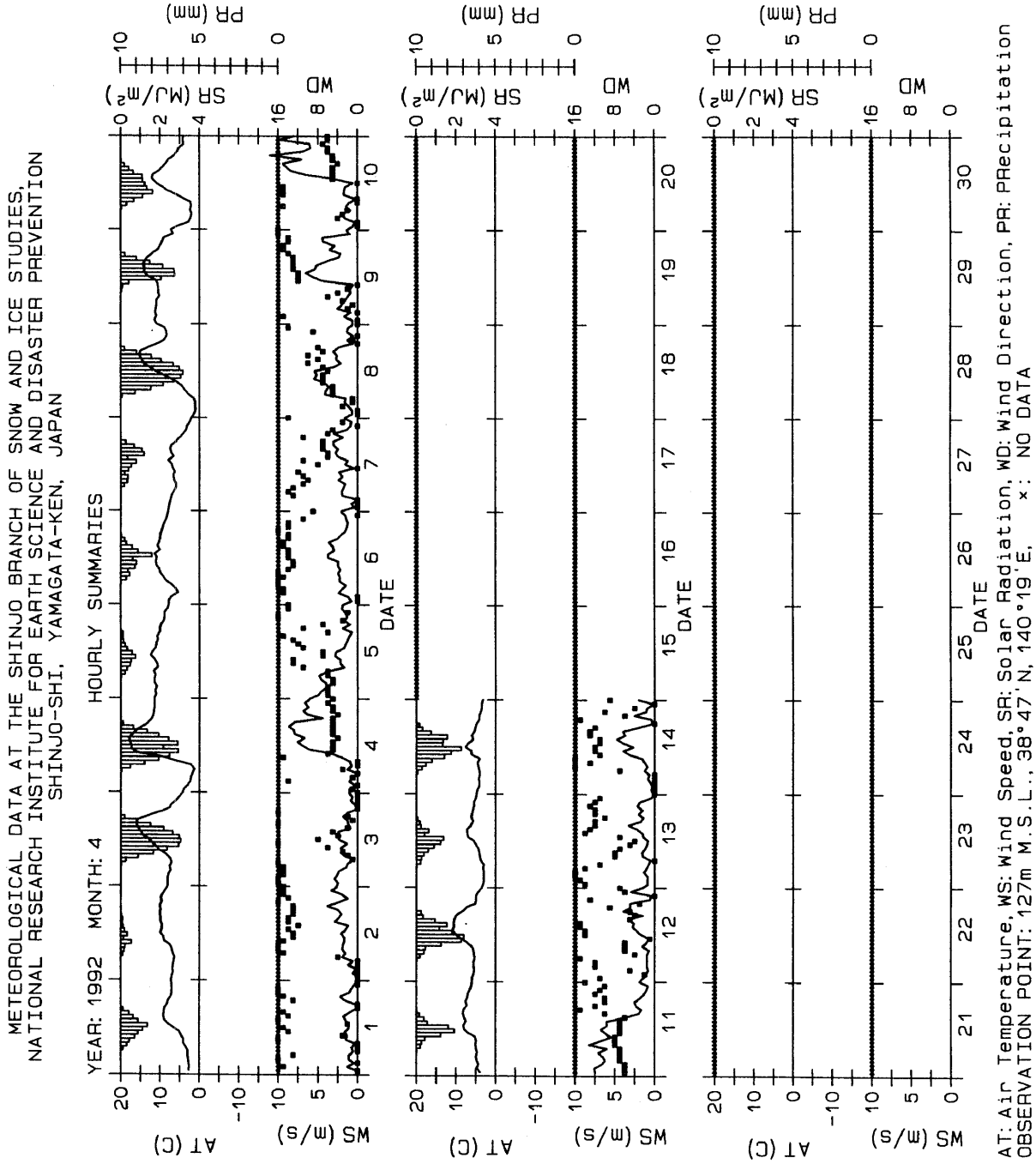

Fig.4.48 気象変化図

Seasonal variations in meteorological data.

Table 7.49 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

NOVEMBER 1992

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	X	X	X	(X)	X	X	X	X	X
2	X	X	X	(X)	X	X	X	X	X
3	X	X	X	(X)	X	X	X	X	X
4	X	X	X	(X)	X	X	X	X	X
5	X	X	X	(X)	X	X	X	X	X
6	X	X	X	(X)	X	X	X	X	X
7	X	X	X	(X)	X	X	X	X	X
8	X	X	X	(X)	X	X	X	X	X
9	X	X	X	(X)	X	X	X	X	X
10	X	X	X	(X)	X	X	X	X	X
11	X	X	X	(X)	X	X	X	X	X
12	X	X	X	(X)	X	X	X	X	X
13	X	X	X	(X)	X	X	X	X	X
14	X	X	X	(X)	X	X	X	X	X
15	X	X	X	(X)	X	X	X	X	X
16	X	X	X	(X)	X	X	X	X	X
17	X	X	X	(X)	X	X	X	X	X
18	X	X	X	(X)	X	X	X	X	X
19	X	X	X	(X)	X	X	X	X	X
20	X	X	X	(X)	X	X	X	X	X
21	X	X	X	(X)	X	X	X	X	X
22	X	X	X	(X)	X	X	X	X	X
23	X	X	X	(X)	X	X	X	X	X
24	X	X	X	(X)	X	X	X	X	X
25	X	X	X	(X)	X	X	X	X	X
26	2.6	6.3	13	(9)	3.4	9.8	-1.0	0.96	X
27	3.8	6.8	14	(10)	-0.9	1.0	-2.2	6.89	3.5
28	0.6	1.7	3	(3)	1.0	4.9	-1.4	7.59	0.0
29	1.2	2.8	15	(7)	5.1	10.3	-0.5	4.99	0.5
30	0.9	2.2	15	(5)	4.7	11.0	-0.6	9.92	0.0
TOTL								30.35	4.0
MEAN	1.8	4.0			2.7	7.4	-1.1	6.07	
MAX	3.8	6.8			5.1	11.0	-0.5	9.92	
MIN	0.6	1.7			-0.9	1.0	-2.2	0.96	
DN	5	5			5	5	5	5	4

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	X	X	X	(X)	X	X	X	X	X
2	X	X	X	(X)	X	X	X	X	X
3	X	X	X	(X)	X	X	X	X	X
4	X	X	X	(X)	X	X	X	X	X
5	X	X	X	(X)	X	X	X	X	X
6	X	X	X	(X)	X	X	X	X	X
7	X	X	X	(X)	X	X	X	X	X
8	X	X	X	(X)	X	X	X	X	X
9	X	X	X	(X)	X	X	X	X	X
10	X	X	X	(X)	X	X	X	X	X
11	X	X	X	(X)	X	X	X	X	X
12	X	X	X	(X)	X	X	X	X	X
13	X	X	X	(X)	X	X	X	X	X
14	X	X	X	(X)	X	X	X	X	X
15	X	X	X	(X)	X	X	X	X	X
16	X	X	X	(X)	X	X	X	X	X
17	X	X	X	(X)	X	X	X	X	X
18	X	X	X	(X)	X	X	X	X	X
19	X	X	X	(X)	X	X	X	X	X
20	X	X	X	(X)	X	X	X	X	X
21	X	X	X	(X)	X	X	X	X	X
22	X	X	X	(X)	X	X	X	X	X
23	X	X	X	(X)	X	X	X	X	X
24	X	X	X	(X)	X	X	X	X	X
25	X	X	X	(X)	X	X	X	X	X
26	4.0	6.8	13	(14)	0.1	6.7	-2.2	1.59	X
27	1.9	4.9	14	(7)	-0.6	1.0	-1.4	6.58	3.0
28	0.7	1.7	16	(3)	1.4	4.9	-0.5	7.84	0.0
29	1.4	2.8	15	(8)	6.1	10.3	0.0	5.51	0.5
30	0.7	2.2	15	(4)	3.2	11.0	-1.9	9.20	0.0
TOTL								30.72	3.5
MEAN	1.7	3.7			2.0	6.8	-1.2	6.14	
MAX	4.0	6.8			6.1	11.0	0.0	9.20	
MIN	0.7	1.7			-0.6	1.0	-2.2	1.59	
DN	5	5			5	5	5	5	4

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

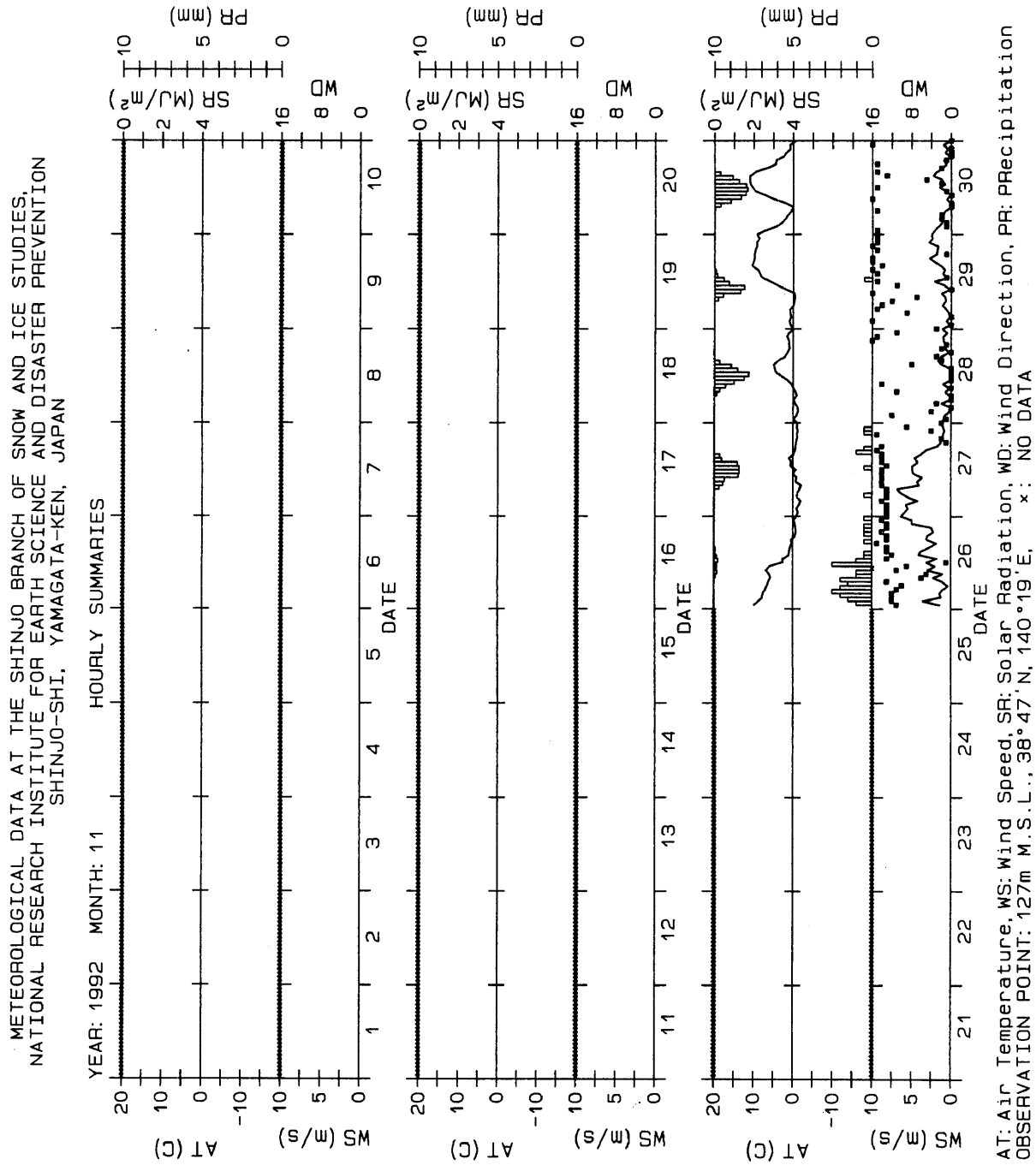

Fig.4.49 気象変化図

Seasonal variations in meteorological data.

Table 7.50 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

DECEMBER 1992

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST	WD(1-16) FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.7	2.2	15	(5)	1.5	5.7	-1.9	4.42	0.0
2	2.7	4.3	15	(7)	3.9	6.2	0.9	0.76	0.0
3	1.2	3.6	1	(5)	3.8	5.8	2.1	2.49	0.0
4	1.7	3.2	14	(8)	2.2	3.8	1.1	2.98	0.0
5	1.9	4.3	16	(7)	2.4	6.0	-2.7	4.72	0.0
6	0.7	1.5	16	(4)	-0.4	6.4	-5.0	8.81	0.0
7	0.6	1.7	2	(3)	1.3	4.3	-2.3	2.51	1.0
8	2.0	5.3	14	(6)	9.0	14.2	4.0	2.76	6.5
9	1.6	3.5	1	(6)	8.7	12.0	5.4	6.60	1.0
10	1.4	4.5	3 4	(3)	7.5	13.2	2.7	4.86	0.0
11	2.7	6.1	13	(8)	4.0	8.4	-1.0	2.05	23.5
12	2.3	4.9	13	(9)	0.8	3.0	-0.7	2.39	7.5
13	2.1	7.2	14	(5)	2.9	7.0	0.3	5.23	8.0
14	X	X	14	(15)	0.6	4.8	-1.2	1.86	20.5
15	2.0	5.2	13	(4)	-0.6	0.4	-1.7	3.27	11.0
16	1.3	2.8	X	(X)	0.5	1.2	-0.5	3.88	5.5
17	0.7	1.9	16	(2)	1.1	3.4	-0.4	5.28	2.0
18	2.4	5.3	15	(8)	-0.7	1.1	-3.1	2.80	9.0
19	1.2	2.6	15	(7)	-1.9	2.3	-6.3	5.64	0.0
20	0.4	1.6	14	(2)	-2.0	0.3	-5.6	2.61	3.5
21	2.0	8.4	5 8	(3)	1.3	4.7	-6.5	9.52	0.5
22	2.3	5.3	14	(9)	4.0	7.0	1.3	1.12	9.0
23	X	X	6 16	(4)	0.4	2.8	-2.6	2.05	30.5
24	X	X	X	(X)	-2.1	-0.2	-2.8	2.60	17.5
25	3.3	5.5	14	(11)	-0.5	1.9	-1.7	3.80	6.0
26	3.0	5.0	14	(11)	2.8	4.2	1.2	4.92	2.0
27	1.4	2.4	2	(7)	4.1	6.1	2.2	2.84	15.5
28	1.3	2.2	15	(9)	2.5	3.8	0.7	3.81	1.5
29	0.9	1.7	15	(4)	0.9	2.3	0.0	5.26	2.5
30	1.1	4.1	7	(3)	1.3	4.1	0.2	4.71	7.0
31	3.3	6.5	14	(12)	0.6	1.9	-0.7	5.86	3.5
TOTL								122.41	194.5
MEAN	1.7	4.0			1.9	4.8	-0.8	3.95	
MAX	3.3	8.4			9.0	14.2	5.4	9.52	
MIN	0.4	1.5			-2.1	-0.2	-6.5	0.76	
DN	28	28			31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST	WD(1-16) FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.0	2.2	15	(4)	2.9	5.8	0.0	4.09	0.0
2	3.0	4.3	15	(10)	4.2	6.2	2.9	0.78	0.0
3	0.7	2.3	14	(4)	3.2	5.8	1.1	2.69	0.0
4	2.2	4.1	15	(8)	2.5	3.8	1.3	2.83	0.0
5	1.3	4.3	14	(6)	0.1	6.0	-5.0	5.22	0.0
6	0.7	1.5	16	(4)	0.4	6.4	-2.3	8.62	0.0
7	0.8	1.7	16	(4)	4.2	8.4	1.2	2.19	5.0
8	2.5	5.3	14	(8)	9.8	14.2	7.7	3.18	3.0
9	1.0	2.6	1 13	(4)	7.0	12.0	2.7	6.34	0.5
10	1.7	4.5	3 4	(3)	8.5	13.2	4.0	4.87	10.0
11	3.4	6.1	13	(12)	1.4	8.4	-1.0	1.91	18.5
12	1.3	4.6	13	(5)	1.1	3.0	0.3	2.77	4.0
13	X	X	14	(7)	3.5	7.0	0.3	4.75	18.0
14	3.0	5.2	14	(13)	-0.5	0.6	-1.7	2.14	11.5
15	1.7	3.5	6	(7)	-0.2	0.6	-0.8	3.23	12.0
16	0.6	1.9	X	(X)	0.6	1.2	-0.4	3.88	3.0
17	1.3	4.0	15	(5)	1.1	3.4	-0.9	5.20	3.0
18	2.4	5.3	15	(8)	-2.0	0.5	-6.3	3.06	7.0
19	0.8	2.0	15	(4)	-2.2	2.3	-5.7	5.44	0.0
20	0.2	1.6	4 7 9	(1)	-1.4	0.4	-6.5	3.23	3.5
21	3.0	8.4	7	(4)	3.0	4.7	-1.1	8.74	4.0
22	2.2	4.2	14	(7)	4.1	7.0	1.8	0.96	20.0
23	X	X	X	(X)	-1.4	0.9	-2.8	2.07	27.0
24	3.9	6.2	13	(10)	-1.6	-0.1	-2.7	2.92	8.0
25	3.2	4.9	13 14	(10)	0.6	2.2	-1.0	3.73	4.5
26	2.2	5.0	14	(7)	3.4	4.7	1.8	4.76	9.0
27	1.3	2.4	2	(5)	3.8	6.1	1.8	3.05	9.5
28	1.1	2.2	15	(10)	1.7	3.8	0.0	3.78	0.5
29	1.2	1.8	2	(4)	1.0	2.3	0.2	5.34	3.5
30	1.9	4.8	14	(5)	1.2	4.1	-0.7	4.79	8.5
31	2.8	6.5	14	(8)	0.8	1.9	-0.3	5.96	1.5
TOTL								122.52	195.0
MEAN	1.8	3.9			2.0	4.7	-0.4	3.95	
MAX	3.9	8.4			9.8	14.2	7.7	8.74	
MIN	0.2	1.5			-2.2	-0.1	-6.5	0.78	
DN	29	29			31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

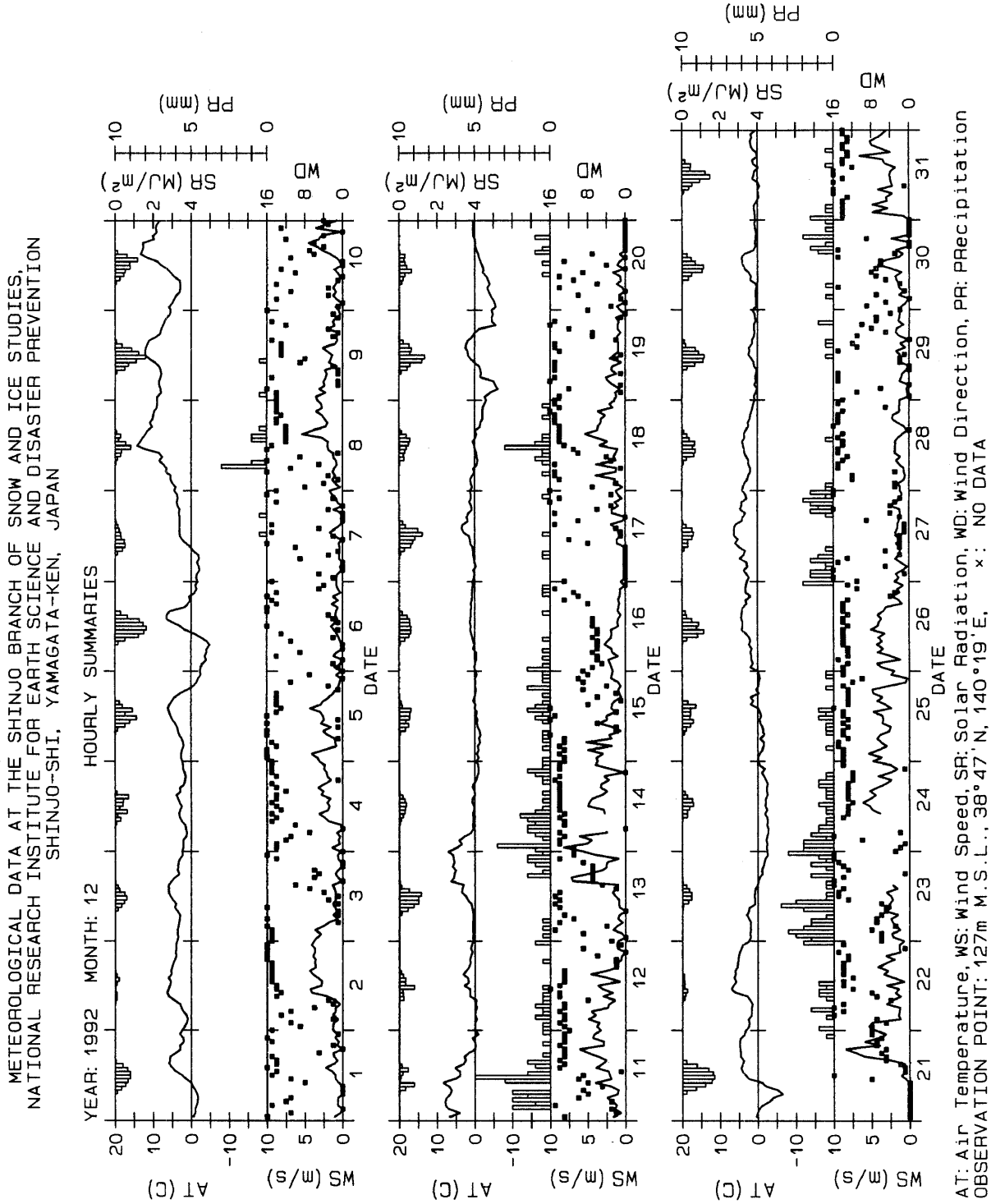

Fig.4.50 気象変化図

Seasonal variations in meteorological data.

Table 7.51　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

JANUARY　1993

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.5	3.1	2	(4)	0.6	3.6	-5.7	6.03	0.5
2	1.0	2.5	16	(3)	-1.1	1.7	-5.3	7.45	3.5
3	1.2	2.6	6	(4)	2.9	5.9	0.5	3.08	20.0
4	2.3	5.9	14	(7)	-0.6	0.8	-2.2	5.40	5.5
5	2.8	6.4	13	(8)	-0.9	1.7	-2.4	4.95	11.0
6	1.8	3.6	14	(7)	0.8	3.4	-2.4	4.25	0.0
7	0.7	2.0	1	(3)	0.3	2.2	-1.7	4.51	3.0
8	3.4	7.3	14	(13)	1.7	3.7	0.7	5.23	0.5
9	1.3	3.4	15	(4)	0.3	3.3	-2.0	5.75	0.0
10	1.2	2.8	14	(5)	0.1	1.9	-1.5	2.92	6.0
11	2.1	3.8	16	(8)	0.6	2.7	-0.8	5.73	0.0
12	2.5	5.3	14	(9)	1.4	3.2	-0.8	7.71	0.5
13	1.4	3.1	13	(5)	1.6	2.7	0.0	5.50	0.0
14	X	X	14	(2)	-0.2	1.9	-1.7	4.31	5.5
15	X	X	4	(3)	0.1	2.1	-1.2	3.71	0.5
16	4.3	6.8	9	(10)	1.7	2.5	0.3	3.88	2.5
17	3.2	5.9	13	(7)	1.6	3.7	0.0	6.36	12.5
18	1.8	4.7	5	(3)	1.1	4.3	-3.0	11.60	0.0
19	1.8	4.4	12	(4)	-0.1	2.8	-1.5	5.93	10.0
20	1.8	5.3	13	(10)	-1.1	-0.4	-1.7	3.16	26.5
21	2.6	4.6	14	(10)	-0.6	2.8	-2.2	7.74	8.5
22	1.5	3.7	14	(7)	-1.4	0.0	-4.6	7.38	4.5
23	0.8	1.7	16	(4)	-3.0	0.6	-7.7	9.69	1.0
24	0.6	1.8	3	(3)	-4.4	1.8	-9.0	10.81	0.0
25	2.2	6.5	6	(4)	-0.8	4.8	-7.0	6.14	0.0
26	1.8	3.5	1	(4)	1.5	2.4	0.7	5.12	0.5
27	1.0	2.8	16	(4)	0.9	2.1	-0.4	5.01	0.5
28	3.5	7.1	12	(8)	0.0	1.6	-3.0	4.71	7.0
29	6.5	7.7	13	(14)	0.3	2.2	-1.8	5.88	12.0
30	2.8	5.3	13	(12)	0.7	2.0	-0.6	3.74	14.0
31	1.6	4.3	13	(6)	0.8	3.6	-0.6	8.88	6.5
TOTL								182.56	162.5
MEAN	2.1	4.4			0.2	2.5	-2.2	5.89	
MAX	6.5	7.7			2.9	5.9	0.7	11.60	
MIN	0.6	1.7			-4.4	-0.4	-9.0	2.92	
DN	29	29			31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.1	2.4	4	(4)	-0.9	3.6	-5.7	6.08	0.0
2	1.2	2.5	6 10	(3)	0.9	2.9	-2.3	7.22	7.5
3	2.1	5.9	14	(8)	2.2	5.9	-0.8	3.22	17.0
4	1.8	4.5	13	(5)	-1.0	0.6	-2.2	5.14	10.5
5	2.9	6.4	14	(12)	-0.1	2.4	-2.4	5.05	5.0
6	1.0	2.6	3	(4)	-0.1	3.4	-2.4	4.29	0.0
7	1.4	6.0	13	(4)	1.6	3.7	0.4	4.60	3.0
8	3.1	7.3	14	(12)	0.7	3.4	-2.0	5.21	0.5
9	1.1	2.7	1	(5)	0.1	3.3	-1.5	5.50	0.0
10	1.6	2.8	16	(7)	0.6	1.9	-0.6	3.05	6.0
11	2.3	3.8	14	(11)	0.7	2.7	-0.8	6.16	0.5
12	2.2	5.3	13 14	(8)	1.8	3.2	0.0	7.46	0.0
13	1.0	3.1	9 11	(3)	0.6	2.7	-1.7	5.44	0.0
14	X	X	15	(3)	-0.1	1.9	-1.2	4.08	6.0
15	2.4	6.0	8	(4)	1.0	2.4	0.0	3.71	2.5
16	3.8	6.8	9	(11)	1.6	2.5	0.8	3.89	8.0
17	2.6	5.9	13	(8)	0.7	3.7	-3.0	7.10	4.5
18	2.0	4.7	7	(3)	1.1	4.3	-1.2	11.08	5.5
19	1.8	4.4	7	(5)	-0.4	2.8	-1.7	5.63	14.0
20	2.2	5.3	13	(12)	-1.2	-0.4	-2.2	3.39	20.5
21	2.6	4.6	14	(10)	-0.6	2.8	-4.6	7.85	9.5
22	1.0	3.1	14	(4)	-1.7	0.0	-4.8	7.81	0.5
23	0.7	1.3	16	(4)	-4.7	0.6	-9.0	9.40	0.5
24	0.6	1.8	3	(4)	-4.0	1.8	-7.0	10.74	0.0
25	3.0	6.5	6	(5)	2.1	4.8	-3.0	5.98	0.5
26	1.2	2.8	2	(4)	1.2	2.3	0.5	5.21	0.0
27	1.0	1.9	16	(5)	1.0	2.1	-0.4	4.80	3.5
28	5.5	7.7	13	(11)	-0.8	1.6	-3.0	4.55	12.0
29	5.1	7.7	12	(11)	1.1	2.2	-0.6	6.22	4.0
30	2.8	5.3	13	(11)	0.3	1.7	-0.6	4.49	16.0
31	0.6	3.7	13	(3)	0.4	3.6	-1.2	8.15	5.5
TOTL								182.50	163.0
MEAN	2.1	4.5			0.1	2.6	-2.1	5.89	
MAX	5.5	7.7			2.2	5.9	0.8	11.08	
MIN	0.6	1.3			-4.7	-0.4	-9.0	3.05	
DN	30	30			31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

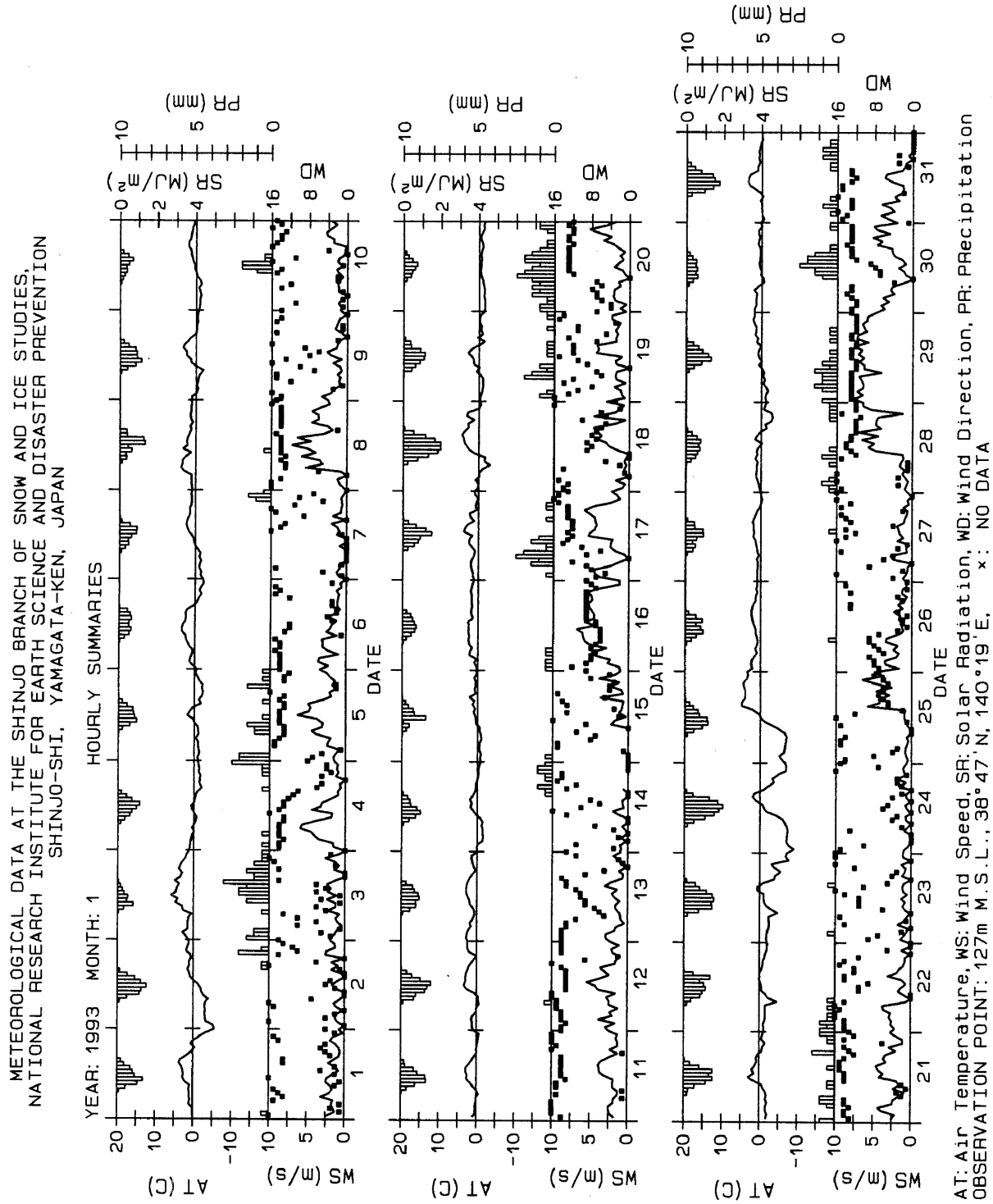

Fig.4.51 気象変化図

Seasonal variations in meteorological data.

Table 7.52 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

FEBRUARY 1993

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.3	3.1	14	(3)	-1.4	0.3	-5.1	4.56	7.0
2	1.9	3.5	14	(5)	-0.8	3.0	-7.1	12.07	6.0
3	2.1	4.1	13	(6)	1.9	3.2	-0.7	5.46	X
4	2.0	5.6	14	(7)	0.5	1.6	-1.2	3.36	8.0
5	2.7	7.4	6	(9)	2.3	5.1	-0.6	9.64	0.0
6	2.3	4.9	14	(4)	8.2	12.6	2.7	8.49	19.0
7	2.4	4.8	14	(9)	6.5	10.3	3.0	1.40	23.5
8	5.1	7.5	13	(17)	-1.1	2.4	-3.1	5.71	7.0
9	2.4	4.1	14	(9)	-1.3	0.4	-3.0	7.21	1.0
10	1.8	3.5	14	(4)	-0.3	2.2	-3.4	8.50	0.0
11	2.6	5.7	6	(7)	2.3	4.5	-1.8	9.92	4.5
12	3.6	6.3	13	(9)	-0.5	1.9	-2.1	5.97	11.0
13	3.4	9.6	13	(4)	-0.8	1.3	-2.5	4.72	7.0
14	4.1	7.1	14	(6)	-1.1	1.5	-3.1	10.14	3.0
15	2.5	5.1	14	(5)	1.3	4.0	-1.9	9.47	5.5
16	2.1	4.8	14	(8)	1.6	5.0	-2.8	13.74	0.0
17	2.5	7.4	9	(4)	0.9	3.5	-1.4	1.98	28.5
18	1.3	3.6	13	(4)	2.1	4.5	-0.5	9.51	13.0
19	3.1	5.3	14	(7)	-0.8	2.0	-2.7	9.34	4.0
20	2.2	4.9	15	(5)	-1.1	2.1	-4.5	12.68	1.5
21	1.2	3.6	16	(5)	0.2	2.8	-2.3	7.29	4.0
22	1.1	2.5	16	(7)	2.6	4.7	1.0	4.61	12.0
23	2.4	5.5	6	(4)	1.5	4.0	-0.2	7.40	17.0
24	2.9	5.6	13	(11)	0.2	2.0	-2.1	11.06	10.5
25	2.1	4.1	14	(6)	-0.4	1.7	-2.3	12.16	7.5
26	2.2	4.1	13 15	(4)	0.4	2.7	-2.4	8.85	5.5
27	0.8	2.1	2	(3)	1.6	5.8	-1.5	14.32	0.0
28	2.0	5.2	12	(7)	2.5	5.3	0.7	5.82	6.0
TOTL								225.38	212.0
MEAN	2.4	5.0			1.0	3.6	-1.8	8.05	
MAX	5.1	9.6			8.2	12.6	3.0	14.32	
MIN	0.8	2.1			-1.4	0.3	-7.1	1.40	
DN	28	28			28	28	28	28	27

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.8	3.1	3 14	(3)	-2.2	0.3	-7.1	4.92	12.0
2	2.4	4.1	14	(9)	0.8	3.0	-1.3	11.61	X
3	1.2	2.9	2	(3)	1.8	3.2	0.4	5.39	X
4	2.4	5.6	14	(8)	0.3	1.5	-1.2	3.65	2.5
5	2.7	7.4	6	(9)	3.8	6.6	1.2	9.98	9.5
6	2.4	4.9	5	(4)	9.5	12.6	6.1	7.82	14.0
7	3.9	7.5	14	(9)	3.9	10.3	-0.6	2.00	20.0
8	3.9	6.8	13	(11)	-2.4	-0.3	-3.1	5.24	6.5
9	2.2	4.1	14	(6)	-0.9	0.4	-3.4	8.25	0.5
10	1.6	3.5	12 14	(4)	0.4	2.2	-1.8	8.22	0.0
11	3.2	5.7	6	(6)	2.4	4.5	-1.0	9.36	11.0
12	3.7	6.4	13	(8)	-1.4	0.1	-2.5	5.65	7.5
13	3.7	9.6	6	(3)	-0.1	1.5	-1.8	5.54	6.5
14	3.2	7.1	13	(5)	-1.6	0.8	-3.1	9.88	2.5
15	2.9	5.1	14	(10)	2.3	4.0	0.9	9.42	3.5
16	2.3	7.4	13	(5)	1.2	5.0	-2.8	13.14	1.0
17	1.6	6.1	9	(3)	1.6	3.2	0.6	2.76	38.5
18	1.7	3.6	13	(4)	0.9	4.5	-1.9	9.67	3.5
19	3.1	5.3	14	(7)	-1.8	2.0	-4.5	9.53	4.0
20	1.8	4.9	14	(5)	-0.3	2.1	-2.3	12.45	0.0
21	1.3	3.6	16	(8)	1.2	2.8	-0.5	6.72	13.0
22	1.2	3.3	16	(4)	2.8	4.7	0.5	4.96	12.0
23	2.7	5.5	13	(4)	1.0	4.0	-0.3	7.27	15.5
24	2.4	5.6	13	(9)	-0.3	2.0	-2.1	11.54	8.5
25	2.3	4.1	15	(5)	-0.3	1.7	-2.4	11.50	6.5
26	1.7	4.1	13	(3)	0.5	2.7	-1.5	9.61	1.0
27	0.8	2.1	2 3	(2)	2.3	5.8	0.7	13.79	0.0
28	3.6	5.9	12	(9)	2.8	5.3	0.8	5.90	7.5
TOTL								225.77	207.0
MEAN	2.4	5.2			1.0	3.4	-1.2	8.06	
MAX	3.9	9.6			9.5	12.6	6.1	13.79	
MIN	0.8	2.1			-2.4	-0.3	-7.1	2.00	
DN	28	28			28	28	28	28	26

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

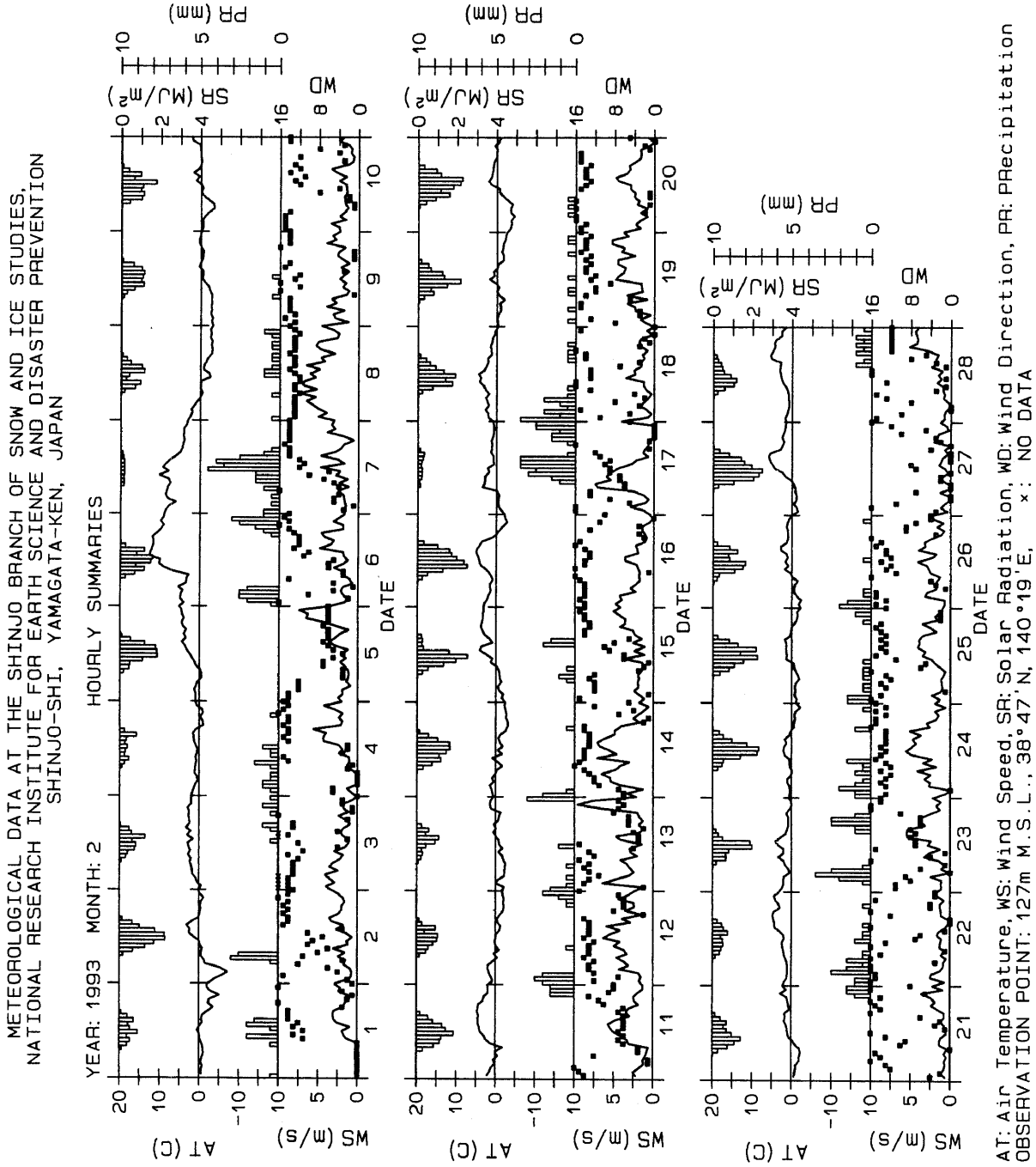

Fig.4.52 気象変化図

Seasonal variations in meteorological data.

Table 7.53　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

MARCH　1993

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	3.7	5.9	13	(12)	1.3	3.2	-1.8	10.22	3.5
2	2.0	5.4	13	(5)	-1.5	-0.1	-4.0	6.64	9.5
3	1.7	3.3	10	(3)	0.9	3.4	-1.3	8.10	17.0
4	1.1	2.4	4	(5)	1.4	4.8	-0.9	12.64	6.0
5	1.3	4.4	3	(3)	2.6	8.1	-1.0	14.88	0.0
6	1.7	4.0	13	(6)	4.9	8.1	1.9	10.01	2.0
7	1.2	4.6	14	(3)	2.0	4.9	0.6	3.46	6.5
8	X	X	16	(7)	-0.7	2.0	-5.7	10.69	5.5
9	0.9	1.7	11	(8)	-0.3	4.3	-7.1	13.29	0.0
10	1.0	2.8	5	(3)	2.1	5.8	0.0	12.51	1.0
11	1.7	4.6	15	(4)	2.0	5.3	0.4	12.33	3.5
12	1.8	3.5	15	(4)	1.5	4.8	-1.1	12.35	0.0
13	4.1	6.2	14	(12)	0.6	2.0	-1.1	11.04	0.5
14	3.4	5.5	14	(12)	-0.3	1.8	-1.9	14.74	2.0
15	1.3	3.4	11	(6)	0.8	3.8	-1.3	12.41	2.0
16	1.6	5.1	14	(5)	-0.8	2.1	-2.4	14.18	2.5
17	1.7	4.6	12	(8)	1.1	2.7	-0.2	9.21	12.5
18	X	X	X	(X)	0.7	5.4	-2.2	15.21	2.0
19	1.5	4.3	5	(4)	1.2	5.4	-2.0	19.03	0.0
20	1.1	2.6	4 16	(3)	-0.3	2.8	-3.6	12.43	3.0
21	1.7	3.7	2	(6)	0.9	6.3	-3.8	20.89	0.5
22	1.3	2.9	1	(4)	1.6	5.8	-5.0	8.39	1.5
23	1.4	2.5	1	(7)	4.9	10.4	-1.0	20.95	0.0
24	X	X	X	(X)	X	X	X	X	5.5
25	2.4	4.6	13	(8)	6.7	10.4	2.9	14.95	9.0
26	1.8	3.2	3	(5)	5.9	11.4	0.5	21.06	0.0
27	1.7	4.6	15	(4)	4.2	11.4	-1.5	18.50	0.0
28	2.9	6.7	5	(8)	3.0	7.3	-2.1	12.27	2.5
29	2.1	4.9	15	(6)	0.3	1.1	-1.1	9.17	10.0
30	1.5	3.5	2	(5)	2.3	7.0	-1.3	12.89	0.0
31	1.5	5.5	4	(4)	5.2	14.7	-2.0	19.20	0.0
TOTL								393.64	108.0
MEAN	1.8	4.2			1.8	5.5	-1.6	13.12	
MAX	4.1	6.7			6.7	14.7	2.9	21.06	
MIN	0.9	1.7			-1.5	-0.1	-7.1	3.46	
DN	28	28			30	30	30	30	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.4	5.2	13	(6)	0.0	3.2	-4.0	10.45	2.0
2	2.0	5.4	13	(4)	-0.9	1.2	-1.9	6.69	18.0
3	1.6	3.3	3	(4)	1.0	3.4	-1.3	8.02	13.5
4	0.9	2.2	3	(4)	1.1	4.8	-1.0	12.62	1.0
5	1.8	4.4	6	(4)	4.7	8.1	-0.1	14.90	2.0
6	1.2	3.2	14	(3)	3.6	8.1	1.1	9.49	0.5
7	X	X	14	(3)	1.4	4.9	-0.6	3.72	11.5
8	1.5	3.9	16	(7)	-2.4	2.0	-7.1	11.37	0.0
9	0.9	1.7	11	(8)	1.8	4.3	-0.5	12.59	0.0
10	1.0	2.8	6 11	(3)	2.2	5.8	0.0	13.49	4.0
11	1.9	4.6	15	(3)	1.9	5.3	-0.1	12.08	0.5
12	2.3	5.6	15	(10)	1.2	4.8	-1.1	12.76	0.0
13	4.5	6.2	14	(18)	0.3	2.0	-1.9	11.04	2.0
14	2.4	5.5	14	(5)	0.0	1.8	-1.3	14.51	0.5
15	0.9	1.9	11	(6)	0.3	3.8	-2.4	13.19	2.5
16	2.4	5.1	12	(7)	0.1	2.7	-2.1	13.21	6.5
17	0.9	2.6	12	(3)	0.4	2.2	-2.0	9.56	8.0
18	X	X	X	(X)	1.0	5.4	-2.2	16.45	2.0
19	1.5	4.3	16	(4)	0.8	5.4	-2.0	17.74	1.5
20	1.2	2.5	13	(3)	-0.6	2.8	-3.8	13.29	2.0
21	1.7	3.7	2 12	(4)	0.7	6.3	-5.0	19.55	0.0
22	1.4	2.9	1	(9)	3.9	5.8	0.1	10.35	1.5
23	1.0	2.5	3	(6)	2.8	10.4	-4.0	20.86	0.0
24	X	X	X	(X)	X	X	X	X	14.5
25	2.4	4.6	13	(8)	6.9	10.4	2.7	16.62	0.0
26	1.6	3.2	13	(3)	4.4	11.4	-1.5	19.83	0.0
27	1.8	4.6	12	(4)	3.9	11.4	-2.1	19.10	0.0
28	2.7	6.7	5	(9)	3.4	7.3	0.5	10.58	11.0
29	2.5	4.9	15	(8)	0.4	2.7	-1.1	10.95	1.5
30	1.1	3.5	2	(4)	1.6	7.0	-2.0	13.18	0.0
31	1.8	5.5	4	(4)	7.2	14.7	3.1	18.30	1.0
TOTL								396.48	107.5
MEAN	1.8	4.0			1.8	5.6	-1.5	13.22	
MAX	4.5	6.7			7.2	14.7	3.1	20.86	
MIN	0.9	1.7			-2.4	1.2	-7.1	3.72	
DN	28	28			30	30	30	30	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

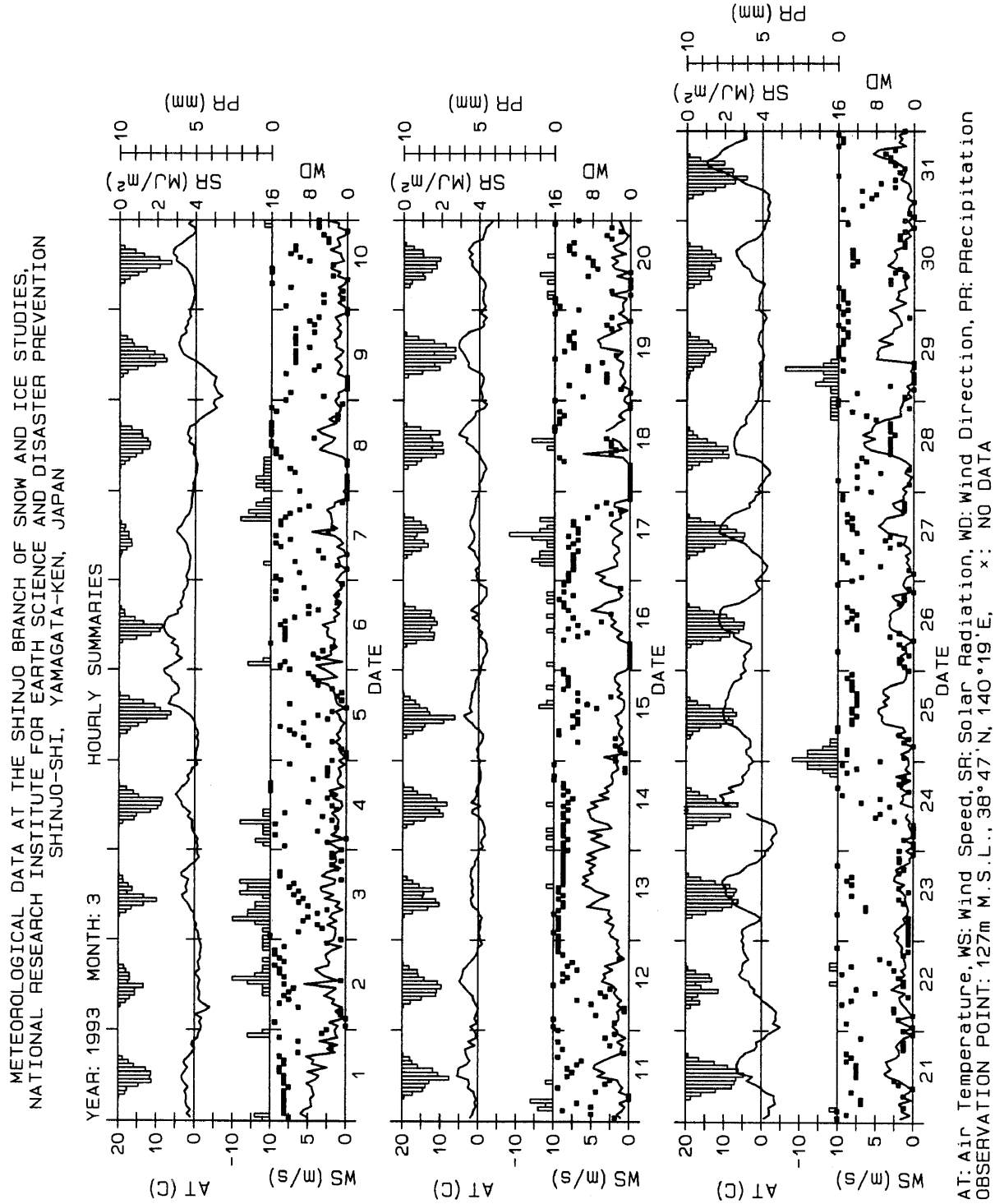

Fig.4.53 気象変化図
Seasonal variations in meteorological data.

Table 7.54 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

NOVEMBER 1993

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST	FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	X	X	X	(X)	X	X	X	X	X
2	X	X	X	(X)	X	X	X	X	X
3	X	X	X	(X)	X	X	X	X	X
4	X	X	X	(X)	X	X	X	X	X
5	X	X	X	(X)	X	X	X	X	X
6	X	X	X	(X)	X	X	X	X	X
7	X	X	X	(X)	X	X	X	X	X
8	X	X	X	(X)	X	X	X	X	X
9	X	X	X	(X)	X	X	X	X	X
10	X	X	X	(X)	X	X	X	X	X
11	X	X	X	(X)	X	X	X	X	X
12	X	X	X	(X)	X	X	X	X	X
13	X	X	X	(X)	X	X	X	X	X
14	X	X	X	(X)	X	X	X	X	X
15	X	X	X	(X)	X	X	X	X	X
16	X	X	X	(X)	X	X	X	X	X
17	X	X	X	(X)	X	X	X	X	X
18	X	X	X	(X)	X	X	X	X	X
19	X	X	X	(X)	X	X	X	X	X
20	X	X	X	(X)	X	X	X	X	X
21	X	X	X	(X)	X	X	X	X	X
22	X	X	X	(X)	X	X	X	X	X
23	X	X	X	(X)	X	X	X	X	X
24	X	X	X	(X)	X	X	X	X	X
25	2.2	4.2	7	(4)	2.9	4.9	0.5	4.35	19.0
26	1.1	2.1	16	(5)	3.8	5.6	2.4	2.37	4.0
27	2.0	4.4	5	(4)	7.1	10.7	4.6	4.06	20.0
28	4.0	7.5	14	(10)	3.9	8.4	1.0	X	10.5
29	2.3	3.5	15	(7)	3.5	5.8	0.8	X	10.5
30	1.2	2.0	16	(5)	3.9	6.8	2.2	X	0.5
TOTL								10.78	64.5
MEAN	2.1	3.9			4.2	7.0	1.9	3.59	
MAX	4.0	7.5			7.1	10.7	4.6	4.35	
MIN	1.1	2.0			2.9	4.9	0.5	2.37	
DN	6	6			6	6	6	3	6

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST	FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	X	X	X	(X)	X	X	X	X	X
2	X	X	X	(X)	X	X	X	X	X
3	X	X	X	(X)	X	X	X	X	X
4	X	X	X	(X)	X	X	X	X	X
5	X	X	X	(X)	X	X	X	X	X
6	X	X	X	(X)	X	X	X	X	X
7	X	X	X	(X)	X	X	X	X	X
8	X	X	X	(X)	X	X	X	X	X
9	X	X	X	(X)	X	X	X	X	X
10	X	X	X	(X)	X	X	X	X	X
11	X	X	X	(X)	X	X	X	X	X
12	X	X	X	(X)	X	X	X	X	X
13	X	X	X	(X)	X	X	X	X	X
14	X	X	X	(X)	X	X	X	X	X
15	X	X	X	(X)	X	X	X	X	X
16	X	X	X	(X)	X	X	X	X	X
17	X	X	X	(X)	X	X	X	X	X
18	X	X	X	(X)	X	X	X	X	X
19	X	X	X	(X)	X	X	X	X	X
20	X	X	X	(X)	X	X	X	X	X
21	X	X	X	(X)	X	X	X	X	X
22	X	X	X	(X)	X	X	X	X	X
23	X	X	X	(X)	X	X	X	X	X
24	X	X	X	(X)	X	X	X	X	X
25	1.7	4.2	16	(4)	3.4	4.9	2.4	4.24	14.0
26	1.3	3.3	4	(4)	4.7	6.3	3.1	2.74	19.5
27	2.6	5.2	13	(4)	7.7	10.7	5.2	X	12.0
28	3.7	7.5	14	(8)	1.9	4.4	0.8	X	12.0
29	1.7	3.5	15	(8)	4.1	5.8	2.2	X	1.0
30	1.1	2.0	16	(6)	4.2	6.8	2.5	X	5.0
TOTL								6.98	63.5
MEAN	2.0	4.3			4.3	6.5	2.7	3.49	
MAX	3.7	7.5			7.7	10.7	5.2	4.24	
MIN	1.1	2.0			1.9	4.4	0.8	2.74	
DN	6	6			6	6	6	2	6

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

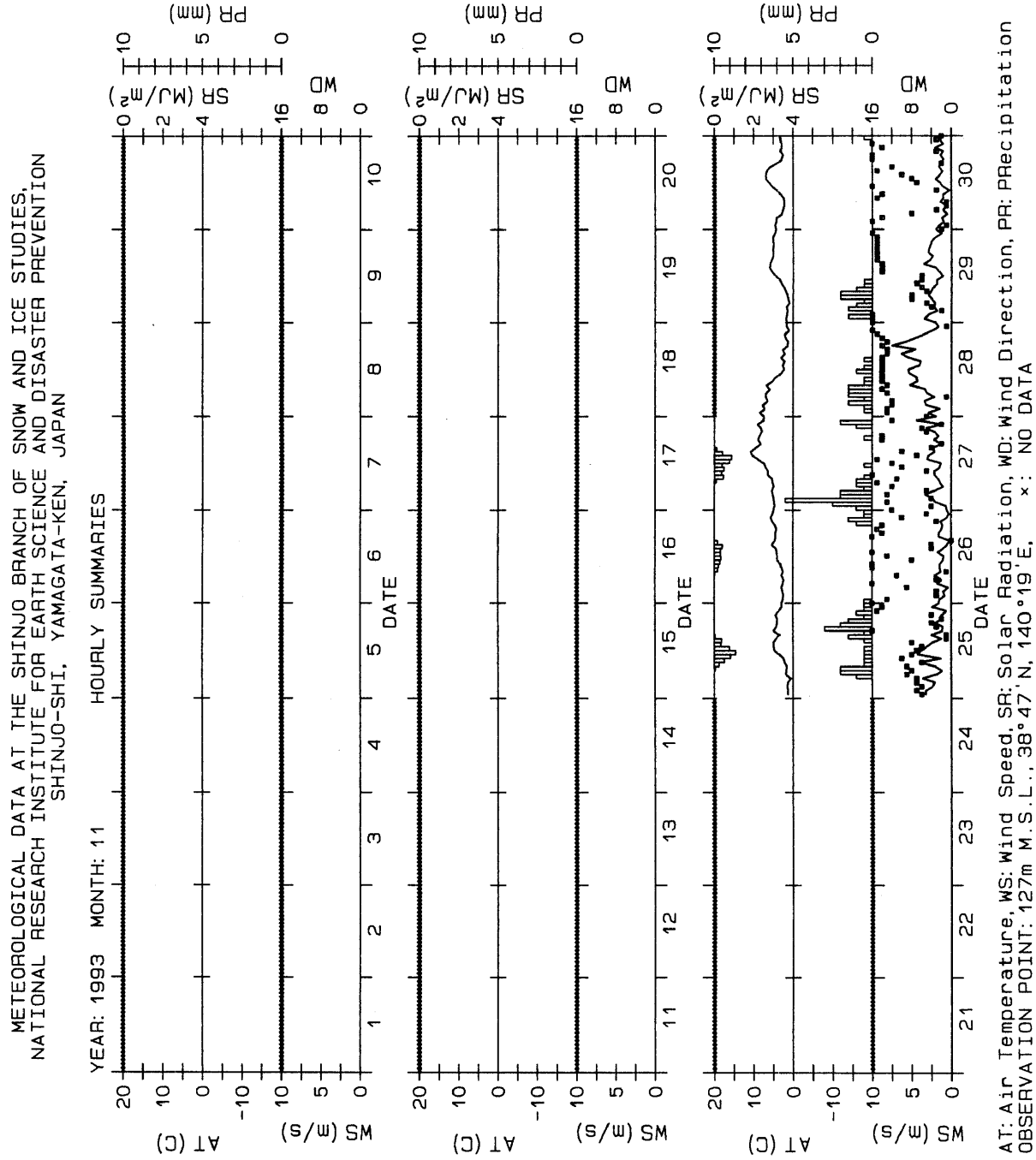

Fig.4.54 気象変化図

Seasonal variations in meteorological data.

Table 7.55 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

DECEMBER 1993

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.8	7.6	13	(5)	6.6	12.3	3.5	X	8.5
2	2.0	6.2	16	(4)	6.1	12.1	0.8	X	0.0
3	1.8	3.8	14	(6)	6.6	12.0	2.8	X	10.0
4	0.8	2.4	12	(4)	1.0	2.6	0.2	X	13.0
5	X	X	8	(6)	1.0	2.2	0.2	X	12.5
6	1.1	2.2	X	(X)	-0.7	1.5	-2.9	X	0.5
7	0.9	1.8	4	(6)	0.4	3.0	-2.2	X	0.0
8	1.1	1.9	14	(4)	1.5	2.8	0.5	X	0.0
9	2.0	4.3	14	(4)	3.3	6.8	1.3	X	3.5
10	1.8	4.6	4	(4)	3.7	5.2	2.4	X	5.0
11	3.7	8.5	13	(7)	4.6	8.1	3.0	X	20.0
12	1.7	4.0	5	(3)	3.7	5.5	1.4	X	4.0
13	1.2	2.2	4 5	(3)	3.4	6.1	0.7	X	10.5
14	2.3	4.1	14	(8)	1.3	4.7	-1.7	X	3.0
15	3.5	5.4	14	(11)	-2.4	-1.0	-4.0	X	4.5
16	1.4	2.9	1 15	(4)	-1.5	0.6	-3.8	X	0.5
17	5.1	10.0	14	(8)	0.1	2.9	-3.0	X	11.0
18	4.3	7.0	14	(11)	-1.5	0.4	-3.1	X	9.0
19	2.0	3.4	16	(7)	-1.3	3.2	-7.2	X	0.5
20	1.9	6.6	5	(4)	-3.2	5.1	-11.3	X	0.5
21	1.1	2.3	11	(4)	-0.1	2.8	-3.7	X	16.5
22	3.0	5.2	14	(11)	-2.7	-0.6	-3.8	X	28.0
23	4.6	5.8	14	(13)	-1.0	3.1	-4.5	X	8.0
24	2.8	5.9	15	(9)	3.2	5.2	0.9	X	0.0
25	0.9	1.9	1 14	(4)	1.1	2.1	0.4	X	1.0
26	0.8	2.1	10 15	(3)	0.7	1.6	-0.4	X	0.0
27	3.6	6.7	13	(14)	2.3	4.8	-0.5	X	14.5
28	5.1	7.2	14	(12)	0.1	2.5	-1.4	X	9.0
29	2.4	3.6	14	(8)	1.9	3.4	0.2	X	1.0
30	1.1	3.3	16	(5)	1.5	5.1	-3.0	X	0.0
31	2.1	5.0	14	(8)	0.9	3.2	-2.6	X	5.5
TOTL								X	200.0
MEAN	2.3	4.6			1.3	4.2	-1.3	X	
MAX	5.1	10.0			6.6	12.3	3.5	X	
MIN	0.8	1.8			-3.2	-1.0	-11.3	X	
DN	30	30			31	31	31	0	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.9	7.6	13	(6)	6.3	12.3	0.8	X	4.0
2	2.4	6.2	6	(4)	8.6	12.1	3.8	X	4.0
3	1.4	2.4	14	(6)	3.6	7.1	0.6	X	9.0
4	X	X	8	(5)	0.5	1.3	0.2	X	19.5
5	1.5	3.4	X	(X)	0.1	2.2	-2.9	X	3.0
6	1.1	2.2	4 8	(4)	-0.5	1.5	-2.2	X	0.5
7	1.0	1.9	4	(6)	1.2	3.0	0.3	X	0.0
8	1.2	1.9	9 11 14	(3)	1.8	2.8	1.1	X	2.5
9	1.9	4.3	14	(4)	3.8	6.8	2.4	X	1.0
10	1.9	4.6	15	(3)	3.8	5.2	3.0	X	9.0
11	4.0	8.5	13	(9)	4.6	8.1	2.3	X	19.0
12	1.3	2.3	5	(4)	2.8	5.5	0.7	X	1.0
13	1.5	2.2	14	(4)	4.1	6.1	1.8	X	11.5
14	2.8	5.4	14	(9)	-0.7	2.2	-3.1	X	5.0
15	2.9	5.2	14	(7)	-2.5	-1.3	-4.0	X	2.0
16	2.7	10.0	7	(5)	0.1	2.9	-3.0	X	7.0
17	5.4	7.1	13	(13)	-1.5	1.8	-3.1	X	6.0
18	3.2	6.1	14	(9)	-0.5	1.0	-1.9	X	7.0
19	1.3	2.9	2	(5)	-4.6	3.2	-11.3	X	0.5
20	1.9	6.6	14	(4)	-0.6	5.1	-5.2	X	0.5
21	2.3	5.2	14	(7)	0.0	2.8	-3.0	X	24.0
22	3.3	5.8	13	(10)	-3.1	-1.9	-4.5	X	23.0
23	4.2	5.9	14	(16)	1.4	3.9	-1.6	X	5.5
24	1.6	5.2	15	(5)	2.2	5.2	0.4	X	0.0
25	0.8	1.7	14	(4)	1.1	2.1	0.5	X	1.0
26	1.2	3.7	4	(4)	0.5	2.8	-0.5	X	5.0
27	5.2	7.2	13	(18)	2.5	4.8	-0.5	X	13.5
28	3.6	7.0	14	(8)	0.1	1.6	-1.4	X	6.0
29	2.1	3.6	14	(8)	2.3	3.4	0.8	X	0.0
30	1.1	2.0	1 16	(4)	0.7	5.1	-3.0	X	1.0
31	3.4	6.4	15	(10)	0.7	3.2	-2.2	X	5.0
TOTL								X	196.0
MEAN	2.4	4.8			1.3	3.9	-1.1	X	
MAX	5.4	10.0			8.6	12.3	3.8	X	
MIN	0.8	1.7			-4.6	-1.9	-11.3	X	
DN	30	30			31	31	31	0	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

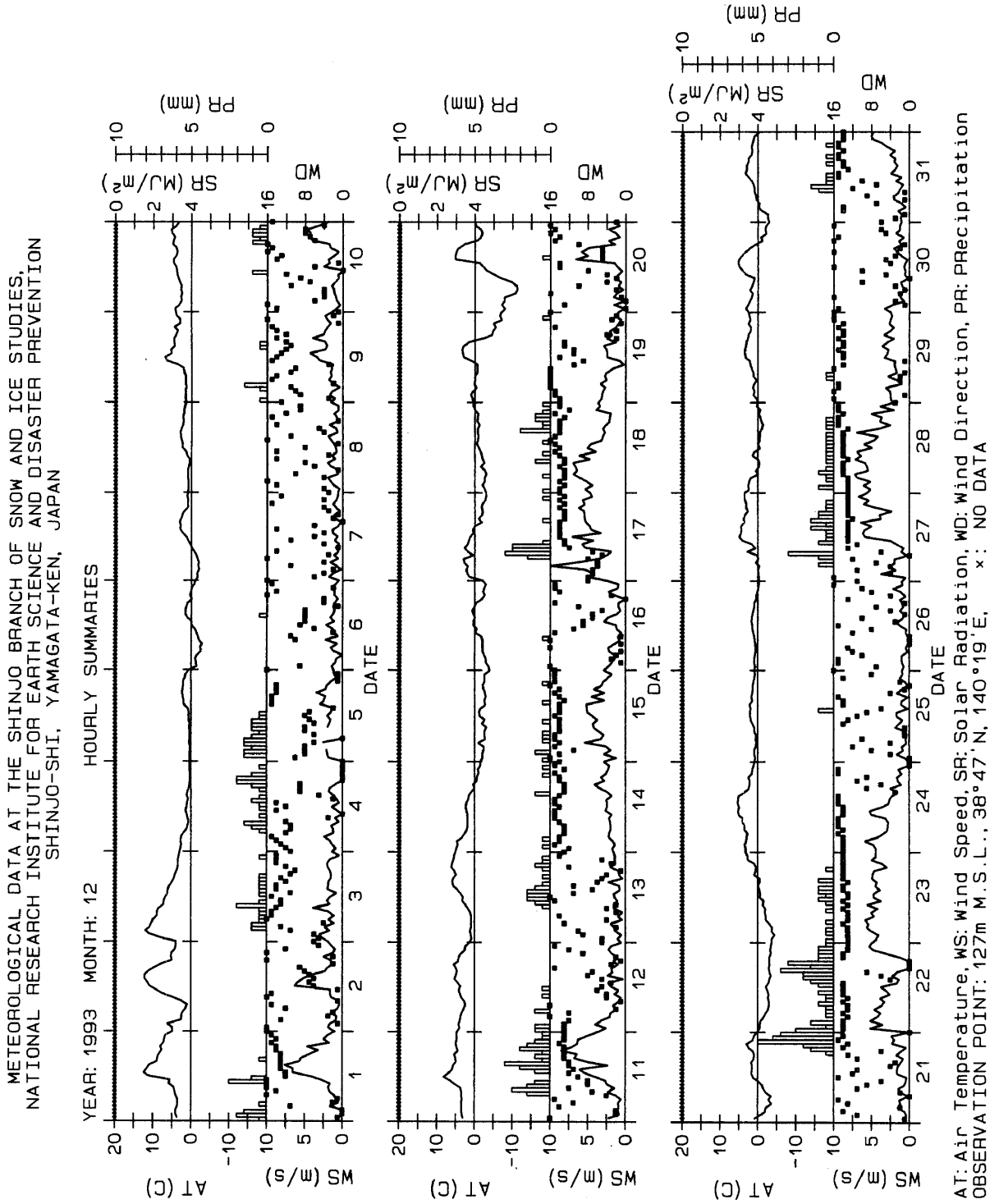

Fig.4.55 気象変化図

Seasonal variations in meteorological data.

Table 7.56　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

JANUARY　1994

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	3.8	6.4	14	(12)	-0.5	1.6	-2.2	X	2.5
2	1.8	4.0	7	(5)	2.1	4.8	-1.1	X	2.5
3	1.4	3.1	9	(3)	2.2	4.5	1.1	X	23.5
4	X	X	14	(6)	1.0	2.8	-0.4	X	6.0
5	X	X	15	(9)	-4.0	0.0	-9.8	X	4.5
6	1.8	4.4	15	(5)	-3.3	2.7	-7.7	X	24.5
7	4.5	7.1	14	(14)	-2.4	1.6	-5.5	X	8.5
8	1.9	5.1	6	(7)	-2.0	1.0	-5.7	X	1.0
9	1.4	2.3	4	(5)	0.5	3.5	-1.9	X	7.5
10	0.8	2.5	3	(6)	-1.0	4.4	-6.2	X	0.5
11	0.7	1.9	3	(13)	-3.6	1.5	-9.1	X	0.0
12	0.9	2.3	14	(3)	-0.6	1.5	-3.2	X	3.5
13	0.8	2.2	3	(3)	-2.3	1.8	-5.8	X	0.5
14	1.3	3.3	16	(7)	-1.6	2.1	-6.2	X	0.0
15	2.8	5.4	14	(9)	-1.7	0.3	-3.2	X	0.5
16	1.3	2.1	3	(7)	-1.0	2.2	-3.8	X	0.0
17	1.1	2.0	16	(3)	0.3	5.2	-5.6	X	13.0
18	2.6	4.3	13	(9)	-1.0	0.8	-4.2	X	2.0
19	4.2	6.7	14	(11)	-3.8	-2.7	-4.8	4.83	9.5
20	1.1	3.1	2	(3)	-2.8	-1.7	-3.8	3.88	28.0
21	0.9	2.5	14	(3)	-2.7	-0.4	-4.9	9.74	2.0
22	2.0	6.2	6	(5)	-2.1	1.0	-5.5	10.17	10.0
23	2.0	5.3	15	(5)	-2.8	-0.5	-9.2	4.96	10.5
24	2.7	6.0	14	(8)	-3.5	-1.7	-6.0	4.29	9.0
25	1.1	3.2	3	6 7(2)	-1.7	0.9	-4.2	3.98	22.0
26	0.8	2.2	15	(3)	0.6	1.4	0.0	3.71	7.5
27	2.5	5.3	13	(9)	-1.7	0.8	-5.5	4.68	8.0
28	2.7	6.4	15	(6)	-3.2	-1.4	-4.4	10.99	1.5
29	2.1	5.0	13	(5)	-3.0	-0.2	-4.9	9.33	4.0
30	2.0	4.0	15	(5)	-5.8	-2.6	-10.8	6.00	8.0
31	0.8	2.0	8	(2)	-5.2	-2.0	-8.9	7.98	4.5
TOTL								84.54	225.0
MEAN	1.9	4.0			-1.8	1.1	-4.9	6.50	
MAX	4.5	7.1			2.2	5.2	1.1	10.99	
MIN	0.7	1.9			-5.8	-2.7	-10.8	3.71	
DN	29	29			31	31	31	13	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.4	5.7	14	(11)	-0.1	2.0	-1.4	X	2.0
2	1.8	4.0	7	(6)	3.1	4.8	-0.4	X	16.0
3	1.7	3.4	14	(6)	1.8	3.2	0.5	X	11.5
4	X	X	14	(7)	-0.1	2.8	-3.6	X	8.5
5	2.2	5.3	15	(9)	-5.7	-2.4	-9.8	X	0.5
6	3.1	7.1	14	(7)	-0.9	2.7	-4.5	X	30.5
7	3.3	7.0	15	(9)	-4.0	-2.9	-5.7	X	2.5
8	1.9	5.1	6	(5)	-0.9	1.0	-2.7	X	5.0
9	1.2	2.5	15	(4)	0.6	3.5	-3.2	X	4.0
10	0.7	1.6	3	(12)	-3.3	4.4	-9.1	X	0.0
11	0.9	2.3	3	(7)	-1.7	1.5	-4.9	X	3.0
12	0.5	2.2	14	(2)	-0.9	1.5	-4.7	X	0.5
13	1.1	2.2	3	(3)	-2.8	1.8	-6.2	X	0.5
14	1.9	3.3	16	(10)	-1.0	2.1	-3.2	X	0.5
15	2.4	5.4	14	(8)	-1.9	0.3	-3.8	X	0.0
16	1.4	2.1	3	(5)	-0.8	2.2	-5.6	X	0.0
17	1.2	4.0	13	(5)	1.4	5.2	-1.2	X	15.0
18	3.1	5.8	14	(12)	-2.7	0.8	-4.8	X	4.5
19	3.6	6.7	13	(11)	-3.4	-2.7	-4.2	4.37	23.5
20	0.6	3.1	3 4	(1)	-2.7	-1.7	-3.8	4.50	11.5
21	1.1	2.5	14	(4)	-3.2	-0.4	-5.5	9.43	1.5
22	2.3	6.2	7	(5)	-0.7	1.0	-2.8	10.22	15.5
23	2.1	3.9	15	(10)	-4.2	-0.5	-9.2	4.80	9.5
24	2.4	6.0	14	(7)	-3.0	-1.7	-4.2	4.15	4.0
25	0.7	3.2	7	(2)	-0.3	0.9	-3.0	3.98	25.0
26	1.2	2.6	13	(4)	0.6	1.4	-0.2	3.71	7.0
27	3.1	5.3	14	(7)	-3.3	-0.7	-5.5	5.12	5.5
28	2.1	6.4	16	(5)	-3.5	-1.4	-4.9	10.91	1.5
29	2.7	5.0	13	(7)	-2.6	-0.2	-4.5	9.47	6.0
30	1.2	2.8	3	(3)	-7.4	-3.8	-10.8	6.04	8.0
31	0.6	2.0	8	(2)	-3.8	-2.0	-6.0	7.58	1.5
TOTL								84.28	224.5
MEAN	1.8	4.2			-1.9	0.7	-4.5	6.48	
MAX	3.6	7.1			3.1	5.2	0.5	10.91	
MIN	0.5	1.6			-7.4	-3.8	-10.8	3.71	
DN	30	30			31	31	31	13	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

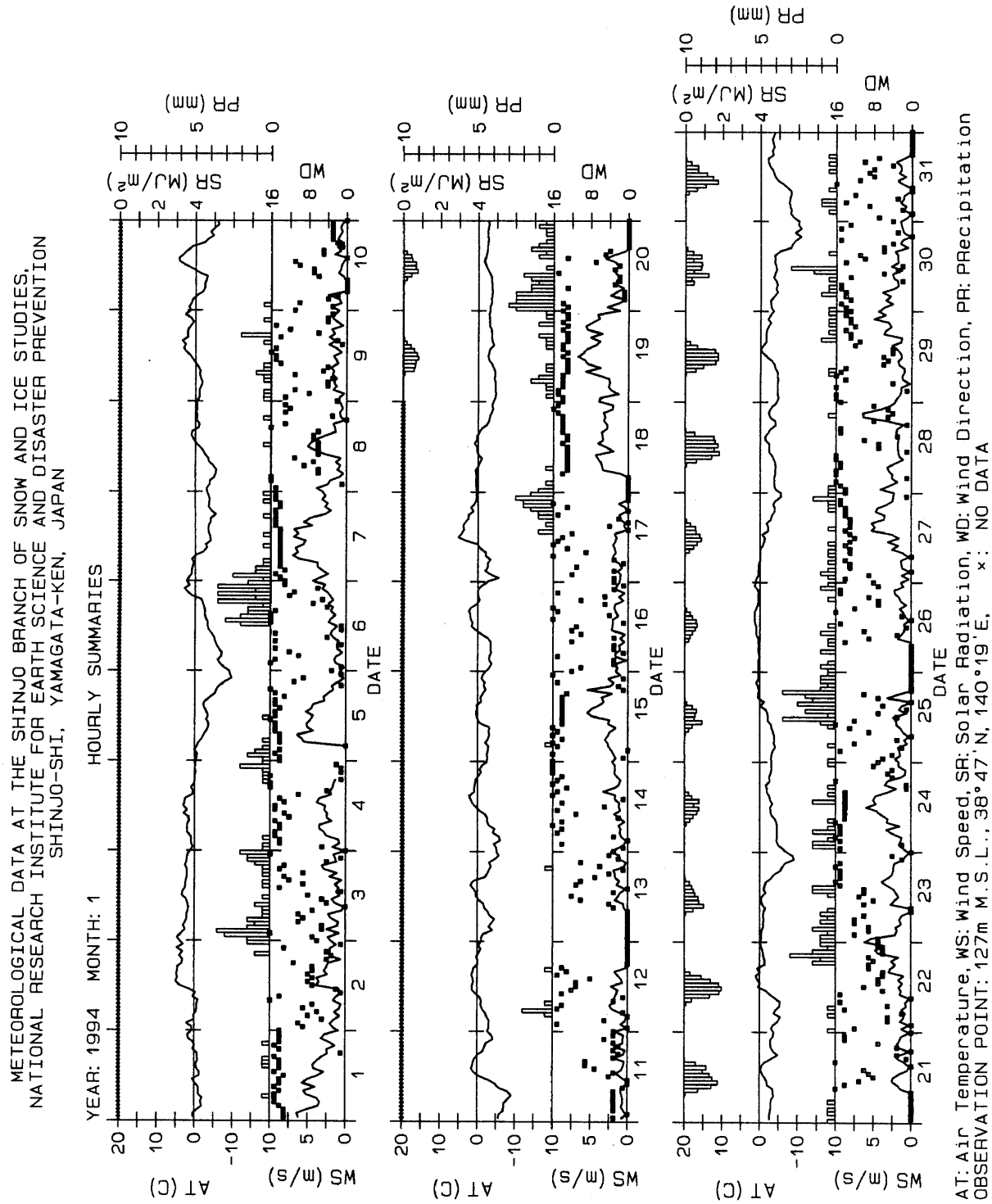

Fig.4.56 気象変化図

Seasonal variations in meteorological data.

Table 7.57　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

FEBRUARY 1994

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	X	X	16	(3)	-2.8	0.7	-5.1	4.85	7.5
2	4.9	9.2	13	(10)	-2.6	0.8	-4.2	7.31	5.0
3	2.7	4.7	14	(8)	-4.0	-2.7	-6.2	6.78	5.5
4	4.2	7.4	14	(12)	-2.3	-0.2	-4.1	8.01	5.5
5	2.3	3.5	13	(6)	1.6	4.2	-2.4	9.00	0.0
6	1.6	4.5	13	(5)	1.0	5.1	-2.4	9.14	3.5
7	2.1	4.4	13	(5)	0.5	3.5	-2.2	5.99	7.5
8	2.9	5.6	16	(6)	1.9	4.6	-1.4	10.75	1.0
9	1.5	4.3	1	(5)	2.4	4.2	0.6	9.22	4.5
10	X	X	14	(9)	0.9	2.8	-1.4	4.76	14.0
11	3.9	6.9	13	(9)	-1.9	-1.0	-2.7	8.81	10.0
12	1.9	5.7	14	(6)	-2.6	-1.8	-3.7	4.30	4.0
13	5.1	7.6	14	(17)	-4.1	-2.5	-5.0	10.11	7.0
14	4.5	6.3	13	(14)	-2.1	-0.8	-4.3	7.29	15.5
15	3.3	5.4	14	(8)	1.3	2.8	-1.2	5.66	2.5
16	1.9	6.6	15	(6)	1.1	2.0	-0.2	4.34	2.0
17	2.9	5.9	14	(9)	-0.3	1.1	-1.2	8.66	2.0
18	3.6	6.6	13	(10)	2.9	4.8	-1.5	9.70	0.5
19	2.5	4.6	13	(7)	3.9	6.5	-2.3	8.87	0.0
20	1.1	2.1	4 15	(3)	-0.9	4.8	-3.7	11.84	0.0
21	2.7	8.0	13	(6)	3.1	8.5	-2.5	3.47	20.0
22	8.4	10.8	13	(23)	0.2	2.8	-1.4	4.91	10.0
23	6.8	8.8	13	(20)	-1.7	0.1	-3.1	8.44	6.0
24	3.0	5.4	13	(9)	-0.4	1.2	-2.7	10.34	13.0
25	2.0	3.4	16	(8)	1.3	4.8	-2.1	15.61	0.5
26	1.6	3.5	12	(4)	0.4	4.1	-2.4	10.64	0.0
27	1.6	5.2	13	(7)	0.7	5.5	-2.4	14.36	0.5
28	1.3	2.9	13	(3)	1.4	3.8	-0.9	9.62	1.5
TOTL								232.78	149.0
MEAN	3.1	5.7			0.0	2.5	-2.6	8.31	
MAX	8.4	10.8			3.9	8.5	0.6	15.61	
MIN	1.1	2.1			-4.1	-2.7	-6.2	3.47	
DN	26	26			28	28	28	28	28

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	X	X	13	(8)	-1.8	0.8	-4.0	4.61	11.0
2	3.2	7.0	14	(9)	-3.7	-1.2	-6.2	7.78	2.5
3	3.9	7.4	14	(16)	-3.5	-2.0	-4.1	6.74	7.5
4	3.3	5.8	15	(10)	-0.6	2.0	-2.7	8.02	2.5
5	1.7	3.5	13	(7)	0.9	4.2	-2.4	8.72	3.0
6	1.7	4.5	14	(5)	0.9	5.1	-2.4	9.25	0.5
7	2.7	4.3	13	(5)	0.8	3.5	-1.4	6.59	8.0
8	2.4	5.6	5	(4)	2.7	4.6	0.6	10.37	0.5
9	2.1	6.1	1	(5)	2.3	4.1	0.5	8.95	10.5
10	X	X	14	(13)	-0.4	2.8	-2.7	5.28	12.5
11	3.0	6.9	13	(7)	-2.1	-1.0	-3.1	8.47	5.5
12	3.4	6.8	14	(13)	-3.4	-1.8	-5.0	4.56	6.0
13	4.9	7.6	14	(17)	-3.5	-2.5	-4.8	9.76	9.0
14	4.0	6.3	13	(13)	-1.0	0.7	-2.2	7.01	13.5
15	2.5	5.4	13	(6)	1.8	2.8	0.5	5.57	1.0
16	2.3	6.6	15	(6)	0.4	2.0	-1.0	4.81	3.0
17	2.9	5.9	14	(10)	0.0	3.3	-1.5	8.79	1.0
18	3.9	6.6	13	(13)	4.4	5.5	3.3	9.80	0.0
19	1.8	4.3	13	(4)	1.1	6.5	-3.7	8.82	0.0
20	1.2	2.8	14	(5)	-0.1	4.8	-2.5	11.84	0.0
21	5.1	9.6	13	(14)	3.6	8.5	-1.2	3.07	27.5
22	8.1	10.8	13	(20)	-0.5	1.0	-2.2	5.30	4.0
23	5.7	8.8	13	(20)	-2.1	-0.4	-3.1	8.51	8.0
24	2.2	5.0	14	(7)	0.6	1.8	-0.9	11.80	10.0
25	1.8	3.4	16	(5)	0.4	4.8	-2.4	15.04	0.0
26	1.5	3.5	16	(4)	0.6	4.1	-2.4	10.42	0.0
27	1.5	5.2	13	(7)	1.2	5.5	-1.4	13.91	2.0
28	1.4	2.9	12	(3)	0.8	3.8	-2.2	9.84	0.0
TOTL								233.63	149.0
MEAN	3.0	5.9			0.0	2.6	-2.2	8.34	
MAX	8.1	10.8			4.4	8.5	3.3	15.04	
MIN	1.2	2.8			-3.7	-2.5	-6.2	3.07	
DN	26	26			28	28	28	28	28

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

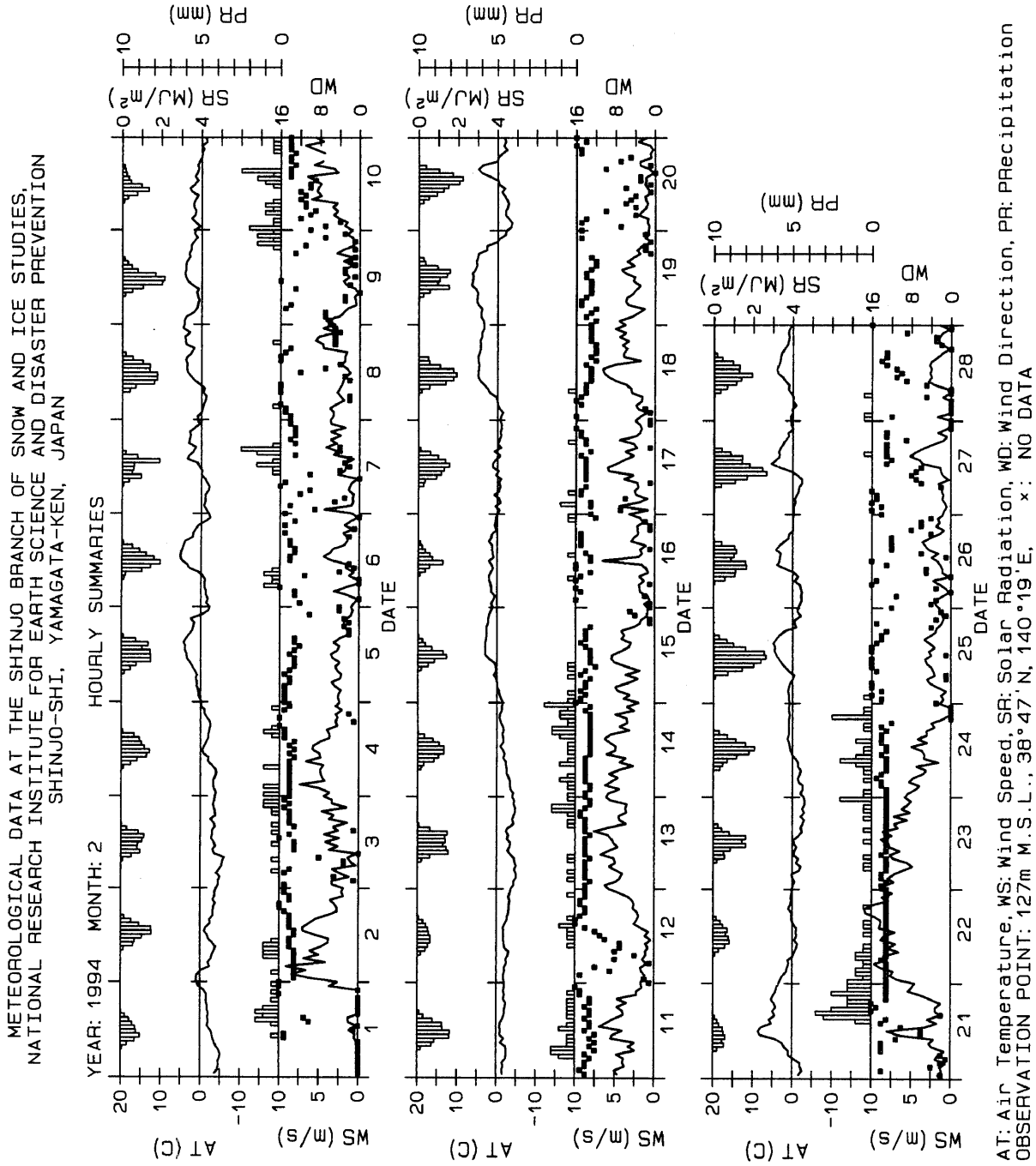

Fig.4.57 気象変化図

Seasonal variations in meteorological data.

Table 7.58 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

MARCH 1994

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.4	4.1	12	(5)	0.9	4.8	-2.2	12.22	3.5
2	X	X	13	(6)	-0.5	2.2	-4.4	13.37	3.0
3	2.0	3.2	7	(6)	0.7	5.0	-2.7	17.08	4.5
4	X	X	X	(X)	-1.2	2.5	-6.7	15.77	0.5
5	X	X	X	(X)	-1.8	-0.8	-2.8	9.20	2.5
6	X	X	X	(X)	-1.1	1.5	-3.2	14.78	0.5
7	X	X	X	(X)	-0.4	5.4	-5.2	16.30	0.0
8	3.4	8.9	7	(4)	1.7	5.4	-4.5	6.47	8.5
9	2.2	3.9	14	(12)	4.6	7.3	1.3	8.59	0.5
10	3.0	5.8	14	(11)	-0.5	1.3	-3.0	9.93	2.0
11	X	X	13	(6)	-1.4	0.5	-3.2	6.31	15.5
12	X	X	16	(4)	0.6	2.6	-1.0	11.48	6.5
13	X	X	15	(7)	-1.3	0.6	-2.5	10.48	4.0
14	X	X	3 7 8	(3)	-1.4	2.5	-4.3	13.31	3.0
15	X	X	X	(X)	X	X	X	X	2.0
16	1.4	2.8	10	(4)	1.1	5.8	-3.1	17.87	0.5
17	3.3	6.4	14	(11)	1.4	4.4	-0.8	11.78	3.0
18	2.3	4.3	15	(7)	1.0	5.3	-5.5	19.75	0.0
19	1.0	2.2	2	(4)	0.1	7.4	-7.6	20.81	0.0
20	1.6	3.6	12	(5)	1.7	5.2	-1.4	12.94	3.0
21	3.2	6.3	14	(10)	-0.2	2.8	-1.7	15.84	1.0
22	2.4	7.2	5	(6)	1.8	5.7	-3.0	20.48	1.5
23	3.9	7.2	7	(8)	3.2	5.1	1.3	6.41	2.5
24	1.8	5.0	13	(7)	3.1	4.8	1.3	5.18	11.0
25	2.2	4.9	13	(5)	1.8	4.3	-0.4	8.81	7.5
26	1.6	3.8	10	(4)	0.4	3.4	-0.6	10.77	9.0
27	1.9	5.2	13	(5)	1.5	3.8	-0.9	15.23	6.0
28	2.4	4.1	11	(6)	6.5	10.5	2.8	17.29	0.0
29	3.9	6.2	13	(10)	3.6	5.5	1.2	9.48	0.5
30	2.8	4.8	14	(8)	2.0	4.9	-3.2	14.00	0.5
31	2.3	5.4	14	(6)	1.1	6.6	-4.8	12.89	1.0
TOTL								384.82	103.5
MEAN	2.4	5.0			1.0	4.2	-2.4	12.83	
MAX	3.9	8.9			6.5	10.5	2.8	20.81	
MIN	1.0	2.2			-1.8	-0.8	-7.6	5.18	
DN	21	21			30	30	30	30	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	X	X	14	(6)	1.3	4.8	-0.7	12.45	6.5
2	2.4	5.7	13	(6)	-1.3	2.2	-4.4	14.15	1.5
3	1.3	3.2	7	(4)	0.2	5.0	-6.7	17.11	3.5
4	X	X	X	(X)	-0.7	2.5	-2.8	15.36	0.5
5	X	X	X	(X)	-1.9	-0.3	-3.2	9.91	2.5
6	X	X	X	(X)	-1.7	1.5	-5.2	13.70	0.0
7	X	X	X	(X)	0.6	5.4	-4.5	16.24	0.0
8	3.3	8.9	7	(3)	3.9	7.3	1.3	5.88	8.5
9	2.4	3.5	14	(16)	3.1	7.0	-0.3	9.46	0.5
10	3.1	5.8	14	(9)	-1.3	1.1	-3.0	8.88	6.0
11	X	X	13	(4)	-0.7	1.2	-3.2	7.56	14.0
12	X	X	16	(7)	-0.1	2.6	-2.3	10.93	4.5
13	X	X	13	(5)	-1.7	0.6	-4.3	11.25	5.0
14	2.0	4.6	7	(7)	-1.1	2.5	-3.5	13.16	3.0
15	X	X	X	(X)	X	X	X	X	0.5
16	1.4	2.8	10	(4)	2.4	5.8	-1.0	17.06	2.5
17	3.7	6.4	14	(12)	1.0	4.4	-1.0	11.86	1.0
18	1.6	4.3	13 14	(3)	-1.2	5.3	-7.6	20.66	0.0
19	1.2	2.2	12	(4)	2.2	7.4	-1.4	19.19	2.5
20	2.4	4.3	14	(6)	1.6	5.2	-1.2	13.13	0.5
21	2.5	6.3	1	(7)	-0.6	2.8	-3.0	16.93	2.0
22	4.0	7.2	5	(6)	3.5	5.7	1.3	18.32	0.5
23	2.3	7.0	7	(6)	2.8	5.1	1.3	6.43	9.0
24	1.9	5.0	13	(7)	2.8	4.8	-0.4	6.35	5.5
25	2.6	4.9	13	(6)	1.4	4.3	-0.3	8.60	9.0
26	0.9	3.8	10	(3)	0.3	3.4	-0.9	11.69	11.5
27	2.8	5.2	6	(6)	2.9	6.5	1.3	14.33	1.0
28	2.8	6.2	13	(5)	7.0	10.5	3.8	17.59	0.0
29	3.5	5.6	15	(7)	2.5	5.1	1.2	9.81	0.5
30	2.2	4.8	14	(7)	-0.1	4.9	-4.8	12.63	1.0
31	2.0	5.4	14	(5)	1.1	6.6	-5.7	16.13	0.5
TOTL								386.75	103.5
MEAN	2.4	5.1			0.9	4.4	-2.0	12.89	
MAX	4.0	8.9			7.0	10.5	3.8	20.66	
MIN	0.9	2.2			-1.9	-0.3	-7.6	5.88	
DN	22	22			30	30	30	30	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

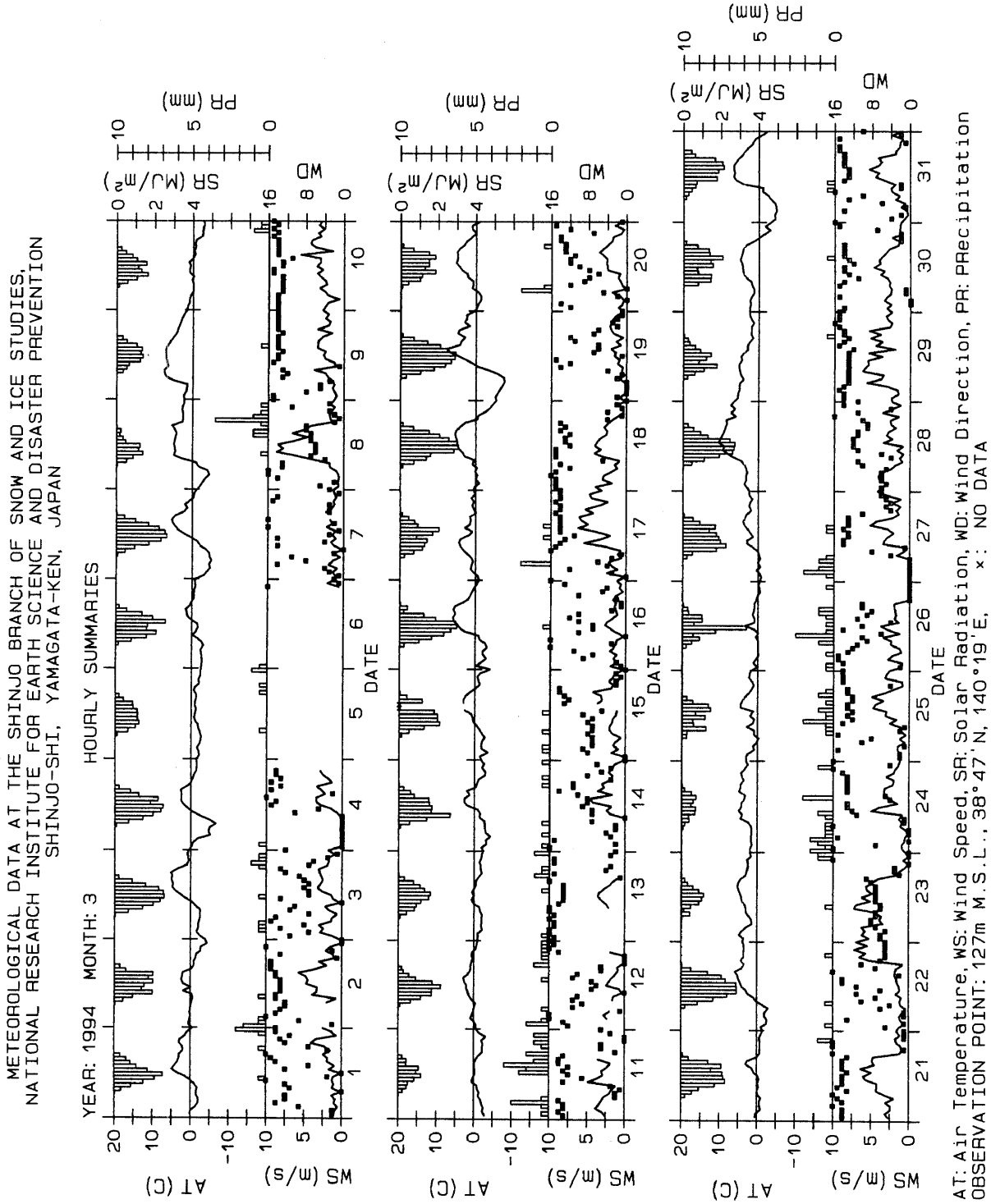

Fig.4.58 気象変化図

Seasonal variations in meteorological data.

Table 7.59　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

APRIL　1994

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST	WD(1-16) FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	0.9	2.3	2	(5)	2.2	10.1	-5.7	22.89	0.0
2	1.9	5.7	13	(3)	4.8	8.2	1.5	4.50	3.5
3	7.9	11.0	13	(11)	4.8	5.8	2.3	11.07	2.0
4	1.4	3.0	1	(8)	4.5	11.1	-0.4	22.05	0.0
5	1.2	2.5	2	(4)	6.4	15.3	0.0	19.95	0.0
6	1.3	3.2	3	(5)	6.3	14.9	-0.5	19.85	0.0
7	1.5	3.9	13	(4)	7.5	17.6	0.2	19.20	0.0
8	3.1	5.3	14	(11)	4.7	7.1	0.0	11.17	0.0
9	2.9	7.3	15	(8)	2.1	4.4	-0.5	12.16	0.0
10	1.8	4.2	13	(7)	2.2	6.6	-3.0	13.93	0.0
11	X	X	X	(X)	X	X	X	X	X
12	X	X	X	(X)	X	X	X	X	X
13	X	X	X	(X)	X	X	X	X	X
14	X	X	X	(X)	X	X	X	X	X
15	X	X	X	(X)	X	X	X	X	X
16	X	X	X	(X)	X	X	X	X	X
17	X	X	X	(X)	X	X	X	X	X
18	X	X	X	(X)	X	X	X	X	X
19	X	X	X	(X)	X	X	X	X	X
20	X	X	X	(X)	X	X	X	X	X
21	X	X	X	(X)	X	X	X	X	X
22	X	X	X	(X)	X	X	X	X	X
23	X	X	X	(X)	X	X	X	X	X
24	X	X	X	(X)	X	X	X	X	X
25	X	X	X	(X)	X	X	X	X	X
26	X	X	X	(X)	X	X	X	X	X
27	X	X	X	(X)	X	X	X	X	X
28	X	X	X	(X)	X	X	X	X	X
29	X	X	X	(X)	X	X	X	X	X
30	X	X	X	(X)	X	X	X	X	X
TOTL								156.77	5.5
MEAN	2.4	4.8			4.5	10.1	-0.6	15.68	
MAX	7.9	11.0			7.5	17.6	2.3	22.89	
MIN	0.9	2.3			2.1	4.4	-5.7	4.50	
DN	10	10			10	10	10	10	10

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST	WD(1-16) FREQ NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.1	2.3	6	(5)	4.3	10.1	1.5	19.73	2.0
2	4.0	9.2	13	(8)	6.0	8.2	3.4	6.21	3.0
3	5.9	11.0	14	(6)	3.1	5.5	-0.4	11.51	0.5
4	1.2	3.0	1	(7)	4.7	11.1	0.0	22.73	0.0
5	1.1	2.5	9	(4)	6.3	15.3	-0.5	19.36	0.0
6	1.3	3.2	3	(6)	6.5	14.9	0.2	20.25	0.0
7	2.6	4.4	14	(7)	8.7	17.6	4.6	17.33	0.0
8	2.5	5.3	14	(7)	3.3	7.1	0.0	11.03	0.0
9	2.5	7.3	15	(7)	1.3	4.4	-3.0	14.04	0.0
10	X	X	X	(X)	X	X	X	X	X
11	X	X	X	(X)	X	X	X	X	X
12	X	X	X	(X)	X	X	X	X	X
13	X	X	X	(X)	X	X	X	X	X
14	X	X	X	(X)	X	X	X	X	X
15	X	X	X	(X)	X	X	X	X	X
16	X	X	X	(X)	X	X	X	X	X
17	X	X	X	(X)	X	X	X	X	X
18	X	X	X	(X)	X	X	X	X	X
19	X	X	X	(X)	X	X	X	X	X
20	X	X	X	(X)	X	X	X	X	X
21	X	X	X	(X)	X	X	X	X	X
22	X	X	X	(X)	X	X	X	X	X
23	X	X	X	(X)	X	X	X	X	X
24	X	X	X	(X)	X	X	X	X	X
25	X	X	X	(X)	X	X	X	X	X
26	X	X	X	(X)	X	X	X	X	X
27	X	X	X	(X)	X	X	X	X	X
28	X	X	X	(X)	X	X	X	X	X
29	X	X	X	(X)	X	X	X	X	X
30	X	X	X	(X)	X	X	X	X	X
TOTL								142.19	5.5
MEAN	2.5	5.4			4.9	10.5	0.6	15.80	
MAX	5.9	11.0			8.7	17.6	4.6	22.73	
MIN	1.1	2.3			1.3	4.4	-3.0	6.21	
DN	9	9			9	9	9	9	9

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

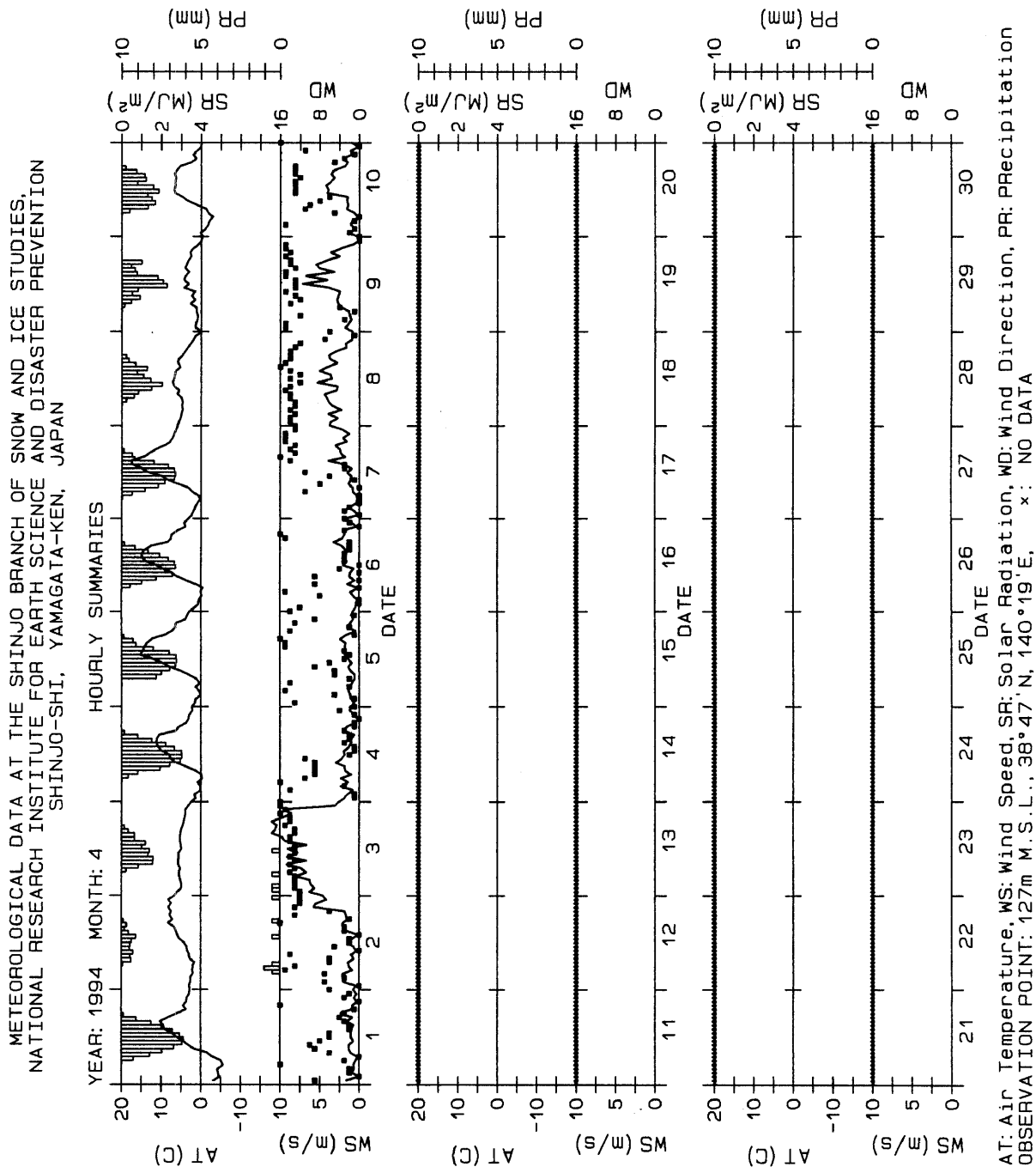

Fig.4.59 気象変化図

Seasonal variations in meteorological data.

Table 7.60　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

NOVEMBER 1994

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	X	X	X	(X)	X	X	X	X	X
2	X	X	X	(X)	X	X	X	X	X
3	X	X	X	(X)	X	X	X	X	X
4	X	X	X	(X)	X	X	X	X	X
5	X	X	X	(X)	X	X	X	X	X
6	X	X	X	(X)	X	X	X	X	X
7	X	X	X	(X)	X	X	X	X	X
8	X	X	X	(X)	X	X	X	X	X
9	X	X	X	(X)	X	X	X	X	X
10	X	X	X	(X)	X	X	X	X	X
11	X	X	X	(X)	X	X	X	X	X
12	X	X	X	(X)	X	X	X	X	X
13	X	X	X	(X)	X	X	X	X	X
14	X	X	X	(X)	X	X	X	X	X
15	X	X	X	(X)	X	X	X	X	X
16	X	X	X	(X)	X	X	X	X	X
17	X	X	X	(X)	X	X	X	X	X
18	X	X	X	(X)	X	X	X	X	X
19	X	X	X	(X)	X	X	X	X	X
20	X	X	X	(X)	X	X	X	X	X
21	X	X	X	(X)	X	X	X	X	X
22	X	X	X	(X)	X	X	X	X	X
23	1.5	3.0	16	(6)	2.9	8.6	-1.7	8.49	0.0
24	1.1	2.3	2	(5)	2.4	9.3	-3.0	9.82	0.0
25	1.2	3.4	14 15	(4)	3.1	7.8	-2.8	4.19	7.5
26	1.5	2.9	14	(4)	5.3	9.1	3.2	5.33	6.0
27	2.5	5.9	14	(8)	4.3	6.4	3.1	6.86	3.0
28	2.2	3.6	16	(4)	6.6	9.2	4.2	4.73	3.5
29	1.3	2.3	15 16	(4)	6.8	9.2	4.8	3.74	3.0
30	1.1	2.3	13	(5)	4.5	11.0	0.8	8.70	0.0
TOTL								51.87	23.0
MEAN	1.6	3.2			4.5	8.8	1.1	6.48	
MAX	2.5	5.9			6.8	11.0	4.8	9.82	
MIN	1.1	2.3			2.4	6.4	-3.0	3.74	
DN	8	8			8	8	8	8	8

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	X	X	X	(X)	X	X	X	X	X
2	X	X	X	(X)	X	X	X	X	X
3	X	X	X	(X)	X	X	X	X	X
4	X	X	X	(X)	X	X	X	X	X
5	X	X	X	(X)	X	X	X	X	X
6	X	X	X	(X)	X	X	X	X	X
7	X	X	X	(X)	X	X	X	X	X
8	X	X	X	(X)	X	X	X	X	X
9	X	X	X	(X)	X	X	X	X	X
10	X	X	X	(X)	X	X	X	X	X
11	X	X	X	(X)	X	X	X	X	X
12	X	X	X	(X)	X	X	X	X	X
13	X	X	X	(X)	X	X	X	X	X
14	X	X	X	(X)	X	X	X	X	X
15	X	X	X	(X)	X	X	X	X	X
16	X	X	X	(X)	X	X	X	X	X
17	X	X	X	(X)	X	X	X	X	X
18	X	X	X	(X)	X	X	X	X	X
19	X	X	X	(X)	X	X	X	X	X
20	X	X	X	(X)	X	X	X	X	X
21	X	X	X	(X)	X	X	X	X	X
22	X	X	X	(X)	X	X	X	X	X
23	1.6	3.0	4 16	(4)	1.9	8.6	-3.0	8.20	0.0
24	1.0	2.0	14	(4)	2.3	9.3	-2.8	9.63	0.0
25	1.3	3.4	12	(3)	5.1	7.8	2.2	3.30	8.0
26	2.0	3.5	14	(7)	5.2	9.1	3.1	5.73	6.5
27	2.5	5.9	16	(6)	5.0	7.6	3.5	6.99	2.0
28	1.8	3.0	8	(3)	6.6	9.2	4.8	4.54	6.0
29	1.1	2.2	15	(5)	5.6	9.2	1.0	3.85	0.5
30	1.1	2.3	13	(5)	3.5	11.0	-0.8	8.36	0.0
TOTL								50.58	23.0
MEAN	1.5	3.2			4.4	9.0	1.0	6.32	
MAX	2.5	5.9			6.6	11.0	4.8	9.63	
MIN	1.0	2.0			1.9	7.6	-3.0	3.30	
DN	8	8			8	8	8	8	8

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

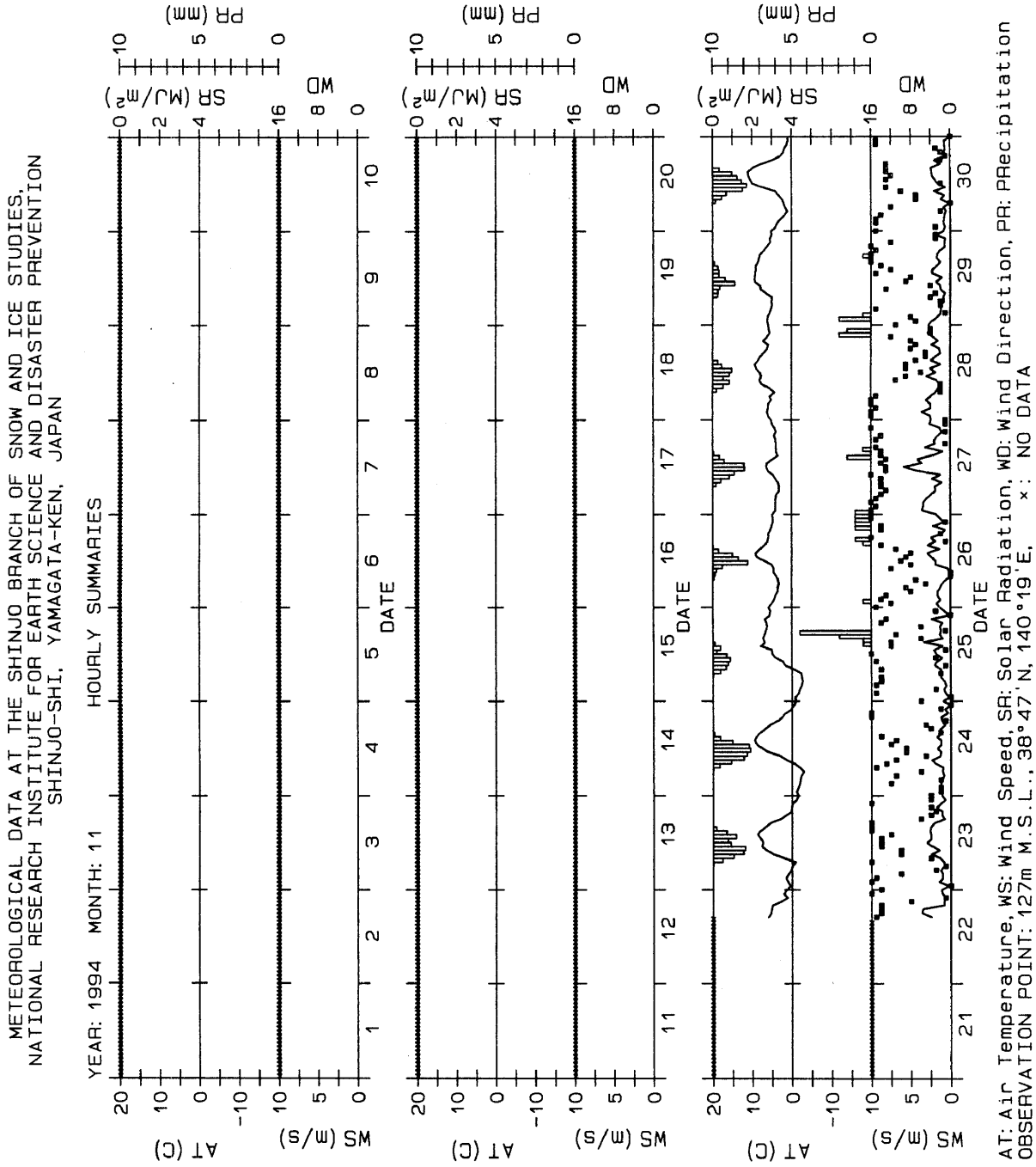

Fig.4.60 気象変化図

Seasonal variations in meteorological data.

Table 7.61 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

DECEMBER 1994

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.0	1.7	16	(4)	1.4	3.2	-0.8	2.71	0.0
2	1.3	4.1	1 12	(4)	3.7	9.5	0.8	2.94	5.5
3	4.2	6.9	13	(15)	3.5	7.9	1.1	3.22	18.0
4	3.5	5.3	13 14	(9)	2.8	4.3	0.0	2.55	5.5
5	2.3	5.7	14	(7)	1.4	3.3	0.1	1.84	17.5
6	2.8	5.6	16	(7)	2.0	3.7	0.6	4.11	7.5
7	1.6	3.5	16	(8)	1.7	5.2	0.7	0.61	58.0
8	1.9	4.3	14	(6)	4.4	7.9	-0.2	6.47	0.5
9	2.3	6.8	14	(7)	2.0	6.0	-0.8	1.44	14.5
10	X	X	X	(X)	X	X	X	X	X
11	1.2	2.9	2	(6)	2.8	5.8	-1.0	5.60	0.0
12	0.9	1.7	16	(6)	4.2	7.9	1.2	6.06	0.0
13	X	X	X	(X)	X	X	X	X	X
14	2.5	5.6	13	(4)	0.6	2.8	-0.4	5.20	8.0
15	X	X	14	(5)	-0.5	2.8	-2.8	2.94	15.5
16	X	X	14	(14)	-4.5	-2.9	-6.2	4.55	8.5
17	X	X	14	(6)	X	X	X	X	X
18	X	X	14	(10)	-2.2	-1.9	-2.9	3.54	19.5
19	2.3	4.7	15	(7)	-3.3	-1.8	-5.1	5.74	6.5
20	0.6	1.7	14 15	(2)	-4.0	-2.2	-6.7	4.63	6.5
21	2.5	4.7	14	(7)	0.9	3.0	-3.2	4.86	5.0
22	1.2	2.6	2	(3)	0.5	4.0	-1.9	3.64	0.0
23	0.9	1.7	4	(3)	0.0	1.7	-4.2	2.84	2.5
24	0.9	2.4	4	(4)	1.9	3.8	1.0	3.05	1.5
25	2.9	5.5	14	(10)	2.0	4.0	-2.2	4.69	7.0
26	1.5	6.4	16	(5)	-1.7	3.4	-6.6	9.52	0.0
27	0.9	2.3	16	(4)	1.2	2.7	-0.1	3.75	13.0
28	1.2	2.4	15	(3)	0.8	2.4	-0.8	3.92	1.0
29	1.9	4.3	14	(6)	-0.7	1.6	-2.2	3.61	10.5
30	1.3	2.1	7	(5)	-0.8	1.4	-2.3	5.57	2.5
31	1.2	2.8	15	(9)	-0.9	1.1	-3.8	4.29	2.5
TOTL								113.89	237.0
MEAN	1.8	3.9			0.7	3.2	-1.7	4.07	
MAX	4.2	6.9			4.4	9.5	1.2	9.52	
MIN	0.6	1.7			-4.5	-2.9	-6.7	0.61	
DN	25	25			28	28	28	28	28

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.0	1.8	16	(5)	1.8	3.2	0.8	2.61	0.0
2	2.7	6.4	13	(7)	5.1	9.5	2.1	3.33	15.5
3	4.0	6.9	13	(12)	2.8	3.9	1.1	3.08	9.0
4	2.1	5.2	13	(6)	1.9	4.3	0.0	2.45	19.5
5	3.1	5.7	14	(9)	1.6	3.3	0.6	1.71	8.0
6	2.3	5.6	16	(8)	2.2	3.7	0.9	4.00	11.5
7	2.0	4.3	16	(7)	2.8	5.3	0.7	1.20	49.0
8	1.3	3.2	1	(4)	2.6	7.9	-0.8	5.97	0.0
9	4.0	7.1	13	(9)	3.5	6.0	0.1	1.71	16.0
10	X	X	X	(X)	X	X	X	X	X
11	0.8	2.3	2	(4)	3.1	5.8	1.2	5.26	0.0
12	X	X	X	(X)	5.1	7.9	3.1	6.49	1.5
13	X	X	X	(X)	X	X	X	X	X
14	2.6	5.8	14	(5)	0.9	2.8	-0.9	4.75	7.0
15	X	X	14	(9)	-2.3	-0.4	-4.9	2.97	15.5
16	2.1	4.1	14	(7)	-4.8	-3.1	-6.2	4.52	9.5
17	X	X	14	(7)	X	X	X	X	X
18	X	X	14	(10)	-2.6	-1.9	-3.9	3.37	18.5
19	2.0	4.7	14	(6)	-4.2	-1.8	-6.7	5.90	4.0
20	1.2	4.7	14	(4)	-1.5	3.0	-5.0	4.69	11.0
21	1.8	3.6	13	(7)	-0.1	2.9	-3.2	4.83	0.0
22	1.2	2.6	3	(4)	0.4	4.0	-4.2	3.30	0.0
23	1.0	2.4	4	(5)	1.0	1.7	-0.1	3.06	3.5
24	1.4	4.2	14	(6)	2.7	4.0	1.7	2.90	7.0
25	2.4	5.5	14	(6)	-1.2	3.8	-6.6	5.41	0.5
26	1.4	6.4	16	(5)	0.5	3.4	-2.2	8.78	13.0
27	1.0	2.3	2	(3)	0.9	2.7	-0.8	3.90	0.0
28	1.6	4.3	14	(6)	0.9	2.4	-0.8	4.15	6.5
29	1.7	4.1	1	(4)	-1.3	-0.1	-2.3	3.44	7.5
30	1.0	2.1	15	(5)	-0.8	1.4	-1.7	5.50	1.5
31	2.6	6.4	15	(8)	-1.0	1.1	-3.8	4.31	2.5
TOTL								113.61	237.5
MEAN	1.9	4.5			0.7	3.1	-1.5	4.06	
MAX	4.0	7.1			5.1	9.5	3.1	8.78	
MIN	0.8	1.8			-4.8	-3.1	-6.7	1.20	
DN	25	25			28	28	28	28	28

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

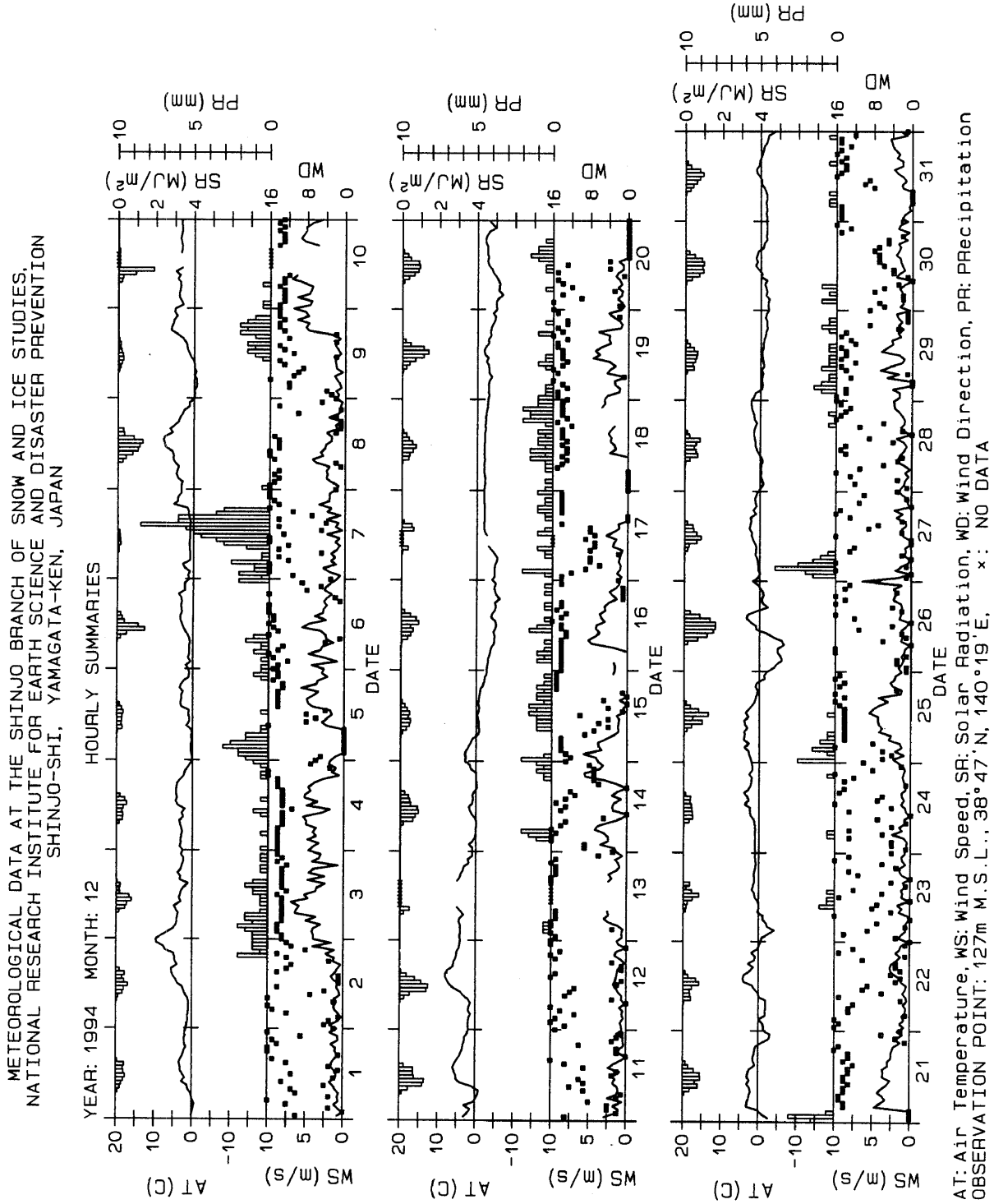

Fig.4.61 気象変化図

Seasonal variations in meteorological data.

Table 7.62　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

JANUARY　1995

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	4.4	6.4	14	(13)	-2.4	-0.3	-5.1	3.75	4.0
2	1.6	3.4	2	(5)	-1.8	1.2	-5.6	5.93	5.0
3	1.0	2.0	1	(4)	-1.1	2.0	-6.4	6.68	0.0
4	0.8	3.0	1	(4)	1.1	2.3	0.3	2.37	8.0
5	2.0	4.8	8	(4)	1.1	3.0	0.2	2.57	14.0
6	X	X	15 16	(4)	-1.9	0.5	-2.8	5.19	11.0
7	4.0	6.8	13	(12)	1.7	3.2	-0.8	2.93	12.0
8	2.9	6.3	13	(7)	1.2	5.1	-7.3	8.34	0.0
9	1.6	3.6	12	(4)	-2.0	4.2	-8.3	8.05	9.0
10	X	X	13	(7)	-1.5	1.5	-3.2	4.52	22.5
11	X	X	1	(3)	-4.7	-2.2	-12.7	5.68	12.5
12	X	X	11	(3)	-5.8	-2.0	-9.7	7.24	1.5
13	1.4	3.5	15	(4)	-3.9	-2.0	-5.7	6.36	9.5
14	2.7	4.7	15	(9)	-4.5	-2.9	-7.1	4.95	5.0
15	3.5	5.6	14	(12)	-4.1	-2.6	-5.0	4.68	6.0
16	2.8	5.7	15	(8)	-4.4	-2.7	-7.0	6.50	9.0
17	1.3	1.9	2	(5)	-4.7	-2.3	-7.0	7.55	6.0
18	2.6	7.8	2 13	(4)	-2.5	1.3	-7.4	7.40	3.5
19	3.5	5.8	14	(11)	-2.9	-0.5	-4.1	6.46	3.5
20	2.0	4.0	14	(7)	-1.3	1.5	-5.9	5.57	4.5
21	1.2	2.8	3	(6)	-5.0	1.8	-12.9	10.78	0.0
22	1.7	5.0	14	(5)	0.1	3.5	-2.5	3.36	1.0
23	0.9	2.4	3	(3)	1.6	2.8	0.6	4.25	2.0
24	2.6	4.5	15	(6)	1.1	3.9	-0.7	8.20	0.0
25	3.5	6.3	13	(7)	-1.5	1.0	-2.8	9.55	1.5
26	1.9	6.3	13	(4)	-0.3	3.2	-2.8	8.21	2.5
27	2.1	4.1	15	(6)	-3.4	-1.4	-6.9	5.97	5.0
28	1.0	1.8	2	(6)	-4.0	-0.1	-8.7	12.05	0.0
29	1.6	4.4	16	(5)	-3.7	1.7	-7.5	7.39	0.5
30	3.7	8.1	13	(12)	-3.3	-1.5	-5.5	4.29	5.0
31	4.2	6.7	13	(10)	-1.9	1.4	-5.3	7.00	8.0
TOTL								193.78	172.0
MEAN	2.3	4.7			-2.1	0.8	-5.3	6.25	
MAX	4.4	8.1			1.7	5.1	0.6	12.05	
MIN	0.8	1.8			-5.8	-2.9	-12.9	2.37	
DN	27	27			31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	3.5	6.3	14	(11)	-3.4	-0.3	-5.6	3.83	3.5
2	1.3	2.6	2	(6)	-1.4	1.2	-6.4	6.20	4.0
3	0.9	2.0	11	(5)	0.2	2.0	-3.1	6.18	2.0
4	1.1	3.0	8	(4)	1.6	3.0	1.1	2.41	10.0
5	X	X	8 13 14	(2)	0.0	1.6	-2.2	2.60	16.0
6	X	X	15 16	(4)	-1.2	1.1	-2.8	5.58	8.5
7	4.8	6.8	13	(14)	2.4	3.2	1.0	2.78	8.5
8	1.6	3.2	15	(5)	-2.3	5.1	-8.3	8.46	0.0
9	X	X	12	(4)	0.7	4.2	-3.2	7.63	23.5
10	X	X	14	(3)	-2.6	-1.6	-3.5	4.68	18.5
11	X	X	10 13	(2)	-6.5	-2.2	-12.7	6.03	3.0
12	0.9	2.4	1 11	(3)	-4.7	-2.0	-8.1	7.19	2.5
13	1.6	3.5	15	(7)	-4.0	-2.0	-7.1	6.38	9.5
14	3.7	5.6	14	(11)	-4.1	-2.9	-5.0	4.59	4.0
15	3.1	5.7	14	(12)	-4.3	-2.6	-5.3	4.86	10.5
16	1.9	4.0	15	(8)	-5.0	-2.7	-7.0	6.56	6.5
17	1.2	1.9	2	(7)	-4.5	-2.3	-7.4	7.50	3.0
18	3.7	7.8	14	(8)	-1.3	1.3	-3.7	7.37	6.0
19	2.8	5.8	14	(9)	-2.6	-0.7	-4.1	6.50	5.0
20	1.8	4.0	15	(7)	-4.5	1.5	-12.9	6.15	0.5
21	0.9	2.8	3	(4)	-2.0	1.8	-7.3	10.10	0.0
22	1.7	5.0	14	(5)	1.2	3.5	-0.6	3.36	2.5
23	1.4	3.4	15	(4)	1.6	2.8	-0.4	4.80	0.5
24	3.2	4.5	13	(8)	0.0	3.9	-2.8	7.57	0.5
25	2.8	6.3	1	(6)	-1.4	1.0	-2.8	10.07	1.0
26	2.3	6.3	14	(4)	-0.6	3.2	-3.9	7.80	4.0
27	1.4	2.7	6	(4)	-5.1	-1.9	-8.7	6.38	3.5
28	1.1	1.9	1	(6)	-3.5	-0.1	-7.5	11.87	0.5
29	2.8	8.1	14	(5)	-2.4	1.7	-6.4	7.14	1.5
30	3.6	5.7	13	(17)	-4.2	-2.3	-5.5	4.27	8.0
31	4.3	6.7	13	(11)	-0.3	1.4	-2.7	6.94	9.5
TOTL								193.76	176.5
MEAN	2.3	4.6			-2.1	0.6	-5.0	6.25	
MAX	4.8	8.1			2.4	5.1	1.1	11.87	
MIN	0.9	1.9			-6.5	-2.9	-12.9	2.41	
DN	26	26			31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

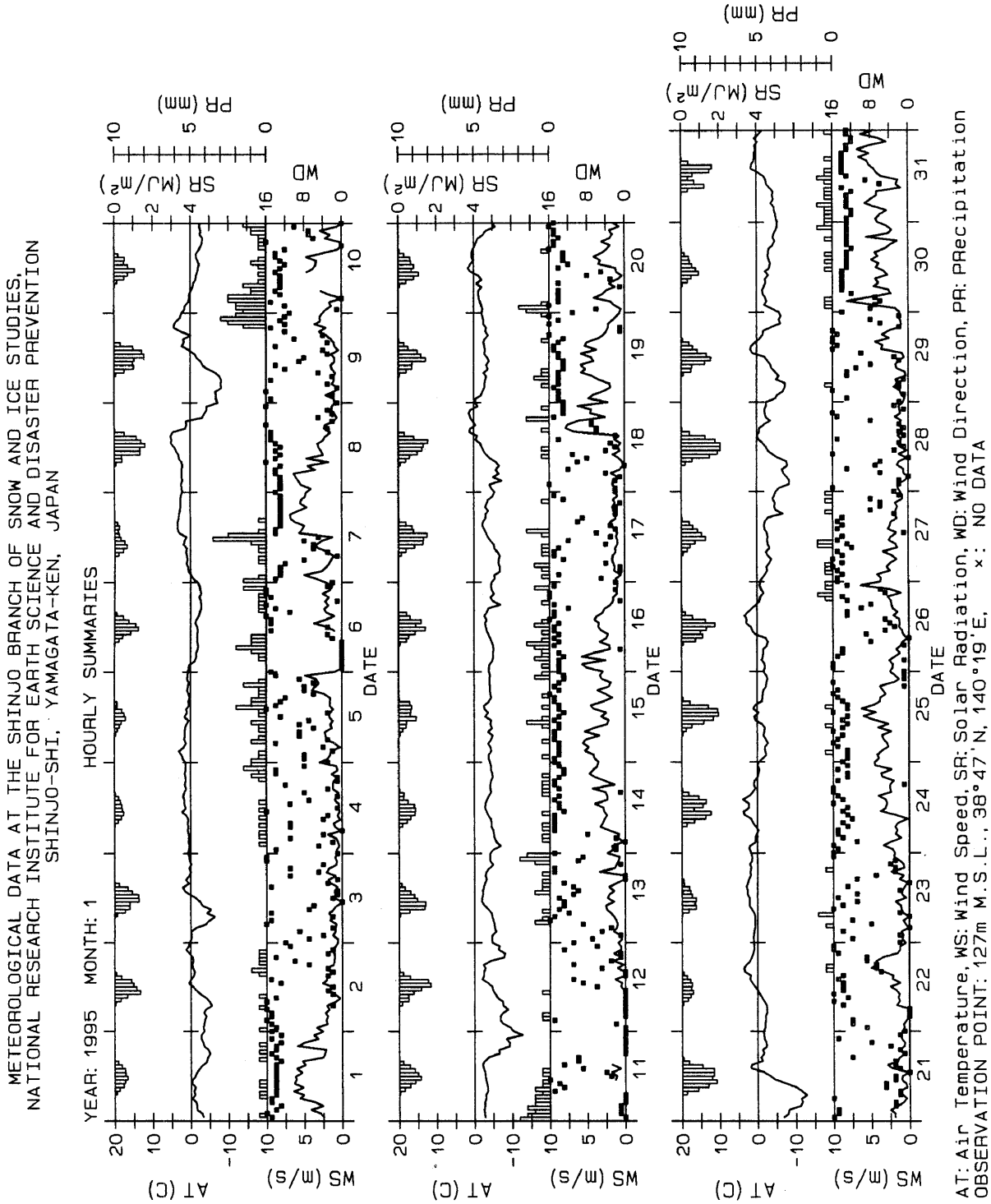

Fig.4.62 気象変化図

Seasonal variations in meteorological data.

Table 7.63 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

FEBRUARY 1995

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.5	4.8	13	(8)	0.2	1.1	-1.3	5.68	14.0
2	X	X	1	(5)	-1.8	0.2	-4.5	8.24	2.5
3	X	X	10	(5)	-3.1	-0.9	-7.6	6.81	2.5
4	1.2	2.7	1	(5)	-3.4	0.5	-9.1	11.46	1.5
5	1.1	2.3	3	(6)	-7.1	-3.2	-11.7	7.86	0.0
6	1.5	4.3	2	(4)	-5.5	-0.5	-11.2	10.41	3.5
7	1.1	4.2	14	(3)	-0.9	1.7	-2.8	10.47	13.5
8	1.9	4.2	15	(4)	1.0	3.5	-0.4	4.28	18.0
9	1.7	4.6	16	(5)	-0.5	3.0	-3.2	10.96	2.5
10	1.8	3.7	13	(5)	-2.3	1.5	-5.1	12.23	0.5
11	1.6	2.9	16	(5)	-0.2	3.5	-3.4	10.25	0.0
12	1.1	2.3	13	(4)	-1.2	3.3	-6.4	10.42	0.0
13	1.1	3.7	4 16	(4)	1.6	4.3	0.2	7.05	4.5
14	1.2	3.4	13	(3)	0.0	2.4	-3.6	8.11	3.0
15	1.1	1.9	15	(5)	-2.5	1.5	-6.0	9.75	1.0
16	1.7	3.5	15	(4)	-1.2	2.2	-4.1	8.23	10.5
17	2.5	4.8	14	(9)	-1.8	0.9	-3.5	7.46	14.0
18	2.9	5.7	14	(10)	-0.9	1.5	-2.4	11.76	6.0
19	3.2	5.6	14	(10)	0.2	2.7	-2.1	12.15	0.0
20	2.6	4.7	12	(6)	-0.4	3.3	-5.7	16.01	2.5
21	1.5	4.7	7	(4)	-0.2	2.2	-2.3	8.30	11.5
22	3.9	5.7	13	(9)	0.9	3.3	-1.0	13.80	1.5
23	1.2	2.6	2	(4)	0.1	4.7	-5.6	15.00	1.5
24	2.2	5.2	14	(8)	0.2	3.1	-2.6	12.12	3.0
25	1.3	2.4	3	(6)	-1.8	3.5	-5.9	14.23	0.0
26	2.5	6.4	1	(5)	-0.4	5.2	-8.4	13.12	1.0
27	1.7	4.7	14	(6)	1.2	4.8	-1.4	8.49	1.5
28	2.8	7.5	6	(4)	1.4	4.4	-1.9	16.35	1.0
TOTL								291.01	121.0
MEAN	1.9	4.2			-1.0	2.3	-4.4	10.39	
MAX	3.9	7.5			1.6	5.2	0.2	16.35	
MIN	1.1	1.9			-7.1	-3.2	-11.7	4.28	
DN	26	26			28	28	28	28	28

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	1.4	3.9	14	(6)	-0.8	1.1	-4.5	6.10	8.0
2	X	X	2	(4)	-1.7	0.2	-3.6	8.46	2.5
3	0.9	2.0	10	(6)	-3.8	-0.9	-7.6	6.93	3.0
4	1.2	2.7	2	(5)	-4.4	0.5	-9.1	10.94	1.0
5	1.0	2.3	1	(5)	-8.4	-3.2	-11.7	8.19	0.0
6	1.4	4.3	14	(3)	-2.5	-0.5	-6.8	10.27	12.0
7	1.4	4.2	14	(3)	0.1	1.7	-1.2	10.10	16.0
8	1.7	4.2	15 16	(4)	-0.1	3.5	-3.2	4.45	7.0
9	1.9	4.6	15 16	(6)	-1.1	3.0	-5.1	11.64	2.5
10	1.9	3.7	12	(5)	-1.6	1.5	-4.0	11.57	0.5
11	1.2	2.8	16	(3)	-1.3	3.5	-6.4	10.56	0.0
12	1.0	2.3	13	(3)	1.0	3.3	-2.9	9.94	3.5
13	1.0	3.7	4	(5)	1.3	4.3	-0.5	7.37	3.0
14	1.6	3.4	14	(6)	-1.6	2.4	-6.0	8.20	1.0
15	0.9	1.4	15	(7)	-2.1	1.5	-4.4	9.44	1.5
16	2.0	3.6	13	(5)	-0.9	2.2	-3.5	8.96	18.0
17	2.9	4.8	14	(12)	-1.7	0.9	-2.6	7.11	11.5
18	2.9	5.7	16	(10)	-0.7	1.5	-2.1	12.06	0.5
19	3.1	5.6	14	(13)	0.0	2.7	-5.7	12.81	0.0
20	2.1	4.7	12	(6)	-0.2	3.3	-2.7	14.70	9.5
21	2.8	5.7	13	(8)	0.6	2.2	-1.0	9.19	6.0
22	2.6	5.6	14	(7)	-0.4	3.3	-5.6	14.11	0.0
23	1.3	3.1	16	(3)	1.1	4.7	-2.2	14.61	4.5
24	2.2	5.2	14	(7)	-1.2	3.1	-5.4	11.78	0.0
25	1.2	2.4	1	(6)	-2.9	3.5	-8.4	14.57	0.0
26	2.5	6.4	6	(4)	2.1	5.2	-1.4	12.17	1.0
27	2.1	4.7	15	(6)	1.0	4.8	-1.9	9.90	1.5
28	3.2	7.5	6	(8)	2.1	4.4	-0.5	15.21	1.0
TOTL								291.36	115.0
MEAN	1.8	4.1			-1.0	2.3	-4.3	10.41	
MAX	3.2	7.5			2.1	5.2	-0.5	15.21	
MIN	0.9	1.4			-8.4	-3.2	-11.7	4.45	
DN	27	27			28	28	28	28	28

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

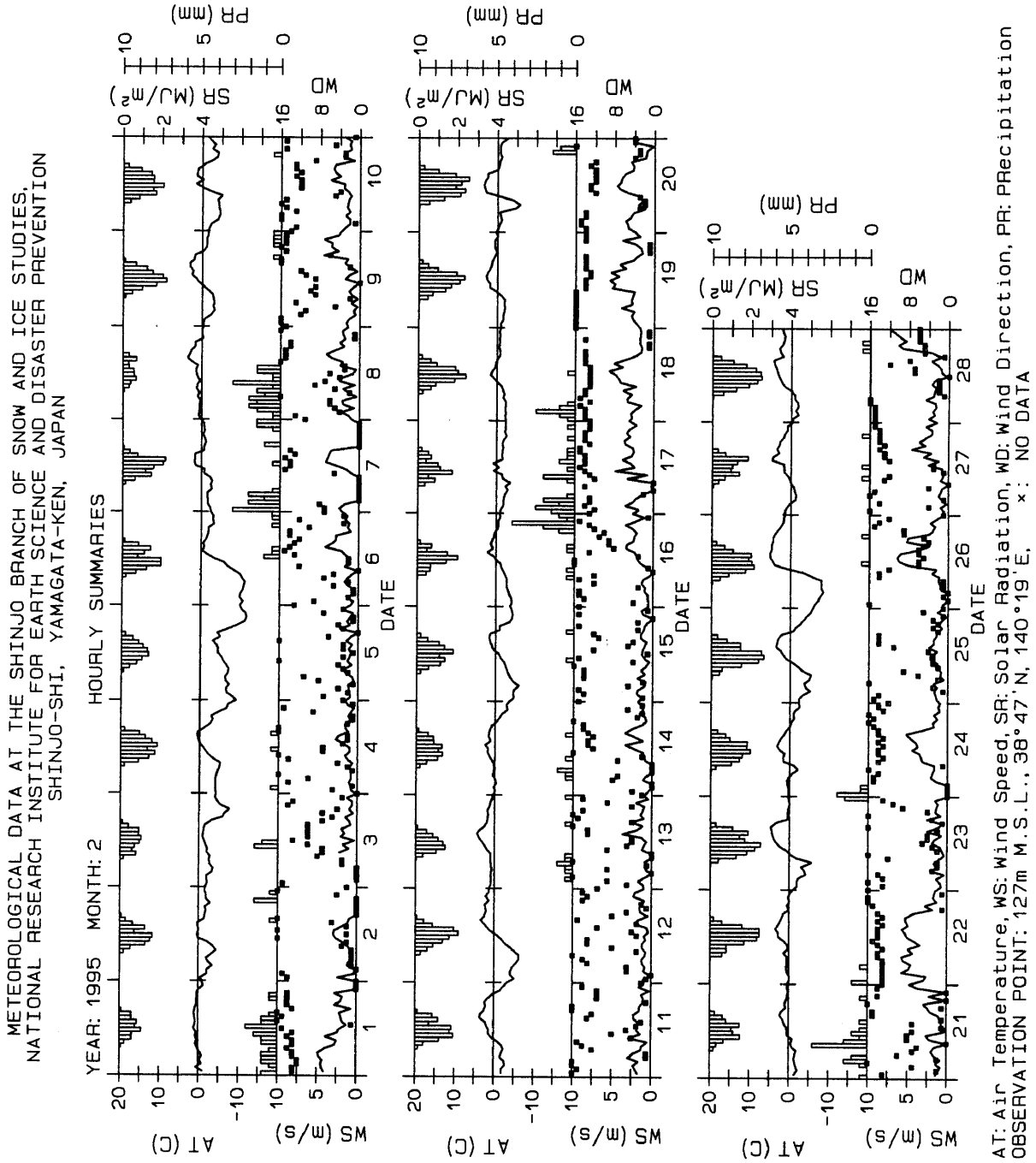

Fig.4.63 気象変化図

Seasonal variations in meteorological data.

Table 7.64　新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

MARCH　1995

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.0	5.9	16	(6)	2.2	4.8	-0.5	8.80	0.0
2	2.7	5.1	14	(7)	-0.6	1.1	-2.6	9.22	1.0
3	1.1	2.0	14	(4)	-2.1	0.6	-5.7	11.87	2.0
4	0.9	2.3	3 16	(3)	-1.0	2.0	-2.8	8.46	2.5
5	0.9	2.9	14	(3)	-1.9	1.7	-5.7	12.46	3.5
6	1.3	4.1	14	(4)	-0.3	2.9	-3.4	14.82	3.0
7	1.4	2.1	3	(4)	0.5	5.5	-5.9	14.54	0.0
8	0.8	2.0	4	(4)	0.8	2.4	0.1	4.40	13.5
9	3.2	6.9	13	(8)	2.7	5.8	-0.9	14.28	0.5
10	3.7	8.4	5	(5)	1.3	5.6	-4.2	13.25	2.5
11	1.5	3.2	14	(7)	1.0	2.5	0.1	4.95	27.0
12	2.2	4.4	5	(6)	1.2	4.6	-3.5	16.76	0.0
13	1.1	2.0	6	(4)	2.7	6.2	0.4	12.43	0.0
14	1.2	3.2	7	(4)	2.2	4.7	-0.3	9.68	0.0
15	1.1	2.3	2 5	(3)	2.0	8.7	-2.7	17.92	0.0
16	4.3	8.5	6	(10)	3.3	7.7	-5.0	13.09	7.0
17	4.5	8.2	7	(8)	7.6	14.4	0.8	7.89	1.0
18	1.8	4.4	14	(6)	1.0	3.3	-2.4	15.65	0.5
19	1.7	4.5	14	(5)	-0.4	5.1	-6.3	14.20	3.0
20	2.1	5.9	6	(4)	2.6	6.8	-0.6	14.33	2.0
21	1.4	4.0	7 11 14	(3)	4.8	13.4	-2.0	19.16	0.0
22	2.3	5.0	14	(9)	2.7	5.9	-0.7	19.43	2.0
23	1.0	1.8	2	(5)	2.1	6.8	-1.3	16.29	0.0
24	0.8	1.5	14	(4)	2.6	4.5	0.7	3.88	7.5
25	1.4	2.2	15	(7)	1.1	2.4	-0.8	5.10	3.0
26	1.5	4.0	5	(3)	-0.4	3.2	-2.7	11.98	0.5
27	2.0	4.4	7	(5)	1.4	5.4	-4.1	11.60	1.5
28	1.8	5.1	13	(6)	2.4	6.6	-1.0	14.66	3.0
29	1.7	5.9	6	(6)	3.2	9.2	-1.9	15.23	0.5
30	2.3	5.3	6	(6)	5.7	10.4	-0.6	9.23	9.5
31	2.4	7.9	12	(5)	7.6	9.3	5.6	3.11	13.5
TOTL								368.63	110.0
MEAN	1.9	4.4			1.9	5.6	-1.9	11.89	
MAX	4.5	8.5			7.6	14.4	5.6	19.43	
MIN	0.8	1.5			-2.1	0.6	-6.3	3.11	
DN	31	31			31	31	31	31	31

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ NO		AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	2.0	5.1	14	(5)	1.7	4.8	-0.8	9.07	1.0
2	1.8	4.7	14	(5)	-2.1	1.0	-5.7	9.29	1.5
3	1.0	2.0	16	(4)	-1.5	0.6	-2.8	11.78	0.5
4	0.6	2.3	3	(4)	-1.2	2.0	-5.7	9.52	3.0
5	0.9	2.9	14	(3)	-1.7	1.7	-3.6	12.24	5.5
6	1.7	4.1	14	(4)	-0.7	2.9	-5.9	15.27	0.5
7	1.3	2.1	15	(4)	2.1	5.5	0.1	12.75	5.5
8	1.2	3.7	15	(5)	1.1	4.3	0.1	5.16	8.0
9	2.7	6.9	13	(8)	1.3	5.8	-4.2	15.45	0.5
10	3.8	8.4	5	(5)	2.5	5.6	0.2	11.38	21.5
11	1.5	3.2	14	(5)	0.1	2.5	-3.5	6.36	8.0
12	2.3	4.4	5	(6)	2.3	4.6	-1.0	15.90	0.0
13	1.1	2.0	6	(5)	2.4	6.2	-0.3	12.80	0.0
14	1.1	3.2	8	(4)	2.1	4.7	-0.5	9.78	0.0
15	1.3	2.3	2	(5)	0.9	8.7	-5.0	18.83	0.0
16	6.3	8.5	6	(11)	7.7	10.2	6.3	11.87	7.5
17	3.1	7.8	13	(6)	4.4	14.4	-0.9	8.55	0.5
18	1.2	2.3	14	(6)	-0.7	3.3	-6.3	16.12	0.5
19	2.0	5.1	6	(5)	1.5	5.1	-0.4	15.06	5.0
20	1.8	5.9	7	(6)	2.3	6.8	-2.0	13.85	0.0
21	1.6	4.0	14	(5)	5.7	13.4	0.8	17.96	1.5
22	2.1	5.0	14	(6)	1.6	5.9	-1.3	20.03	0.5
23	1.1	1.8	3	(4)	2.8	6.8	0.4	14.52	0.0
24	0.8	1.7	14	(6)	2.4	4.5	0.5	4.37	9.5
25	1.3	2.2	15	(6)	0.0	2.4	-2.6	6.65	1.0
26	1.8	4.0	4	(5)	-0.7	3.2	-4.1	12.70	0.5
27	1.8	4.4	7	(5)	2.8	5.4	0.6	9.17	3.5
28	1.8	5.1	13	(4)	1.5	6.6	-1.9	16.37	1.0
29	1.7	5.9	6	(5)	3.8	9.2	-0.6	15.07	0.5
30	3.4	7.9	6	(7)	8.3	10.4	5.1	7.81	21.5
31	1.8	3.7	12	(5)	6.2	8.6	2.5	2.95	2.0
TOTL								368.62	110.5
MEAN	1.9	4.3			1.9	5.7	-1.4	11.89	
MAX	6.3	8.5			8.3	14.4	6.3	20.03	
MIN	0.6	1.7			-2.1	0.6	-6.3	2.95	
DN	31	31			31	31	31	31	31

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

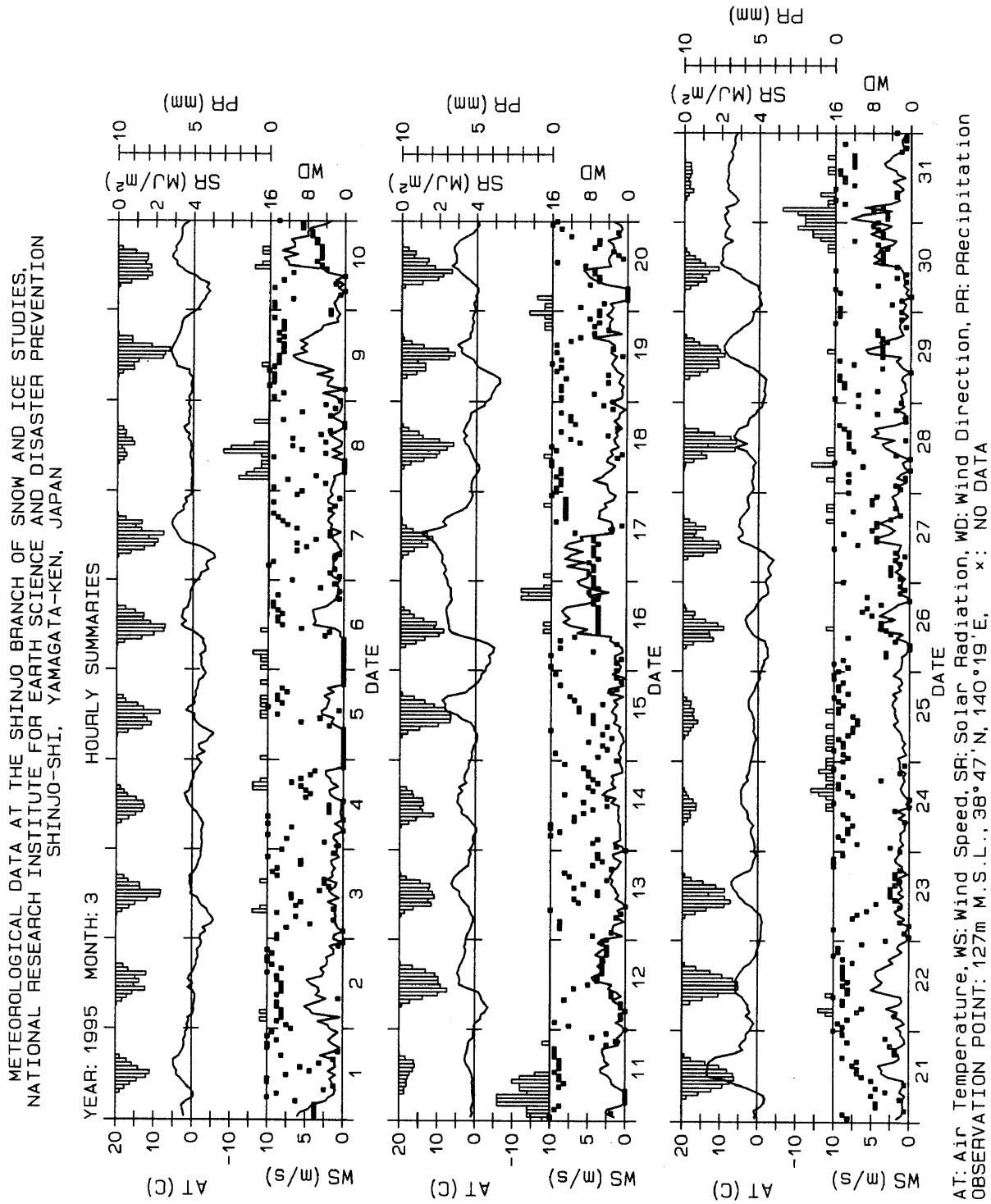

Fig.4.64 気象変化図

Seasonal variations in meteorological data.

Table 7.65 新庄支所冬期気象月表

Monthly report of meteorological data collected at the Shinjo Branch.

METEOROLOGICAL DATA AT THE SHINJO BRANCH OF SNOW AND ICE STUDIES*,
NATIONAL RESEARCH INSTITUTE FOR EARTH SCIENCE AND DISASTER PREVENTION, SHINJO-SHI, YAMAGATA-KEN, JAPAN

(DAILY SUMMARIES)

APRIL 1995

BOUNDARY OF DATE : 00H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	4.0	7.9	12	(6)	4.3	8.4	1.6	7.69	6.5
2	4.8	7.6	13	(10)	3.7	7.1	1.3	18.15	1.0
3	2.3	5.2	13	(4)	2.4	5.3	-0.7	16.80	8.5
4	2.9	6.2	12	(6)	7.2	11.3	2.2	13.20	1.5
5	1.5	4.1	8	(4)	8.3	16.3	0.8	21.27	0.0
6	2.3	6.2	6	(6)	9.3	17.1	0.4	17.63	0.5
7	X	X	X	(X)	X	X	X	X	X
8	X	X	X	(X)	X	X	X	X	X
9	X	X	X	(X)	X	X	X	X	X
10	X	X	X	(X)	X	X	X	X	X
11	X	X	X	(X)	X	X	X	X	X
12	X	X	X	(X)	X	X	X	X	X
13	X	X	X	(X)	X	X	X	X	X
14	X	X	X	(X)	X	X	X	X	X
15	X	X	X	(X)	X	X	X	X	X
16	X	X	X	(X)	X	X	X	X	X
17	X	X	X	(X)	X	X	X	X	X
18	X	X	X	(X)	X	X	X	X	X
19	X	X	X	(X)	X	X	X	X	X
20	X	X	X	(X)	X	X	X	X	X
21	X	X	X	(X)	X	X	X	X	X
22	X	X	X	(X)	X	X	X	X	X
23	X	X	X	(X)	X	X	X	X	X
24	X	X	X	(X)	X	X	X	X	X
25	X	X	X	(X)	X	X	X	X	X
26	X	X	X	(X)	X	X	X	X	X
27	X	X	X	(X)	X	X	X	X	X
28	X	X	X	(X)	X	X	X	X	X
29	X	X	X	(X)	X	X	X	X	X
30	X	X	X	(X)	X	X	X	X	X
TOTL								94.73	18.0
MEAN	3.0	6.2			5.9	10.9	0.9	15.79	
MAX	4.8	7.9			9.3	17.1	2.2	21.27	
MIN	1.5	4.1			2.4	5.3	-0.7	7.69	
DN	6	6			6	6	6	6	6

BOUNDARY OF DATE : 09H O'CLOCK

DATE	WS(m/s) MEAN	WS(m/s) MAX	WD(1-16) MOST FREQ	NO	AT(℃) MEAN	AT(℃) MAX	AT(℃) MIN	SR(MJ/m²) TOTL	PR(mm) TOTL
1	5.6	7.9	13	(12)	3.8	8.4	1.6	9.30	6.5
2	2.8	7.1	12	(6)	2.7	7.1	-0.7	18.10	7.5
3	2.6	5.2	13 14	(3)	3.9	8.6	2.2	17.63	2.5
4	2.6	6.2	12	(6)	7.0	11.3	0.8	13.58	0.5
5	1.4	4.1	8	(5)	7.8	16.3	0.4	21.01	0.0
6	3.1	6.2	6	(7)	11.9	17.1	7.0	15.18	1.0
7	X	X	X	(X)	X	X	X	X	X
8	X	X	X	(X)	X	X	X	X	X
9	X	X	X	(X)	X	X	X	X	X
10	X	X	X	(X)	X	X	X	X	X
11	X	X	X	(X)	X	X	X	X	X
12	X	X	X	(X)	X	X	X	X	X
13	X	X	X	(X)	X	X	X	X	X
14	X	X	X	(X)	X	X	X	X	X
15	X	X	X	(X)	X	X	X	X	X
16	X	X	X	(X)	X	X	X	X	X
17	X	X	X	(X)	X	X	X	X	X
18	X	X	X	(X)	X	X	X	X	X
19	X	X	X	(X)	X	X	X	X	X
20	X	X	X	(X)	X	X	X	X	X
21	X	X	X	(X)	X	X	X	X	X
22	X	X	X	(X)	X	X	X	X	X
23	X	X	X	(X)	X	X	X	X	X
24	X	X	X	(X)	X	X	X	X	X
25	X	X	X	(X)	X	X	X	X	X
26	X	X	X	(X)	X	X	X	X	X
27	X	X	X	(X)	X	X	X	X	X
28	X	X	X	(X)	X	X	X	X	X
29	X	X	X	(X)	X	X	X	X	X
30	X	X	X	(X)	X	X	X	X	X
TOTL								94.80	18.0
MEAN	3.0	6.1			6.2	11.5	1.9	15.80	
MAX	5.6	7.9			11.9	17.1	7.0	21.01	
MIN	1.4	4.1			2.7	7.1	-0.7	9.30	
DN	6	6			6	6	6	6	6

X - NO DATA
* - OBSERVATION POINT:127m M.S.L.,38° 47'N,140° 19'E

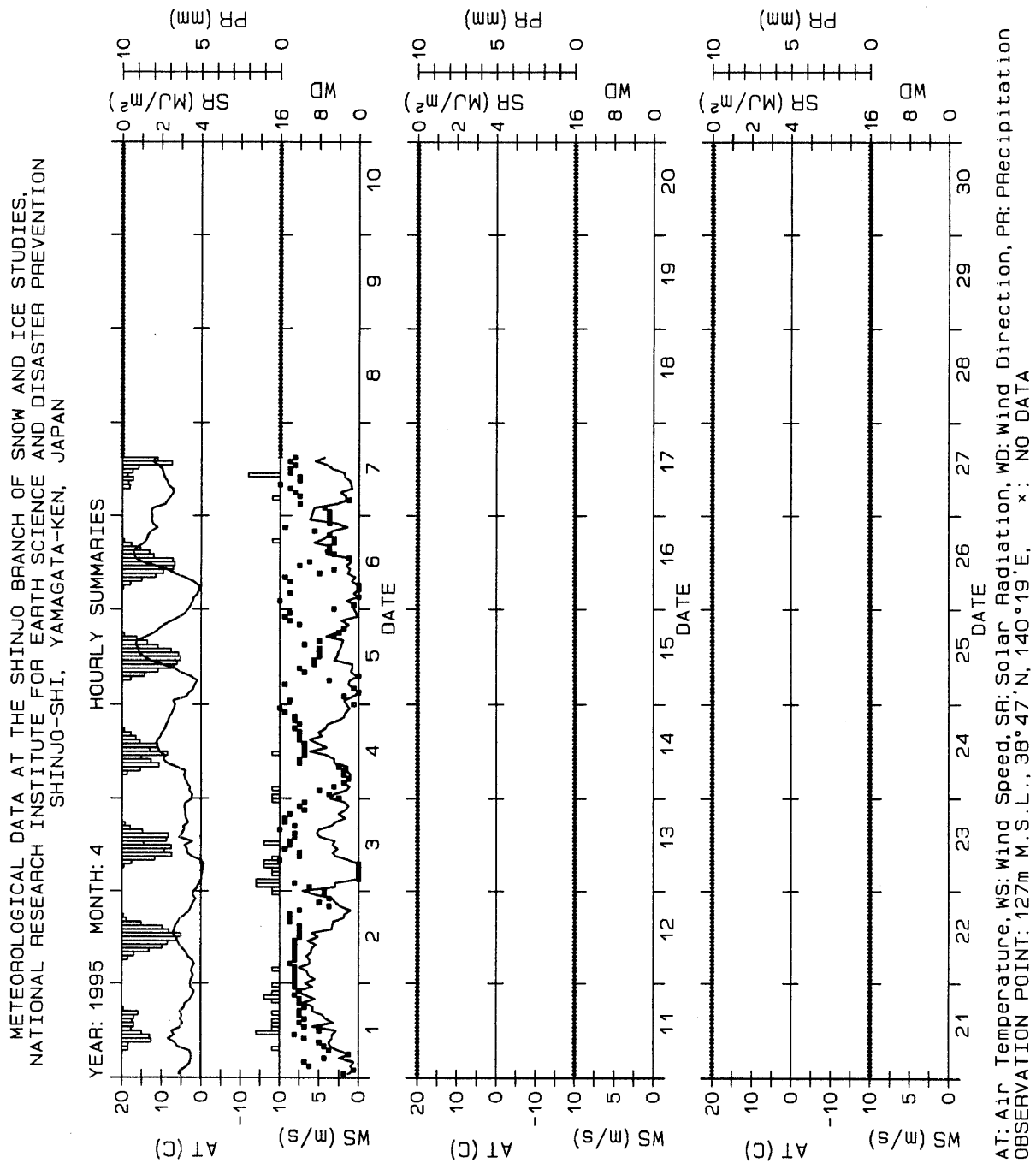

Fig.4.65 気象変化図

Seasonal variations in meteorological data.

表8～表14は，表7に示した月毎の統計処理結果のうち，主な要素を21冬期分まとめたものである．これらの表中の（）内の数値は，月最多風向についてはそれを求めるときに使用した毎正時の風向の数で，それ以外の要素についてはそれらを求めるときに使用した日統計値の数（日数）である．不明データが10日（月最多風向の場合は24×10＝240個）を超える月は空白としてある．

21冬期の平均から，新庄の冬の気象は概略次のように言うことができる．新庄は新庄盆地の中央部に位置するため，風は割合弱く（表8参照），主風向は北西(14)および西北西(13)である（表9参照）．月平均気温は1，2月に氷点下になり，年毎の変動が大きい（表10参照）．月平均全天日射量は，12月から1，2，3月へと急激に増加し，2月は12月の約2倍である．また，年毎の変動幅が割合小さい（表13参照）．月降水量は12月と1月が年によって違いはあるもののほぼ同程度であり，2月，3月の順に少なくなる（表14参照）．

21冬期のうち最近の7冬期（1988/89年～1994/95年）は，新庄の最大積雪深が100cm前後と少雪傾向が続いた．それ以前の最大積雪深の平均値（146cm）を大きく下回る冬がこれほど続いたことは過去60年間なく，地球温暖化の影響が懸念されている．ここで，最近の7冬期を少雪期，それ以前の14冬期を通常期として，それぞれの期の月平均気温を求めたところ，12月～3月のいずれの月も少雪期の方が高温（厳冬期である1月は0.9℃，2月は1.9℃高温）であった．一方，月降水量についても同様の区分をして比較したが，少雪期と通常期に大きな差はなかった．したがって，最近の7冬期の少雪傾向は，気温が高めであったために降水が雪ではなく雨の形態をとったためであると考えることができる．ここでは大まかに傾向を述べたが，今後は各冬期の月毎のデータからさらに解析を進める予定である．

Table 8 月平均風速．（ ）内の数値は使用したデータ数（日数）を表す．
Monthly mean wind speed. The numeral in the parentheses denotes the number of days used to obtain the mean value.

単位：m/s

冬＼月	11	12	1	2	3	4
1974/75	0.9 (29)	1.1 (26)	1.0 (30)	1.0 (27)	1.1 (31)	
1975/76		0.8 (30)	1.2 (26)	0.9 (28)	1.1 (31)	
1976/77		0.8 (27)	1.0 (30)	1.2 (26)	1.1 (31)	
1977/78		0.8 (30)	1.2 (29)	1.1 (26)	1.3 (31)	
1978/79		0.8 (30)	1.0 (31)	0.9 (28)	1.1 (31)	
1979/80		0.5 (31)	0.8 (31)	0.8 (29)	1.2 (31)	
1980/81		0.8 (30)	0.9 (29)	0.9 (25)	1.0 (31)	
1981/82	0.7 (25)	0.8 (30)	0.8 (29)	1.0 (28)	0.8 (30)	
1982/83*	1.5 (30)	1.3 (31)	2.0 (31)	1.6 (28)	1.5 (31)	2.0 (30)
1983/84	1.1 (28)	1.7 (31)	1.4 (31)	2.4 (28)	1.9 (31)	1.6 (30)
1984/85	1.3 (30)	1.5 (31)	2.0 (31)	2.3 (28)	1.4 (31)	1.8 (30)
1985/86	1.2 (30)	1.4 (31)	1.9 (31)	1.5 (28)	2.1 (31)	1.9 (30)
1986/87	1.5 (30)	1.9 (31)	2.2 (31)	2.2 (28)	1.7 (24)	1.8 (30)
1987/88	1.6 (30)	1.3 (31)	1.4 (31)	1.8 (29)	1.9 (31)	1.5 (30)
1988/89	1.3 (30)	1.7 (29)	1.6 (31)	1.2 (28)	1.9 (31)	1.8 (26)
1989/90	1.2 (30)	1.6 (31)	1.4 (31)	1.1 (28)	1.9 (31)	1.9 (30)
1990/91	1.6 (30)	1.3 (31)	1.2 (31)	2.0 (28)	1.7 (31)	1.7 (26)
1991/92		1.8 (21)	1.7 (23)	1.8 (22)	2.1 (30)	
1992/93		1.7 (28)	2.1 (29)	2.4 (28)	1.8 (28)	
1993/94		2.3 (30)	1.9 (29)	3.1 (26)	2.4 (21)	
1994/95		1.8 (25)	2.3 (27)	1.9 (26)	1.9 (31)	

＊ 1982年7月 風速計の地上高が 5.5 mから 10.2 mに変わった。

Table 9　月最多風向.（　）内の数値は使用したデータ数（時数）を表す.
Most frequent wind direction in the month. The numeral in the parentheses denotes the number of hours used to obtain the most frequent wind direction.

16方位

冬＼月	11	12	1	2	3	4
1974/75	14 (719)	13 (718)	13 (743)	13 (671)	13 (743)	
1975/76		14 (743)	13 (726)	13 (694)	14 (744)	
1976/77		14 (707)	14 (742)	13 (648)	14 (744)	
1977/78		14 (741)	14 (742)	14 (651)	13 (744)	
1978/79		13 (739)	13 (744)	13 (669)	13 (744)	
1979/80		14 (744)	13 (744)	14 (696)	13 (744)	
1980/81		13 (735)	14 (735)	13 (653)	13 (743)	
1981/82	14 (600)	13 (740)	13 (722)	13 (672)	13 (743)	
1982/83	13 (720)	14 (744)	13 (744)	14 (672)	13 (744)	13 (720)
1983/84	13 (695)	13 (744)	13 (744)	13 (693)	13 (744)	1 (720)
1984/85	15 (720)	13 (744)	13 (744)	13 (672)	13 (744)	13 (720)
1985/86	13 (720)	13, 14 (744)	13 (744)	13 (672)	13 (744)	13 (720)
1986/87	13 (720)	13 (744)	13 (744)	13 (672)	13 (585)	13 (720)
1987/88	13 (720)	14 (744)	13 (744)	13 (695)	13 (744)	13 (709)
1988/89	14 (720)	14 (726)	14 (744)	14 (672)	13 (744)	13 (662)
1989/90	15 (720)	15 (744)	14 (744)	14 (672)	14 (744)	14 (720)
1990/91	13, 14 (720)	14 (744)	14 (744)	14 (672)	14 (744)	14 (632)
1991/92		14 (608)	14 (736)	13 (696)	13 (735)	
1992/93		14 (738)	14 (744)	14 (672)	13 (742)	
1993/94		14 (738)	14 (744)	13 (672)	14 (694)	
1994/95		14 (730)	14 (744)	14 (672)	14 (744)	

Table 10 月平均気温.（ ）内の数値は使用したデータ数（日数）を表す.
Monthly mean air temperature. The numeral in the parentheses denotes the number of days used to obtain the mean value.

単位：℃

冬＼月	11	12	1	2	3	4
1974/75	3.4 (30)	-1.4 (30)	-2.8 (31)	-3.1 (28)	1.1 (30)	
1975/76		0.5 (30)	-1.5 (30)	-1.3 (28)	1.6 (31)	
1976/77		-0.4 (31)	-4.3 (30)	-2.1 (28)	1.5 (31)	
1977/78		1.7 (30)	-1.3 (31)	-3.2 (28)	1.5 (31)	
1978/79		2.4 (29)	-0.1 (31)	0.8 (28)	1.5 (31)	
1979/80		3.1 (31)	-1.3 (31)	-2.2 (29)	0.7 (31)	
1980/81		1.3 (30)	-2.8 (30)	-1.4 (27)	0.7 (31)	
1981/82	3.1 (25)	0.9 (26)	-2.0 (30)	-2.0 (28)	1.5 (30)	
1982/83	6.5 (30)	2.3 (31)	-0.5 (31)	-2.3 (28)	0.9 (31)	10.5 (30)
1983/84	4.9 (28)	-0.6 (31)	-3.4 (31)	-3.6 (28)	-1.7 (31)	4.2 (30)
1984/85	4.3 (30)	0.4 (31)	-4.0 (31)	-1.2 (28)	0.8 (31)	8.4 (30)
1985/86	5.9 (30)	-0.6 (31)	-3.0 (31)	-3.2 (28)	0.8 (31)	7.2 (30)
1986/87	4.4 (30)	2.0 (31)	-1.9 (31)	-1.3 (28)	0.8 (24)	7.4 (30)
1987/88	5.7 (30)	1.2 (31)	-0.7 (31)	-3.2 (29)	0.9 (31)	7.2 (30)
1988/89	3.4 (30)	0.7 (29)	-0.3 (31)	0.2 (28)	3.5 (31)	9.0 (24)
1989/90	8.0 (30)	2.0 (31)	-2.7 (31)	0.8 (28)	3.7 (31)	9.2 (30)
1990/91	8.3 (30)	3.8 (31)	-1.3 (31)	-0.9 (28)	1.9 (31)	8.6 (26)
1991/92		1.4 (30)	-0.2 (31)	-1.5 (29)	2.2 (31)	
1992/93		1.9 (31)	0.2 (31)	1.0 (28)	1.8 (30)	
1993/94		1.3 (31)	-1.8 (31)	0.0 (28)	1.0 (30)	
1994/95		0.7 (28)	-2.1 (31)	-1.0 (28)	1.9 (31)	

Table 11 月最高気温.（ ）内の数値は使用したデータ数（日数）を表す.
Maximum air temperature in the month. The numeral in the parentheses denotes the number of days used to obtain the maximum value.

単位：℃

冬＼月	11	12	1	2	3	4
1974/75	18.4 (30)	5.1 (30)	4.4 (31)	5.4 (28)	12.7 (30)	
1975/76		10.1 (30)	8.9 (30)	7.1 (28)	11.9 (31)	
1976/77		8.9 (31)	2.6 (30)	12.8 (28)	10.9 (31)	
1977/78		11.3 (30)	6.7 (31)	5.1 (28)	13.9 (31)	
1978/79		11.6 (29)	13.1 (31)	8.5 (28)	15.5 (31)	
1979/80		12.6 (31)	10.1 (31)	7.7 (29)	13.1 (31)	
1980/81		11.9 (30)	3.2 (30)	7.6 (27)	12.2 (31)	
1981/82	11.2 (25)	9.9 (26)	4.6 (30)	8.0 (28)	12.3 (30)	
1982/83	15.8 (30)	12.5 (31)	9.8 (31)	6.1 (28)	10.9 (31)	29.4 (30)
1983/84	15.7 (28)	10.1 (31)	2.9 (31)	2.2 (28)	5.6 (31)	21.7 (30)
1984/85	18.7 (30)	13.0 (31)	2.7 (31)	6.4 (28)	9.7 (31)	22.6 (30)
1985/86	18.5 (30)	10.1 (31)	3.0 (31)	4.5 (28)	9.1 (31)	20.1 (30)
1986/87	18.4 (30)	11.6 (31)	8.0 (31)	11.3 (28)	14.3 (24)	27.6 (30)
1987/88	17.0 (30)	15.3 (31)	10.9 (31)	6.2 (29)	12.2 (31)	24.8 (30)
1988/89	14.5 (30)	10.2 (29)	6.5 (31)	8.3 (28)	14.9 (31)	22.1 (24)
1989/90	17.0 (30)	14.6 (31)	7.8 (31)	8.3 (28)	15.8 (31)	25.0 (30)
1990/91	18.8 (30)	19.1 (31)	5.1 (31)	9.0 (28)	13.5 (31)	23.6 (26)
1991/92		11.0 (30)	7.2 (31)	6.7 (29)	12.0 (31)	
1992/93		14.2 (31)	5.9 (31)	12.6 (28)	14.7 (30)	
1993/94		12.3 (31)	5.2 (31)	8.5 (28)	10.5 (30)	
1994/95		9.5 (28)	5.1 (31)	5.2 (28)	14.4 (31)	

Table 12 月最低気温．（ ）内の数値は使用したデータ数（日数）を表す．
Minimum air temperature in the month. The numeral in the parentheses denotes the number of days used to obtain the minimum value.

単位：℃

冬＼月	11	12	1	2	3	4
1974/75	-4.9 (30)	-12.6 (30)	-14.7 (31)	-14.0 (28)	-8.8 (30)	
1975/76		-9.0 (30)	-10.8 (30)	-16.9 (28)	-8.3 (31)	
1976/77		-13.7 (31)	-14.2 (30)	-12.9 (28)	-9.6 (31)	
1977/78		-7.2 (30)	-9.0 (31)	-13.1 (28)	-7.7 (31)	
1978/79		-4.7 (29)	-7.2 (31)	-8.8 (28)	-7.1 (31)	
1979/80		-3.9 (31)	-11.1 (31)	-10.4 (29)	-9.7 (31)	
1980/81		-7.5 (30)	-14.3 (30)	-12.3 (27)	-13.1 (31)	
1981/82	-4.2 (25)	-4.0 (26)	-13.8 (30)	-12.7 (28)	-8.7 (30)	
1982/83	-5.4 (30)	-4.2 (31)	-10.2 (31)	-12.7 (28)	-9.1 (31)	-0.6 (30)
1983/84	-5.7 (28)	-11.9 (31)	-12.3 (31)	-15.7 (29)	-14.5 (31)	-9.5 (30)
1984/85	-3.6 (30)	-13.6 (31)	-12.9 (31)	-13.7 (28)	-8.2 (31)	-1.6 (30)
1985/86	-4.5 (30)	-10.0 (31)	-12.2 (31)	-15.1 (28)	-12.0 (31)	-4.7 (30)
1986/87	-3.8 (30)	-7.2 (31)	-11.2 (31)	-13.8 (28)	-11.9 (24)	-3.5 (30)
1987/88	-6.2 (30)	-8.8 (31)	-10.2 (31)	-12.3 (29)	-9.5 (31)	-5.0 (30)
1988/89	-3.6 (30)	-6.1 (29)	-10.5 (31)	-8.7 (28)	-4.8 (31)	-1.6 (24)
1989/90	0.0 (30)	-6.3 (31)	-16.9 (31)	-12.7 (28)	-5.4 (31)	-1.2 (30)
1990/91	-1.4 (30)	-7.3 (31)	-12.1 (31)	-12.6 (28)	-8.2 (31)	-4.5 (26)
1991/92		-5.9 (30)	-9.0 (30)	-10.7 (29)	-6.6 (31)	
1992/93		-6.5 (31)	-9.0 (31)	-7.1 (28)	-7.1 (30)	
1993/94		-11.3 (31)	-10.8 (31)	-6.2 (28)	-7.6 (30)	
1994/95		-6.7 (28)	-12.9 (31)	-11.7 (28)	-6.3 (31)	

Table 13　月平均全天日射量.（　）内の数値は使用したデータ数（日数）を表す.
Monthly mean global solar radiation. The numeral in the parentheses denotes the number of days used to obtain the mean value.

単位：MJ/m²

冬＼月	11	12	1	2	3	4
1974/75						
1975/76						
1976/77			6.23 (31)	8.16 (28)	10.71 (31)	
1977/78		3.96 (30)	5.07 (31)	8.06 (28)	11.74 (31)	
1978/79		3.88 (30)	4.55 (31)	7.19 (28)	10.78 (31)	
1979/80		3.86 (31)	4.57 (29)	9.02 (29)	12.52 (31)	
1980/81		4.65 (30)	6.49 (30)	8.45 (27)	14.36 (31)	
1981/82	5.14 (25)	4.17 (26)	5.89 (30)	8.96 (27)	12.02 (30)	
1982/83	5.26 (30)	3.79 (31)	5.74 (31)	8.20 (28)	12.69 (31)	14.35 (30)
1983/84	5.74 (28)	4.78 (31)			14.12 (31)	17.48 (30)
1984/85	5.87 (30)	5.00 (31)	6.67 (31)	8.19 (28)	11.91 (31)	14.10 (30)
1985/86	4.31 (30)	5.04 (31)	5.66 (31)	8.64 (28)	11.91 (31)	14.27 (30)
1986/87	4.60 (30)	3.47 (31)	4.58 (31)	6.95 (28)	10.56 (24)	14.07 (30)
1987/88	5.49 (30)	4.54 (31)	4.97 (25)		12.29 (31)	14.77 (29)
1988/89		5.00 (29)	6.55 (26)	8.79 (28)	11.65 (31)	13.46 (26)
1989/90	5.65 (30)	4.98 (31)	6.38 (30)	9.28 (28)	12.19 (31)	14.48 (23)
1990/91	5.29 (30)	4.14 (31)	6.28 (31)	7.98 (28)	12.69 (31)	18.21 (26)
1991/92		4.00 (30)	5.91 (29)	8.74 (29)	12.73 (31)	
1992/93		3.95 (31)	5.89 (31)	8.05 (28)	13.12 (30)	
1993/94				8.31 (28)	12.83 (30)	
1994/95		4.07 (28)	6.25 (31)	10.39 (28)	11.89 (31)	

Table 14 月降水量．（ ）内の数値は使用したデータ数（日数）を表す．
Monthly accumulated precipitation. The numeral in the parentheses denotes the number of days used to obtain the accumulated value.

単位：mm

冬＼月	11	12	1	2	3	4
1974/75	242.0 (30)	161.5 (31)	160.5 (31)	147.5 (28)	198.5 (31)	
1975/76		117.5 (30)	205.0 (30)	157.5 (29)	66.0 (31)	
1976/77		209.0 (31)	166.5 (30)	127.0 (28)	91.5 (31)	
1977/78		199.0 (31)	179.0 (31)	152.5 (28)	128.0 (31)	
1978/79		108.0 (29)	171.0 (31)	150.0 (28)	148.0 (31)	
1979/80		173.0 (31)	183.0 (31)	192.0 (29)	110.5 (31)	
1980/81		261.0 (30)	246.5 (31)	139.5 (27)	117.0 (31)	
1981/82	145.0 (25)	174.5 (25)	197.0 (30)	135.0 (28)	131.0 (31)	
1982/83	152.5 (28)	253.0 (31)	129.0 (31)	173.5 (27)	125.5 (31)	105.0 (30)
1983/84	151.0 (28)	214.0 (30)	220.5 (31)	108.0 (28)	123.5 (31)	114.0 (30)
1984/85	128.0 (30)	176.0 (31)	150.0 (31)	154.5 (28)	95.0 (31)	51.5 (30)
1985/86		143.0 (27)	184.5 (31)	150.0 (27)	104.0 (31)	100.5 (30)
1986/87	150.5 (30)	176.0 (31)	145.0 (31)	100.5 (28)	117.0 (31)	45.0 (30)
1987/88	183.5 (30)	112.5 (31)	259.5 (31)	159.0 (29)	66.5 (31)	114.0 (30)
1988/89	250.5 (30)	170.5 (29)	112.5 (31)	101.5 (28)	71.0 (31)	163.0 (27)
1989/90	162.0 (30)	177.0 (31)	203.0 (31)	83.5 (28)	75.5 (31)	89.0 (30)
1990/91	205.0 (30)	226.0 (31)	197.0 (31)	184.0 (28)	58.0 (31)	35.5 (26)
1991/92						
1992/93		194.5 (31)	162.5 (31)	212.0 (27)	108.0 (31)	
1993/94		200.0 (31)	225.0 (31)	149.0 (28)	103.5 (31)	
1994/95		237.0 (28)	172.0 (31)	121.0 (28)	110.0 (31)	

6．あとがき

1974年11月から本格的に開始された気象・降積雪観測は，1995年4月現在で21冬期間継続している．これらの観測は雪氷防災研究の基礎資料を得る目的で，防災科学技術研究所の経常研究として行われてきたものであるが，データの蓄積とともに，雪氷防災研究のみならず，雪氷圏地球科学研究の基礎資料としても有効に利用されるであろう．すでに，阿部ほか（1995）により暖冬少雪傾向下の積雪の構造と性質が解析されたほか，1988年以降に防災科学技術研究所が整備してきた山地積雪観測ネットワークの気象・積雪データとの対比なども可能となりつつある．

本資料を含めこれまでの当支所の気象・降積雪データは，気象観測，降積雪観測および積雪断面観測の3つに分けて刊行されてきた．しかし，利用者の便宜とデータ公開の迅速性を考慮して，1995/96冬期以降の気象・降積雪データは一冬毎にまとめて刊行する予定である．

謝　辞

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参考文献

1）阿部　修・佐藤　威・佐藤篤司・小杉健二(1995)：新庄雪氷防災研究支所における22冬期間の積雪断面観測結果－最近の概況と過去との比較－．東北の雪と生活，No.**10**，34-35.

2）阿部　修・佐藤　威・佐藤篤司・小杉健二(1996a)：新庄の平地における積雪断面観測結果(1988/89年～1994/95年7冬期)．防災科学技術研究所研究資料，No.**171**，1-140.

3）阿部　修・佐藤　威・佐藤篤司・中村秀臣・東浦將夫・沼野夏生・小杉健二・中村　勉(1996b)：新庄雪氷防災研究支所における降積雪観測(1984/85年～1994/95年11冬期)．防災科学技術研究所研究資料，No.**175**，1-74.

4）阿部　修・中村秀臣・東浦將夫・沼野夏生・佐藤篤司・中村　勉(1988)：新庄の平地における積雪断面観測結果(1980/81年～1987/88年冬期)．防災科学技術研究資料，No.**131**，1-138.

5）阿部　修・中村秀臣・東浦將夫・沼野夏生・中村　勉(1985a)：新庄支所における10冬期間の気象降積雪観測，その1気象資料編．防災科学技術研究資料，No.**105**，1-121.

6）阿部　修・中村秀臣・東浦將夫・沼野夏生・中村　勉(1985b)：新庄支所における10冬期間の気象降積雪観測，その2降積雪編．防災科学技術研究資料，No.**106**，1-76.

7）気象庁(1971)：地上気象観測法．日本気象協会，東京，p.50.

8）東浦將夫・阿部　修(1975)：新庄の平地積雪断面観測(昭和48年～49年冬期)．国立防災科学技術センター研究速報，No.**13**，37-54.

9）東浦將夫・阿部　修・中村　勉・中村秀臣(1978)：新庄の平地における積雪断面観測(昭和49年～50年冬期)．防災科学技術研究資料，No.**33**，1-26.

10）東浦將夫・阿部　修・沼野夏生(1982)：新庄の平地における積雪断面観測-(1975年～1980年)5冬期-．防災科学技術研究資料，No.**70**，1-103.

Appendix　気象・積雪データ自動収集システム関連資料
Manuals for the automatic acquisition systems used for collection of meteorological and snow data.

新庄支所における気象・積雪観測の自動化（Ver1.2a）

佐藤　威

§0．プログラムの履歴

Ver1.0	統計値の計算・収録機能なし。
Ver1.1a	Ver1.1bとほぼ同じ。ただし、バグ（長波放射量の計算式）あり。毎分ﾃﾞｰﾀのﾌｧｲﾙ出力あり。
Ver1.1b	本文で解説しているもの。ただし、バグは修正済み。LP出力ﾌｫｰﾏｯﾄを少し変更してあるが、未チェック。（PC9801Vm用、データはFDに書込）
Ver1.2a	Ver1.1bと本質的に同じ。（PC9821Xe用、データはFDとHDに書き込み、94/95冬期用）

§1．概要と注意

ルーチン観測データの処理の省力化のため、一部要素のパソコンによる自動取り込み、統計処理を行う。取り込みは1分毎に行い、統計値（前1時間統計値）は毎正時に前1時間の60ヶのデータ（01分、02分……59分、00分）より求め、FD及びHDに書き込まれる。日統計値は前1時間統計値より求めることができる（要プログラム開発）。

さらに、不測の事態に備え、15分毎に電圧・パルス値をFD及びHDに書き込むと同時に、LPにも毎正時の値がプリントアウトされる。

（Ver1.2aの注意）

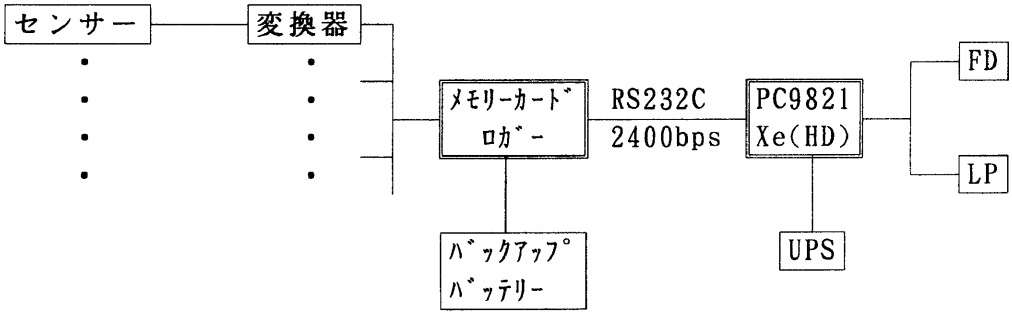
1)94/95冬期の気象・積雪観測に対応している。観測機器等を変更する場合は、プログラムを変更する必要がある。

2)風向については、1をNとして東回りに16方位で表している。この定義は、一般的なものとは異なるが、CRTとLPに表示される風向は正しい。

3)日射量については、毎分の積算日射出力から前1分積算日射量を求め、それらを60個加えて前1時間積算日射量を求めている。出力のゼロリセットに対するアルゴリズムが完全ではないため、積算日射出力にドリフトがある場合は積算日射量に誤差が含まれることがある。また、同様の理由により、1日1回(夜間)の強制的なゼロリセットの時に誤った日射量が計算されることがある。

4)雨量(転倒マス)については、変換器のアナログ出力を取り込んでいる。出力の量子化アルゴリズムが完全ではないため、出力にドリフトがある場合は誤った雨量が計算されることがある。

§2．ハードウェア構成



PC9821XeのメモリーＳＷは以下のように設定しておくこと（全二重、非同期）。

2400bps/7bit/odd-parity/CR.LF
1 stop bit/No XON•XOFF-control
No SI•SO-control

ただし、MS-DOSのswitchコマンドで設定する

§3．対象要素と記録方法

要　素	入力信号	ロガーch	前1時間統計値(01,02,…,59,00分のデータから算出)
風向	平均風向	1	16方位毎の頻度 (1:N,2:NNE,•••••16:NNW) ただし、風速≦0.2m/sの時calmとし、風向は0とする
風速	平均風速	2	平均風速 最大風速
気温	瞬間気温	3	平均気温 最高気温 最低気温
相対湿度	瞬間相対湿度 (100%をこえた時は100%とする)	4	平均相対湿度 最高相対湿度 最低相対湿度
日射量	積算日射	5	前1時間積算日射(MJ/㎡/h)
長波放射量	瞬間長波放射量	8	前1時間積算放射(MJ/㎡/h)
積雪重量	瞬間積雪重量	7	瞬間積雪重量 ただし、算出式は暫定
雨量(転倒マス)	電圧出力	6	前1時間雨量(mm/h)
雨量(溢水式)	パルス出力	99	前1時間雨量(mm/h)

(注)風向の定義は、一般的なもの(1がN, 16がNNE)とは異なる。

		HD/FD出力	CRT表示	LP出力
1分毎瞬間値	電圧・ﾊﾟﾙｽ		○（全ch）	
	物理量		○（風向・風速・気温・湿度）	
15分毎瞬間値（00,15,30,45分）	電圧・ﾊﾟﾙｽ	○*1（全ch）		
	物理量			
60分毎瞬間値（毎正時）	電圧・ﾊﾟﾙｽ			○（全ch）
	物理量	○*2（積雪重量）	○（風向・風速・気温・湿度・積雪重量）	○（風向・風速・気温・湿度・積雪重量）
前1時間統計値（毎正時）	電圧・ﾊﾟﾙｽ			
	物理量	○*2（風向・風速・気温・湿度・日射量・長波放射量・転倒マス雨量・溢水式雨量）	○（日射量・長波放射量・転倒マス雨量・溢水式雨量）	○（日射量・長波放射量・転倒マス雨量・溢水式雨量）

*1 ファイル名は、"aaa.D15"（FDに書込）及び "aaa.B15"（HDに書込）
（ファイルの安全のため２つのファイルに同一内容を書き込む）
*2 ファイル名は、"aaa.D60"（FDに書込）及び "aaa.B60"（HDに書込）
（ファイルの安全のため２つのファイルに同一内容を書き込む）

いずれも、aaaは、キーインする（§５参照）

§４．ソフトウェア仕様

・自作ソフトウェア（"MCL1_2a.BAS" ;付-3参照）で、必要なパラメータ、ファイル名などのキーインはＣＲＴの表示に従って行う（付-1参照）が、測定項目の追加や変換式の変更は直接プログラムを書き換えて対応する。また、時間管理はこのソフトウェアで校正するPCの時計で行う。
・ＨＤ／ＦＤデータは、ＡＳＣＩＩ形式。
・前１時間統計値をもとにオフラインで日統計値が計算可能（プログラムの作成が必要）

§５．ファイル仕様

・ファイル名のベース名（aaa）は、そのファイルが最初に作成される年（yy）月（mm）日（dd）を用いて、
aaa＝Dyymmdd
とする。（例，'94年5月16日なら、D940516）
ただし、同一日に２つ以上作成するときは、DyymmddAなど後ろに識別のための文字をいれる。

・ファイルのサイズ（概略）

	1日分	1ヶ月分(31日)
aaa.D15,　aaa.B15	9,000 Byte	279,000 Byte
aaa.D60,　aaa.B60	3,300 Byte	102,300 Byte

1カ月で約381,300×2＝　762,600 Byte
4カ月で約762,600×4＝3,050,400 Byte＝3 MByte

・ファイルのリスト（付-4参照）

§6．ＬＰ出力仕様

15ｲﾝﾁ連続紙1ﾍﾟｰｼﾞに1日分のデータ（毎正時の瞬間値と統計値）がプリントアウトされる。出力例は付-2を参照のこと。

§7．運用

・プログラムの起動

PC9821Xeを起動するとEOsysyemのメニューが現れるので「新庄支所ルーチン観測」を選択する。

・データディスクの交換

1ヶ月連続して記録し、月1回データディスクを交換する。

データディスクを交換するときは、プログラムをSTOPする（正時をさける）。

このため、交換時を含む60分間の統計値は記録されない。（データ整理の時、マニュアルで入れる）

・毎朝の動作確認

ＣＲＴのPowerをONにして動作を確認する。

（時刻表示はほぼ正確か？　直前の00秒の値・00分の値が表示されているか？）

プリンターの動作を確認する。

（直前の00分の値が印字されているか？）

・異常時の対応

ｱ）作業停電時（予め5分以上の停電がわかっている時）

停電となってからプログラムをSTOPし、復電してから再開。

プログラムをSTOPするのは、正時を過ぎてからが望ましい。

ｲ）突発停電時

停電が5分以上続く時のみ、ｱ）と同様の操作。

5分以内なら、そのままにしておく。

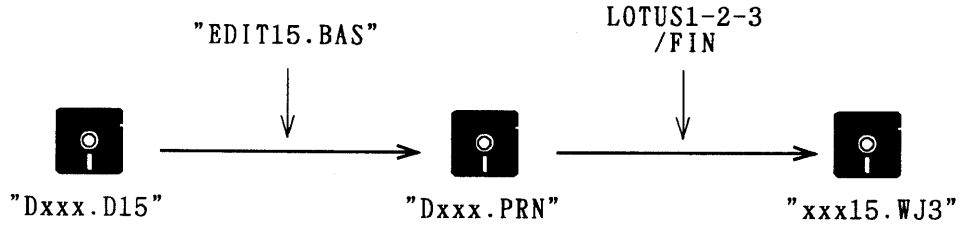
ｳ）毎朝の点検時に異常があった時

佐藤 威に連絡する。不在時はプログラムをSTOPし、再度立ち上げて様子を見る。

・プログラムの停止（STOP）
STOPキーを押す。次に、SYSTEMとキーインする（HOME・CLRキーを押して画面をクリアしてから）とEOsystemのメニューが表示される。

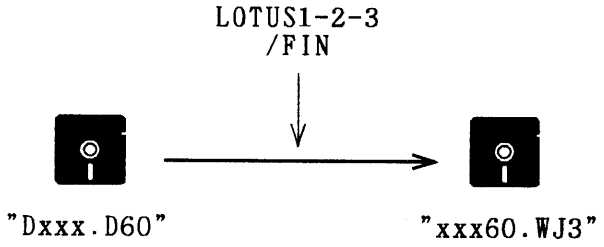
§８．データ整理

・15分毎瞬間値データは、万一の場合のバックアップ的なものである。
プログラム"EDIT15.BAS"により、LOTUS1-2-3で/FIN可能なASCIIﾌｧｲﾙができる。



（"Dxxx.D15"のリストは付-4を参照のこと）

・60分毎瞬間値・前１時間統計値データは、直接、LOTUS1-2-3で/FIN可能である。



（"Dxxx.D60"のリストは付-4を参照のこと）

・日統計値を求めるときは、LOTUS1-2-3（"xxx60.WJ3"に対して）で行うか、プログラム（"Dxxx.D60"に対して）を作る必要がある。このとき、FD交換の時刻を含む１時間の統計値はチャートより求めて"xxx60.WJ3"または"Dxxx.D60"に加えること。

（付-1）操作方法

ア）ﾒﾓﾘｰｶｰﾄﾞﾛｶﾞｰ

背面のスイッチによる設定を変更しなければ、前面の電源スイッチを入れるだけでよい。

イ）PC9821Xe

§２に従って、メモリースイッチを設定する。

ウ）プログラム"MCL1_2a.BAS"

①PCをリセットし、ECsystemのメニューから「新庄支所ルーチン観測」を選択する。

②CRTの表示に従い、必要なパラメータ、ファイル名などをキーインする。

③最後にリターンを押すと、データ収集が開始される。

④中断するときは、STOPキーを押し、SYSTEMとキーインする。再開するときは①から始める。

－－－手順②の詳細－－－

1)ﾌﾟﾘﾝﾀｰ用紙のﾐｼﾝ目を合わせて、ﾌﾟﾘﾝﾀｰをｵﾝﾗｲﾝ状態とする。［画面１］

```
プリンター用紙のミシン目をあわせてから，何かキーを押して下さい
```

〔画面１〕

2)ﾛｶﾞｰの設定を確認する。
［画面２］
変更しないときは"N"をｷｰｲﾝすると［画面５］になり5)に進む。
変更するときは3)に進む。

```
メモリーカードロガー コントロール プログラム　Ver1.2a(by T.Sato)
ロガーの設定を確認します

現在の設定は以下の通りです
     PIOFF
     MMSCAN
     RN01,30mV,OFF
     RN02,30mV,OFF
     RN03,30mV,OFF
     RN04,30mV,OFF
     RN05,30mV,OFF
     RN06,30mV,OFF
     RN07,30mV,OFF
     RN08,30mV,OFF
     RN99,PULSE,OFF
     EN
CH数を変更するときは、プログラムを停止して直接修正して下さい

設定内容を変更しますか(Y/N)

データディスクの交換やトラブルの時には，まずSTOPキーを押して
プログラムを停止して下さい．その後，EOsystemを起動して下さい
```

〔画面２〕

3)ﾛｶﾞｰの設定を変更するために、"Y"をｷｰｲﾝし、変更する設定ｺﾏﾝﾄﾞの個数をｷｰｲﾝする。
［画面３］

```
メモリーカードロガー コントロール プログラム　Ver1.2a(by T.Sato)
ロガーの設定を確認します

現在の設定は以下の通りです
    PIOFF
    MMSCAN
    RN01,30mV,OFF
    RN02,30mV,OFF
    RN03,30mV,OFF
    RN04,30mV,OFF
    RN05,30mV,OFF
    RN06,30mV,OFF
    RN07,30mV,OFF
    RN08,30mV,OFF
    RN99,PULSE,OFF
    EN
CH数を変更するときは、プログラムを停止して直接修正して下さい

設定内容を変更しますか(Y/N)　Y
  変更する設定コマンドの個数をキーインして下さい　2

データディスクの交換やトラブルの時には、まずSTOPキーを押して
プログラムを停止して下さい．その後，EOsystemを起動して下さい
```

〔画面３〕

4)新しい設定ｺﾏﾝﾄﾞをｷｰｲﾝする。
［画面４］
確認で"Y"をｷｰｲﾝすれば5)
［画面５］に進み、
"N"をｷｰｲﾝすると再度設定ｺﾏﾝﾄﾞがｷｰｲﾝできる。
［画面４］

```
メモリーカードロガー コントロール プログラム　Ver1.2a(by T.Sato)
ロガーの設定を確認します

順に設定コマンドをキーインして下さい（例　"RN02,30U,OFF" , "RN02,SKIP" etc.）

No.　1　"RN02,30mU,OFF"　　確認(Y/N)　Y
No.　2　"RN04,30mU,OFF"　　確認(Y/N)　Y

データディスクの交換やトラブルの時には，まずSTOPキーを押して
プログラムを停止して下さい．その後，EOsystemを起動して下さい
```

〔画面４〕

5)PCの時計を校正する。
［画面５］

```
メモリーカードロガー コントロール プログラム　Ver1.2a(by T.Sato)
PCの時計を校正します

校正する日付と時刻(現在の時刻より１分以上あと)をキーインして下さい

(例　"YY/MM/DD/HH:MM:SS")

データディスクの交換やトラブルの時には，まずSTOPキーを押して
プログラムを停止して下さい．その後，EOsystemを起動して下さい
```

〔画面５〕

6)年月日時分秒を指定の書式でｷｰｲﾝする。［画面６］
その後の手順に要する時間の余裕を見て、現在の時刻より１分以上後をｷｰｲﾝする。
確認で"Y"をｷｰｲﾝすれば7)［画面７］に進み、
"N"をｷｰｲﾝすると再度年月日時分秒がｷｰｲﾝできる。

```
メモリーカードロガー コントロール プログラム　Ver1.2a(by T.Sato)
PCの時計を校正します
校正する日付と時刻(現在の時刻より１分以上あと)をキーインして下さい
(例　"YY/MM/DD/HH:MM:SS")
 "94/05/21/10:21:00"                    確認(Y/N)　Y

データディスクの交換やトラブルの時には，まずSTOPキーを押して
プログラムを停止して下さい．その後，EOsystemを起動して下さい
```

〔画面６〕

7)ｷｰｲﾝした時刻になにかｷｰを押す。［画面７］

```
メモリーカードロガー コントロール プログラム　Ver1.2a(by T.Sato).
PCの時計を校正します
校正する日付と時刻(現在の時刻より１分以上あと)をキーインして下さい
(例　"YY/MM/DD/HH:MM:SS")
 "94/05/21/10:21:00"                    確認(Y/N)　Y

校正する時刻になったらなにかキーを押して下さい

データディスクの交換やトラブルの時には，まずSTOPキーを押して
プログラムを停止して下さい．その後，EOsystemを起動して下さい
```

〔画面７〕

8)ﾃﾞｰﾀ用FDをＣﾄﾞﾗｲﾌﾞに入れ、なにかキーを押す。
［画面８］

```
メモリーカードロガー コントロール プログラム　Ver1.2a(by T.Sato)
データファイルの準備をします
データ用フロッピーディスクをドライブCに入れてから，なにかキーを押して下さい

データディスクの交換やトラブルの時には，まずSTOPキーを押して
プログラムを停止して下さい．その後，EOsystemを起動して下さい
```

〔画面８〕

9)ﾃﾞｰﾀ用FDの中のﾌｧｲﾙのﾘｽﾄが表示される。［画面９］

```
メモリーカードロガー コントロール プログラム　Ver1.2a(by T.Sato)

データファイルの準備をします

既存のファイルは以下の通りです
C:¥
D940521A D15      106  94/05/21        D940521A B15      106  94/05/21
D940521A D60      184  94/05/21        D940521A B60      184  94/05/21
D940521A MIN     1204  94/05/21

なにかキーを押して下さい

データディスクの交換やトラブルの時には，まずSTOPキーを押して
プログラムを停止して下さい．その後，EOsystemを起動して下さい
```

〔画面９〕

10)ﾃﾞｰﾀﾌｧｲﾙ名（ﾍﾞｰｽ名のみ）をｷｰｲﾝする。［画面10］
既存のﾃﾞｰﾀﾌｧｲﾙ名と同じ場合は上書きされるので注意する。
確認で"Y"をｷｰｲﾝすれば11)［画面11］に進み、
"N"をｷｰｲﾝすると再度ﾃﾞｰﾀﾌｧｲﾙ名がｷｰｲﾝできる。

```
メモリーカードロガー コントロール プログラム　Ver1.2a(by T.Sato)

データファイルの準備をします

データファイル名を入力して下さい（例　D940506）
　拡張子は不要です！　既存のファイル名を入力すると上書きされます！

File Name :　D940521                    確認(Y/N)　Y

データディスクの交換やトラブルの時には，まずSTOPキーを押して
プログラムを停止して下さい．その後，EOsystemを起動して下さい
```

〔画面10〕

11)なにかｷｰを押すとﾃﾞｰﾀ収集が始まる。［画面11］

```
メモリーカードロガー コントロール プログラム　Ver1.2a(by T.Sato)

何かキーを押すとスタートします

データディスクの交換やトラブルの時には，まずSTOPキーを押して
プログラムを停止して下さい．その後，EOsystemを起動して下さい
```

〔画面11〕

12)ﾃﾞｰﾀ収集中の画面

［画面12］

ただし、正時の観測値はその時刻の前1時間分のﾃﾞｰﾀがそろわないと表示されない。

```
メモリーカードロガー コントロール プログラム　Ver1.2a(by T.Sato)
                                                    94/05/23 08:47:05
── 正時の観測値 (94/05/23/08:00:00) ──
平均 平均 気温 相対 積雪 前1h 前1h 前1h雨量 前1h雨量
風向 風速 湿度 重量 日射量 放射量 (ﾁﾝﾄｳ) (ｲｯｽｲ)
     (m/s) (℃) (%) (kg/m^2) (MJ/m^2/h) (MJ/m^2/h) (mm/h) (mm/h)
NNW   0.4  12.1 99.9   3     0.9       5.8       0.0     0.0

── 毎分の観測値 (94/05/23/08:47:00) ──
平均 平均 気温 相対
風向 風速 湿度
     (m/s) (℃) (%)
SSE   0.7  14.3 96.1

── 毎分の電圧値[mV]とパルス数 (94/05/23/08:47:00) ──
   1ch   2ch   3ch   4ch   5ch   6ch   7ch   8ch  99ch
 2.724 0.110 6.430 9.607 6.046 5.593 0.491 1.315    23

データディスクの交換やトラブルの時には，まずSTOPキーを押して
プログラムを停止して下さい．その後，EOsystemを起動して下さい
```

〔画面12〕

(付-2) ＬＰ出力例（その１）

プログラム：MCL1_2A.BAS (Ver 1.2a by T.Sato)

Date : 95/02/01

－－－　電圧・パルス（瞬間値）　－－－

TIME	1ch	2ch	3ch	4ch	5ch	6ch	7ch	8ch	99ch
	ﾌｳｺｳ	ﾌｳｿｸ	ｷｵﾝ	ｿｳﾀｲ ｼﾂﾄﾞ	ﾋｷﾘﾝ ﾆｯｼｬ	ﾃﾝﾄｳ ｳﾘｮｳ	ﾋｷﾋﾘ ｼﾞｭｳﾘｮｳ	ﾁｮｳﾊ ﾎｳｼｬ	ｲｯｽｲ ｳﾘｮｳ
01:00:00	5.255	0.691	4.899	9.138	0.002	7.200	2.602	1.104	139
02:00:00	5.323	0.729	5.062	7.146	0.002	7.200	2.646	1.087	139
03:00:00	5.199	0.739	4.927	9.117	0.002	7.200	2.610	1.090	140
04:00:00	5.162	0.719	4.977	8.671	0.003	7.300	2.637	1.100	142
05:00:00	5.393	0.779	4.910	9.500	0.002	7.400	2.631	1.098	144
06:00:00	5.345	0.797	4.955	9.194	0.002	7.600	2.683	1.119	146
07:00:00	5.672	0.681	5.024	8.033	0.003	7.700	2.657	1.036	147
08:00:00	5.613	0.446	5.063	8.687	0.155	7.700	2.689	1.124	147
09:00:00	5.276	0.406	5.033	9.848	0.667	7.700	2.694	1.139	149
10:00:00	5.640	0.651	5.063	9.735	1.887	8.000	2.692	1.145	151
11:00:00	5.245	0.390	5.044	9.997	3.151	8.300	2.720	1.148	154
12:00:00	6.134	0.349	5.111	9.996	5.343	8.300	2.738	1.158	154
13:00:00	7.180	0.209	5.072	9.996	6.917	8.600	2.731	1.185	158
14:00:00	6.624	0.298	5.074	9.996	8.686	8.700	2.717	1.123	160
15:00:00	6.401	0.327	5.089	9.995	9.912	9.000	2.779	1.129	162
16:00:00	6.594	0.349	5.101	9.996	1.140	9.000	2.777	1.078	163
17:00:00	5.420	0.099	5.072	9.995	1.358	9.000	2.780	1.068	163
18:00:00	5.948	0.457	5.033	9.856	1.359	9.000	2.782	1.019	163
19:00:00	5.959	0.318	5.033	9.531	1.359	9.000	2.791	1.107	163
20:00:00	5.908	0.288	5.023	9.995	1.360	9.000	2.806	1.118	164
21:00:00	5.968	0.457	5.023	9.703	1.359	9.000	2.802	1.086	165
22:00:00	6.064	0.001	4.977	9.995	0.003	9.000	2.794	1.024	165
23:00:00	6.063	0.000	4.869	9.995	0.002	9.000	2.773	0.886	165
00:00:00	6.064	0.001	4.927	9.733	0.002	9.000	2.809	0.866	165

（付-2）ＬＰ出力例（その２）

プログラム：MCL1_2A.BAS (Ver 1.2a by T.Sato)

Date : 95/02/01

－－－ 物理量 －－－

TIME	1ch	2ch	3ch	4ch	5ch	6ch	7ch	8ch	99ch
	ﾌｳｺｳ (ｼｭﾝｶﾝ)	ﾌｳｿｸ (ｼｭﾝｶﾝ)	ｷｵﾝ (ｼｭﾝｶﾝ)	ｿｳﾀｲｼﾂﾄﾞ (ｼｭﾝｶﾝ)	ｾｷｻﾞﾝﾆｯｼｬ (ﾏI1h)	ﾃﾝﾄｳｳﾘｮｳ (ﾏI1h)	ｾｷｾﾂｼﾞｭｳﾘｮｳ (ｼｭﾝｶﾝ)	ﾁｮｳﾊﾎｳｼｬ (ﾏI1h)	ｲｯｽｲｳﾘｮｳ (ﾏI1h)
01:00:00	WNW	4.1	-1.0	91.4	0.01	0.5	218.8	1.08	1.0
02:00:00	WNW	4.4	0.6	71.5	0.01	0.0	223.2	1.06	0.0
03:00:00	W	4.4	-0.7	91.2	0.01	0.0	219.6	1.06	0.5
04:00:00	W	4.3	-0.2	86.7	0.01	0.5	222.3	1.07	1.0
05:00:00	WNW	4.7	-0.9	95.0	0.01	0.5	221.7	1.08	1.0
06:00:00	WNW	4.8	-0.5	91.9	0.01	1.0	226.9	1.06	1.0
07:00:00	NW	4.1	0.2	80.3	0.01	0.5	224.3	0.95	0.5
08:00:00	WNW	2.7	0.6	86.9	0.08	0.0	227.5	1.07	0.0
09:00:00	WNW	2.4	0.3	98.5	0.26	0.0	228.0	1.09	1.0
10:00:00	NW	3.9	0.6	97.4	0.61	1.5	227.8	1.11	1.0
11:00:00	WNW	2.3	0.4	100.0	0.63	1.5	230.6	1.10	1.5
12:00:00	NNW	2.1	1.1	100.0	1.10	0.0	232.3	1.10	0.0
13:00:00	NNE	1.3	0.7	100.0	0.79	1.5	231.7	1.09	2.0
14:00:00	N	1.8	0.7	100.0	0.88	0.5	230.3	1.10	1.0
15:00:00	NNW	2.0	0.9	100.0	0.61	1.5	236.4	1.10	1.0
16:00:00	N	2.1	1.0	100.0	0.61	0.0	236.2	1.10	0.5
17:00:00	WNW	0.6	0.7	100.0	0.12	0.0	236.5	1.01	0.0
18:00:00	NW	2.7	0.3	98.6	0.01	0.0	236.7	1.07	0.0
19:00:00	NW	1.9	0.3	95.3	0.01	0.0	237.6	1.05	0.0
20:00:00	NW	1.7	0.2	100.0	0.01	0.0	239.1	1.09	0.5
21:00:00	NW	2.7	0.2	97.0	0.01	0.0	238.7	1.05	0.5
22:00:00	-	0.0	-0.2	100.0	0.01	0.0	237.9	1.03	0.0
23:00:00	-	0.0	-1.3	100.0	0.01	0.0	235.8	0.99	0.0
00:00:00	-	0.0	-0.7	97.3	0.01	0.0	239.4	1.01	0.0

（付-3）プログラムリスト

```
1000 'A:¥SHINJO¥MCL1_2A.BAS",A
1010 '*********************************************************************
1020 '* ### SAMPLING PROGRAM FOR SHINJO BRANCH ROUTINE OBSERVATION ###      *
1030 '*                                                                     *
1040 '*     To control Memory Card Logger using PC-9821Xe thru. RS-232C     *
1050 '*                                                                     *
1060 '*      Filename: MCL1_2A.BAS                                          *
1070 '*      Setting:  Memory Card Logger:                                  *
1080 '*                                2400bps/7bit/odd-parity/CR.LF        *
1090 '*                                1 stop bit/No XON·XOFF-control       *
1100 '*                                No SI·SO-control                     *
1110 '*                PC-9821Xe   File Alocation                          *
1130 '*                     #1: RS-232C input/output                       *
1140 '*                     #2: data file (FD,Dyymmdd.D15)                 *
1150 '*                     #3: data file (HD,Dyymmdd.B15)                 *
1160 '*                     #4: data file (FD,Dyymmdd.D60)                 *
1170 '*                     #5: data file (HD,Dyymmdd.B60)                 *
1180 '*                                                                     *
1190 '*         Ver 1.0                          93/04/22   by T.Sato       *
1200 '*         Ver 1.1A                         94/05/16   by T.Sato       *
1205 '*         Ver 1.1B                         94/06/10   by T.Sato       *
1210 '*         Ver 1.2A                         94/12/22   by T.Sato       *
1220 '*********************************************************************
1230 '
1240 DIM NCH(9),DAT(99),DAT0(99),X(99),DIREC$(16),FQ%(16)
1250 DATA "  -","  N","NNE"," NE","ENE","  E","ESE"," SE","SSE","  S","SSW"," SW","WSW","  W","WNW"," NW","NNW"
1260 FOR I=0 TO 16 : READ DIREC$(I) : NEXT I
1270 WIDTH 80,25
1280 SCREEN 3,0,0,1
1290 FOR I=1 TO 99 : DAT0(I)=0! : NEXT I
1300 GOSUB *STAT.RESET
1310 STATFLAG=0 :'はじめの正時は０、それ以外は１
1320 SCANFLAG=0
1330 MIN.COUNT%=0
1340 '
1350 '
1360 '   *** ＬＰの初期設定とタイトルの印字，タイトルと注意のＣＲＴ表示 ***
1370 '
1380 LPFLAG=0
1390 CLS 3 : GOSUB *LPINIT
1400 GOSUB *DISPLAY
1410 '
1420 '   *** ＲＳ２３２Ｃのオープンとロガーの初期設定 ***
1430 '
1440 OPEN "COM1:071NN" AS #1
1450 IF EOF(1)=0 THEN BA$=INPUT$(LOC(1),#1)  :'ＰＣバッファのクリア
1460 PRINT #1, CHR$(&H1B)+"R"
1470 GOSUB *ERRCHK
1480 '
1490 PRINT #1,"RN01,30mV,OFF"       :'ロガーの設定
1500 PRINT #1,"RN02,30mV,OFF"
1510 PRINT #1,"RN03,30mV,OFF"
1520 PRINT #1,"RN04,30mV,OFF"
1530 PRINT #1,"RN05,30mV,OFF"
1540 PRINT #1,"RN06,30mV,OFF"
1550 PRINT #1,"RN07,30mV,OFF"
1560 PRINT #1,"RN08,30mV,OFF"
1570 PRINT #1,"RN99,PULSE,OFF"
1580 '
1590 '
1600 '   *** ロガー設定情報の確認と変更 ***
1610 '
1620 CLS : LOCATE 0,2 : COLOR 4
```

```
1630 PRINT "ロガーの設定を確認します"
1640 LOCATE 0,4 : COLOR 6 : PRINT "現在の設定は以下の通りです"
1650 PRINT #1,"TS1"
1660 GOSUB *ERRCHK
1670 PRINT #1,CHR$(&H1B)+"T"
1680 JCH=0
1690 LINE INPUT #1,D$ : COLOR 7 : PRINT "      ";D$
1700 IF LEFT$(D$,2)="RN" THEN JCH=JCH+1 : NCH(JCH)=VAL(MID$(D$,3,2))
1710 IF LEFT$(D$,2)<>"EN" THEN GOTO 1690
1720 JCHEND=JCH
1730 GOSUB *ERRCHK
1740 '
1750 COLOR 6
1760 PRINT "CH数を変更するときは、プログラムを停止して直接修正して下さい": PRINT
1770 PRINT "設定内容を変更しますか(Y/N)";
1780 COLOR 7 : INPUT "  ",A$
1790 IF A$="N" OR A$="n" THEN GOTO 2000
1800 '
1810 COLOR 6
1820 PRINT "  変更する設定コマンドの個数をキーインして下さい";
1830 COLOR 7 : INPUT "  ",IEND
1840 CLS : LOCATE 0,4 : COLOR 6 : PRINT "    順に設定コマンドをキーインして下さい";
1850 PRINT " (例  ";CHR$(34);"RN02,30V,OFF";CHR$(34);" , ";CHR$(34);"RN02,SKIP";CHR$(34);" etc.)" : PRINT
1860 '
1870 FOR I=1 TO IEND
1880 LOCATE 0,I+5: PRINT "                                                                                    "
1890 COLOR 6 : LOCATE 0,I+5 : PRINT "      No.  ";STR$(I);
1900 COLOR 7 : INPUT "  ",D$
1910 COLOR 6 : LOCATE 45,I+5 : PRINT "     確認(Y/N)  ";
1920 COLOR 7 : INPUT "  ",A$
1930 IF A$="N" OR A$="n" THEN GOTO 1880
1940 PRINT #1,D$
1950 GOSUB *ERRCHK
1960 NEXT I
1970 '
1980 GOTO 1600
1990 '
2000 '   *** ＰＣの時計の校正 ***
2010 '
2020 CLS : LOCATE 0,2 : COLOR 4
2030 PRINT "ＰＣの時計を校正します     "
2040 COLOR 6 : LOCATE 0,4 : PRINT "校正する日付と時刻(現在の時刻より１分以上あと)をキーインして下さい"
2050 LOCATE 0,6 : PRINT "(例  ";CHR$(34);"YY/MM/DD/HH:MM:SS";CHR$(34);")";
2060 COLOR 7 : LOCATE 0,8 : INPUT "  ",DT$
2070 COLOR 6 : LOCATE 40,8 : PRINT "確認(Y/N)";
2080 COLOR 7 : INPUT "  ",A$
2090 IF A$="N" OR A$="n" THEN GOTO 2020
2100 '
2110 PRINT : PRINT : COLOR 6 : PRINT "校正する時刻になったらなにかキーを押して下さい"
2120 A$=INKEY$ : IF A$="" THEN GOTO 2120        : 'キー入力待ち
2130 DATE$=MID$(DT$,1,8)
2140 TIME$=MID$(DT$,10,8)
2150 'PRINT DATE$,TIME$ :'FOR CHECK
2160 '
2170 '   *** データファイルの準備 ***
2180 '
2190 CLS : LOCATE 0,2 : COLOR 4
2200 PRINT "データファイルの準備をします"
2210 COLOR 6 : LOCATE 0,4:PRINT "データ用フロッピーディスクをドライブＣに入れてから，なにかキーを押して下さい"
2220 A$=INKEY$ : IF A$="" THEN GOTO 2220        :'キー入力待ち
2230 COLOR 6 : LOCATE 0,4 : PRINT "既存のファイルは以下の通りです                                    "
2240 FILES "C:" : PRINT
2250 COLOR 6 : PRINT "なにかキーを押して下さい"
2260 A$=INKEY$ : IF A$="" THEN GOTO 2260        : 'キー入力待ち
2270 CLS:COLOR 6 : LOCATE 0,4 :PRINT "データファイル名を入力して下さい (例  D940506)"
2280  PRINT "    拡張子は不要です！  既存のファイル名を入力すると上書きされます！" :PRINT
2290 COLOR 6 : LOCATE 0,7 : PRINT "File Name : ";
2300 COLOR 7:INPUT "  ",FILEN$
2310 COLOR 6 : LOCATE 40,7 : PRINT "確認(Y/N)";
2320 COLOR 7 : INPUT "  ",A$
```

```
2330 IF A$="N" OR A$="n" THEN GOTO 2270
2340 '
2350 OPEN "C:"+FILEN$+".D15" FOR OUTPUT AS #2
2360 OPEN "A:¥SHINJO¥DATA¥"+FILEN$+".B15" FOR OUTPUT AS #3
2370 OPEN "C:"+FILEN$+".D60" FOR OUTPUT AS #4
2380 OPEN "A:¥SHINJO¥DATA¥"+FILEN$+".B60" FOR OUTPUT AS #5
2390 'OPEN "B:"+FILEN$+".MIN" FOR OUTPUT AS #6  :'FOR CHECK
2400 WRITE #2,FILEN$
2410 WRITE #3,FILEN$
2420 WRITE #4,FILEN$
2430 WRITE #5,FILEN$
2440 'WRITE #6,FILEN$ :CLOSE 6 :'FOR CHECK
2450 CLOSE 2,3,4,5
2460 '
2470 CLS : LOCATE 0,2 : COLOR 4
2480 PRINT "                                    "
2490 CLS:LOCATE 0,9 :COLOR 4 : PRINT : PRINT "                    何かキーを押すとスタートします"
2500 A$=INKEY$ : IF A$="" THEN GOTO 2500          : 'キー入力待ち
2510 '
2520 '   *** データの取り込み ***
2530 '
2540 CLS
2550 '
2560 *DATAGET
2570 COLOR 4 : LOCATE 63,2 : PRINT DATE$ : DDATE$=DATE$
2580 LOCATE 72,2 : PRINT TIME$ : TTIME$=TIME$
2590 '
2600 IF SCANFLAG=0 AND MID$(TTIME$,7,2)="00" THEN GOTO 2630
2610 IF MID$(TTIME$,7,2)="00" THEN GOTO *DATAGET ELSE SCANFLAG=0 : GOTO *DATAGET
2620 '
2630 SCANFLAG=1
2640 PRINT #1,"SC"+DDATE$+","+MID$(TTIME$,1,5)
2650 GOSUB *ERRCHK
2660 LOCATE 0,15 : PRINT "---  毎分の電圧値[mV]とパルス数";
2670 PRINT #1,"TS0"
2680 GOSUB *ERRCHK
2690 PRINT #1,CHR$(&H1B)+"T"
2700 LINE INPUT #1,D$
2710 IF MID$(D$,2,1)="A" THEN PRINT "  (";MID$(D$,5,2);"/";MID$(D$,7,2);"/";MID$(D$,9,2); : DTE$=MID$(D$,5,6) : GOT
O 2700
2720 IF MID$(D$,2,1)="I" THEN PRINT "/";MID$(D$,5,2);":";MID$(D$,7,2);":";MID$(D$,9,2);")  ---" : TME$=MID$(D$,5,6)
 : GOTO 2700
2730 ICH=VAL(MID$(D$,3,2))
2740 DAT(ICH)=VAL(MID$(D$,9,7))
2750 IF MID$(D$,2,1)="E" THEN GOTO 2780
2760 GOTO 2700
2770 '
2780 LOCATE 0,16 : COLOR 6 : FOR JCH=1 TO JCHEND
2790 PRINT USING "    ##ch";NCH(JCH);
2800 NEXT JCH : PRINT
2810 LOCATE 0,17 : COLOR 7 :FOR JCH=1 TO JCHEND-1
2820 PRINT USING " ###.###";DAT(NCH(JCH));
2830 NEXT JCH
2840 PRINT USING " #######";DAT(NCH(JCHEND))
2850 '
2860 MIN%=VAL(MID$(TME$,3,2))
2870 '
2880 '   *** データの処理 ***
2890 '
2900 IF MIN%=0 THEN GOSUB *CALC : GOSUB *STAT : GOSUB *DISP1 : GOSUB *DISP60 : GOSUB *FDOUT15 : GOSUB *FDOUT60 : GO
SUB *LPOUT : GOSUB *STAT.RESET
2910 IF MIN%=0 AND STATFLAG=0 THEN STATFLAG=1
2920 IF MIN%=0 AND LPFLAG=0 THEN LPFLAG=1
2930  F MIN%=0 THEN GOTO *DATAGET
2940 '
2950 IF MIN%=15 OR MIN%=30 OR MIN%=45  THEN GOSUB *CALC : GOSUB *STAT : GOSUB *DISP1 : GOSUB *FDOUT15 : GOTO *DATAG
ET
2960 '
2970 GOSUB *CALC : GOSUB *STAT : GOSUB *DISP1 : GOTO *DATAGET
2980 '
```

```
2990 '   *** 終了処理 ***
3000 '
3010 CLOSE
3020 END
3030 '
3040 '
3050 '==============================================================
3060 '                          サブルーチン
3070 '==============================================================
3080 '
3090 '   *** ＬＰの初期設定 ***
3100 '
3110 *LPINIT
3120 CONSOLE 0,24,0,1
3130 CLS : LOCATE 0,10 : COLOR 6
3140 PRINT "      プリンター用紙のミシン目をあわせてから，何かキーを押して下さい"
3150 A$=INKEY$ : IF A$="" THEN GOTO 3150        :'キー入力待ち
3160 LPRINT CHR$(27);CHR$(99);CHR$(49);         :'プリンターの初期化
3170 COLOR 7
3180 '
3190 RETURN
3200 '
3210 '   *** ＬＰのタイトル印字 ***
3220 '
3230 *LPTITLE
3240 LPRINT CHR$(27);"H";    :  'NORMAL CHARACTER
3250 LPRINT "                                プログラム：MCL1_2A.BAS (Ver 1.2a by T.Sato)"
3260 LPRINT:LPRINT "Date : ";MID$(DTE$,1,2);"/";MID$(DTE$,3,2);"/";MID$(DTE$,5,2):LPRINT:LPRINT
3270 LPRINT "              ---  電圧・パルス（瞬間値）  ---                    ---  物理量  ---"
3280 LPRINT CHR$(27);"Q";    :  'CONDENSED CHARACTER
3290 LPRINT
3300 LPRINT "   TIME        1ch        2ch        3ch        4ch        5ch        6ch        7ch        8ch        99ch
     1ch      2ch      3ch      4ch      5ch      6ch      7ch      8ch      99ch":LPRINT
3302 LPRINT "                フウコウ    フウソク    キオン     ソウタイ    セキサン    テントウ    セキセツ    チョウハ    イッスイ
     フウコウ    フウソク    キオン    ソウタイ    セキサン    テントウ    セキセツ    チョウハ    イッスイ  "
3303 LPRINT "                                                シツド      ニッシャ    ウリョウ    ジュウリョウ    ホウシャ    ウリョウ
                 シツド      ニッシャ    ウリョウ ジュウリョウ    ホウシャ    ウリョウ"
3305 LPRINT "
  (シュンカン) (シュンカン) (シュンカン) (シュンカン)  (マエ1h)  (マエ1h) (シュンカン)  (マエ1h)  (マエ1h)":LPRINT
3320 RETURN
3330 '
3340 '   *** タイトルと注意のＣＲＴ表示 ***
3350 '
3360 *DISPLAY
3370 CLS
3380 LINE (0,19)-(640,19),5,,&HFFFF
3390 LINE (0,20)-(640,20),5,,&HFFFF
3400 LINE (0,362)-(640,362),2,,&HFFFF
3410 LINE (0,363)-(640,363),2,,&HFFFF
3420 CONSOLE 3,20,0,1
3430 LOCATE 5,0 : COLOR 5
3440 PRINT "メモリーカードロガー コントロール プログラム  Ｖｅｒ１.２ａ(by T.Sato)"
3450 LOCATE 8,23 : COLOR 2
3460 PRINT "データディスクの交換やトラブルの時には，まずＳＴＯＰキーを押して"
3470 LOCATE 8,24
3480 PRINT "プログラムを停止して下さい．その後，ＥＯｓｙｓｔｅｍを起動して下さい" : COLOR 7
3490 '
3500 RETURN
3510 '
3520 '   *** ＲＳ２３２Ｃのステータスのチェック ***
3530 '
3540 *ERRCHK
3550 PRINT #1,CHR$(&H1B)+"S"
3560 LINE INPUT #1,D$
3570 IF D$<>"ER00" THEN COLOR 7 : PRINT D$ : CLOSE : STOP
3580 '
3590 RETURN
3600 '
3610 '   *** 物理量の計算 ***
3620 '
```

```
3630 *CALC
3640 IF DAT(1)<0 THEN DAT(1)=0          :'風向 (deg)
3650 X(1)=DAT(1)*54
3660 IF X(1)>360 THEN X(1)=X(1)-360
3670 IF DAT(2)<0 THEN DAT(2)=0          :'風速 (m/s)
3680 X(2)=DAT(2)*6
3690 X(3)=DAT(3)*10-50                  :'気温 (℃)
3700 IF DAT(4)>10! THEN DAT(4)=10!      :'相対湿度 (%)
3710 X(4)=DAT(4)*10
3720 IF DAT(5)-DAT0(5)<-9! THEN X(5)=(DAT(5)+10-DAT0(5))*.5 ELSE X(5)=(DAT(5)-DAT0(5))*.5                    :'日射量
(MJ/m^2/h)
3730 IF X(5)<0 THEN X(5)=0
3740 DAT(6)=CINT(DAT(6)*10)/10          :'雨量 (mm/h) 転倒ます式
3750 IF DAT(6)>=DAT0(6) THEN X(6)=(DAT(6)-DAT0(6))*5 ELSE X(6)=(DAT(6)+10-DAT0(6))*5

3760 IF X(6)<0 THEN X(6)=0
3770 X(7)=DAT(7)*99.47-40               :'積雪重量 (kg/m^2) for 94/95 winter
3780 X(8)=DAT(8)*0.976                  :'放射量 (MJ/m^2/h)
3790 IF DAT(99)>=DAT0(99) THEN X(99)=(DAT(99)-DAT0(99))*.5 ELSE X(99)=(DAT(99)+30000-DAT0(99))*.5            :'雨量
(mm/h)  溢水式
3800 '
3810 FOR I=1 TO 99:DAT0(I)=DAT(I):NEXT I :'1分前の値のメモリー
3820 '
3830 '
3840 'OPEN "B:"+FILEN$+".MIN" FOR APPEND AS #6  :'FOR CHECK
3850 'WRITE #6,DTE$  :'FOR CHECK
3860 'WRITE #6,TME$  :'FOR CHECK
3870 'WRITE #6,MIN.COUNT%  :'FOR CHECK
3880 'FOR JCH=1 TO JCHEND  :'FOR CHECK
3890 'WRITE #6,NCH(JCH),DAT(NCH(JCH))  :'FOR CHECK
3900 'NEXT JCH  :'FOR CHECK
3910 'WRITE #6,NCH(1),IDIR  :'FOR CHECK
3920 'FOR JCH=2 TO JCHEND  :'FOR CHECK
3930 'WRITE #6,NCH(JCH),X(NCH(JCH))  :'FOR CHECK
3940 'NEXT JCH  :'FOR CHECK
3950 'CLOSE 6  :'FOR CHECK
3960 '
3970 RETURN
3980 '   *** 統計値の初期化 ***
3990 '
4000 *STAT.RESET
4010 MIN.COUNT%=0
4020 FOR I=0 TO 16 : FQ%(I)=0 : NEXT I
4030 UMAX=-50! : UMEAN=0!
4040 TMAX=-50! : TMIN=50! : TMEAN=0!
4050 RHMAX=-100! : RHMIN=100! : RHMEAN=0!
4060 SOLAR.R=0! : LONG.R=0! : T.RAIN=0! : O.RAIN=0!
4070 '
4080 RETURN
4090 '
4100 '   *** 統計値の計算 ***
4110 '
4120 *STAT
4130 MIN.COUNT%=MIN.COUNT%+1
4140 GOSUB *DIR : FQ%(IDIR)=FQ%(IDIR)+1        :'前1時間風向頻度
4150 IF X(2)>UMAX THEN UMAX=X(2)               :'前1時間最大風速
4160 UMEAN=UMEAN+X(2)/60                       :'前1時間平均風速
4170 IF X(3)>TMAX THEN TMAX=X(3)               :'前1時間最高気温
4180 IF X(3)<TMIN THEN TMIN=X(3)               :'前1時間最低気温
4190 TMEAN=TMEAN+X(3)/60                       :'前1時間平均気温
4200 IF X(4)>RHMAX THEN RHMAX=X(4)             :'前1時間最高相対湿度
4210 IF X(4)<RHMIN THEN RHMIN=X(4)             :'前1時間最低相対湿度
4220 RHMEAN=RHMEAN+X(4)/60                     :'前1時間平均相対湿度
4230 SOLAR.R=SOLAR.R+X(5)                      :'前1時間日射量 (MJ/m^2/h)
4240 LONG.R=LONG.R+X(8)/60                     :'前1時間放射量 (MJ/m^2/h)
4250 T.RAIN=T.RAIN+X(6)                        :'前1時間雨量 (mm/h)  転倒ます式
4260 O.RAIN=O.RAIN+X(99)                       :'前1時間雨量 (mm/h)  溢水式
4270 '
4280 RETURN
4290 '
4300 '   *** 物理量のＣＲＴ表示(正時) ***
```

```
4310 '
4320 *DISP60
4330 COLOR 4
4340 LOCATE 0,3 : PRINT "---  正時の観測値  (";
4350 PRINT MID$(DTE$,1,2);"/";MID$(DTE$,3,2);"/";MID$(DTE$,5,2);"/";
4360 PRINT MID$(TME$,1,2);":";MID$(TME$,3,2);":";MID$(TME$,5,2);")  ---";
4370 COLOR 6
4380 LOCATE 0,4:PRINT"平均   平均   気温   相対   積雪    前1h      前1h   前1h雨量 前1h雨量"
4390 LOCATE 0,5:PRINT"風向   風速          湿度   重量   日射量    放射量   (ﾃﾝﾄｳ)   (ｲｯｽｲ) "
4400 LOCATE 0,6:PRINT"      (m/s)   (℃)   (%)(kg/m^2)(MJ/m^2/h)(MJ/m^2/h) (mm/h)   (mm/h)": PRINT
4410 IF STATFLAG=0 THEN GOTO 4450
4420 COLOR 7
4430 LOCATE 0,7
4440 PRINT USING     " & &  ###.#  ###.#  ###.#    ###    ###.#    ###.#   ###.#    ###.#";DIREC$(IDIR),X(2),X(3),
X(4),X(7),SOLAR.R,LONG.R,T.RAIN,O.RAIN : RETURN
4450 LOCATE 0,7 : PRINT
4460 '
4470 RETURN
4480 '
4490 '   *** 物理量のＣＲＴ表示(毎分) ***
4500 '
4510 *DISP1
4520 COLOR 4
4530 LOCATE 0,9 : PRINT "---  毎分の観測値  (";
4540 PRINT MID$(DTE$,1,2);"/";MID$(DTE$,3,2);"/";MID$(DTE$,5,2);"/";
4550 PRINT MID$(TME$,1,2);":";MID$(TME$,3,2);":";MID$(TME$,5,2);")  ---";
4560 COLOR 6
4570 LOCATE 0,10:PRINT"平均   平均   気温   相対"
4580 LOCATE 0,11:PRINT"風向   風速          湿度"
4590 LOCATE 0,12:PRINT"      (m/s)   (℃)   (%)": PRINT
4600 COLOR 7
4610 LOCATE 0,13
4620 PRINT USING      " & &  ###.#  ###.#  ###.#";DIREC$(IDIR),X(2),X(3),X(4) : RETURN
4630 '
4640 RETURN
4650 '
4660 '   *** 電圧値と物理量のＬＰ出力(正時) ***
4670 '
4680 *LPOUT
4690 IF LPFLAG=0 THEN GOSUB *LPTITLE : LPRINT CHR$(31);CHR$(16+(VAL(MID$(TME$,1,2))-1)*2);: GOTO 4740
4700 IF MID$(TME$,1,2)<>"01" THEN GOTO 4790
4710 LPRINT CHR$(12);
4720 GOSUB *LPTITLE : GOTO 4790
4730 '
4740 'FIRST_LP
4750 LPRINT USING " &&:&&:&&  ###.###   ###.###   ###.###   ###.###   ###.###   ###.###   ###.###   ###.###    ####
#         ";MID$(TME$,1,2);MID$(TME$,3,2);MID$(TME$,5,2);DAT(1);DAT(2);DAT(3);DAT(4);DAT(5);DAT(6);DAT(7);DAT(8);DA
T(99):LPRINT
4760 '
4770 RETURN
4780 '
4790 'NOT_FIRST_LP
4800 LPRINT USING " &&:&&:&&  ###.###   ###.###   ###.###   ###.###   ###.###   ###.###   ###.###   ###.###    ####
#         ";MID$(TME$,1,2);MID$(TME$,3,2);MID$(TME$,5,2);DAT(1);DAT(2);DAT(3);DAT(4);DAT(5);DAT(6);DAT(7);DAT(8);DA
T(99);
4810 LPRINT USING "  & &   ###.#   ###.#   ###.#   ##.##   ###.#   ###.#   ##.##   ###.#";DIREC$(IDIR);X(2);X(3);X(
4);SOLAR.R;T.RAIN;X(7);LONG.R;O.RAIN : LPRINT
4820 '
4830 RETURN
4840 '
4850 '   *** 電圧値のファイル出力(15分毎) ***
4860 '
4870 *FDOUT15
4880 OPEN "C:"+FILEN$+".D15" FOR APPEND AS #2
4890 WRITE #2,DTE$
4900 WRITE #2,TME$
4910 FOR JCH=1 TO JCHEND
4920 WRITE #2,NCH(JCH),DAT(NCH(JCH))
4930 NEXT JCH
4940 CLOSE 2
```

```
4950 '
4960 OPEN "A:¥SHINJO¥DATA¥"+FILEN$+".B15" FOR APPEND AS #3
4970 WRITE #3,DTE$
4980 WRITE #3,TME$
4990 FOR JCH=1 TO JCHEND
5000 WRITE #3,NCH(JCH),DAT(NCH(JCH))
5010 NEXT JCH
5020 CLOSE 3
5030 '
5040 RETURN
5050 '
5060 '   *** 統計値のファイル出力(正時) ***
5070 '
5080 *FDOUT60
5090 OPEN "C:"+FILEN$+".D60" FOR APPEND AS #4
5100 '
5110 IF STATFLAG<>0 THEN GOTO 5160
5120 FOR I=0 TO 16 : FQ%(I)=-999 : NEXT I
5130 UMEAN=-999 : UMAX=-999 : TMEAN=-999 : TMAX=-999 : TMIN=-999
5140 RHMEAN=-999 : RHMAX=-999 : RHMIN=-999 : SOLAR.R=-999 : LONG.R=-999
5150 X(7)=-999 : T.RAIN=-999 : O.RAIN=-999
5160 '
5170 WRITE #4,DTE$,TME$,MIN.COUNT%,FQ%(0),FQ%(1),FQ%(2),FQ%(3),FQ%(4),FQ%(5),FQ%(6),FQ%(7),FQ%(8),FQ%(9),FQ%(10),FQ
%(11),FQ%(12),FQ%(13),FQ%(14),FQ%(15),FQ%(16),UMEAN,UMAX,TMEAN,TMAX,TMIN,RHMEAN,RHMAX,RHMIN,SOLAR.R,LONG.R,X(7),T.R
AIN,O.RAIN
5180 CLOSE 4
5190 '
5200 OPEN "A:¥SHINJO¥DATA¥"+FILEN$+".B60" FOR APPEND AS #5
5210 WRITE #5,DTE$,TME$,MIN.COUNT%,FQ%(0),FQ%(1),FQ%(2),FQ%(3),FQ%(4),FQ%(5),FQ%(6),FQ%(7),FQ%(8),FQ%(9),FQ%(10),FQ
%(11),FQ%(12),FQ%(13),FQ%(14),FQ%(15),FQ%(16),UMEAN,UMAX,TMEAN,TMAX,TMIN,RHMEAN,RHMAX,RHMIN,SOLAR.R,LONG.R,X(7),T.R
AIN,O.RAIN
5220 CLOSE 5
5230 '
5240 RETURN
5250 '
5260 '
5270 '   *** 風向の分類 ***
5280 '
5290 *DIR
5300 IDIR=INT((X(1)+11.25)/22.5)+1
5310 IF IDIR=17 THEN IDIR=1
5320 IF X(2)<=.2 THEN IDIR=0
5330 '
5340 RETURN
```

（付-4）データファイルリスト例

1）Dyymmdd.D15

```
"D950113"  — file name
"950113"   ┐ (base name)
"163000"   │
1,6.085    │
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