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# 新庄における降積雪観測および積雪断面観測
## (1996/97 年～ 2003/04 年 8 冬期)

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# Data of Snowfall and Snow Cover Observed at Shinjo
## (1996/97 Winter to 2003/04 Winter)

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**Abstract**

Snowfall and snow cover observations were carried out in the eight winter seasons from 1996/97 to 2003/04 at the Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED. The observation site is located in a basin 50 km from the Sea of Japan (140 °18 ′43 ″E, 38 °47 ′25 ″N, 127 m a.s.l.).

The observation includes the followings:

1. Snowfall and snow cover observations (every day): weather condition, depth of snow cover, water equivalent of snow cover, depth and density of daily new snowfall and infiltration water into the ground.
2. Snow pit observations (every 10 days): snow type, grain size, temperature, density, water content and hardness (Rammsonde and push-gauge).

Results reported here contain useful information concerning the mechanism of snow disaster occurrence and influences of global warming in snowy areas.

**Key words** : Snowfall, Snow cover, Snow pit, Shinjo

## 1. はじめに

雪氷災害の発生メカニズムの解明には，発生時の気象・降積雪データが不可欠である．また，1980 年代後半から顕著に現れている，地球温暖化の雪氷災害に与える影響についても監視する必要がある．このような観点から当支所では，これまで継続して冬期の気象・降積雪観測および積雪断面観測を行ってきた．この中で，新積雪の密度，積雪相当水量，積雪全層密度，積雪層構造などのデータは，東北地方では当支所だけが取得していることから，関連分野の研究者・技術者に広く利用されている．**表 1** にこれまで発行した研究資料の一覧を示した．

本報告は，1996/97 年～ 2003/04 年の 8 冬期の降積雪観測および積雪断面観測の結果についてまとめたものである．なお，同期間の気象観測の結果については，小杉ほか（2005）に報告されている．

## 2. 観測期間および場所

観測期間は，1996 年 11 月から 2004 年 4 月までの 8 冬期である．

観測場所は，山形県新庄市十日町 1400 にある防災科学技術研究所長岡雪氷防災研究所新庄支所の構内である．当支所の地理的位置は，東経 140 °18 ′43 ″，北緯 38 °47 ′25 ″（世界測地系）および標高 127m である（**図 1**）．降積雪観測のうち，地下浸透量のみは第 1 気象観測露場で，その他は全て第 2 気象観測露場で行った．また，積雪断面観測は積雪断面観測露場で行った．**図 2** に構内配置図，**図 3**，**4** に第 1，2 気象観測露場の各種測定装置の配置図を示した．

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**表 1**　　収録冬期と印刷物一覧．表中の右肩の数字は参考文献の番号を示す．
**Table 1**　Publications of all data observed in 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，降水量他 | 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10冬期：研究資料105号(1985)[1]<br>*2.* 1984/85～1994/95年11冬期：研究資料180号(1997)[17] | *1.* 1974/75～1983/84年10冬期：研究資料106号(1985)[2]<br>*2.* 1984/85～1994/95年11冬期：研究資料175号(1996)[5] | *1.* 1973/74年1冬期：研究速報13号(1975)[7]<br>*2.* 1974/75年1冬期：研究資料33号(1978)[8]<br>*3.* 1975/76～1979/80年5冬期：研究資料70号(1982)[9]<br>*4.* 1980/81～1987/88年8冬期：研究資料131号(1988)[3]<br>*5.* 1988/89～1994/95年7冬期：研究資料171号(1996)[4] |
| | 1995/96年1冬期：研究資料179号(1997)[6] | | |
| | 1996/97～2003/04年8冬期：研究資料265号(2005)[14] | 1996/97～2003/04年8冬期(本報) | |

## 3. 降積雪観測

### 3.1 観測方法

人手による天気，積雪深，新積雪の深さおよびその密度の観測は，毎朝 9 時に行った．また，超音波式積雪深計，赤外線反射式積雪深計，メタルウェハー式積雪重量計および融雪量計による自動観測は，気象観測装置に毎正時にデジタル記録するとともに，アナログ記録計に連続記録した．**図 5** に積雪深計，**図 6** に積雪重量計のメタルウェハー，および**図 7** に融雪量計の受水升をそれぞれ示した．

⑴　天気

地上気象観測指針（気象庁，1993）に従って判断した．

⑵　積雪深

1）雪尺（**図 5** の A）

雪尺の目盛りを目視により読み取った．

2）超音波式積雪深計（**図 5** の B）

地上の定位置から雪面に向けて鉛直下方に超音波を発信し，雪面で反射して受信するまでの伝播時間より，積雪深を求める方式である．超音波の気温による伝播速度の変化を補正する回路が組み込まれている．測定雪面の真上に受発信装置があるので，着雪が落下して雪面が乱される場合がある．また．雪面の密度が小さいときに超音波のもぐり込みを生じて実際よりも少なめに測定されることがある．

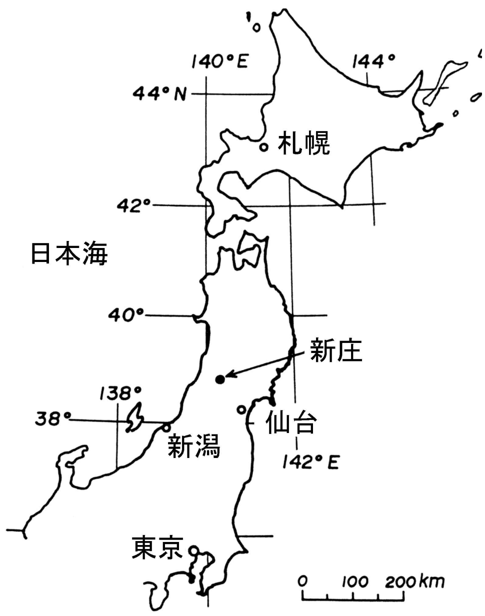


**図 1**　　観測点の位置
**Fig. 1**　Location of observation site.

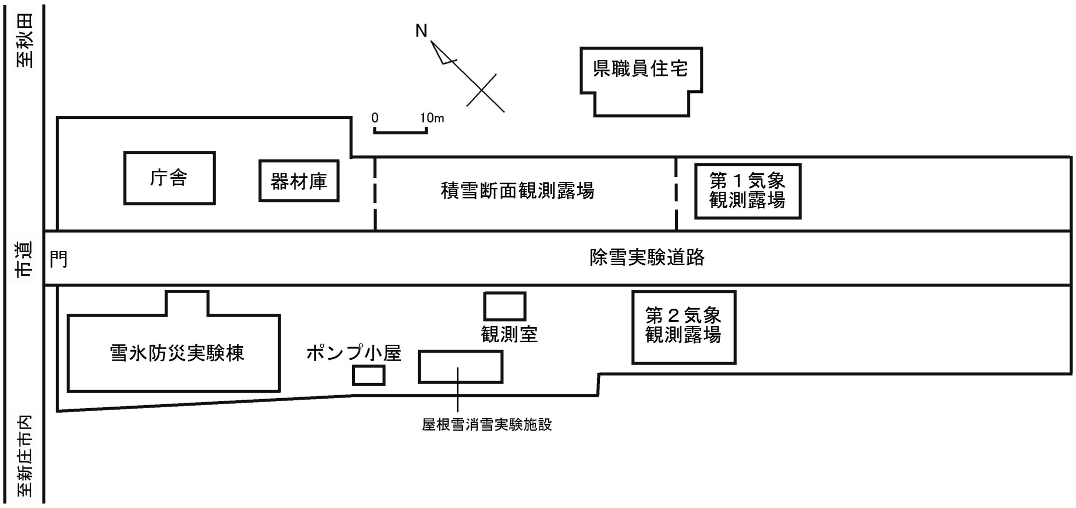


**図 2**　第 1，第 2 気象観測露場および積雪断面観測露場

**Fig. 2**　Two meteorological fields and one snow pit observation field.

3）赤外線反射式積雪深計（**図 5** の C）

地上の定位置から斜め前方の雪面に赤外線のスポットを照射し，水平方向の基線に沿って約 1m 離れた別の場所から，そのスポットの位置を割り出し，三角測量の原理で積雪深を求める方式である（木村ほか，1975）．雪面を乱すこと無く測定可能である．

⑶　積雪相当水量

1）メタルウェハー式積雪重量計（**図 6**）

不凍液で満たされ，パイプで連結されている 4 枚のメタルウェハーを地表に設置し，その上に積もった積雪による内部圧力の変化を測定することにより，積雪相当水量を求める方式である（木村，1983）．

2）スノーサンプラー

10 日毎の積雪断面観測により測定された値をそのまま転記したものである．観測場所は積雪重量計と少し離れている．

⑷　積雪全層密度

上と同様に，積雪断面観測によりスノーサンプラーを用いて測定された値をそのまま転記したものである．

⑸　新積雪深

当日 9 時から翌日 9 時までの 24 時間に雪板上に新たに積もった雪の深さをスケールで読み取った．

⑹　新積雪の密度

上と同様に，当日 9 時から翌日 9 時までの 24 時間に雪板上に新たに積もった雪を断面積約 42cm$^2$ の円筒サンプラーで採取し，その重量と体積から求めた．

⑺　地下浸透量

用いた融雪量計は，地表に設置した広さ 2m × 2m のステンレス製の受水升（**図 7**）で集めた水量を，バケット式流量計（1 パルス 200cc）でカウントして求める方式である．

### 3.2 観測結果

月毎の観測結果を**付表 1.1** ～ **1.48** に示す．本表の日別値および月統計値の記載方法は，**付録 1** の通りである．

**付表 1** に基づいて作成した，積雪深，新積雪の深さおよび密度，積雪相当水量，全層平均密度の一冬ごとの変化を**図 8.1** ～ **8.8** に示した．記号の説明は以下の通りである．ここで，（　）内は使用測定装置である．これらの記号のうち HS と HSW は，The International Commission on Snow and Ice of the IASH & IGS (1990)に準拠した，積雪・雪崩分類（日本雪氷学会，1998）に従った．

⑴ HS(L)　：積雪深（雪尺）
⑵ HS(M)　：積雪深（超音波式積雪深計）
⑶ HS(R)　：積雪深（赤外線反射式積雪深計）
⑷ HN　：新積雪深
⑸ DN　：新積雪の密度
⑹ MW　：地下浸透量（融雪量計）
⑺ HSW(L)：積雪相当水量（メタルウェハー式積雪重量計）
⑻ HSW(R)：積雪相当水量（スノーサンプラー）
⑼ DS　：積雪全層平均密度（スノーサンプラー）

**表 2** に 8 冬期の最大積雪深，最大積雪相当水量などの統計値をまとめて示した．これによれば，2000/01 年冬期に最大積雪深 159cm（起日 2001 年 1 月 17 日，雪尺による測定値）を記録し，近年では大雪であったことがわかる．この冬の最大積雪相当水量は 549mm（起日 2001 年 3 月 13 日, メタルウェハー式積雪重量計による測定値）であった．逆に，最大積雪深が 1m 未満となった冬は，1997/98 年（95cm）および 1998/99 年（89cm）の 2 冬であった．

新積雪の月平均密度について集計した結果を**表 3** に示した．それぞれの月の 8 冬期平均値を見ると，12 月が過去の統計値（阿部ほか，1996）に比べてやや低いものの，他の月については大きな違いは見られなかった．

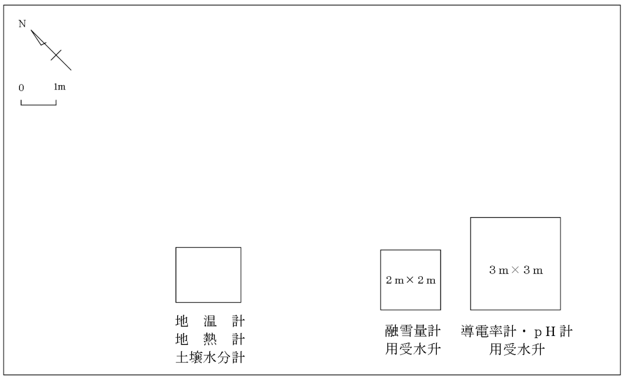


**図 3**　第 1 気象観測露場（12m × 20m）計測器配置図
**Fig. 3**　Horizontal distribution of sensors in No.1 meteorological field (12m × 20m).

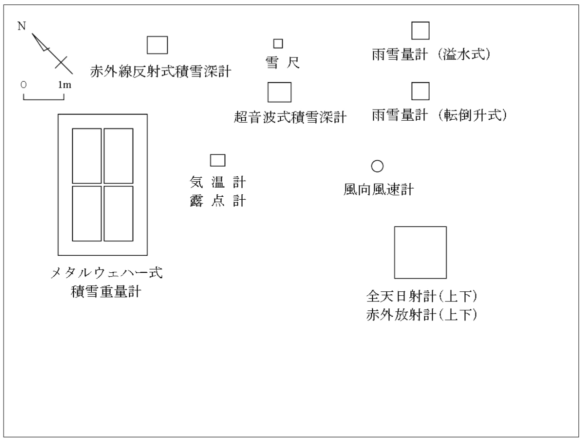


**図 4**　第 2 気象観測露場（15m × 20m）計測器配置図
**Fig. 4**　Horizontal distribution of sensors in No.2 meteorological field (15m × 20m).


**図 5**　雪尺（A），超音波式積雪深計（B）および赤外線反射式積雪深計（C）
**Fig. 5**　Snow stake (A), ultrasonic snow depth meter (B) and infrared snow depth meter (C).

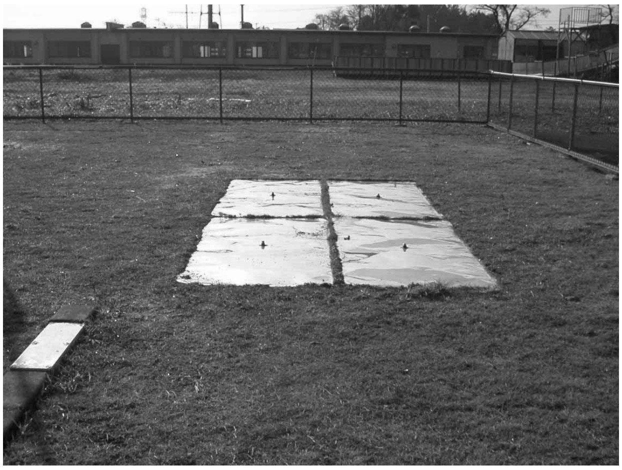

**図 6**　積雪重量計の 4 枚のメタルウェハー（ステンレス製プレッシャー）および圧力センサー（左下の箱の中に納められてある）
**Fig. 6**　Four metal wafers (pressure pillows made by stainless steel) and a pressure sensor in a box (left bottom).

**図 7**　融雪量計の受水升（2m × 2m）
**Fig. 7**　Funnel of lysimeter (2m × 2m).

## 4. 積雪断面観測

### 4.1 定期観測日

定期観測日は，毎月の 5 日，15 日および 25 日であるが，休日と重なった場合は 1 日程度前後した．観測はすべて午前中に行われた．

### 4.2 観測方法

積雪断面作成後，地上気象観測指針（気象庁，1993）および積雪断面観測法（日本雪氷学会，1970）に準拠して行った．ただし，積雪の分類名称は積雪・雪崩分類（日本雪氷学会，1998）に準拠した．

⑴　天気

観測開始時における天気である．**表 4** にここで用いた天気記号を示した．

**表 2**　降積雪概況
**Table 2**　Records of daily new snowfall and snow cover.

| 測定項目（使用測定装置,単位） | 1996/97年冬期 | | 1997/98年冬期 | | 1998/99年冬期 | | 1999/2000年冬期 | |
|---|---|---|---|---|---|---|---|---|
| | 測定値 | 起日 | 測定値 | 起日 | 測定値 | 起日 | 測定値 | 起日 |
| 最大積雪深（雪尺,cm） | 109 | 1997年2月23日 | 95 | 1998年2月2日 | 89 | 1999年2月15日 | 138 | 2000年2月29日 |
| 積算積雪深（同上,cm・日） | 5061 | － | 3372 | － | 4858 | － | 7329 | － |
| 最大積雪相当水量（積雪重量計,mm） | 372 | 1997年2月25日 | × | － | 289 | 1999年2月25日 | 426 | 2000年3月17日 |
| 最大新積雪深（雪板,cm） | 26 | 1997年1月10日 | 42 | 1998年1月20日 | 28 | 1999年1月3日 | 31 | 2000年3月9日 |
| 積算新積雪深（同上,cm） | 550 | － | 494 | － | 567 | － | 783 | － |

| 測定項目（使用測定装置,単位） | 2000/01年冬期 | | 2001/02年冬期 | | 2002/03年冬期 | | 2003/04年冬期 | |
|---|---|---|---|---|---|---|---|---|
| | 測定値 | 起日 | 測定値 | 起日 | 測定値 | 起日 | 測定値 | 起日 |
| 最大積雪深（雪尺,cm） | 159 | 2001年1月17日 | 127 | 2002年2月12日 | 110 | 2003年1月31日 | 117 | 2004年2月9日 |
| 積算積雪深（同上,cm・日） | 11345 | － | 7331 | － | 5747 | － | 4953 | － |
| 最大積雪相当水量（積雪重量計,mm） | 549 | 2001年3月13日 | 386 | 2002年2月20日 | 305 | 2003年2月7日 | × | － |
| 最大新積雪深（雪板,cm） | 41 | 2001年1月5日 | 40 | 2001年12月14日 | 38 | 2002年12月11日<br>2003年1月28日 | 30 | 2004年2月8日 |
| 積算新積雪深（同上,cm） | 887 | － | 641 | － | 630 | － | 539 | － |

**表 3**　新積雪の月平均密度（kg/m$^3$）.（ ）の数値は測定日数を表す.
**Table 3**　Monthly mean density of daily new snowfall (kg/m$^3$). (): Measurement number of the daily new snowfall.

| 冬期＼月 | 11 | 12 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| 1996/97 | 112 ( 3) | 131 (12) | 104 (25) | 107 (19) | 111 (10) | 145 ( 1) |
| 1997/98 | － ( 0) | 129 (13) | 84 (26) | 76 (10) | 99 ( 6) | 100 ( 1) |
| 1998/99 | 75 ( 3) | 79 (10) | 76 (21) | 94 (18) | 178 ( 7) | － ( 0) |
| 1999/2000 | 148 ( 3) | 123 (18) | 200 (17) | 104 (25) | 123 (12) | － ( 0) |
| 2000/01 | 285 ( 1) | 116 (17) | 87 (25) | 102 (20) | 141 (14) | － ( 0) |
| 2001/02 | 525 ( 2) | 113 (26) | 135 (20) | 97 (12) | 194 ( 5) | － ( 0) |
| 2002/03 | 335 ( 6) | 72 (11) | 100 (24) | 112 (16) | 110 (10) | － ( 0) |
| 2003/04 | － ( 0) | 101 ( 8) | 101 (24) | 96 (17) | 90 (11) | － ( 0) |
| 算術平均 | 247 | 108 | 111 | 99 | 131 | 123 |

⑵　積雪深
　地上に立てた雪尺で読み取った.
⑶　積雪相当水量
　断面積約 42cm$^2$ の透明円筒サンプラーで，鉛直方向に約 30cm おきに積雪を採取しその全重量と断面積から求めた.
⑷　全層平均密度
　上記の積雪深と積雪相当水量から算出した.
⑸　雪温
　断面作成後，直ちに地表から雪面まで 10cm ごとに，サーミスタ温度計で測定した.

**表 4**　天気記号の一覧
**Table 4**　Symbols of weather conditions.

| 天気記号 | 天気 |
|---|---|
| ○ | 快晴 |
| ⦶ | 晴 |
| ⦶⦶ | 薄曇 |
| ◎ | 曇 |
| ⚹ | 雪 |
| ● | 雨 |
| ≡ | 霧 |

**表 5**　　積雪の分類名称，状態およびこれに対応する記号と線

**Table 5**　Symbols and classified names of snow layers.

| 積雪の分類名称，状態 Classified names of snow cover condition | 記号 Graphic symbol t *≧1cm | 線 Graphic line t *＜1cm |
|---|---|---|
| 新雪 Crystals | ＋　＋ | ＋………… |
| こしまり雪 Partly settled | /　/ | — |
| しまり雪 Settled | ●　● | ●------ |
| ざらめ雪 Granular | ○　○ | ○———— |
| こしもざらめ雪 Grains with facets | □　□ | — |
| しもざらめ雪 Depth hoar | ∧　∧ | — |
| 氷板 Ice layer | ━━━ | ——— |
| 表面霜 Surface hoar | ∨ | — |
| クラスト Crust | ▽ | — |
| ２種類の混合層 Mixed | /　●<br>●　/<br>○　●<br>●　○ | — |

t＊： 層厚

Thickness of snow layer

(6)　雪質

目視および 10 倍のルーペで判別した．**表 5** に本報告で用いた積雪の分類名称，状態およびこれに対応する記号と線の一覧を示した．

(7)　粒度

10 倍のルーペおよび粒度ゲージで判別した．

(8)　密度

厚さ 3cm 以上の積雪層についてほぼ 10cm ごとに，角形スノーサンプラー（100cm³）で積雪を採取し，その重量を天秤で計り算出した．

(9)　硬度

プッシュゲージにより 7 回測定し，最大と最小を除いた 5 回の測定値の平均を求めた．

(10)　ラム硬度

ラムゾンデにより測定した．

(11)　含水率

簡易熱量式含水率計（河島ほか，1996）により測定した．

### 4.3 観測結果

積雪断面観測の結果を**付表 2.1 〜 2.80** および**付図 1.1 〜 1.80** にそれぞれ対比して示した．このうち，積雪深，積雪相当水量および全層平均密度の集計結果を**表 6** に，また，一冬の雪質変化図を**図 9.1 〜 9.8** に示した．**図 9** によれば，近年では大雪となった 2000/01 年冬期以外は，積雪層がざらめ雪（○印）で占められている期間が長い

**表 6**　　積雪の深さ，相当水量および全層密度の変化

**Table 6**　Seasonal variations of depth, water equivalent and mean density of snow cover.

| 月 | 1996/97年冬期 | | | | 1997/98年冬期 | | | | 1998/99年冬期 | | | | 1999/2000年冬期 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 日 | 積雪深 (cm) | 積雪相当水量 (mm) | 積雪全層密度 (kg/m³) | 日 | 積雪深 (cm) | 積雪相当水量 (mm) | 積雪全層密度 (kg/m³) | 日 | 積雪深 (cm) | 積雪相当水量 (mm) | 積雪全層密度 (kg/m³) | 日 | 積雪深 (cm) | 積雪相当水量 (mm) | 積雪全層密度 (kg/m³) |
| | 5 | 15 | 45 | 302 | 5 | 14 | 23 | 163 | – | | | | – | | | |
| 12 | – | | | | 15 | 14 | 22 | 159 | – | | | | 15 | 12.5 | 24 | 194 |
| | 25 | 5 | 17 | 330 | – | | | | – | | | | 24 | 72 | 132 | 184 |
| | 6 | 41 | 62 | 151 | 5 | 8 | 7 | 82 | 5 | 53 | 76 | 143 | 6 | 29 | 110 | 379 |
| 1 | 16 | 37 | 92 | 248 | 16 | 35 | 54 | 154 | 14 | 67 | 149 | 222 | 14 | 18 | 72 | 398 |
| | 24 | 65 | 158 | 244 | 26 | 77 | 130 | 168 | 25 | 45 | 173 | 385 | 25 | 48 | 81 | 168 |
| | 5 | 78 | 222 | 284 | 5 | 85.5 | 238 | 278 | 5 | 76 | 207 | 273 | 4 | 49.5 | 150 | 303 |
| 2 | 14 | 89 | 251 | 282 | 16 | 55 | 230 | 419 | 15 | 92 | 274 | 298 | 15 | 60 | 217 | 362 |
| | 25 | 89 | 321 | 361 | 25 | 45 | 190 | 422 | 25 | 74 | 277 | 374 | 24 | 108 | 305 | 282 |
| | 5 | 76 | 252 | 331 | 5 | 18 | 80 | 442 | 5 | 61 | 249 | 408 | 6 | 88 | 356 | 404 |
| 3 | 14 | 46 | 180 | 392 | 16 | 2.6 | 3 | 115 | 15 | 38 | 155 | 407 | 15 | 106 | 382 | 360 |
| | – | | | | – | | | | 25 | 9 | 27 | 295 | 24 | 81 | 353 | 436 |

| 月 | 2000/01年冬期 | | | | 2001/02年冬期 | | | | 2002/03年冬期 | | | | 2003/04年冬期 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 日 | 積雪深 (cm) | 積雪相当水量 (mm) | 積雪全層密度 (kg/m³) | 日 | 積雪深 (cm) | 積雪相当水量 (mm) | 積雪全層密度 (kg/m³) | 日 | 積雪深 (cm) | 積雪相当水量 (mm) | 積雪全層密度 (kg/m³) | 日 | 積雪深 (cm) | 積雪相当水量 (mm) | 積雪全層密度 (kg/m³) |
| | – | | | | – | | | | – | | | | – | | | |
| 12 | 15 | 31.5 | 48 | 151 | 14 | 14 | 15 | 109 | – | | | | – | | | |
| | 25 | 4 | 3 | 67 | 25 | 46 | 113 | 245 | – | | | | – | | | |
| | 5 | 103 | 184 | 179 | 4 | 89 | 186 | 209 | 6 | 60 | 105 | 175 | 6 | 8 | 6 | 75 |
| 1 | 15 | 127 | 311 | 245 | 15 | 73 | 254 | 347 | 15 | 43 | 128 | 297 | 15 | 55 | 86 | 157 |
| | 25 | 125 | 353 | 282 | 25 | 92 | 279 | 303 | 24 | 88 | 179 | 204 | 26 | 68 | 156 | 229 |
| | 5 | 145 | 432 | 298 | 5 | 89 | 327 | 368 | 6 | 97 | 284 | 292 | 5 | 76 | 216 | 284 |
| 2 | 15 | 156 | 463 | 297 | 15 | 118 | 340 | 288 | 14 | 84 | 272 | 324 | 16 | 89 | 282 | 317 |
| | 26 | 135 | 480 | 356 | 25 | 91 | 354 | 389 | 25 | 63 | 228 | 362 | 25 | 66 | 268 | 406 |
| | 5 | 123 | 446 | 363 | 5 | 78 | 305 | 392 | 5 | 63 | 219 | 347 | 5 | 63 | 220 | 349 |
| 3 | 15 | 122 | 469 | 385 | 15 | 40 | 162 | 405 | 14 | 52 | 204 | 392 | 15 | 49 | 187 | 381 |
| | 26 | 62 | 269 | 433 | – | | | | 25 | 20 | 67 | 336 | 25 | 11 | 49 | 450 |
| | 5 | 44 | 205 | 465 | – | | | | – | | | | – | | | |
| 4 | – | | | | – | | | | – | | | | – | | | |
| | – | | | | – | | | | – | | | | – | | | |

ことがわかる．ざらめ雪は融解によって生じることから，暖冬の影響が雪質に顕著に現れていたことになる．

## 5. 終わりに

1996/97 年～ 2003/04 年 8 冬期の降積雪観測および積雪断面観測の結果をここに収録した．今後インターネット上でも公開する予定である．

## 謝辞

休日の降積雪観測および積雪断面観測の委託先である，株式会社双葉建設コンサルタントの観測責任者の小野正光，平日の降積雪観測に従事された冬季臨時職員の鈴木克彦，鈴木豊寿，データ整理に従事された遅沢弘子，高橋弥生，荒川育恵の皆さんに謝意を表します．

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## 要　旨

1996 年 11 月から 2004 年 4 月までの 8 冬期間，防災科学技術研究所長岡雪氷防災研究所新庄支所（山形県新庄市十日町 1400）で行った降積雪観測および積雪断面観測の結果を報告した．収録項目は，降積雪観測では，毎日の天気，積雪深，積雪相当水量，積雪全層密度，新積雪深，新積雪密度および地下浸透量である．また，積雪断面観測では，10 日毎の雪質，雪温，密度，硬度および含水率である．

**キーワード**：降雪，積雪，積雪断面，新庄

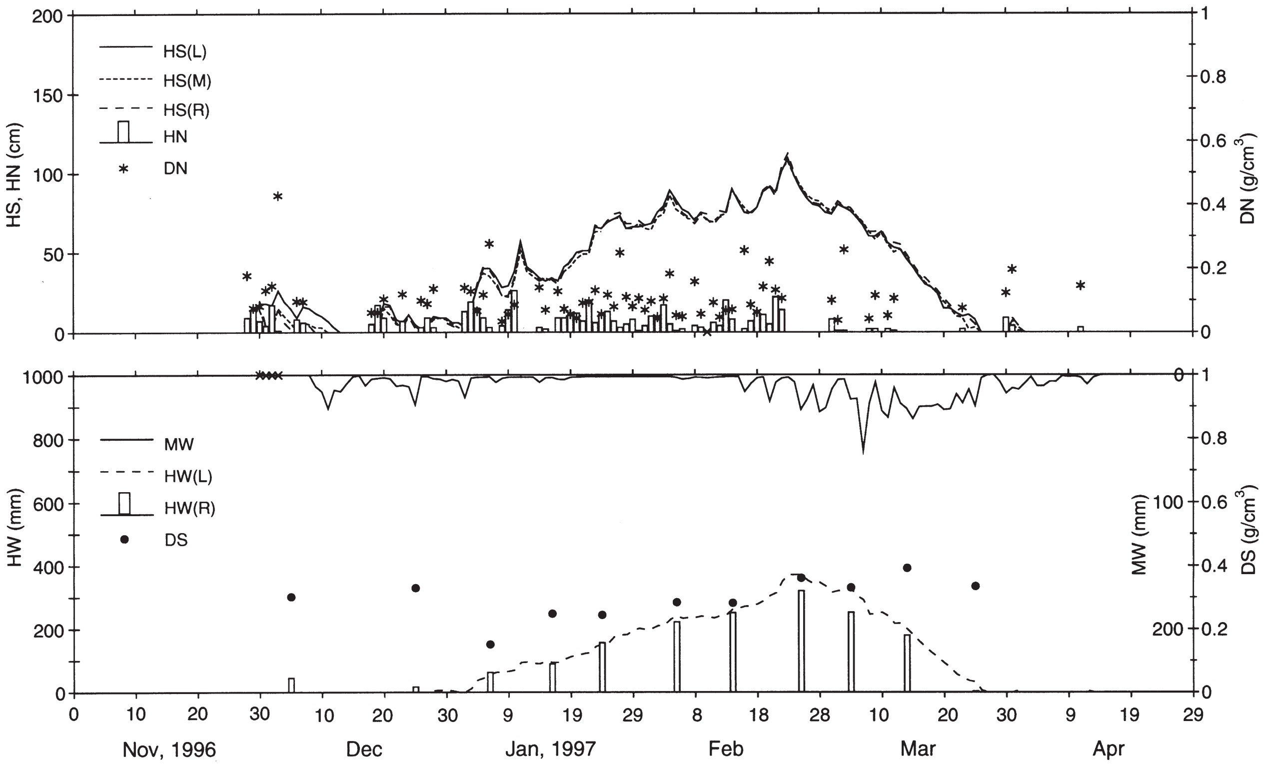



**図 8.1**　降積雪変化図

**Fig. 8.1**　Variations of daily new snowfall and snow cover data.

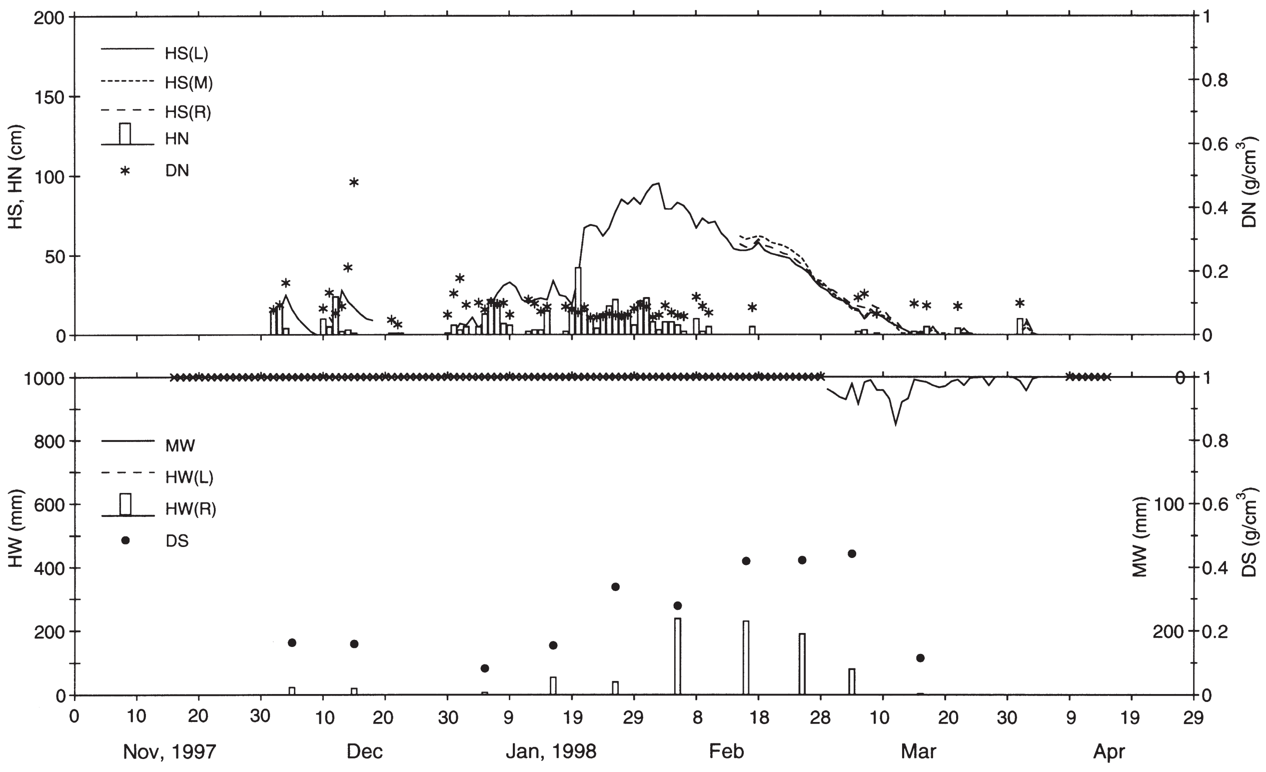



**図 8.2**　降積雪変化図

**Fig. 8.2**　Variations of daily new snowfall and snow cover data.

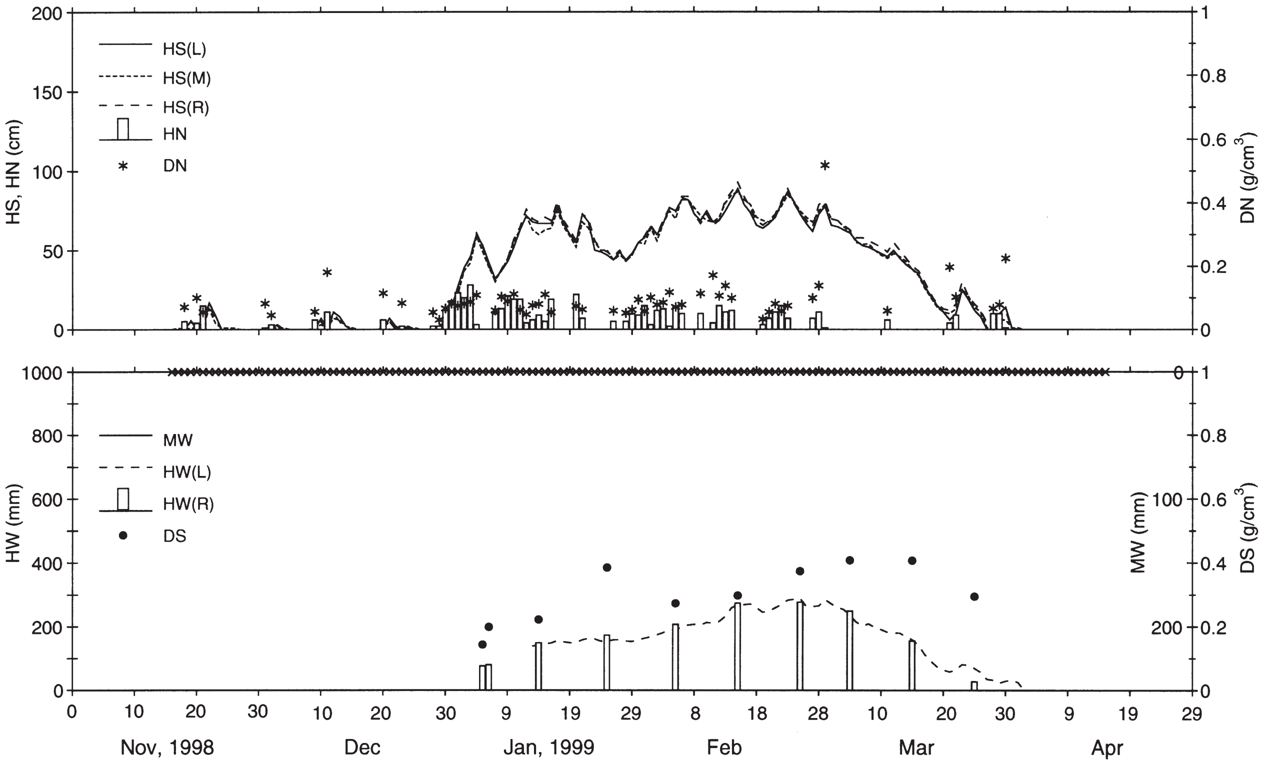



**図 8.3**　降積雪変化図

**Fig. 8.3**　Variations of daily new snowfall and snow cover data.

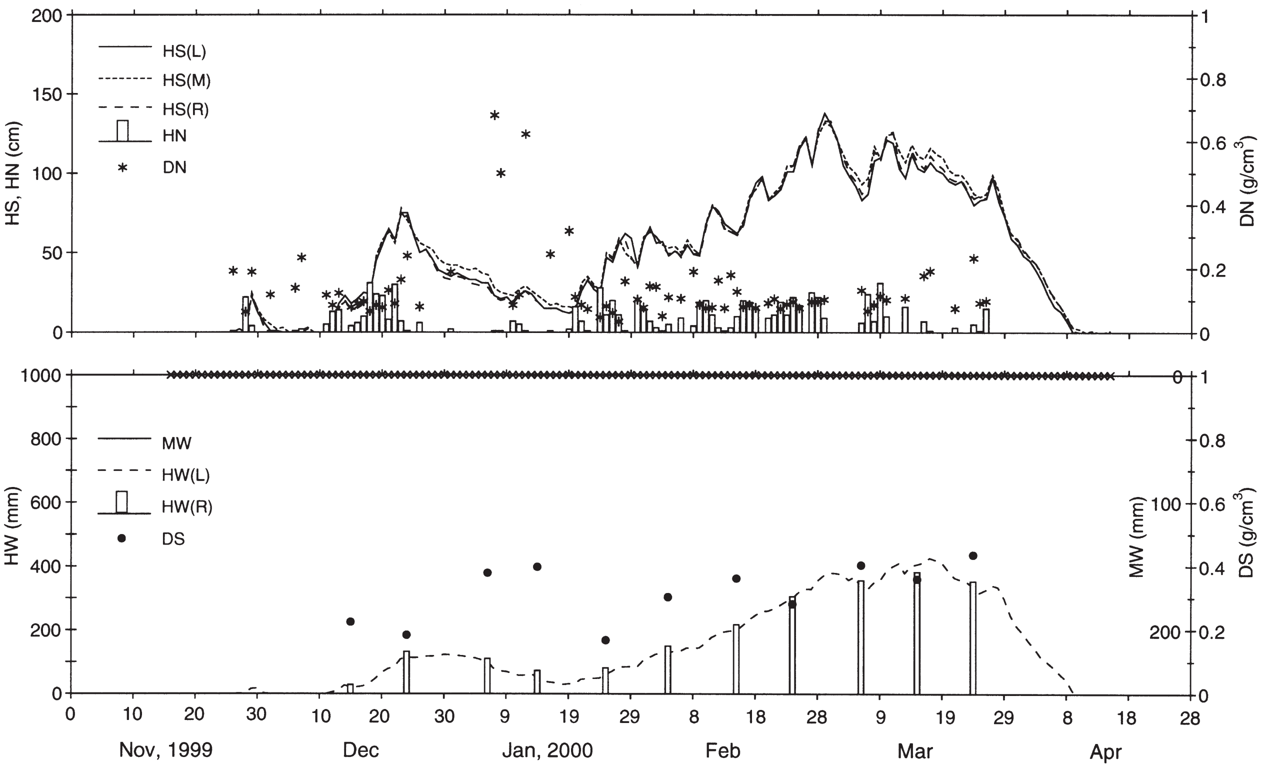



**図 8.4**　降積雪変化図

**Fig. 8.4**　Variations of daily new snowfall and snow cover data.

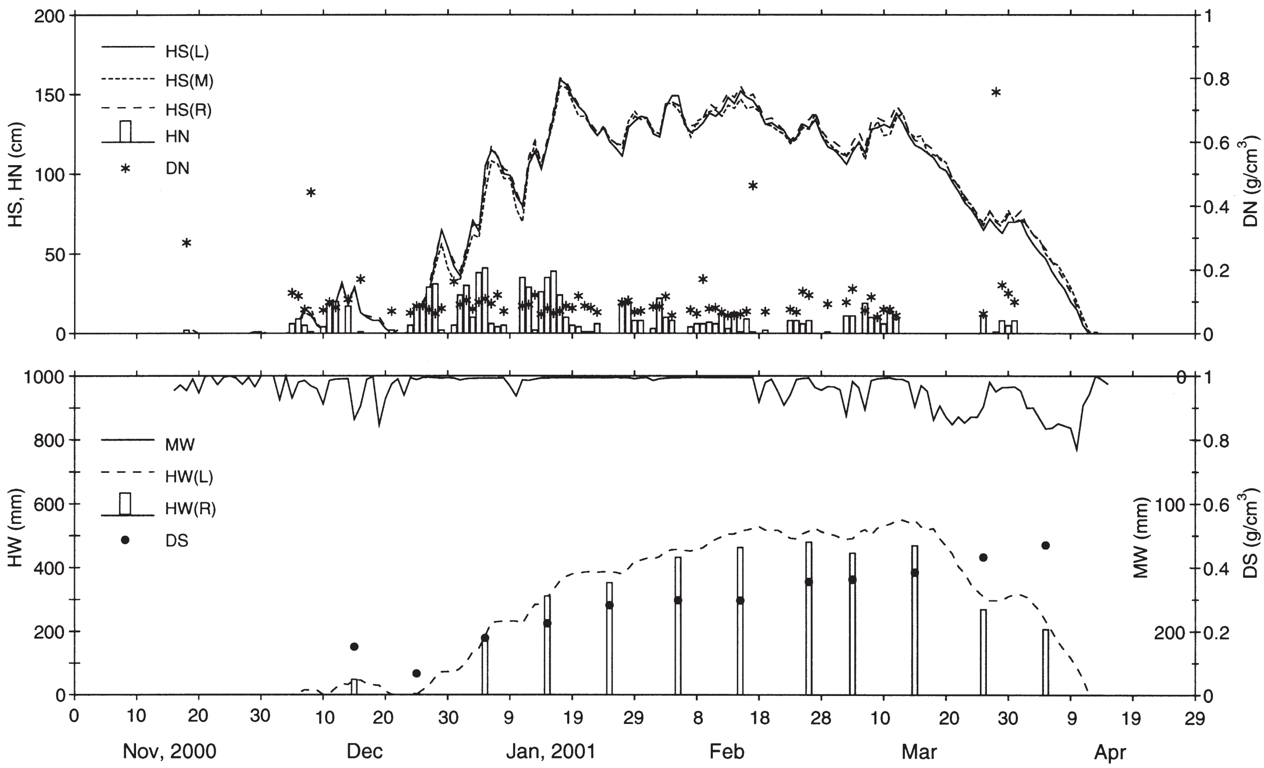



**図 8.5**　降積雪変化図

**Fig. 8.5**　Variations of daily new snowfall and snow cover data.

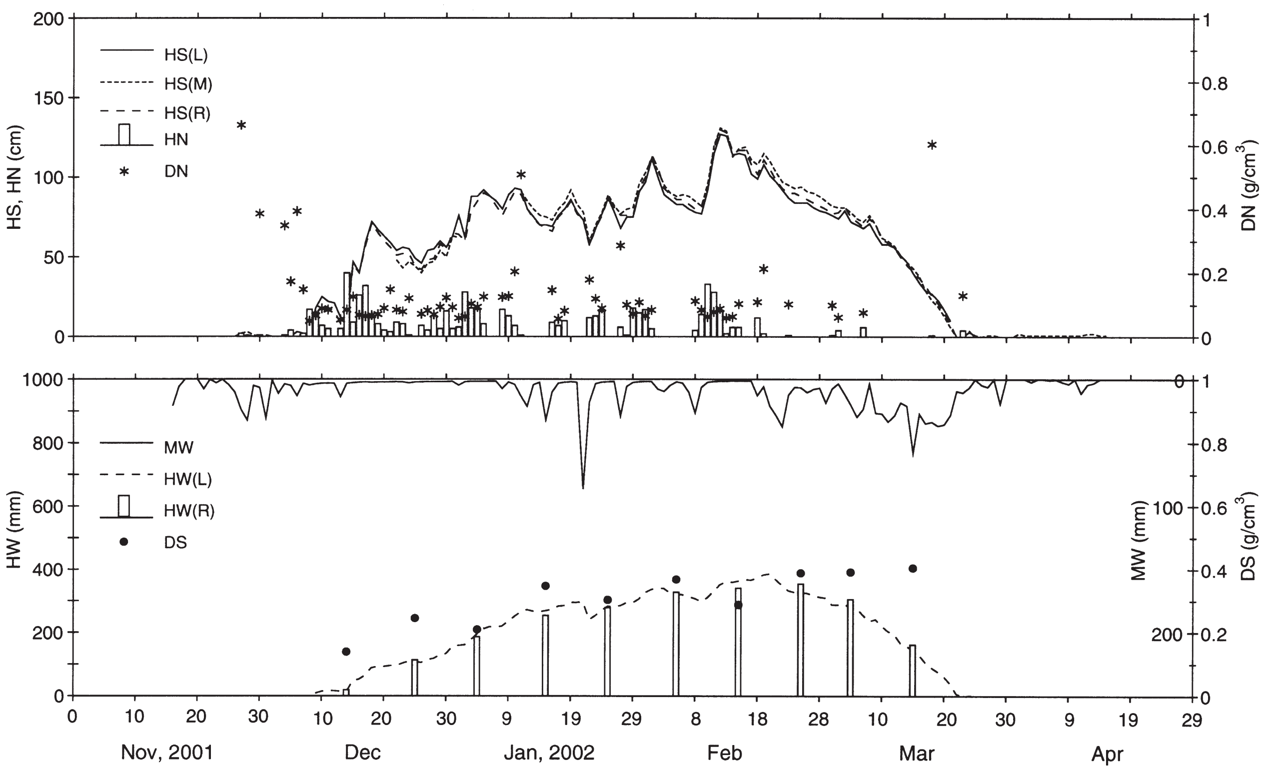



**図 8.6**　降積雪変化図

**Fig. 8.6**　Variations of daily new snowfall and snow cover data.

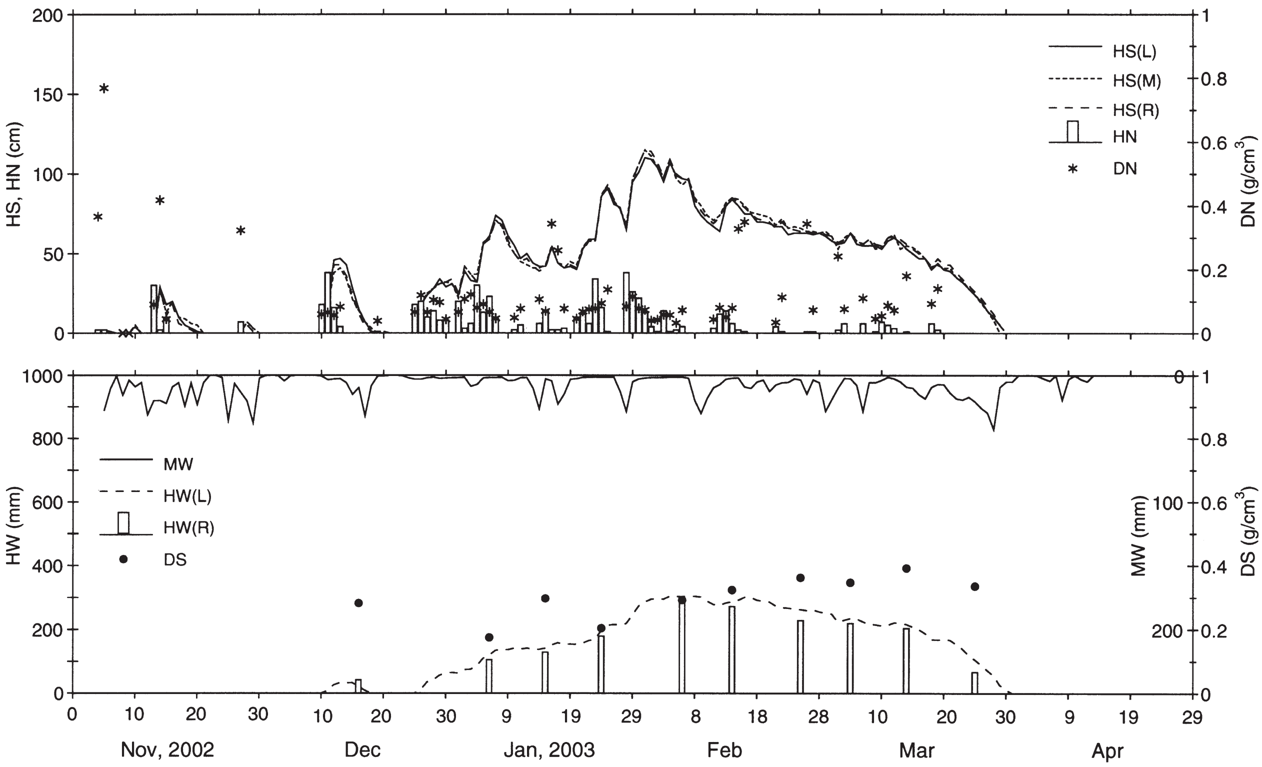



**図 8.7**　降積雪変化図

**Fig. 8.7**　Variations of daily new snowfall and snow cover data.

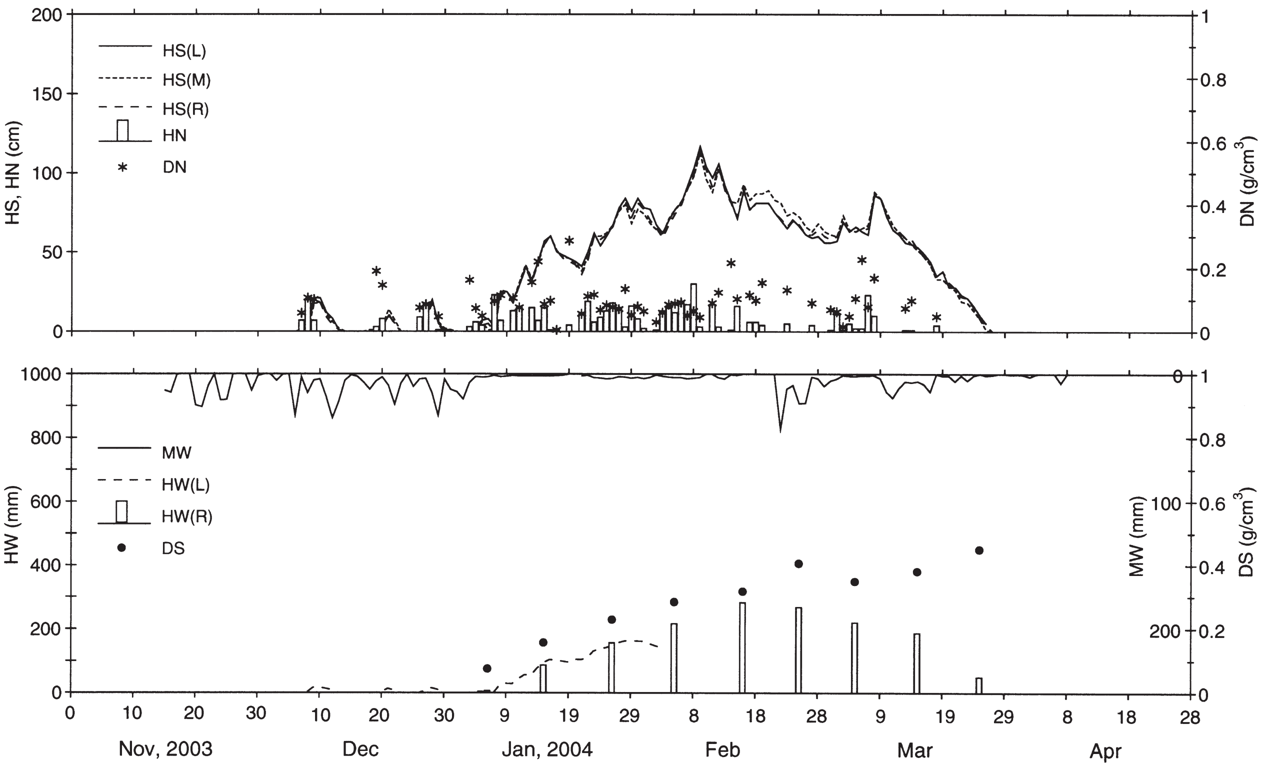



**図 8.8**　降積雪変化図

**Fig. 8.8**　Variations of daily new snowfall and snow cover data.

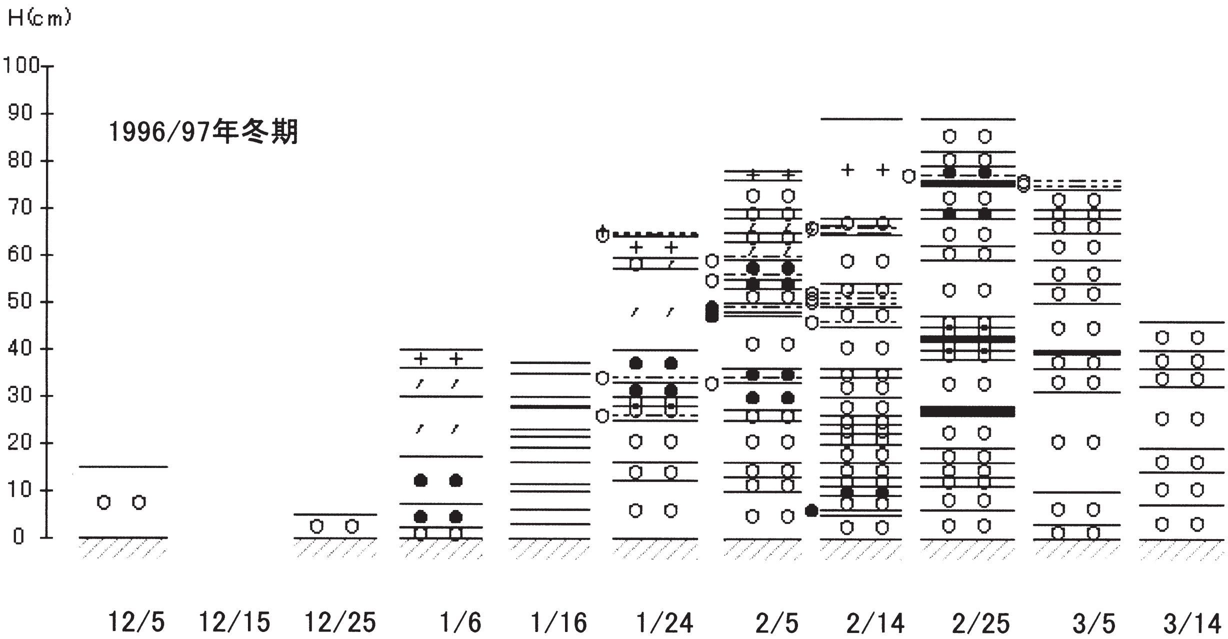



図 9.1　雪質変化図

**Fig. 9.1**　Variation of snow layer structure.

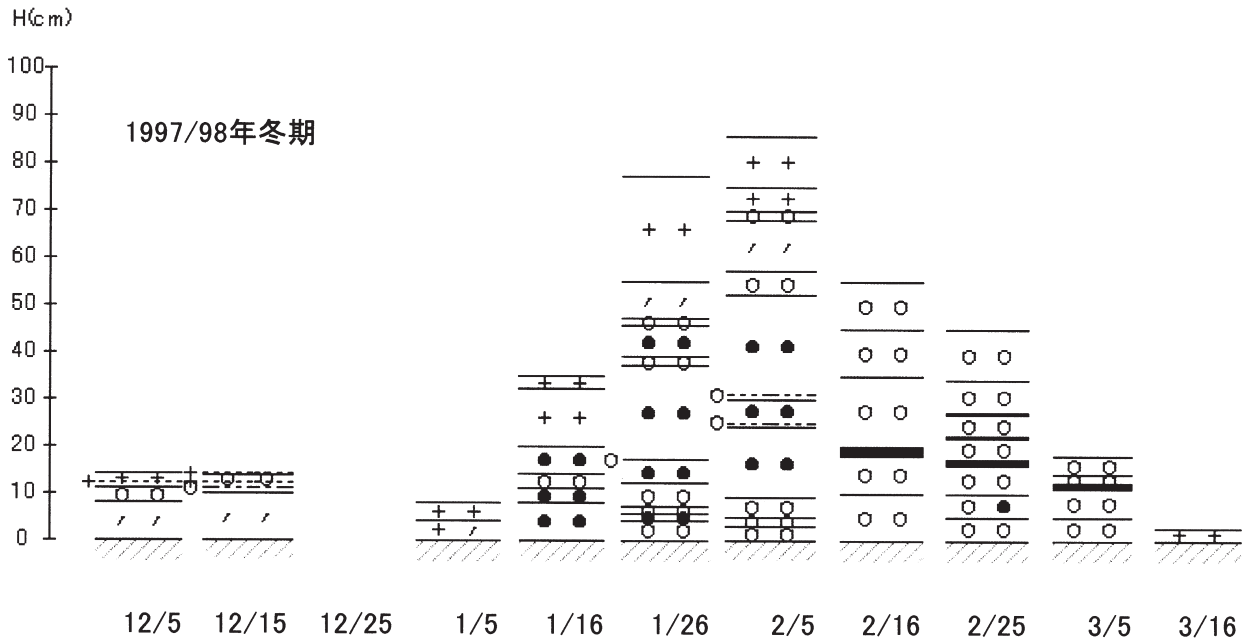



図 9.2　雪質変化図

**Fig. 9.2**　Variation of snow layer structure.

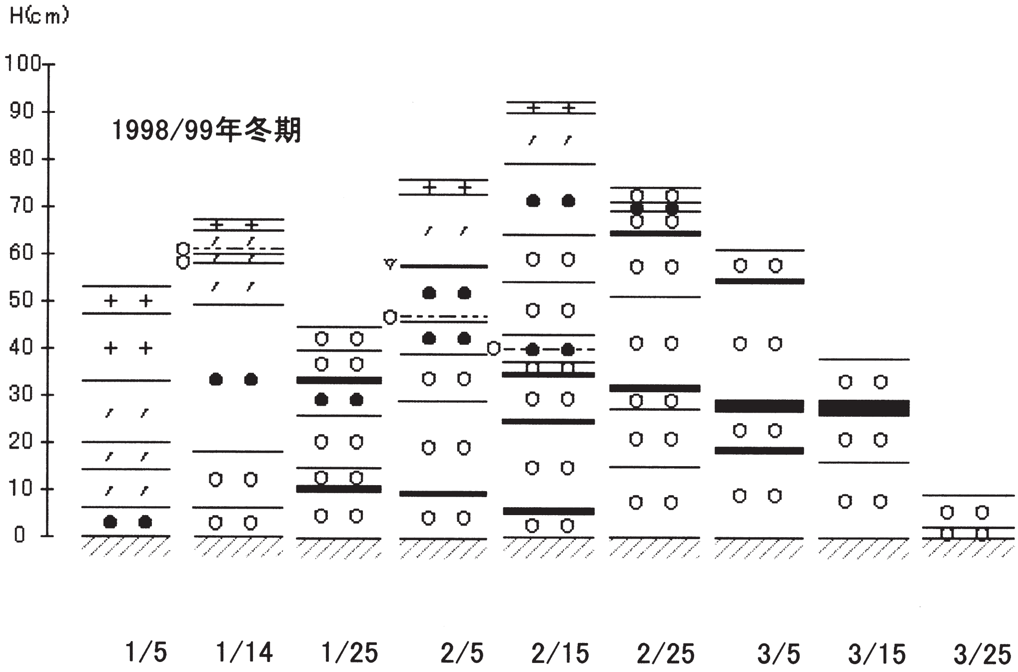



**図 9.3**　雪質変化図

**Fig. 9.3**　Variation of snow layer structure.

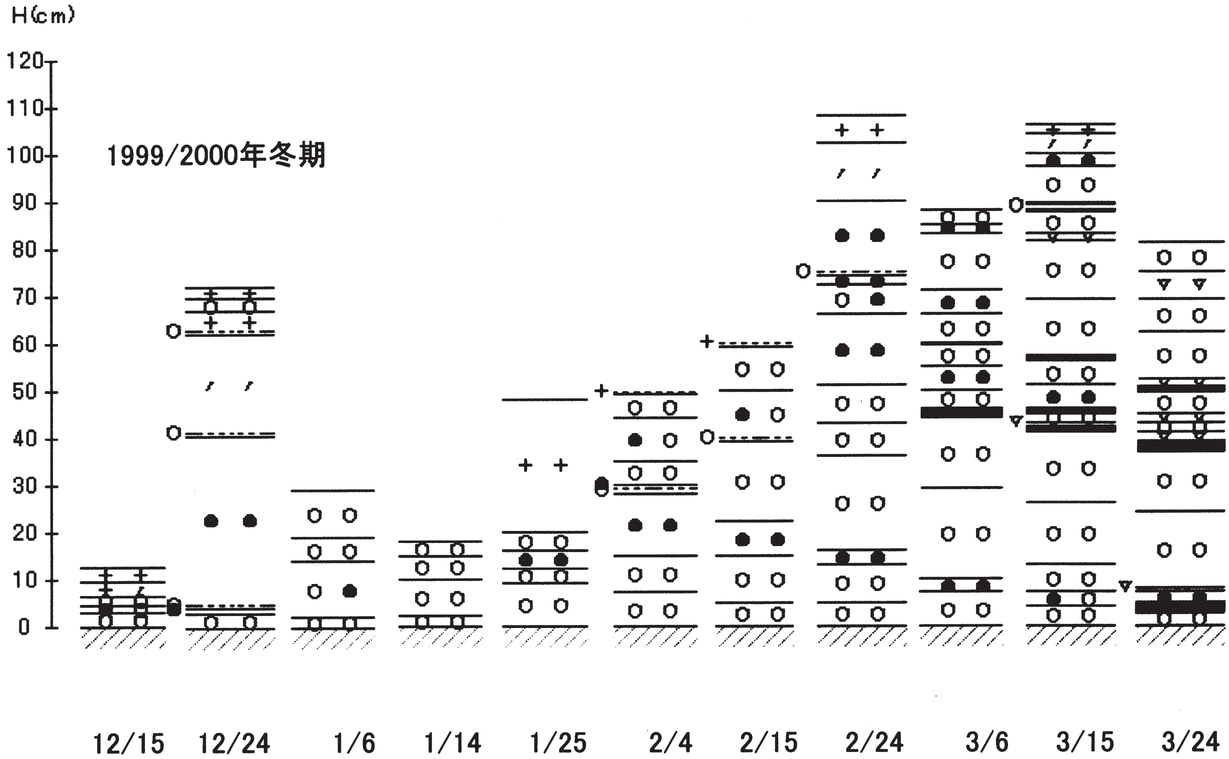



**図 9.4**　雪質変化図

**Fig. 9.4**　Variation of snow layer structure.

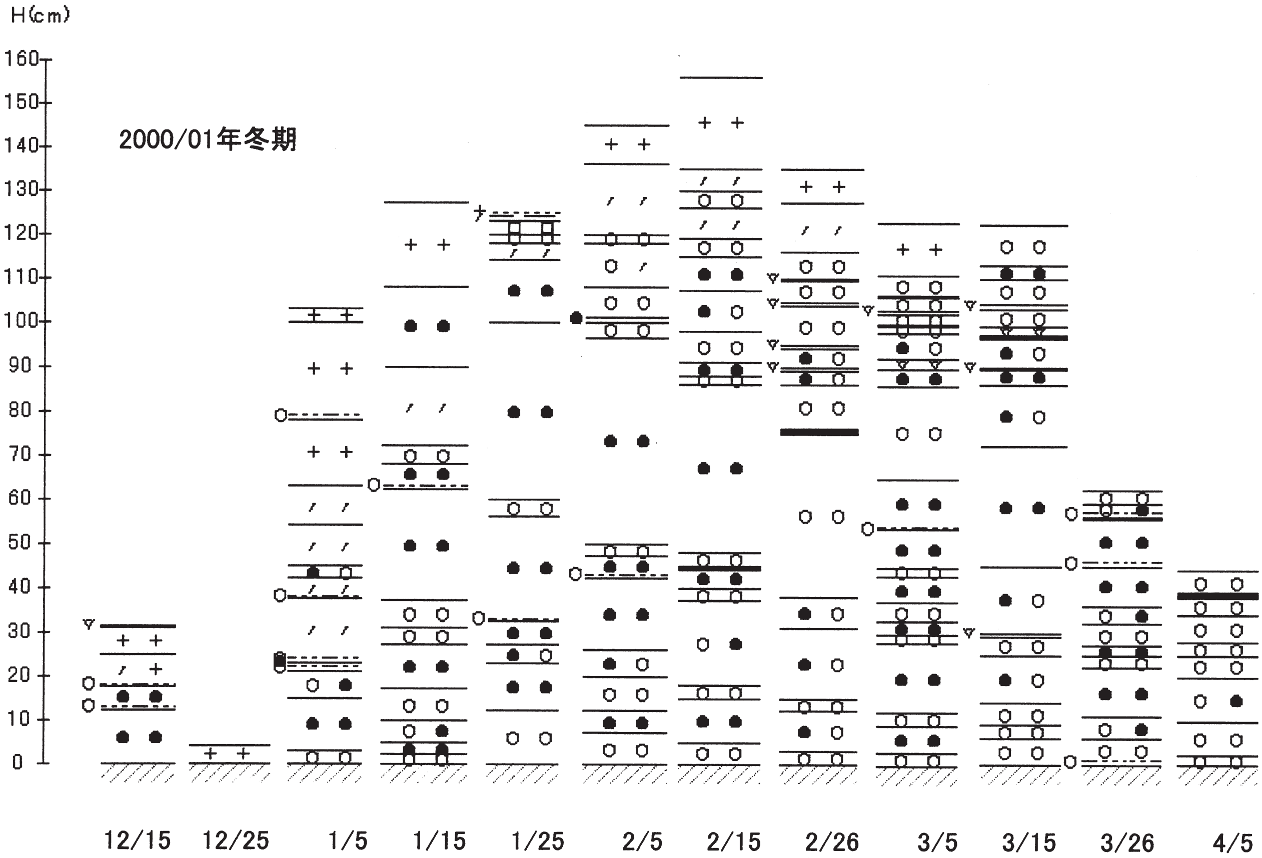



**図 9.5**　雪質変化図

**Fig. 9.5**　Variation of snow layer structure.

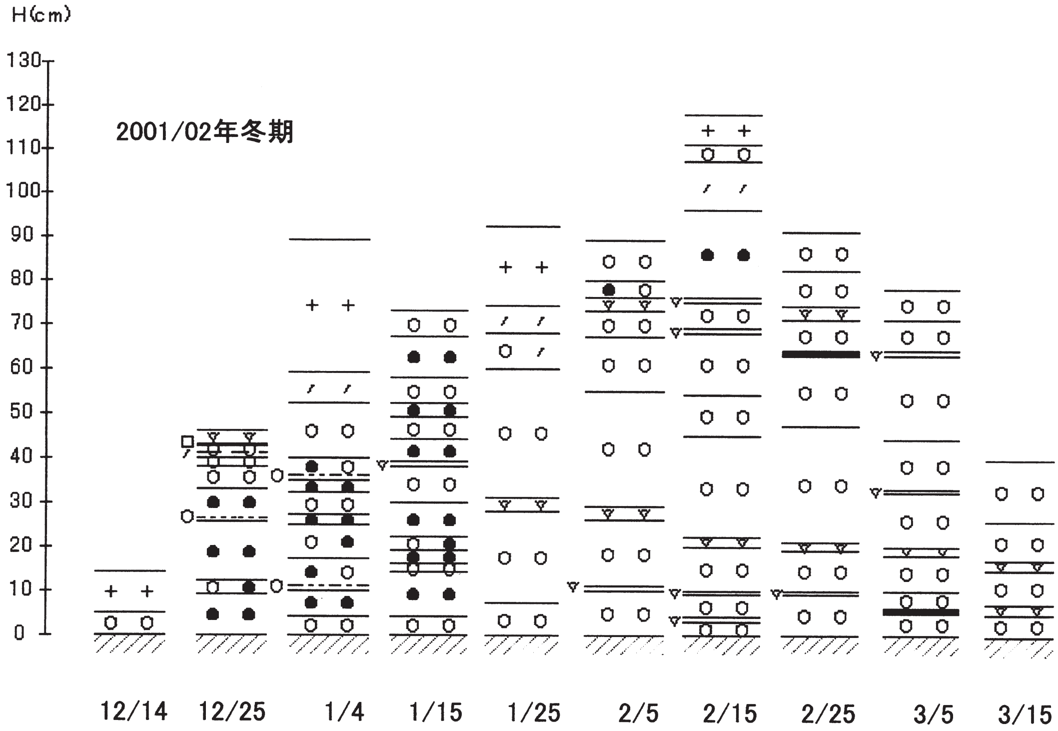



**図 9.6**　雪質変化図

**Fig. 9.6**　Variation of snow layer structure.

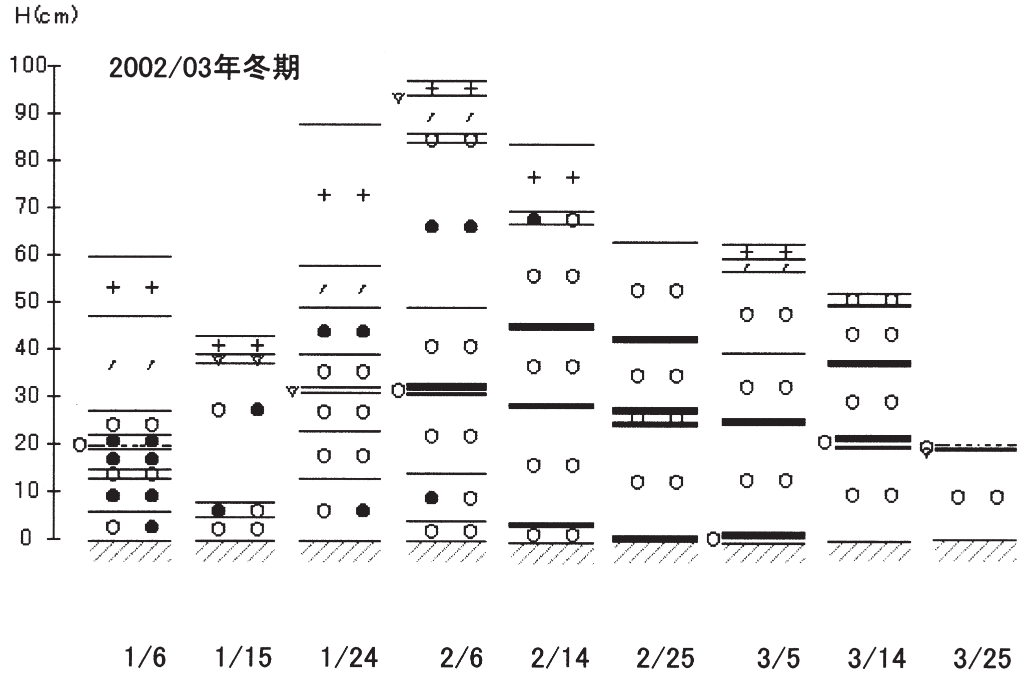



**図 9.7**　雪質変化図

**Fig. 9.7**　Variation of snow layer structure.

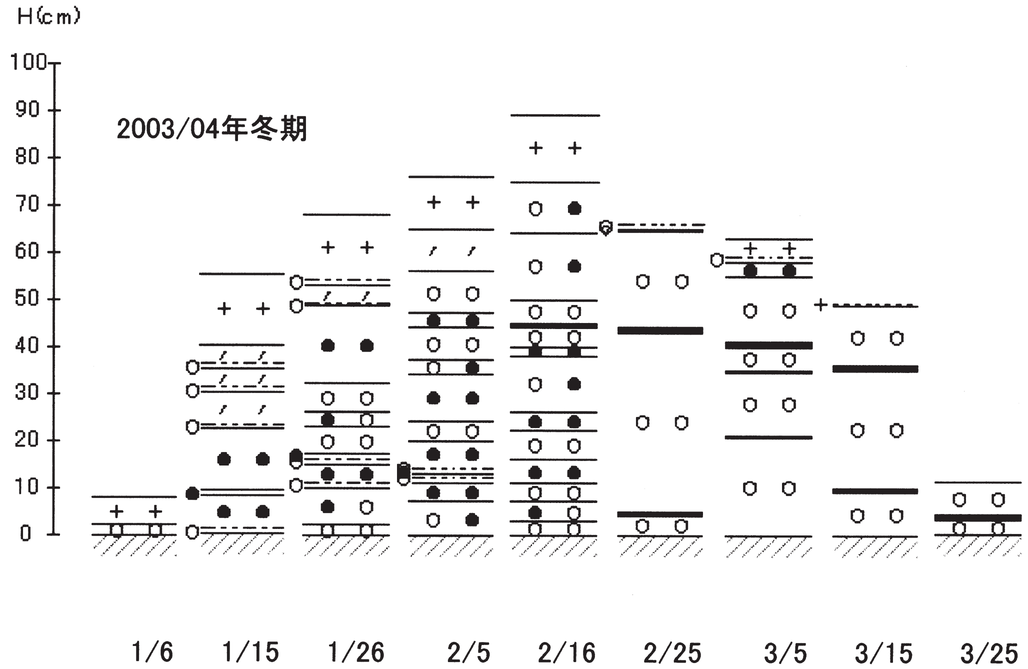



**図 9.8**　雪質変化図

**Fig. 9.8**　Variation of snow layer structure.

**付録 1**　付表 A1.1 ～ A1.48（積雪月報）の記載方法

**Appendix 1**　Description of Table A1.1 ～ A1.48 (Monthly report of snow data).

## 1. 欠測データ

欠測の場合は"X"とした.

## 2. 日別値

(1) 天気

9 時における天気である.

(2) 積雪深

9 時における測定値である. 雪尺の欄では, "-" は観測露場内に積雪がない場合, "0" は雪尺の近傍には積雪がないが, 観測露場内の他の部分には積雪がある場合である.

(3) 積雪相当水量

9 時のメタルウェハー式積雪重量計による測定値で, 零点のドリフトを補正してある.

(4) 積雪全層密度

積雪断面観測の時に円筒サンプラーで測定した重量と体積から算出したものである.

(5) 新積雪深

当日 9 時から翌日 9 時までに, 新たな降雪がない場合は "-" , 新たな降雪があっても測定時 (9 時) に雪板の上に積雪がない場合は "0" とした.

(6) 新積雪の密度

上の(5)の新積雪の密度で, 新積雪深が 1cm 以上ある場合の測定値を有効とした.

(7) 地下浸透量

当日 9 時から翌日 9 時までの融雪量計を用いて測定した積算値である. 降雨がある場合は, 融雪量に降雨の寄与が加わることに注意する必要がある.

## 3. 月統計値

(1) 積雪全層密度

その月の中での測定値の平均値を求めた.

(2) 新積雪深

欠測の有無によらずその月の中での測定値の合計（積算）値を求めた.

(3) 新積雪の密度

その月の中での測定値の平均値を求めた.

(4) 地下浸透量

欠測の有無によらずその月の中での測定値の合計（積算）値を求めた.

**付表 1.1**　積雪月報

**Table A1.1**　Monthly report of snow data.

1996年
11月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | 0 | | |
| 16 | 雨 | - | | | | | | - | | |
| 17 | 曇 | - | | | | | | - | | |
| 18 | 雨 | - | | | | | | - | | |
| 19 | 雨 | - | | | | | | - | | |
| 20 | 快晴 | - | | | | | | - | | |
| 21 | 霧 | - | | | | | | - | | |
| 22 | 雨 | - | | | | | | - | | |
| 23 | 曇 | - | | | | | | - | | |
| 24 | 快晴 | - | | | | | | - | | |
| 25 | 曇 | - | | | | | | - | | |
| 26 | 晴 | - | | | | | | - | | |
| 27 | 雨 | - | | | | | | - | | |
| 28 | 曇 | - | | | | | | 9 | 0.178 | |
| 29 | 雪 | 9 | | | | | | 14 | 0.076 | |
| 30 | 雪 | 18 | 14 | 20 | X | | | 7 | 0.082 | X |
| Total | | | | | | | | 30 | | |
| Mean | | | | | | | | | 0.112 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.2**　積雪月報

**Table A1.2**　Monthly report of snow data.

1996年
12月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度,DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度,DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺,L | 超音波計,M | 赤外線計,R | ﾒﾀﾙｳｪﾊｰ,L | ｽﾉｰｻﾝﾌﾟﾗｰ,R | | | | |
| 1 | 晴 | 18 | 4 | 4 | X | | | 4 | 0.131 | X |
| 2 | 曇 | 17 | 1 | 4 | X | | | 17 | 0.145 | X |
| 3 | 雪 | 26 | 15 | 14 | X | | | 1 | 0.429 | X |
| 4 | 霧 | 19 | 10 | 6 | X | | | - | | 0.0 |
| 5 | 雨 | 15 | 6 | 2 | X | 45 | 0.302 | 0 | | 0.0 |
| 6 | 雪 | 9 | 1 | 0 | X | | | 8 | 0.097 | 0.0 |
| 7 | 雪 | 16 | 6 | 5 | X | | | 6 | 0.095 | 0.0 |
| 8 | 雪 | 15 | 5 | 4 | X | | | 0 | | 0.0 |
| 9 | 雨 | 12 | 3 | 0 | X | | | - | | 8.9 |
| 10 | 雨 | 10 | 3 | 0 | X | | | - | | 13.1 |
| 11 | 曇 | 7 | 0 | 0 | X | | | - | | 26.5 |
| 12 | 雨 | 3 | 0 | 0 | X | | | - | | 11.8 |
| 13 | 晴 | 0 | 0 | 0 | X | | | - | | 12.9 |
| 14 | 晴 | 0 | 0 | 0 | X | | | - | | 6.7 |
| 15 | 快晴 | 0 | 0 | 0 | X | | | - | | 1.3 |
| 16 | 快晴 | 0 | 0 | 0 | X | | | - | | 0.4 |
| 17 | 霧 | - | 0 | 0 | X | | | - | | 8.2 |
| 18 | 曇 | - | 0 | 0 | X | | | 5 | 0.062 | 3.2 |
| 19 | 曇 | 6 | 0 | 3 | X | | | 17 | 0.062 | 2.6 |
| 20 | 雪 | 18 | 15 | 16 | X | | | 9 | 0.104 | 2.1 |
| 21 | 雪 | 17 | 11 | 16 | X | | | 0 | | 3.0 |
| 22 | 曇 | 8 | 5 | 6 | X | | | 0 | | 8.7 |
| 23 | 曇 | 6 | 4 | 3 | X | | | 7 | 0.119 | 8.0 |
| 24 | 晴 | 11 | 11 | 10 | X | | | 0 | | 9.1 |
| 25 | 雨 | 5 | 4 | 3 | X | 17 | 0.330 | 0 | | 23.5 |
| 26 | 雪 | 2 | 1 | 1 | X | | | 3 | 0.099 | 1.2 |
| 27 | 曇 | 5 | 4 | 4 | X | | | 9 | 0.089 | 1.3 |
| 28 | 雪 | 10 | 8 | 9 | 5 | | | 3 | 0.136 | 3.0 |
| 29 | 曇 | 9 | 9 | 9 | 6 | | | - | | 3.3 |
| 30 | 快晴 | 9 | 8 | 6 | 6 | | | - | | 5.0 |
| 31 | 晴 | 6 | 5 | 4 | 4 | | | 0 | | 3.5 |
| Total | | | | | | | | 89 | | |
| Mean | | | | | | | 0.316 | | 0.131 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.3**　積雪月報

**Table A1.3**　Monthly report of snow data.

1997年
1月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度,DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度,DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺,L | 超音波計,M | 赤外線計,R | ﾒﾀﾙｳｪﾊｰ,L | ｽﾉｰｻﾝﾌﾟﾗｰ,R | | | | |
| 1 | 曇 | 6 | 3 | 2 | 0 | | | 0 | | 4.8 |
| 2 | 曇 | 3 | 1 | 0 | 0 | | | 13 | 0.139 | 17.8 |
| 3 | 雪 | 14 | 14 | 14 | 12 | | | 19 | 0.128 | 2.4 |
| 4 | 晴 | 28 | 29 | 30 | 38 | | | 15 | 0.066 | 1.9 |
| 5 | 雪 | 40 | 37 | 41 | 45 | | | 9 | 0.117 | 1.7 |
| 6 | 雪 | 40 | 35 | 39 | 56 | 63 | 0.151 | 3 | 0.277 | 1.6 |
| 7 | 雨 | 35 | 30 | 33 | 63 | | | 0 | | 5.7 |
| 8 | 晴 | 28 | 23 | 22 | 64 | | | 4 | 0.034 | 2.7 |
| 9 | 雪 | 29 | 22 | 23 | 66 | | | 14 | 0.056 | 1.8 |
| 10 | 雪 | 38 | 32 | 34 | 70 | | | 26 | 0.086 | 1.8 |
| 11 | 晴 | 57 | 51 | 55 | 94 | | | 0 | | 1.7 |
| 12 | 晴 | 41 | 38 | 40 | 95 | | | 0 | | 1.8 |
| 13 | 曇 | 38 | 35 | 37 | 91 | | | - | | 1.8 |
| 14 | 霧 | 34 | 32 | 32 | 90 | | | 3 | 0.140 | 5.7 |
| 15 | 薄曇 | 32 | 34 | 35 | 97 | | | 2 | 0.070 | 2.3 |
| 16 | 雪 | 34 | 32 | 33 | 94 | 89 | 0.248 | 0 | | 2.1 |
| 17 | 曇 | 32 | 33 | 30 | 94 | | | 9 | 0.128 | 3.5 |
| 18 | 雪 | 41 | 38 | 38 | 104 | | | 9 | 0.073 | 3.7 |
| 19 | 晴 | 44 | 41 | 45 | 112 | | | 11 | 0.057 | 1.9 |
| 20 | 雪 | 50 | 46 | 49 | 116 | | | 12 | 0.044 | 1.7 |
| 21 | 雪 | 51 | 49 | 51 | 121 | | | 7 | 0.092 | 1.6 |
| 22 | 快晴 | 51 | 49 | 51 | 124 | | | 20 | 0.095 | 1.6 |
| 23 | 雪 | 66 | 63 | 67 | 144 | | | 6 | 0.131 | 1.6 |
| 24 | 雪 | 65 | 63 | 65 | 151 | 156 | 0.244 | 11 | 0.057 | 1.6 |
| 25 | 雪 | 69 | X | 70 | 154 | | | 13 | 0.117 | 1.5 |
| 26 | 雪 | 71 | 71 | 74 | 176 | | | 7 | 0.080 | 1.5 |
| 27 | 雪 | 73 | 72 | 75 | 181 | | | 3 | 0.249 | 1.5 |
| 28 | 曇 | 65 | 65 | 68 | 182 | | | 5 | 0.110 | 1.4 |
| 29 | 雪 | 66 | 65 | 68 | 196 | | | 8 | 0.081 | 1.4 |
| 30 | 雪 | 66 | 68 | 70 | 202 | | | 1 | 0.106 | 1.4 |
| 31 | 雪 | 67 | 65 | 67 | 198 | | | 4 | 0.070 | 1.4 |
| Total | | | | | | | | 234 | | 85.2 |
| Mean | | | | | | | 0.214 | | 0.104 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.4**　積雪月報

**Table A1.4**　Monthly report of snow data.

1997年
2月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm³) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm³) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 曇 | 68 | 64 | 67 | 201 | | | 10 | 0.097 | 1.4 |
| 2 | 曇 | 75 | 72 | 75 | 210 | | | 8 | 0.047 | 1.4 |
| 3 | 雪 | 79 | 74 | 77 | 211 | | | 17 | 0.105 | 1.4 |
| 4 | 雪 | 89 | 86 | 89 | 230 | | | 5 | 0.183 | 1.5 |
| 5 | 曇 | 83 | 77 | 81 | 241 | 222 | 0.284 | 1 | 0.053 | 2.1 |
| 6 | 曇 | 77 | 74 | 75 | 233 | | | 2 | 0.049 | 3.4 |
| 7 | 雪 | 75 | 71 | 72 | 236 | | | 0 | | 2.9 |
| 8 | 快晴 | 70 | 71 | 68 | 236 | | | 4 | 0.158 | 1.9 |
| 9 | 晴 | 75 | 74 | 73 | 240 | | | 3 | 0.057 | 2.1 |
| 10 | 晴 | 74 | 70 | 71 | 239 | | | X | X | 2.5 |
| 11 | X | X | 69 | 67 | 234 | | | 6 | 0.093 | 2.1 |
| 12 | 曇 | 76 | 73 | 72 | 241 | | | 4 | 0.047 | 1.8 |
| 13 | 晴 | 75 | 74 | 73 | 244 | | | 20 | 0.068 | 1.6 |
| 14 | 雪 | 90 | 89 | 90 | 262 | 251 | 0.282 | 8 | 0.071 | 1.5 |
| 15 | 曇 | 82 | 83 | 83 | 265 | | | 0 | | 1.4 |
| 16 | 雨 | 75 | 78 | 75 | 271 | | | 2 | 0.256 | 13.2 |
| 17 | 雪 | 75 | 74 | 74 | 272 | | | 7 | 0.086 | 6.8 |
| 18 | 雪 | 78 | 78 | 78 | 278 | | | 13 | 0.063 | 2.4 |
| 19 | 雪 | 88 | 89 | 89 | 289 | | | 11 | 0.142 | 1.8 |
| 20 | 雪 | 91 | 92 | 92 | 305 | | | 5 | 0.222 | 20.9 |
| 21 | 雪 | 88 | 88 | 85 | 314 | | | 22 | 0.132 | 5.8 |
| 22 | 雪 | 101 | 102 | 104 | 351 | | | 14 | 0.106 | 2.6 |
| 23 | 雪 | 109 | 107 | 112 | 371 | | | 0 | | 2.0 |
| 24 | 曇 | 98 | 98 | 100 | 371 | | | - | | 5.6 |
| 25 | 霧 | 90 | 92 | 91 | 372 | 321 | 0.361 | - | | 27.4 |
| 26 | 曇 | 84 | 86 | 85 | 354 | | | - | | 19.4 |
| 27 | 曇 | 80 | 83 | 81 | 343 | | | - | | 7.9 |
| 28 | 快晴 | 79 | 82 | 80 | 347 | | | - | | 29.2 |
| Total | | | | | | | | 162 | | 174.0 |
| Mean | | | | | | | 0.309 | | 0.107 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.5**　積雪月報

**Table A1.5**　Monthly report of snow data.

1997年
3月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 雨 | 75 | 78 | 77 | 335 | | | 0 | | 26.0 |
| 2 | 雪 | 74 | 76 | 74 | 316 | | | 8 | 0.100 | 11.2 |
| 3 | 雪 | 80 | 82 | 82 | 321 | | | 1 | 0.037 | 3.7 |
| 4 | 雪 | 78 | 78 | 79 | 323 | | | 1 | 0.258 | 3.5 |
| 5 | 晴 | 76 | 78 | 78 | 328 | 252 | 0.331 | - | | 19.3 |
| 6 | 快晴 | 72 | 73 | 73 | 304 | | | - | | 18.8 |
| 7 | 曇 | 67 | 69 | 68 | 292 | | | - | | 59.9 |
| 8 | 曇 | 60 | 63 | 63 | 246 | | | 2 | 0.042 | 22.6 |
| 9 | 雪 | 60 | 58 | 63 | 247 | | | 2 | 0.115 | 5.6 |
| 10 | 晴 | 63 | 62 | 64 | 252 | | | - | | 28.4 |
| 11 | 曇 | 56 | 55 | 57 | 240 | | | 2 | 0.052 | 33.6 |
| 12 | 雪 | 53 | 50 | 56 | 217 | | | 1 | 0.106 | 10.1 |
| 13 | 快晴 | 52 | 52 | 55 | 218 | | | - | | 22.6 |
| 14 | 快晴 | 46 | 48 | 49 | 200 | 180 | 0.392 | - | | 26.7 |
| 15 | 曇 | 41 | 41 | 43 | 181 | | | 0 | | 34.7 |
| 16 | 曇 | 35 | 36 | 37 | 160 | | | 0 | | 25.2 |
| 17 | 快晴 | 30 | 31 | 34 | 141 | | | - | | 24.9 |
| 18 | 快晴 | 28 | 28 | 30 | 124 | | | - | | 24.9 |
| 19 | 快晴 | 24 | 24 | 26 | 109 | | | - | | 23.4 |
| 20 | 快晴 | 15 | 19 | 21 | 92 | | | - | | 27.5 |
| 21 | 快晴 | 15 | 15 | 17 | 77 | | | - | | 27.0 |
| 22 | 雨 | 12 | 10 | 12 | 56 | | | - | | 15.1 |
| 23 | 曇 | 10 | 9 | 10 | 46 | | | 2 | 0.076 | 22.2 |
| 24 | 雪 | 11 | 2 | 9 | 36 | | | 0 | | 11.3 |
| 25 | 曇 | 8 | 3 | 5 | 32 | 3 | 0.335 | - | | 24.6 |
| 26 | 快晴 | 0 | 0 | 0 | 6 | | | - | | 2.5 |
| 27 | 曇 | - | 0 | 0 | 0 | | | - | | 0.2 |
| 28 | 快晴 | - | 0 | 0 | 0 | | | - | | 0.1 |
| 29 | 曇 | - | 0 | 0 | 0 | | | - | | 5.4 |
| 30 | 曇 | - | 0 | 0 | 0 | | | 9 | 0.123 | 14.5 |
| 31 | 曇 | 9 | 5 | 7 | 0 | | | 4 | 0.196 | 10.3 |
| Total | | | | | | | | 32 | | 586.0 |
| Mean | | | | | | | 0.353 | | 0.111 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.6**　積雪月報

**Table A1.6**　Monthly report of snow data.

1997年
4月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度,DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度,DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺,L | 超音波計,M | 赤外線計,R | ﾒﾀﾙｳｪﾊｰ,L | ｽﾉｰｻﾝﾌﾟﾗｰ,R | | | | |
| 1 | 晴 | 4 | 1 | 3 | 6 | | | - | | 11.6 |
| 2 | 曇 | - | 0 | 0 | 0 | | | - | | 6.5 |
| 3 | 雨 | - | 0 | 0 | 0 | | | - | | 1.6 |
| 4 | 曇 | - | 0 | 0 | 0 | | | - | | 8.7 |
| 5 | X | - | 0 | 0 | 0 | | | - | | 8.8 |
| 6 | X | - | 0 | 0 | 0 | | | - | | 5.2 |
| 7 | X | - | 0 | 0 | 0 | | | - | | 5.3 |
| 8 | X | - | 0 | 0 | 0 | | | - | | 0.9 |
| 9 | X | - | 0 | 0 | 0 | | | - | | 1.5 |
| 10 | X | - | 0 | 0 | 0 | | | - | | 1.2 |
| 11 | X | - | 0 | 0 | 0 | | | 3 | 0.145 | 2.1 |
| 12 | 雪 | 3 | 0 | 0 | 5 | | | 0 | | 7.4 |
| 13 | X | - | 0 | 0 | 0 | | | - | | 2.1 |
| 14 | X | - | 0 | 0 | 0 | | | - | | 0.3 |
| 15 | X | - | 0 | 0 | 0 | | | | | 0.0 |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |
| Total | | | | | | | | 3 | | |
| Mean | | | | | | | | | 0.145 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.7**　積雪月報

**Table A1.7**　Monthly report of snow data.

1997年
11月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層 密度, DS ($g/cm^3$) | 新積雪深 HN (cm) | 新積雪の 密度, DN ($g/cm^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | 霧 | - | X | X | X | | | - | | X |
| 17 | 雨 | - | X | X | X | | | - | | X |
| 18 | 曇 | - | X | X | X | | | - | | X |
| 19 | 雨 | - | X | X | X | | | - | | X |
| 20 | 霧 | - | X | X | X | | | - | | X |
| 21 | 霧 | - | X | X | X | | | - | | X |
| 22 | 雨 | - | X | X | X | | | - | | X |
| 23 | 曇 | - | X | X | X | | | - | | X |
| 24 | 薄曇 | - | X | X | X | | | - | | X |
| 25 | 霧 | - | X | X | X | | | - | | X |
| 26 | 雨 | - | X | X | X | | | - | | X |
| 27 | 雨 | - | X | X | X | | | - | | X |
| 28 | 晴 | - | X | X | X | | | - | | X |
| 29 | 雨 | - | X | X | X | | | - | | X |
| 30 | 雨 | - | X | X | X | | | - | | X |
| Total | | | | | | | | | | |
| Mean | | | | | | | | | | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.8**　積雪月報

**Table A1.8**　Monthly report of snow data.

1997年
12月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS ($g/cm^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN ($g/cm^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 晴 | - | X | X | X | | | - | | X |
| 2 | 曇 | - | X | X | X | | | 15 | 0.079 | X |
| 3 | 雪 | 15 | X | X | X | | | 18 | 0.094 | X |
| 4 | 晴 | 25 | X | X | X | | | 4 | 0.164 | X |
| 5 | みぞれ | 16 | X | X | X | 23 | 0.163 | 0 | | X |
| 6 | 霧 | 10 | X | X | X | | | - | | X |
| 7 | 雨 | 6 | X | X | X | | | - | | X |
| 8 | 曇 | 2 | X | X | X | | | - | | X |
| 9 | 雨 | 0 | X | X | X | | | - | | X |
| 10 | 晴 | - | X | X | X | | | 10 | 0.083 | X |
| 11 | 雪 | 11 | X | X | X | | | 5 | 0.133 | X |
| 12 | 曇 | 5 | X | X | X | | | 24 | 0.068 | X |
| 13 | 晴 | 28 | X | X | X | | | 2 | 0.090 | X |
| 14 | 晴 | 21 | X | X | X | | | 3 | 0.212 | X |
| 15 | 雨 | 17 | X | X | X | 20 | 0.159 | 1 | 0.480 | X |
| 16 | 曇 | 13 | X | X | X | | | - | | X |
| 17 | 晴 | 10 | X | X | X | | | - | | X |
| 18 | 曇 | 9 | X | X | X | | | - | | X |
| 19 | 晴 | - | X | X | X | | | - | | X |
| 20 | 曇 | - | X | X | X | | | - | | X |
| 21 | 晴 | - | X | X | X | | | 1 | 0.047 | X |
| 22 | 雪 | 1 | X | X | X | | | 1 | 0.032 | X |
| 23 | 雪 | 1 | X | X | X | | | - | | X |
| 24 | 晴 | - | X | X | X | | | - | | X |
| 25 | 快晴 | - | X | X | X | | | - | | X |
| 26 | 霧 | - | X | X | X | | | - | | X |
| 27 | 晴 | - | X | X | X | | | - | | X |
| 28 | 曇 | - | X | X | X | | | 0 | | X |
| 29 | 雪 | - | X | X | X | | | 0 | | X |
| 30 | 曇 | - | X | X | X | | | 1 | 0.063 | X |
| 31 | 曇 | 1 | X | X | X | | | 6 | 0.130 | X |
| Total | | | | | | | | 91 | | |
| Mean | | | | | | | 0.161 | | 0.129 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.9**　積雪月報

**Table A1.9**　Monthly report of snow data.

1998年
1月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm³) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm³) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 曇 | 7 | X | X | X | | | 3 | 0.178 | X |
| 2 | 晴 | 6 | X | X | X | | | 5 | 0.094 | X |
| 3 | 雪 | 11 | X | X | X | | | - | | X |
| 4 | 曇 | 4 | X | X | X | | | 5 | 0.101 | X |
| 5 | 雪 | 9 | X | X | X | 7 | 0.082 | 13 | 0.079 | X |
| 6 | 雪 | 19 | X | X | X | | | 22 | 0.103 | X |
| 7 | 地ふぶき | 26 | X | X | X | | | 18 | 0.097 | X |
| 8 | 晴 | 31 | X | X | X | | | 7 | 0.100 | X |
| 9 | 晴 | 33 | X | X | X | | | 6 | 0.063 | X |
| 10 | 雪 | 30 | X | X | X | | | 0 | | X |
| 11 | 晴 | 22 | X | X | X | | | 0 | | X |
| 12 | 曇 | 20 | X | X | X | | | 2 | 0.111 | X |
| 13 | 曇 | 22 | X | X | X | | | 3 | 0.098 | X |
| 14 | 雪 | 23 | X | X | X | | | 3 | 0.073 | X |
| 15 | 曇 | 22 | X | X | X | | | 15 | 0.088 | X |
| 16 | 曇 | 34 | X | X | X | 54 | 0.154 | 0 | | X |
| 17 | 曇 | 25 | X | X | X | | | 0 | | X |
| 18 | 雨 | 24 | X | X | X | | | 2 | 0.088 | X |
| 19 | 雪 | 19 | X | X | X | | | 17 | 0.079 | X |
| 20 | 雪 | 36 | X | X | X | | | 42 | 0.070 | X |
| 21 | 雪 | 67 | X | X | X | | | 15 | 0.086 | X |
| 22 | 曇 | 69 | X | X | X | | | 10 | 0.054 | X |
| 23 | 雪 | 68 | X | X | X | | | 4 | 0.055 | X |
| 24 | 快晴 | 62 | X | X | X | | | 13 | 0.058 | X |
| 25 | 雪 | 67 | X | X | X | | | 18 | 0.066 | X |
| 26 | 雪 | 77 | X | X | X | 40 | 0.337 | 22 | 0.061 | X |
| 27 | 雪 | 85 | X | X | X | | | 10 | 0.060 | X |
| 28 | 雪 | 82 | X | X | X | | | 13 | 0.063 | X |
| 29 | 雪 | 86 | X | X | X | | | 6 | 0.082 | X |
| 30 | 雪 | 82 | X | X | X | | | 21 | 0.094 | X |
| 31 | 雪 | 89 | X | X | X | | | 23 | 0.088 | X |
| Total | | | | | | | | 318 | | |
| Mean | | | | | | | 0.191 | | 0.084 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.10**　積雪月報

**Table A1.10**　Monthly report of snow data.

1998年
2月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度,DS (g/cm³) | 新積雪深 HN (cm) | 新積雪の密度,DN (g/cm³) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺,L | 超音波計,M | 赤外線計,R | ﾒﾀﾙｳｪﾊｰ,L | ｽﾉｰｻﾝﾌﾟﾗｰ,R | | | | |
| 1 | 曇 | 94 | X | X | X | | | 8 | 0.055 | X |
| 2 | 雪 | 95 | X | X | X | | | 3 | 0.062 | X |
| 3 | 雪 | 79 | X | X | X | | | 8 | 0.092 | X |
| 4 | 雪 | 79 | X | X | X | | | 8 | 0.070 | X |
| 5 | 雪 | 83 | X | X | X | 238 | 0.278 | 6 | 0.061 | X |
| 6 | 雪 | 81 | X | X | X | | | 2 | 0.058 | X |
| 7 | 快晴 | 76 | X | X | X | | | 0 | | X |
| 8 | 雪 | 67 | X | X | X | | | 10 | 0.119 | X |
| 9 | 雪 | 73 | X | X | X | | | 2 | 0.090 | X |
| 10 | 雪 | 70 | X | X | X | | | 5 | 0.069 | X |
| 11 | 曇 | 71 | X | X | X | | | 0 | | X |
| 12 | 晴 | 64 | X | X | X | | | 0 | | X |
| 13 | 晴 | 60 | X | X | X | | | 0 | | X |
| 14 | 雪 | 54 | X | X | X | | | 0 | | X |
| 15 | 曇 | 53 | 62 | 57 | X | | | 0 | | X |
| 16 | 曇 | 53 | 60 | 55 | X | 230 | 0.419 | 0 | | X |
| 17 | 晴 | 54 | 61 | 56 | X | | | 5 | 0.086 | X |
| 18 | 晴 | 58 | 62 | 60 | X | | | 0 | | X |
| 19 | 快晴 | 53 | 61 | 56 | X | | | - | | X |
| 20 | 曇 | 51 | 58 | 55 | X | | | 0 | | X |
| 21 | 雨 | 50 | 57 | 53 | X | | | - | | X |
| 22 | 晴 | 49 | 56 | 51 | X | | | - | | X |
| 23 | 曇 | 48 | 54 | 50 | X | | | - | | X |
| 24 | 晴 | 44 | 51 | 47 | X | | | - | | X |
| 25 | 晴 | 42 | 48 | 44 | X | 190 | 0.422 | - | | X |
| 26 | 晴 | 39 | 42 | 40 | X | | | - | | X |
| 27 | 雨 | 34 | 35 | 35 | X | | | - | | X |
| 28 | 霧 | 30 | 34 | 32 | X | | | - | | X |
| Total | | | | | | | | 57 | | |
| Mean | | | | | | | 0.373 | | 0.076 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.11**　積雪月報

**Table A1.11**　Monthly report of snow data.

1998年
3月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm³) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm³) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 曇 | 28 | 30 | 29 | X | | | - | | 9.60 |
| 2 | 晴 | 24 | 26 | 28 | X | | | - | | 12.35 |
| 3 | 晴 | 22 | 23 | 25 | X | | | 0 | | 15.90 |
| 4 | 曇 | 21 | 20 | 22 | X | | | - | | 17.80 |
| 5 | 曇 | 17 | 16 | 19 | X | 80 | 0.442 | - | | 5.15 |
| 6 | 晴 | 16 | 15 | 18 | X | | | 2 | 0.117 | 21.20 |
| 7 | 雪 | 10 | 11 | 17 | X | | | 3 | 0.129 | 4.15 |
| 8 | 曇 | 14 | 16 | 19 | X | | | - | | 2.40 |
| 9 | 曇 | 13 | 13 | 17 | X | | | 1 | 0.066 | 10.40 |
| 10 | 晴 | 11 | 12 | 16 | X | | | - | | 10.45 |
| 11 | 快晴 | 8 | 10 | 11 | X | | | - | | 17.15 |
| 12 | 雨 | 6 | 5 | 9 | X | | | - | | 37.55 |
| 13 | 曇 | 4 | 1 | 4 | X | | | - | | 19.65 |
| 14 | 晴 | 2 | 1 | 1 | X | | | 0 | | 17.10 |
| 15 | 雪 | 0 | 1 | 0 | X | | | 2 | 0.098 | 2.05 |
| 16 | 雪 | 2 | 1 | 2 | X | 3 | 0.115 | 1 | X | 3.20 |
| 17 | 雪 | 1 | 1 | 1 | X | | | 5 | 0.092 | 4.10 |
| 18 | 曇 | 5 | 3 | 4 | X | | | 0 | | 6.70 |
| 19 | 晴 | 0 | 1 | 0 | X | | | 0 | | 8.35 |
| 20 | 雨 | 0 | 1 | 0 | X | | | - | | 7.30 |
| 21 | 晴 | - | 0 | 0 | X | | | 0 | | 3.50 |
| 22 | 晴 | 0 | 1 | 0 | X | | | 4 | 0.090 | 2.15 |
| 23 | 晴 | 4 | 1 | 2 | X | | | 0 | | 6.65 |
| 24 | 曇 | 0 | 1 | 0 | X | | | - | | 0.75 |
| 25 | 晴 | - | 0 | 0 | X | | | - | | 0.50 |
| 26 | 快晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 27 | 雨 | - | 0 | 0 | X | | | - | | 6.75 |
| 28 | 曇 | - | 0 | 0 | X | | | - | | 0.00 |
| 29 | 晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 30 | 晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 31 | 雨 | - | 0 | 0 | X | | | - | | 0.45 |
| Total | | | | | | | | 18 | | 253.30 |
| Mean | | | | | | | 0.279 | | 0.099 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.12**　積雪月報

**Table A1.12**　Monthly report of snow data.

1998年
4月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度,DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度,DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺,L | 超音波計,M | 赤外線計,R | ﾒﾀﾙｳｪﾊｰ,L | ｽﾉｰｻﾝﾌﾟﾗｰ,R | | | | |
| 1 | 曇 | - | 1 | 0 | X | | | 10 | 0.100 | 3.30 |
| 2 | 雪 | 10 | 5 | 8 | X | | | 0 | | 10.85 |
| 3 | 曇 | 2 | 1 | 0 | X | | | - | | 1.55 |
| 4 | 快晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 5 | 快晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 6 | 曇 | - | 0 | 0 | X | | | - | | 0.00 |
| 7 | 快晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 8 | 快晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 9 | 雨 | - | 0 | 0 | X | | | - | | X |
| 10 | 雨 | - | X | X | X | | | - | | X |
| 11 | 晴 | - | X | X | X | | | - | | X |
| 12 | 晴 | - | X | X | X | | | - | | X |
| 13 | 曇 | - | X | X | X | | | - | | X |
| 14 | 雨 | - | X | X | X | | | - | | X |
| 15 | 雨 | - | 0 | 0 | X | | | - | | X |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |
| Total | | | | | | | | 10 | | |
| Mean | | | | | | | | | 0.100 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.13**　積雪月報

**Table A1.13**　Monthly report of snow data.

1998年
11月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm³) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm³) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | 雨 | - | 0 | 0 | X | | | - | | X |
| 17 | 曇 | 0 | 1 | 0 | X | | | 0 | | X |
| 18 | みぞれ | - | 0 | 0 | X | | | 5 | 0.071 | X |
| 19 | 雪 | 6 | 1 | 5 | X | | | 0 | | X |
| 20 | 晴 | 0 | 1 | 0 | X | | | 4 | 0.100 | X |
| 21 | 雪 | 4 | 2 | 4 | X | | | 15 | 0.055 | X |
| 22 | 雪 | 17 | 13 | 15 | X | | | - | | X |
| 23 | 曇 | 9 | 4 | 7 | X | | | 0 | | X |
| 24 | 曇 | 0 | 1 | 0 | X | | | 0 | | X |
| 25 | 雨 | 0 | 1 | 0 | X | | | 0 | | X |
| 26 | 曇 | 0 | 1 | 0 | X | | | - | | X |
| 27 | 曇 | - | 0 | 0 | X | | | - | | X |
| 28 | 曇 | - | 0 | 0 | X | | | - | | X |
| 29 | 晴 | - | 0 | 0 | X | | | - | | X |
| 30 | 雨 | - | 0 | 0 | X | | | - | | X |
| Total | | | | | | | | 24 | | |
| Mean | | | | | | | | | 0.075 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.14**　積雪月報

**Table A1.14**　Monthly report of snow data.

1998年
12月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 雨 | - | 0 | 0 | X | | | 1 | 0.082 | X |
| 2 | 雪 | 1 | 1 | 0 | X | | | 3 | 0.045 | X |
| 3 | 曇 | 3 | 1 | 2 | X | | | 0 | | X |
| 4 | 快晴 | 0 | 1 | 0 | X | | | - | | X |
| 5 | 快晴 | - | 0 | 0 | X | | | - | | X |
| 6 | 晴 | - | 0 | 0 | X | | | - | | X |
| 7 | 曇 | - | 0 | 0 | X | | | - | | X |
| 8 | 雨 | - | 0 | 0 | X | | | 0 | | X |
| 9 | 雪 | 0 | 1 | 0 | X | | | 6 | 0.056 | X |
| 10 | 雪 | 7 | 3 | 5 | X | | | 0 | | X |
| 11 | 曇 | 0 | 1 | 0 | X | | | 11 | 0.181 | X |
| 12 | 曇 | 11 | 7 | 10 | X | | | 0 | | X |
| 13 | 雨 | 8 | 6 | 5 | X | | | - | | X |
| 14 | 雨 | 2 | 2 | 0 | X | | | - | | X |
| 15 | 雨 | 0 | 1 | 0 | X | | | - | | X |
| 16 | 雨 | - | 0 | 0 | X | | | - | | X |
| 17 | 晴 | - | 0 | 0 | X | | | - | | X |
| 18 | 晴 | - | 0 | 0 | X | | | - | | X |
| 19 | 雨 | - | 0 | 0 | X | | | 0 | | X |
| 20 | 雪 | 0 | 1 | 0 | X | | | 6 | 0.114 | X |
| 21 | 曇 | 7 | 5 | 5 | X | | | 0 | | X |
| 22 | みぞれ | 2 | 1 | 0 | X | | | 0 | | X |
| 23 | 曇 | 0 | 1 | 0 | X | | | 2 | 0.083 | X |
| 24 | 曇 | 2 | 1 | 1 | X | | | 0 | | X |
| 25 | 曇 | 0 | 1 | 0 | X | | | - | | X |
| 26 | 曇 | - | 0 | 0 | X | | | - | | X |
| 27 | 晴 | - | 0 | 0 | X | | | - | | X |
| 28 | 曇 | - | 0 | 0 | X | | | 2 | 0.054 | X |
| 29 | 雪 | 2 | 1 | 0 | X | | | 2 | 0.030 | X |
| 30 | 雪 | 5 | 1 | 1 | X | | | 12 | 0.066 | X |
| 31 | 雪 | 14 | 11 | 12 | X | | | 18 | 0.081 | X |
| Total | | | | | | | | 63 | | |
| Mean | | | | | | | | | 0.079 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.15**　積雪月報

**Table A1.15**　Monthly report of snow data.

1999年
1月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) 雪尺,L | 超音波計,M | 赤外線計,R | 積雪相当水量 HW (mm) ﾒﾀﾙｳｪﾊｰ,L | ｽﾉｰｻﾝﾌﾟﾗｰ,R | 積雪全層密度,DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度,DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 曇 | 27 | 22 | 23 | X | | | 23 | 0.075 | X |
| 2 | 雪 | 39 | 37 | 38 | X | | | 20 | 0.081 | X |
| 3 | 雪 | 46 | 42 | 46 | X | | | 28 | 0.087 | X |
| 4 | 曇 | 60 | 59 | 61 | X | | | 3 | 0.108 | X |
| 5 | 晴 | 53 | 49 | 52 | X | 76 | 0.143 | - | | X |
| 6 | 曇 | 42 | 39 | 40 | X | 80 | 0.199 | 0 | | X |
| 7 | 曇 | 32 | 31 | 30 | X | | | 10 | 0.060 | X |
| 8 | 雪 | 37 | 37 | 38 | X | | | 13 | 0.103 | X |
| 9 | 雪 | 43 | 45 | 45 | X | | | 21 | 0.089 | X |
| 10 | 雪 | 52 | 56 | 57 | X | | | 19 | 0.111 | X |
| 11 | 晴 | 63 | 63 | 65 | X | | | 19 | 0.062 | X |
| 12 | 曇 | 72 | 72 | 76 | X | | | 4 | 0.047 | X |
| 13 | 曇 | 68 | 63 | 70 | 138 | | | 6 | 0.076 | X |
| 14 | 曇 | 67 | 60 | 68 | 141 | 149 | 0.222 | 9 | 0.080 | X |
| 15 | 曇 | 67 | 63 | 71 | 146 | | | 5 | 0.110 | X |
| 16 | 雪 | 67 | 64 | 69 | 148 | | | 19 | 0.054 | X |
| 17 | 曇 | 78 | 75 | 81 | 155 | | | 0 | | X |
| 18 | 晴 | 67 | 65 | 69 | 152 | | | - | | X |
| 19 | 晴 | 60 | 59 | 63 | 149 | | | - | | X |
| 20 | 雨 | 55 | 52 | 56 | 149 | | | 22 | 0.074 | X |
| 21 | 雪 | 73 | 68 | 73 | 158 | | | 7 | 0.063 | X |
| 22 | 曇 | 68 | 64 | 70 | 163 | | | - | | X |
| 23 | 雨 | 50 | 55 | 56 | 161 | | | - | | X |
| 24 | 薄曇 | 49 | 50 | 51 | 154 | | | - | | X |
| 25 | 曇 | 47 | 50 | 49 | 154 | 173 | 0.385 | - | | X |
| 26 | 曇 | 44 | 44 | 46 | 158 | | | 5 | 0.059 | X |
| 27 | 曇 | 49 | 47 | 50 | 159 | | | - | | X |
| 28 | 雨 | 44 | 44 | 43 | 154 | | | 5 | 0.052 | X |
| 29 | 雪 | 48 | 47 | 47 | 153 | | | 10 | 0.062 | X |
| 30 | 雪 | 55 | 55 | 55 | 158 | | | 9 | 0.094 | X |
| 31 | 薄曇 | 58 | 54 | 59 | 163 | | | 15 | 0.058 | X |
| Total | | | | | | | | 272 | | |
| Mean | | | | | | | 0.237 | | 0.076 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.16**　積雪月報

**Table A1.16**　Monthly report of snow data.

1999年
2月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS ($g/cm^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN ($g/cm^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 雪 | 65 | 64 | 66 | 168 | | | 3 | 0.101 | X |
| 2 | 曇 | 60 | 56 | 60 | 174 | | | 12 | 0.078 | X |
| 3 | 雪 | 67 | 67 | 69 | 181 | | | 13 | 0.085 | X |
| 4 | 曇 | 77 | 75 | 77 | 191 | | | 2 | 0.117 | X |
| 5 | 曇 | 75 | 70 | 74 | 191 | 207 | 0.273 | 14 | 0.071 | X |
| 6 | 曇 | 82 | 83 | 84 | 198 | | | 10 | 0.078 | X |
| 7 | 曇 | 82 | 82 | 84 | 205 | | | 0 | | X |
| 8 | 曇 | 73 | 77 | 73 | 207 | | | - | | X |
| 9 | 快晴 | 69 | 72 | 67 | 205 | | | 10 | 0.113 | X |
| 10 | 雪 | 75 | 69 | 73 | 213 | | | 0 | | X |
| 11 | 晴 | 68 | 68 | 66 | 211 | | | 4 | 0.171 | X |
| 12 | 雪 | 69 | 71 | 69 | 216 | | | 15 | 0.106 | X |
| 13 | 雪 | 75 | 80 | 82 | 232 | | | 11 | 0.138 | X |
| 14 | 雪 | 82 | 85 | 87 | 259 | | | 12 | 0.099 | X |
| 15 | 雪 | 89 | 87 | 93 | 269 | 274 | 0.298 | 0 | | X |
| 16 | 雪 | 79 | 82 | 84 | 269 | | | - | | X |
| 17 | 曇 | 74 | 79 | 77 | 271 | | | - | | X |
| 18 | 雨 | 66 | 71 | 69 | 260 | | | 0 | | X |
| 19 | 曇 | 64 | 69 | 66 | 245 | | | 3 | 0.032 | X |
| 20 | 快晴 | 67 | 68 | 69 | 249 | | | 7 | 0.055 | X |
| 21 | 快晴 | 71 | 72 | 73 | 259 | | | 11 | 0.081 | X |
| 22 | 雪 | 80 | 78 | 81 | 269 | | | 15 | 0.058 | X |
| 23 | 曇 | 87 | 85 | 89 | 283 | | | 7 | 0.075 | X |
| 24 | 曇 | 81 | 81 | 80 | 286 | | | - | | X |
| 25 | 雨 | 73 | 75 | 73 | 289 | 277 | 0.374 | - | | X |
| 26 | 曇 | 67 | 71 | 69 | 264 | | | - | | X |
| 27 | 雨 | 62 | 68 | 65 | 263 | | | 7 | 0.099 | X |
| 28 | 雪 | 73 | 75 | 79 | 265 | | | 11 | 0.138 | X |
| Total | | | | | | | | 167 | | |
| Mean | | | | | | | 0.315 | | 0.094 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.17**　積雪月報

**Table A1.17**　Monthly report of snow data.

1999年
3月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度,DS ($g/cm^3$) | 新積雪深 HN (cm) | 新積雪の密度,DN ($g/cm^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺,L | 超音波計,M | 赤外線計,R | ﾒﾀﾙｳｪﾊｰ,L | ｽﾉｰｻﾝﾌﾟﾗｰ,R | | | | |
| 1 | 晴 | 78 | 79 | 81 | 285 | | | 1 | 0.518 | X |
| 2 | 雨 | 66 | 70 | 70 | 272 | | | 0 | | X |
| 3 | 快晴 | 65 | 69 | 69 | 260 | | | - | | X |
| 4 | 曇 | 63 | 65 | 66 | 254 | | | - | | X |
| 5 | 曇 | 61 | 62 | 63 | 236 | 249 | 0.408 | 0 | | X |
| 6 | 雪 | 56 | 55 | 58 | 215 | | | - | | X |
| 7 | 曇 | 53 | 54 | 58 | 202 | | | - | | X |
| 8 | 曇 | 52 | 54 | 56 | 209 | | | - | | X |
| 9 | 曇 | 50 | 50 | 54 | 198 | | | - | | X |
| 10 | 曇 | 48 | 47 | 52 | 191 | | | - | | X |
| 11 | 曇 | 46 | 45 | 49 | 183 | | | 6 | 0.059 | X |
| 12 | 曇 | 50 | 48 | 55 | 181 | | | 0 | | X |
| 13 | 快晴 | 45 | 46 | 50 | 180 | | | - | | X |
| 14 | 快晴 | 41 | 43 | 45 | 169 | | | - | | X |
| 15 | 雨 | 38 | 38 | 40 | 159 | 155 | 0.407 | - | | X |
| 16 | 晴 | 35 | 34 | 37 | 142 | | | - | | X |
| 17 | 曇 | 27 | 26 | 30 | 113 | | | - | | X |
| 18 | 晴 | 21 | 20 | 22 | 92 | | | - | | X |
| 19 | 曇 | 15 | 14 | 16 | 74 | | | - | | X |
| 20 | 曇 | 11 | 11 | 13 | 64 | | | - | | X |
| 21 | 曇 | 6 | 10 | 12 | 58 | | | 4 | 0.197 | X |
| 22 | 雪 | 10 | 13 | 16 | 63 | | | 9 | 0.102 | X |
| 23 | 雪 | 25 | 25 | 30 | 81 | | | - | | X |
| 24 | 晴 | 19 | 21 | 21 | 79 | | | - | | X |
| 25 | 曇 | 12 | 14 | 16 | 69 | 27 | 0.295 | - | | X |
| 26 | 晴 | 8 | 11 | 12 | 57 | | | - | | X |
| 27 | 曇 | 0 | 1 | 4 | 35 | | | - | | X |
| 28 | 晴 | 0 | 1 | 0 | 32 | | | 10 | 0.066 | X |
| 29 | 曇 | 10 | 6 | 10 | 23 | | | 10 | 0.078 | X |
| 30 | 曇 | 14 | 6 | 12 | 29 | | | 1 | 0.225 | X |
| 31 | 雪 | 1 | 1 | 0 | 33 | | | 0 | | X |
| Total | | | | | | | | 41 | | |
| Mean | | | | | | | 0.370 | | 0.178 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.18**　積雪月報
**Table A1.18**　Monthly report of snow data.

1999年
4月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) 雪尺, L | 超音波計, M | 赤外線計, R | 積雪相当水量 HW (mm) ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | 積雪全層密度, DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 曇 | 0 | 1 | 0 | 25 | | | - | | X |
| 2 | 曇 | - | 0 | 0 | 0 | | | 0 | | X |
| 3 | 曇 | - | 0 | 0 | 0 | | | 0 | | X |
| 4 | 曇 | - | 0 | 0 | 0 | | | - | | X |
| 5 | 快晴 | - | 0 | 0 | 0 | | | - | | X |
| 6 | 曇 | - | 0 | 0 | 0 | | | 0 | | X |
| 7 | 曇 | - | 0 | 0 | 0 | | | 0 | | X |
| 8 | 曇 | - | 0 | 0 | 0 | | | 0 | | X |
| 9 | 曇 | - | 0 | 0 | 0 | | | - | | X |
| 10 | 曇 | - | 0 | 0 | 0 | | | - | | X |
| 11 | 曇 | - | 0 | 0 | 0 | | | - | | X |
| 12 | 曇 | - | 0 | 0 | 0 | | | - | | X |
| 13 | 雨 | - | 0 | 0 | 0 | | | - | | X |
| 14 | 雨 | - | 0 | 0 | 0 | | | - | | X |
| 15 | 曇 | - | 0 | 0 | 0 | | | - | | X |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |
| Total | | | | | | | | 0 | | |
| Mean | | | | | | | | | | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.19**　積雪月報

**Table A1.19**　Monthly report of snow data.

1999年
11月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | 曇 | - | 0 | 0 | 0 | | | - | | X |
| 17 | 雨 | - | 0 | 0 | 0 | | | - | | X |
| 18 | 晴 | - | 0 | 0 | 0 | | | - | | X |
| 19 | 曇 | - | 0 | 0 | 0 | | | - | | X |
| 20 | 曇 | - | 0 | 0 | 0 | | | - | | X |
| 21 | 雨 | - | 0 | 0 | 0 | | | - | | X |
| 22 | 曇 | - | 0 | 0 | 0 | | | - | | X |
| 23 | 霧 | - | 0 | 0 | 0 | | | - | | X |
| 24 | 霧 | - | 0 | 0 | 0 | | | - | | X |
| 25 | 曇 | - | 0 | 0 | 0 | | | - | | X |
| 26 | 雨 | - | 0 | 0 | 0 | | | 1 | 0.192 | X |
| 27 | 雪 | 1 | 2 | 2 | 1 | | | - | | X |
| 28 | 晴 | - | 0 | 0 | 0 | | | 22 | 0.064 | X |
| 29 | 雪 | 22 | 23 | 25 | 16 | | | 4 | 0.189 | X |
| 30 | 雨 | 12 | 14 | 13 | 17 | | | - | | X |
| Total | | | | | | | | 27 | | |
| Mean | | | | | | | | | 0.148 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.20**　積雪月報

**Table A1.20**　Monthly report of snow data.

1999年
12月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm³) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm³) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 晴 | 6 | 8 | 3 | 2 | | | - | | X |
| 2 | 雨 | 1 | 5 | 1 | 0 | | | 1 | 0.118 | X |
| 3 | 曇 | 1 | 2 | 1 | 0 | | | 0 | | X |
| 4 | 曇 | 0 | 3 | 0 | 0 | | | - | | X |
| 5 | 晴 | - | 0 | 0 | 0 | | | - | | X |
| 6 | 雨 | - | 0 | 0 | 0 | | | 1 | 0.139 | X |
| 7 | 雪 | 1 | 1 | 0 | 0 | | | 2 | 0.234 | X |
| 8 | 晴 | 3 | 3 | 2 | 1 | | | - | | X |
| 9 | 曇 | - | 0 | 0 | 0 | | | - | | X |
| 10 | 曇 | - | 0 | 0 | 0 | | | - | | X |
| 11 | 雨 | - | 0 | 0 | 0 | | | 5 | 0.117 | X |
| 12 | 雪 | 5 | 7 | 6 | 5 | | | 13 | 0.085 | X |
| 13 | 雪 | 18 | 16 | 15 | 11 | | | 14 | 0.123 | X |
| 14 | 雪 | 23 | 19 | 20 | 26 | | | 0 | | X |
| 15 | 曇 | 18 | 14 | 14 | 22 | 28 | 0.225 | 4 | 0.079 | X |
| 16 | 雪 | 21 | 15 | 16 | 21 | | | 6 | 0.090 | X |
| 17 | 雪 | 25 | 18 | 18 | 24 | | | 10 | 0.097 | X |
| 18 | 雪 | 24 | 22 | 23 | 32 | | | 31 | 0.066 | X |
| 19 | 雪 | 45 | 48 | 47 | 48 | | | 24 | 0.085 | X |
| 20 | 曇 | 55 | 58 | 57 | 66 | | | 23 | 0.078 | X |
| 21 | 雪 | 65 | 63 | 65 | 78 | | | 8 | 0.132 | X |
| 22 | 雪 | 58 | 56 | 58 | 83 | | | 30 | 0.090 | X |
| 23 | 晴 | 75 | 75 | 78 | 108 | | | 7 | 0.165 | X |
| 24 | 霧 | 75 | 70 | 72 | 115 | 132 | 0.184 | 1 | 0.240 | X |
| 25 | あられ | 61 | 62 | 62 | 113 | | | 0 | | X |
| 26 | 晴 | 50 | 56 | 50 | 113 | | | 6 | 0.080 | X |
| 27 | 曇 | 52 | 54 | 52 | 117 | | | 0 | | X |
| 28 | 霧 | 46 | 52 | 45 | 118 | | | - | | X |
| 29 | 曇 | 39 | 46 | 37 | 119 | | | - | | X |
| 30 | 曇 | 37 | 43 | 34 | 123 | | | - | | X |
| 31 | 曇 | 35 | 42 | 33 | 122 | | | 2 | 0.189 | X |
| Total | | | | | | | | 188 | | |
| Mean | | | | | | | 0.205 | | 0.123 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.21**　積雪月報

**Table A1.21**　Monthly report of snow data.

2000年
1月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) 雪尺, L | 超音波計, M | 赤外線計, R | 積雪相当水量 HW (mm) ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | 積雪全層密度, DS (g/cm³) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm³) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 曇 | 37 | 42 | 35 | 120 | | | 0 | | X |
| 2 | 曇 | 35 | 40 | 34 | 118 | | | 0 | | X |
| 3 | 雨 | 33 | 39 | 31 | 115 | | | - | | X |
| 4 | 雨 | 33 | 40 | 30 | 112 | | | - | | X |
| 5 | 雨 | 31 | 37 | 29 | 106 | | | - | | X |
| 6 | 曇 | 31 | 36 | 28 | 100 | 110 | 0.379 | - | | X |
| 7 | 雨 | 23 | 28 | 22 | 79 | | | 1 | 0.683 | X |
| 8 | 雨 | 21 | 25 | 20 | 71 | | | 1 | 0.500 | X |
| 9 | 雪 | 22 | 24 | 21 | 69 | | | - | | X |
| 10 | 雨 | 18 | 23 | 19 | 64 | | | 7 | 0.085 | X |
| 11 | 雪 | 23 | 27 | 25 | 57 | | | 5 | 0.118 | X |
| 12 | 曇 | 26 | 29 | 26 | 58 | | | 1 | 0.623 | X |
| 13 | 雨 | 24 | 26 | 22 | 62 | | | - | | X |
| 14 | 晴 | 19 | 23 | 19 | 51 | 72 | 0.398 | - | | X |
| 15 | 雨 | 15 | 20 | 15 | 39 | | | 0 | | X |
| 16 | 曇 | 15 | 17 | 15 | 36 | | | 1 | 0.245 | X |
| 17 | 曇 | 15 | 18 | 15 | 34 | | | - | | X |
| 18 | 晴 | 13 | 16 | 13 | 29 | | | - | | X |
| 19 | 晴 | 12 | 16 | 12 | 31 | | | 2 | 0.318 | X |
| 20 | 晴 | 14 | 15 | 13 | 31 | | | 16 | 0.111 | X |
| 21 | 雪 | 26 | 31 | 29 | 45 | | | 7 | 0.086 | X |
| 22 | 曇 | 33 | 35 | 32 | 47 | | | 1 | 0.073 | X |
| 23 | 晴 | 27 | 30 | 29 | 48 | | | 0 | | X |
| 24 | 曇 | 24 | 26 | 23 | 49 | | | 28 | 0.047 | X |
| 25 | 曇 | 47 | 50 | 49 | 61 | 81 | 0.168 | 11 | 0.082 | X |
| 26 | 雪 | 44 | 47 | 46 | 70 | | | 20 | 0.061 | X |
| 27 | 雪 | 56 | 59 | 58 | 83 | | | 11 | 0.034 | X |
| 28 | 晴 | 62 | 50 | 58 | 84 | | | 1 | 0.160 | X |
| 29 | 曇 | 59 | 46 | 47 | 85 | | | - | | X |
| 30 | 霧 | 41 | 43 | 40 | 83 | | | 20 | 0.103 | X |
| 31 | 晴 | 58 | 60 | 59 | 104 | | | 14 | 0.078 | X |
| Total | | | | | | | | 147 | | |
| Mean | | | | | | | 0.315 | | 0.200 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.22**　積雪月報

**Table A1.22**　Monthly report of snow data.

2000年
2月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度,DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度,DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺,L | 超音波計,M | 赤外線計,R | ﾒﾀﾙｳｪﾊｰ,L | ｽﾉｰｻﾝﾌﾟﾗｰ,R | | | | |
| 1 | 雪 | 66 | 63 | 64 | 114 | | | 7 | 0.145 | X |
| 2 | 雪 | 56 | 60 | 60 | 124 | | | 3 | 0.143 | X |
| 3 | 雪 | 57 | 55 | 54 | 128 | | | 1 | 0.051 | X |
| 4 | 晴 | 48 | 53 | 49 | 130 | 150 | 0.303 | 5 | 0.110 | X |
| 5 | 曇 | 51 | 54 | 52 | 133 | | | - | | X |
| 6 | 曇 | 48 | 50 | 47 | 134 | | | 9 | 0.106 | X |
| 7 | 曇 | 55 | 58 | 55 | 144 | | | - | | X |
| 8 | 曇 | 49 | 52 | 49 | 142 | | | 4 | 0.190 | X |
| 9 | 曇 | 50 | 49 | 48 | 144 | | | 19 | 0.087 | X |
| 10 | 雪 | 68 | 69 | 66 | 159 | | | 20 | 0.076 | X |
| 11 | 雪 | 79 | 80 | 80 | 177 | | | 11 | 0.078 | X |
| 12 | 雪 | 76 | 76 | 74 | 187 | | | 3 | 0.163 | X |
| 13 | 晴 | 68 | 65 | 64 | 194 | | | 1 | 0.076 | X |
| 14 | 晴 | 65 | 63 | 63 | 197 | | | 3 | 0.180 | X |
| 15 | 雪 | 62 | 62 | 61 | 199 | 217 | 0.362 | 10 | 0.128 | X |
| 16 | 曇 | 68 | 70 | 67 | 214 | | | 20 | 0.080 | X |
| 17 | 雪 | 84 | 86 | 83 | 232 | | | 19 | 0.086 | X |
| 18 | 雪 | 94 | 90 | 92 | 246 | | | 15 | 0.077 | X |
| 19 | 曇 | 98 | 97 | 96 | 259 | | | 0 | | X |
| 20 | 曇 | 83 | 83 | 85 | 260 | | | 9 | 0.092 | X |
| 21 | 雪 | 86 | 88 | 87 | 267 | | | 11 | 0.105 | X |
| 22 | 雪 | 90 | 92 | 90 | 278 | | | 19 | 0.074 | X |
| 23 | 曇 | 101 | 105 | 103 | 290 | | | 11 | 0.088 | X |
| 24 | 雪 | 101 | 105 | 105 | 300 | 305 | 0.282 | 22 | 0.096 | X |
| 25 | 雪 | 116 | 117 | 118 | 318 | | | 17 | 0.076 | X |
| 26 | 雪 | 122 | 123 | 123 | 329 | | | 0 | | X |
| 27 | 晴 | 105 | 106 | 105 | 328 | | | 25 | 0.096 | X |
| 28 | 雪 | 127 | 124 | 128 | 355 | | | 22 | 0.097 | X |
| 29 | 雪 | 138 | 132 | 133 | 371 | | | 9 | 0.103 | X |
| Total | | | | | | | | 295 | | |
| Mean | | | | | | | 0.316 | | 0.104 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.23**　積雪月報

**Table A1.23**　Monthly report of snow data.

2000年
3月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層 密度, DS ($g/cm^3$) | 新積雪深 HN (cm) | 新積雪の 密度, DN ($g/cm^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 晴 | 131 | 130 | 133 | 380 | | | 0 | | X |
| 2 | 曇 | 122 | 121 | 121 | 378 | | | - | | X |
| 3 | 曇 | 105 | 112 | 110 | 375 | | | - | | X |
| 4 | 晴 | 98 | 104 | 100 | 357 | | | - | | X |
| 5 | 晴 | 92 | 100 | 95 | 368 | | | - | | X |
| 6 | 晴 | 83 | 93 | 87 | 332 | 356 | 0.404 | 6 | 0.132 | X |
| 7 | 雪 | 87 | 97 | 92 | 327 | | | 24 | 0.067 | X |
| 8 | 雪 | 108 | 117 | 114 | 348 | | | 7 | 0.086 | X |
| 9 | 雪 | 110 | 109 | 108 | 355 | | | 31 | 0.114 | X |
| 10 | 雪 | 121 | 124 | 125 | 384 | | | 10 | 0.102 | X |
| 11 | 雪 | 119 | 125 | 126 | 399 | | | - | | X |
| 12 | 曇 | 103 | 114 | 106 | 409 | | | - | | X |
| 13 | 曇 | 97 | 107 | 97 | 379 | | | 16 | 0.107 | X |
| 14 | 雪 | 112 | 118 | 114 | 402 | | | 0 | | X |
| 15 | 雪 | 103 | 111 | 107 | 406 | 382 | 0.360 | - | | X |
| 16 | 曇 | 101 | 109 | 103 | 412 | | | 7 | 0.178 | X |
| 17 | 晴 | 107 | 116 | 111 | 426 | | | 1 | 0.192 | X |
| 18 | 雪 | 102 | 112 | 106 | 419 | | | 0 | | X |
| 19 | 晴 | 100 | 110 | 103 | 411 | | | - | | X |
| 20 | 晴 | 95 | 102 | 97 | 386 | | | 0 | | X |
| 21 | 晴 | 93 | 99 | 95 | 364 | | | 3 | 0.075 | X |
| 22 | 晴 | 95 | 99 | 96 | 357 | | | - | | X |
| 23 | 晴 | 88 | 94 | 89 | 350 | | | - | | X |
| 24 | 曇 | 80 | 87 | 84 | 336 | 353 | 0.436 | 5 | 0.233 | X |
| 25 | 雪 | 83 | 85 | 86 | 316 | | | 1 | 0.092 | X |
| 26 | 曇 | 84 | 87 | 84 | 325 | | | 15 | 0.098 | X |
| 27 | 雪 | 97 | 99 | 99 | 340 | | | - | | X |
| 28 | 曇 | 82 | 89 | 86 | 334 | | | - | | X |
| 29 | 晴 | 72 | 73 | 72 | 298 | | | - | | X |
| 30 | 雨 | 59 | 62 | 61 | 246 | | | - | | X |
| 31 | 曇 | 55 | 58 | 59 | 212 | | | 0 | | X |
| Total | | | | | | | | 126 | | |
| Mean | | | | | | | 0.400 | | 0.123 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.24**　積雪月報

**Table A1.24**　Monthly report of snow data.

2000年
4月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 曇 | 48 | 51 | 52 | 189 | | | 0 | | X |
| 2 | 晴 | 45 | 47 | 47 | 163 | | | - | | X |
| 3 | 晴 | 39 | 43 | 43 | 140 | | | - | | X |
| 4 | 晴 | 32 | 36 | 37 | 112 | | | - | | X |
| 5 | 曇 | 23 | 28 | 27 | 98 | | | - | | X |
| 6 | 晴 | 16 | 21 | 22 | 81 | | | - | | X |
| 7 | 晴 | 13 | 16 | 16 | 61 | | | - | | X |
| 8 | 雨 | 7 | 9 | 10 | 43 | | | - | | X |
| 9 | 晴 | 0 | 3 | 1 | 9 | | | - | | X |
| 10 | 晴 | 0 | 2 | 0 | 0 | | | - | | X |
| 11 | 晴 | - | 0 | 0 | 0 | | | 0 | | X |
| 12 | 曇 | 0 | 1 | 0 | 0 | | | - | | X |
| 13 | 晴 | - | 0 | 0 | 0 | | | - | | X |
| 14 | 曇 | - | 0 | 0 | 0 | | | 0 | | X |
| 15 | 曇 | 0 | 1 | 0 | 0 | | | - | | X |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |
| Total | | | | | | | | 0 | | |
| Mean | | | | | | | | | | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.25**　積雪月報

**Table A1.25**　Monthly report of snow data.

2000年
11月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度,DS ($g/cm^3$) | 新積雪深 HN (cm) | 新積雪の密度,DN ($g/cm^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺,L | 超音波計,M | 赤外線計,R | ﾒﾀﾙｳｪﾊｰ,L | ｽﾉｰｻﾝﾌﾟﾗｰ,R | | | | |
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | - | | |
| 16 | 曇 | - | 0 | 0 | 0 | | | - | | 11.40 |
| 17 | 曇 | - | 0 | 0 | 0 | | | - | | 6.95 |
| 18 | 曇 | - | 0 | 0 | 0 | | | 2 | 0.285 | 11.40 |
| 19 | 雪 | 2 | 0 | 0 | 0 | | | 0 | | 2.30 |
| 20 | 曇 | 0 | 0 | 0 | 0 | | | 0 | | 13.20 |
| 21 | 雨 | 0 | 0 | 0 | 0 | | | 0 | | 0.25 |
| 22 | 曇 | 0 | 0 | 0 | 0 | | | 0 | | 0.00 |
| 23 | 晴 | 0 | 0 | 0 | 0 | | | - | | 6.70 |
| 24 | 雨 | - | 0 | 0 | 0 | | | - | | 0.90 |
| 25 | 曇 | - | 0 | 0 | 0 | | | - | | 0.10 |
| 26 | 曇 | - | 0 | 0 | 0 | | | 0 | | 1.70 |
| 27 | 雨 | 0 | 0 | 0 | 0 | | | 0 | | 6.45 |
| 28 | 曇 | 0 | 0 | 0 | 0 | | | 0 | | 1.00 |
| 29 | 曇 | 0 | 1 | 1 | 0 | | | 0 | | 8.55 |
| 30 | 雨 | 0 | 1 | 1 | 0 | | | - | | 0.05 |
| Total | | | | | | | | 2 | | |
| Mean | | | | | | | | | 0.285 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.26**　積雪月報

**Table A1.26**　Monthly report of snow data.

2000年
12月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm³) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm³) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 曇 | - | 0 | 0 | 0 | | | - | | 0.05 |
| 2 | 快晴 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 3 | 曇 | - | 0 | 0 | 0 | | | - | | 18.75 |
| 4 | 曇 | - | 0 | 0 | 0 | | | 0 | | 0.00 |
| 5 | 曇 | 0 | 1 | 1 | 0 | | | 6 | 0.127 | 17.45 |
| 6 | 雪 | 6 | 1 | 8 | 5 | | | 9 | 0.117 | 4.85 |
| 7 | 晴 | 16 | 16 | 13 | 15 | | | 5 | 0.075 | 3.50 |
| 8 | 雪 | 12 | 16 | 11 | 14 | | | 1 | 0.443 | 7.70 |
| 9 | 曇 | 5 | 5 | 6 | 14 | | | - | | 10.05 |
| 10 | 曇 | 2 | 2 | 2 | 1 | | | 4 | 0.073 | 22.15 |
| 11 | 雪 | 4 | 1 | 5 | 3 | | | 18 | 0.098 | 3.45 |
| 12 | 雪 | 19 | X | 21 | 21 | | | 20 | 0.081 | 2.55 |
| 13 | 雪 | 32 | X | 30 | 35 | | | 0 | | 2.30 |
| 14 | 雪 | 18 | X | 19 | 32 | | | 17 | 0.107 | 2.15 |
| 15 | 晴 | 29 | X | 30 | 47 | 48 | 0.151 | 0 | | 34.10 |
| 16 | 雨 | 13 | X | 12 | 46 | | | 1 | 0.170 | 23.75 |
| 17 | 晴 | 10 | X | 11 | 35 | | | - | | 2.65 |
| 18 | 晴 | 8 | X | 10 | 31 | | | - | | 0.60 |
| 19 | 雨 | 8 | X | 10 | 29 | | | 0 | | 38.50 |
| 20 | 曇 | 3 | X | 4 | 11 | | | - | | 17.95 |
| 21 | 曇 | 0 | 1 | 1 | 1 | | | 2 | 0.069 | 6.30 |
| 22 | 晴 | 2 | X | 1 | 0 | | | - | | 2.25 |
| 23 | 快晴 | - | 0 | 0 | 0 | | | 0 | | 15.15 |
| 24 | 雪 | 0 | 1 | 0 | 0 | | | 5 | 0.064 | 1.45 |
| 25 | 雪 | 5 | 5 | 3 | 1 | 3 | 0.067 | 17 | 0.085 | 2.95 |
| 26 | 雪 | 18 | 20 | 18 | 15 | | | 18 | 0.087 | 1.30 |
| 27 | 雪 | 26 | 26 | 30 | 30 | | | 29 | 0.074 | 1.10 |
| 28 | 雪 | 46 | 42 | 48 | 55 | | | 31 | 0.062 | 1.55 |
| 29 | 雪 | 65 | 56 | 65 | 72 | | | 2 | 0.078 | 1.70 |
| 30 | 晴 | 54 | 41 | 54 | 73 | | | - | | 1.50 |
| 31 | 曇 | 42 | 33 | 45 | 71 | | | 5 | 0.162 | 1.75 |
| Total | | | | | | | | 190 | | 249.50 |
| Mean | | | | | | | 0.109 | | 0.116 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.27**　積雪月報

**Table A1.27**　Monthly report of snow data.

2001年
1月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm³) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm³) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 雪 | 36 | 34 | 39 | 83 | | | 24 | 0.090 | 3.25 |
| 2 | 雪 | 52 | 48 | 54 | 103 | | | 30 | 0.104 | 2.15 |
| 3 | 雪 | 71 | 62 | 68 | 134 | | | 10 | 0.076 | 1.95 |
| 4 | 雪 | 64 | 60 | 68 | 146 | | | 38 | 0.098 | 1.85 |
| 5 | 雪 | 105 | 88 | 96 | 185 | 184 | 0.179 | 41 | 0.108 | 1.85 |
| 6 | 曇 | 115 | 108 | 118 | 228 | | | 6 | 0.093 | 1.75 |
| 7 | 雪 | 111 | 106 | 110 | 230 | | | 4 | 0.120 | 1.75 |
| 8 | 雪 | 100 | 97 | 103 | 232 | | | 5 | 0.069 | 1.60 |
| 9 | 晴 | 99 | 97 | 101 | 232 | | | - | | 8.05 |
| 10 | 曇 | 86 | 78 | 89 | 232 | | | - | | 15.90 |
| 11 | 曇 | 80 | 70 | 79 | 223 | | | 35 | 0.086 | 3.15 |
| 12 | 雪 | 106 | 106 | 111 | 257 | | | 29 | 0.090 | 3.55 |
| 13 | 雪 | 114 | 119 | 121 | 284 | | | 2 | 0.120 | 2.60 |
| 14 | 雪 | 103 | 103 | 106 | 285 | | | 26 | 0.060 | 1.70 |
| 15 | 雪 | 119 | 119 | 122 | 306 | 311 | 0.225 | 35 | 0.078 | 1.65 |
| 16 | 曇 | 137 | 134 | 140 | 332 | | | 39 | 0.063 | 1.55 |
| 17 | 雪 | 159 | 155 | 160 | 357 | | | 24 | 0.070 | 1.55 |
| 18 | 雪 | 156 | 154 | 158 | 372 | | | 10 | 0.086 | 1.55 |
| 19 | 晴 | 148 | 145 | 150 | 380 | | | 5 | 0.079 | 1.45 |
| 20 | 晴 | 142 | 136 | 143 | 382 | | | 4 | 0.117 | 1.45 |
| 21 | 雪 | 138 | 136 | 138 | 386 | | | 1 | 0.086 | 1.50 |
| 22 | 晴 | 129 | 129 | 131 | 387 | | | 1 | 0.080 | 1.45 |
| 23 | 雪 | 124 | 124 | 126 | 385 | | | 6 | 0.066 | 1.40 |
| 24 | 雪 | 129 | 130 | 129 | 387 | | | 0 | | 1.40 |
| 25 | 晴 | 120 | 122 | 122 | 386 | 353 | 0.282 | 0 | | 1.45 |
| 26 | 晴 | 116 | 119 | 119 | 385 | | | 0 | | 1.35 |
| 27 | 雪 | 111 | 118 | 115 | 380 | | | 18 | 0.097 | 1.40 |
| 28 | 曇 | 129 | 133 | 130 | 396 | | | 19 | 0.103 | 1.45 |
| 29 | 雪 | 133 | 139 | 136 | 419 | | | 8 | 0.067 | 2.15 |
| 30 | 曇 | 136 | 134 | 134 | 423 | | | 8 | 0.070 | 1.55 |
| 31 | 雪 | 135 | 135 | 133 | 429 | | | 0 | | 1.30 |
| Total | | | | | | | | 428 | | 76.70 |
| Mean | | | | | | | 0.229 | | 0.087 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.28**　積雪月報

**Table A1.28**　Monthly report of snow data.

2001年
2月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm³) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm³) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 曇 | 125 | 127 | 125 | 427 | | | 3 | 0.084 | 3.55 |
| 2 | 雪 | 123 | 125 | 123 | 434 | | | 22 | 0.084 | 2.25 |
| 3 | 雪 | 142 | 144 | 145 | 451 | | | 10 | 0.116 | 1.75 |
| 4 | 雪 | 149 | 144 | 145 | 456 | | | 8 | 0.056 | 1.55 |
| 5 | 曇 | 149 | 140 | 143 | 457 | 432 | 0.298 | 0 | | 1.40 |
| 6 | 曇 | 131 | 133 | 134 | 454 | | | 0 | | 1.35 |
| 7 | 晴 | 126 | 123 | 130 | 452 | | | 4 | 0.073 | 1.30 |
| 8 | 晴 | 128 | 133 | 131 | 456 | | | 6 | 0.062 | 1.30 |
| 9 | 晴 | 132 | 135 | 135 | 462 | | | 6 | 0.170 | 1.25 |
| 10 | 晴 | 138 | 139 | 144 | 477 | | | 7 | 0.077 | 1.25 |
| 11 | 晴 | 136 | 140 | 141 | 488 | | | 6 | 0.080 | 1.25 |
| 12 | 雪 | 140 | 136 | 144 | 496 | | | 12 | 0.067 | 1.25 |
| 13 | 雪 | 148 | 143 | 151 | 505 | | | 3 | 0.056 | 1.20 |
| 14 | 曇 | 144 | 141 | 148 | 505 | | | 13 | 0.057 | 1.20 |
| 15 | 曇 | 152 | 147 | 155 | 515 | 463 | 0.297 | 1 | 0.060 | 1.20 |
| 16 | 曇 | 148 | 141 | 148 | 517 | | | 9 | 0.069 | 1.20 |
| 17 | 雪 | 146 | 142 | 150 | 522 | | | 1 | 0.464 | 1.20 |
| 18 | 雨 | 140 | 139 | 142 | 528 | | | - | | 20.60 |
| 19 | 晴 | 131 | 131 | 134 | 517 | | | 2 | 0.068 | 5.05 |
| 20 | 雪 | 132 | 130 | 135 | 516 | | | 0 | | 2.45 |
| 21 | 晴 | 129 | 127 | 131 | 517 | | | - | | 11.85 |
| 22 | 曇 | 127 | 125 | 127 | 506 | | | - | | 22.90 |
| 23 | 曇 | 120 | 119 | 121 | 492 | | | 8 | 0.075 | 14.90 |
| 24 | 雪 | 123 | 122 | 125 | 490 | | | 8 | 0.067 | 2.70 |
| 25 | 雪 | 131 | 129 | 133 | 506 | | | 6 | 0.131 | 1.90 |
| 26 | 雪 | 129 | 128 | 134 | 514 | 480 | 0.356 | 8 | 0.120 | 1.65 |
| 27 | 曇 | 134 | 138 | 139 | 523 | | | - | | 9.00 |
| 28 | 曇 | 124 | 124 | 127 | 512 | | | - | | 11.10 |
| Total | | | | | | | | 143 | | 129.55 |
| Mean | | | | | | | 0.317 | | 0.102 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.29**　積雪月報

**Table A1.29**　Monthly report of snow data.

2001年
3月
9時

防災科学技術研究所新庄雪氷防災研究支所
Shinjo Branch of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS ($g/cm^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN ($g/cm^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 曇 | 117 | 120 | 122 | 505 | | | 1 | 0.092 | 8.25 |
| 2 | 曇 | 115 | 116 | 120 | 502 | | | 0 | | 8.40 |
| 3 | 曇 | 111 | 113 | 117 | 494 | | | - | | 10.80 |
| 4 | 曇 | 106 | 111 | 111 | 489 | | | 11 | 0.098 | 31.35 |
| 5 | 雪 | 114 | 116 | 120 | 491 | 446 | 0.363 | 11 | 0.140 | 4.25 |
| 6 | 雪 | 120 | 119 | 126 | 510 | | | 0 | | 9.05 |
| 7 | 曇 | 113 | 109 | 117 | 519 | | | 19 | 0.072 | 26.40 |
| 8 | 雪 | 128 | 127 | 133 | 502 | | | 10 | 0.114 | 3.50 |
| 9 | 晴 | 129 | 133 | 135 | 524 | | | 11 | 0.051 | 2.20 |
| 10 | 雪 | 131 | 124 | 133 | 530 | | | 6 | 0.075 | 1.70 |
| 11 | 雪 | 129 | 125 | 134 | 536 | | | 13 | 0.075 | 1.60 |
| 12 | 雪 | 138 | 135 | 143 | 546 | | | 9 | 0.056 | 2.55 |
| 13 | 雪 | 132 | 138 | 137 | 549 | | | 0 | | 2.55 |
| 14 | 曇 | 124 | 126 | 127 | 542 | | | - | | 4.70 |
| 15 | 雨 | 118 | 123 | 121 | 548 | 469 | 0.385 | 0 | | 24.15 |
| 16 | 晴 | 116 | 124 | 120 | 528 | | | - | | 7.45 |
| 17 | 快晴 | 113 | 113 | 118 | 519 | | | - | | 11.85 |
| 18 | 曇 | 110 | 112 | 115 | 522 | | | - | | 34.40 |
| 19 | 曇 | 104 | 110 | 109 | 491 | | | - | | 23.40 |
| 20 | 晴 | 102 | 107 | 106 | 469 | | | - | | 32.05 |
| 21 | 晴 | 95 | 97 | 98 | 444 | | | - | | 38.00 |
| 22 | 晴 | 89 | 93 | 92 | 403 | | | - | | 31.90 |
| 23 | 晴 | 82 | 84 | 86 | 383 | | | - | | 36.75 |
| 24 | 晴 | 78 | 81 | 81 | 349 | | | - | | 32.05 |
| 25 | 晴 | 72 | 73 | 75 | 328 | | | - | | 32.20 |
| 26 | 雨 | 65 | 70 | 68 | 310 | 269 | 0.433 | 11 | 0.062 | 24.05 |
| 27 | 雪 | 72 | 77 | 77 | 297 | | | 0 | | 4.65 |
| 28 | 晴 | 67 | 71 | 70 | 297 | | | 1 | 0.757 | 12.20 |
| 29 | 晴 | 63 | 70 | 67 | 299 | | | 8 | 0.152 | 8.90 |
| 30 | 雪 | 70 | 77 | 75 | 310 | | | 5 | 0.126 | 8.80 |
| 31 | 曇 | 70 | 70 | 73 | 317 | | | 8 | 0.099 | 8.35 |
| Total | | | | | | | | 124 | | 488.45 |
| Mean | | | | | | | 0.394 | | 0.141 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.30**　積雪月報

**Table A1.30**　Monthly report of snow data.

2001年
4月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) 雪尺, L | 超音波計, M | 赤外線計, R | 積雪相当水量 HW (mm) ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | 積雪全層密度, DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 曇 | 71 | 72 | 77 | 316 | | | 0 | | 11.70 |
| 2 | 曇 | 62 | 68 | 67 | 308 | | | - | | 25.20 |
| 3 | 雨 | 56 | 62 | 62 | 287 | | | - | | 24.90 |
| 4 | 曇 | 51 | 59 | 58 | 266 | | | - | | 33.05 |
| 5 | 快晴 | 47 | 50 | 53 | 233 | 207 | 0.471 | - | | 41.25 |
| 6 | 晴 | 39 | 45 | 45 | 201 | | | - | | 40.80 |
| 7 | 晴 | 33 | 43 | 40 | 168 | | | - | | 37.20 |
| 8 | 曇 | 28 | 36 | 33 | 141 | | | - | | 38.95 |
| 9 | 曇 | 20 | 29 | 26 | 117 | | | - | | 40.60 |
| 10 | 曇 | 15 | 20 | 17 | 88 | | | - | | 57.40 |
| 11 | 晴 | 5 | 10 | 6 | 51 | | | - | | 22.95 |
| 12 | 曇 | 0 | 1 | 0 | 0 | | | - | | 14.35 |
| 13 | 曇 | 0 | 1 | 0 | 0 | | | - | | 0.05 |
| 14 | 晴 | - | 0 | 0 | 0 | | | - | | 2.65 |
| 15 | 晴 | - | 0 | 0 | 0 | | | - | | 6.20 |
| 16 | | | | | | | | - | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |
| Total | | | | | | | | 0 | | |
| Mean | | | | | | | 0.471 | | | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.31**　積雪月報

**Table A1.31**　Monthly report of snow data.

2001年
11月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS ($g/cm^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN ($g/cm^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | - | | |
| 16 | 雨 | - | 0 | 0 | 0 | | | - | | 20.90 |
| 17 | 雨 | - | 0 | 0 | 0 | | | - | | 5.90 |
| 18 | 曇 | - | 0 | 0 | 0 | | | - | | 0.05 |
| 19 | 曇 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 20 | 霧 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 21 | 霧 | - | 0 | 0 | 0 | | | - | | 7.70 |
| 22 | 快晴 | - | 0 | 0 | 0 | | | - | | 0.15 |
| 23 | 曇 | - | 0 | 0 | 0 | | | - | | 2.95 |
| 24 | 霧 | - | 0 | 0 | 0 | | | - | | 0.20 |
| 25 | 霧 | - | 0 | 0 | 0 | | | - | | 4.40 |
| 26 | 曇 | - | 0 | 0 | 0 | | | 0 | | 10.25 |
| 27 | 曇 | 0 | 2 | 0 | 0 | | | 2 | 0.664 | 23.80 |
| 28 | みぞれ | 1 | 3 | 0 | 0 | | | 0 | | 32.25 |
| 29 | 雨 | 0 | 1 | 0 | 0 | | | - | | 5.05 |
| 30 | 雨 | - | 0 | 0 | 0 | | | 1 | 0.385 | 6.70 |
| Total | | | | | | | | 3 | | |
| Mean | | | | | | | | | 0.525 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.32**　積雪月報

**Table A1.32**　Monthly report of snow data.

2001年
12月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 雪 | 1 | X | 0 | 0 | | | 0 | | 30.65 |
| 2 | 雨 | 0 | X | 0 | 0 | | | 0 | | 0.60 |
| 3 | 雨 | 0 | X | 0 | 0 | | | 0 | | 11.25 |
| 4 | 曇 | 0 | X | 0 | 0 | | | 1 | 0.348 | 3.80 |
| 5 | 曇 | 0 | X | 0 | 0 | | | 4 | 0.173 | 5.05 |
| 6 | 雪 | 3 | X | 2 | 1 | | | 0 | 0.393 | 13.05 |
| 7 | 晴 | 2 | X | 0 | 0 | | | 2 | 0.148 | 3.30 |
| 8 | 快晴 | 2 | X | 0 | 0 | | | 17 | 0.049 | 4.80 |
| 9 | 雪 | 18 | X | 13 | 8 | | | 15 | 0.066 | 3.80 |
| 10 | 雪 | 25 | X | 20 | 14 | | | 7 | 0.088 | 3.30 |
| 11 | 雪 | 22 | X | 18 | 17 | | | 5 | 0.084 | 3.15 |
| 12 | 薄曇 | 21 | X | 16 | 16 | | | - | | 3.30 |
| 13 | 曇 | 12 | X | 8 | 14 | | | 5 | 0.053 | 13.85 |
| 14 | 雪 | 10 | X | 8 | 12 | 19 | 0.139 | 40 | 0.084 | 3.35 |
| 15 | 雪 | 47 | X | 45 | 47 | | | 9 | 0.125 | 2.85 |
| 16 | 雪 | 40 | X | 40 | 52 | | | 26 | 0.068 | 2.45 |
| 17 | 雪 | 59 | X | 57 | 64 | | | 32 | 0.064 | 2.20 |
| 18 | 雪 | 72 | X | 71 | 88 | | | 12 | 0.067 | 2.55 |
| 19 | 雪 | 67 | X | 65 | 92 | | | 8 | 0.070 | 2.35 |
| 20 | 曇 | 63 | X | 60 | 92 | | | 4 | 0.089 | 2.30 |
| 21 | 曇 | 59 | X | 56 | 95 | | | 3 | 0.148 | 2.20 |
| 22 | 曇 | 54 | 48 | 51 | 95 | | | 9 | 0.084 | 2.10 |
| 23 | 雪 | 56 | 43 | 52 | 103 | | | 8 | 0.078 | 2.20 |
| 24 | 曇 | 55 | 47 | 52 | 109 | | | 1 | 0.120 | 3.00 |
| 25 | 霧 | 49 | 44 | 44 | 109 | 113 | 0.245 | - | | 2.35 |
| 26 | 曇 | 46 | 40 | 42 | 105 | | | 7 | 0.071 | 2.15 |
| 27 | 雪 | 54 | 46 | 48 | 114 | | | 4 | 0.082 | 2.05 |
| 28 | 曇 | 55 | 47 | 49 | 118 | | | 13 | 0.069 | 2.10 |
| 29 | 曇 | 60 | 54 | 58 | 129 | | | 5 | 0.093 | 2.00 |
| 30 | 雪 | 56 | 50 | 55 | 133 | | | 16 | 0.122 | 2.00 |
| 31 | 雪 | 63 | 63 | 65 | 155 | | | 5 | 0.092 | 1.80 |
| Total | | | | | | | | 256 | | 141.90 |
| Mean | | | | | | | 0.192 | | 0.113 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.33**　積雪月報

**Table A1.33**　Monthly report of snow data.

2002年
1月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm³) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm³) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 曇 | 76 | 62 | 64 | 159 | | | 6 | 0.058 | 4.80 |
| 2 | 雪 | 62 | X | 60 | 161 | | | 28 | 0.063 | 2.10 |
| 3 | 雪 | 88 | X | 79 | 177 | | | 18 | 0.103 | 1.80 |
| 4 | 曇 | 88 | X | 85 | 195 | 186 | 0.209 | 17 | 0.093 | 1.80 |
| 5 | 曇 | 92 | X | 90 | 211 | | | 8 | 0.125 | 1.75 |
| 6 | 晴 | 88 | X | 88 | 218 | | | - | | 1.70 |
| 7 | 曇 | 85 | X | 82 | 216 | | | - | | 1.70 |
| 8 | 曇 | 80 | X | 76 | 220 | | | 17 | 0.124 | 7.45 |
| 9 | 雪 | 89 | X | 84 | 236 | | | 13 | 0.127 | 2.25 |
| 10 | 曇 | 93 | X | 91 | 251 | | | 7 | 0.204 | 4.15 |
| 11 | みぞれ | 92 | 91 | 89 | 265 | | | 1 | 0.508 | 13.35 |
| 12 | 雨 | 80 | 85 | 80 | 272 | | | - | | 21.30 |
| 13 | 曇 | 75 | 80 | 74 | 267 | | | - | | 4.40 |
| 14 | 曇 | 70 | 76 | 70 | 266 | | | - | | 2.50 |
| 15 | 雨 | 70 | 75 | 68 | 269 | 254 | 0.347 | - | | 31.95 |
| 16 | 雨 | 69 | 73 | 66 | 273 | | | 9 | 0.146 | 10.30 |
| 17 | 雪 | 76 | 80 | 75 | 283 | | | 7 | 0.056 | 3.15 |
| 18 | 雪 | 80 | 84 | 79 | 285 | | | 10 | 0.081 | 2.40 |
| 19 | 晴 | 86 | 92 | 85 | 295 | | | - | | 2.05 |
| 20 | 晴 | 78 | 83 | 77 | 295 | | | - | | 2.30 |
| 21 | 雨 | 73 | 78 | 73 | 297 | | | - | | 86.50 |
| 22 | 雨 | 58 | 60 | 57 | 241 | | | 12 | 0.179 | 18.25 |
| 23 | 雪 | 68 | 70 | 68 | 254 | | | 13 | 0.119 | 3.45 |
| 24 | 雪 | 77 | 78 | 76 | 271 | | | 16 | 0.089 | 2.30 |
| 25 | 曇 | 87 | 89 | 87 | 283 | 279 | 0.303 | 0 | | 2.00 |
| 26 | 曇 | 78 | 82 | 81 | 282 | | | - | | 1.85 |
| 27 | 雨 | 68 | 77 | 76 | 285 | | | 6 | 0.286 | 28.95 |
| 28 | 雪 | 75 | 80 | 76 | 294 | | | 1 | 0.100 | 5.75 |
| 29 | 曇 | 75 | 81 | 76 | 294 | | | 18 | 0.072 | 2.55 |
| 30 | 雪 | 91 | 96 | 93 | 306 | | | 15 | 0.108 | 1.95 |
| 31 | 雪 | 97 | 103 | 100 | 326 | | | 17 | 0.066 | 1.75 |
| Total | | | | | | | | 237 | | 278.50 |
| Mean | | | | | | | 0.286 | | 0.135 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.34**　積雪月報

**Table A1.34**　Monthly report of snow data.

2002年
2月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS ($g/cm^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN ($g/cm^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 雪 | 112 | 112 | 114 | 336 | | | 5 | 0.084 | 1.75 |
| 2 | 晴 | 100 | 104 | 106 | 340 | | | - | | 7.70 |
| 3 | 霧 | 89 | 95 | 93 | 339 | | | - | | 9.60 |
| 4 | 快晴 | 86 | 90 | 89 | 325 | | | - | | 4.85 |
| 5 | 薄曇 | 83 | 88 | 86 | 322 | 327 | 0.368 | - | | 2.05 |
| 6 | 薄曇 | 83 | 89 | 86 | 319 | | | - | | 3.00 |
| 7 | 霧 | 80 | 88 | 83 | 313 | | | - | | 10.30 |
| 8 | 晴 | 78 | 85 | 80 | 307 | | | 4 | 0.112 | 26.40 |
| 9 | 雪 | 77 | 82 | 81 | 298 | | | 14 | 0.084 | 6.40 |
| 10 | 曇 | 92 | 96 | 93 | 310 | | | 33 | 0.063 | 2.35 |
| 11 | 雪 | 115 | 120 | 119 | 330 | | | 28 | 0.078 | 1.75 |
| 12 | 雪 | 127 | 131 | 130 | 351 | | | 16 | 0.088 | 1.55 |
| 13 | 雪 | 126 | 129 | 128 | 361 | | | 2 | 0.059 | 1.40 |
| 14 | 雪 | 114 | 113 | 116 | 359 | | | 6 | 0.063 | 1.30 |
| 15 | 雪 | 115 | 118 | 117 | 363 | 340 | 0.288 | 6 | 0.103 | 1.35 |
| 16 | 晴 | 114 | 119 | 117 | 368 | | | - | | 1.25 |
| 17 | 霧 | 102 | 111 | 108 | 366 | | | 0 | | 1.20 |
| 18 | 雨 | 99 | 108 | 102 | 373 | | | 12 | 0.109 | 12.70 |
| 19 | 雪 | 108 | 115 | 111 | 383 | | | 2 | 0.213 | 5.75 |
| 20 | 曇 | 101 | 110 | 105 | 386 | | | 0 | | 20.95 |
| 21 | 晴 | 97 | 103 | 98 | 367 | | | - | | 28.25 |
| 22 | 雨 | 92 | 97 | 93 | 349 | | | - | | 37.25 |
| 23 | 曇 | 87 | 95 | 90 | 332 | | | 1 | 0.102 | 12.30 |
| 24 | 晴 | 84 | 93 | 90 | 327 | | | 0 | | 6.20 |
| 25 | 晴 | 84 | 94 | 88 | 327 | 354 | 0.389 | - | | 6.55 |
| 26 | 晴 | 84 | 91 | 86 | 324 | | | - | | 10.35 |
| 27 | 快晴 | 81 | 90 | 84 | 318 | | | - | | 7.85 |
| 28 | 霧 | 79 | 88 | 82 | 312 | | | - | | 6.80 |
| Total | | | | | | | | 129 | | 239.15 |
| Mean | | | | | | | 0.348 | | 0.097 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.35**　積雪月報

**Table A1.35**　Monthly report of snow data.

2002年
3月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm³) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm³) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 霧 | 78 | 85 | 80 | 309 | | | - | | 18.50 |
| 2 | 霧 | 76 | 82 | 77 | 288 | | | 1 | 0.099 | 7.45 |
| 3 | 雪 | 74 | 81 | 78 | 288 | | | 4 | 0.061 | 3.40 |
| 4 | 曇 | 79 | 81 | 82 | 291 | | | - | | 11.40 |
| 5 | 晴 | 72 | 78 | 75 | 277 | 305 | 0.392 | - | | 19.90 |
| 6 | 雨 | 70 | 74 | 72 | 278 | | | - | | 29.55 |
| 7 | 雨 | 68 | 72 | 69 | 255 | | | 6 | 0.076 | 23.30 |
| 8 | 雪 | 71 | 76 | 74 | 236 | | | 0 | | 3.45 |
| 9 | 曇 | 64 | 70 | 70 | 242 | | | - | | 26.45 |
| 10 | 曇 | 58 | 62 | 61 | 221 | | | 0 | | 26.95 |
| 11 | 曇 | 58 | 60 | 59 | 204 | | | - | | 33.25 |
| 12 | 晴 | 56 | 57 | 56 | 195 | | | 0 | | 28.65 |
| 13 | 曇 | 51 | 51 | 50 | 167 | | | - | | 18.25 |
| 14 | 晴 | 47 | 47 | 45 | 157 | | | - | | 20.75 |
| 15 | 雨 | 40 | 43 | 41 | 146 | 162 | 0.405 | - | | 57.90 |
| 16 | 晴 | 34 | 38 | 37 | 130 | | | - | | 27.00 |
| 17 | 曇 | 29 | 29 | 32 | 106 | | | - | | 34.65 |
| 18 | 曇 | 27 | 23 | 26 | 89 | | | 1 | 0.604 | 33.50 |
| 19 | 曇 | 23 | 19 | 21 | 76 | | | - | | 36.60 |
| 20 | 曇 | 17 | 13 | 15 | 61 | | | - | | 35.50 |
| 21 | 晴 | 10 | 6 | 8 | 39 | | | - | | 27.95 |
| 22 | 雨 | - | 0 | 0 | 7 | | | - | | 9.35 |
| 23 | 曇 | - | 0 | 0 | 0 | | | 4 | 0.130 | 10.45 |
| 24 | 晴 | 4 | 3 | 3 | 1 | | | 0 | | 6.75 |
| 25 | 曇 | 0 | 1 | 0 | 0 | | | - | | 0.05 |
| 26 | 快晴 | - | 0 | 0 | 0 | | | - | | 4.45 |
| 27 | 雨 | 0 | 1 | 0 | 0 | | | 0 | | 6.10 |
| 28 | 晴 | 0 | 1 | 0 | 0 | | | - | | 0.00 |
| 29 | 曇 | 0 | 0 | 0 | 0 | | | - | | 19.30 |
| 30 | 曇 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 31 | 曇 | - | 0 | 0 | 0 | | | - | | 0.00 |
| Total | | | | | | | | 16 | | 580.80 |
| Mean | | | | | | | 0.399 | | 0.194 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.36**　積雪月報

**Table A1.36**　Monthly report of snow data.

2002年
4月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS ($g/cm^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN ($g/cm^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 薄曇 | - | 2 | 0 | 0 | | | - | | 0.00 |
| 2 | 晴 | - | 1 | 0 | 0 | | | - | | 0.00 |
| 3 | 晴 | - | 1 | 0 | 0 | | | - | | 2.15 |
| 4 | 晴 | - | 1 | 0 | 0 | | | - | | 0.00 |
| 5 | 晴 | - | 1 | 0 | 0 | | | - | | 0.00 |
| 6 | 晴 | - | 1 | 0 | 0 | | | - | | 0.65 |
| 7 | 曇 | - | 1 | 0 | 0 | | | - | | 0.20 |
| 8 | 曇 | - | 1 | 0 | 0 | | | - | | 2.15 |
| 9 | 雨 | - | 1 | 0 | 0 | | | - | | 3.65 |
| 10 | 曇 | - | 1 | 0 | 0 | | | - | | 0.05 |
| 11 | 曇 | - | 1 | 0 | 0 | | | - | | 10.95 |
| 12 | 雨 | - | 2 | 0 | 0 | | | - | | 4.15 |
| 13 | 晴 | - | 2 | 0 | 0 | | | - | | 2.95 |
| 14 | 曇 | - | 1 | 0 | 0 | | | - | | 0.00 |
| 15 | 晴 | - | 1 | 0 | 0 | | | - | | 0.00 |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |
| Total | | | | | | | | 0 | | |
| Mean | | | | | | | | | | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表1.37**　積雪月報

**Table A1.37**　Monthly report of snow data.

2002年
11月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | 2 | 0.367 | |
| 5 | みぞれ | 2 | 0 | 0 | X | | | 2 | 0.769 | 28.10 |
| 6 | みぞれ | 1 | 0 | 0 | X | | | 0 | | 10.60 |
| 7 | 曇 | 0 | 0 | 0 | X | | | 0 | | 0.15 |
| 8 | 雨 | 0 | 0 | 0 | X | | | X | X | 15.80 |
| 9 | X | X | 0 | 0 | X | | | X | X | 3.70 |
| 10 | X | X | 5 | 4 | X | | | 0 | | 8.90 |
| 11 | 雨 | 0 | 0 | 0 | X | | | 0 | | 5.60 |
| 12 | 雨 | 0 | 0 | 0 | X | | | 0 | | 31.30 |
| 13 | 雨 | 0 | 0 | 0 | X | | | 30 | 0.090 | 20.10 |
| 14 | 雪 | 29 | 27 | 29 | X | | | 2 | 0.418 | 20.05 |
| 15 | 雨 | 18 | 13 | 11 | X | | | 10 | 0.044 | 22.40 |
| 16 | 雪 | 20 | 20 | 18 | X | | | 0 | | 9.05 |
| 17 | 曇 | 10 | 10 | 6 | X | | | 0 | | 5.70 |
| 18 | 曇 | 5 | 9 | 4 | X | | | 0 | | 24.55 |
| 19 | 曇 | 3 | 6 | 2 | X | | | 0 | | 5.80 |
| 20 | 晴 | 1 | 5 | 0 | X | | | 0 | | 23.30 |
| 21 | 雨 | 0 | 0 | 0 | X | | | 0 | | 5.85 |
| 22 | 曇 | 0 | 0 | 0 | X | | | - | | 0.05 |
| 23 | 霧 | - | 0 | 0 | X | | | - | | 0.00 |
| 24 | 霧 | - | 0 | 0 | X | | | - | | 1.80 |
| 25 | 雨 | - | 0 | 0 | X | | | - | | 35.75 |
| 26 | 曇 | - | 0 | 0 | X | | | - | | 6.35 |
| 27 | 雨 | - | 0 | 0 | X | | | 7 | 0.323 | 13.40 |
| 28 | 曇 | 7 | 7 | 5 | X | | | 0 | | 20.35 |
| 29 | 曇 | 3 | 3 | 1 | X | | | - | | 37.85 |
| 30 | 雨 | - | 0 | 0 | X | | | - | | 2.25 |
| Total | | | | | | | | 53 | | |
| Mean | | | | | | | | | 0.335 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.38**　積雪月報

**Table A1.38**　Monthly report of snow data.

2002年
12月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) 雪尺, L | 超音波計, M | 赤外線計, R | 積雪相当水量 HW (mm) ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | 積雪全層密度, DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 曇 | - | 0 | 0 | X | | | - | | 0.15 |
| 2 | 霧 | - | 0 | 0 | X | | | - | | 0.10 |
| 3 | 曇 | - | 0 | 0 | X | | | - | | 0.20 |
| 4 | 曇 | - | 0 | 0 | X | | | - | | 4.40 |
| 5 | 雨 | - | 0 | 0 | X | | | - | | 0.40 |
| 6 | 曇 | - | 0 | 0 | X | | | 0 | | 0.00 |
| 7 | 曇 | 0 | 0 | 0 | 0 | | | 0 | | 0.00 |
| 8 | 雪 | 0 | 0 | 0 | 0 | | | - | | 0.00 |
| 9 | 曇 | - | 0 | 0 | 0 | | | - | | 0.05 |
| 10 | 曇 | - | 0 | 0 | 0 | | | 18 | 0.059 | 0.50 |
| 11 | 雪 | 18 | 17 | 16 | 8 | | | 38 | 0.065 | 3.50 |
| 12 | 雪 | 46 | 38 | 43 | 26 | | | 16 | 0.056 | 2.90 |
| 13 | 雪 | 47 | 41 | 43 | 33 | | | 4 | 0.083 | 2.65 |
| 14 | 曇 | 43 | 34 | 36 | 32 | | | 0 | | 5.80 |
| 15 | 雨 | 28 | 21 | 23 | 33 | | | - | | 15.15 |
| 16 | 霧 | 15 | 14 | 12 | 21 | 42 | 0.282 | - | | 9.65 |
| 17 | 雨 | 7 | 7 | 4 | 9 | | | - | | 32.35 |
| 18 | 薄曇 | 1 | 3 | 1 | 0 | | | - | | 8.20 |
| 19 | 曇 | - | 0 | 0 | 0 | | | 1 | 0.038 | 0.65 |
| 20 | 雪 | 1 | 0 | 0 | 0 | | | 0 | | 0.50 |
| 21 | 曇 | 0 | 0 | 0 | 0 | | | - | | 0.00 |
| 22 | 晴 | - | 0 | 0 | 0 | | | 0 | | 0.00 |
| 23 | 曇 | 0 | 0 | 0 | 0 | | | 0 | | 0.40 |
| 24 | 曇 | 0 | 0 | 0 | 0 | | | - | | 2.10 |
| 25 | 晴 | - | 0 | 0 | 0 | | | 18 | 0.066 | 3.05 |
| 26 | 雪 | 18 | 18 | 16 | 11 | | | 20 | 0.119 | 3.10 |
| 27 | 雪 | 24 | 25 | 26 | 35 | | | 10 | 0.066 | 1.90 |
| 28 | 雪 | 28 | 28 | 28 | 42 | | | 14 | 0.104 | 1.55 |
| 29 | 曇 | 34 | 31 | 32 | 56 | | | 8 | 0.097 | 2.50 |
| 30 | 晴 | 29 | 32 | 32 | 64 | | | 8 | 0.043 | 2.15 |
| 31 | 雪 | 31 | 31 | 34 | 65 | | | 0 | | 1.95 |
| Total | | | | | | | | 154 | | 105.85 |
| Mean | | | | | | | 0.282 | | 0.072 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.39**　積雪月報

**Table A1.39**　Monthly report of snow data.

2003年
1月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS ($g/cm^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN ($g/cm^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 雪 | 24 | 22 | 25 | 63 | | | 20 | 0.066 | 1.85 |
| 2 | 雪 | 39 | 42 | 42 | 74 | | | 3 | 0.107 | 1.65 |
| 3 | 曇 | 33 | 37 | 37 | 75 | | | 6 | 0.121 | 8.65 |
| 4 | 曇 | 32 | 37 | 32 | 86 | | | 30 | 0.080 | 7.20 |
| 5 | 雪 | 56 | 57 | 56 | 109 | | | 13 | 0.091 | 2.05 |
| 6 | 雪 | 61 | 60 | 59 | 119 | 105 | 0.175 | 23 | 0.066 | 1.85 |
| 7 | 雪 | 74 | 71 | 71 | 134 | | | 9 | 0.046 | 1.75 |
| 8 | 曇 | 71 | 67 | 68 | 137 | | | 0 | | 1.65 |
| 9 | 快晴 | 61 | 56 | 58 | 136 | | | 0 | | 4.30 |
| 10 | 曇 | 55 | 50 | 50 | 141 | | | 2 | 0.048 | 3.95 |
| 11 | 晴 | 47 | 45 | 45 | 138 | | | 5 | 0.077 | 1.95 |
| 12 | 雪 | 50 | 43 | 47 | 141 | | | 0 | | 1.85 |
| 13 | 雪 | 44 | 41 | 42 | 138 | | | - | | 10.10 |
| 14 | 曇 | 42 | 41 | 39 | 137 | | | 6 | 0.106 | 26.80 |
| 15 | 雪 | 42 | 43 | 41 | 141 | 128 | 0.297 | 14 | 0.069 | 2.80 |
| 16 | 雪 | 54 | 55 | 54 | 151 | | | 2 | 0.344 | 4.40 |
| 17 | 曇 | 44 | 44 | 44 | 158 | | | 2 | 0.260 | 23.05 |
| 18 | 曇 | 41 | 41 | 43 | 153 | | | 3 | 0.077 | 15.00 |
| 19 | 雪 | 42 | 45 | 43 | 154 | | | - | | 3.15 |
| 20 | 快晴 | 40 | 43 | 41 | 153 | | | 10 | 0.045 | 2.70 |
| 21 | 雪 | 53 | 54 | 52 | 157 | | | 12 | 0.068 | 1.65 |
| 22 | 曇 | 59 | 59 | 58 | 165 | | | 6 | 0.075 | 1.60 |
| 23 | 曇 | 59 | 58 | 57 | 170 | | | 34 | 0.078 | 1.55 |
| 24 | 雪 | 86 | 87 | 86 | 197 | 179 | 0.204 | 16 | 0.094 | 1.55 |
| 25 | 雪 | 91 | 93 | 93 | 213 | | | 1 | 0.137 | 1.55 |
| 26 | 曇 | 81 | 83 | 84 | 215 | | | - | | 1.45 |
| 27 | 曇 | 79 | 78 | 78 | 214 | | | - | | 12.75 |
| 28 | 雨 | 65 | 68 | 65 | 218 | | | 38 | 0.084 | 28.75 |
| 29 | 雪 | 95 | 97 | 96 | 245 | | | 26 | 0.115 | 5.05 |
| 30 | 雪 | 101 | 106 | 106 | 273 | | | 22 | 0.078 | 2.85 |
| 31 | 雪 | 110 | 115 | 115 | 286 | | | 13 | 0.073 | 2.15 |
| Total | | | | | | | | 315 | | 187.60 |
| Mean | | | | | | | 0.225 | | 0.100 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.40**　積雪月報

**Table A1.40**　Monthly report of snow data.

2003年
2月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm³) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm³) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 雪 | 109 | 111 | 114 | 295 | | | 4 | 0.039 | 1.85 |
| 2 | 晴 | 104 | 104 | 107 | 296 | | | 1 | 0.042 | 1.75 |
| 3 | 雪 | 95 | 98 | 98 | 295 | | | 14 | 0.058 | 1.70 |
| 4 | 雪 | 107 | 109 | 109 | 304 | | | 1 | 0.057 | 1.55 |
| 5 | 霧 | 99 | 97 | 100 | 304 | | | 2 | 0.032 | 1.50 |
| 6 | 曇 | 97 | 93 | 97 | 303 | 284 | 0.292 | 4 | 0.072 | 1.50 |
| 7 | 雪 | 96 | 97 | 97 | 305 | | | 0 | | 2.25 |
| 8 | 雨 | 80 | 85 | 84 | 304 | | | 0 | | 20.10 |
| 9 | 曇 | 74 | 80 | 77 | 302 | | | - | | 30.30 |
| 10 | 雨 | 70 | 74 | 72 | 289 | | | - | | 18.30 |
| 11 | 曇 | 67 | 71 | 69 | 278 | | | 3 | 0.043 | 9.80 |
| 12 | 雪 | 64 | 74 | 73 | 275 | | | 12 | 0.080 | 7.35 |
| 13 | 快晴 | 80 | 82 | 81 | 283 | | | 14 | 0.050 | 3.00 |
| 14 | 曇 | 84 | 85 | 85 | 287 | 272 | 0.324 | 6 | 0.079 | 2.25 |
| 15 | 雪 | 80 | 84 | 82 | 292 | | | 2 | 0.328 | 2.05 |
| 16 | 霧 | 75 | 80 | 79 | 301 | | | 1 | 0.350 | 9.20 |
| 17 | 曇 | 75 | 76 | 75 | 301 | | | 0 | | 10.15 |
| 18 | 晴 | 70 | 75 | 72 | 292 | | | - | | 5.15 |
| 19 | 快晴 | 70 | 74 | 71 | 289 | | | 0 | | 3.65 |
| 20 | 曇 | 69 | 73 | 70 | 286 | | | 0 | | 12.75 |
| 21 | 快晴 | 67 | 68 | 66 | 274 | | | 4 | 0.034 | 7.60 |
| 22 | 雪 | 67 | 72 | 70 | 268 | | | 1 | 0.113 | 5.75 |
| 23 | 晴 | 62 | 66 | 66 | 267 | | | 0 | | 5.45 |
| 24 | 晴 | 63 | 67 | 65 | 263 | | | 0 | | 2.70 |
| 25 | 快晴 | 63 | 66 | 64 | 262 | 228 | 0.362 | 0 | | 3.60 |
| 26 | 曇 | 63 | 64 | 64 | 259 | | | 1 | 0.344 | 14.85 |
| 27 | 曇 | 62 | 64 | 63 | 261 | | | 1 | 0.073 | 3.50 |
| 28 | 晴 | 63 | 63 | 64 | 255 | | | - | | 5.65 |
| Total | | | | | | | | 70 | | 195.25 |
| Mean | | | | | | | 0.326 | | 0.112 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表1.41**　積雪月報

**Table A1.41**　Monthly report of snow data.

2003年
3月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) 雪尺, L | 超音波計, M | 赤外線計, R | 積雪相当水量 HW (mm) ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | 積雪全層密度, DS (g/cm³) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm³) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 晴 | 61 | 64 | 62 | 251 | | | - | | 28.60 |
| 2 | 曇 | 58 | 61 | 61 | 248 | | | - | | 19.25 |
| 3 | 曇 | 56 | 53 | 57 | 223 | | | 2 | 0.242 | 10.05 |
| 4 | 雪 | 57 | 60 | 59 | 229 | | | 6 | 0.076 | 2.40 |
| 5 | 雪 | 63 | 63 | 63 | 234 | 219 | 0.347 | 0 | | 2.60 |
| 6 | 曇 | 56 | 58 | 59 | 233 | | | 0 | | 7.65 |
| 7 | 曇 | 55 | 56 | 56 | 224 | | | 6 | 0.110 | 28.85 |
| 8 | 雪 | 55 | 59 | 59 | 217 | | | 0 | | 5.55 |
| 9 | 曇 | 55 | 53 | 56 | 215 | | | 1 | 0.045 | 5.60 |
| 10 | 快晴 | 53 | 54 | 55 | 212 | | | 7 | 0.054 | 3.80 |
| 11 | 雪 | 58 | 60 | 60 | 214 | | | 5 | 0.087 | 1.45 |
| 12 | 曇 | 60 | 62 | 61 | 221 | | | 3 | 0.072 | 2.60 |
| 13 | 曇 | 57 | 53 | 59 | 221 | | | - | | 4.90 |
| 14 | 晴 | 53 | 55 | 56 | 216 | 204 | 0.392 | 1 | 0.180 | 9.20 |
| 15 | 曇 | 50 | 54 | 53 | 208 | | | - | | 9.95 |
| 16 | 雨 | 47 | 51 | 50 | 200 | | | 0 | | 15.25 |
| 17 | 曇 | 47 | 47 | 47 | 188 | | | - | | 18.55 |
| 18 | 晴 | 40 | 42 | 42 | 169 | | | 6 | 0.093 | 9.30 |
| 19 | 曇 | 44 | 43 | 47 | 168 | | | 2 | 0.140 | 6.95 |
| 20 | 晴 | 40 | 41 | 43 | 170 | | | 0 | | 7.25 |
| 21 | 快晴 | 39 | 41 | 43 | 167 | | | - | | 13.90 |
| 22 | 晴 | 35 | 35 | 38 | 154 | | | - | | 18.50 |
| 23 | 晴 | 32 | 33 | 34 | 139 | | | - | | 19.50 |
| 24 | 曇 | 28 | 28 | 30 | 119 | | | - | | 17.25 |
| 25 | 薄曇 | 24 | 24 | 26 | 105 | 67 | 0.336 | - | | 21.00 |
| 26 | 曇 | 20 | 19 | 22 | 89 | | | - | | 26.10 |
| 27 | 曇 | 14 | 14 | 17 | 72 | | | - | | 29.80 |
| 28 | 雨 | 10 | 8 | 12 | 56 | | | - | | 42.90 |
| 29 | 曇 | 5 | 0 | 5 | 26 | | | - | | 9.25 |
| 30 | 曇 | - | 0 | 0 | 11 | | | - | | 5.05 |
| 31 | 曇 | - | 0 | 0 | 0 | | | - | | 4.90 |
| Total | | | | | | | | 38 | | 407.90 |
| Mean | | | | | | | 0.358 | | 0.110 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.42**　積雪月報

**Table A1.42**　Monthly report of snow data.

2003年
4月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層 密度, DS (g/cm³) | 新積雪深 HN (cm) | 新積雪の 密度, DN (g/cm³) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 曇 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 2 | 曇 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 3 | 晴 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 4 | 晴 | - | 0 | 0 | 0 | | | - | | 0.30 |
| 5 | 曇 | - | 0 | 0 | 0 | | | - | | 2.45 |
| 6 | 曇 | - | 0 | 0 | 0 | | | - | | 4.30 |
| 7 | 晴 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 8 | 曇 | - | 0 | 0 | 0 | | | - | | 19.55 |
| 9 | 雨 | - | 0 | 0 | 0 | | | - | | 3.05 |
| 10 | 曇 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 11 | 晴 | - | 0 | 0 | 0 | | | - | | 3.05 |
| 12 | 雨 | - | 0 | 0 | 0 | | | - | | 4.75 |
| 13 | 曇 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 14 | 薄曇 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 15 | 晴 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |
| Total | | | | | | | | 0 | | |
| Mean | | | | | | | | | | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.43**　積雪月報

**Table A1.43**　Monthly report of snow data.

2003年
11月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度,DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度,DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺,L | 超音波計,M | 赤外線計,R | ﾒﾀﾙｳｪﾊｰ,L | ｽﾉｰｻﾝﾌﾟﾗｰ,R | | | | |
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | 霧 | - | 0 | 0 | 0 | | | - | | 12.90 |
| 16 | 雨 | - | 0 | 0 | 0 | | | - | | 14.60 |
| 17 | 雨 | - | 0 | 0 | 0 | | | - | | 0.20 |
| 18 | 晴 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 19 | 霧 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 20 | 霧 | - | 0 | 0 | 0 | | | - | | 24.50 |
| 21 | 曇 | - | 0 | 0 | 0 | | | - | | 25.75 |
| 22 | 雨 | - | 0 | 0 | 0 | | | 0 | | 9.50 |
| 23 | 晴 | 0 | 0 | 0 | 0 | | | - | | 0.00 |
| 24 | 霧 | - | 0 | 0 | 0 | | | - | | 20.60 |
| 25 | 雨 | - | 0 | 0 | 0 | | | - | | 20.10 |
| 26 | 曇 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 27 | 曇 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 28 | 曇 | - | 0 | 0 | 0 | | | - | | 0.05 |
| 29 | 曇 | - | 0 | 0 | 0 | | | - | | 12.95 |
| 30 | 雨 | - | 0 | 0 | 0 | | | - | | 1.40 |
| Total | | | | | | | | 0 | | |
| Mean | | | | | | | | | | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.44**　積雪月報

**Table A1.44**　Monthly report of snow data.

2003年
12月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS ($g/cm^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN ($g/cm^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 曇 | - | 0 | 0 | 0 | | | - | | 0.05 |
| 2 | 晴 | - | 0 | 0 | 0 | | | - | | 0.00 |
| 3 | 晴 | - | 0 | 0 | 0 | | | 0 | | 5.20 |
| 4 | 曇 | 0 | 0 | 0 | 0 | | | 0 | | 0.30 |
| 5 | 曇 | 0 | 0 | 0 | 0 | | | - | | 0.00 |
| 6 | 曇 | - | 0 | 0 | 0 | | | 0 | | 32.45 |
| 7 | 雪 | 0 | 1 | 0 | 0 | | | 7 | 0.058 | 2.25 |
| 8 | 雪 | 7 | 0 | 4 | 1 | | | 20 | 0.106 | 14.85 |
| 9 | 雪 | 21 | 17 | 19 | 16 | | | 7 | 0.101 | 4.95 |
| 10 | 雪 | 21 | 19 | 18 | 17 | | | 0 | | 4.10 |
| 11 | 曇 | 12 | 11 | 9 | 13 | | | - | | 17.95 |
| 12 | 雨 | 8 | 6 | 4 | 9 | | | - | | 34.45 |
| 13 | 雨 | 1 | 2 | 1 | 0 | | | - | | 21.80 |
| 14 | 晴 | - | 0 | 0 | 0 | | | - | | 5.20 |
| 15 | 曇 | - | 0 | 0 | 0 | | | - | | 0.80 |
| 16 | 雨 | - | 0 | 0 | 0 | | | - | | 1.95 |
| 17 | 曇 | - | 0 | 0 | 0 | | | 0 | | 6.50 |
| 18 | 雨 | 0 | 1 | 0 | 0 | | | 0 | | 12.15 |
| 19 | 曇 | 0 | 1 | 0 | 0 | | | 3 | 0.190 | 5.65 |
| 20 | 雪 | 3 | 3 | 2 | 2 | | | 8 | 0.146 | 2.50 |
| 21 | 雪 | 10 | 14 | 11 | 13 | | | - | | 9.10 |
| 22 | 曇 | 5 | 7 | 4 | 8 | | | - | | 23.95 |
| 23 | 曇 | - | 0 | 0 | 0 | | | - | | 7.45 |
| 24 | 曇 | - | 0 | 0 | 0 | | | - | | 0.10 |
| 25 | 曇 | - | 0 | 0 | 0 | | | 0 | | 10.00 |
| 26 | 晴 | 0 | 0 | 0 | 0 | | | 9 | 0.075 | 4.10 |
| 27 | 雪 | 10 | 9 | 7 | 6 | | | 17 | 0.085 | 3.60 |
| 28 | 雪 | 20 | 19 | 18 | 15 | | | 0 | | 14.95 |
| 29 | 曇 | 5 | 6 | 4 | 10 | | | 1 | 0.047 | 32.65 |
| 30 | 雪 | 1 | 2 | 0 | 0 | | | 0 | | 3.95 |
| 31 | 曇 | 1 | 1 | 0 | 0 | | | - | | 12.30 |
| Total | | | | | | | | 72 | | 295.25 |
| Mean | | | | | | | | | 0.101 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.45**　積雪月報

**Table A1.45**　Monthly report of snow data.

2004年
1月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層 密度, DS (g/cm³) | 新積雪深 HN (cm) | 新積雪の 密度, DN (g/cm³) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 曇 | - | 0 | 0 | 0 | | | - | | 14.05 |
| 2 | 雨 | - | 0 | 0 | 0 | | | - | | 19.75 |
| 3 | 雨 | - | 0 | 0 | 0 | | | 3 | 0.162 | 7.05 |
| 4 | 晴 | 3 | 0 | 2 | 4 | | | 6 | 0.073 | 2.05 |
| 5 | 霧 | 7 | 6 | 4 | 4 | | | 4 | 0.049 | 2.60 |
| 6 | 霧 | 8 | 1 | 5 | 2 | 6 | 0.075 | - | | 2.30 |
| 7 | 霧 | 3 | 1 | 0 | 0 | | | 23 | 0.096 | 1.10 |
| 8 | 雪 | 25 | 26 | 24 | 24 | | | 7 | 0.114 | 2.15 |
| 9 | 雪 | 25 | 25 | 23 | 29 | | | - | | 1.80 |
| 10 | 霧 | 20 | 19 | 18 | 28 | | | 13 | 0.105 | 1.15 |
| 11 | 雪 | 29 | 31 | 29 | 44 | | | 15 | 0.076 | 1.45 |
| 12 | 晴 | 41 | 42 | 40 | 56 | | | - | | 1.45 |
| 13 | 曇 | 32 | 33 | 31 | 54 | | | 15 | 0.155 | 1.50 |
| 14 | 雪 | 44 | 44 | 43 | 77 | | | 7 | 0.220 | 1.45 |
| 15 | 雪 | 57 | 56 | 55 | 94 | 86 | 0.157 | 15 | 0.086 | 1.50 |
| 16 | 雪 | 60 | 60 | 60 | 104 | | | 1 | 0.097 | 1.50 |
| 17 | 曇 | 50 | 51 | 51 | 102 | | | 1 | 0.005 | 1.30 |
| 18 | 雪 | 48 | 47 | 46 | 99 | | | 0 | | 0.90 |
| 19 | 曇 | 46 | 46 | 44 | 96 | | | 4 | 0.286 | 0.05 |
| 20 | 雨 | 44 | 43 | 42 | 105 | | | 0 | | X |
| 21 | 曇 | 41 | 38 | 36 | 104 | | | 11 | 0.056 | 1.60 |
| 22 | 雪 | 50 | 47 | 45 | 108 | | | 19 | 0.111 | 0.90 |
| 23 | 曇 | 62 | 60 | 60 | 130 | | | 6 | 0.116 | 2.85 |
| 24 | 曇 | 54 | 60 | 58 | 138 | | | 9 | 0.068 | 3.20 |
| 25 | 雪 | 60 | 62 | 61 | 141 | | | 13 | 0.083 | 3.80 |
| 26 | 雪 | 67 | 67 | 66 | 148 | 156 | 0.229 | 18 | 0.077 | 3.50 |
| 27 | 雪 | 78 | 76 | 77 | 157 | | | 15 | 0.071 | 2.10 |
| 28 | 雪 | 84 | 80 | 82 | 162 | | | 3 | 0.134 | 2.40 |
| 29 | 曇 | 76 | 68 | 72 | 163 | | | 16 | 0.052 | 3.30 |
| 30 | 雪 | 84 | 77 | 81 | 162 | | | 8 | 0.079 | 2.65 |
| 31 | 曇 | 78 | 74 | 77 | 161 | | | 2 | 0.064 | 3.60 |
| Total | | | | | | | | 234 | | |
| Mean | | | | | | | 0.154 | | 0.101 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.46**　積雪月報

**Table A1.46**　Monthly report of snow data.

2004年
2月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS ($g/cm^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN ($g/cm^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 曇 | 77 | 68 | 70 | 154 | | | - | | 2.70 |
| 2 | 曇 | 67 | 64 | 65 | 147 | | | 1 | 0.030 | 0.65 |
| 3 | 曇 | 62 | 61 | 59 | 142 | | | 13 | 0.060 | 1.70 |
| 4 | 雪 | 70 | 71 | 67 | X | | | 15 | 0.085 | 2.40 |
| 5 | 雪 | 77 | 77 | 74 | X | 216 | 0.284 | 12 | 0.088 | 2.80 |
| 6 | 雪 | 81 | 82 | 80 | X | | | 19 | 0.092 | 2.85 |
| 7 | 雪 | 92 | 90 | 90 | X | | | 17 | 0.051 | 3.70 |
| 8 | 雪 | 103 | 98 | 99 | X | | | 30 | 0.065 | 3.30 |
| 9 | 雪 | 117 | 113 | 116 | X | | | 3 | 0.045 | 2.80 |
| 10 | 雪 | 104 | 96 | 102 | X | | | 0 | | 0.15 |
| 11 | 曇 | 97 | 88 | 91 | X | | | 17 | 0.090 | 0.00 |
| 12 | 雪 | 106 | 103 | 104 | X | | | 3 | 0.123 | 2.85 |
| 13 | 晴 | 92 | 90 | 89 | X | | | - | | 3.85 |
| 14 | 曇 | 82 | 82 | 81 | X | | | 1 | 0.216 | 0.50 |
| 15 | 雪 | 71 | 81 | 72 | X | | | 16 | 0.103 | 0.95 |
| 16 | 雪 | 89 | 93 | 90 | X | 282 | 0.317 | 0 | | 0.00 |
| 17 | 曇 | 77 | 83 | 76 | X | | | 6 | 0.115 | 0.10 |
| 18 | 雪 | 81 | 87 | 81 | X | | | 6 | 0.098 | 0.00 |
| 19 | 曇 | 81 | 87 | 81 | X | | | 4 | 0.154 | 0.00 |
| 20 | 晴 | 81 | 89 | 81 | X | | | - | | 0.05 |
| 21 | 霧 | 75 | 83 | 75 | X | | | - | | 0.00 |
| 22 | 曇 | 70 | 81 | 71 | X | | | 0 | | 43.20 |
| 23 | 雪 | 65 | 73 | 66 | X | | | 5 | 0.131 | 11.65 |
| 24 | 晴 | 70 | 75 | 71 | X | | | - | | 8.80 |
| 25 | 曇 | 66 | 72 | 67 | X | 268 | 0.406 | - | | 23.00 |
| 26 | 雨 | 61 | 66 | 61 | X | | | 0 | | 22.65 |
| 27 | 雪 | 59 | 63 | 61 | X | | | 4 | 0.090 | 2.30 |
| 28 | 雪 | 60 | 68 | 64 | X | | | - | | 3.55 |
| 29 | 雪 | 56 | 63 | 60 | X | | | - | | 9.60 |
| Total | | | | | | | | 172 | | 156.10 |
| Mean | | | | | | | 0.336 | | 0.096 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.47**　積雪月報
**Table A1.47**　Monthly report of snow data.

2004年
3月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積 雪 深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 曇 | 56 | 61 | 58 | X | | | 1 | 0.069 | 5.35 |
| 2 | 快晴 | 57 | 60 | 60 | X | | | 11 | 0.063 | 3.85 |
| 3 | 雪 | 69 | 73 | 69 | X | | | 1 | 0.016 | 1.00 |
| 4 | 雪 | 63 | 64 | 63 | X | | | 5 | 0.048 | 1.60 |
| 5 | 晴 | 66 | 63 | 66 | X | 220 | 0.349 | 2 | 0.104 | 1.85 |
| 6 | 雪 | 63 | 65 | 64 | X | | | 2 | 0.227 | 1.15 |
| 7 | 曇 | 61 | 67 | 65 | X | | | 23 | 0.078 | 1.15 |
| 8 | 雪 | 86 | 88 | 87 | X | | | 10 | 0.169 | 1.10 |
| 9 | あられ | 84 | 84 | 85 | X | | | 0 | | 3.50 |
| 10 | 快晴 | 72 | 75 | 73 | X | | | - | | 14.05 |
| 11 | 雨 | 64 | 67 | X | X | | | - | | 18.65 |
| 12 | 晴 | 61 | 62 | 63 | X | | | 0 | | 11.00 |
| 13 | 晴 | 56 | 59 | 59 | X | | | 1 | 0.074 | 5.95 |
| 14 | 晴 | 55 | 55 | 58 | X | | | 1 | 0.098 | 6.65 |
| 15 | 雪 | 53 | 51 | 52 | X | 187 | 0.381 | 0 | | 5.80 |
| 16 | 晴 | 49 | 48 | 47 | X | | | - | | 8.05 |
| 17 | 晴 | 44 | 42 | 42 | X | | | 0 | | 14.00 |
| 18 | 曇 | 35 | 33 | 35 | X | | | 4 | 0.048 | 0.00 |
| 19 | 雪 | 38 | 33 | 38 | X | | | 0 | | 1.45 |
| 20 | 晴 | 28 | 29 | 31 | X | | | 0 | | 1.40 |
| 21 | 晴 | 28 | 26 | 27 | X | | | - | | 5.80 |
| 22 | 曇 | 23 | 19 | 22 | X | | | - | | 1.20 |
| 23 | 晴 | 21 | 18 | 21 | X | | | - | | 5.15 |
| 24 | 快晴 | 16 | 13 | 15 | X | | | - | | 1.20 |
| 25 | 曇 | 10 | 8 | 8 | X | 49 | 0.450 | - | | 0.00 |
| 26 | 曇 | 5 | 1 | 4 | X | | | - | | 1.25 |
| 27 | 曇 | - | 0 | 0 | X | | | - | | 0.80 |
| 28 | 快晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 29 | 晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 30 | 曇 | - | 0 | 0 | X | | | - | | 0.60 |
| 31 | 曇 | - | 0 | 0 | X | | | - | | 0.30 |
| Total | | | | | | | | 61 | | 123.85 |
| Mean | | | | | | | 0.393 | | 0.090 | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 1.48**　積雪月報

**Table A1.48**　Monthly report of snow data.

2004年
4月
9時

防災科学技術研究所長岡雪氷防災研究所新庄支所
Shinjo Branch, Nagaoka Institute of Snow and Ice Studies, NIED

| 日 Date | 天気 Weather | 積雪深 HS (cm) | | | 積雪相当水量 HW (mm) | | 積雪全層密度, DS (g/cm$^3$) | 新積雪深 HN (cm) | 新積雪の密度, DN (g/cm$^3$) | 地下浸透量 MW (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 雪尺, L | 超音波計, M | 赤外線計, R | ﾒﾀﾙｳｪﾊｰ, L | ｽﾉｰｻﾝﾌﾟﾗｰ, R | | | | |
| 1 | 曇 | - | 0 | 0 | X | | | - | | 0.70 |
| 2 | 雨 | - | 0 | 0 | X | | | 0 | | 2.35 |
| 3 | 雨 | - | 0 | 0 | X | | | - | | 0.20 |
| 4 | 曇 | - | 0 | 0 | X | | | - | | 0.00 |
| 5 | 晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 6 | 晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 7 | 曇 | - | 0 | 0 | X | | | - | | 7.15 |
| 8 | 晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 9 | 晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 10 | 晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 11 | 晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 12 | 晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 13 | 雨 | - | 0 | 0 | X | | | - | | 0.00 |
| 14 | 雨 | - | 0 | 0 | X | | | - | | 0.00 |
| 15 | 晴 | - | 0 | 0 | X | | | - | | 0.00 |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |
| Total | | | | | | | | 0 | | |
| Mean | | | | | | | | | | |

HS: Depth of snow cover (L: Snow stake, M: Ultrasonic snow depth meter, R: Infrared snow depth meter)
　HS(L)="-": No snow cover, HS(L)="0": No snow cover around the snow stake though less than half of the observation field is covered with snow
HW: Water equivalent of snow cover (L: Pressure pillow/Metal wafer, R: Snow sampler)
DS: Density of snow cover (Snow sampler)
HN: Depth of daily new snowfall (Snow accumulation board)
　HN="-": No new snowfall, HN="0": No snow on the snow accumulation board though there is new snow in the observation field
DN: Density of daily new snowfall (Snow sampler)
MW: Infiltration water containing rainfall (Lysimeter)

**付表 2.1**　積雪断面観測結果

**Table A2.1**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 1996,12,05 | 15 cm | 45 mm | 302 kg/m$^3$ | ● | 1.1 ˚C(09h30m) | 2.5 m/s(09h30m) | 09h15m – 09h52m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | H | KK,OA(KS,MO) | 新庄雪氷防災研究支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 15 – 0 | ○ | 2.0–5.0 | 15 | 0.0 | 15 – 12 | 303 | 15 – 12 | 20 | | | | | |
| | | | 10 | 0.0 | 10 – 7 | 367 | 11 – 8 | 16 | | | | | |
| | | | 5 | 0.0 | 4 – 1 | 383 | 4 – 1 | 17 | | | | | |
| | | | 0 | 0.0 | | | | | | | | | |
| | | | | | 15 – 0 | 302 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。

**付表 2.2**　積雪断面観測結果

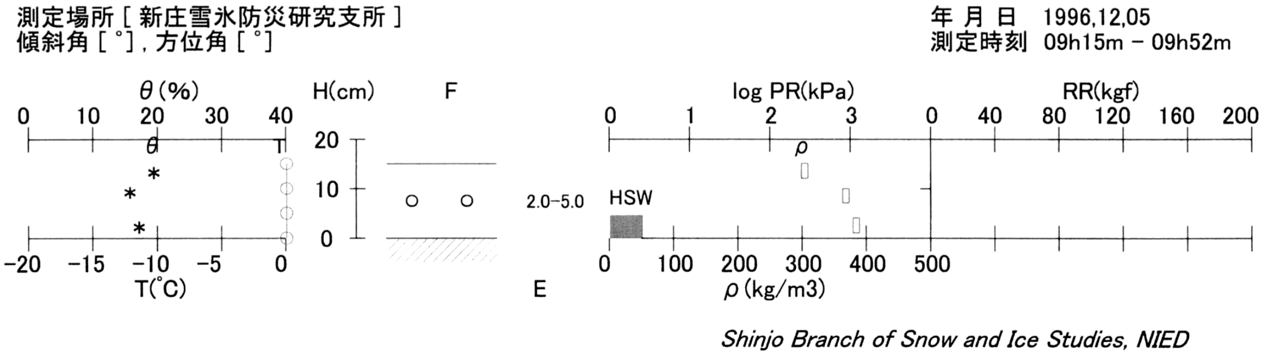
**Table A2.2**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 1996,12,25 | 5 cm | 17 mm | 330 kg/m$^3$ | ● | 3.7 ˚C(09h00m) | 1.2 m/s(09h00m) | 09h04m – 09h20m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | H | OA,TS,KK(KS,MO) | 新庄雪氷防災研究支所 |

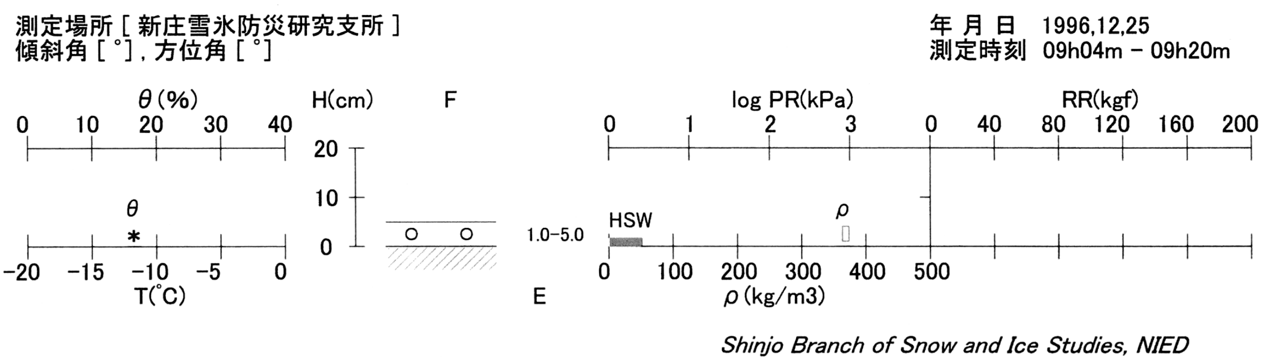
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 5 – 0 | ○ | 1.0–5.0 | | | 4 – 1 | 367 | 4 – 1 | 17 | | | | | |
| | | | | | | | 4 – 1 | 16 | | | | | |
| | | | | | 5 – 0 | 330 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。




付図 1.1　積雪断面観測図

**Fig. A1.1** Profiles of physical properties of snow cover.




付図 1.2　積雪断面観測図

**Fig. A1.2** Profiles of physical properties of snow cover.

付表 2.3　積雪断面観測結果

**Table A2.3**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 傾斜角 | 全層平均密度 | 方位角 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|---|
| 1997.01.06 | 41 cm | 62 mm | | 151 kg/m$^3$ | | ＊ | 0.4 ˚C(09h00m) | 0 m/s(09h00m) | 09h05m - 09h56m |
| 緯度 | 経度 | 標高 | 傾斜角 | | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ | | ˚ | H | TS,,OA,KK(KS,MO,YS,YS | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 40 - 36 | + | | 42 | 0.0 | 40 - 37 | 164 | 40 - 37 | 8 | | | | | |
| 36 30 | / | 0.2-0.5 | 40 | 0.0 | 36 - 33 | 105 | 4 - 1 | 5 | | | | | |
| 30 - 17 | / | 0.2-0.5 | 35 | -0.1 | 30 - 27 | 143 | | | | | | | |
| 17 - 7 | ● | 0.2-0.5 | 30 | -0.2 | 24.5 - 21.5 | 142 | | | | | | | |
| 7 - 2 | ● | 0.2-0.5 | 25 | -0.3 | 19.5 - 16.5 | 196 | | | | | | | |
| 2 - 0 | ○ | 0.2-0.5 | 20 | -0.2 | 15 - 12 | 181 | | | | | | | |
| | | | 10 | -0.3 | 10.5 - 7.5 | 241 | | | | | | | |
| | | | 0 | 0.0 | 6.5 - 3.5 | 220 | | | | | | | |
| | | | | | 3.5 - 0.5 | 234 | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | 42 - 0 | 151 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。

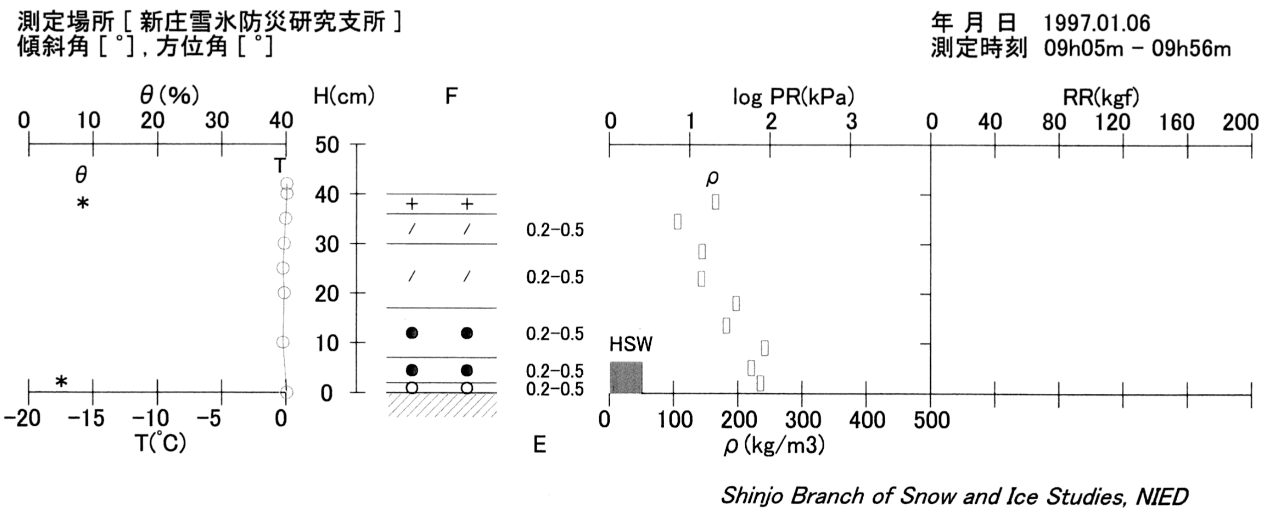
付表 2.4　積雪断面観測結果

**Table A2.4**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 傾斜角 | 全層平均密度 | 方位角 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|---|
| 1997.01.16 | 37 cm | 92 mm | | 248 kg/m$^3$ | | ＊ | 0.1 ˚C(10h00m) | 2.4 m/s(10h00m) | 09h05m - 10h25m |
| 緯度 | 経度 | 標高 | 傾斜角 | | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ | | ˚ | H | TS,OA,KK(MO,KS,YS,YS) | 新庄雪氷防災研究支所 | |

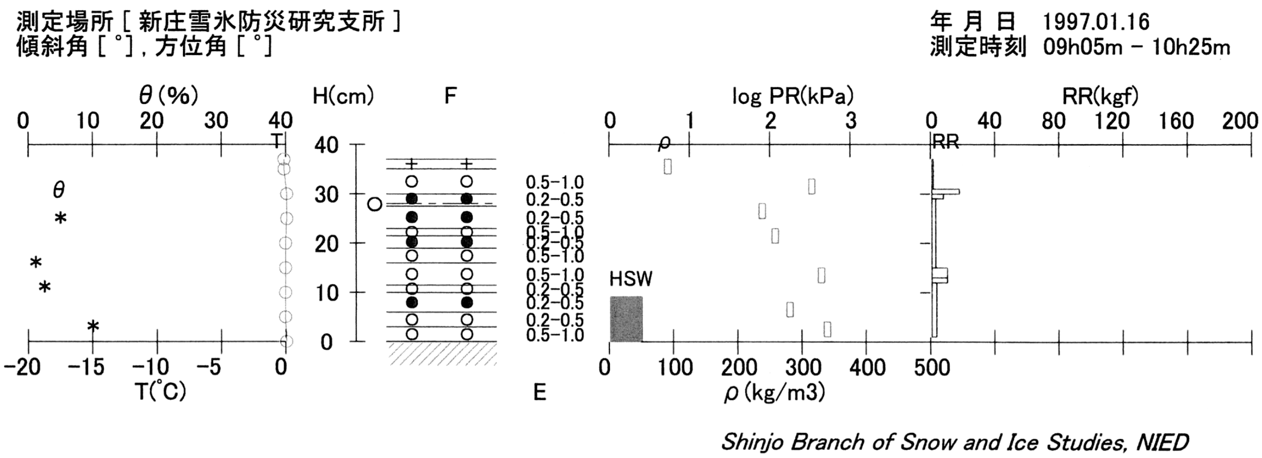
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 37 - 35 | + | | 37 | -0.2 | 37 - 34 | 90 | 27 - 24 | 5 | | | | 37 - 31 | 1 |
| 35 30 | ○ | 0.5-1.0 | 35 | -0.2 | 33 - 30 | 314 | 18 - 15 | 1 | | | | 31 - 30 | 17 |
| 30 - 28 | ● | 0.2-0.5 | 30 | 0.0 | 28 - 25 | 237 | 13 - 10 | 3 | | | | 30 - 29 | 7 |
| 28 - 27.5 | ○ | 0.5-1.0 | 25 | 0.0 | 23 - 20 | 257 | 5 - 2 | 10 | | | | 29 - 15 | 3 |
| 27.5 - 23 | ● | 0.2-0.5 | 20 | -0.1 | 15 - 12 | 329 | | | | | | 15 - 13 | 10 |
| 23 - 21.5 | ○ | 0.5-1.0 | 15 | -0.1 | 8 - 5 | 280 | | | | | | 13 - 12 | 10 |
| 21.5 19 | ● | 0.2-0.5 | 10 | -0.1 | 4 - 1 | 338 | | | | | | 12 - 1 | 3 |
| 19 - 16 | ○ | 0.5-1.0 | 5 | -0.1 | | | | | | | | | |
| 16 - 11.5 | ○ | 0.5-1.0 | 0 | 0.0 | 36 - 0 | 248 | | | | | | | |
| 11.5 - 10 | ○ | 0.2-0.5 | | | | | | | | | | | |
| 10 - 6 | ● | 0.2-0.5 | | | | | | | | | | | |
| 6 - 3 | ○ | 0.2-0.5 | | | | | | | | | | | |
| 3 - 0 | ○ | 0.5-1.0 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




**付図 1.3**　積雪断面観測図

**Fig. A1.3**　Profiles of physical properties of snow cover.




**付図 1.4**　積雪断面観測図

**Fig. A1.4**　Profiles of physical properties of snow cover.

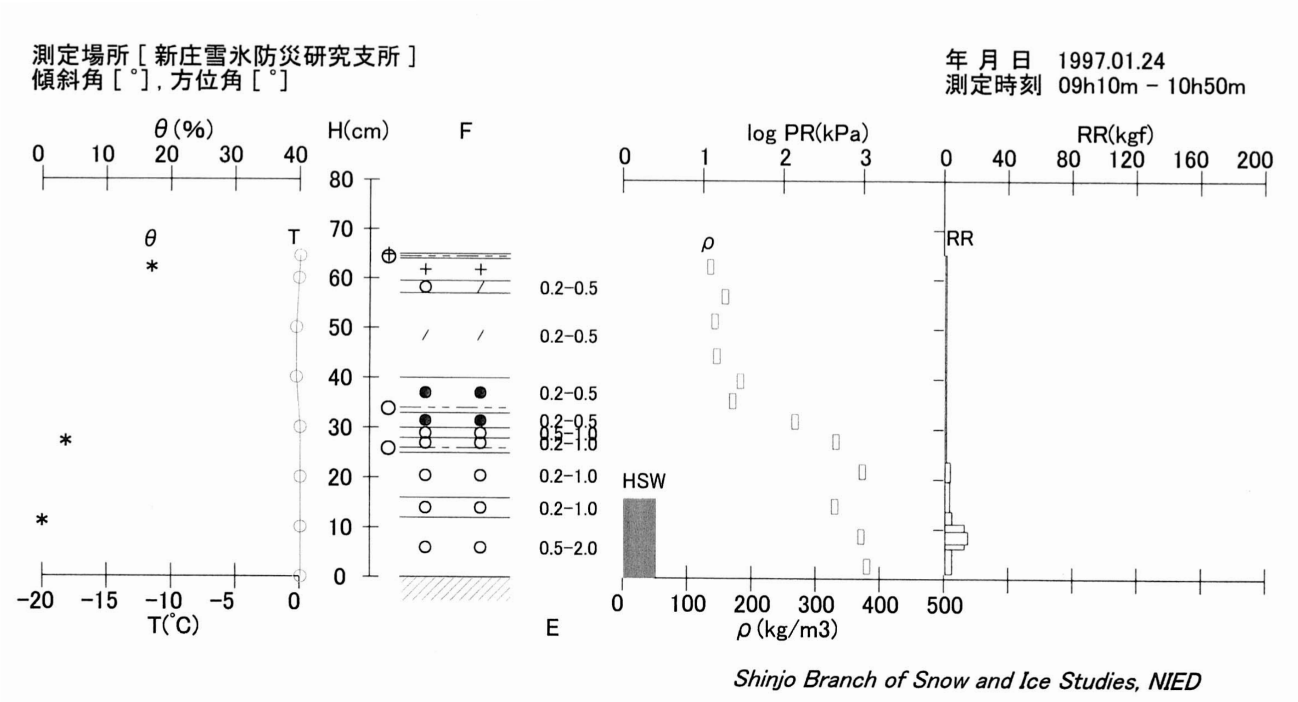
**付表 2.5**　積雪断面観測結果

**Table A2.5**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 1997.01.24 | 65 cm | 158 mm | | 244 $kg/m^3$ | ＊ | 1.2 °C(10h00m) | 1.6 m/s(10h00m) | 09h10m - 10h50m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38°47'N | 140°19'E | 127 m | ° | ° | H | OA(KS,MO,YS) | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(°C) | | 密度 ρ($kg/m^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 65 - 64.5 | ＋ | | 65 | 0.0 | 64 - 61 | 135 | 64 - 61 | 17 | | | | 65 - 23.5 | 1 |
| 64.5 64 | ○ | 0.2-0.5 | 60 | -0.1 | 58 - 55 | 158 | 29 - 26 | 4 | | | | 23.5 - 19.5 | 3 |
| 64 - 59.5 | ＋ | | 50 | -0.3 | 53 - 50 | 142 | 13 - 10 | 0 | | | | 19.5 - 13.5 | 3 |
| 59.5 - 57 | ○, / | 0.2-0.5 | 40 | -0.3 | 46 - 43 | 145 | | | | | | 13.5 - 11 | 4 |
| 57 - 40 | / | 0.2-0.5 | 30 | 0.0 | 41 - 38 | 182 | | | | | | 11 - 9.5 | 12 |
| 40 - 34 | ● | 0.2-0.5 | 20 | 0.0 | 37 - 34 | 170 | | | | | | 9.5 - 7 | 14 |
| 34 33 | ○ | 0.5-1.0 | 10 | 0.0 | 33 - 30 | 267 | | | | | | 7 - 6 | 12 |
| 33 - 30 | ● | 0.2-0.5 | 0 | 0.0 | 29 - 26 | 331 | | | | | | 6 - 1 | 4 |
| 30 - 28 | ○ | 0.5-1.0 | | | 23 - 20 | 372 | | | | | | | |
| 28 - 26 | ○ | 0.2-1.0 | | | 16 - 13 | 329 | | | | | | | |
| 26 - 25 | ○ | 0.2-0.5 | | | 10 - 7 | 370 | | | | | | | |
| 25 - 16 | ○ | 0.2-1.0 | | | 4 - 1 | 379 | | | | | | | |
| 16 - 12 | ○ | 0.2-1.0 | | | | | | | | | | | |
| 12 0 | ○ | 0.5-2.0 | | | 64 - 0 | 244 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




**付図 1.5**　積雪断面観測図

**Fig. A1.5**　Profiles of physical properties of snow cover.

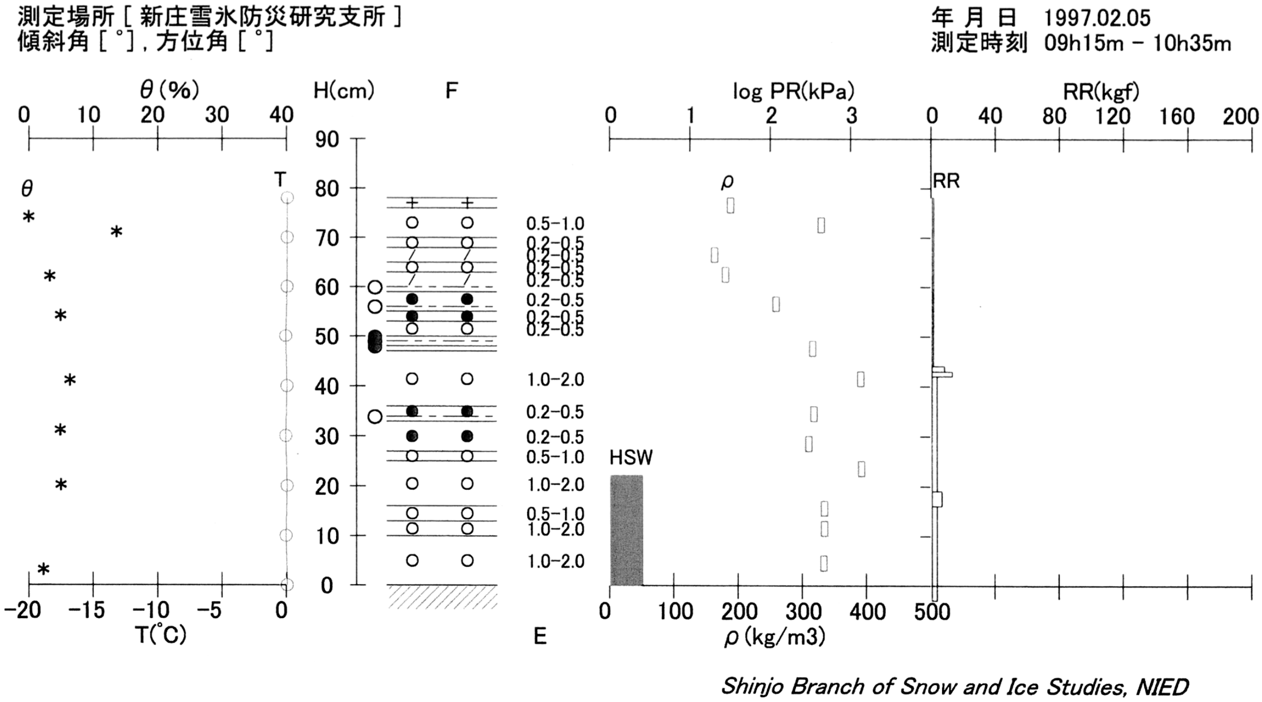
**付表 2.6**　　積雪断面観測結果

**Table A2.6**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 1997.02.05 | 78 cm | 222 mm | | 284 kg/m$^3$ | ⁎ | -0.5 ˚C(10h00m) | 1.2 m/s(10h00m) | 09h15m - 10h35m |
| **緯度** | **経度** | **標高** | **傾斜角** | **方位角** | **座標軸** | **測定者** | **測定場所** | |
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | H | TS,OA,KK(KS,MO,YS,YS) | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 $\rho$(kg/m$^3$) | | 含水率 $\theta$(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | $\rho$ | H | $\theta$ | H | *1 $\phi$ (cm) | PR | H | RR |
| 78 - 76 | + | | 78 | 0.0 | 78 - 75 | 187 | 76 - 73 | 0 | | | | 78 - 44 | 1 |
| 76 70 | ○ | 0.5-1.0 | 70 | 0.0 | 74 - 71 | 328 | 73 - 70 | 14 | | | | 44 - 43 | 8 |
| 70 - 68 | ○ | 0.2-0.5 | 60 | 0.0 | 68 - 65 | 162 | 64 - 61 | 3 | | | | 43 - 42 | 13 |
| 68 - 65 | / | 0.2-0.5 | 50 | -0.1 | 64 - 61 | 179 | 56 - 53 | 5 | | | | 42 - 19 | 3 |
| 65 - 63 | ○ | 0.2-0.5 | 40 | 0.0 | 58 - 55 | 258 | 43 - 40 | 6 | | | | 19 - 16 | 6 |
| 63 - 60 | / | 0.2-0.5 | 30 | -0.1 | 49 - 46 | 315 | 33 - 30 | 5 | | | | 16 - -3 | 3 |
| 60 59 | ○ | 0.2-0.5 | 20 | 0.0 | 43 - 40 | 390 | 22 - 19 | 5 | | | | | |
| 59 - 56 | ● | 0.2-0.5 | 10 | -0.1 | 36 - 33 | 317 | 5 - 2 | 2 | | | | | |
| 56 - 55 | ○ | 0.2-0.5 | 0 | 0.0 | 30 - 27 | 309 | | | | | | | |
| 55 - 53 | ● | 0.2-0.5 | | | 25 - 22 | 391 | | | | | | | |
| 53 - 50 | ○ | 0.2-0.5 | | | 17 - 14 | 333 | | | | | | | |
| 50 - 49 | ● | 0.2-0.5 | | | 13 - 10 | 333 | | | | | | | |
| 49 - 48 | ○ | 1.0-2.0 | | | 6 - 3 | 332 | | | | | | | |
| 48 47 | ● | 0.2-0.5 | | | | | | | | | | | |
| 47 - 36 | ○ | 1.0-2.0 | | | 78 - 0 | 284 | | | | | | | |
| 36 - 34 | ● | 0.2-0.5 | | | | | | | | | | | |
| 34 - 33 | ○ | 0.2-0.5 | | | | | | | | | | | |
| 33 - 27 | ● | 0.2-0.5 | | | | | | | | | | | |
| 27 - 25 | ○ | 0.5-1.0 | | | | | | | | | | | |
| 25 - 16 | ○ | 1.0-2.0 | | | | | | | | | | | |
| 16 - 13 | ○ | 0.5-1.0 | | | | | | | | | | | |
| 13 - 10 | ○ | 1.0-2.0 | | | | | | | | | | | |
| 10 - 0 | ○ | 1.0-2.0 | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| 78 - 0 | | | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: $\phi$ は円板径を表わす。




付図 1.6　積雪断面観測図

**Fig. A1.6**　Profiles of physical properties of snow cover.

**付表 2.7**　積雪断面観測結果

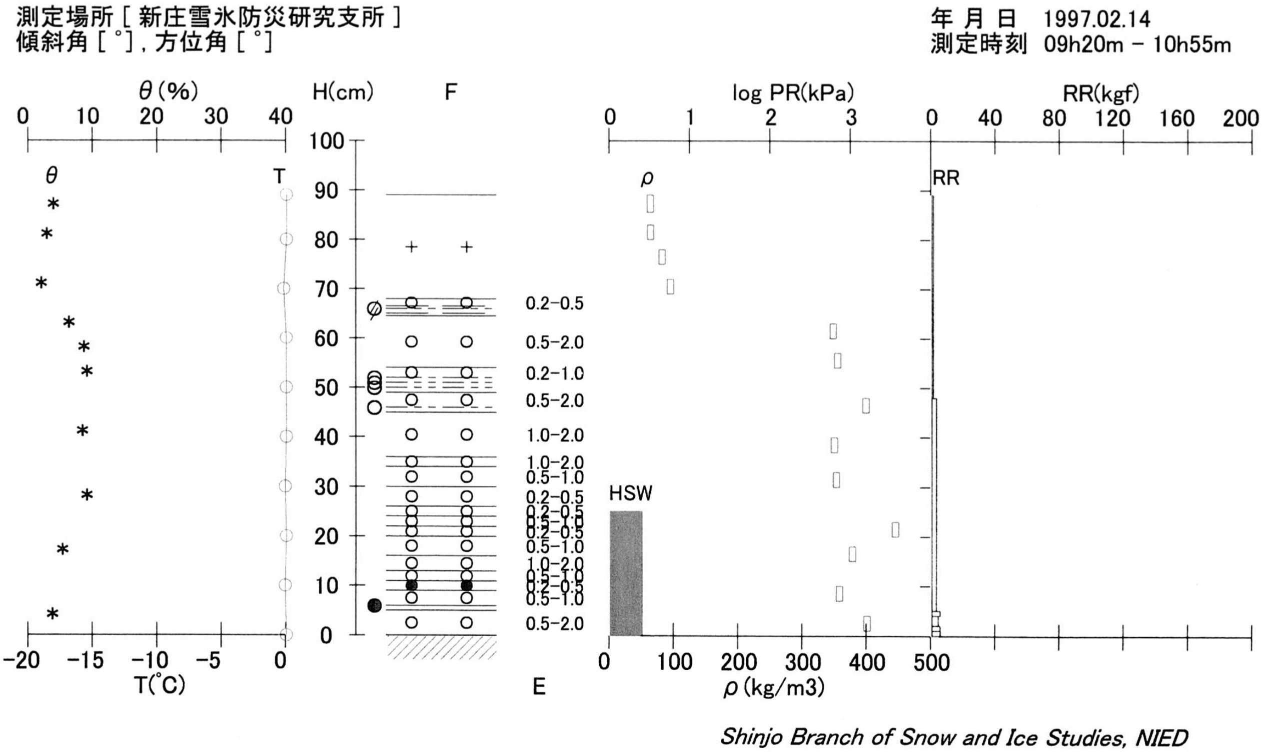
**Table A2.7**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 1997.02.14 | 89 cm | 251 mm | 282 kg/m$^3$ | ① | 0.2 ˚C(10h00m) | 1.6 m/s(10h00m) | 09h20m - 10h55m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | H | TS,OA,KK(KS,YK) | 新庄雪氷防災研究支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 89 - 68 | ＋ | | 89 | 0.0 | 89 - 85.5 | 63 | 89 - 86 | 4 | | | | 89 - 48 | 1 |
| 68 66.5 | ○ | 0.2–0.5 | 80 | 0.0 | 83 - 80 | 63 | 83 - 80 | 3 | | | | 48 - 5 | 3 |
| 66.5 - 66 | / | 0.2–0.5 | 70 | -0.2 | 78 - 75 | 81 | 73 - 70 | 2 | | | | 5 - 4 | 5 |
| 66 - 65 | ○ | 0.5–1.0 | 60 | 0.0 | 72 - 69 | 94 | 65 - 62 | 6 | | | | 4 - 2 | 4 |
| 65 - 64.5 | / | 0.2–0.5 | 50 | 0.0 | 63 - 60 | 347 | 60 - 57 | 9 | | | | 2 - 1 | 5 |
| 64.5 - 54 | ○ | 0.5–2.0 | 40 | 0.0 | 57 - 54 | 354 | 55 - 52 | 9 | | | | 1 - 0 | 5 |
| 54 52 | ○ | 0.2–1.0 | 30 | -0.1 | 48 - 45 | 398 | 43 - 40 | 9 | | | | | |
| 52 - 51 | ○ | 0.2–0.5 | 20 | 0.0 | 40 - 37 | 349 | 30 - 27 | 9 | | | | | |
| 51 - 50 | ○ | 0.5–1.0 | 10 | -0.1 | 33 - 30 | 352 | 19 - 16 | 5 | | | | | |
| 50 - 49 | ○ | 0.2–0.5 | 0 | 0.0 | 23 - 20 | 444 | 6 - 3 | 4 | | | | | |
| 49 - 46 | ○ | 0.5–2.0 | | | 18 - 15 | 377 | | | | | | | |
| 46 - 45 | ○ | 0.5–2.0 | | | 10 - 7 | 357 | | | | | | | |
| 45 - 36 | ○ | 1.0–2.0 | | | 4 - 1 | 400 | | | | | | | |
| 36 34 | ○ | 1.0–2.0 | | | | | | | | | | | |
| 34 - 30 | ○ | 0.5–1.0 | | | 89 - 0 | 282 | | | | | | | |
| 30 - 26 | ○ | 0.2–0.5 | | | | | | | | | | | |
| 26 - 24 | ○ | 0.2–0.5 | | | | | | | | | | | |
| 24 - 22 | ○ | 0.5–1.0 | | | | | | | | | | | |
| 22 - 20 | ○ | 0.2–0.5 | | | | | | | | | | | |
| 20 - 16 | ○ | 0.5–1.0 | | | | | | | | | | | |
| 16 - 13 | ○ | 1.0–2.0 | | | | | | | | | | | |
| 13 - 11 | ○ | 0.5–1.0 | | | | | | | | | | | |
| 11 - 9 | ● | 0.2–0.5 | | | | | | | | | | | |
| 9 - 6 | ○ | 0.5–1.0 | | | | | | | | | | | |
| 6 - 5 | ● | 0.2–0.5 | | | | | | | | | | | |
| 5 - 0 | ○ | 0.5–2.0 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




**付図 1.7**　積雪断面観測図

**Fig. A1.7**　Profiles of physical properties of snow cover.

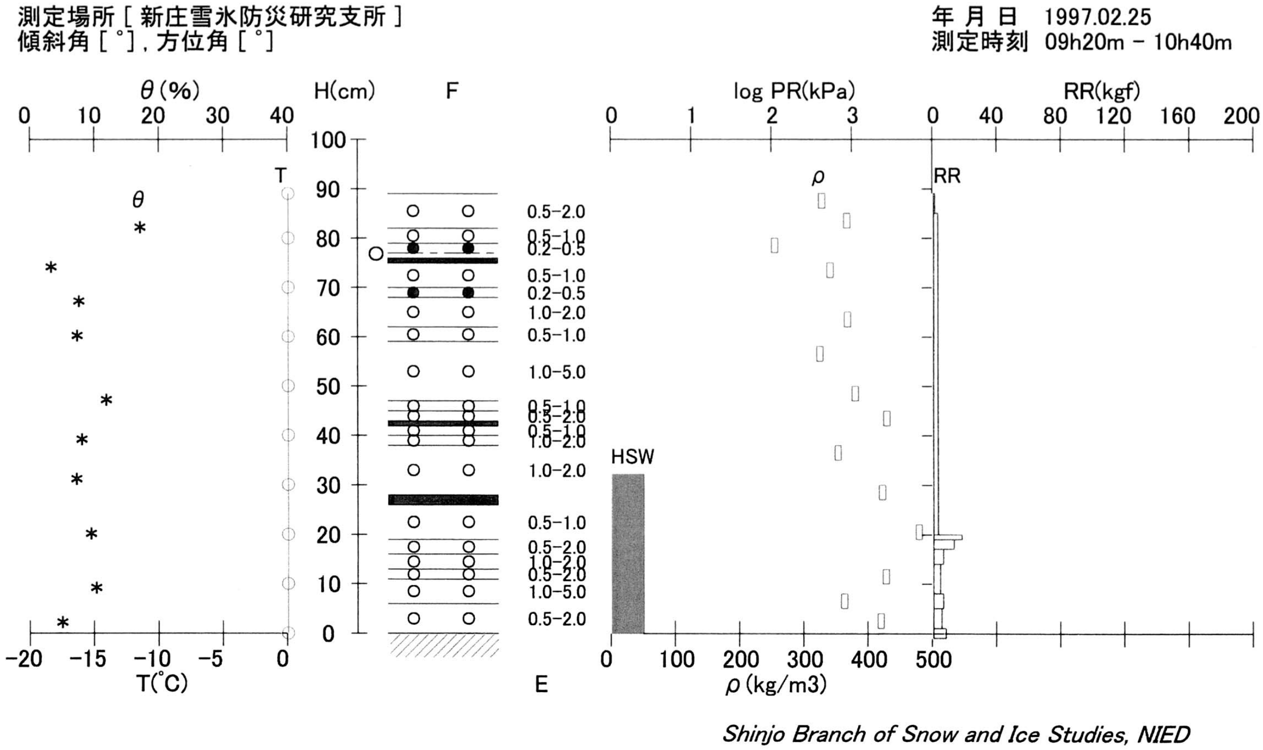
**付表 2.8**　積雪断面観測結果

**Table A2.8**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 1997.02.25 | 89 cm | 321 mm | | 361 kg/m$^3$ | ≡ | −0.5 ˚C(10h00m) | 1.1 m/s(10h00m) | 09h20m − 10h40m |
| **緯度** | **経度** | **標高** | **傾斜角** | **方位角** | **座標軸** | **測定者** | **測定場所** | |
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | H | TS,OA,KK(KS) | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 89 − 82 | ○ | 0.5−2.0 | 89 | 0.0 | 89 − 86 | 327 | 84 − 81 | 17 | | | | 89 − 85 | 1 |
| 82 79 | ○ | 0.5−1.0 | 80 | 0.0 | 85 − 82 | 366 | 76 − 73 | 3 | | | | 85 − 20 | 3 |
| 79 − 77 | ● | 0.2−0.5 | 70 | 0.0 | 80 − 77 | 254 | 69 − 66 | 8 | | | | 20 − 19 | 18 |
| 77 − 76 | ○ | 0.5−1.0 | 60 | 0.0 | 75 − 72 | 340 | 62 − 59 | 7 | | | | 19 − 17 | 13 |
| 76 − 75 | — | | 50 | 0.0 | 65 − 62 | 367 | 49 − 46 | 12 | | | | 17 − 14 | 6 |
| 75 − 70 | ○ | 0.5−1.0 | 40 | 0.0 | 58 − 55 | 324 | 41 − 38 | 8 | | | | 14 − 8 | 4 |
| 70 68 | ● | 0.2−0.5 | 30 | 0.0 | 50 − 47 | 379 | 33 − 30 | 7 | | | | 8 − 5 | 6 |
| 68 − 62 | ○ | 1.0−2.0 | 20 | 0.0 | 45 − 42 | 428 | 22 − 19 | 10 | | | | 5 − 1 | 5 |
| 62 − 59 | ○ | 0.5−1.0 | 10 | 0.0 | 38 − 35 | 352 | 11 − 8 | 10 | | | | 1 − −1 | 8 |
| 59 − 47 | ○ | 1.0−5.0 | 0 | 0.0 | 30 − 27 | 421 | 4 − 1 | 5 | | | | | |
| 47 − 45 | ○ | 0.5−1.0 | | | 22 − 19 | 478 | | | | | | | |
| 45 − 43 | ○ | 0.5−2.0 | | | 13 − 10 | 427 | | | | | | | |
| 43 − 42 | — | | | | 8 − 5 | 362 | | | | | | | |
| 42 40 | ○ | 0.5−1.0 | | | 4 − 1 | 419 | | | | | | | |
| 40 − 38 | ○ | 1.0−2.0 | | | | | | | | | | | |
| 38 − 28 | ○ | 1.0−2.0 | | | 89 − 0 | 361 | | | | | | | |
| 28 − 26 | — | | | | | | | | | | | | |
| 26 − 19 | ○ | 0.5−1.0 | | | | | | | | | | | |
| 19 − 16 | ○ | 0.5−2.0 | | | | | | | | | | | |
| 16 − 13 | ○ | 1.0−2.0 | | | | | | | | | | | |
| 13 − 11 | ○ | 0.5−2.0 | | | | | | | | | | | |
| 11 − 6 | ○ | 1.0−5.0 | | | | | | | | | | | |
| 6 − 0 | ○ | 0.5−2.0 | | | | | | | | | | | |
| **備考** | | | | | | | | | | | | | |

*1: φは円板径を表わす。




**付図 1.8**　積雪断面観測図

**Fig. A1.8**　Profiles of physical properties of snow cover.

**付表 2.9**　積雪断面観測結果

**Table A2.9**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 1997.03.05 | 76 cm | 252 mm | 331 kg/m$^3$ | ◎ | 4.5 ˚C(10h00m) | 1.4 m/s(10h00m) | 09h20m - 10h35m |
| **緯度** | **経度** | **標高** | **傾斜角 / 方位角** | **座標軸** | **測定者** | **測定場所** | |
| 38˚47'N | 140˚19'E | 127 m | ˚ / ˚ | H | TS,OA,KK(KS,YO) | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 76 - 75 | ○ | 0.2-0.5 | 76 | 0.0 | 76 - 73 | 307 | 76 - 73 | 15 | | | | 76 - 70 | 1 |
| 75 74 | ○ | 1.0-2.0 | 70 | 0.0 | 70 - 67 | 372 | 70 - 67 | 2 | | | | 70 - 67 | 8 |
| 74 - 70 | ○ | 1.0-2.0 | 60 | 0.0 | 60 - 57 | 420 | 60 - 57 | 11 | | | | 67 - 64 | 8 |
| 70 - 68 | ○ | 1.0-2.0 | 45 | 0.0 | 50 - 47 | 402 | 50 - 47 | 10 | | | | 64 - 61 | 4 |
| 68 - 65 | ○ | 0.5-2.0 | 30 | 0.0 | 40 - 37 | 449 | 38 - 35 | 9 | | | | 61 - 59 | 4 |
| 65 - 59 | ○ | 2.0-5.0 | 15 | 0.0 | 29 - 26 | 434 | 30 - 27 | 9 | | | | 59 - 14 | 3 |
| 59 54 | ○ | 1.0-2.0 | 0 | 0.0 | 15 - 12 | 477 | 20 - 17 | 10 | | | | 14 - 11 | 6 |
| 54 - 50 | ○ | 2.0-5.0 | | | 9 - 6 | 394 | 11 - 8 | 12 | | | | 11 - 1 | 3 |
| 50 - 40 | ○ | 1.0-5.0 | | | 4 - 1 | 457 | | | | | | | |
| 40 - 39 | — | | | | | | | | | | | | |
| 39 - 36 | ○ | 0.5-2.0 | | | 76 - 0 | 331 | | | | | | | |
| 36 - 31 | ○ | 2.0-5.0 | | | | | | | | | | | |
| 31 - 10 | ○ | 0.5-2.0 | | | | | | | | | | | |
| 10 3 | ○ | 2.0-5.0 | | | | | | | | | | | |
| 3 - 0 | ○ | 0.5-2.0 | | | | | | | | | | | |
| 備考 | H 3-0cmのGは水しみ層 | | | | | | | | | | | | |

*1:φは円板径を表わす。

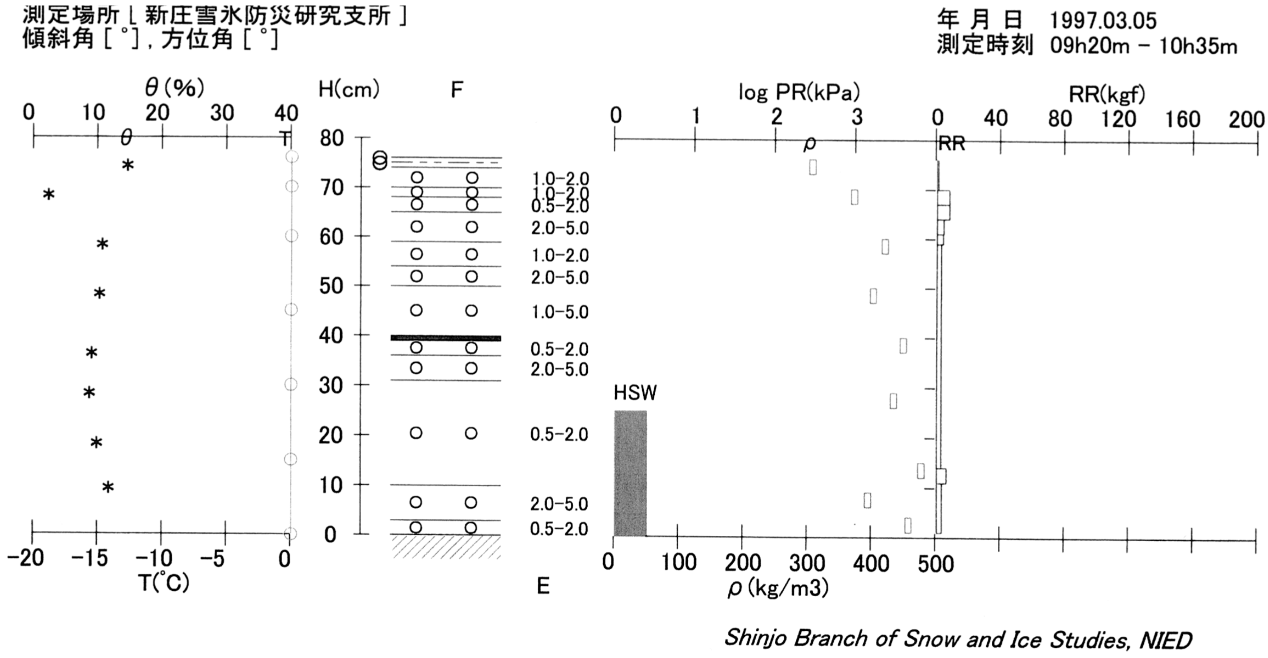
**付表 2.10**　積雪断面観測結果

**Table A2.10**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 1997.03.14 | 46 cm | 180 mm | 392 kg/m$^3$ | ○ | 3.2 ˚C(10h00m) | 1.2 m/s(10h00m) | 09h10m - 10h15m |
| **緯度** | **経度** | **標高** | **傾斜角 / 方位角** | **座標軸** | **測定者** | **測定場所** | |
| 38˚47'N | 140˚19'E | 127 m | ˚ / ˚ | H | OA(KS,OY) | 新庄雪氷防災研究支所 | |

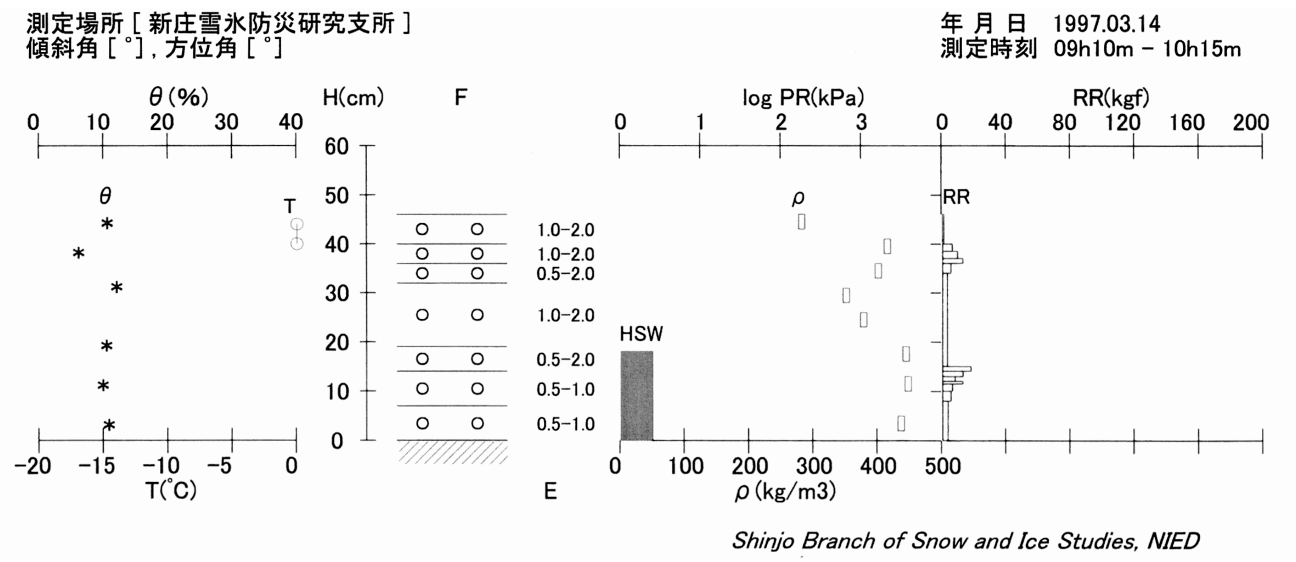
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 46 - 40 | ○ | 1.0-2.0 | 44 | 0.0 | 46 - 43 | 282 | 46 - 43 | 11 | | | | 46 - 40 | 1 |
| 40 36 | ○ | 1.0-2.0 | 40 | 0.0 | 41 - 38 | 415 | 40 - 37 | 6 | | | | 40 - 38.5 | 6 |
| 36 - 32 | ○ | 0.5-2.0 | | | 36 - 33 | 401 | 33 - 30 | 12 | | | | 38.5 - 37 | 9 |
| 32 - 19 | ○ | 1.0-2.0 | | | 31 - 28 | 351 | 21 - 18 | 11 | | | | 37 - 36 | 13 |
| 19 - 14 | ○ | 0.5-2.0 | | | 26 - 23 | 378 | 13 - 10 | 10 | | | | 36 - 34 | 5 |
| 14 - 7 | ○ | 0.5-1.0 | | | 19 - 16 | 444 | 5 - 2 | 11 | | | | 34 - 15 | 3 |
| 7 0 | ○ | 0.5-1.0 | | | 13 - 10 | 447 | | | | | | 15 - 14 | 18 |
| | | | | | 5 - 2 | 436 | | | | | | 14 - 13 | 13 |
| | | | | | | | | | | | | 13 - 12 | 8 |
| | | | | | 46 - 0 | 392 | | | | | | 12 - 11.5 | 13 |
| | | | | | | | | | | | | 11.5 - 10 | 6 |
| | | | | | | | | | | | | 10 - 8 | 5 |
| | | | | | | | | | | | | 8 - 0 | 3 |
| 備考 | 雪温40cm以下ぬれ雪の為省略 | | | | | | | | | | | | |

*1:φは円板径を表わす。




**付図 1.9**　積雪断面観測図

**Fig. A1.9**　Profiles of physical properties of snow cover.




**付図 1.10**　積雪断面観測図

**Fig. A1.10**　Profiles of physical properties of snow cover.

付表 2.11　積雪断面観測結果
**Table A2.11**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 1997.12.05 | 14 cm | 23 mm | 163 kg/m$^3$ | ⋇ | 0.4 ˚C(09h14m) | 0 m/s(09h14m) | 09h00m - 10h00m |
| 緯度 | 経度 | 標高 | 傾斜角 / 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ / ˚ | H | TS,KK,YK,OA(KS,TS) | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 14 - 12 | + | 1.0-2.0 | 14 | 0.0 | 14 - 11 | 151 | 14 - 11 | 6 | | | | | |
| 12 11 | +, / | 0.5-1.0 | 10 | 0.0 | 8 - 5 | 195 | 8 - 5 | 7 | | | | | |
| 11 - 8 | ○ | 1.0-2.0 | 5 | 0.0 | 4 - 1 | 150 | 4 - 1 | 7 | | | | | |
| 8 - 0 | / | <0.5 | 0 | 0.0 | | | | | | | | | |
| | | | | | 14 - 0 | 163 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

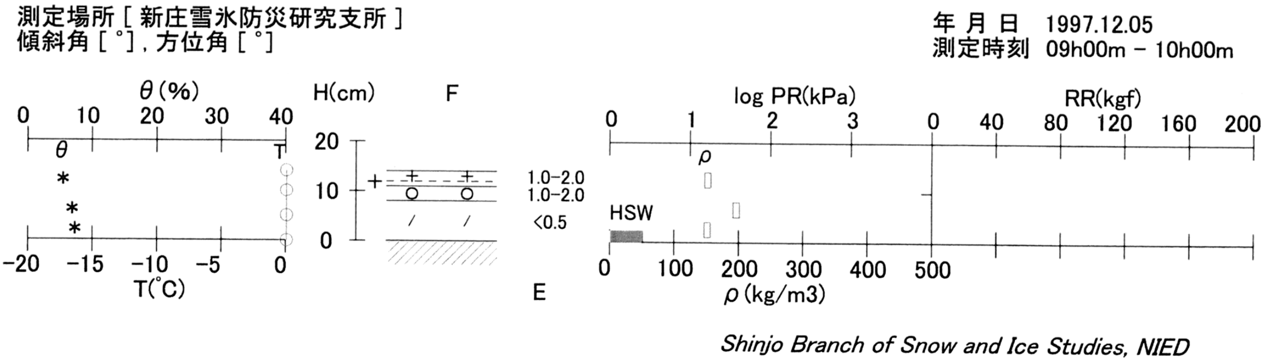
*1: φは円板径を表わす。

付表 2.12　積雪断面観測結果
**Table A2.12**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 1997.12.15 | 14 cm | 22 mm | 159 kg/m$^3$ | ● | 0.9 ˚C(09h45m) | 1 m/s(09h45m) | 09h05m - 09h45m |
| 緯度 | 経度 | 標高 | 傾斜角 / 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ / ˚ | H | OA,TS,YK(KS,TS) | 新庄雪氷防災研究支所 | |

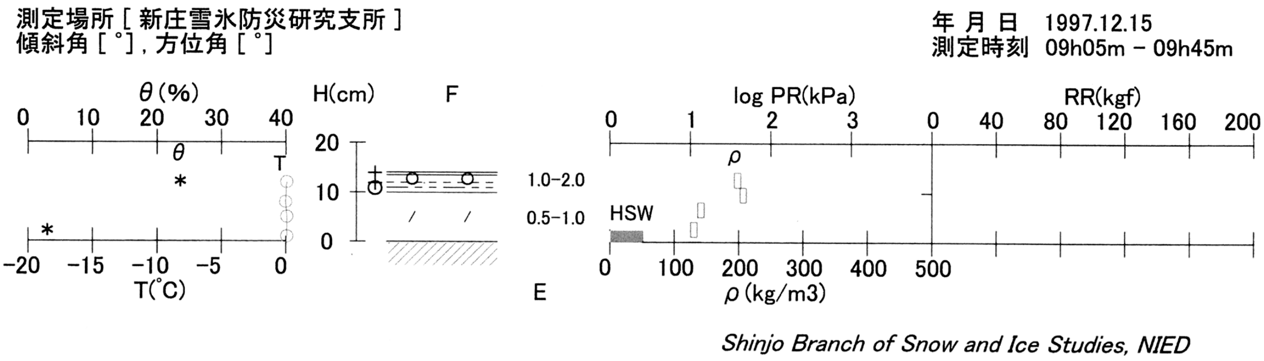
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 14 - 13.5 | + | 1.0-2.0 | 12 | 0.0 | 14 - 11 | 197 | 14 - 11 | 24 | | | | | |
| 13.5 12 | ○ | 1.0-2.0 | 8 | -0.1 | 11 - 8 | 206 | 4 - 1 | 3 | | | | | |
| 12 - 11 | + | 2.0-5.0 | 5 | 0.0 | 8 - 5 | 140 | | | | | | | |
| 11 - 10 | ○ | 1.0-2.0 | 1 | 0.0 | 4 - 1 | 129 | | | | | | | |
| 10 - 0 | / | 0.5-1.0 | | | | | | | | | | | |
| | | | | | 12.5 - 0 | 159 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φは円板径を表わす。




**付図 1.11**　積雪断面観測図

**Fig. A1.11**　Profiles of physical properties of snow cover.




**付図 1.12**　積雪断面観測図

**Fig. A1.12**　Profiles of physical properties of snow cover.

**付表 2.13**　積雪断面観測結果

**Table A2.13**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 1998.01.05 | 8 cm | 7 mm | 82 kg/m$^3$ | | ◎ | 0.5 ˚C(09h15m) | 0 m/s(09h00m) | 09h10m - 09h42m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | H | TS,KK,YK(KS,TS) | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 8 - 4 | ＋ | 0.5-1.0 | 8 | -0.2 | 8 - 5 | 82 | | | | | | | |
| 4 0 | ＋,／ | 0.5-1.0 | 6 | -0.1 | 5 - 2 | 109 | | | | | | | |
| | | | 4 | -0.4 | 3 - 0 | 152 | | | | | | | |
| | | | 2 | -0.4 | | | | | | | | | |
| | | | 0 | 0.0 | 8 - 0 | 82 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φは円板径を表わす。

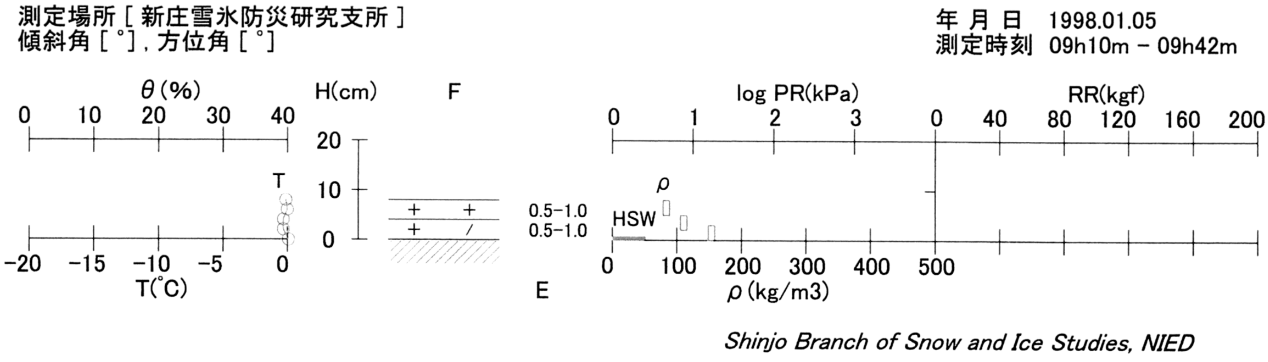
**付表 2.14**　積雪断面観測結果

**Table A2.14**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 1998,01,16 | 35 cm | 54 mm | 154 kg/m$^3$ | | ◎ | -0.3 ˚C(09h10m) | 0 m/s(09h10m) | 09h10m - 10h58m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'E | 140˚19'N | 127 m | ˚ | ˚ | H | OA,MO(YS,TA,KO) | 新庄雪氷防災研究支所 | |

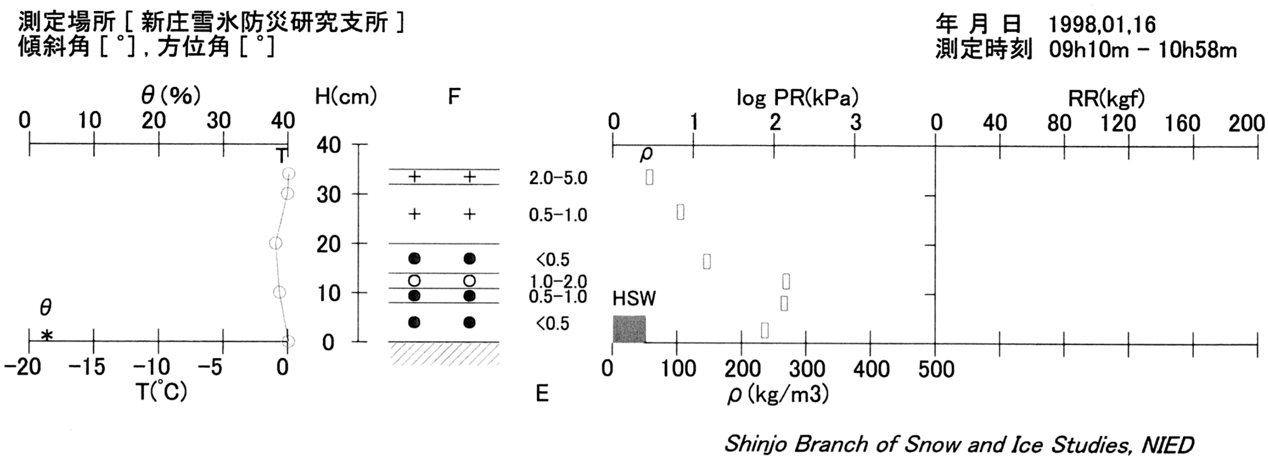
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 35 - 32 | ＋ | 2.0-5.0 | 34 | 0.0 | 35 - 32 | 56 | 3 - 0 | 3 | | | | | |
| 32 20 | ＋ | 0.5-1.0 | 30 | -0.1 | 28 - 25 | 104 | | | | | | | |
| 20 - 14 | ● | <0.5 | 20 | -1.0 | 18 - 15 | 145 | | | | | | | |
| 14 - 11 | ○ | 1.0-2.0 | 10 | -0.7 | 14 - 11 | 268 | | | | | | | |
| 11 - 8 | ● | 0.5-1.0 | 0 | 0.0 | 9.5 - 6.5 | 265 | | | | | | | |
| 8 - 0 | ● | <0.5 | | | 4 - 1 | 235 | | | | | | | |
| | | | | | 35 - 0 | 154 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φは円板径を表わす。




付図 1.13　積雪断面観測図

**Fig. A1.13** Profiles of physical properties of snow cover.




付図 1.14　積雪断面観測図

**Fig. A1.14** Profiles of physical properties of snow cover.

**付表 2.15**　積雪断面観測結果

**Table A2.15**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 1998,01,26 | 77 cm | 130 mm | 168 kg/m$^3$ | * | -1.1 ℃(09h37m) | | 09h27m - 11h06m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38°47'N | 140°19'E | m | ° | ° | H | OA,YK(KS,TS,MO,YS,TA) | 新庄雪氷防災研究支所 |

| 雪質:F,粒度:E | | | 雪温 T(℃) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 77 - 55 | + | 1.0-2.0 | 76 | -1.4 | 77 - 74 | 74 | 3 - 0 | 9 | | | | 77 - 15.5 | 1 |
| 55 47 | / | 0.5-1.0 | 70 | -1.6 | 68 - 65 | 56 | 3 - 0 | 4 | | | | 15.5 - 13.5 | 10 |
| 47 - 45.5 | ○ | 1.0-2.0 | 60 | -1.4 | 55 - 52 | 136 | | | | | | 13.5 - 13 | 23 |
| 45.5 - 39 | ● | 0.5-1.0 | 50 | -1.5 | 48 - 45 | 155 | | | | | | 13 - 11.5 | 9 |
| 39 - 37 | ○ | 0.5-1.0 | 40 | -1.1 | 43 - 40 | 199 | | | | | | 11.5 - 10 | 9 |
| 37 - 17 | ● | <0.5 | 30 | -0.7 | 39 - 36 | 192 | | | | | | 10 - 8 | 8 |
| 17 | ○ | 2 | 20 | -0.3 | 27 - 24 | 177 | | | | | | 8 - 7 | 13 |
| 17 - 12 | ● | <0.5 | 10 | -0.1 | 19 - 16 | 246 | | | | | | 7 - 6 | 13 |
| 12 - 7 | ○ | 1.0-2.0 | 0 | 0.0 | 10 - 7 | 345 | | | | | | 6 - 0 | 4 |
| 7 - 5.5 | ○ | 1.0-2.0 | | | 6 - 3 | 355 | | | | | | | |
| 5.5 - 4 | ● | 0.5-1.0 | | | 3 - 0 | 389 | | | | | | | |
| 4 - 0 | ○ | 1.0-2.0 | | | | | | | | | | | |
| | | | | | 77 - 0 | 168 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。

**付表 2.16**　積雪断面観測結果

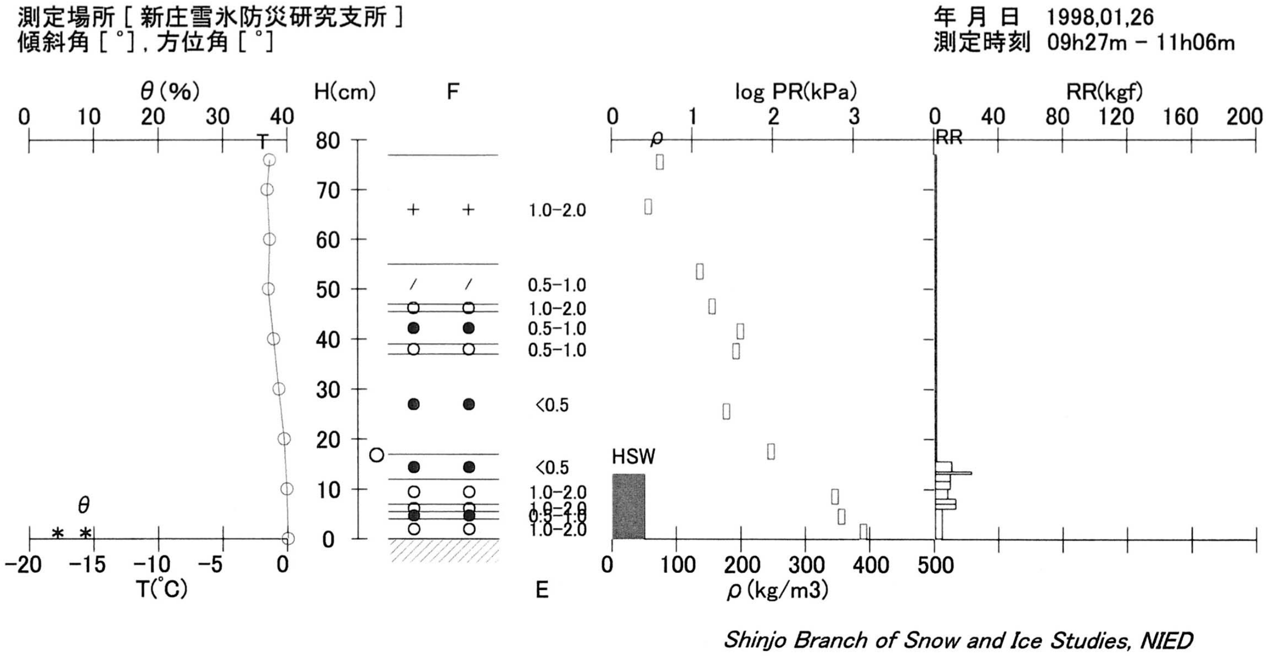
**Table A2.16**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 1998,02,05 | 85.5 cm | 238 mm | 278 kg/m$^3$ | * | 0 ℃(09h35m) | | 09h30m - 11h55m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38°47'N | 140°19'E | 127 m | ° | ° | H | TS(KO,MO,YS,SK) | 新庄雪氷防災研究支所 |

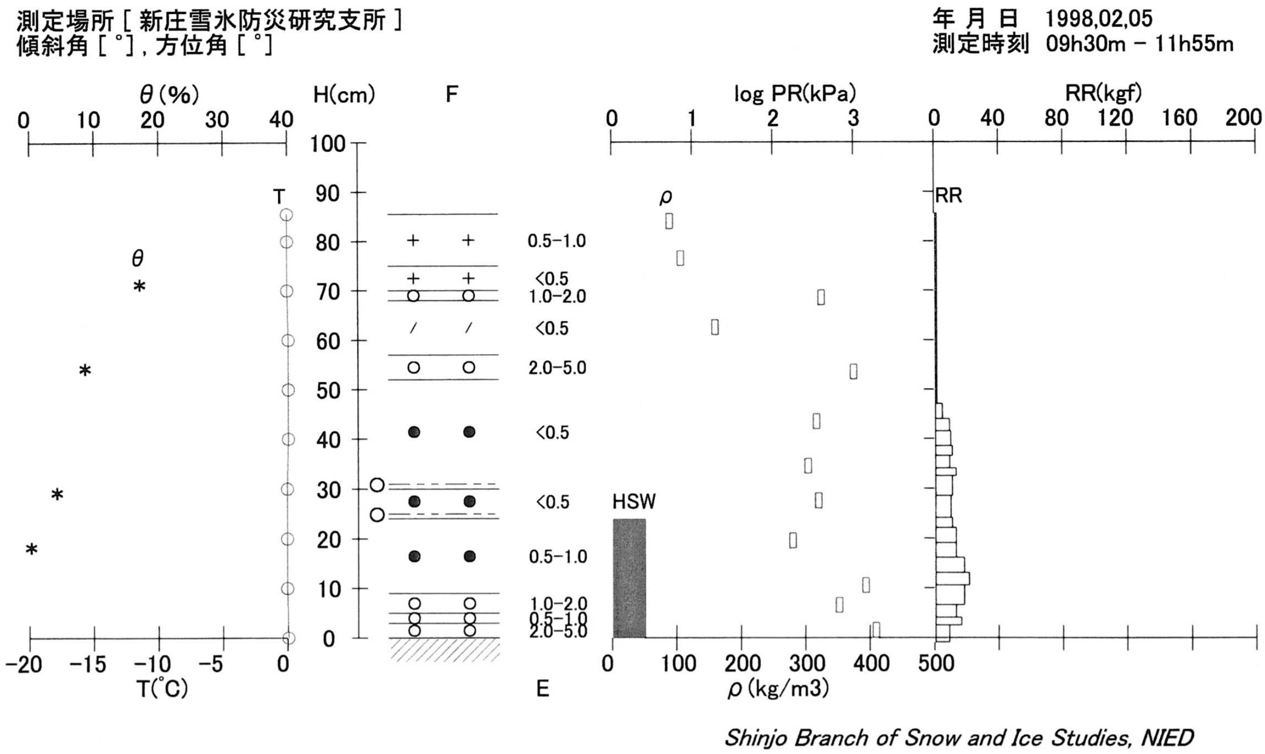
| 雪質:F,粒度:E | | | 雪温 T(℃) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 85.5 - 75 | + | 0.5-1.0 | 86 | -0.1 | 85.5 - 82.5 | 89 | 73 - 70 | 17 | | | | 85.5 - 47 | 1 |
| 75 70 | + | <0.5 | 80 | -0.1 | 78 - 75 | 106 | 56 - 53 | 9 | | | | 47 - 44 | 4 |
| 70 - 68 | ○ | 1.0-2.0 | 70 | -0.1 | 70 - 67 | 324 | 31 - 28 | 4 | | | | 44 - 41.5 | 9 |
| 68 - 57 | / | <0.5 | 60 | 0.0 | 64 - 61 | 159 | 20 - 17 | 0 | | | | 41.5 - 38.5 | 9 |
| 57 - 52 | ○ | 2.0-5.0 | 50 | 0.0 | 55 - 52 | 374 | | | | | | 38.5 - 36.5 | 10 |
| 52 - 31 | ● | <0.5 | 40 | 0.0 | 45 - 42 | 316 | | | | | | 36.5 - 34 | 9 |
| 31 30 | ○ | 1.0-2.0 | 30 | -0.1 | 36 - 33 | 303 | | | | | | 34 - 32.5 | 13 |
| 30 - 25 | ● | <0.5 | 20 | -0.1 | 29 - 26 | 319 | | | | | | 32.5 - 28.5 | 10 |
| 25 - 24 | ○ | 0.5-1.0 | 10 | -0.1 | 21 - 18 | 279 | | | | | | 28.5 - 24 | 9 |
| 24 - 9 | ● | 0.5-1.0 | 0 | 0.0 | 12 - 9 | 392 | | | | | | 24 - 22 | 10 |
| 9 - 5 | ○ | 1.0-2.0 | | | 8 - 5 | 351 | | | | | | 22 - 19 | 13 |
| 5 - 3 | ○ | 0.5-1.0 | | | 3 - 0 | 408 | | | | | | 19 - 16 | 13 |
| 3 - 0 | ○ | 2.0-5.0 | | | | | | | | | | 16 - 13 | 18 |
| | | | | | 85.5 - 0 | 278 | | | | | | 13 - 10.5 | 21 |
| | | | | | | | | | | | | 10.5 - 6.5 | 18 |
| | | | | | | | | | | | | 6.5 - 4 | 13 |
| | | | | | | | | | | | | 4 - 2.5 | 16 |
| | | | | | | | | | | | | 2.5 - -1 | 8 |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




**付図 1.15**　積雪断面観測図

**Fig. A1.15**　Profiles of physical properties of snow cover.




**付図 1.16**　積雪断面観測図

**Fig. A1.16**　Profiles of physical properties of snow cover.

**付表 2.17**　積雪断面観測結果

**Table A2.17**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 1998,02,16 | 55 cm | 230 mm | | 419 kg/m$^3$ | ◎ | 2.3 ˚C(10h00m) | 2 m/s(10h00m) | 09h15m - 10h42m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | H | KK(KS,MO,YS,KO) | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 55 - 45 | ○ | 2.0-5.0 | 55 | -0.1 | 55 - 52 | 248 | 55 - 52 | 3 | | | | 55 - 51.5 | 1 |
| 45 35 | ○ | 1.0-2.0 | 50 | 0.0 | 50 - 47 | 365 | 47 - 44 | 5 | | | | 51.5 - 48.5 | 6 |
| 35 - 20 | ○ | 1.0-2.0 | 40 | 0.0 | 40 - 37 | 408 | 33 - 30 | 9 | | | | 48.5 - 46.5 | 18 |
| 20 - 18 | — | | 30 | 0.0 | 30 - 27 | 464 | 23 - 20 | 8 | | | | 46.5 - 44 | 15 |
| 18 - 10 | ○ | 0.5-1.0 | 20 | 0.0 | 23 - 20 | 483 | 13 - 10 | 6 | | | | 44 - 26.5 | 3 |
| 10 - 0 | ○ | 1.0-2.0 | 10 | 0.0 | 15 - 12 | 457 | 4 - 1 | 7 | | | | 26.5 - 21.5 | 5 |
| | | | 0 | 0.0 | 8 - 5 | 491 | | | | | | 21.5 - 18 | 6 |
| | | | | | 3 - 0 | 417 | | | | | | 18 - 16.5 | 9 |
| | | | | | | | | | | | | 16.5 - 13.5 | 6 |
| | | | | | 55 - 0 | 419 | | | | | | 13.5 - 10.5 | 6 |
| | | | | | | | | | | | | 10.5 - 6 | 5 |
| | | | | | | | | | | | | 6 - 4.5 | 9 |
| | | | | | | | | | | | | 4.5 - 3.5 | 13 |
| | | | | | | | | | | | | 3.5 - 0.5 | 6 |
| | | | | | | | | | | | | 0.5 - 0 | 23 |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。

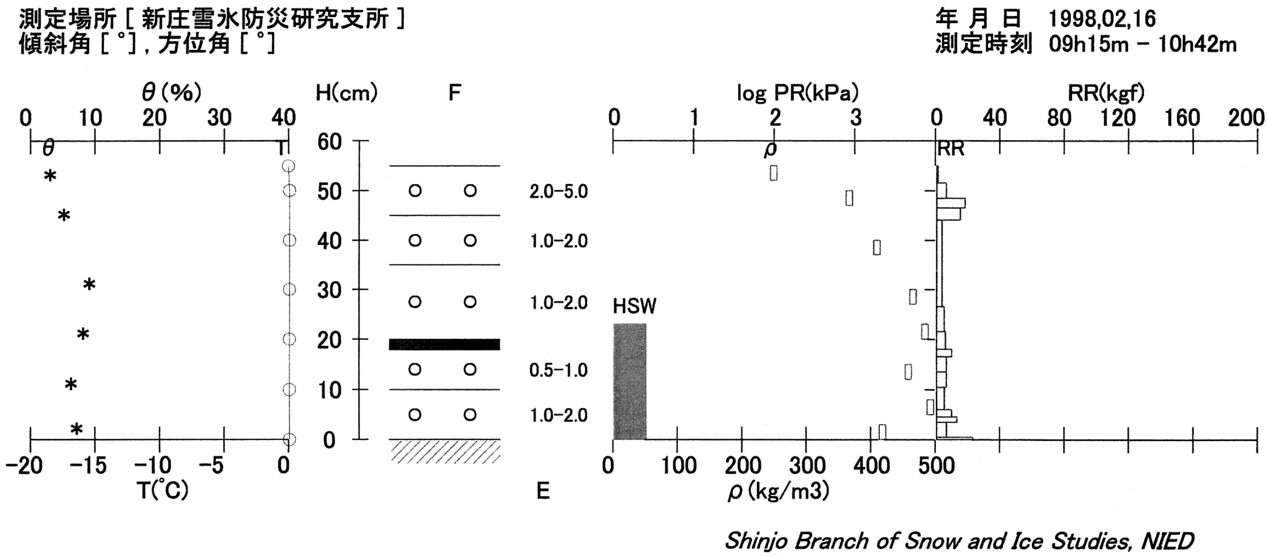
**付表 2.18**　積雪断面観測結果

**Table A2.18**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 1998,02,25 | 45 cm | 190 mm | | 422 kg/m$^3$ | ⦶ | 3 ˚C(09h15m) | 6.2 m/s(09h15m) | 09h15m - 10h25m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | H | OA,MO(YS,TA,KS,TS) | 新庄雪氷防災研究支所 | |

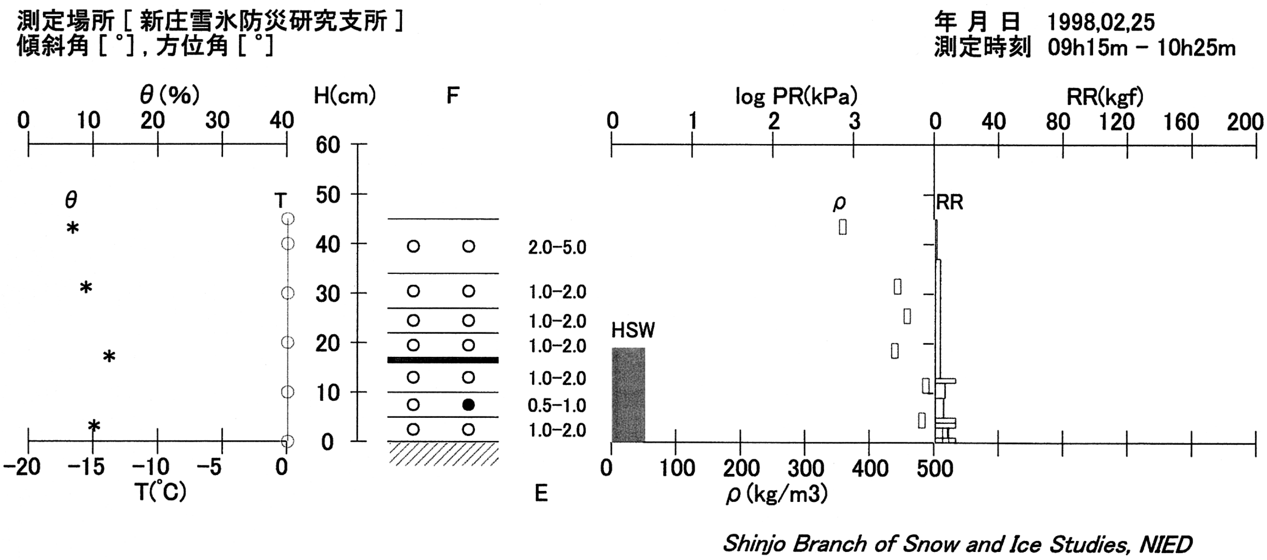
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 45 - 34 | ○ | 2.0-5.0 | 45 | 0.0 | 45 - 42 | 357 | 45 - 42 | 7 | | | | 45 - 37 | 1 |
| 34 27 | ○ | 1.0-2.0 | 40 | 0.0 | 33 - 30 | 442 | 33 - 30 | 9 | | | | 37 - 13 | 3 |
| - 27 | — | 5 | 30 | 0.0 | 27 - 24 | 457 | 19 - 16 | 13 | | | | 13 - 12 | 13 |
| 27 - 22 | ○ | 1.0-2.0 | 20 | 0.0 | 20 - 17 | 438 | 5 - 2 | 10 | | | | 12 - 9 | 6 |
| - 22 | — | 7 | 10 | 0.0 | 13 - 10 | 486 | | | | | | 9 - 5 | 5 |
| 22 - 17 | ○ | 1.0-2.0 | 0 | 0.0 | 6 - 3 | 480 | | | | | | 5 - 4 | 13 |
| 17 16 | — | | | | 3 - 0 | 517 | | | | | | 4 - 3 | 13 |
| 16 - 10 | ○ | 1.0-2.0 | | | | | | | | | | 3 - 1 | 8 |
| 10 - 5 | ○,● | 0.5-1.0 | | | 45 - 0 | 422 | | | | | | 1 - 0 | 13 |
| - 5 | — | 6 | | | | | | | | | | | |
| 5 - 0 | ○ | 1.0-2.0 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




付図 1.17　積雪断面観測図

**Fig. A1.17**　Profiles of physical properties of snow cover.




付図 1.18　積雪断面観測図

**Fig. A1.18**　Profiles of physical properties of snow cover.

**付表 2.19**　積雪断面観測結果

**Table A2.19**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 1998,03,05 | 18 cm | 80 mm | 442 kg/m$^3$ | | ◎ | -0.1 ˚C(09h13m) | 1.6 m/s(09h13m) | 09h05m - 09h55m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ° | ° | H | TS,MO(YS,TA,KS,TS) | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 18 - 14 | ○ | 1.0-2.0 | 18 | 0.0 | 18 - 15 | 385 | 4 - 1 | 5 | | | | 18 - 15 | 1 |
| 14 12 | ○ | 1.0-2.0 | 15 | -0.1 | 15 - 12 | 399 | 4 - 1 | 7 | | | | 15 - 13 | 13 |
| 12 - 11 | — | | 10 | -0.5 | 10 - 7 | 444 | | | | | | 13 - 11 | 23 |
| 11 - 5 | ○ | 1.0-2.0 | 5 | 0.0 | 4 - 1 | 501 | | | | | | 11 - 8.5 | 27 |
| 5 - 0 | ○ | 1.0-2.0 | 0 | 0.0 | | | | | | | | 8.5 - 6 | 27 |
| | | | | | 18 - 0 | 442 | | | | | | 6 - 4.5 | 43 |
| | | | | | | | | | | | | 4.5 - 3.5 | 23 |
| | | | | | | | | | | | | 3.5 - 2 | 16 |
| | | | | | | | | | | | | 2 - 0 | 13 |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。

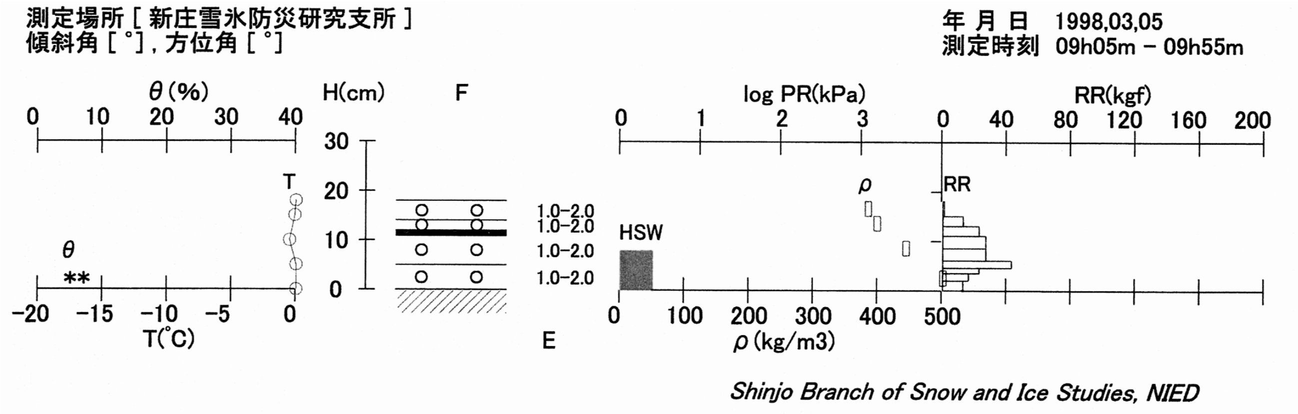
**付表 2.20**　積雪断面観測結果

**Table A2.20**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 1998.03.16 | 2.6 cm | 3 mm | 115 kg/m$^3$ | | ＊ | -0.6 ˚C(08h55m) | 3.2 m/s(08h55m) | 08h50m - 09h10m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ° | ° | H | MO(YS,TA,KS,TS) | 新庄雪氷防災研究支所 | |

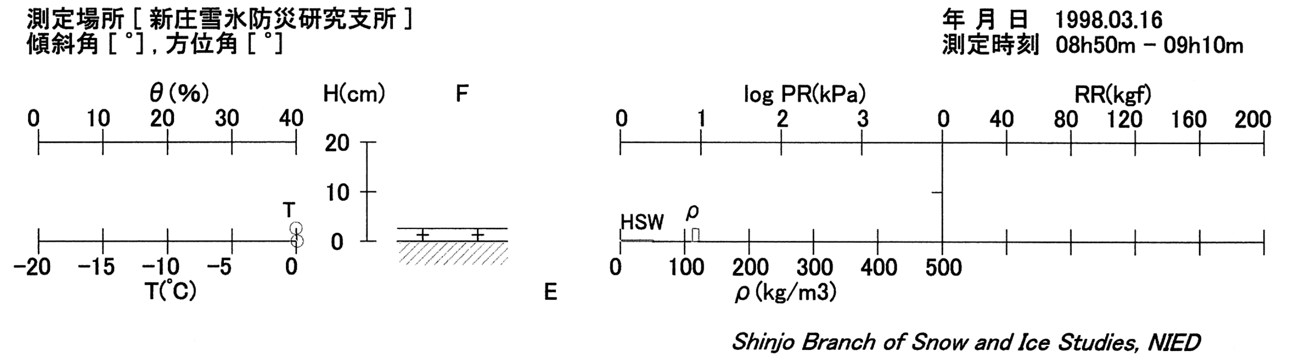
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 2.6 - 0 | ＋ | | 3 | -0.1 | 2.6 - 0 | 115 | | | | | | | |
| | | | 0 | 0.0 | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




付図 1.19　積雪断面観測図

**Fig. A1.19**　Profiles of physical properties of snow cover.




付図 1.20　積雪断面観測図

**Fig. A1.20**　Profiles of physical properties of snow cover.

付表 2.21　積雪断面観測結果

**Table A2.21**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 1999.01.05 | 53 cm | 76 mm | 143 kg/m$^3$ | ◐ | -6.1 ˚C(09h28m) | 0 m/s(09h18m) | 09h18m - 10h15m |
| 緯度 | 経度 | 標高 | 傾斜角 ° 方位角 ° | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | | H | KK,YK(KS,TS) | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 53 – 47 | + | 0.5-1.0 | 53 | -3.0 | 53 – 50 | 116 | | | 50 | 1.5 | 2.7 | 53 – 2 | 1 |
| 47 33 | + | 0.5-1.0 | 50 | -4.9 | 49 – 46 | 123 | | | 41 | 1.5 | 3.8 | 2 – 0 | 3 |
| 33 – 20 | / | 0.5-1.0 | 45 | -4.3 | 41 – 38 | 121 | | | 35 | 1.5 | 6.1 | | |
| 20 – 14 | / | 0.5-1.0 | 40 | -4.7 | 36 – 33 | 135 | | | 25 | 1.5 | 9.8 | | |
| 14 – 6 | / | 0.5-1.0 | 35 | -3.3 | 30 – 27 | 161 | | | 17 | 1.5 | 16 | | |
| 6 – 0 | ● | <0.2 | 30 | -2.5 | 26 – 23 | 154 | | | | | | | |
| | | | 25 | -1.6 | 20 – 17 | 171 | | | | | | | |
| | | | 20 | -1.0 | 11 – 8 | 177 | | | | | | | |
| | | | 15 | -0.6 | 4 – 1 | 234 | | | | | | | |
| | | | 10 | -0.4 | | | | | | | | | |
| | | | 5 | -0.1 | 53 – 0 | 143 | | | | | | | |
| | | | 0 | 0.0 | | | | | | | | | |
| 備考 | 雪質 41cm～42cmあられ1.0-2.0 | | | | | | | | | | | | |

*1: φは円板径を表わす。

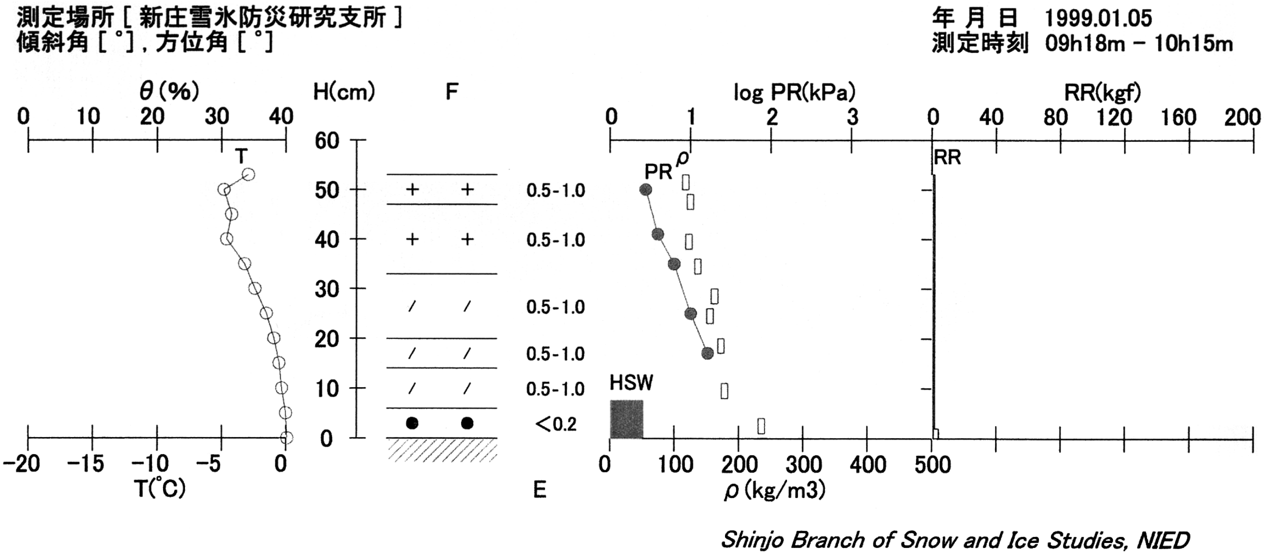
付表 2.22　積雪断面観測結果

**Table A2.22**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 1999.01.14 | 67 cm | 149 mm | 222 kg/m$^3$ | ⁎ | -0.8 ˚C(09h20m) | 2.5 m/s(09h20m) | 09h15m - 10h15m |
| 緯度 | 経度 | 標高 | 傾斜角 ° 方位角 ° | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | | H | MO.YS.SY.TA | 新庄雪氷防災研究支所 | |

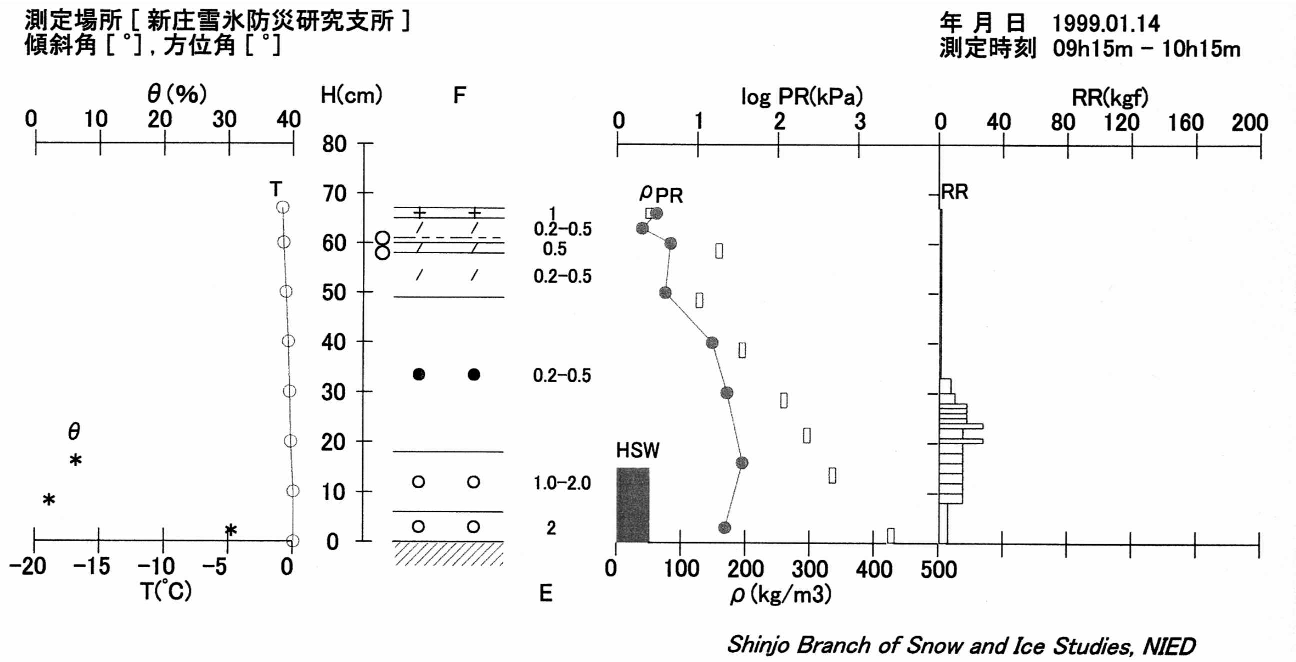
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 67 – 65 | + | 1 | 67 | -0.9 | 67 – 65 | 48 | 18 – 15 | 6 | 66 | 1.5 | 3 | 67 – 33 | 1 |
| 65 61 | / | 0.2–0.5 | 60 | -0.8 | 60 – 57 | 157 | 10 – 7 | 2 | 63 | 1.5 | 2 | 33 – 30 | 7 |
| 61 – 60 | ○ | 0.2–0.5 | 50 | -0.6 | 50 – 47 | 127 | 4 – 1 | 31 | 60 | 1.5 | 4.5 | 30 – 28 | 10 |
| 60 – 58 | / | 0.5 | 40 | -0.4 | 40 – 37 | 194 | | | 50 | 1.5 | 3.9 | 28 – 27 | 17 |
| – 58 | ○ | | 30 | -0.3 | 30 – 27 | 259 | | | 40 | 1.5 | 15 | 27 – 26 | 17 |
| 58 – 49 | / | 0.2–0.5 | 20 | -0.2 | 23 – 20 | 295 | | | 30 | 1.5 | 23 | 26 – 25 | 17 |
| 49 18 | ● | 0.2–0.5 | 10 | 0.0 | 15 – 12 | 335 | | | 16 | 1.5 | 36 | 25 – 24 | 17 |
| 18 – 6 | ○ | 1.0–2.0 | 0 | 0.0 | 3 – 0 | 426 | | | 3 | 1.5 | 22 | 24 – 23 | 27 |
| 6 – 0 | ○ | 2 | | | | | | | | | | 23 – 21 | 15 |
| | | | | | 67 – 0 | 222 | | | | | | 21 – 20 | 27 |
| | | | | | | | | | | | | 20 – 18 | 15 |
| | | | | | | | | | | | | 18 – 16 | 15 |
| | | | | | | | | | | | | 16 – 14 | 15 |
| | | | | | | | | | | | | 14 – 12 | 15 |
| | | | | | | | | | | | | 12 – 10 | 15 |
| | | | | | | | | | | | | 10 – 8 | 15 |
| | | | | | | | | | | | | 8 – 0 | 5 |
| 備考 | 2 | | | | | | | | | | | | |

*1: φは円板径を表わす。




付図 1.21　積雪断面観測図

**Fig. A1.21**　Profiles of physical properties of snow cover.




付図 1.22　積雪断面観測図

**Fig. A1.22**　Profiles of physical properties of snow cover.

**付表 2.23**　積雪断面観測結果

**Table A2.23**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 1999.01.25 | 45 cm | 173 mm | 385 kg/m$^3$ | | ◎ | -1.4 ℃(09h07m) | 1.1 m/s(09h07m) | 09h10m - 09h55m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38°47'N | 140°19'E | 127 m | ° | ° | H | MO.YS.SY.TA | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(℃) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 45 - 40 | ○ | 1 | 45 | -1.4 | 45 - 42 | 310 | 10 - 7 | 4 | 45 | 1.5 | 52 | 45 - 44 | 1 |
| 40 34 | ○ | 1-2 | 40 | -2.2 | 38 - 35 | 375 | 5 - 2 | 9 | 37 | 1.5 | 84 | 44 - 36 | 21 |
| 34 - 33 | — | | 30 | -1.4 | 31 - 28 | 248 | | | 30 | 1.5 | 34 | 36 - 25 | 21 |
| 33 - 26 | ● | 0.5-1 | 20 | -0.1 | 23 - 20 | 427 | | | 20 | 1.5 | 64 | 25 - 17 | 5 |
| 26 - 15 | ○ | 1 | 10 | 0.0 | 8 - 5 | 337 | | | 10 | 1.5 | 19 | 17 - 12 | 12 |
| 15 - 11 | ○ | 2 | 0 | 0.0 | 4 - 1 | 384 | | | 3 | 1.5 | 13 | 12 - 7 | 15 |
| 11 10 | — | | | | | | | | | | | 7 - 0 | 6 |
| 10 - 0 | ○ | 2 | | | 45 - 0 | 385 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。

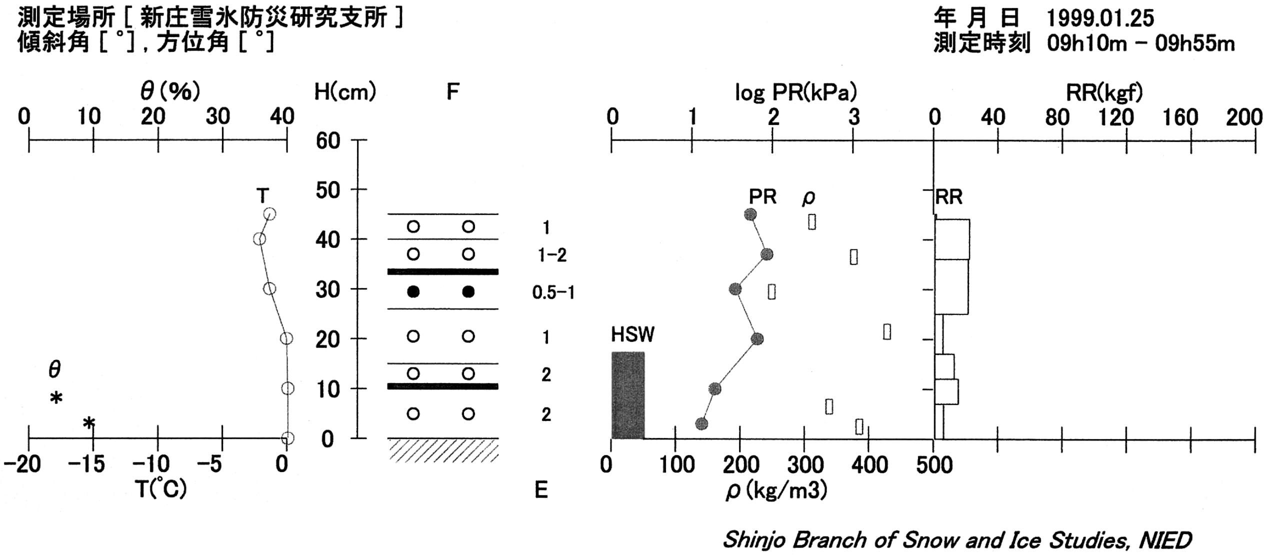
**付表 2.24**　積雪断面観測結果

**Table A2.24**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 1999.02.05 | 76 cm | 207 mm | 273 kg/m$^3$ | | ◎ | -7.1 ℃(09h20m) | 0 m/s(09h20m) | 09h20m - 10h40m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38°47'N | 140°19'E | 127 m | ° | ° | H | MO.YS.SY.TA | 新庄雪氷防災研究支所 | |

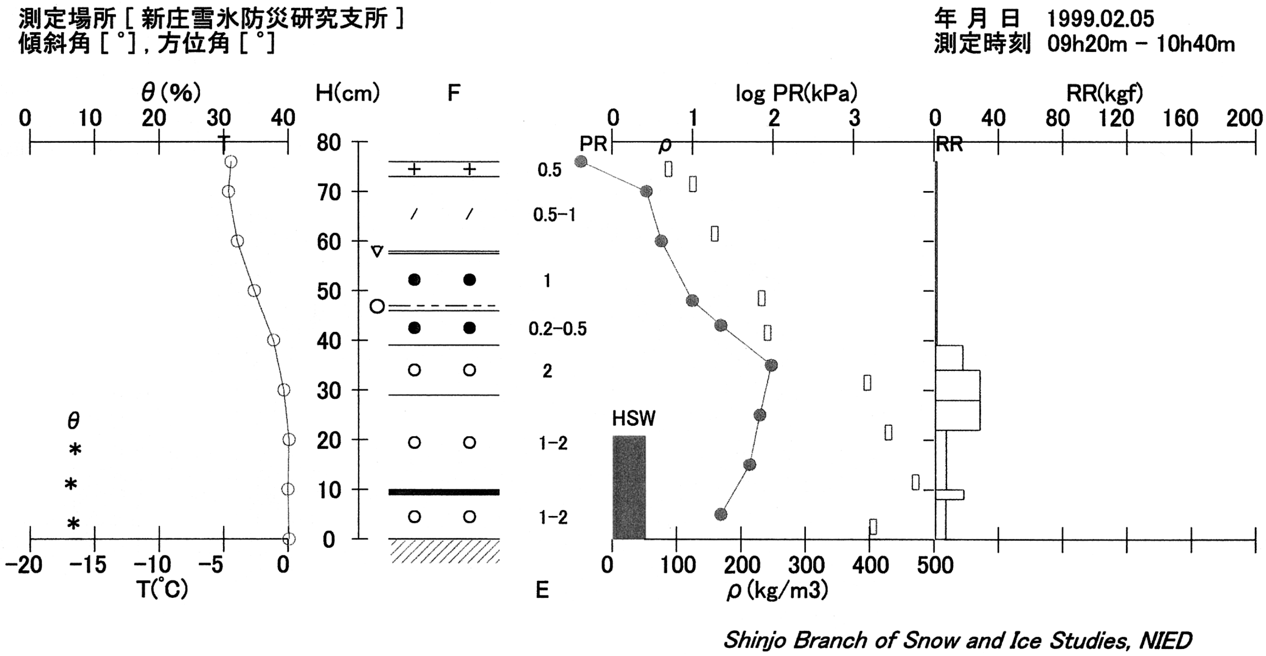
| 雪質:F,粒度:E | | | 雪温 T(℃) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 76 - 73 | + | 0.5 | 76 | -4.5 | 76 - 73 | 86 | 20 - 17 | 7 | 76 | 1.5 | 0.4 | 76 - 39 | 1 |
| 73 58 | / | 0.5-1 | 70 | -4.7 | 73 - 70 | 124 | 13 - 10 | 6 | 70 | 1.5 | 2.6 | 39 - 34 | 17 |
| 58 - 57.5 | ▽ | | 60 | -4.0 | 63 - 60 | 158 | 5 - 2 | 7 | 60 | 1.5 | 4 | 34 - 28 | 28 |
| 57.5 - 47 | ● | 1 | 50 | -2.7 | 50 - 47 | 231 | | | 48 | 1.5 | 9.7 | 28 - 22 | 28 |
| 47 - 46 | ○ | 2 | 40 | -1.2 | 43 - 40 | 240 | | | 43 | 1.5 | 22 | 22 - 10 | 7 |
| 46 - 39 | ● | 0.2-0.5 | 30 | -0.4 | 33 - 30 | 395 | | | 35 | 1.5 | 93 | 10 - 8 | 18 |
| 39 29 | ○ | 2 | 20 | 0.0 | 23 - 20 | 428 | | | 25 | 1.5 | 67 | 8 - 0 | 6 |
| 29 - 10 | ○ | 1-2 | 10 | -0.1 | 13 - 10 | 470 | | | 15 | 1.5 | 50 | | |
| 10 - 9 | — | | 0 | 0.0 | 4 - 1 | 404 | | | 5 | 1.5 | 22 | | |
| 9 - 0 | ○ | 1-2 | | | | | | | | | | | |
| | | | | | 76 - 0 | 273 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




付図 1.23　積雪断面観測図

**Fig. A1.23** Profiles of physical properties of snow cover.




付図 1.24　積雪断面観測図

**Fig. A1.24** Profiles of physical properties of snow cover.

**付表 2.25**　積雪断面観測結果

**Table A2.25**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 1999.02.15 | 92 cm | 274 mm | 298 kg/m$^3$ | ◎ | -1.2 ˚C(09h25m) | 1.4 m/s(09h25m) | 09h20m - 10h45m |
| 緯度 | 経度 | 標高 | 傾斜角 / 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ / ˚ | H | MO.YS.TA.KO | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 92 - 90 | + | 2 | 92 | -1.0 | 92 - 89 | 73 | 55 - 52 | 7 | 92 | 1.5 | 0.6 | 92 - 69 | 1 |
| 90 79 | / | 0.5 | 80 | -1.7 | 83 - 80 | 135 | 45 - 42 | 11 | 85 | 1.5 | 2.7 | 69 - 66 | 6 |
| 79 - 64 | ● | 0.2-0.5 | 70 | -0.9 | 73 - 70 | 222 | 33 - 30 | 5 | 70 | 1.5 | 17 | 66 - 62 | 5 |
| 64 - 54 | ○ | 1 | 60 | -0.7 | 63 - 60 | 299 | 20 - 17 | 7 | 60 | 1.5 | 28 | 62 - 52 | 12 |
| 54 - 43 | ○ | 1-2 | 50 | 0.0 | 53 - 50 | 360 | 10 - 7 | 8 | 50 | 1.5 | 23 | 52 - 28 | 4 |
| 43 - 37 | ● | 0.5-1 | 40 | -0.1 | 43 - 40 | 311 | | | 40 | 1.5 | 24 | 28 - 24 | 8 |
| 40 39 | ○ | 1-2 | 30 | 0.0 | 33 - 30 | 359 | | | 30 | 1.5 | 43 | 24 - 18 | 6 |
| 37 - 35 | ○ | 1-2 | 20 | -0.1 | 23 - 20 | 363 | | | 15 | 1.5 | 52 | 18 - 12 | 6 |
| 35 - 34 | — | | 10 | 0.0 | 13 - 10 | 465 | | | 3 | 1.5 | 7.7 | 12 - 7 | 7 |
| 34 - 25 | ○ | 2-5 | 0 | 0.0 | 4 - 1 | 327 | | | | | | 7 - 5 | 13 |
| 25 - 24 | — | | | | | | | | | | | 5 - 0 | 7 |
| 24 - 6 | ○ | 1-2 | | | 92 - 0 | 298 | | | | | | | |
| 6 - 5 | — | | | | | | | | | | | | |
| 5 0 | ○ | 1-2 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。

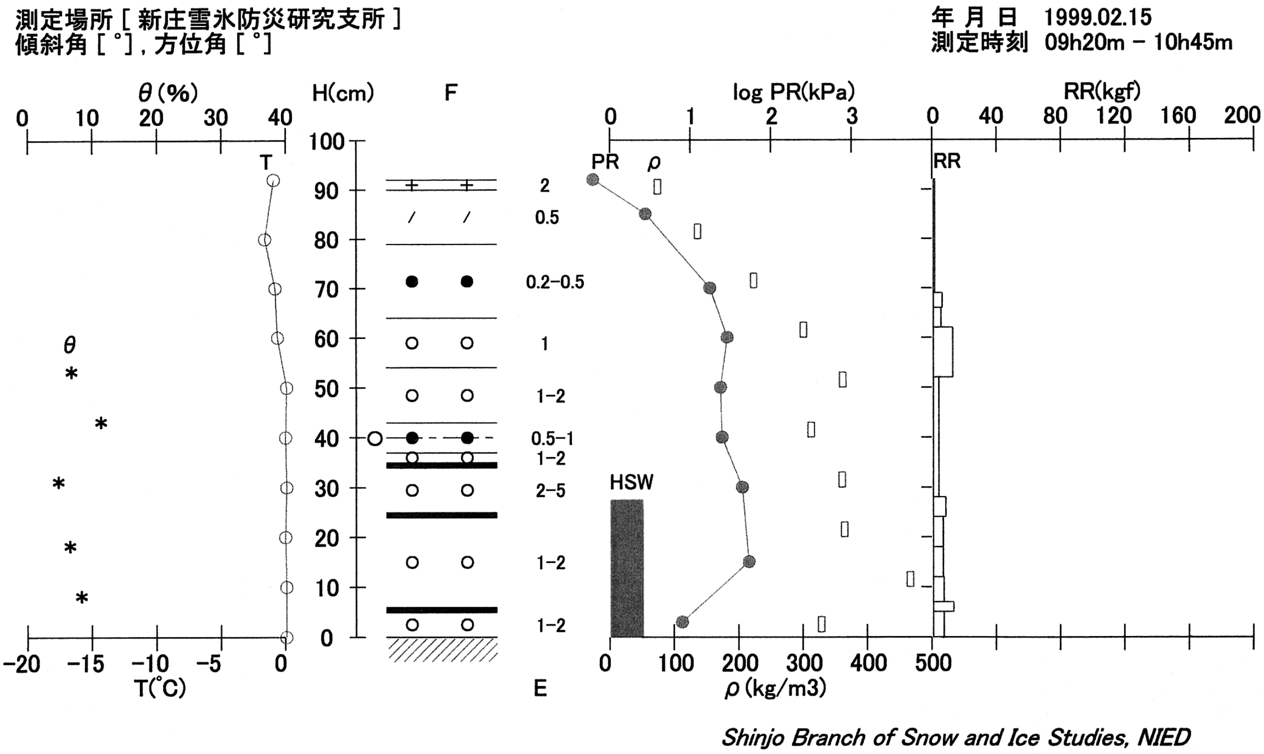
**付表 2.26**　積雪断面観測結果

**Table A2.26**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 1999.02.25 | 74 cm | 277 mm | 374 kg/m$^3$ | ● | 3.5 ˚C(09h30m) | 1.9 m/s(09h30m) | 09h30m - 11h00m |
| 緯度 | 経度 | 標高 | 傾斜角 / 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ / ˚ | H | MO.YS.SY.KO | 新庄雪氷防災研究支所 | |

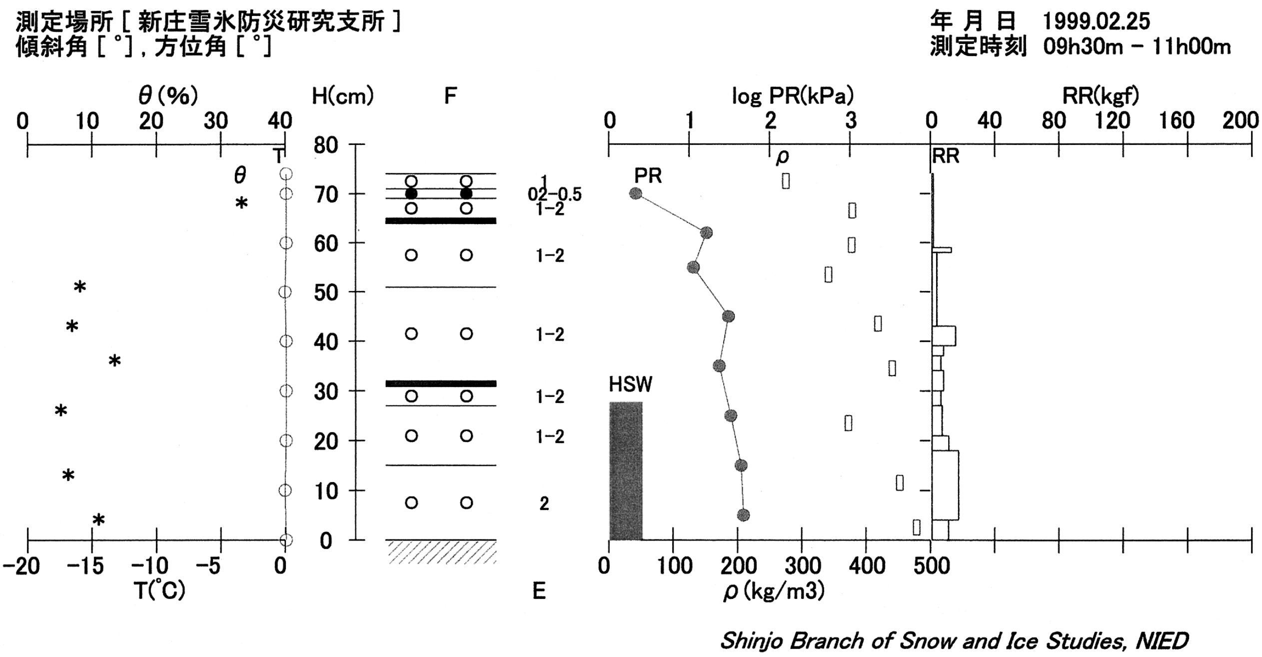
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 74 - 71 | ○ | 1 | 74 | 0.0 | 74 - 71 | 274 | 70 - 67 | 33 | 70 | 1.5 | 2.1 | 74 - 59 | 1 |
| 71 69 | ● | 02-0.5 | 70 | 0.0 | 68 - 65 | 377 | 53 - 50 | 8 | 62 | 1.5 | 16 | 59 - 58 | 12 |
| 69 - 65 | ○ | 1-2 | 60 | 0.0 | 61 - 58 | 376 | 45 - 42 | 7 | 55 | 1.5 | 11 | 58 - 43 | 3 |
| 65 - 64 | — | | 50 | -0.1 | 55 - 52 | 340 | 38 - 35 | 14 | 45 | 1.5 | 30 | 43 - 39 | 15 |
| 64 - 51 | ○ | 1-2 | 40 | 0.0 | 45 - 42 | 417 | 28 - 25 | 5 | 35 | 1.5 | 23 | 39 - 37 | 7 |
| 51 - 32 | ○ | 1-2 | 30 | 0.0 | 36 - 33 | 439 | 15 - 12 | 6 | 25 | 1.5 | 32 | 37 - 34 | 6 |
| 32 31 | — | | 20 | 0.0 | 25 - 22 | 371 | 6 - 3 | 11 | 15 | 1.5 | 43 | 34 - 30 | 7 |
| 31 - 27 | ○ | 1-2 | 10 | -0.1 | 13 - 10 | 451 | | | 5 | 1.5 | 46 | 30 - 27 | 6 |
| 27 - 15 | ○ | 1-2 | 0 | 0.0 | 4 - 1 | 477 | | | | | | 27 - 21 | 6 |
| 15 - 0 | ○ | 2 | | | | | | | | | | 21 - 18 | 11 |
| | | | | | 74 - 0 | 374 | | | | | | 18 - 4 | 16 |
| | | | | | | | | | | | | 4 - 0 | 10 |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




付図 1.25　積雪断面観測図

**Fig. A1.25**　Profiles of physical properties of snow cover.




付図 1.26　積雪断面観測図

**Fig. A1.26**　Profiles of physical properties of snow cover.

付表 2.27　積雪断面観測結果

**Table A2.27**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 傾斜角 | 全層平均密度 | 方位角 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|---|
| 1999.03.05 | 61 cm | 249 mm | | 408 kg/m$^3$ | | ◎ | 0.3 ˚C(09h30m) | 1.2 m/s(09h30m) | 09h10m − 10h35m |
| 緯度 | 経度 | 標高 | 傾斜角 | | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ | | ˚ | H | MO.YS.KS.SK | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 61 − 55 | ○ | 2-5 | 61 | 0.0 | 61 − 58 | 336 | 59 − 56 | 8 | 61 | 1.5 | 11 | 61 − 56 | 1 |
| 55 54 | — | | 50 | 0.0 | 53 − 50 | 339 | 48 − 45 | 37 | 50 | 1.5 | 10 | 56 − 51 | 17 |
| 54 − 29 | ○ | 1-2 | 40 | 0.0 | 43 − 40 | 409 | 40 − 37 | 13 | 40 | 1.5 | 19 | 51 − 27 | 3 |
| 29 − 27 | — | | 30 | 0.0 | 33 − 30 | 436 | 28 − 25 | 9 | 30 | 1.5 | 43 | 27 − 17 | 5 |
| 27 − 19 | ○ | 1-2 | 20 | 0.0 | 23 − 20 | 407 | 18 − 15 | 11 | 20 | 1.5 | 39 | 17 − 13 | 8 |
| 19 − 18 | — | | 10 | −0.1 | 13 − 10 | 435 | 6 − 3 | 8 | 10 | 1.5 | 42 | 13 − 8 | 7 |
| 18 0 | ○ | 1-2 | 0 | 0.0 | 3 − 1 | 726 | | | 5 | 1.5 | 42 | 8 − 3 | 12 |
| | | | | | | | | | | | | 3 − 1 | 15 |
| | | | | | 61 − 0 | 408 | | | | | | 1 − 0 | 27 |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。

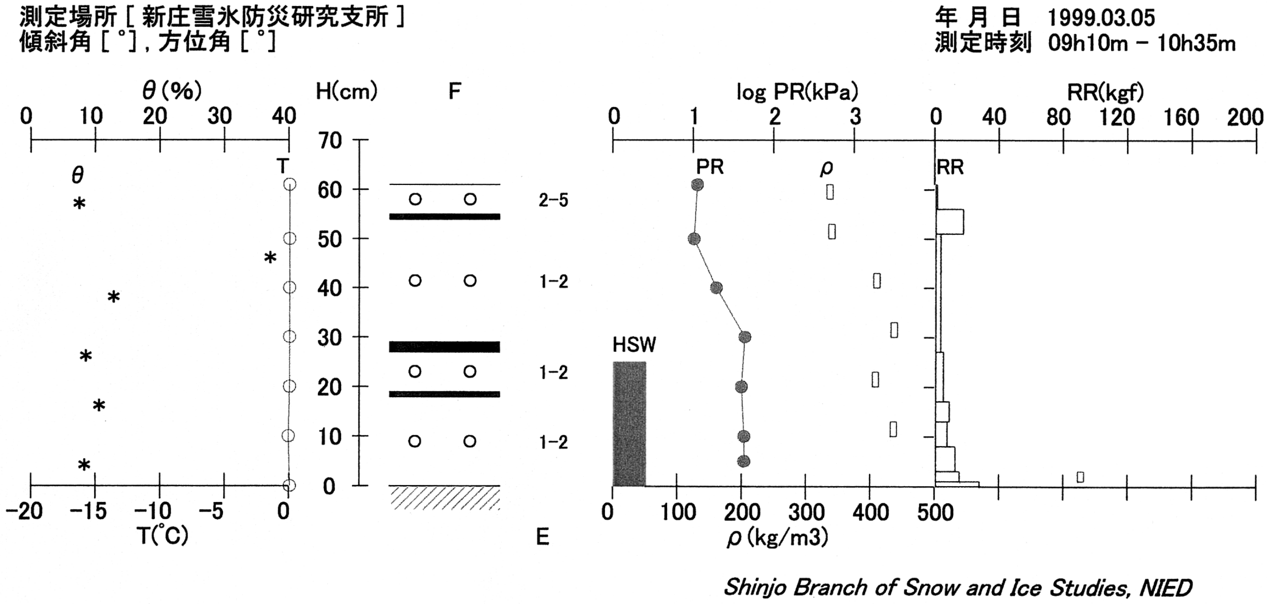
付表 2.28　積雪断面観測結果

**Table A2.28**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 傾斜角 | 全層平均密度 | 方位角 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|---|
| 1999.03.15 | 38 cm | 155 mm | | 407 kg/m$^3$ | | ● | 2.2 ˚C(09h00m) | 0.6 m/s(09h00m) | 09h05m − 09h55m |
| 緯度 | 経度 | 標高 | 傾斜角 | | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ | | ˚ | H | MO.YS.SY.TA | 新庄雪氷防災研究支所 | |

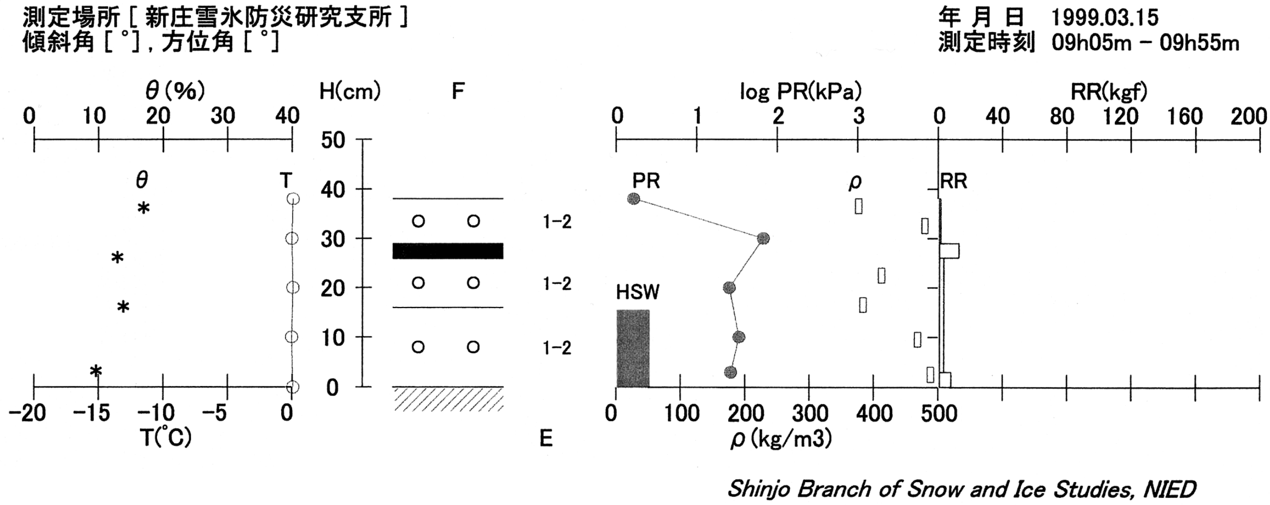
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 38 − 29 | ○ | 1-2 | 38 | 0.0 | 38 − 35 | 375 | 38 − 35 | 17 | 38 | 1.5 | 1.6 | 38 − 29 | 1 |
| 29 26 | — | | 30 | −0.1 | 34 − 31 | 478 | 28 − 25 | 13 | 30 | 1.5 | 66 | 29 − 26 | 12 |
| 26 − 16 | ○ | 1-2 | 20 | 0.0 | 24 − 21 | 411 | 18 − 15 | 14 | 20 | 1.5 | 25 | 26 − 3 | 3 |
| 16 − 0 | ○ | 1-2 | 10 | −0.1 | 18 − 15 | 382 | 5 − 2 | 10 | 10 | 1.5 | 33 | 3 − 0 | 7 |
| | | | 0 | 0.0 | 11 − 8 | 467 | | | 3 | 1.5 | 26 | | |
| | | | | | 4 − 1 | 487 | | | | | | | |
| | | | | | 38 − 0 | 407 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。




付図 1.27　積雪断面観測図

**Fig. A1.27**　Profiles of physical properties of snow cover.




付図 1.28　積雪断面観測図

**Fig. A1.28**　Profiles of physical properties of snow cover.

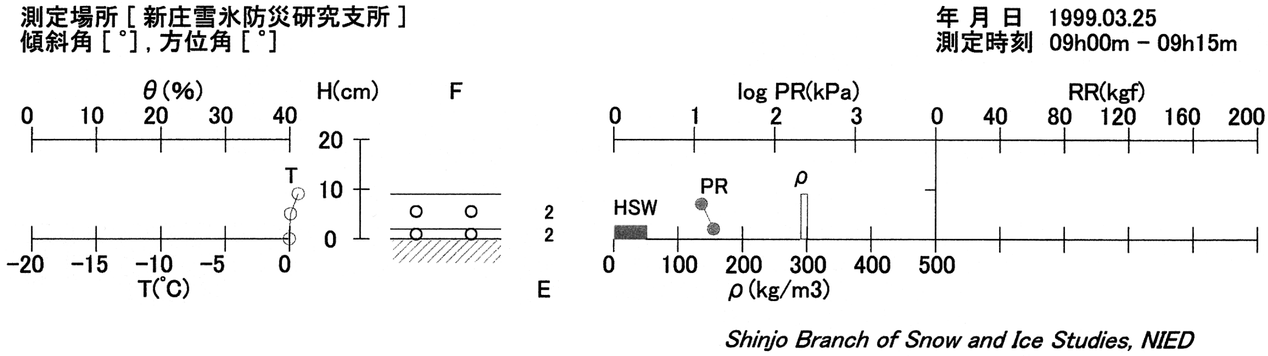
付表 2.29　　積雪断面観測結果

**Table A2.29**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 1999.03.25 | 9 cm | 27 mm | 295 kg/m$^3$ | ◎ | 0.8 ˚C(09h00m) | 0.9 m/s(09h00m) | 09h00m - 09h15m |
| 緯度 | 経度 | 標高 | 傾斜角 / 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ / ˚ | H | YS,SY,KS,SS | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, H (cm) | F | E (mm) | H | T | H | ρ | H | θ | H | *1 φ (cm) | PR | H | RR |
| 9 - 2 | ○ | | 9 | 0.6 | 9 - 0 | 295 | | | 7 | 1.5 | 12 | | |
| 2 0 | ○ | | 5 | 0.0 | | | | | 2 | 1.5 | 17 | | |
| | | | 0 | -0.1 | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




**付図 1.29**　積雪断面観測図

**Fig. A1.29**　Profiles of physical properties of snow cover.

**付表 2.30**　積雪断面観測結果

**Table A2.30**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 1999.12.15 | 12.5 cm | 24 mm | 194 kg/m³ | ◎,＊ | 4 ˚C(09h30m) | 0 m/s(09h30m) | 09h15m - 09h40m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | YK,TS,OA(TS) | 新庄雪氷防災研究支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m³) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 12.5 - 9.5 | ＋ | 0.2–0.5 | 13 | −1.8 | 12.5 - 9.5 | 104 | | | 11 | 1.5 | 1.1 | 12.5 - 2.5 | 1 |
| 9.5 6.5 | ＋,／ | 0.2–0.5 | 10 | −1.2 | 10 - 7 | 182 | | | 7 | 1.5 | 2.3 | 2.5 - 0.3 | 5 |
| 6.5 - 4.5 | ○ | 1.0–2.0 | 5 | −0.7 | 6.5 - 3.5 | 299 | | | 4.5 | 1.5 | 12 | 0.3 - −1.5 | 5 |
| 4.5 - 3 | ●,○ | 0.5–1.0 | 0 | 0.0 | 3 - 0 | 196 | | | 2.5 | 1.5 | 48 | | |
| 3 - 0 | ○ | 1.0–2.0 | | | | | | | | | | | |
| | | | | | 12.5 - 0 | 194 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。

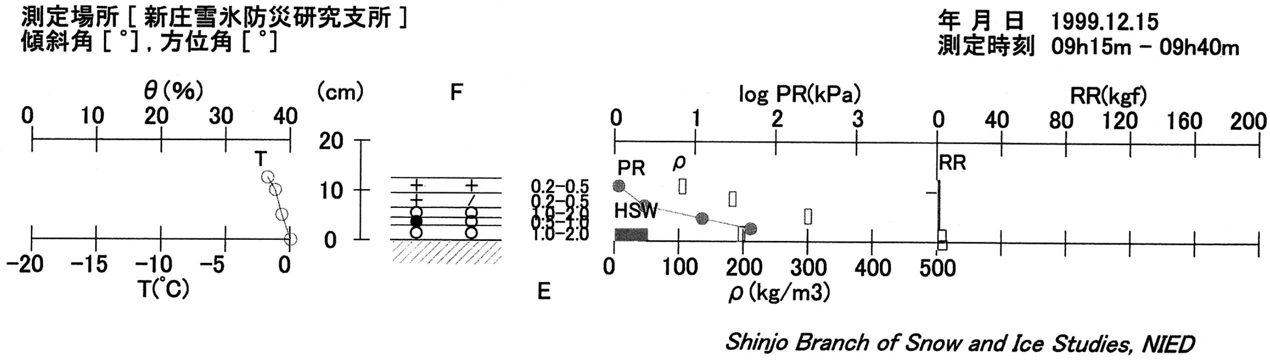
**付表 2.31**　積雪断面観測結果

**Table A2.31**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 1999.12.24 | 72 cm | 132 mm | 184 kg/m³ | ≡ | 0.4 ˚C(10h00m) | 0 m/s(10h00m) | 09h30m - 10h40m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
| 38˚47'N | 140˚19' E | 127 m | ˚ | ˚ | | O.A(T.S,K.S,K.A) | 新庄雪氷防災研究支所 |

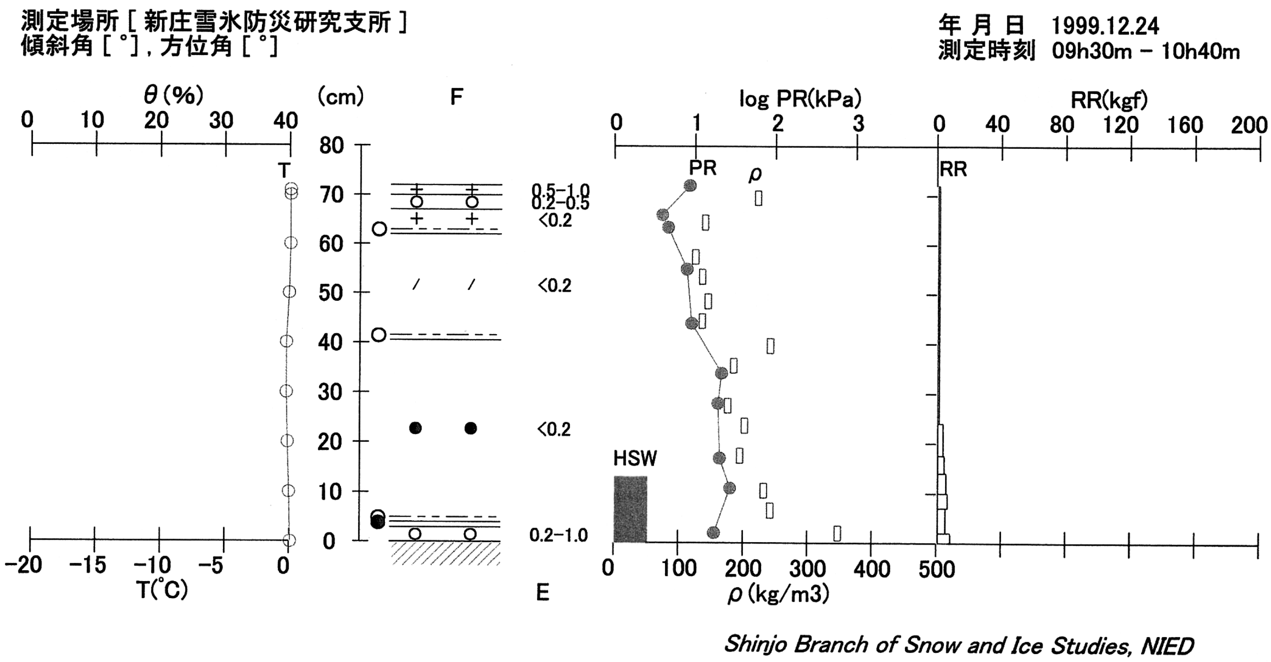
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m³) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 72 - 70 | ＋ | 0.5–1.0 | 71 | 0.0 | 71 - 68 | 221 | | | 72 | 1.5 | 8.3 | 72 - 24 | 1 |
| 70 67 | ○ | 0.2–0.5 | 70 | 0.0 | 66 - 63 | 139 | | | 66 | 1.5 | 3.8 | 24 - 17.5 | 3 |
| 67 - 63 | ＋ | <0.2 | 60 | 0.0 | 59 - 56 | 124 | | | 63.5 | 1.5 | 4.5 | 17.5 - 14 | 4 |
| 63 - 62 | ○ | 0.2–0.5 | 50 | −0.1 | 55 - 52 | 135 | | | 55 | 1.5 | 7.7 | 14 - 10 | 5 |
| 62 - 41.5 | ／ | <0.2 | 40 | −0.3 | 50 - 47 | 144 | | | 44 | 1.5 | 8.9 | 10 - 7 | 6 |
| 41.5 - 40.5 | ○ | 0.2–0.5 | 30 | −0.3 | 46 - 43 | 135 | | | 34 | 1.5 | 21 | 7 - 2 | 5 |
| 40.5 5 | ● | <0.2 | 20 | −0.2 | 41 - 38 | 241 | | | 28 | 1.5 | 19 | 2 - 0 | 8 |
| 5 - 4 | ○ | 0.2–0.5 | 10 | −0.1 | 37 - 34 | 184 | | | 17 | 1.5 | 20 | | |
| 4 - 3 | ● | <0.2 | 0 | 0.0 | 29 - 26 | 175 | | | 11 | 1.5 | 27 | | |
| 3 - 0 | ○ | 0.2–1.0 | | | 25 - 22 | 201 | | | 2 | 1.5 | 17 | | |
| | | | | | 19 - 16 | 194 | | | | | | | |
| | | | | | 12 - 9 | 231 | | | | | | | |
| | | | | | 8 - 5 | 241 | | | | | | | |
| | | | | | 3.5 - 0.5 | 346 | | | | | | | |
| | | | | | 72 - 0 | 184 | | | | | | | |
| 備考 | 雪虫が見られた | | | | | | | | | | | | |

*1: φ は円板径を表わす。




**付図 1.30** 積雪断面観測図

**Fig. A1.30** Profiles of physical properties of snow cover.




**付図 1.31** 積雪断面観測図

**Fig. A1.31** Profiles of physical properties of snow cover.

付表 2.32　　積雪断面観測結果

**Table A2.32**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 2000.01.06 | 29 cm | 110 mm | | 379 kg/m³ | ⦶ | 4.3 ˚C(09h15m) | 4.2 m/s(09h15m) | 09h15m - 10h10m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | M.O,O.O,K.I,S.Y | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m³) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 29 - 19 | ○ | 1.0-2.0 | 29 | 0.0 | 29 - 26 | 311 | 29 - 26 | 9 | 29 | 1.5 | 3.4 | 29 - 4 | 1 |
| 19 14 | ○ | 1.0-2.0 | 25 | 0.0 | 23 - 20 | 367 | 18 - 15 | 8 | 25 | 1.5 | 2.5 | 4 - 0 | 3 |
| 14 - 2 | ○,● | 1 | 20 | 0.0 | 18 - 15 | 414 | 11 - 8 | 8 | 18 | 1.5 | 12 | | |
| 2 - 0 | ○ | 1 | 15 | 0.0 | 13 - 10 | 456 | 4 - 1 | 11 | 13 | 1.5 | 17 | | |
| | | | 10 | 0.0 | 8 - 5 | 423 | | | 7 | 1.5 | 17 | | |
| | | | 5 | 0.0 | 3 - 0 | 441 | | | 2 | 1.5 | 19 | | |
| | | | 1 | 0.0 | | | | | | | | | |
| | | | | | 29 - 0 | 379 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φは円板径を表わす。

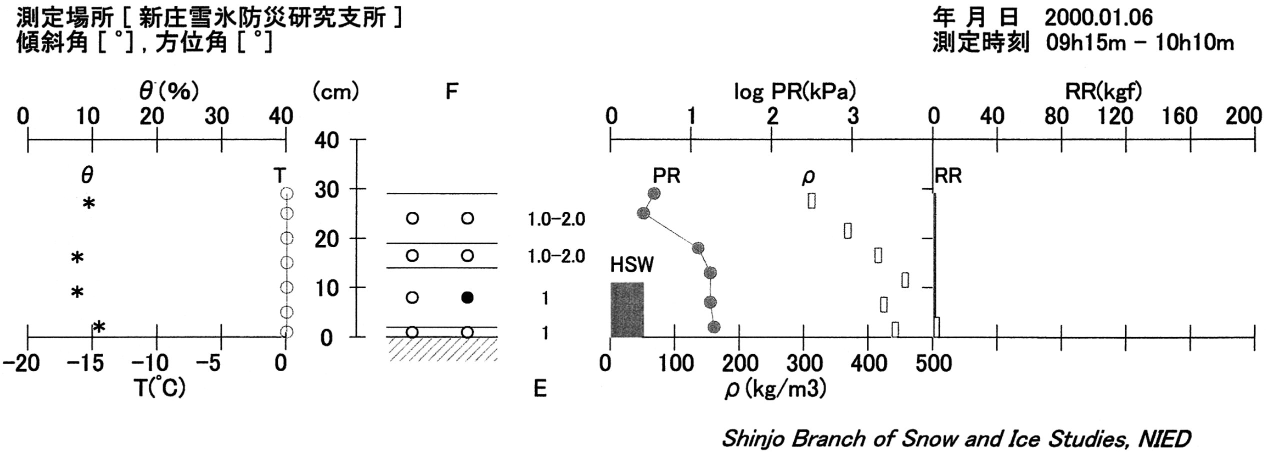
付表 2.33　　積雪断面観測結果

**Table A2.33**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 2000,01,14 | 18 cm | 72 mm | | 398 kg/m³ | ⦶ | 6.6 ˚C(09h10m) | 5 m/s(09h10m) | 09h10m - 09h55m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,HK,KO,SK | 新庄雪氷防災研究支所 | |

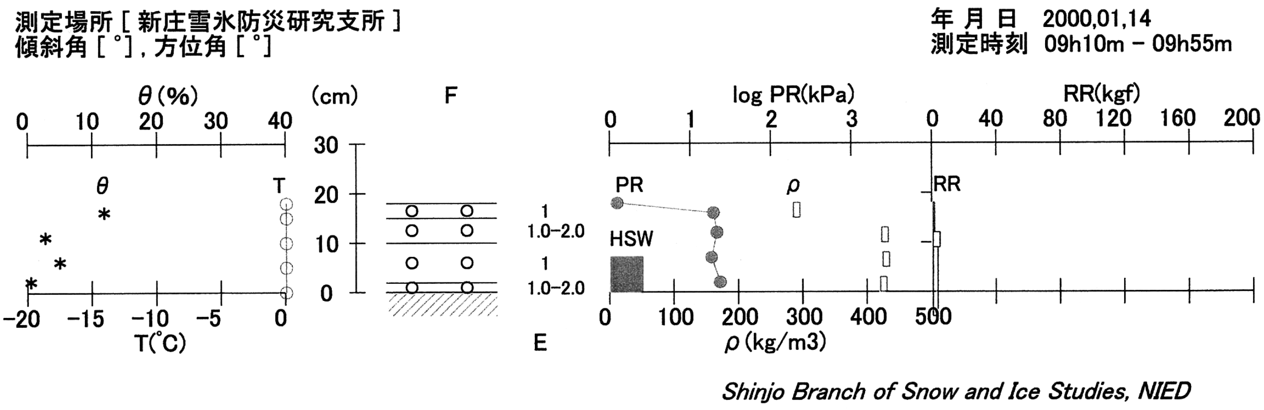
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m³) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 18 - 15 | ○ | 1 | 18 | 0.0 | 18 - 15 | 289 | 18 - 15 | 12 | 18 | 1.5 | 1.2 | 18 - 12 | 1 |
| 15 10 | ○ | 1.0-2.0 | 15 | 0.0 | 13 - 10 | 426 | 13 - 10 | 3 | 16 | 1.5 | 19 | 12 - 9 | 4 |
| 10 - 2 | ○ | 1 | 10 | 0.0 | 8 - 5 | 428 | 8 - 5 | 5 | 12 | 1.5 | 21 | 9 - -5 | 3 |
| 2 - 0 | ○ | 1.0-2.0 | 5 | 0.0 | 3 - 0 | 424 | 4 - 1 | 1 | 7 | 1.5 | 18 | | |
| | | | 0 | 0.0 | | | | | 2 | 1.5 | 23 | | |
| | | | | | 18 - 0 | 398 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φは円板径を表わす。




付図 1.32　積雪断面観測図

**Fig. A1.32**　Profiles of physical properties of snow cover.




付図 1.33　積雪断面観測図

**Fig. A1.33**　Profiles of physical properties of snow cover.

付表 2.34　　積雪断面観測結果

**Table A2.34**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2000.01.25 | 48 cm | 81 mm | 168 kg/m$^3$ | ⦶ | -2.5 ˚C(09h20m) | 0 m/s(09h20m) | 09h10h - 10h10m |
| **緯度** | **経度** | **標高** | **傾斜角　方位角** | **座標軸** | **測定者** | **測定場所** | |
| 38˚47N | 140˚19'E | 127 m | ˚　˚ | | MO,TK,KO,SY | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 48 - 20 | + | 1 | 48 | -1.7 | 48 - 45 | 48 | 20 - 17 | 10 | 48 | 1.5 | 0.4 | 48 - 0 | 1 |
| 20 16 | ○ | 1 | 40 | -1.6 | 35 - 32 | 63 | 16 - 13 | 6 | 35 | 1.5 | 1.3 | | |
| 16 - 12 | ● | 0.5-1.0 | 30 | -1.5 | 23 - 20 | 58 | 12 - 9 | 2 | 22 | 1.5 | 1.8 | | |
| 12 - 9 | ○ | 1 | 20 | -0.3 | 19 - 16 | 455 | 7 - 4 | 4 | 18 | 1.5 | 5.3 | | |
| 9 - 0 | ○ | 1.0-2.0 | 10 | -0.1 | 15 - 12 | 304 | | | 13 | 1.5 | 8.7 | | |
| | | | 0 | -0.1 | 9 - 6 | 369 | | | 9 | 1.5 | 21 | | |
| | | | | | 3 - 0 | 458 | | | 4 | 1.5 | 16 | | |
| | | | | | 48 - 0 | 168 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φは円板径を表わす。

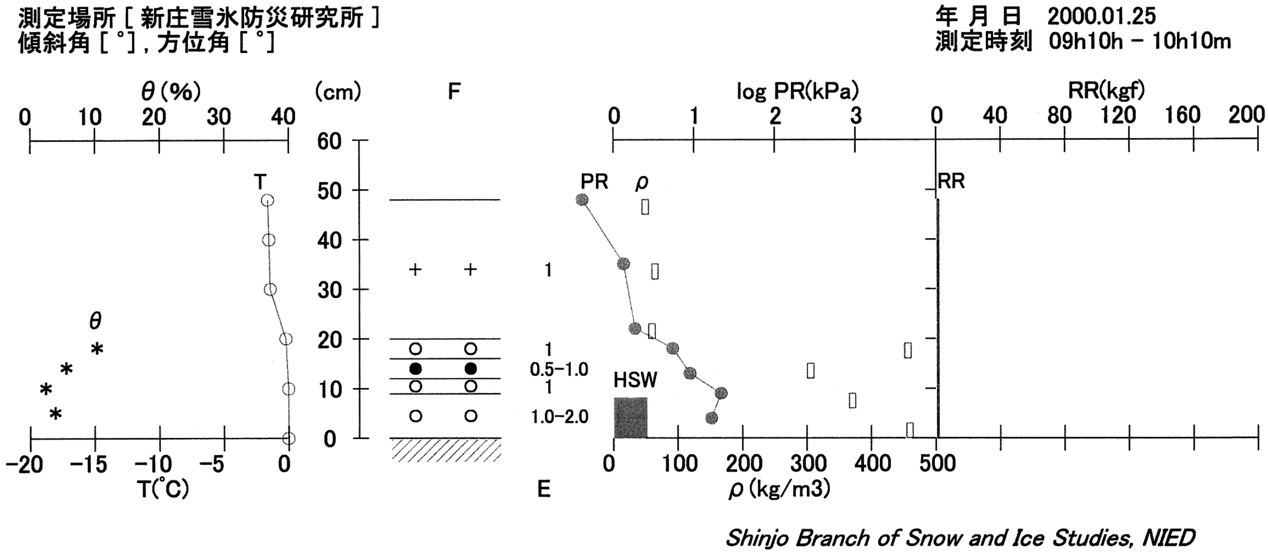
付表 2.35　　積雪断面観測結果

**Table A2.35**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2000.02.04 | 49.5 cm | 150 mm | 303 kg/m$^3$ | ⦶ | -2.6 ˚C(09h27m) | 0 m/s(09h27m) | 09h07m - 10h10m |
| **緯度** | **経度** | **標高** | **傾斜角　方位角** | **座標軸** | **測定者** | **測定場所** | |
| | | m | ˚　˚ | | M.O,O.O,K.I,S.Y | 新庄雪氷防災研究支所 | |

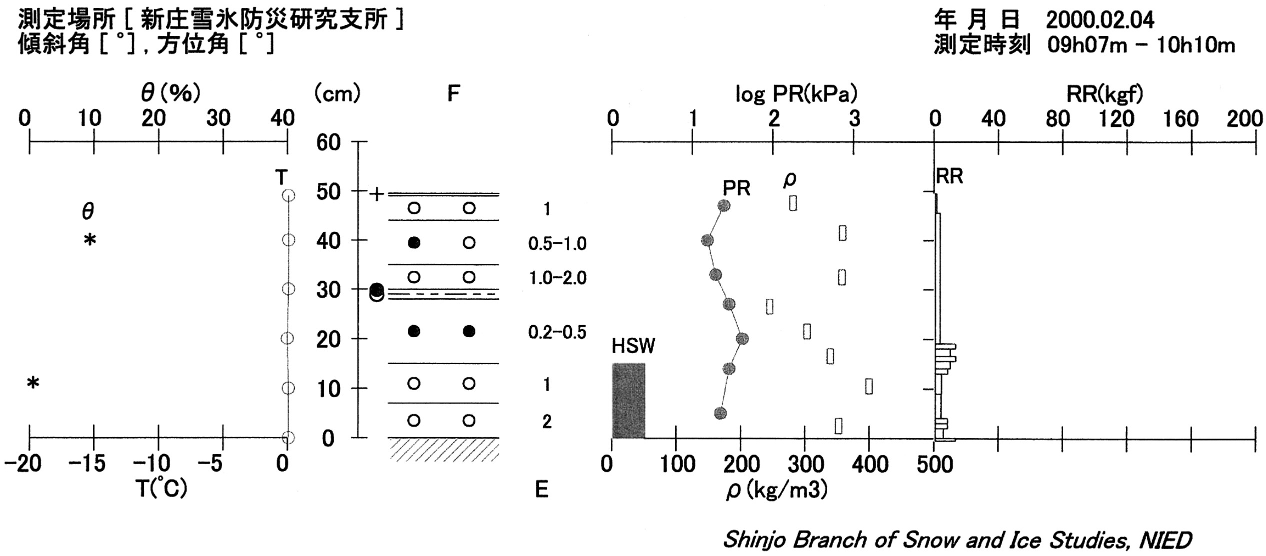
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 49.5 - 49 | + | 1 | 49 | 0.0 | 49 - 46 | 280 | 42 - 39 | 9 | 47 | 1.5 | 24 | 49.5 - 45.5 | 1 |
| 49 44 | ○ | 1 | 40 | 0.0 | 43 - 40 | 357 | 13 - 10 | 1 | 40 | 1.5 | 15 | 45.5 - 19 | 3 |
| 44 - 35 | ●,○ | 0.5-1.0 | 30 | 0.0 | 34 - 31 | 356 | | | 33 | 1.5 | 19 | 19 - 18 | 13 |
| 35 - 30 | ○ | 1.0-2.0 | 20 | -0.1 | 28 - 25 | 244 | | | 27 | 1.5 | 28 | 18 - 16.5 | 9 |
| 30 - 29 | ● | 0.5-1.0 | 10 | 0.0 | 23 - 20 | 302 | | | 20 | 1.5 | 41 | 16.5 - 15.5 | 13 |
| 29 - 28 | ○ | 1.0-2.0 | 0 | 0.0 | 18 - 15 | 338 | | | 14 | 1.5 | 28 | 15.5 - 14 | 9 |
| 28 15 | ● | 0.2-0.5 | | | 12 - 9 | 398 | | | 5 | 1.5 | 22 | 14 - 13 | 8 |
| 15 - 7 | ○ | 1 | | | 4 - 1 | 351 | | | | | | 13 - 9 | 4 |
| 7 - 0 | ○ | 2 | | | | | | | | | | 9 - 4 | 4 |
| | | | | | 49.5 - 0 | 303 | | | | | | 4 - 3 | 8 |
| | | | | | | | | | | | | 3 - 2 | 8 |
| | | | | | | | | | | | | 2 - 0 | 5 |
| | | | | | | | | | | | | 0 - -0.5 | 13 |
| 備考 | | | | | | | | | | | | | |

*1: φは円板径を表わす。




付図 1.34　積雪断面観測図

Fig. A1.34　Profiles of physical properties of snow cover.




付図 1.35　積雪断面観測図

Fig. A1.35　Profiles of physical properties of snow cover.

**付表 2.36**　積雪断面観測結果

**Table A2.36**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2000.02.15 | 60 cm | 217 mm | 362 kg/m$^3$ | ⋇ | -1.1 ˚C(09h14m) | 1 m/s(09h14m) | 09h11m - 10h16m |
| 緯度 | 経度 | 標高 | 傾斜角 / 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ / ˚ | | MO,KS,OO,SY | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 60 - 59 | + | 1 | 60 | 0.0 | 59 - 56 | 363 | 55 - 52 | 11 | 59 | 1.5 | 0.7 | | |
| 59 50 | ○ | 1 | 50 | 0.0 | 53 - 50 | 351 | 46 - 43 | 7 | 55 | 1.5 | 4.6 | | |
| 50 - 40 | ●,○ | 0.5-1.0 | 40 | 0.0 | 46 - 43 | 323 | 37 - 34 | 8 | 50 | 1.5 | 10 | | |
| 40 - 39 | ○ | 1.0-2.0 | 30 | -0.1 | 40 - 37 | 374 | 26 - 23 | 6 | 45 | 1.5 | 13 | | |
| 39 - 22 | ○ | 2 | 20 | 0.0 | 33 - 30 | 438 | 21 - 18 | 6 | 40 | 1.5 | 18 | | |
| 22 - 15 | ● | 0.2-0.5 | 10 | -0.1 | 25 - 22 | 397 | 11 - 8 | 2 | 35 | 1.5 | 8 | | |
| 15 5 | ○ | 1.0-2.0 | 0 | 0.0 | 20 - 17 | 461 | | | 30 | 1.5 | 15 | | |
| 5 - 0 | ○ | 2 | | | 11 - 8 | 387 | | | 25 | 1.5 | 18 | | |
| | | | | | 4 - 1 | 362 | | | 20 | 1.5 | 40 | | |
| | | | | | | | | | 15 | 1.5 | 48 | | |
| | | | | | 60 - 0 | 362 | | | 10 | 1.5 | 14 | | |
| 備考 | ラム硬度測定無し | | | | | | | | | | | | |

*1: φは円板径を表わす。

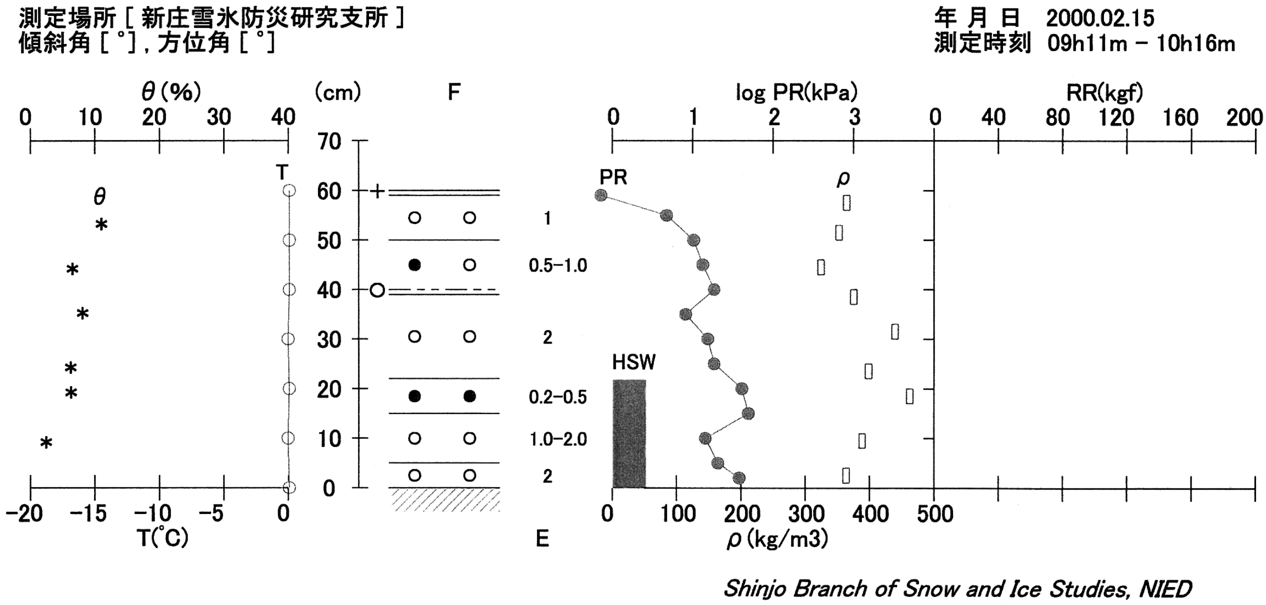
**付表 2.37**　積雪断面観測結果

**Table A2.37**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2000.02.24 | 108 cm | 305 mm | 282 kg/m$^3$ | ⋇ | -2.5 ˚C(09h43m) | 0.8 m/s(09h43m) | 09h13m - 10h35m |
| 緯度 | 経度 | 標高 | 傾斜角 / 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ / ˚ | | MO,OO,KI,SY | 新庄雪氷防災研究支所 | |

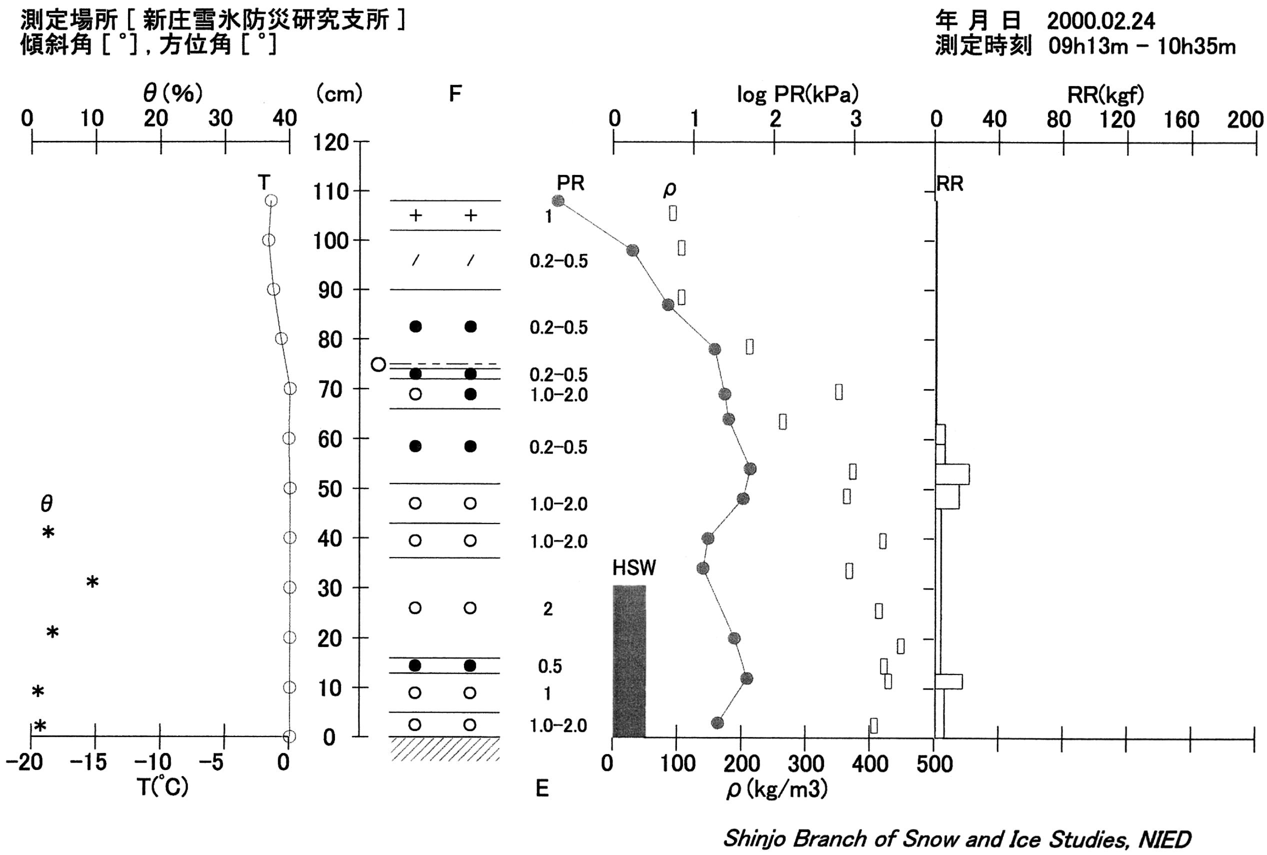
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 108 - 102 | + | 1 | 108 | -1.5 | 107 - 104 | 91 | 43 - 40 | 3 | 108 | 1.5 | 0.2 | 108 - 63 | 1 |
| 102 90 | / | 0.2-0.5 | 100 | -1.7 | 100 - 97 | 105 | 33 - 30 | 10 | 98 | 1.5 | 1.7 | 63 - 59 | 6 |
| 90 - 75 | ● | 0.2-0.5 | 90 | -1.3 | 90 - 87 | 105 | 23 - 20 | 3 | 87 | 1.5 | 4.7 | 59 - 55 | 6 |
| 75 - 74 | ○ | 0.5-1.0 | 80 | -0.7 | 80 - 77 | 211 | 11 - 8 | 1 | 78 | 1.5 | 18 | 55 - 51 | 21 |
| 74 - 72 | ● | 0.2-0.5 | 70 | 0.0 | 71 - 68 | 350 | 4 - 1 | 1 | 69 | 1.5 | 24 | 51 - 46 | 15 |
| 72 - 66 | ○,● | 1.0-2.0 | 60 | -0.1 | 65 - 62 | 263 | | | 64 | 1.5 | 27 | 46 - 13 | 4 |
| 66 51 | ● | 0.2-0.5 | 50 | 0.0 | 55 - 52 | 372 | | | 54 | 1.5 | 50 | 13 - 10 | 17 |
| 51 - 43 | ○ | 1.0-2.0 | 40 | 0.0 | 50 - 47 | 363 | | | 48 | 1.5 | 41 | 10 - 0 | 6 |
| 43 - 36 | ○ | 1.0-2.0 | 30 | 0.0 | 41 - 38 | 419 | | | 40 | 1.5 | 15 | | |
| 36 - 16 | ○ | 2 | 20 | 0.0 | 35 - 32 | 367 | | | 34 | 1.5 | 13 | | |
| 16 - 13 | ● | 0.5 | 10 | 0.0 | 27 - 24 | 413 | | | 20 | 1.5 | 32 | | |
| 13 - 5 | ○ | 1 | 0 | 0.0 | 20 - 17 | 447 | | | 12 | 1.5 | 46 | | |
| 5 - 0 | ○ | 1.0-2.0 | | | 16 - 13 | 421 | | | 3 | 1.5 | 20 | | |
| | | | | | 13 - 10 | 428 | | | | | | | |
| | | | | | 4 - 1 | 406 | | | | | | | |
| | | | | | 108 - 0 | 282 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φは円板径を表わす。




付図 1.36　積雪断面観測図

**Fig. A1.36**　Profiles of physical properties of snow cover.




付図 1.37　積雪断面観測図

**Fig. A1.37**　Profiles of physical properties of snow cover.

**付表 2.38**　積雪断面観測結果

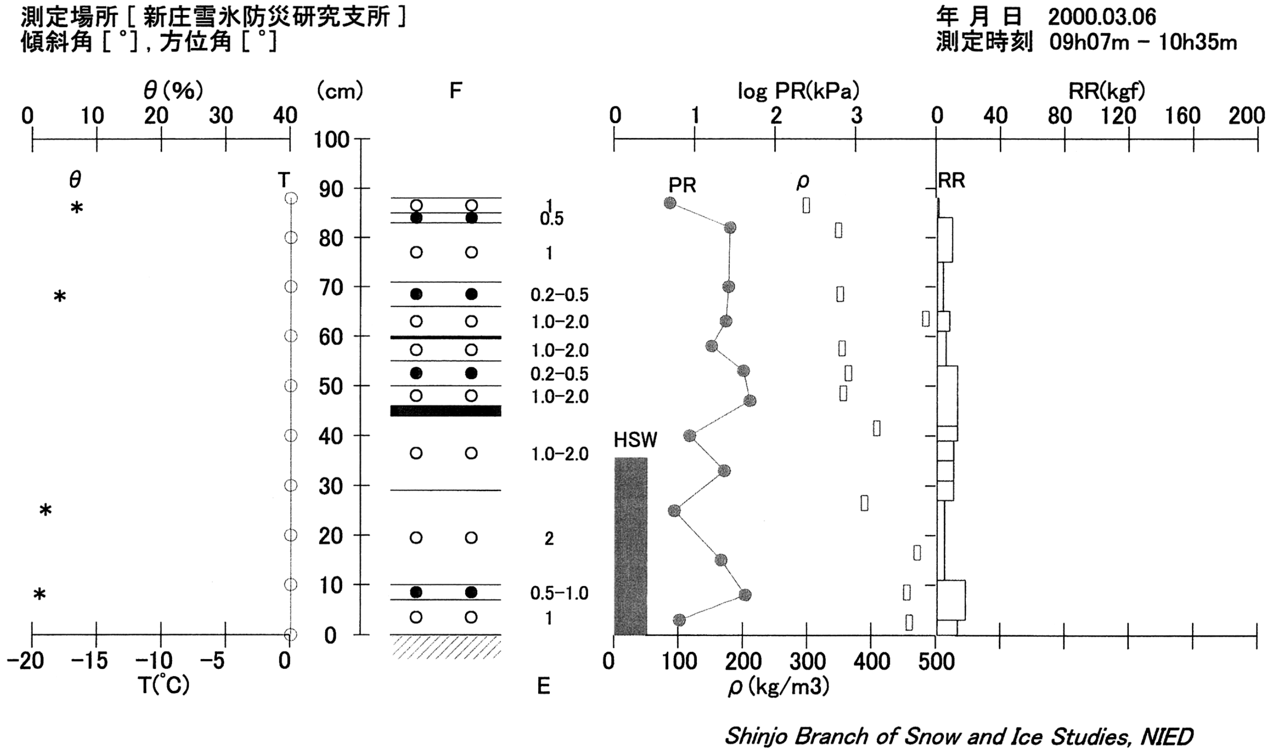
**Table A2.38**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2000.03.06 | 88 cm | 356 mm | 404 kg/m³ | ⦶ | 1.5 ˚C(10h00m) | 1.1 m/s(10h00m) | 09h07m – 10h35m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,SY,KI,KO | 新庄雪氷防災研究支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m³) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 88 – 85 | ○ | 1 | 88 | 0.0 | 88 – 85 | 297 | 88 – 85 | 7 | 87 | 1.5 | 4.8 | 88 – 84 | 1 |
| 85 83 | ● | 0.5 | 80 | 0.0 | 83 – 80 | 347 | 70 – 67 | 4 | 82 | 1.5 | 27 | 84 – 75 | 9 |
| 83 – 71 | ○ | 1 | 70 | 0.0 | 70 – 67 | 350 | 27 – 24 | 2 | 70 | 1.5 | 26 | 75 – 65 | 4 |
| 71 – 66 | ● | 0.2–0.5 | 60 | 0.0 | 65 – 62 | 483 | 10 – 7 | 1 | 63 | 1.5 | 24 | 65 – 61 | 8 |
| 66 – 60 | ○ | 1.0–2.0 | 50 | 0.0 | 59 – 56 | 353 | | | 58 | 1.5 | 16 | 61 – 54 | 6 |
| 60 – 59.5 | — | | 40 | 0.0 | 54 – 51 | 363 | | | 53 | 1.5 | 40 | 54 – 42 | 13 |
| 59.5 55 | ○ | 1.0–2.0 | 30 | 0.0 | 50 – 47 | 355 | | | 47 | 1.5 | 48 | 42 – 39 | 13 |
| 55 – 50 | ● | 0.2–0.5 | 20 | 0.0 | 43 – 40 | 407 | | | 40 | 1.5 | 8.5 | 39 – 35 | 10 |
| 50 – 46 | ○ | 1.0–2.0 | 10 | 0.0 | 28 – 25 | 388 | | | 33 | 1.5 | 23 | 35 – 31 | 10 |
| 46 – 44 | — | | 0 | 0.0 | 18 – 15 | 470 | | | 25 | 1.5 | 5.5 | 31 – 27 | 10 |
| 44 – 29 | ○ | 1.0–2.0 | | | 10 – 7 | 454 | | | 15 | 1.5 | 21 | 27 – 11 | 5 |
| 29 – 10 | ○ | 2 | | | 4 – 1 | 458 | | | 8 | 1.5 | 42 | 11 – 3 | 18 |
| 10 – 7 | ● | 0.5–1.0 | | | | | | | 3 | 1.5 | 6.4 | 3 – 0 | 13 |
| 7 0 | ○ | 1 | | | 88 – 0 | 404 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φは円板径を表わす。




**付図 1.38**　積雪断面観測図

**Fig. A1.38**　Profiles of physical properties of snow cover.

付表 2.39　　積雪断面観測結果

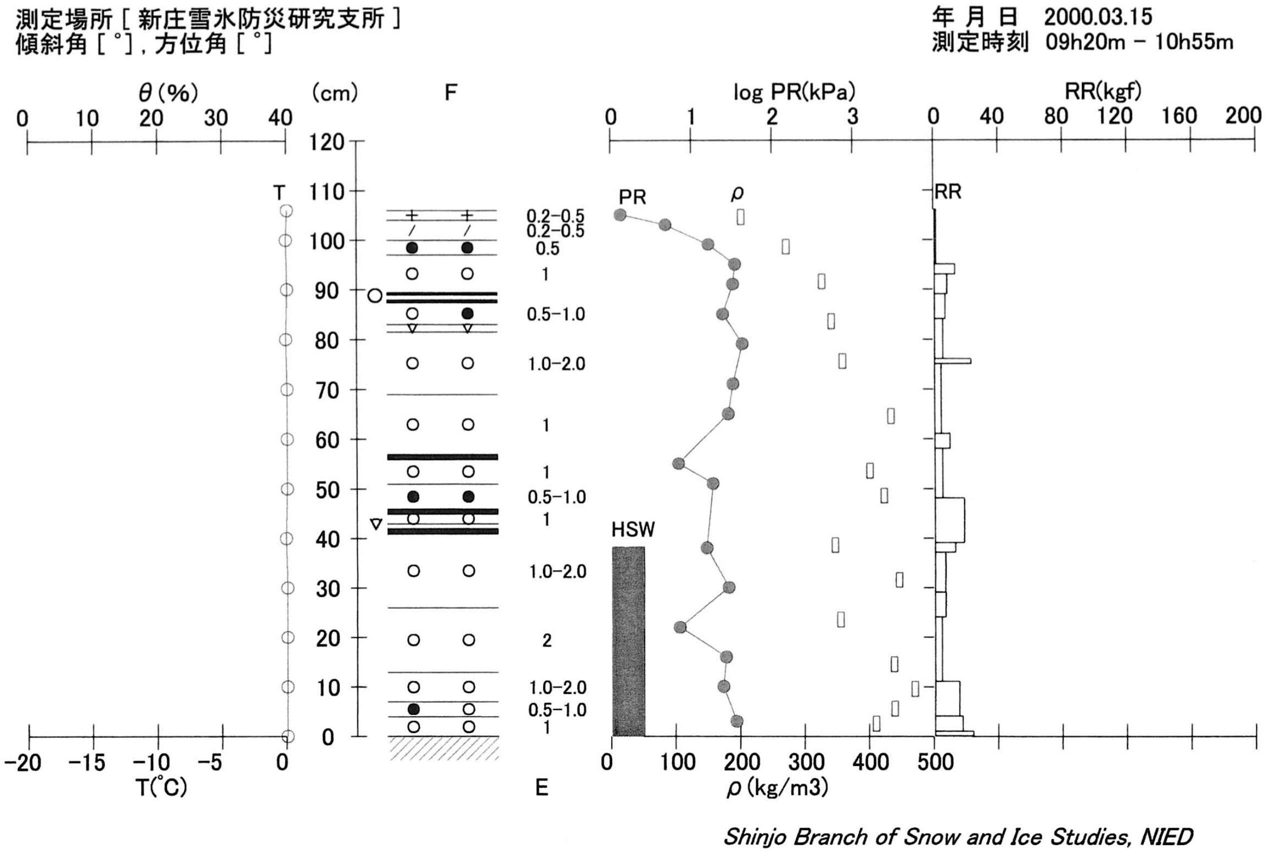
**Table A2.39**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2000.03.15 | 106 cm | 382 mm | 360 kg/m³ | ◎ | 1.8 ˚C(09h21m) | 3 m/s(09h21m) | 09h20m - 10h55m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,OO,SY,KI | 新庄雪氷防災研究支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m³) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 106 - 104 | + | 0.2-0.5 | 106 | 0.0 | 106 - 103 | 201 | | | 105 | 1.5 | 1.3 | 106 - 95 | 1 |
| 104 100 | / | 0.2-0.5 | 100 | -0.1 | 100 - 97 | 271 | | | 103 | 1.5 | 4.7 | 95 - 93 | 13 |
| 100 - 97 | ● | 0.5 | 90 | 0.0 | 93 - 90 | 326 | | | 99 | 1.5 | 16 | 93 - 89 | 8 |
| 97 - 89.5 | ○ | 1 | 80 | -0.1 | 85 - 82 | 341 | | | 95 | 1.5 | 34 | 89 - 84 | 7 |
| 89.5 - 89 | — | | 70 | 0.0 | 77 - 74 | 358 | | | 91 | 1.5 | 32 | 84 - 76 | 5 |
| 89 - 88 | ○ | 1.0-2.0 | 60 | 0.0 | 66 - 63 | 433 | | | 85 | 1.5 | 24 | 76 - 75 | 23 |
| 88 87.5 | — | | 50 | 0.0 | 55 - 52 | 400 | | | 79 | 1.5 | 42 | 75 - 61 | 4 |
| 87.5 - 83 | ○,● | 0.5-1.0 | 40 | -0.1 | 50 - 47 | 422 | | | 71 | 1.5 | 32 | 61 - 58 | 9 |
| 83 - 81.5 | ▽ | | 30 | 0.0 | 40 - 37 | 346 | | | 65 | 1.5 | 28 | 58 - 48 | 5 |
| 81.5 - 69 | ○ | 1.0-2.0 | 20 | 0.0 | 33 - 30 | 445 | | | 55 | 1.5 | 6.7 | 48 - 39 | 18 |
| 69 - 57 | ○ | 1 | 10 | 0.0 | 25 - 22 | 354 | | | 51 | 1.5 | 18 | 39 - 37 | 13 |
| 57 - 56 | — | | 0 | 0.0 | 16 - 13 | 437 | | | 38 | 1.5 | 15 | 37 - 29 | 6 |
| 56 - 51 | ○ | 1 | | | 11 - 8 | 469 | | | 30 | 1.5 | 28 | 29 - 24 | 7 |
| 51 46 | ● | 0.5-1.0 | | | 7 - 4 | 438 | | | 22 | 1.5 | 6.9 | 24 - 11 | 4 |
| 46 - 45 | — | | | | 4 - 1 | 409 | | | 16 | 1.5 | 26 | 11 - 4 | 15 |
| 45 - 43 | ○ | 1 | | | | | | | 10 | 1.5 | 24 | 4 - 1 | 17 |
| 43 - 42 | ▽ | | | | 106 - 0 | 360 | | | 3 | 1.5 | 35 | 1 - 0 | 24 |
| 42 - 41 | — | | | | | | | | | | | | |
| 41 - 26 | ○ | 1.0-2.0 | | | | | | | | | | | |
| 26 - 13 | ○ | 2 | | | | | | | | | | | |
| 13 - 7 | ○ | 1.0-2.0 | | | | | | | | | | | |
| 7 - 4 | ●,○ | 0.5-1.0 | | | | | | | | | | | |
| 4 - 0 | ○ | 1 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φは円板径を表わす。




**付図 1.39**　積雪断面観測図

**Fig. A1.39**　Profiles of physical properties of snow cover.

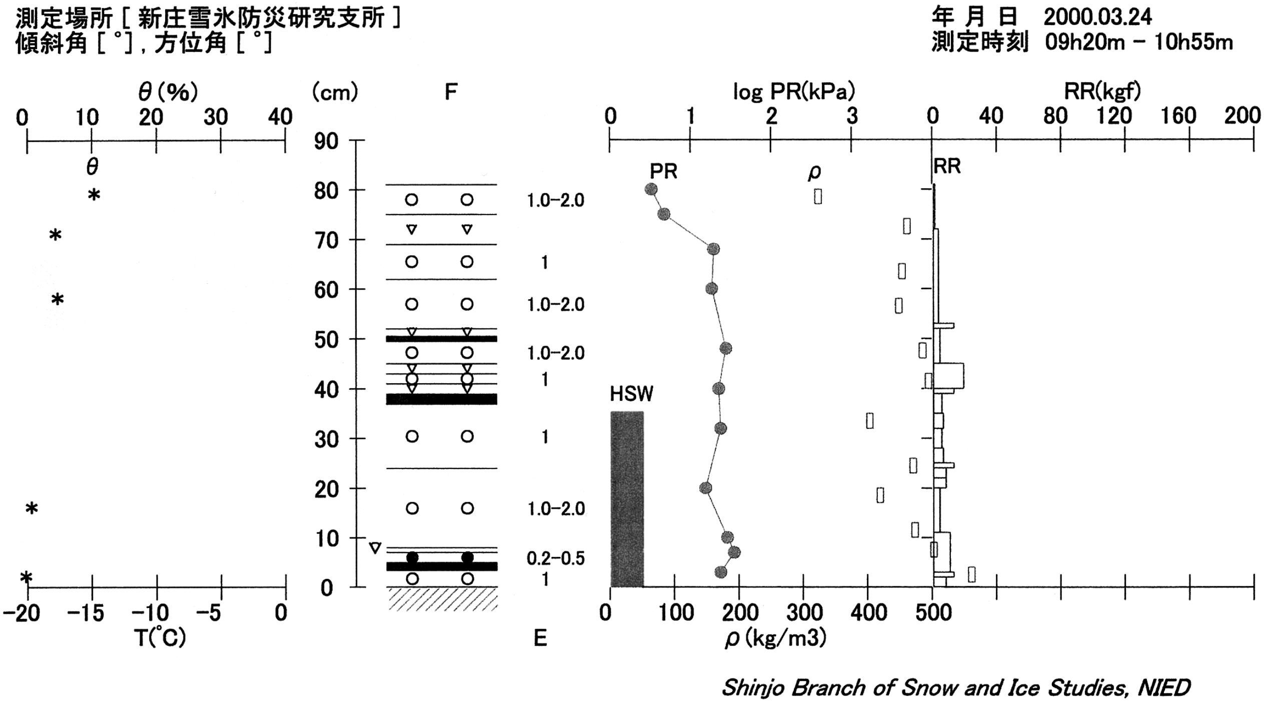
**付表 2.40**　　積雪断面観測結果

**Table A2.40**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2000.03.24 | 81 cm | 353 mm | 436 kg/m³ | ● | 4 ˚C(10h00m) | 5.5 m/s(10h00m) | 09h20m - 10h55m |
| **緯度** | **経度** | **標高** | **傾斜角** / **方位角** | **座標軸** | **測定者** | **測定場所** | |
| 38˚47'N | 140˚19'E | 127 m | ˚ / ˚ | | MO,TK,SY,KI | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m³) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 81 - 75 | ○ | 1.0–2.0 | | | 80 - 77 | 322 | 81 - 78 | 10 | 80 | 1.5 | 3.2 | 81 - 72 | 1 |
| 75 69 | ▽ | | | | 74 - 71 | 460 | 73 - 70 | 4 | 75 | 1.5 | 4.6 | 72 - 53 | 3 |
| 69 - 62 | ○ | 1 | | | 65 - 62 | 452 | 60 - 57 | 5 | 68 | 1.5 | 19 | 53 - 52 | 13 |
| 62 - 52 | ○ | 1.0–2.0 | | | 58 - 55 | 447 | 18 - 15 | 1 | 60 | 1.5 | 18 | 52 - 45 | 4 |
| 52 - 50.5 | ▽ | | | | 49 - 46 | 484 | 4 - 1 | 0 | 48 | 1.5 | 27 | 45 - 40 | 19 |
| 50.5 - 49.5 | — | | | | 43 - 40 | 493 | | | 40 | 1.5 | 22 | 40 - 39 | 13 |
| 49.5 45 | ○ | 1.0–2.0 | | | 35 - 32 | 402 | | | 32 | 1.5 | 23 | 39 - 35 | 5 |
| 45 - 43 | ▽ | | | | 26 - 23 | 469 | | | 20 | 1.5 | 15 | 35 - 32 | 6 |
| 43 - 41 | ○ | 1 | | | 20 - 17 | 418 | | | 10 | 1.5 | 28 | 32 - 28 | 5 |
| 41 - 39 | ▽ | | | | 13 - 10 | 472 | | | 7 | 1.5 | 34 | 28 - 25 | 6 |
| 39 - 37 | — | | | | 9 - 6 | 501 | | | 3 | 1.5 | 23 | 25 - 24 | 13 |
| 37 - 24 | ○ | 1 | | | 4 - 1 | 560 | | | | | | 24 - 22 | 8 |
| 24 - 8 | ○ | 1.0–2.0 | | | | | | | | | | 22 - 20 | 8 |
| 8 7 | ▽ | | | | 81 - 0 | 436 | | | | | | 20 - 11 | 4 |
| 7 - 5 | ● | 0.2–0.5 | | | | | | | | | | 11 - 3 | 10 |
| 5 - 3.5 | — | | | | | | | | | | | 3 - 2 | 13 |
| 3.5 - 0 | ○ | 1 | | | | | | | | | | 2 - 0 | 8 |
| 備考 | | | | | | | | | | | | | |

*1: φは円板径を表わす。




**付図 1.40**　積雪断面観測図

**Fig. A1.40**　Profiles of physical properties of snow cover.

付表 2.41　　積雪断面観測結果

**Table A2.41**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 2000.12.15 | 31.5 cm | 48 mm | 151 kg/m$^3$ | | ⦶ | | | 09h15m – 10h05m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38°47'N | 140°19'E | 127 m | ° | ° | | OA,KK,YK,KS,NA | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(°C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 31.5 – 31 | ∇ | | 31 | 1.8 | 31 – 25 | 84 | | | 28 | 1.5 | 3.9 | 31.5 – 0.5 | 1 |
| 31 25 | + | 0.5–1.0 | 25 | 0.1 | 23 – 20 | 101 | | | 21 | 1.5 | 8.7 | | |
| 25 – 18 | /,+ | 0.5–1.0 | 20 | 0.0 | 18 – 15 | 146 | | | 15 | 1.5 | 14 | | |
| 18 – 17.5 | ○ | 1–2.0 | 15 | 0.1 | 13 – 10 | 205 | | | 9 | 1.5 | 24 | | |
| 17.5 – 13 | ● | 0.5–1.0 | 10 | –0.2 | 8 – 5 | 220 | | | 4 | 1.5 | 38 | | |
| 13 – 12 | ○ | 2.0–5.0 | 5 | –0.1 | 3 – 0 | 293 | | | | | | | |
| 12 0 | ● | 0.2–0.5 | 0 | –0.1 | | | | | | | | | |
| | | | | | 31 – 0 | 151 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。

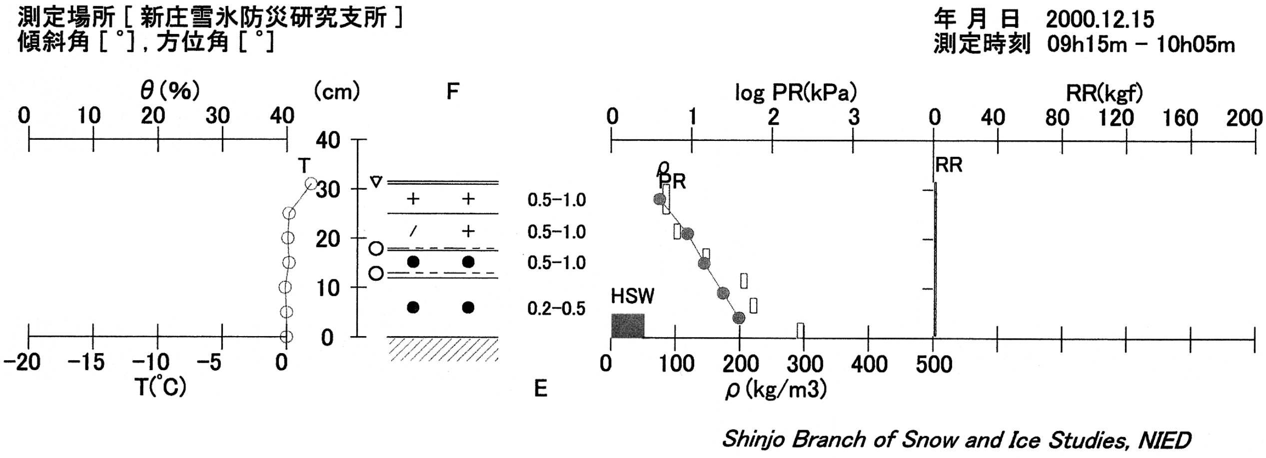
付表 2.42　　積雪断面観測結果

**Table A2.42**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 2000.12.25 | 4 cm | 3 mm | 67 kg/m$^3$ | | ⦶ | –1 °C(09.15) | 0.4 m/s(09.15) | 09h15m – 09h20m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38°47'N | 140°19'E | 127 m | ° | ° | | KS,TS | 新庄雪氷防災研究所 | |

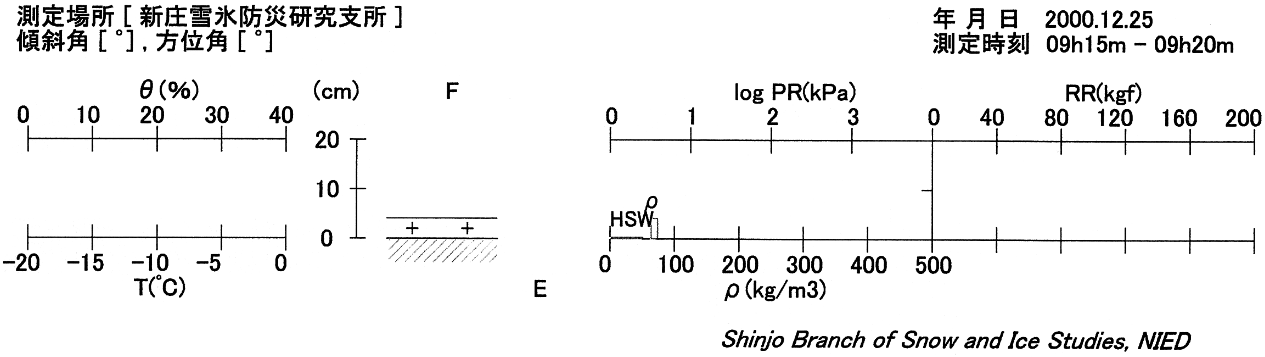
| 雪質:F,粒度:E | | | 雪温 T(°C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 4 – 0 | + | | | | 4 – 0 | 67 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




**付図 1.41**　積雪断面観測図

**Fig. A1.41**　Profiles of physical properties of snow cover.




**付図 1.42**　積雪断面観測図

**Fig. A1.42**　Profiles of physical properties of snow cover.

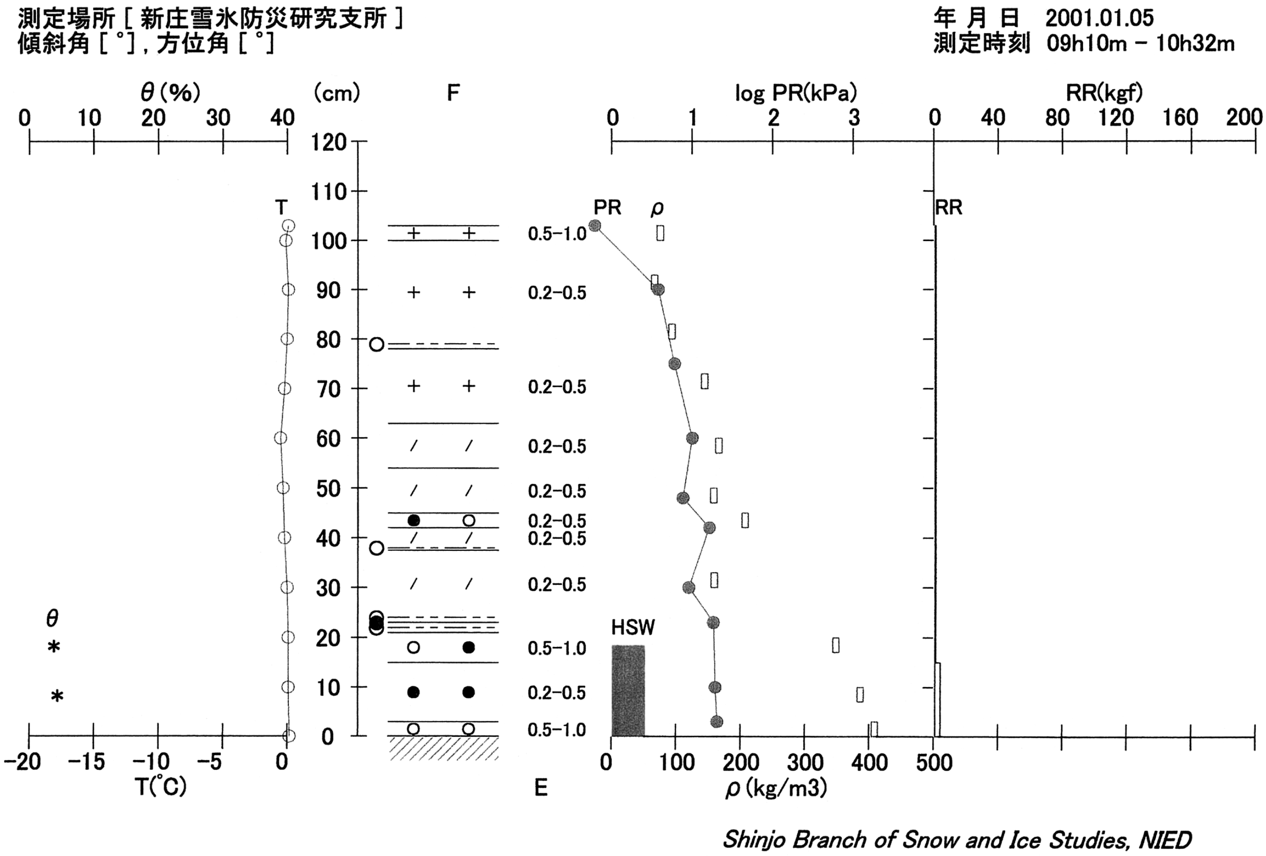
付表 2.43　積雪断面観測結果

Table A2.43　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2001.01.05 | 103 cm | 184 mm | 179 kg/m$^3$ | * | -0.6 ˚C(09h40m) | 0.1 m/s(09h40m) | 09h10m - 10h32m |
| 緯度 | 経度 | 標高 | 傾斜角 ˚ / 方位角 ˚ | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | | | MO,OO,K.I,SY | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 103 - 100 | ＋ | 0.5-1.0 | 103 | 0.0 | 103 - 100 | 74 | 20 - 17 | 4 | 103 | 1.5 | 0.6 | 103 - 15 | 1 |
| 100 79 | ＋ | 0.2-0.5 | 100 | -0.2 | 93 - 90 | 65 | 10 - 7 | 4 | 90 | 1.5 | 3.7 | 15 - 0 | 3 |
| 79 - 78 | ○ | 0.2-0.5 | 90 | 0.0 | 83 - 80 | 92 | | | 75 | 1.5 | 5.9 | | |
| 78 - 63 | ＋ | 0.2-0.5 | 80 | -0.1 | 73 - 70 | 143 | | | 60 | 1.5 | 9.8 | | |
| 63 - 54 | / | 0.2-0.5 | 70 | -0.3 | 60 - 57 | 165 | | | 48 | 1.5 | 7.5 | | |
| 54 - 45 | / | 0.2-0.5 | 60 | -0.6 | 50 - 47 | 157 | | | 42 | 1.5 | 16 | | |
| 45 42 | ●,○ | 0.2-0.5 | 50 | -0.4 | 45 - 42 | 206 | | | 30 | 1.5 | 8.9 | | |
| 42 - 38 | / | 0.2-0.5 | 40 | -0.3 | 33 - 30 | 158 | | | 23 | 1.5 | 18 | | |
| 38 - 37.5 | ○ | 0.5-1.0 | 30 | -0.1 | 20 - 17 | 347 | | | 10 | 1.5 | 19 | | |
| 37.5 - 24 | / | 0.2-0.5 | 20 | 0.0 | 10 - 7 | 385 | | | 3 | 1.5 | 20 | | |
| 24 - 23 | ○ | 0.5-1.0 | 10 | 0.0 | 3 - 0 | 407 | | | | | | | |
| 23 - 22 | ● | 0.2-0.5 | 0 | 0.1 | | | | | | | | | |
| 22 - 21 | ○ | 1 | | | 103 - 0 | 179 | | | | | | | |
| 21 15 | ○,● | 0.5-1.0 | | | | | | | | | | | |
| 15 - 3 | ● | 0.2-0.5 | | | | | | | | | | | |
| 3 - 0 | ○ | 0.5-1.0 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。




**付図 1.43**　積雪断面観測図

**Fig. A1.43**　Profiles of physical properties of snow cover.

付表 2.44　　積雪断面観測結果

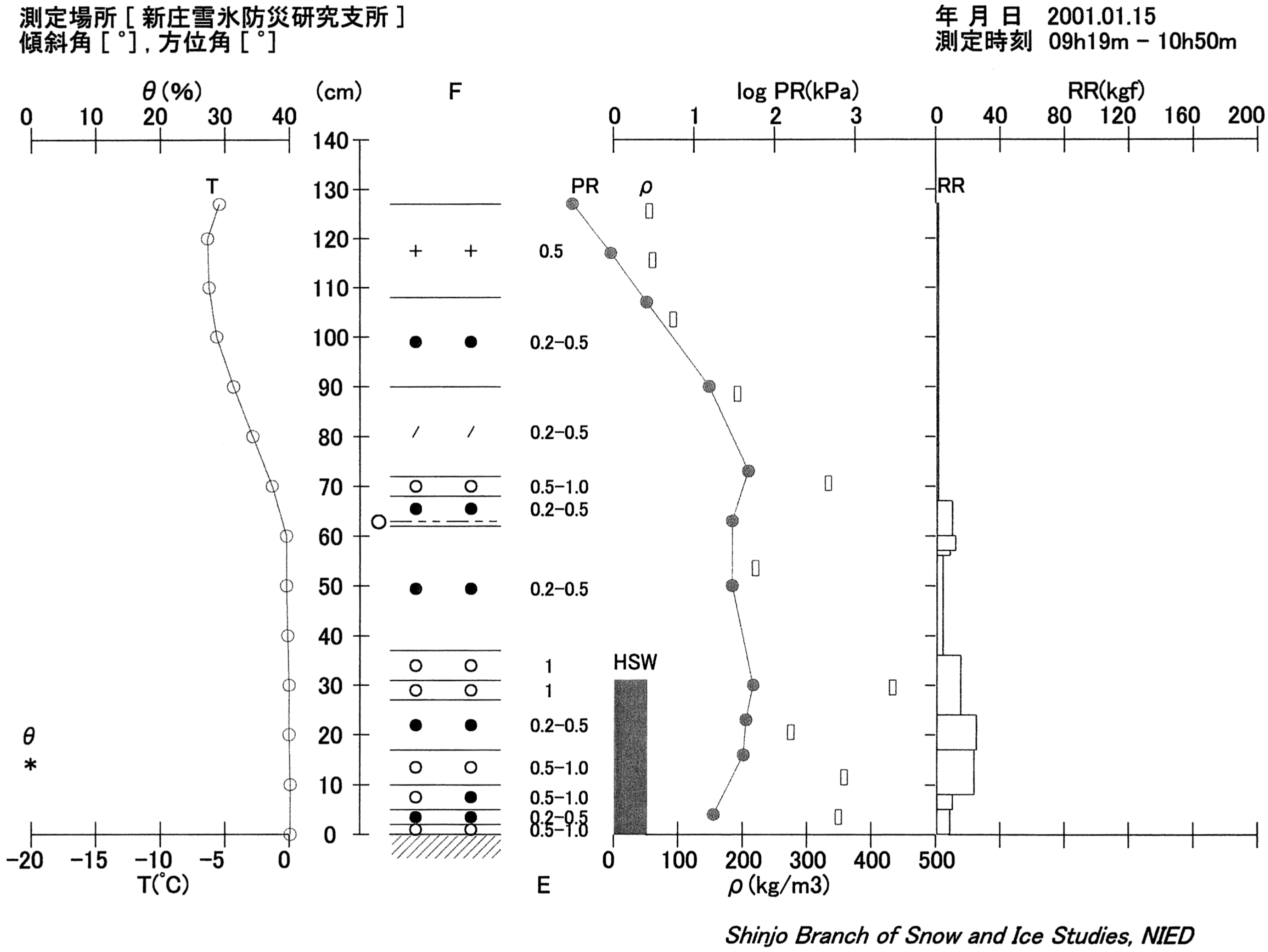
**Table A2.44**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2001.01.15 | 127 cm | 311 mm | 245 kg/m$^3$ | ＊ | -6.3 ˚C(09h40m) | 0 m/s(09h40m) | 09h19m - 10h50m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,TK,KO,SY | 新庄雪氷防災研究支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 127 - 108 | + | 0.5 | 127 | -5.5 | 127 - 124 | 54 | 16 - 13 | 0 | 127 | 1.5 | 0.3 | 127 - 67 | 1 |
| 108　90 | ● | 0.2-0.5 | 120 | -6.4 | 117 - 114 | 59 | | | 117 | 1.5 | 0.9 | 67 - 60 | 10 |
| 90 - 72 | / | 0.2-0.5 | 110 | -6.3 | 105 - 102 | 91 | | | 107 | 1.5 | 2.5 | 60 - 57 | 12 |
| 72 - 68 | ○ | 0.5-1.0 | 100 | -5.7 | 90 - 87 | 191 | | | 90 | 1.5 | 15 | 57 - 56 | 8 |
| 68 - 63 | ● | 0.2-0.5 | 90 | -4.4 | 72 - 69 | 332 | | | 73 | 1.5 | 46 | 56 - 36 | 4 |
| 63 - 62 | ○ | 1 | 80 | -2.9 | 55 - 52 | 219 | | | 63 | 1.5 | 29 | 36 - 24 | 15 |
| 62　37 | ● | 0.2-0.5 | 70 | -1.4 | 31 - 28 | 432 | | | 50 | 1.5 | 29 | 24 - 17 | 25 |
| 37 - 31 | ○ | 1 | 60 | -0.3 | 22 - 19 | 274 | | | 30 | 1.5 | 53 | 17 - 8 | 23 |
| 31 - 27 | ○ | 1 | 50 | -0.3 | 13 - 10 | 357 | | | 23 | 1.5 | 43 | 8 - 5 | 10 |
| 27 - 17 | ● | 0.2-0.5 | 40 | -0.2 | 5 - 2 | 348 | | | 16 | 1.5 | 40 | 5 - 0 | 8 |
| 17 - 10 | ○ | 0.5-1.0 | 30 | -0.1 | | | | | 4 | 1.5 | 17 | | |
| 10 - 5 | ○,● | 0.5-1.0 | 20 | -0.1 | 127 - 0 | 245 | | | | | | | |
| 5 - 2 | ● | 0.2-0.5 | 10 | 0.0 | | | | | | | | | |
| 2　0 | ○ | 0.5-1.0 | 0 | 0.0 | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。




**付図 1.44** 積雪断面観測図

**Fig. A1.44** Profiles of physical properties of snow cover.

**付表 2.45**　　積雪断面観測結果

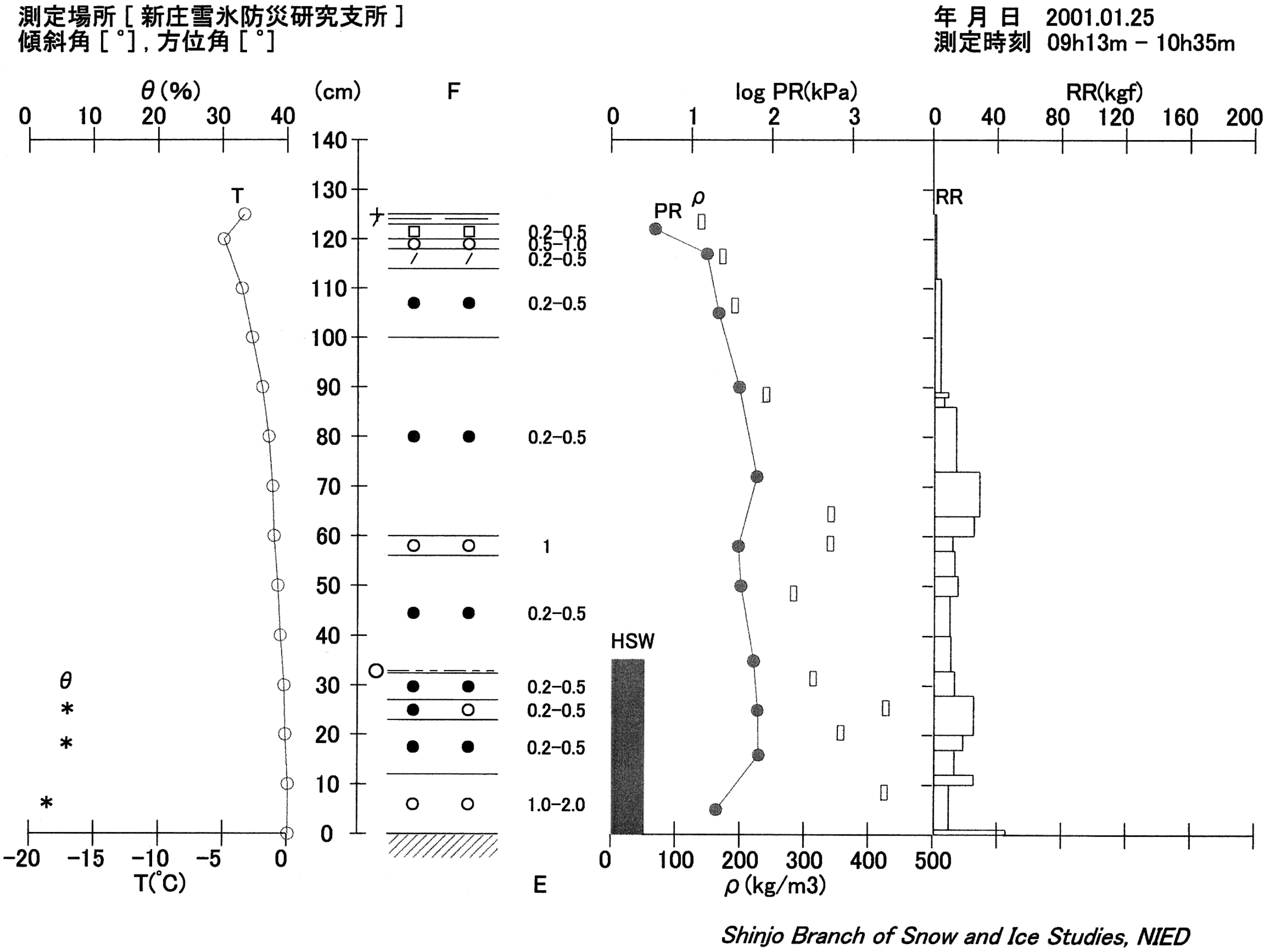
**Table A2.45**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2001.01.25 | 125 cm | 353 mm | 282 kg/m$^3$ | ⦶ | -5.7 ˚C(09h05m) | 0.8 m/s(09h05m) | 09h13m - 10h35m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,KO,OO,KI | 新庄雪氷防災研究支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 125 - 124 | ＋ | 0.2-0.5 | 125 | -3.4 | 125 - 122 | 138 | 27 - 24 | 6 | 122 | 1.5 | 3.4 | 125 - 112 | 1 |
| 124 123 | / | 0.2-0.5 | 120 | -5.0 | 118 - 115 | 171 | 20 - 17 | 6 | 117 | 1.5 | 15 | 112 - 89 | 4 |
| 123 - 120 | □ | 0.2-0.5 | 110 | -3.6 | 108 - 105 | 190 | 8 - 5 | 3 | 105 | 1.5 | 21 | 89 - 88 | 9 |
| 120 - 118 | ○ | 0.5-1.0 | 100 | -2.8 | 90 - 87 | 239 | | | 90 | 1.5 | 38 | 88 - 86 | 6 |
| 118 - 114 | / | 0.2-0.5 | 90 | -2.0 | 66 - 63 | 340 | | | 72 | 1.5 | 63 | 86 - 73 | 14 |
| 114 - 100 | ● | 0.2-0.5 | 80 | -1.5 | 60 - 57 | 339 | | | 58 | 1.5 | 37 | 73 - 64 | 28 |
| 100 60 | ● | 0.2-0.5 | 70 | -1.2 | 50 - 47 | 282 | | | 50 | 1.5 | 40 | 64 - 60 | 25 |
| 60 - 56 | ○ | 1 | 60 | -1.1 | 33 - 30 | 313 | | | 35 | 1.5 | 58 | 60 - 57 | 11 |
| 56 - 33 | ● | 0.2-0.5 | 50 | -0.8 | 27 - 24 | 426 | | | 25 | 1.5 | 65 | 57 - 52 | 13 |
| 33 - 32.5 | ○ | 0.5-1.0 | 40 | -0.6 | 22 - 19 | 356 | | | 16 | 1.5 | 67 | 52 - 48 | 15 |
| 32.5 - 27 | ● | 0.2-0.5 | 30 | -0.3 | 10 - 7 | 424 | | | 5 | 1.5 | 20 | 48 - 40 | 10 |
| 27 - 23 | ●,○ | 0.2-0.5 | 20 | -0.2 | | | | | | | | 40 - 33 | 10 |
| 23 - 12 | ● | 0.2-0.5 | 10 | 0.0 | 125 - 0 | 282 | | | | | | 33 - 28 | 13 |
| 12 0 | ○ | 1.0-2.0 | 0 | 0.0 | | | | | | | | 28 - 20 | 25 |
| | | | | | | | | | | | | 20 - 17 | 18 |
| | | | | | | | | | | | | 17 - 12 | 13 |
| | | | | | | | | | | | | 12 - 10 | 25 |
| | | | | | | | | | | | | 10 - 1 | 9 |
| | | | | | | | | | | | | 1 - 0 | 45 |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




**付図 1.45**　積雪断面観測図

**Fig. A1.45**　Profiles of physical properties of snow cover.

付表 2.46　　積雪断面観測結果

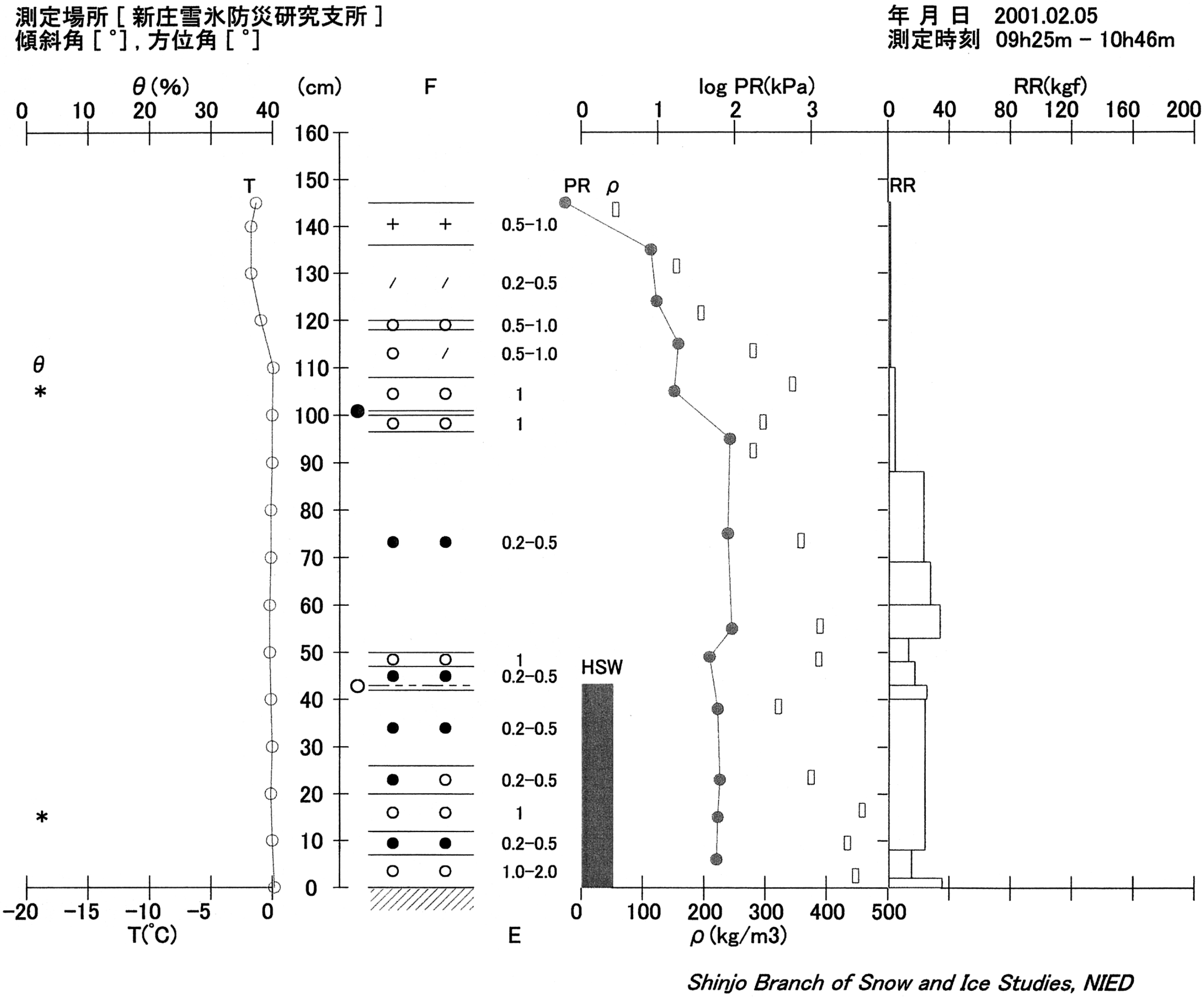
**Table A2.46**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2001.02.05 | 145 cm | 432 mm | 298 kg/m$^3$ | ◎ | -4.7 ˚C(09h34m) | 1 m/s(09h34m) | 09h25m - 10h46m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,OO,KI,SY | 新庄雪氷防災研究支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 145 - 136 | ＋ | 0.5-1.0 | 145 | -1.4 | 145 - 142 | 55 | 107 - 104 | 2 | 145 | 1.5 | 0.6 | 145 - 110 | 1 |
| 136 120 | / | 0.2-0.5 | 140 | -1.8 | 133 - 130 | 154 | 17 - 14 | 3 | 135 | 1.5 | 7.9 | 110 - 88 | 4 |
| 120 - 118 | ○ | 0.5-1.0 | 130 | -1.8 | 123 - 120 | 194 | | | 124 | 1.5 | 9.4 | 88 - 69 | 23 |
| 118 - 108 | ○,/ | 0.5-1.0 | 120 | -1.0 | 115 - 112 | 279 | | | 115 | 1.5 | 18 | 69 - 60 | 27 |
| 108 - 101 | ○ | 1 | 110 | 0.0 | 108 - 105 | 343 | | | 105 | 1.5 | 16 | 60 - 53 | 33 |
| 101 - 100 | ● | 0.2-0.5 | 100 | -0.1 | 100 - 97 | 295 | | | 95 | 1.5 | 85 | 53 - 48 | 13 |
| 100 96.5 | ○ | 1 | 90 | -0.1 | 94 - 91 | 279 | | | 75 | 1.5 | 80 | 48 - 43 | 17 |
| 96.5 - 50 | ● | 0.2-0.5 | 80 | -0.2 | 75 - 72 | 357 | | | 55 | 1.5 | 90 | 43 - 40 | 25 |
| 50 - 47 | ○ | 1 | 70 | -0.2 | 57 - 54 | 388 | | | 49 | 1.5 | 46 | 40 - 8 | 23 |
| 47 - 43 | ● | 0.2-0.5 | 60 | -0.3 | 50 - 47 | 386 | | | 38 | 1.5 | 59 | 8 - 2 | 15 |
| 43 - 42 | ○ | 1 | 50 | -0.3 | 40 - 37 | 320 | | | 23 | 1.5 | 63 | 2 - 0 | 35 |
| 42 - 26 | ● | 0.2-0.5 | 40 | -0.2 | 25 - 22 | 374 | | | 15 | 1.5 | 59 | | |
| 26 - 20 | ●,○ | 0.2-0.5 | 30 | -0.1 | 18 - 15 | 457 | | | 6 | 1.5 | 57 | | |
| 20 12 | ○ | 1 | 20 | -0.2 | 11 - 8 | 433 | | | | | | | |
| 12 - 7 | ● | 0.2-0.5 | 10 | -0.1 | 4 - 1 | 446 | | | | | | | |
| 7 - 0 | ○ | 1.0-2.0 | 0 | 0.1 | | | | | | | | | |
| | | | | | 145 - 0 | 298 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。




付図 1.46　積雪断面観測図

**Fig. A1.46**　Profiles of physical properties of snow cover.

**付表 2.47**　　積雪断面観測結果

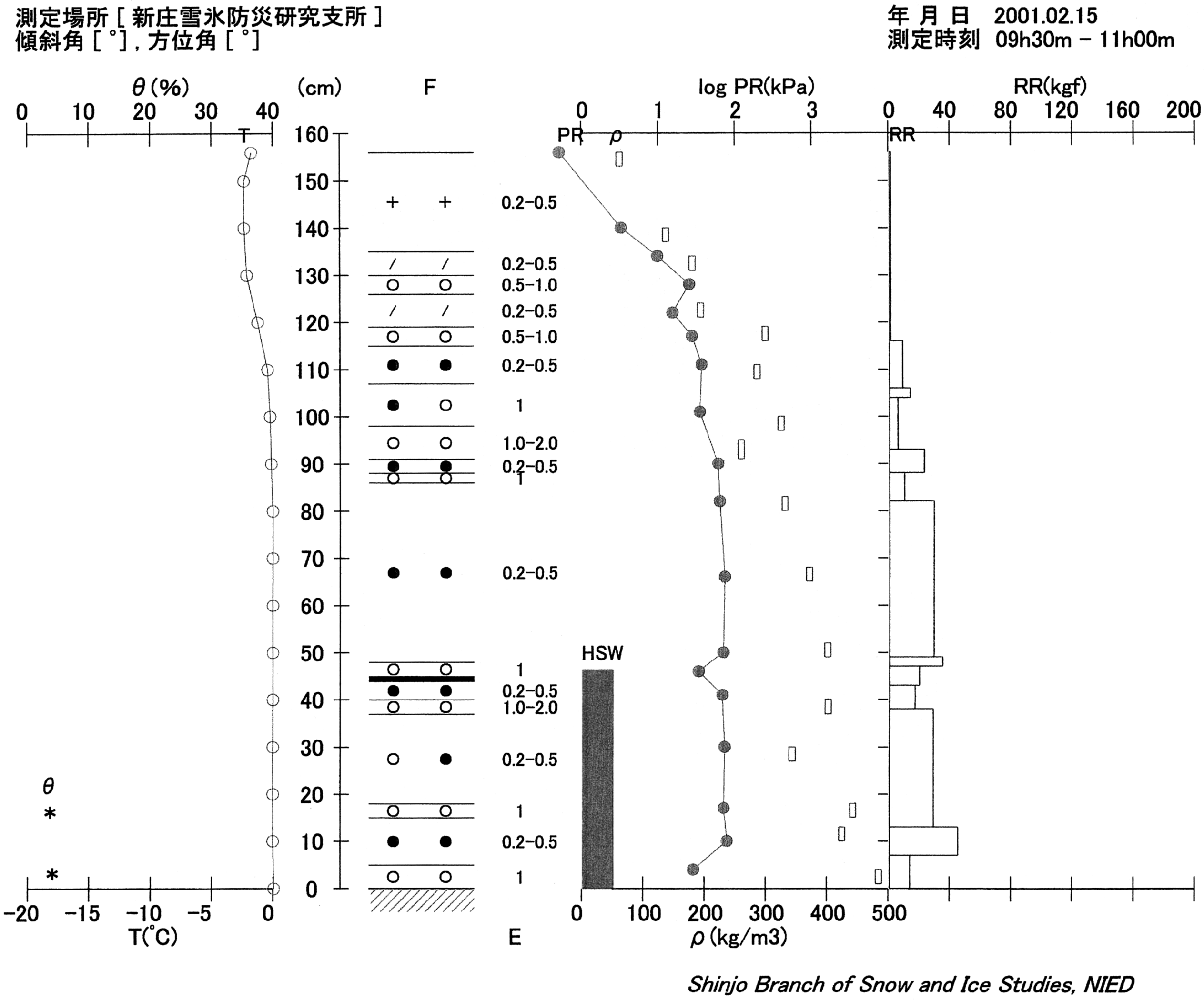
**Table A2.47**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2001.02.15 | 156 cm | 463 mm | 297 kg/m$^3$ | ⁎ | -4.9 ˚C(09h30m) | 0.6 m/s(09h30m) | 09h30m - 11h00m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,OO,HK,SY | 新庄雪氷防災研究支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 156 - 135 | + | 0.2-0.5 | 156 | -1.8 | 156 - 153 | 61 | 18 - 15 | 4 | 156 | 1.5 | 0.5 | 156 - 116 | 1 |
| 135 130 | / | 0.2-0.5 | 150 | -2.4 | 140 - 137 | 136 | 5 - 2 | 4 | 140 | 1.5 | 3.2 | 116 - 106 | 9 |
| 130 - 126 | ○ | 0.5-1.0 | 140 | -2.4 | 134 - 131 | 179 | | | 134 | 1.5 | 9.5 | 106 - 104 | 14 |
| 126 - 119 | / | 0.2-0.5 | 130 | -2.2 | 124 - 121 | 193 | | | 128 | 1.5 | 25 | 104 - 93 | 6 |
| 119 - 115 | ○ | 0.5-1.0 | 120 | -1.3 | 119 - 116 | 298 | | | 122 | 1.5 | 15 | 93 - 88 | 23 |
| 115 - 107 | ● | 0.2-0.5 | 110 | -0.5 | 111 - 108 | 285 | | | 117 | 1.5 | 27 | 88 - 82 | 10 |
| 107 98 | ●,○ | 1 | 100 | -0.3 | 100 - 97 | 324 | | | 111 | 1.5 | 36 | 82 - 49 | 29 |
| 98 - 91 | ○ | 1.0-2.0 | 90 | -0.2 | 95 - 91 | 259 | | | 101 | 1.5 | 34 | 49 - 47 | 35 |
| 91 - 88 | ● | 0.2-0.5 | 80 | -0.1 | 83 - 80 | 330 | | | 90 | 1.5 | 59 | 47 - 43 | 20 |
| 88 - 86 | ○ | 1 | 70 | -0.1 | 68 - 65 | 370 | | | 82 | 1.5 | 62 | 43 - 38 | 17 |
| 86 - 48 | ● | 0.2-0.5 | 60 | -0.1 | 52 - 49 | 400 | | | 66 | 1.5 | 72 | 38 - 13 | 29 |
| 48 - 45 | ○ | 1 | 50 | -0.1 | 40 - 37 | 401 | | | 50 | 1.5 | 69 | 13 - 7 | 45 |
| 45 - 44 | — | | 40 | -0.1 | 30 - 27 | 342 | | | 46 | 1.5 | 33 | 7 - 0 | 13 |
| 44 40 | ● | 0.2-0.5 | 30 | -0.1 | 18 - 15 | 441 | | | 41 | 1.5 | 67 | | |
| 40 - 37 | ○ | 1.0-2.0 | 20 | -0.1 | 13 - 10 | 423 | | | 30 | 1.5 | 72 | | |
| 37 - 18 | ○,● | 0.2-0.5 | 10 | -0.1 | 4 - 1 | 483 | | | 17 | 1.5 | 70 | | |
| 18 - 15 | ○ | 1 | 0 | 0.0 | | | | | 10 | 1.5 | 77 | | |
| 15 - 5 | ● | 0.2-0.5 | | | 156 - 0 | 297 | | | 4 | 1.5 | 28 | | |
| 5 - 0 | ○ | 1 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




**付図 1.47**　積雪断面観測図

**Fig. A1.47**　Profiles of physical properties of snow cover.

**付表 2.48**　積雪断面観測結果

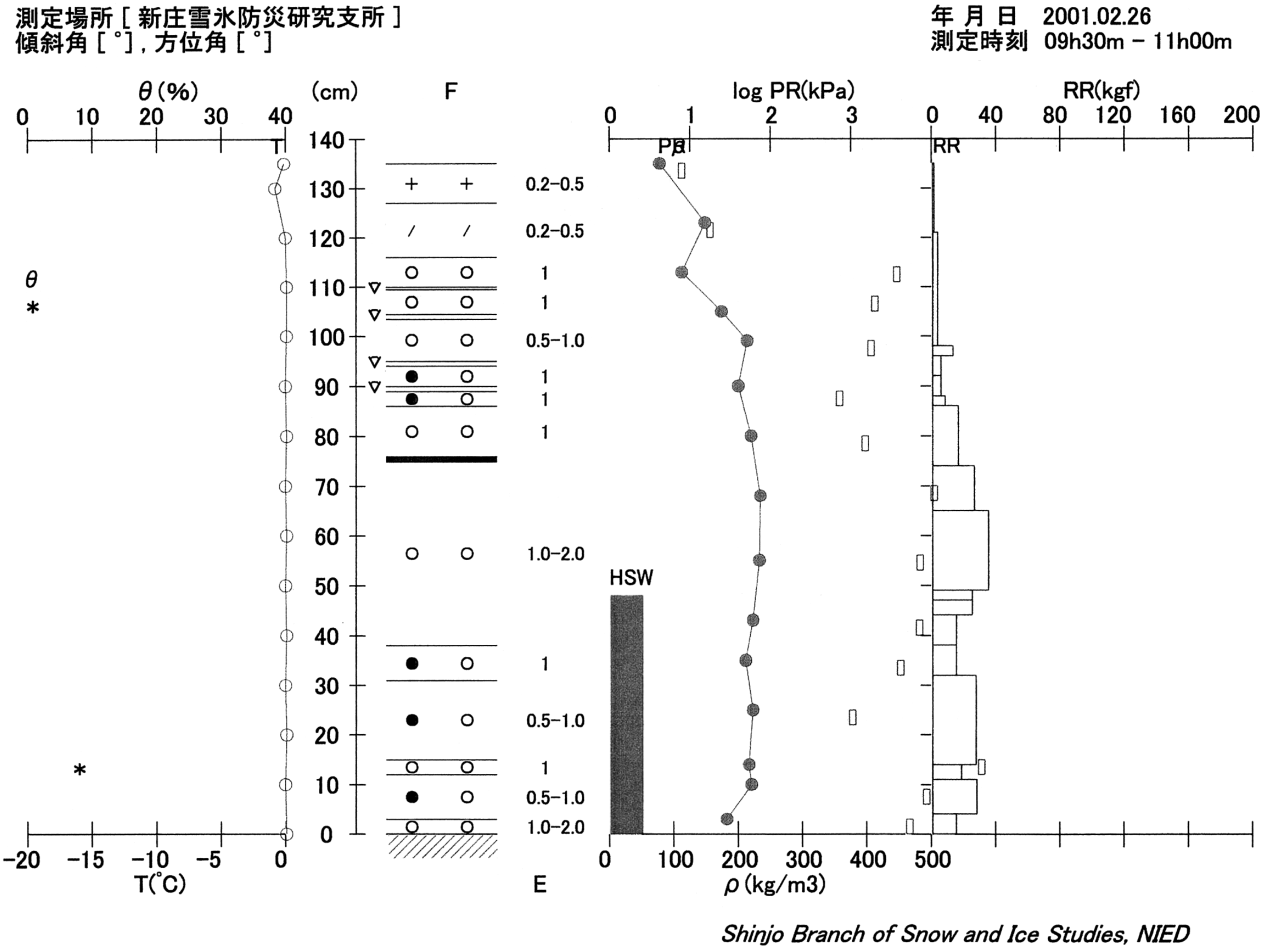
**Table A2.48**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2001.02.26 | 135 cm | 480 mm | 356 kg/m³ | * | -1.3 ˚C(09h45m) | 4.2 m/s(09h45m) | 09h30m - 11h00m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,OO,SY,KS | 新庄雪氷防災研究支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m³) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 135 - 127 | ＋ | 0.2-0.5 | 135 | -0.2 | 135 - 132 | 111 | 108 - 105 | 1 | 135 | 1.5 | 4.1 | 135 - 121 | 1 |
| 127 116 | / | 0.2-0.5 | 130 | -0.9 | 123 - 120 | 155 | 15 - 12 | 8 | 123 | 1.5 | 15 | 121 - 98 | 3 |
| 116 - 110 | ○ | 1 | 120 | -0.1 | 114 - 111 | 445 | | | 113 | 1.5 | 7.7 | 98 - 96 | 13 |
| 110 - 109.5 | ▽ | | 110 | 0.0 | 108 - 105 | 411 | | | 105 | 1.5 | 24 | 96 - 92 | 5 |
| 109.5 - 104.5 | ○ | 1 | 100 | 0.0 | 99 - 96 | 405 | | | 99 | 1.5 | 50 | 92 - 88 | 5 |
| 104.5 - 103.5 | ▽ | | 90 | -0.1 | 89 - 86 | 356 | | | 90 | 1.5 | 39 | 88 - 86 | 8 |
| 103.5 95 | ○ | 0.5-1.0 | 80 | 0.0 | 80 - 77 | 396 | | | 80 | 1.5 | 56 | 86 - 74 | 16 |
| 95 - 94 | ▽ | | 70 | -0.1 | 70 - 67 | 503 | | | 68 | 1.5 | 73 | 74 - 65 | 26 |
| 94 - 90 | ●,○ | 1 | 60 | 0.0 | 56 - 53 | 481 | | | 55 | 1.5 | 71 | 65 - 49 | 35 |
| 90 - 89 | ▽ | | 50 | -0.1 | 43 - 40 | 480 | | | 43 | 1.5 | 59 | 49 - 47 | 25 |
| 89 - 86 | ●,○ | 1 | 40 | 0.0 | 35 - 32 | 451 | | | 35 | 1.5 | 48 | 47 - 44 | 25 |
| 86 - 76 | ○ | 1 | 30 | -0.1 | 25 - 22 | 376 | | | 25 | 1.5 | 59 | 44 - 38 | 15 |
| 76 - 75 | ― | | 20 | 0.0 | 15 - 12 | 577 | | | 14 | 1.5 | 53 | 38 - 32 | 15 |
| 75 38 | ○ | 1.0-2.0 | 10 | -0.1 | 9 - 6 | 491 | | | 10 | 1.5 | 57 | 32 - 14 | 27 |
| 38 - 31 | ●,○ | 1 | 0 | 0.0 | 3 - 0 | 465 | | | 3 | 1.5 | 28 | 14 - 11 | 18 |
| 31 - 15 | ●,○ | 0.5-1.0 | | | | | | | | | | 11 - 4 | 28 |
| 15 - 12 | ○ | 1 | | | 135 - 0 | 356 | | | | | | 4 - 0 | 15 |
| 12 - 3 | ●,○ | 0.5-1.0 | | | | | | | | | | | |
| 3 - 0 | ○ | 1.0-2.0 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




付図 1.48　積雪断面観測図

**Fig. A1.48** Profiles of physical properties of snow cover.

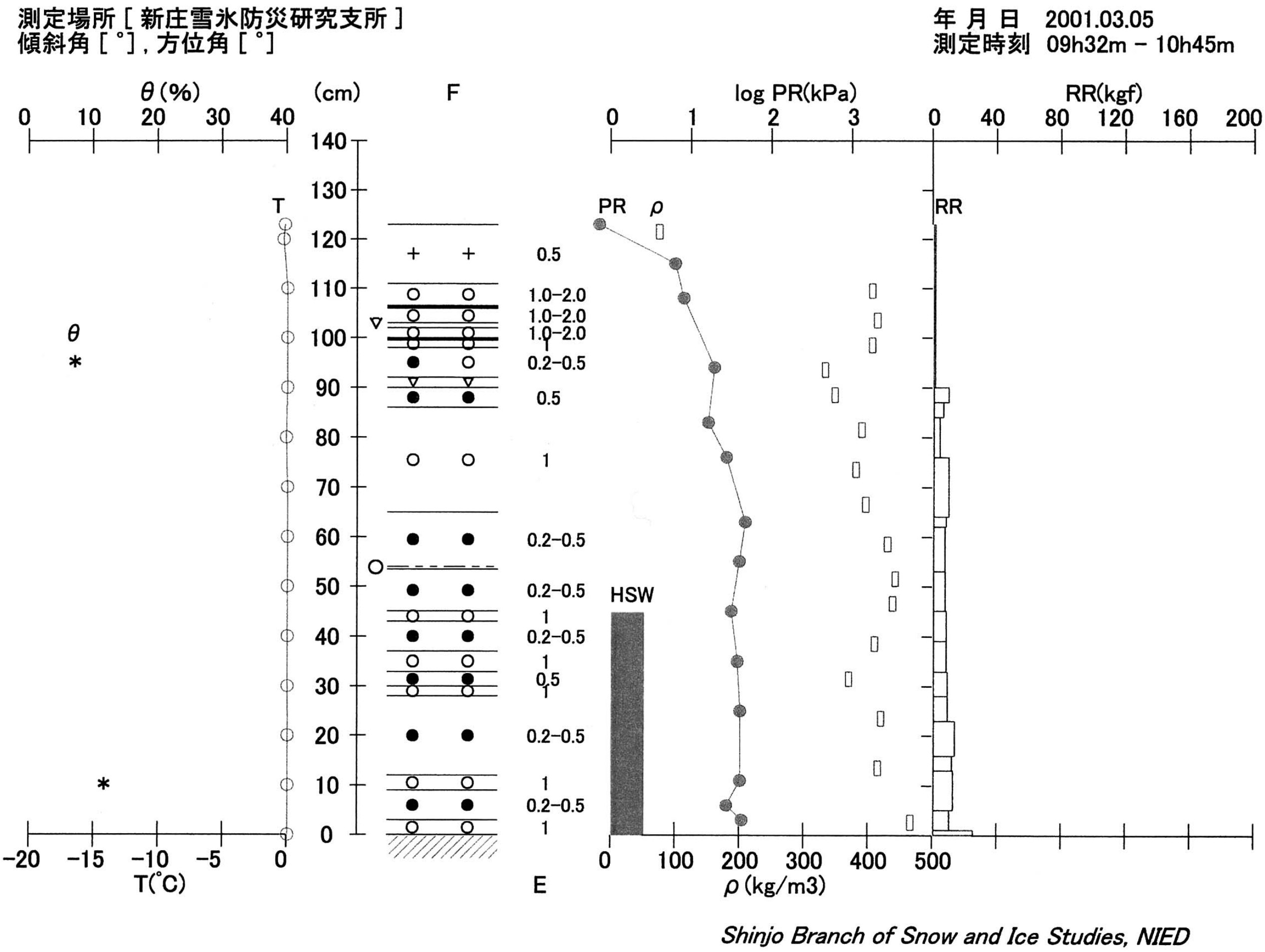
**付表 2.49**　　積雪断面観測結果

**Table A2.49**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 2001.03.05 | 123 cm | 446 mm | | 363 kg/m$^3$ | * | -0.9 ˚C(09h35m) | 1.4 m/s(09h35m) | 09h32m - 10h45m |
| **緯度** | **経度** | **標高** | **傾斜角** | **方位角** | **座標軸** | **測定者** | **測定場所** | |
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,OO,KI | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 123 - 111 | ＋ | 0.5 | 123 | -0.2 | 123 - 120 | 74 | 97 - 94 | 7 | 123 | 1.5 | 0.7 | 123 - 90 | 1 |
| 111 106.5 | ○ | 1.0-2.0 | 120 | -0.3 | 111 - 108 | 405 | 12 - 9 | 12 | 115 | 1.5 | 6.2 | 90 - 87 | 9 |
| 106.5 - 106 | ― | | 110 | 0.0 | 105 - 102 | 413 | | | 108 | 1.5 | 7.9 | 87 - 84 | 6 |
| 106 - 103 | ○ | 1.0-2.0 | 100 | 0.0 | 100 - 97 | 405 | | | 94 | 1.5 | 19 | 84 - 76 | 4 |
| 103 - 102 | ▽ | | 90 | 0.0 | 95 - 92 | 332 | | | 83 | 1.5 | 16 | 76 - 64 | 9 |
| 102 - 100 | ○ | 1.0-2.0 | 80 | -0.1 | 90 - 87 | 347 | | | 76 | 1.5 | 27 | 64 - 62 | 8 |
| 100 99.5 | ― | | 70 | 0.0 | 83 - 80 | 389 | | | 63 | 1.5 | 46 | 62 - 53 | 7 |
| 99.5 - 98 | ○ | 1 | 60 | 0.0 | 75 - 72 | 380 | | | 55 | 1.5 | 39 | 53 - 45 | 7 |
| 98 - 92 | ●,○ | 0.2-0.5 | 50 | 0.0 | 68 - 65 | 395 | | | 45 | 1.5 | 31 | 45 - 39 | 8 |
| 92 - 90 | ▽ | | 40 | 0.0 | 60 - 57 | 429 | | | 35 | 1.5 | 37 | 39 - 33 | 8 |
| 90 - 86 | ● | 0.5 | 30 | 0.0 | 53 - 50 | 441 | | | 25 | 1.5 | 40 | 33 - 28 | 9 |
| 86 - 65 | ○ | 1 | 20 | 0.0 | 48 - 45 | 437 | | | 11 | 1.5 | 40 | 28 - 23 | 9 |
| 65 - 54 | ● | 0.2-0.5 | 10 | 0.0 | 40 - 37 | 409 | | | 6 | 1.5 | 27 | 23 - 16 | 13 |
| 54 53.5 | ○ | 1 | 0 | 0.0 | 33 - 30 | 369 | | | 3 | 1.5 | 42 | 16 - 13 | 11 |
| 53.5 - 45 | ● | 0.2-0.5 | | | 25 - 22 | 419 | | | | | | 13 - 5 | 12 |
| 45 - 43 | ○ | 1 | | | 15 - 12 | 414 | | | | | | 5 - 1 | 10 |
| 43 - 37 | ● | 0.2-0.5 | | | 4 - 1 | 465 | | | | | | 1 - 0 | 25 |
| 37 - 33 | ○ | 1 | | | | | | | | | | | |
| 33 - 30 | ● | 0.5 | | | 123 - 0 | 363 | | | | | | | |
| 30 - 28 | ○ | 1 | | | | | | | | | | | |
| 28 - 12 | ● | 0.2-0.5 | | | | | | | | | | | |
| 12 - 9 | ○ | 1 | | | | | | | | | | | |
| 9 - 3 | ● | 0.2-0.5 | | | | | | | | | | | |
| 3 - 0 | ○ | 1 | | | | | | | | | | | |
| **備考** | | | | | | | | | | | | | |

*1:φは円板径を表わす。




付図 1.49　積雪断面観測図

**Fig. A1.49** Profiles of physical properties of snow cover.

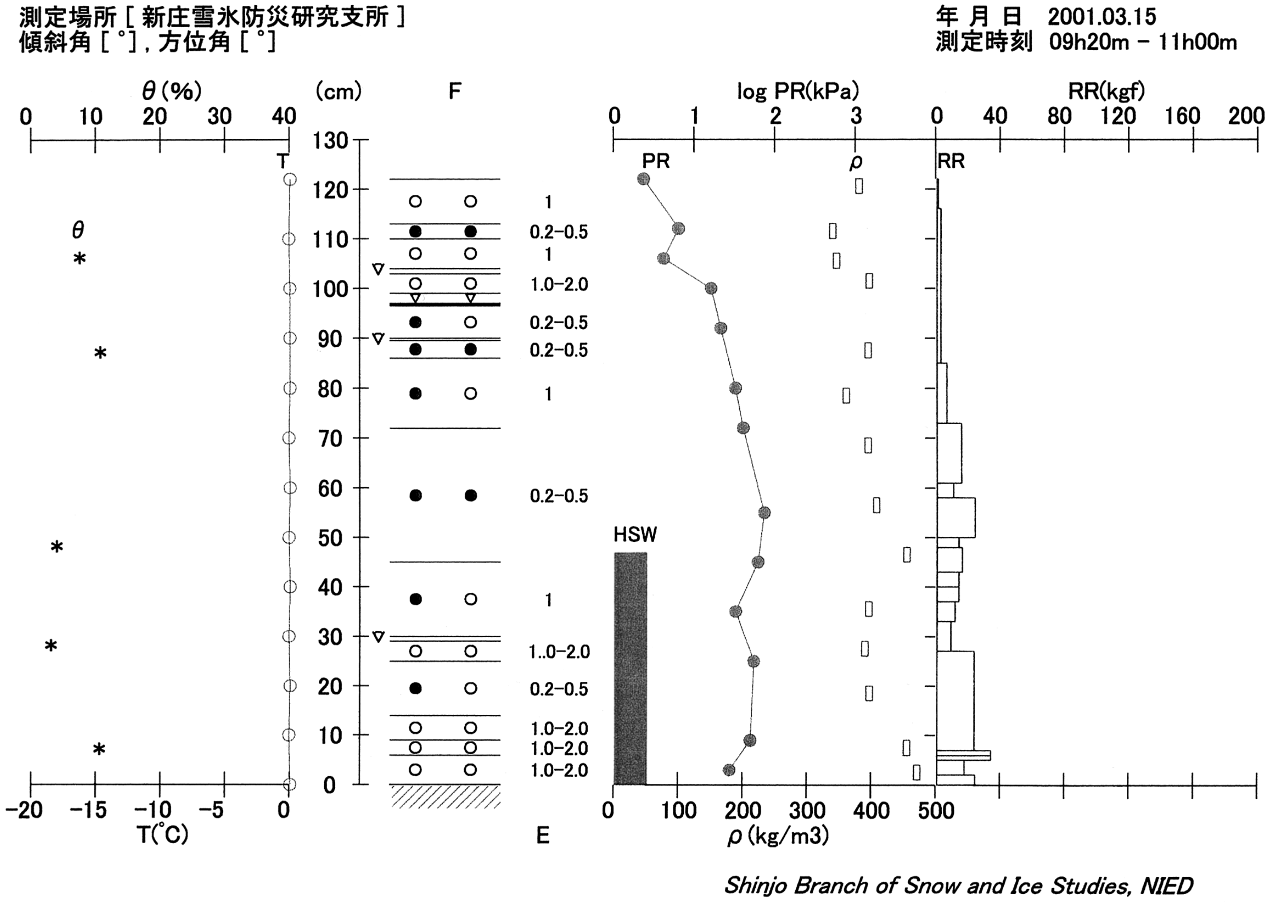
**付表 2.50**　　積雪断面観測結果

**Table A2.50**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2001.03.15 | 122 cm | 469 mm | 385 kg/m$^3$ | ● | 3 °C(09h37m) | 1 m/s(09h37m) | 09h20m - 11h00m |
| **緯度** | **経度** | **標高** | **傾斜角** / **方位角** | **座標軸** | **測定者** | **測定場所** | |
| 38°47'N | 140°19'E | 127 m | ° / ° | | M.O,K.O,S.Y,S.K | 新庄雪氷防災研究支所 | |

| 雪質:F,粒度:E | | | 雪温 T(°C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 122 - 113 | ○ | 1 | 122 | 0.0 | 122 - 119 | 380 | 108 - 105 | 8 | 122 | 1.5 | 2.3 | 122 - 116 | 1 |
| 113 110 | ● | 0.2-0.5 | 110 | -0.1 | 113 - 110 | 339 | 89 - 86 | 11 | 112 | 1.5 | 6.3 | 116 - 85 | 2 |
| 110 - 104 | ○ | 1 | 100 | 0.0 | 107 - 104 | 345 | 50 - 47 | 4 | 106 | 1.5 | 4.1 | 85 - 73 | 6 |
| 104 - 103 | ▽ | | 90 | 0.0 | 103 - 100 | 396 | 30 - 27 | 3 | 100 | 1.5 | 16 | 73 - 61 | 15 |
| 103 - 99 | ○ | 1.0-2.0 | 80 | 0.0 | 89 - 86 | 394 | 9 - 6 | 11 | 92 | 1.5 | 21 | 61 - 58 | 10 |
| 99 - 97 | ▽ | | 70 | -0.1 | 80 - 77 | 360 | | | 80 | 1.5 | 32 | 58 - 50 | 24 |
| 97 96.5 | — | | 60 | 0.0 | 70 - 67 | 394 | | | 72 | 1.5 | 40 | 50 - 48 | 14 |
| 96.5 - 90 | ●,○ | 0.2-0.5 | 50 | -0.1 | 58 - 55 | 407 | | | 55 | 1.5 | 73 | 48 - 43 | 16 |
| 90 - 89.5 | ▽ | | 40 | 0.0 | 48 - 45 | 454 | | | 45 | 1.5 | 61 | 43 - 40 | 14 |
| 89.5 - 86 | ● | 0.2-0.5 | 30 | -0.1 | 37 - 34 | 395 | | | 35 | 1.5 | 32 | 40 - 37 | 14 |
| 86 - 72 | ●,○ | 1 | 20 | 0.0 | 29 - 26 | 389 | | | 25 | 1.5 | 54 | 37 - 33 | 11 |
| 72 - 45 | ● | 0.2-0.5 | 10 | -0.1 | 20 - 17 | 396 | | | 9 | 1.5 | 49 | 33 - 27 | 9 |
| 45 - 30 | ●,○ | 1 | 0 | 0.0 | 9 - 6 | 454 | | | 3 | 1.5 | 27 | 27 - 7 | 23 |
| 30 29 | ▽ | | | | 4 - 1 | 470 | | | | | | 7 - 6 | 34 |
| 29 - 25 | ○ | 1..0-2.0 | | | | | | | | | | 6 - 5 | 34 |
| 25 - 14 | ●,○ | 0.2-0.5 | | | 122 - 0 | 385 | | | | | | 5 - 2 | 17 |
| 14 - 9 | ○ | 1.0-2.0 | | | | | | | | | | 2 - 0 | 24 |
| 9 - 6 | ○ | 1.0-2.0 | | | | | | | | | | | |
| 6 - 0 | ○ | 1.0-2.0 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




付図 1.50　積雪断面観測図
**Fig. A1.50**　Profiles of physical properties of snow cover.

付表 2.51　積雪断面観測結果

**Table A2.51**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2001.03.26 | 62 cm | 269 mm | 433 kg/m$^3$ | ● | 3 °C(09h12m) | 1.7 m/s(09h12m) | 09h07m - 10h30m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38°47'N | 140°19'E | 127 m | ° | ° | | MO,KO,SY,SK | 新庄雪氷防災研究支所 |

| 雪質:F,粒度:E | | | 雪温 T(°C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 62 - 59 | ○ | 1 | 62 | 0.0 | 62 - 59 | 443 | 60 - 57 | 8 | 61 | 1.5 | 13 | 62 - 59 | 1 |
| 59 57 | ○,● | 0.5-1.0 | 50 | -0.1 | 58 - 55 | 416 | 5 - 2 | 4 | 55 | 1.5 | 44 | 59 - 44 | 33 |
| 57 - 56 | ○ | 1 | 40 | 0.0 | 50 - 47 | 448 | | | 50 | 1.5 | 110 | 44 - 36 | 59 |
| 56 - 55.5 | — | | 30 | -0.1 | 43 - 40 | 447 | | | 45 | 1.5 | 110 | 36 - 29 | 46 |
| 55.5 - 46 | ● | 0.5-1.0 | 20 | 0.0 | 32 - 29 | 402 | | | 40 | 1.5 | 87 | 29 - 27 | 18 |
| 46 - 45 | ○ | 1.0-2.0 | 10 | -0.1 | 20 - 17 | 394 | | | 35 | 1.5 | 80 | 27 - 25 | 33 |
| 45 36 | ● | 1 | 0 | 0.0 | 13 - 10 | 431 | | | 30 | 1.5 | 56 | 25 - 21 | 10 |
| 36 - 32 | ○,● | 1 | | | 3 - 0 | 472 | | | 25 | 1.5 | 64 | 21 - 2 | 28 |
| 32 - 27 | ○ | 1.0-2.0 | | | | | | | 20 | 1.5 | 74 | 2 - 0 | 18 |
| 27 - 25 | ● | 0.5-1.0 | | | 62 - 0 | 433 | | | 15 | 1.5 | 88 | | |
| 25 - 22 | ○ | 1.0-2.0 | | | | | | | 10 | 1.5 | 61 | | |
| 22 - 11 | ● | 1 | | | | | | | 5 | 1.5 | 51 | | |
| 11 - 6 | ○,● | 1.0-2.0 | | | | | | | | | | | |
| 6 1 | ○ | 1.0-2.0 | | | | | | | | | | | |
| 1 - 0 | ○ | 1.0-2.0 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。

付表 2.52　積雪断面観測結果

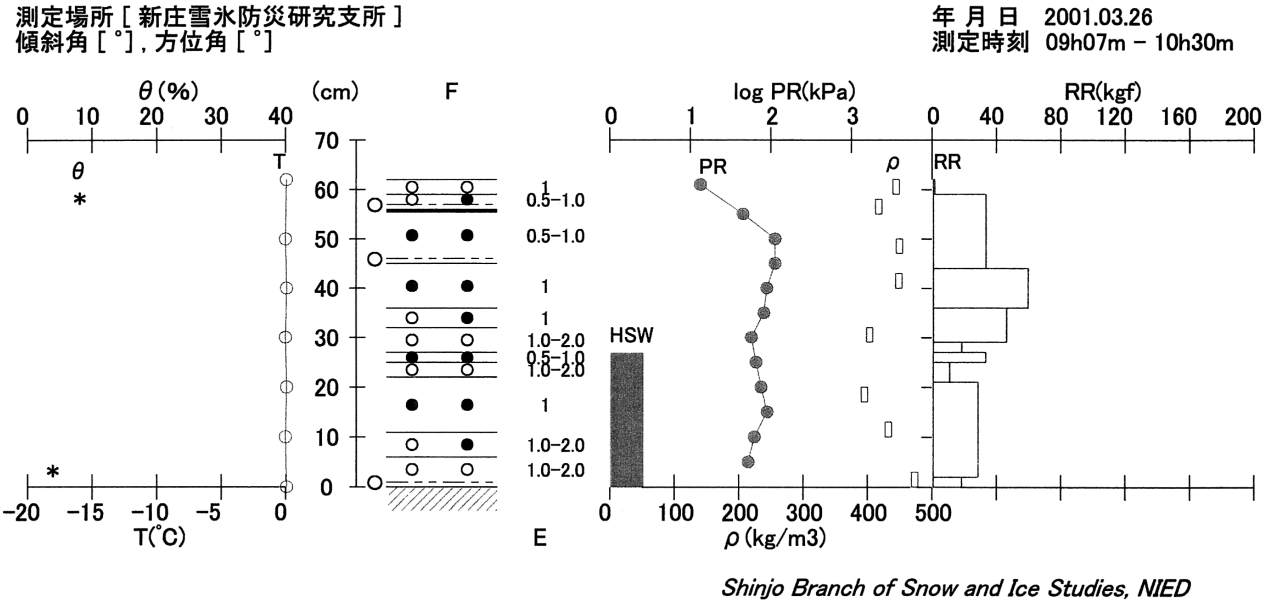
**Table A2.52**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2001.04.05 | 44 cm | 205 mm | 465 kg/m$^3$ | ⦶ | 9.8 °C(14h30m) | 0.8 m/s(14h30m) | 14h05m - 14h45m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38°47'N | 140°19'E | 127 m | ° | ° | | OA,NA | 長岡雪氷防災研究所 新庄支所 |

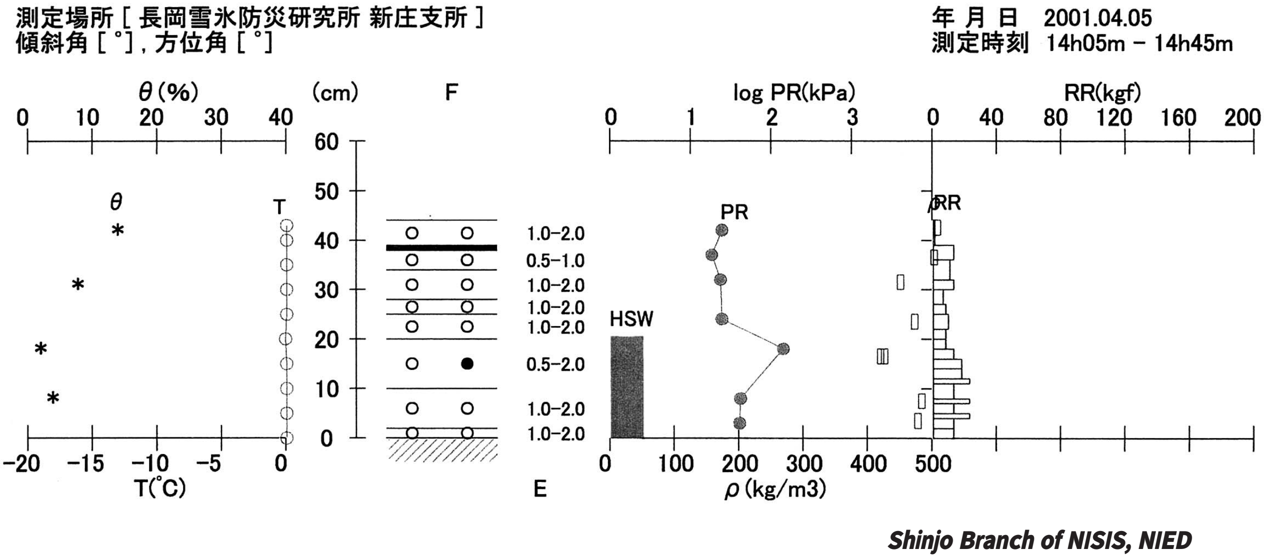
| 雪質:F,粒度:E | | | 雪温 T(°C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 44 - 39 | ○ | 1.0-2.0 | 43 | 0.0 | 44 - 41 | 507 | 44 - 41 | 14 | 42 | 1.5 | 24 | 44 - 39 | 1 |
| 39 38 | — | | 40 | 0.0 | 38 - 35 | 502 | 33 - 30 | 8 | 37 | 1.5 | 18 | 39 - 36 | 13 |
| 38 - 34 | ○ | 0.5-1.0 | 35 | 0.0 | 33 - 30 | 450 | 20 - 17 | 2 | 32 | 1.5 | 23 | 36 - 32 | 10 |
| 34 - 28 | ○ | 1.0-2.0 | 30 | 0.0 | 25 - 22 | 472 | 10 - 7 | 4 | 24 | 1.5 | 24 | 32 - 30 | 13 |
| 28 | — | | 25 | 0.0 | 18 - 15 | 419 | | | 18 | 1.5 | 140 | 30 - 27 | 6 |
| 28 - 25 | ○ | 1.0-2.0 | 20 | -0.1 | 18 - 15 | 425 | | | 8 | 1.5 | 41 | 27 - 25 | 8 |
| 25 20 | ○ | 1.0-2.0 | 15 | 0.0 | 9 - 6 | 483 | | | 3 | 1.5 | 40 | 25 - 22 | 9 |
| 20 - 10 | ○,● | 0.5-2.0 | 10 | 0.0 | 5 - 2 | 477 | | | | | | 22 - 20 | 8 |
| 10 - 2 | ○ | 1.0-2.0 | 5 | 0.0 | | | | | | | | 20 - 18 | 8 |
| 2 - 0 | ○ | 1.0-2.0 | 0 | 0.0 | 44 - 0 | 465 | | | | | | 18 - 16 | 13 |
| | | | | | | | | | | | | 16 - 14 | 18 |
| | | | | | | | | | | | | 14 - 12 | 18 |
| | | | | | | | | | | | | 12 - 11 | 23 |
| | | | | | | | | | | | | 11 - 8 | 13 |
| | | | | | | | | | | | | 8 - 7 | 23 |
| | | | | | | | | | | | | 7 - 5 | 13 |
| | | | | | | | | | | | | 5 - 4 | 23 |
| | | | | | | | | | | | | 4 - 2 | 13 |
| | | | | | | | | | | | | 2 - 0 | 13 |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。




**付図 1.51**　積雪断面観測図

**Fig. A1.51**　Profiles of physical properties of snow cover.




**付図 1.52**　積雪断面観測図

**Fig. A1.52**　Profiles of physical properties of snow cover.

付表 2.53　積雪断面観測結果

**Table A2.53**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2001.12.14 | 14 cm | 15 mm | 109 kg/m$^3$ | ⁎ | -1.5 ˚C(10h05m) | 0 m/s(10h05m) | 10h00m - 10h38m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,OO,KI,SY | 長岡雪氷防災研究所 新庄支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 14 - 5 | ＋ | 0.5-1.0 | 14 | -0.3 | 14 - 11 | 55 | 4 - 1 | 6 | 12 | 1.5 | 1 | | |
| 5 0 | ○ | 0.5-1.0 | 10 | -0.3 | 10 - 7 | 59 | | | 8 | 1.5 | 1.9 | | |
| | | | 5 | 0.0 | 4 - 1 | 291 | | | 3 | 1.5 | 16 | | |
| | | | 0 | 0.4 | | | | | | | | | |
| | | | | | 14 - 0 | 109 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。

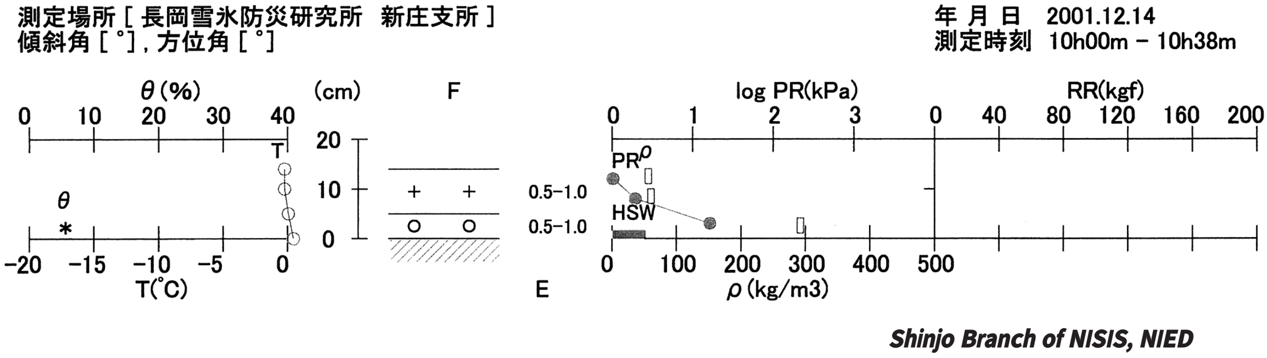
付表 2.54　積雪断面観測結果

**Table A2.54**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2001.12.25 | 46 cm | 113 mm | 245 kg/m$^3$ | ☰ | -3.2 ˚C(09h50m) | 0 m/s(09h50m) | 09h50m - 10h45m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | O.A | 長岡雪氷防災研究所 新庄支所 |

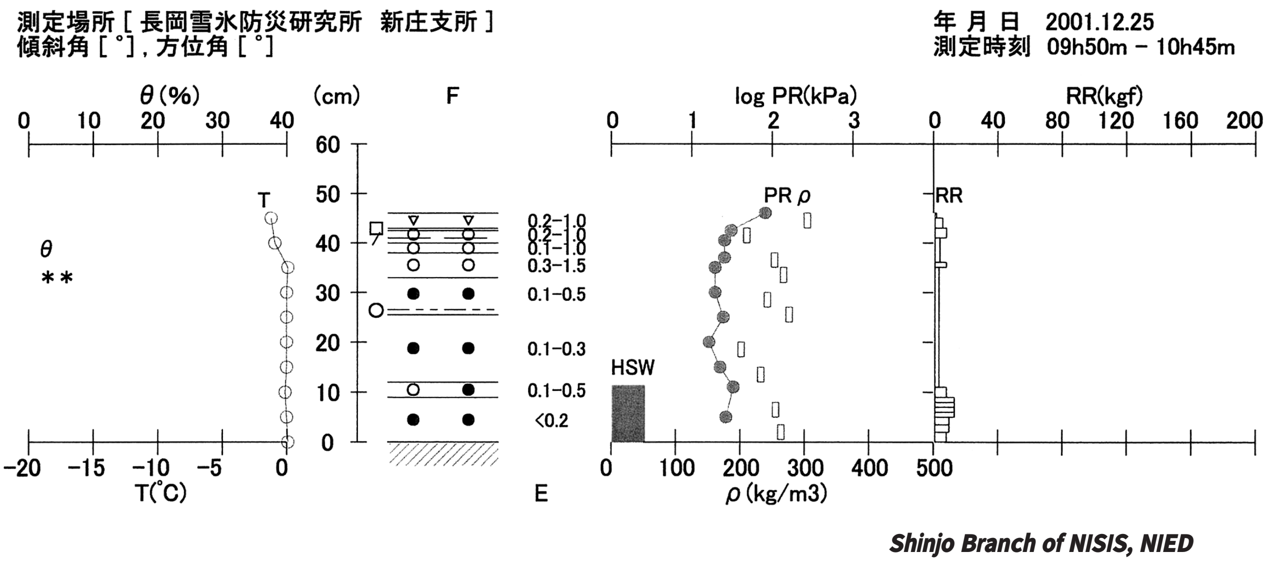
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 46 - 43 | ▽ | 0.2-1.0 | 45 | -1.3 | 46 - 43 | 303 | 35 - 32 | 3 | 46 | 1.5 | 80 | 46 - 45 | 1 |
| 43 42.5 | □ | 0.2-1.0 | 40 | -1.0 | 43 - 40 | 209 | 35 - 32 | 6 | 42.5 | 1.5 | 30 | 45 - 43 | 5 |
| 42.5 - 41 | ○ | 0.2-1.0 | 35 | 0.0 | 38 - 35 | 252 | | | 40.5 | 1.5 | 25 | 43 - 41 | 7 |
| 41 - 40 | / | 0.01-0.3 | 30 | -0.1 | 35 - 32 | 266 | | | 37 | 1.5 | 25 | 41 - 36 | 3 |
| 40 - 38 | ○ | 0.1-1.0 | 25 | -0.1 | 30 - 27 | 241 | | | 35 | 1.5 | 19 | 36 - 35 | 7 |
| 38 - 33 | ○ | 0.3-1.5 | 20 | -0.1 | 27 - 24 | 275 | | | 30 | 1.5 | 19 | 35 - 11 | 3 |
| 33 26.5 | ● | 0.1-0.5 | 15 | -0.1 | 20 - 17 | 200 | | | 25 | 1.5 | 24 | 11 - 9 | 7 |
| 26.5 - 25.5 | ○ | 0.2-1.0 | 10 | -0.2 | 15 - 12 | 231 | | | 20 | 1.5 | 16 | 9 - 8 | 12 |
| 25.5 - 12 | ● | 0.1-0.3 | 5 | -0.1 | 8 - 5 | 254 | | | 15 | 1.5 | 22 | 8 - 7 | 12 |
| 12 - 9 | ○,● | 0.1-0.5 | 0 | 0.0 | 3.5 - 0.5 | 262 | | | 11 | 1.5 | 32 | 7 - 6 | 12 |
| 9 - 0 | ● | <0.2 | | | | | | | 5 | 1.5 | 26 | 6 - 5 | 12 |
| | | | | | 46 - 0 | 245 | | | | | | 5 - 3.5 | 9 |
| | | | | | | | | | | | | 3.5 - 2 | 9 |
| | | | | | | | | | | | | 2 - 0 | 7 |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




付図 1.53　積雪断面観測図

**Fig. A1.53**　Profiles of physical properties of snow cover.




付図 1.54　積雪断面観測図

**Fig. A1.54**　Profiles of physical properties of snow cover.

**付表 2.55**　積雪断面観測結果

**Table A2.55**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 2002.01.04 | 89 cm | 186 mm | | 209 $kg/m^3$ | ＊ | -0.6 °C(09h55m) | 0.8 m/s(09h55m) | 09h00m - 10h10m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38°47'N | 140°19'E | 127 m | ° | ° | | MO,OO,KI,SY | 長岡雪氷防災研究所 新庄支所 | |

| 雪質:F,粒度:E | | | 雪温 T(°C) | | 密度 ρ($kg/m^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 89 - 59 | + | 0.2-0.5 | 89 | -0.4 | 89 - 86 | 98 | | | 89 | 1.5 | 1.2 | 89 - 35 | 1 |
| 59 52 | / | 0.2-0.5 | 80 | -1.5 | 75 - 72 | 103 | | | 80 | 1.5 | 5.2 | 35 - 30 | 3 |
| 52 - 40 | ○ | 1 | 70 | -0.8 | 63 - 60 | 100 | | | 70 | 1.5 | 2.4 | 30 - 29 | 7 |
| 40 - 36 | ●,○ | 0.2-0.5 | 60 | -1.1 | 56 - 53 | 190 | | | 61 | 1.5 | 6.1 | 29 - 24 | 3 |
| 36 - 35 | ○ | 0.5-1.0 | 50 | -0.3 | 46 - 43 | 325 | | | 57 | 1.5 | 12 | 24 - 17 | 3 |
| 35 - 32 | ● | 0.2-0.5 | 40 | -0.1 | 39 - 36 | 324 | | | 48 | 1.5 | 21 | 17 - 14 | 11 |
| 32 27 | ○ | 0.5-1.0 | 30 | -0.2 | 35 - 32 | 270 | | | 43 | 1.5 | 6.7 | 14 - 9 | 12 |
| 27 - 25 | ● | 0.2-0.5 | 20 | -0.2 | 31 - 28 | 294 | | | 38 | 1.5 | 15 | 9 - 4 | 17 |
| 25 - 17 | ○,● | 0.5-1.0 | 10 | -0.1 | 22 - 19 | 264 | | | 34 | 1.5 | 19 | 4 - 0 | 15 |
| 17 - 11 | ●,○ | 0.2-0.5 | 0 | 0.0 | 16 - 13 | 290 | | | 28 | 1.5 | 21 | | |
| 11 - 10 | ○ | 0.5-1.0 | | | 9 - 6 | 282 | | | 20 | 1.5 | 34 | | |
| 10 - 4 | ● | 0.2-0.5 | | | 4 - 1 | 374 | | | 15 | 1.5 | 32 | | |
| 4 - 0 | ○ | 0.5-1.0 | | | | | | | 6 | 1.5 | 40 | | |
| | | | | | 89 - 0 | 209 | | | 3 | 1.5 | 38 | | |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。

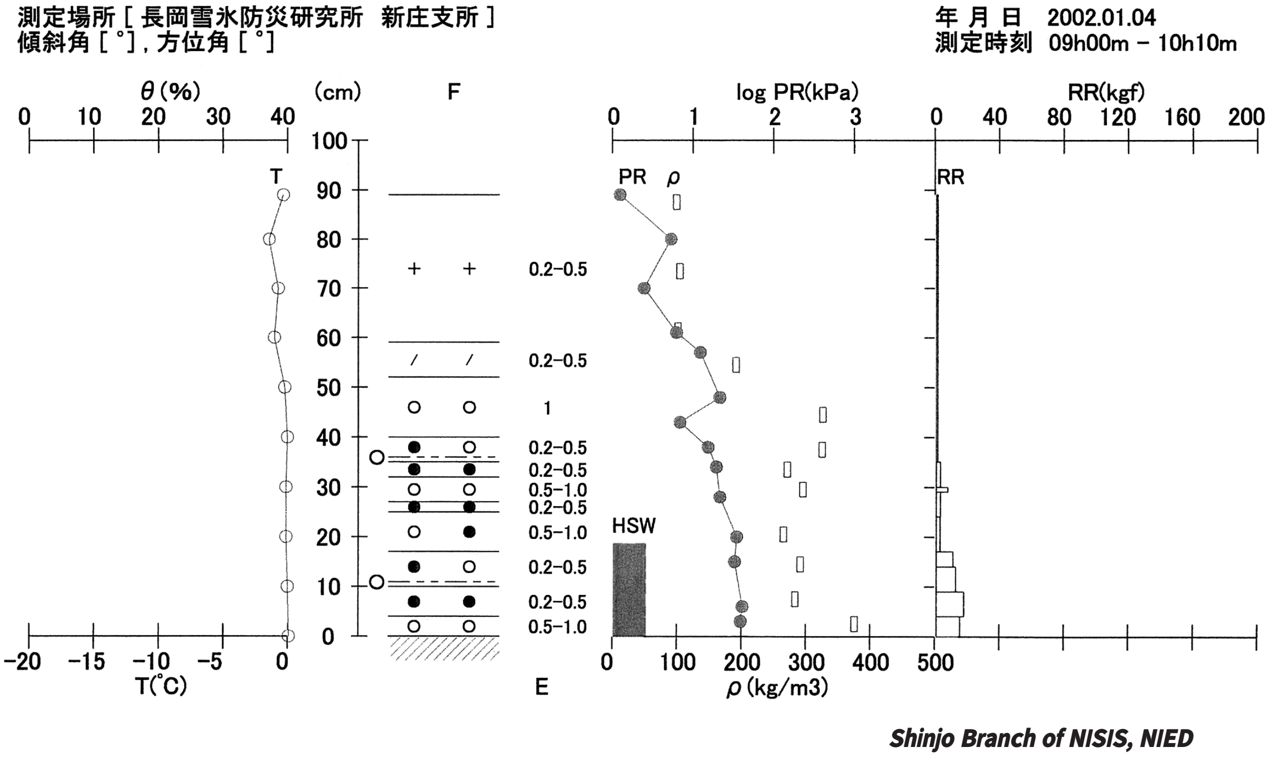
**付表 2.56**　積雪断面観測結果

**Table A2.56**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 2002.01.15 | 73 cm | 254 mm | | 347 $kg/m^3$ | ● | -1.3 °C(09h50m) | 1.3 m/s(09h50m) | 09h16m - 10h26m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38°47'N | 140°19'E | 127 m | ° | ° | | MO,HK,KS,OO | 長岡雪氷防災研究所 新庄支所 | |

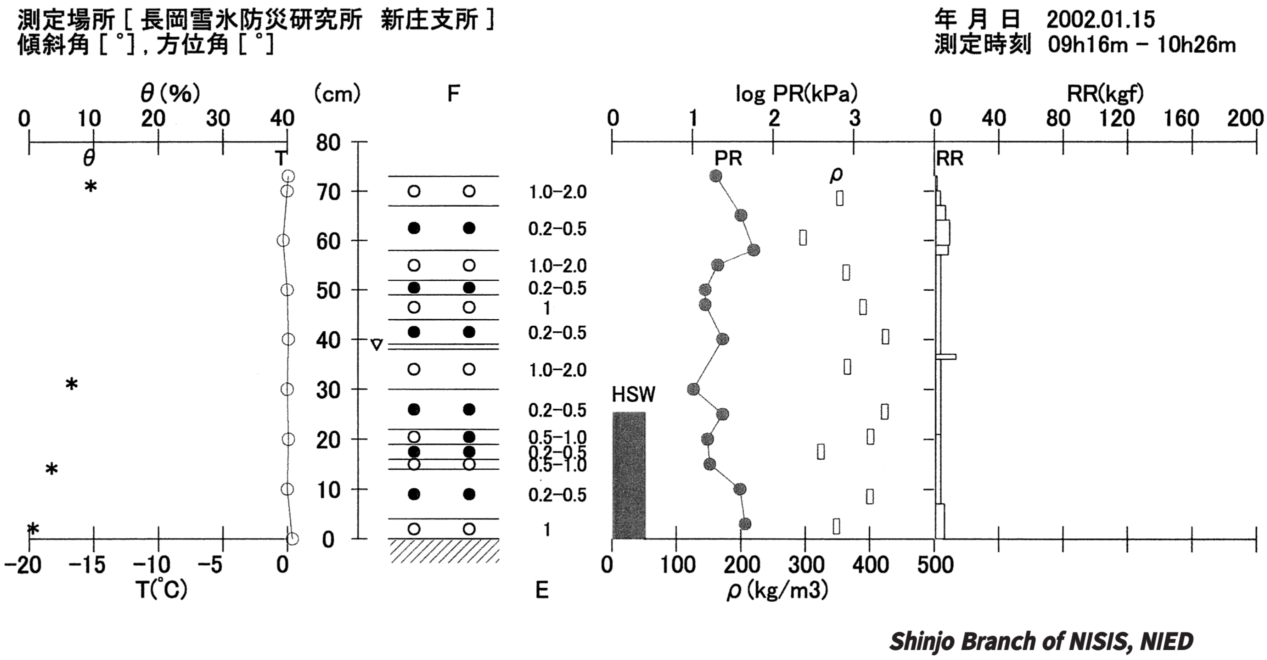
| 雪質:F,粒度:E | | | 雪温 T(°C) | | 密度 ρ($kg/m^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 73 - 67 | ○ | 1.0-2.0 | 73 | 0.0 | 70 - 67 | 352 | 73 - 70 | 10 | 73 | 1.5 | 19 | 73 - 70 | 1 |
| 67 58 | ● | 0.2-0.5 | 70 | -0.1 | 62 - 59 | 295 | 33 - 30 | 7 | 65 | 1.5 | 39 | 70 - 67 | 3 |
| 58 - 52 | ○ | 1.0-2.0 | 60 | -0.4 | 55 - 52 | 362 | 16 - 13 | 4 | 58 | 1.5 | 56 | 67 - 64 | 6 |
| 52 - 49 | ● | 0.2-0.5 | 50 | -0.1 | 48 - 45 | 388 | 4 - 1 | 1 | 55 | 1.5 | 20 | 64 - 59 | 9 |
| 49 - 44 | ○ | 1 | 40 | 0.0 | 42 - 39 | 423 | | | 50 | 1.5 | 14 | 59 - 57 | 8 |
| 44 - 39 | ● | 0.2-0.5 | 30 | -0.1 | 36 - 33 | 364 | | | 47 | 1.5 | 14 | 57 - 37 | 3 |
| 39 38 | ▽ | | 20 | 0.0 | 27 - 24 | 422 | | | 40 | 1.5 | 23 | 37 - 36 | 13 |
| 38 - 30 | ○ | 1.0-2.0 | 10 | -0.1 | 22 - 19 | 400 | | | 30 | 1.5 | 10 | 36 - 21 | 3 |
| 30 - 22 | ● | 0.2-0.5 | 0 | 0.3 | 19 - 16 | 323 | | | 25 | 1.5 | 23 | 21 - 7 | 3 |
| 22 - 19 | ○,● | 0.5-1.0 | | | 10 - 7 | 399 | | | 20 | 1.5 | 15 | 7 - 0 | 6 |
| 19 - 16 | ● | 0.2-0.5 | | | 4 - 1 | 347 | | | 15 | 1.5 | 16 | | |
| 16 - 14 | ○ | 0.5-1.0 | | | | | | | 10 | 1.5 | 38 | | |
| 14 - 4 | ● | 0.2-0.5 | | | 73 - 0 | 347 | | | 3 | 1.5 | 44 | | |
| 4 0 | ○ | 1 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。




付図 1.55　積雪断面観測図

**Fig. A1.55**　Profiles of physical properties of snow cover.




付図 1.56　積雪断面観測図

**Fig. A1.56**　Profiles of physical properties of snow cover.

付表 2.57　　積雪断面観測結果

**Table A2.57**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2002.01.25 | 92 cm | 279 mm | 303 kg/m$^3$ | ＊ | -0.9 ˚C(09h54m) | 1.4 m/s(09h54m) | 09h10m - 10h17m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,OO,KI,SY | 長岡雪氷防災研究所 新庄支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 92 - 74 | ＋ | 0.5-1.0 | 92 | -0.7 | 92 - 89 | 56 | 53 - 50 | 3 | 92 | 1.5 | 0.4 | 92 - 32 | 1 |
| 74 68 | / | 0.2-0.5 | 90 | -0.4 | 78 - 75 | 138 | 27 - 24 | 1 | 78 | 1.5 | 3.9 | 32 - 31 | 5 |
| 68 - 60 | ○,/ | 1 | 80 | -0.6 | 73 - 70 | 157 | 6 - 3 | 6 | 70 | 1.5 | 8.3 | 31 - 17 | 2 |
| 60 - 31 | ○ | 1.0-2.0 | 70 | -0.1 | 65 - 62 | 317 | | | 64 | 1.5 | 9.3 | 17 - 13 | 5 |
| 31 - 28 | ▽ | | 60 | 0.0 | 55 - 52 | 357 | | | 50 | 1.5 | 12 | 13 - 11 | 7 |
| 28 - 7 | ○ | 1.0-2.0 | 50 | 0.0 | 43 - 40 | 373 | | | 40 | 1.5 | 13 | 11 - 0 | 11 |
| 7 0 | ○ | 1 | 40 | 0.0 | 35 - 32 | 386 | | | 32 | 1.5 | 20 | | |
| | | | 30 | 0.0 | 25 - 22 | 398 | | | 25 | 1.5 | 15 | | |
| | | | 20 | 0.0 | 12 - 9 | 412 | | | 15 | 1.5 | 16 | | |
| | | | 10 | -0.1 | 6 - 3 | 496 | | | 5 | 1.5 | 32 | | |
| | | | 0 | 0.2 | | | | | | | | | |
| | | | | | 92 - 0 | 303 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。

付表 2.58　　積雪断面観測結果

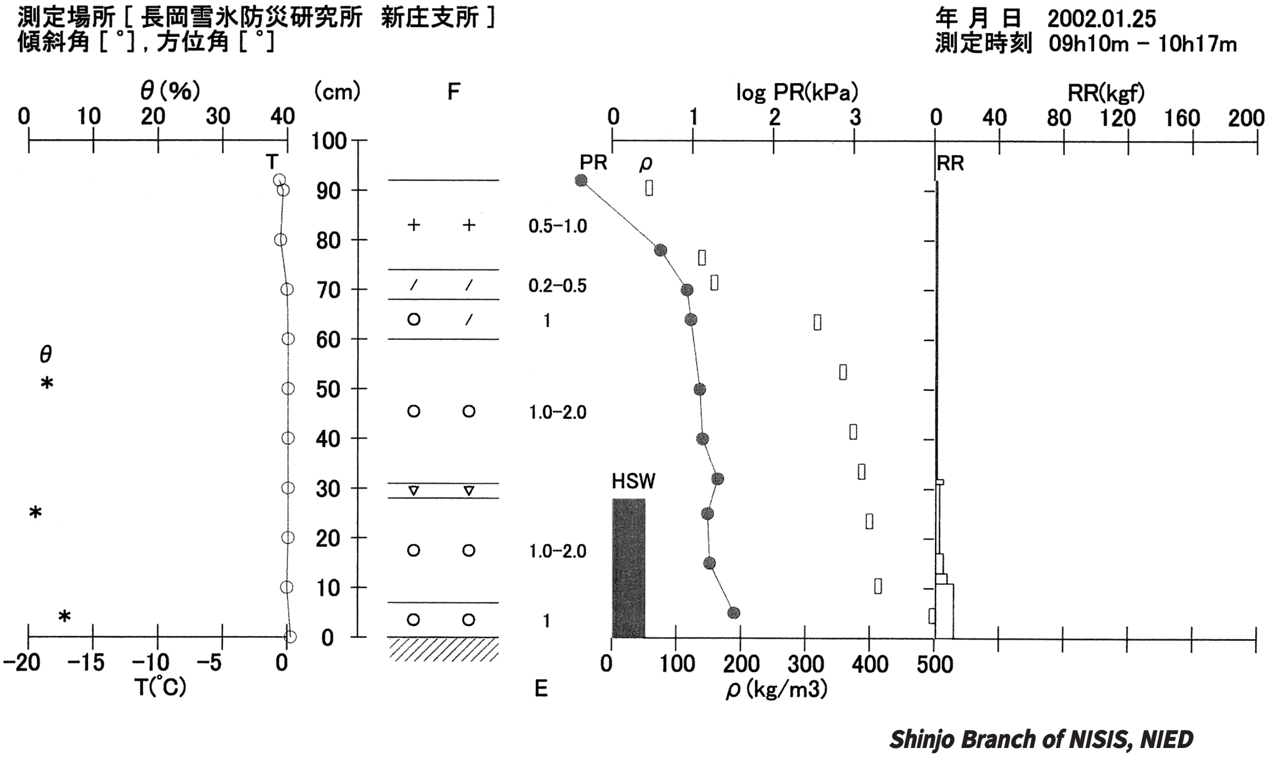
**Table A2.58**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2002.02.05 | 89 cm | 327 mm | 368 kg/m$^3$ | ◎ | -2.9 ˚C(09h27m) | 0.1 m/s(09h27m) | 09h00m - 10h04m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,OO,KI,SY | 長岡雪氷防災研究所 新庄支所 |

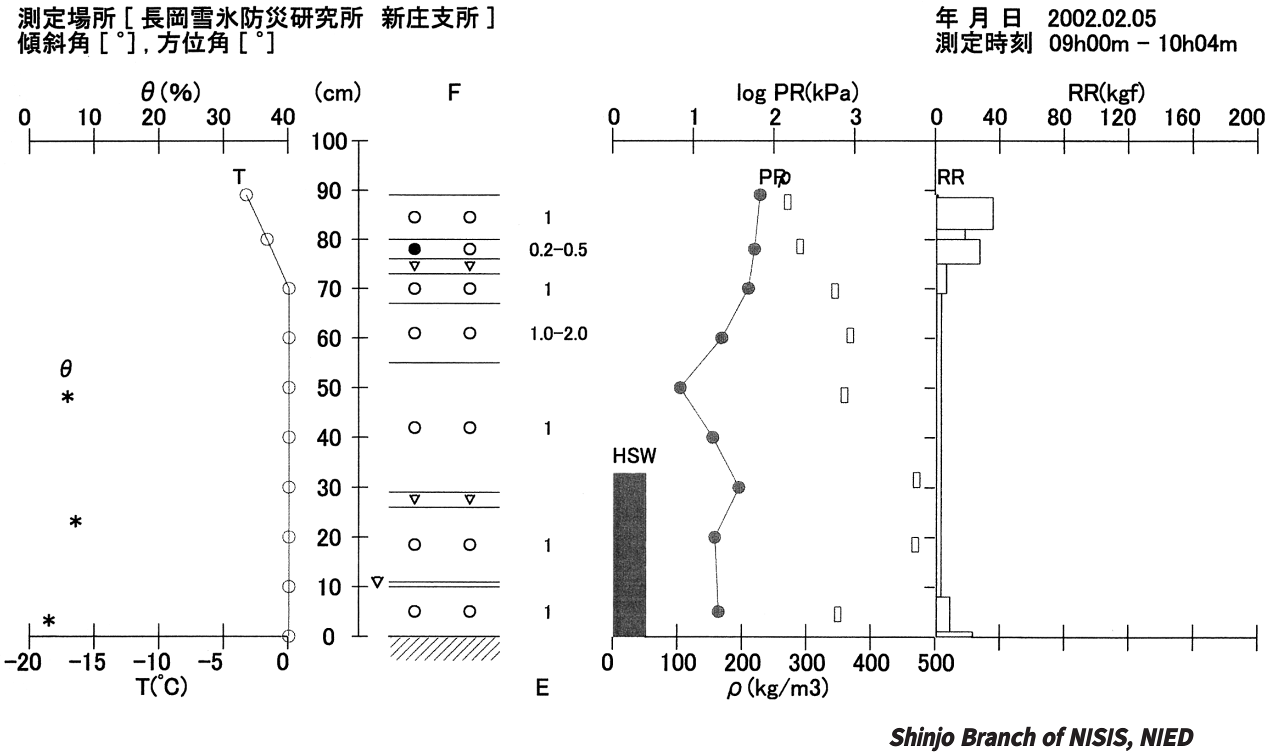
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 89 - 80 | ○ | 1 | 89 | -3.3 | 89 - 86 | 270 | 50 - 47 | 6 | 89 | 1.5 | 66 | 89 - 88.5 | 1 |
| 80 76 | ●,○ | 0.2-0.5 | 80 | -1.7 | 80 - 77 | 289 | 25 - 22 | 7 | 78 | 1.5 | 56 | 88.5 - 82 | 35 |
| 76 - 73 | ▽ | | 70 | 0.0 | 71 - 68 | 343 | 5 - 2 | 3 | 70 | 1.5 | 47 | 82 - 80 | 18 |
| 73 - 67 | ○ | 1 | 60 | 0.0 | 62 - 59 | 367 | | | 60 | 1.5 | 22 | 80 - 75 | 27 |
| 67 - 55 | ○ | 1.0-2.0 | 50 | 0.0 | 50 - 47 | 358 | | | 50 | 1.5 | 6.7 | 75 - 69 | 6 |
| 55 - 29 | ○ | 1 | 40 | 0.0 | 33 - 30 | 470 | | | 40 | 1.5 | 17 | 69 - 8 | 3 |
| 29 26 | ▽ | | 30 | 0.0 | 20 - 17 | 468 | | | 30 | 1.5 | 36 | 8 - 1 | 8 |
| 26 - 11 | ○ | 1 | 20 | 0.0 | 6 - 3 | 348 | | | 20 | 1.5 | 18 | 1 - 0 | 23 |
| 11 - 10 | ▽ | | 10 | 0.0 | | | | | 5 | 1.5 | 20 | | |
| 10 - 0 | ○ | 1 | 0 | 0.0 | 89 - 0 | 368 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




付図 1.57　　積雪断面観測図

**Fig. A1.57**　Profiles of physical properties of snow cover.




付図 1.58　　積雪断面観測図

**Fig. A1.58**　Profiles of physical properties of snow cover.

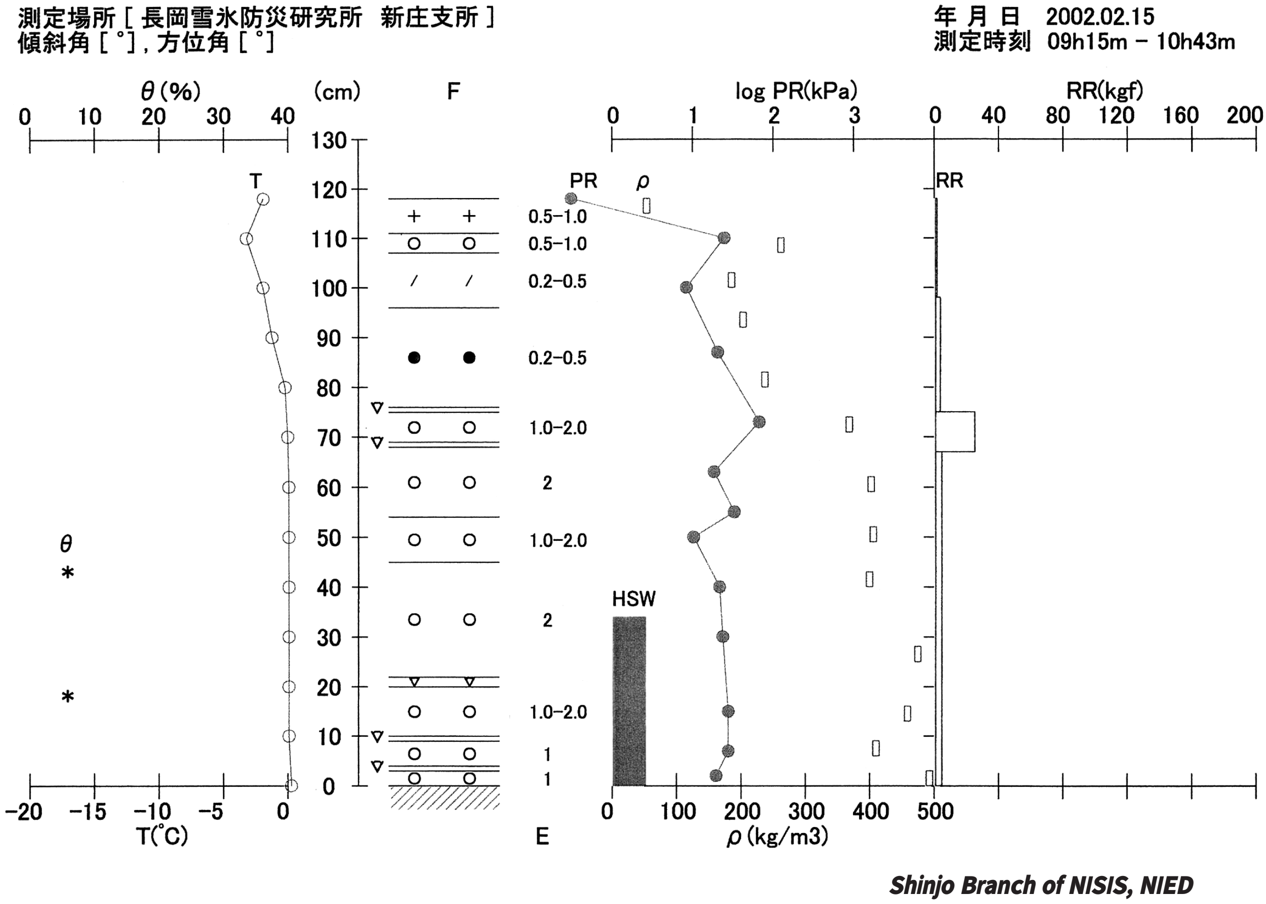
**付表 2.59**　積雪断面観測結果

**Table A2.59**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 2002.02.15 | 118 cm | 340 mm | 288 kg/m$^3$ | | ＊ | -3 ˚C(09h46m) | 1.8 m/s(09h46m) | 09h15m - 10h43m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,TK,OO,KI | 長岡雪氷防災研究所 新庄支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 118 - 111 | ＋ | 0.5-1.0 | 118 | -2.0 | 118 - 115 | 52 | 45 - 42 | 6 | 118 | 1.5 | 0.3 | 118 - 98 | 1 |
| 111 107 | ○ | 0.5-1.0 | 110 | -3.3 | 110 - 107 | 261 | 20 - 17 | 6 | 110 | 1.5 | 24 | 98 - 75 | 3 |
| 107 - 96 | / | 0.2-0.5 | 100 | -2.0 | 103 - 100 | 184 | | | 100 | 1.5 | 8.2 | 75 - 67 | 24 |
| 96 - 76 | ● | 0.2-0.5 | 90 | -1.3 | 95 - 92 | 202 | | | 87 | 1.5 | 20 | 67 - 0 | 4 |
| 76 - 75 | ▽ | | 80 | -0.3 | 83 - 80 | 236 | | | 73 | 1.5 | 66 | | |
| 75 - 69 | ○ | 1.0-2.0 | 70 | -0.1 | 74 - 71 | 367 | | | 63 | 1.5 | 18 | | |
| 69 68 | ▽ | | 60 | 0.0 | 62 - 59 | 401 | | | 55 | 1.5 | 32 | | |
| 68 - 54 | ○ | 2 | 50 | 0.0 | 52 - 49 | 404 | | | 50 | 1.5 | 10 | | |
| 54 - 45 | ○ | 1.0-2.0 | 40 | 0.0 | 43 - 40 | 398 | | | 40 | 1.5 | 21 | | |
| 45 - 22 | ○ | 2 | 30 | 0.0 | 28 - 25 | 473 | | | 30 | 1.5 | 23 | | |
| 22 - 20 | ▽ | | 20 | 0.0 | 16 - 13 | 457 | | | 15 | 1.5 | 27 | | |
| 20 - 10 | ○ | 1.0-2.0 | 10 | 0.0 | 9 - 6 | 408 | | | 7 | 1.5 | 27 | | |
| 10 - 9 | ▽ | | 0 | 0.2 | 3 - 0 | 491 | | | 2 | 1.5 | 19 | | |
| 9 4 | ○ | 1 | | | | | | | | | | | |
| 4 - 3 | ▽ | | | | 118 - 0 | 288 | | | | | | | |
| 3 - 0 | ○ | 1 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。




付図 1.59　積雪断面観測図

**Fig. A1.59**　Profiles of physical properties of snow cover.

付表 2.60　積雪断面観測結果

**Table A2.60**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2002.02.25 | 91 cm | 354 mm | 389 kg/m$^3$ | ◎ | 0.8 ˚C(09h33m) | 0.7 m/s(09h33m) | 09h05m - 10h07m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,OO,KI,SY | 長岡雪氷防災研究所 新庄支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 91 - 82 | ○ | 1.0-2.0 | 91 | 0.0 | 91 - 88 | 258 | 85 - 82 | 6 | 91 | 1.5 | 2 | 91 - 86 | 1 |
| 82 74 | ○ | 1 | 90 | 0.0 | 80 - 77 | 405 | 60 - 57 | 1 | 87 | 1.5 | 28 | 86 - 84 | 5 |
| 74 - 71 | ▽ | | 80 | 0.0 | 70 - 67 | 415 | 40 - 37 | 1 | 80 | 1.5 | 14 | 84 - 71 | 3 |
| 71 - 64 | ○ | 1.0-2.0 | 70 | 0.0 | 60 - 57 | 396 | 15 - 12 | 2 | 67 | 1.5 | 31 | 71 - 65 | 6 |
| 64 - 63 | — | | 60 | 0.0 | 50 - 47 | 443 | 5 - 2 | 1 | 60 | 1.5 | 13 | 65 - 63 | 5 |
| 63 - 47 | ○ | 1 | 50 | 0.0 | 40 - 37 | 429 | | | 50 | 1.5 | 19 | 63 - 57 | 5 |
| 47 21 | ○ | 1.0-2.0 | 40 | 0.0 | 30 - 27 | 444 | | | 40 | 1.5 | 7.9 | 57 - 20 | 3 |
| 21 - 19 | ▽ | | 30 | 0.0 | 17 - 14 | 440 | | | 30 | 1.5 | 8.5 | 20 - 8 | 3 |
| 19 - 10 | ○ | 1.0-2.0 | 20 | 0.0 | 6 - 3 | 472 | | | 15 | 1.5 | 11 | 8 - 0 | 8 |
| 10 - 9 | ▽ | | 10 | 0.0 | | | | | 5 | 1.5 | 32 | | |
| 9 - 0 | ○ | 1.0-2.0 | 0 | 0.0 | 91 - 0 | 389 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φは円板径を表わす。

付表 2.61　積雪断面観測結果

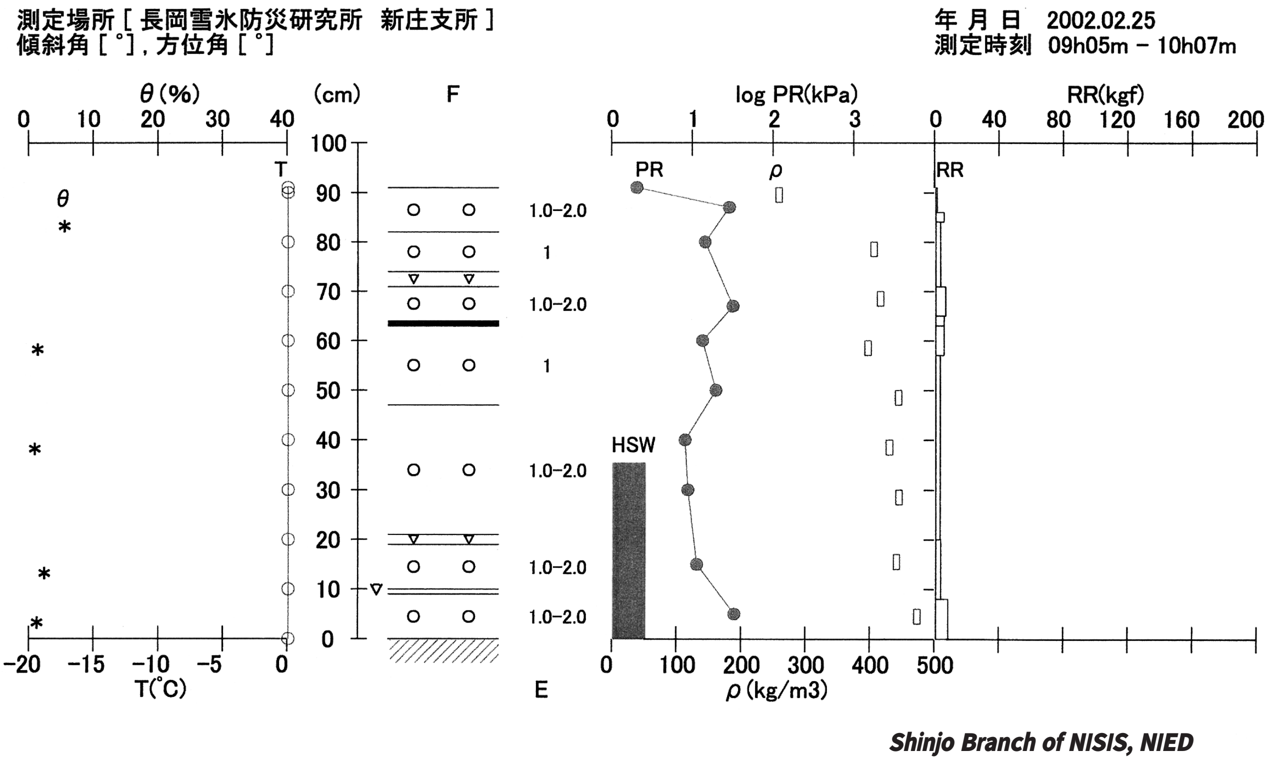
**Table A2.61**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2002.03.05 | 78 cm | 305 mm | 392 kg/m$^3$ | ⦶ | 1.2 ˚C(09h15m) | 0.9 m/s(09h15m) | 08h55m - 10h10m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,KO,OO,KI | 長岡雪氷防災研究所 新庄支所 |

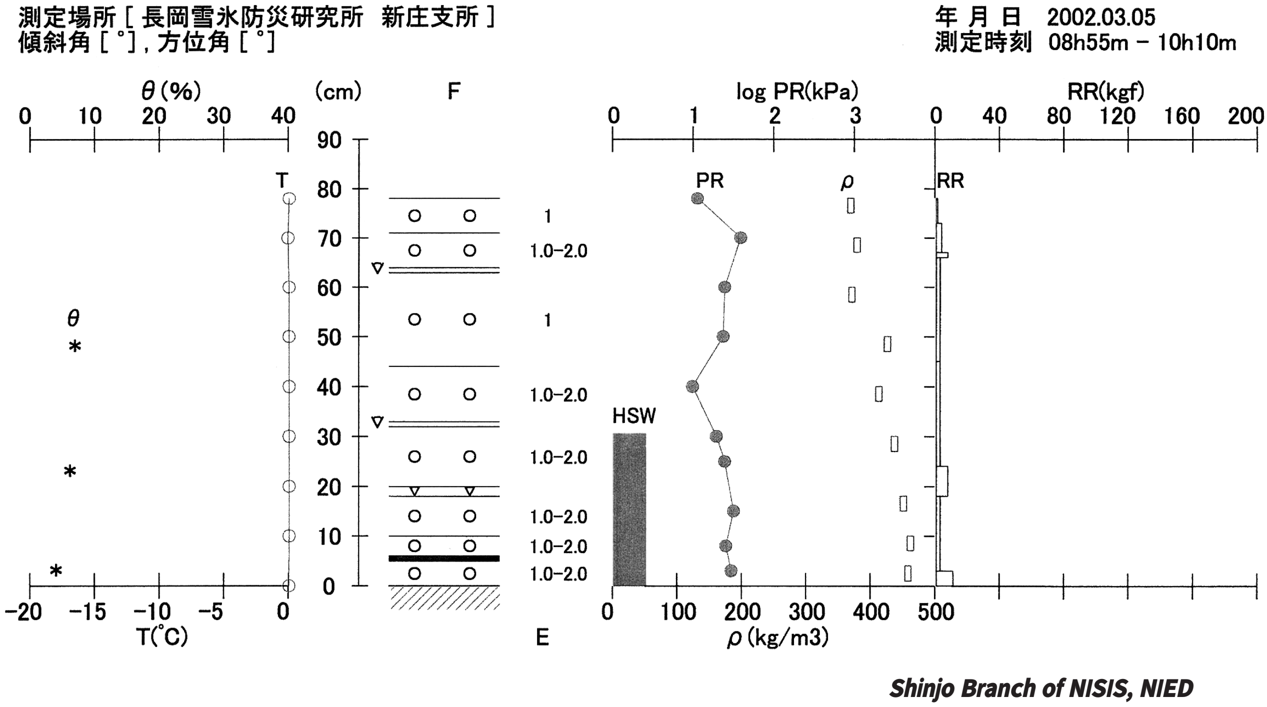
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 78 - 71 | ○ | 1 | 78 | 0.0 | 78 - 75 | 368 | 50 - 47 | 7 | 78 | 1.5 | 11 | 78 - 73 | 1 |
| 71 64 | ○ | 1.0-2.0 | 70 | -0.1 | 70 - 67 | 378 | 25 - 22 | 6 | 70 | 1.5 | 38 | 73 - 67 | 3 |
| 64 - 63 | ▽ | | 60 | 0.0 | 60 - 57 | 370 | 5 - 2 | 4 | 60 | 1.5 | 24 | 67 - 66 | 7 |
| 63 - 44 | ○ | 1 | 50 | 0.0 | 50 - 47 | 425 | | | 50 | 1.5 | 23 | 66 - 45 | 2 |
| 44 - 33 | ○ | 1.0-2.0 | 40 | 0.0 | 40 - 37 | 412 | | | 40 | 1.5 | 9.6 | 45 - 24 | 2 |
| 33 - 32 | ▽ | | 30 | 0.0 | 30 - 27 | 436 | | | 30 | 1.5 | 19 | 24 - 18 | 7 |
| 32 20 | ○ | 1.0-2.0 | 20 | 0.0 | 18 - 15 | 450 | | | 25 | 1.5 | 24 | 18 - 3 | 3 |
| 20 - 18 | ▽ | | 10 | 0.0 | 10 - 7 | 461 | | | 15 | 1.5 | 31 | 3 - 0 | 11 |
| 18 - 10 | ○ | 1.0-2.0 | 0 | 0.0 | 4 - 1 | 457 | | | 8 | 1.5 | 25 | | |
| 10 - 6 | ○ | 1.0-2.0 | | | | | | | 3 | 1.5 | 29 | | |
| 6 - 5 | — | | | | 78 - 0 | 392 | | | | | | | |
| 5 - 0 | ○ | 1.0-2.0 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φは円板径を表わす。




付図 1.60　積雪断面観測図

**Fig. A1.60**　Profiles of physical properties of snow cover.




付図 1.61　積雪断面観測図

**Fig. A1.61**　Profiles of physical properties of snow cover.

**付表 2.62**　　積雪断面観測結果

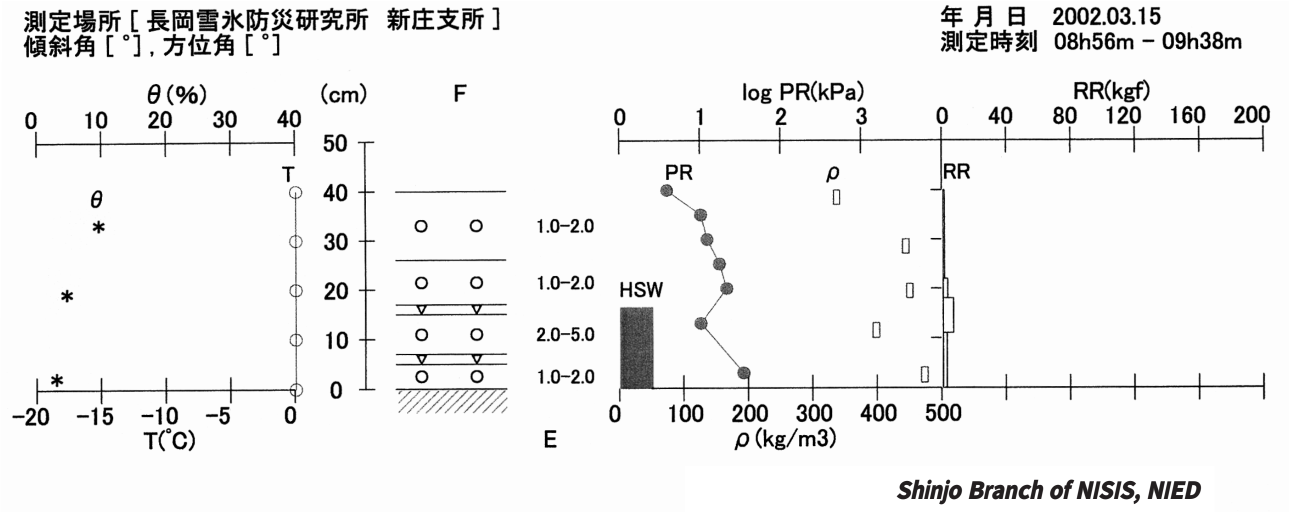
**Table A2.62**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2002.03.15 | 40 cm | 162 mm | 405 kg/m$^3$ | ● | 2.8 ˚C(09h04m) | 1 m/s(09h04m) | 08h56m - 09h38m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,TK,OO,SY | 長岡雪氷防災研究所 新庄支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 40 - 26 | ○ | 1.0-2.0 | 40 | 0.0 | 40 - 37 | 336 | 35 - 32 | 10 | 40 | 1.5 | 3.8 | 40 - 22 | 1 |
| 26 17 | ○ | 1.0-2.0 | 30 | 0.0 | 30 - 27 | 443 | 21 - 18 | 5 | 35 | 1.5 | 10 | 22 - 18 | 3 |
| 17 - 15 | ▽ | | 20 | 0.0 | 21 - 18 | 449 | 4 - 1 | 3 | 30 | 1.5 | 12 | 18 - 11 | 6 |
| 15 - 7 | ○ | 2.0-5.0 | 10 | 0.0 | 13 - 10 | 397 | | | 25 | 1.5 | 17 | 11 - 0 | 2 |
| 7 - 5 | ▽ | | 0 | 0.0 | 4 - 1 | 472 | | | 20 | 1.5 | 21 | | |
| 5 - 0 | ○ | 1.0-2.0 | | | | | | | 13 | 1.5 | 10 | | |
| | | | | | 40 - 0 | 405 | | | 3 | 1.5 | 34 | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




**付図 1.62**　積雪断面観測図

**Fig. A1.62**　Profiles of physical properties of snow cover.

**付表 2.63**　　積雪断面観測結果

**Table A2.63**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 2003.01.06 | 60 cm | 105 mm | 175 kg/m$^3$ | | ⁎ | -2.9 ˚C(09h30m) | 0 m/s(09h30m) | 09h10m - 10h07m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,OO,KI,,SY | 長岡雪氷防災研究所 新庄支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 60 - 47 | ＋ | 0.5-1.0 | 60 | -2.4 | 60 - 57 | 63 | | | 60 | 1.5 | 0.4 | 60 - 5 | 1 |
| 47 27 | / | 0.2-0.5 | 50 | -3.1 | 50 - 47 | 115 | | | 55 | 1.5 | 0.5 | 5 - 6 | -5 |
| 27 - 22 | ○ | 1.0-2.0 | 40 | -2.4 | 40 - 37 | 109 | | | 45 | 1.5 | 2.9 | 6 - 1 | 3 |
| 22 - 20 | ● | 0.2-0.5 | 30 | -0.7 | 30 - 27 | 166 | | | 35 | 1.5 | 3.8 | 1 - 0 | 5 |
| 20 - 19 | ○ | 0.5-1.0 | 20 | 0.0 | 25 - 22 | 264 | | | 29 | 1.5 | 9 | | |
| 19 - 15 | ● | 0.2-0.5 | 10 | -0.1 | 19 - 16 | 181 | | | 25 | 1.5 | 5.7 | | |
| 15 13 | ○ | 0.5-1.0 | 0 | 0.0 | 12 - 8 | 203 | | | 17 | 1.5 | 16 | | |
| 13 - 6 | ● | 0.2-0.5 | | | 4 - 1 | 387 | | | 14 | 1.5 | 9.6 | | |
| 6 - 0 | ○,● | 0.5-1.0 | | | | | | | 10 | 1.5 | 18 | | |
| | | | | | 60 - 0 | 175 | | | 3 | 1.5 | 18 | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。

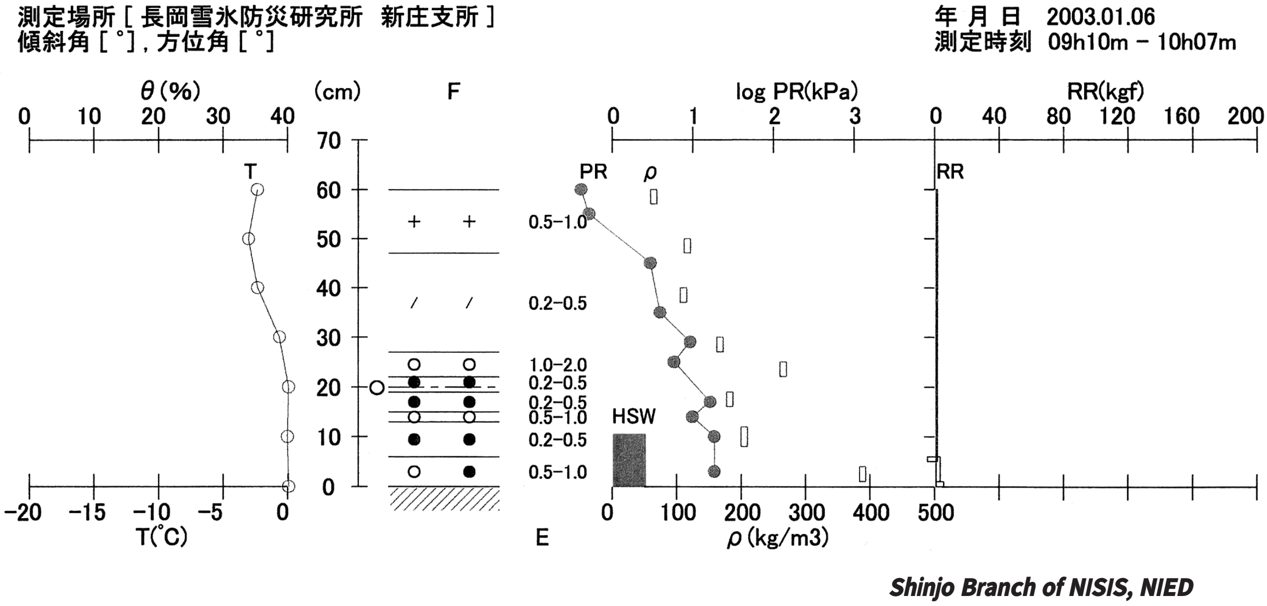
**付表 2.64**　　積雪断面観測結果

**Table A2.64**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 2003.01.15 | 43 cm | 128 mm | 297 kg/m$^3$ | | ⁎ | -4.6 ˚C(09h15m) | 0 m/s(09h15m) | 09h02m - 09h48m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,OO,KI,SY | 長岡雪氷防災研究所 新庄支所 | |

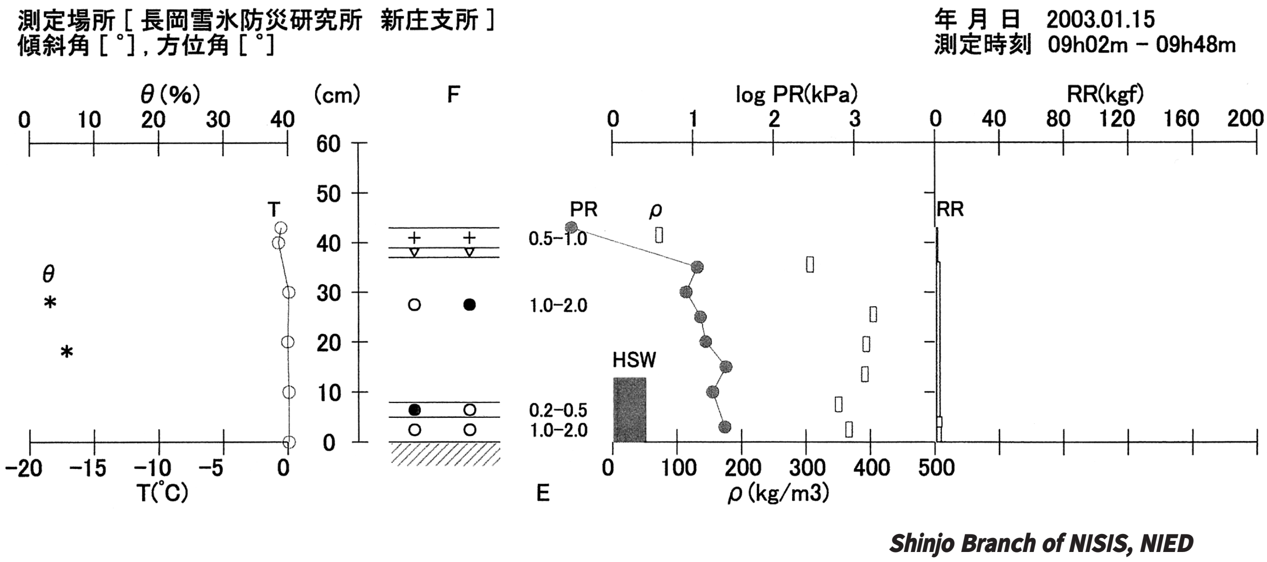
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 43 - 39 | ＋ | 0.5-1.0 | 43 | -0.6 | 43 - 40 | 71 | 30 - 27 | 3 | 43 | 1.5 | 0.3 | 43 - 36 | 1 |
| 39 37 | ▽ | | 40 | -0.8 | 37 - 34 | 305 | 20 - 17 | 6 | 35 | 1.5 | 11 | 36 - 5 | 2 |
| 37 - 18 | ○,● | 1.0-2.0 | 30 | 0.0 | 27 - 24 | 403 | | | 30 | 1.5 | 8 | 5 - 3 | 3 |
| 8 - 5 | ●,○ | 0.2-0.5 | 20 | -0.1 | 21 - 18 | 392 | | | 25 | 1.5 | 12 | 3 - 0 | 3 |
| 5 - 0 | ○ | 1.0-2.0 | 10 | 0.0 | 15 - 12 | 390 | | | 20 | 1.5 | 14 | | |
| | | | 0 | 0.0 | 9 - 6 | 349 | | | 15 | 1.5 | 25 | | |
| | | | | | 4 - 1 | 365 | | | 10 | 1.5 | 17 | | |
| | | | | | | | | | 3 | 1.5 | 24 | | |
| | | | | | 43 - 0 | 297 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




付図 1.63　積雪断面観測図

**Fig. A1.63**　Profiles of physical properties of snow cover.




付図 1.64　積雪断面観測図

**Fig. A1.64**　Profiles of physical properties of snow cover.

**付表 2.65**　積雪断面観測結果

**Table A2.65**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2003.01.24 | 88 cm | 179 mm | 204 kg/m$^3$ | ⋇ | -0.9 ˚C(09h30m) | 4 m/s(09h30m) | 09h03m - 10h00m |
| **緯度** | **経度** | **標高** | **傾斜角　方位角** | **座標軸** | **測定者** | **測定場所** | |
| 38˚47'N | 140˚19'E | 127 m | ˚　˚ | | MO,KK,OO,KI | 長岡雪氷防災研究所 新庄支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 88 - 58 | + | 0.2-0.5 | 88 | 0.0 | 88 - 85 | 42 | 17 - 14 | 2 | 88 | 1.5 | 0.4 | 88 - 29 | 1 |
| 58　49 | / | 0.2-0.5 | 80 | -0.4 | 73 - 70 | 71 | 7 - 4 | 4 | 75 | 1.5 | 1.4 | 29 - 27 | 17 |
| 49 - 39 | ● | 0.2-0.5 | 70 | -1.1 | 61 - 58 | 97 | | | 65 | 1.5 | 0.9 | 27 - 25 | 5 |
| 39 - 32 | ○ | 0.5-1.0 | 60 | -1.0 | 53 - 50 | 143 | | | 55 | 1.5 | 2.4 | 25 - 21 | 6 |
| 32 - 31 | ▽ | | 50 | 0.0 | 46 - 43 | 187 | | | 45 | 1.5 | 8 | 21 - 0 | 3 |
| 31 - 23 | ○ | 1.0-2.0 | 40 | -0.5 | 36 - 33 | 312 | | | 35 | 1.5 | 36 | | |
| 23　13 | ○ | 1.0-2.0 | 30 | -0.1 | 27 - 24 | 315 | | | 25 | 1.5 | 23 | | |
| 13 - 0 | ○,● | 0.5-1.0 | 20 | 0.0 | 20 - 17 | 433 | | | 17 | 1.5 | 12 | | |
| | | | 10 | 0.0 | 12 - 9 | 340 | | | 10 | 1.5 | 17 | | |
| | | | 0 | 0.1 | 4 - 1 | 437 | | | 5 | 1.5 | 30 | | |
| | | | | | 88 - 0 | 204 | | | | | | | |
| 備考 | 風向 西北西 | | | | | | | | | | | | |

*1:φは円板径を表わす。

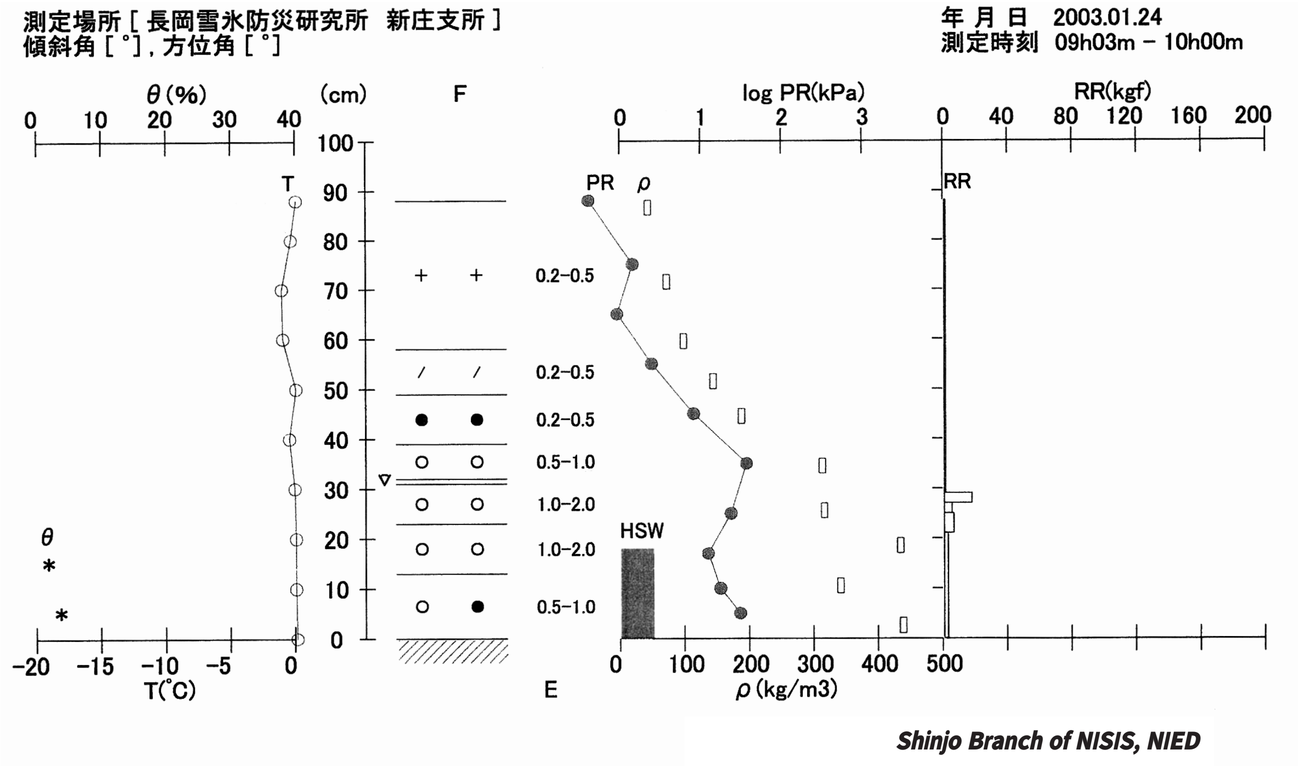
**付表 2.66**　積雪断面観測結果

**Table A2.66**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2003.02.06 | 97 cm | 284 mm | 292 kg/m$^3$ | ◎ | -1.4 ˚C(09h30m) | 2.3 m/s(09h30m) | 09h00m - 10h06m |
| **緯度** | **経度** | **標高** | **傾斜角　方位角** | **座標軸** | **測定者** | **測定場所** | |
| | | m | ˚　˚ | | M.O,K.K,S.Y,K.O | 長岡雪氷防災研究所 新庄支所 | |

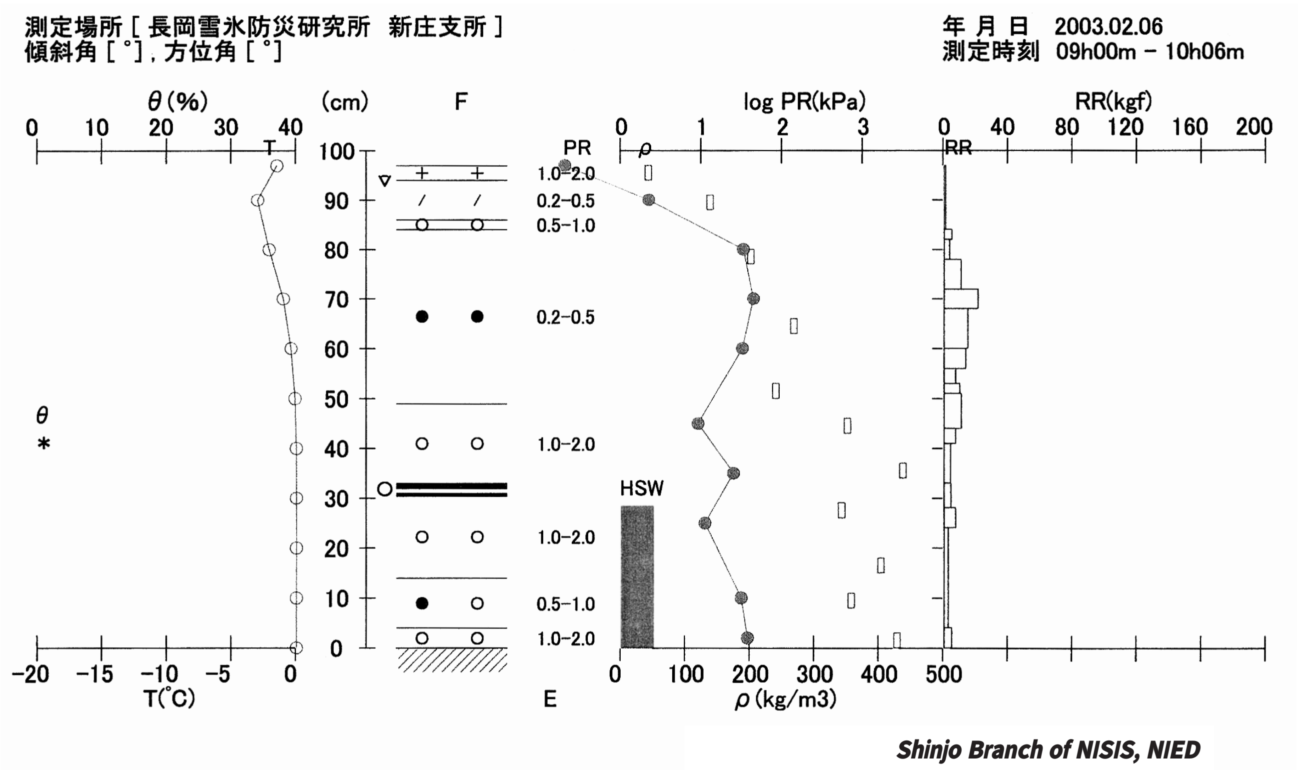
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 97 - 94 | + | 1.0-2.0 | 97 | -1.5 | 97 - 94 | 42 | 43 - 40 | 1 | 97 | 1.5 | 0.2 | 97 - 84 | 1 |
| 94　93 | ▽ | | 90 | -3.0 | 91 - 88 | 138 | | | 90 | 1.5 | 2.2 | 84 - 82 | 5 |
| 94 - 86 | / | 0.2-0.5 | 80 | -2.1 | 80 - 77 | 201 | | | 80 | 1.5 | 33 | 82 - 78 | 3 |
| 86 - 84 | ○ | 0.5-1.0 | 70 | -1.0 | 66 - 63 | 268 | | | 70 | 1.5 | 44 | 78 - 72 | 11 |
| 84 - 49 | ● | 0.2-0.5 | 60 | -0.4 | 53 - 50 | 240 | | | 60 | 1.5 | 32 | 72 - 68 | 21 |
| 49 - 33 | ○ | 1.0-2.0 | 50 | -0.1 | 46 - 43 | 351 | | | 45 | 1.5 | 9 | 68 - 60 | 15 |
| 33　32 | — | | 40 | 0.0 | 37 - 34 | 437 | | | 35 | 1.5 | 25 | 60 - 56 | 13 |
| 32 - 31 | ○ | 1.0-2.0 | 30 | 0.0 | 29 - 26 | 342 | | | 25 | 1.5 | 11 | 56 - 53 | 7 |
| 31 - 30.5 | — | | 20 | 0.0 | 18 - 15 | 403 | | | 10 | 1.5 | 31 | 53 - 51 | 10 |
| 30.5 - 14 | ○ | 1.0-2.0 | 10 | 0.0 | 11 - 8 | 357 | | | 2 | 1.5 | 37 | 51 - 44 | 11 |
| 14 - 4 | ●,○ | 0.5-1.0 | 0 | 0.0 | 3 - 0 | 428 | | | | | | 44 - 41 | 7 |
| 4 - 0 | ○ | 1.0-2.0 | | | | | | | | | | 41 - 33 | 4 |
| | | | | | 97 - 0 | 292 | | | | | | 33 - 28 | 4 |
| | | | | | | | | | | | | 28 - 24 | 7 |
| | | | | | | | | | | | | 24 - 4 | 3 |
| | | | | | | | | | | | | 4 - 0 | 5 |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。




付図 1.65　積雪断面観測図

**Fig. A1.65**　Profiles of physical properties of snow cover.




付図 1.66　積雪断面観測図

**Fig. A1.66**　Profiles of physical properties of snow cover.

**付表 2.67**　積雪断面観測結果

**Table A2.67**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2003.02.14 | 84 cm | 272 mm | 324 kg/m³ | ◎ | 0.7 ˚C(09h30m) | 1.5 m/s(09h30m) | 09h00m - 09h50m |
| 緯度 | 経度 | 標高 | 傾斜角 / 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ / ˚ | | MO,KK,SY,KO | 長岡雪氷防災研究所 新庄支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m³) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 84 - 70 | ＋ | 0.5–1.0 | 84 | -0.1 | 84 - 81 | 42 | 60 - 57 | 8 | 84 | 1.5 | 0.4 | 84 - 43 | 1 |
| 70 67 | ●,○ | 0.2–0.5 | 80 | 0.0 | 73 - 70 | 66 | 33 - 30 | 5 | 75 | 1.5 | 1.9 | 43 - 40 | 3 |
| 67 - 46 | ○ | 1.0–2.0 | 70 | -0.1 | 70 - 67 | 264 | 10 - 7 | 1 | 69 | 1.5 | 17 | 40 - 36 | 8 |
| 46 - 45 | — | | 60 | 0.0 | 65 - 62 | 389 | | | 65 | 1.5 | 2.5 | 36 - 32 | 8 |
| 45 - 29 | ○ | 1.0–2.0 | 50 | 0.0 | 50 - 47 | 393 | | | 55 | 1.5 | 11 | 32 - 30 | 5 |
| 29 - 28.5 | — | | 40 | 0.0 | 43 - 40 | 380 | | | 48 | 1.5 | 8.8 | 30 - 29 | 17 |
| 28.5 4 | ○ | 1.0–2.0 | 30 | 0.0 | 33 - 30 | 451 | | | 43 | 1.5 | 9.3 | 29 - 26 | 5 |
| 4 - 3.5 | — | | 20 | 0.0 | 23 - 20 | 383 | | | 33 | 1.5 | 23 | 26 - 21 | 8 |
| 3.5 - 0 | ○ | 1.0–2.0 | 10 | 0.0 | 10 - 7 | 449 | | | 25 | 1.5 | 40 | 21 - 9 | 3 |
| | | | 0 | 0.0 | 3 - 0 | 416 | | | 15 | 1.5 | 19 | 9 - 0 | 9 |
| | | | | | | | | | 6 | 1.5 | 36 | | |
| | | | | | 84 - 0 | 324 | | | 2 | 1.5 | 33 | | |
| 備考 | | | | | | | | | | | | | |

*1: φは円板径を表わす。

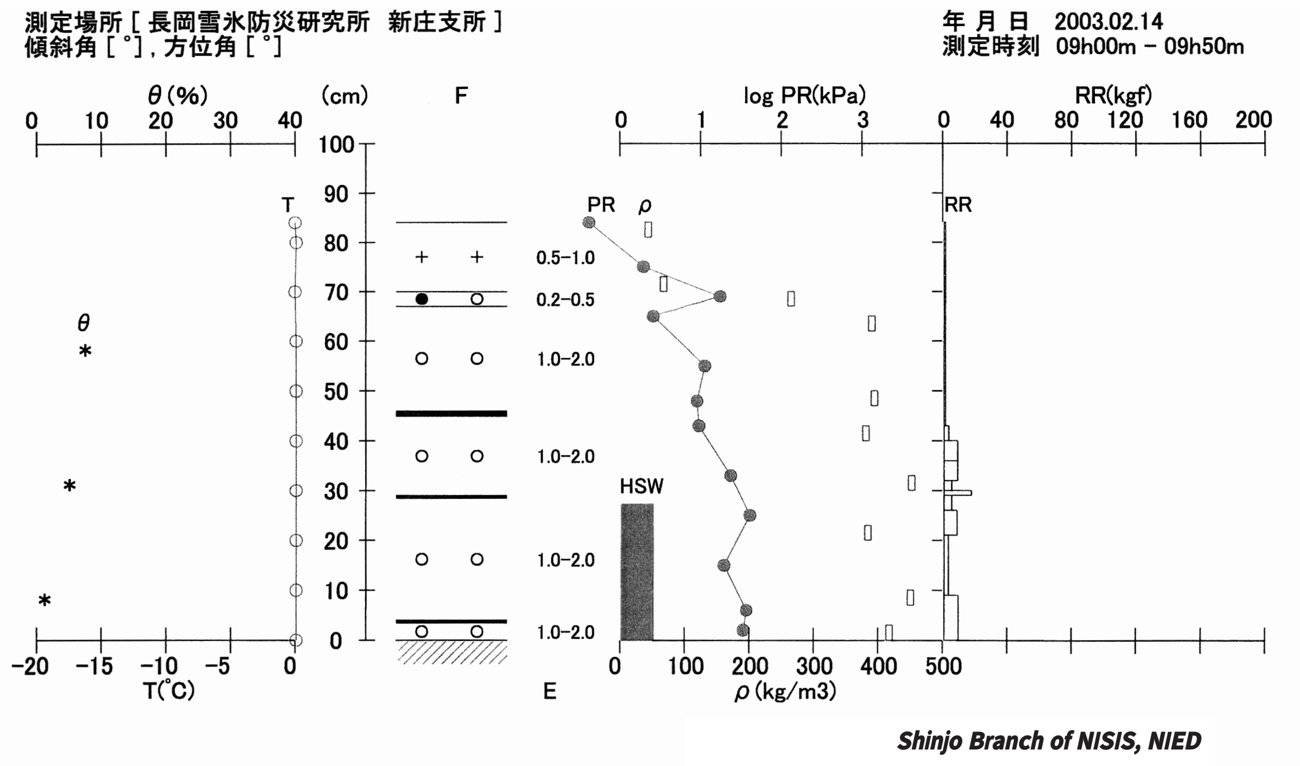
**付表 2.68**　積雪断面観測結果

**Table A2.68**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2003.02.25 | 63 cm | 228 mm | 362 kg/m³ | ◑ | -1.9 ˚C(09h25m) | 0.7 m/s(09h25m) | 09h00m - 09h50m |
| 緯度 | 経度 | 標高 | 傾斜角 / 方位角 | 座標軸 | 測定者 | 測定場所 | |
| | | m | ˚ / ˚ | | M.O,K.K,S.K,K.O | 長岡雪氷防災研究所 新庄支所 | |

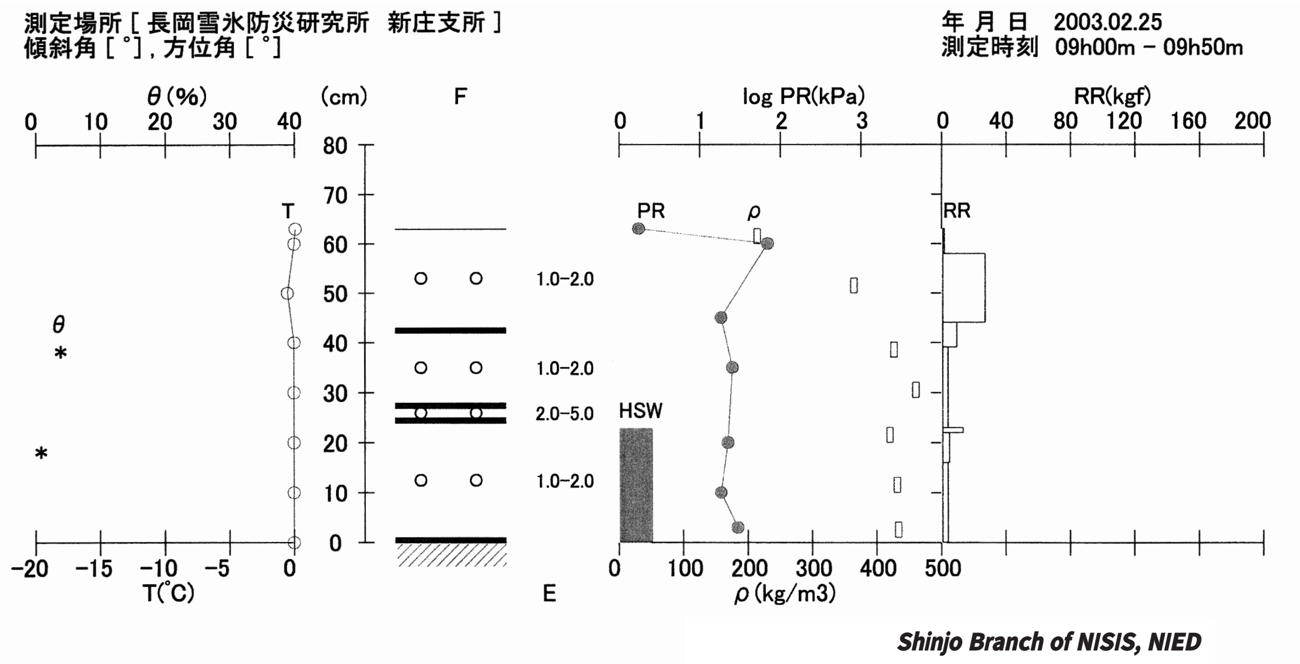
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m³) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 63 - 43 | ○ | 1.0–2.0 | 63 | 0.0 | 63 - 60 | 213 | 40 - 37 | 4 | 63 | 1.5 | 1.7 | 63 - 58 | 1 |
| 43 42 | — | | 60 | -0.1 | 53 - 50 | 363 | 20 - 17 | 1 | 60 | 1.5 | 68 | 58 - 44 | 26 |
| 42 - 28 | ○ | 1.0–2.0 | 50 | -0.6 | 40 - 37 | 425 | | | 45 | 1.5 | 18 | 44 - 39 | 9 |
| 28 - 27 | — | | 40 | -0.1 | 32 - 29 | 459 | | | 35 | 1.5 | 25 | 39 - 23 | 3 |
| 27 - 25 | ○ | 2.0–5.0 | 30 | -0.1 | 23 - 20 | 419 | | | 20 | 1.5 | 22 | 23 - 22 | 13 |
| 25 - 24 | — | | 20 | -0.1 | 13 - 10 | 430 | | | 10 | 1.5 | 18 | 22 - 16 | 4 |
| 24 1 | ○ | 1.0–2.0 | 10 | -0.1 | 4 - 1 | 432 | | | 3 | 1.5 | 29 | 16 - 0 | 3 |
| 1 - 0 | — | | 0 | -0.1 | | | | | | | | | |
| | | | | | 63 - 0 | 362 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φは円板径を表わす。




付図 1.67　積雪断面観測図

**Fig. A1.67**　Profiles of physical properties of snow cover.




付図 1.68　積雪断面観測図

**Fig. A1.68**　Profiles of physical properties of snow cover.

付表 2.69　積雪断面観測結果

**Table A2.69**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2003.03.05 | 63 cm | 219 mm | 347 kg/m$^3$ | ⌽ | -0.9 ˚C(0.9h40m) | 1.6 m/s(09h40m) | 09h03m - 09h58m |
| 緯度 | 経度 | 標高 | 傾斜角　方位角 | 座標軸 | 測定者 | 測定場所 | |
| | | m | ˚　˚ | | M.O,S.Y,K.K,K.O | 長岡雪氷防災研究所 新庄支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 63 - 60 | ＋ | 1.0-2.0 | 63 | 0.1 | 63 - 60 | 81 | 25 - 22 | 1 | 63 | 1.5 | 0.7 | 63 - 55 | 1 |
| 60 57 | / | 0.2-0.5 | 60 | 0.1 | 60 - 57 | 132 | 10 - 7 | 1 | 58 | 1.5 | 1.6 | 55 - 43 | 16 |
| 57 - 40 | ○ | 1.0-2.0 | 50 | -0.6 | 53 - 50 | 346 | | | 55 | 1.5 | 47 | 43 - 24 | 4 |
| 40 - 26 | ○ | 1.0-2.0 | 40 | 0.0 | 40 - 37 | 464 | | | 45 | 1.5 | 75 | 24 - 22 | 13 |
| 26 - 25 | — | | 30 | 0.0 | 30 - 27 | 444 | | | 35 | 1.5 | 19 | 22 - 17 | 5 |
| 25 - 2 | ○ | 1.0-2.0 | 20 | 0.0 | 20 - 17 | 399 | | | 23 | 1.5 | 21 | 17 - 0 | 3 |
| 2 1 | — | | 10 | 0.0 | 10 - 7 | 406 | | | 15 | 1.5 | 19 | | |
| 1 - 0 | ○ | 0.5-1.0 | 0 | 0.0 | | | | | 5 | 1.5 | 18 | | |
| | | | | | 63 - 0 | 347 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。

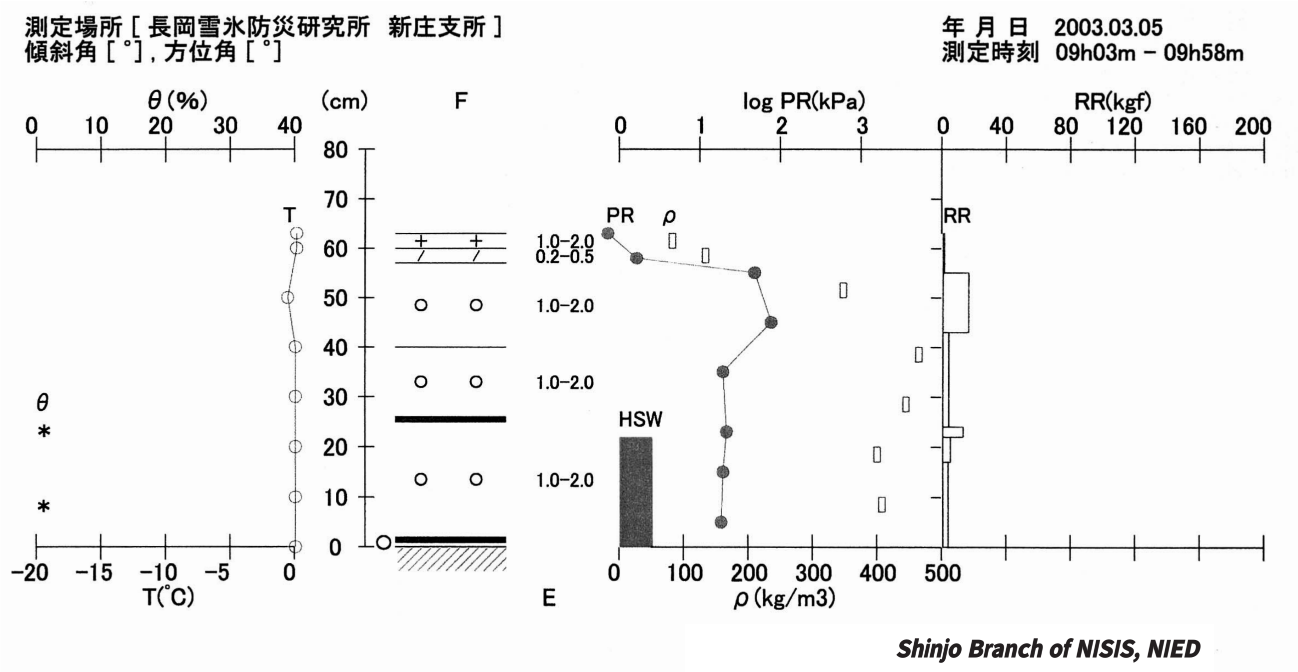
付表 2.70　積雪断面観測結果

**Table A2.70**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2003.03.14 | 52 cm | 204 mm | 392 kg/m$^3$ | ◎ | 1.5 ˚C(09h00m) | 0.7 m/s(09h00m) | 08h58m - 09h45m |
| 緯度 | 経度 | 標高 | 傾斜角　方位角 | 座標軸 | 測定者 | 測定場所 | |
| | | m | ˚　˚ | | M.O,K.K,O.O,K.I | 長岡雪氷防災研究所 新庄支所 | |

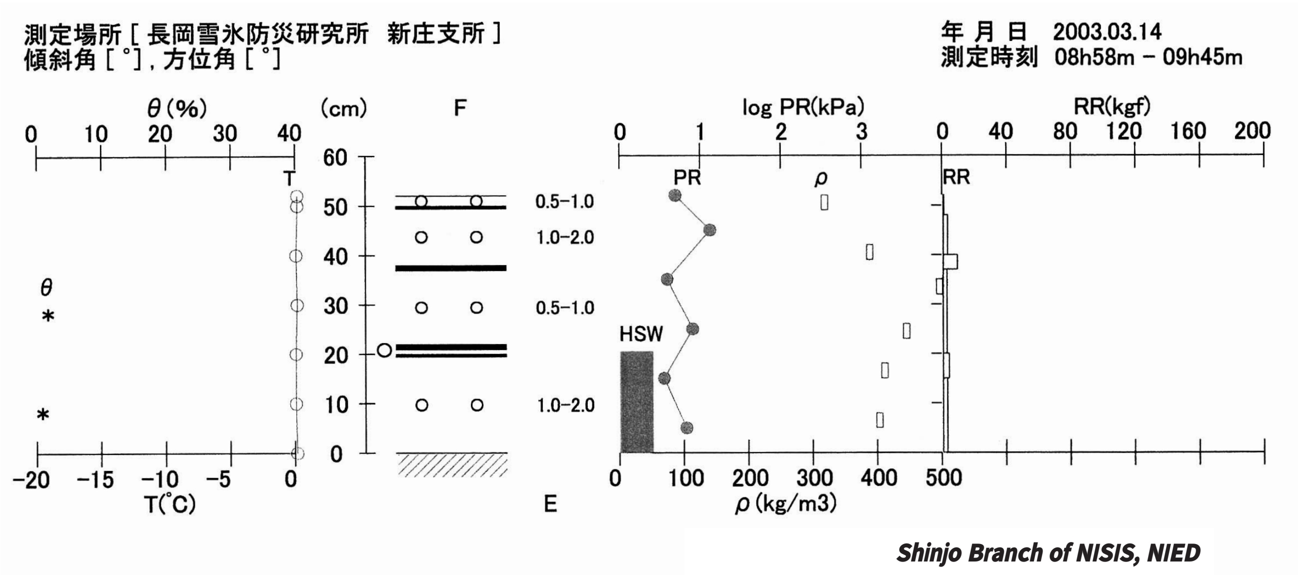
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 52 - 50 | ○ | 0.5-1.0 | 52 | 0.1 | 52 - 49 | 317 | 30 - 27 | 2 | 52 | 1.5 | 4.8 | 52 - 48 | 1 |
| 50 49.5 | — | | 50 | 0.1 | 42 - 39 | 387 | 10 - 7 | 1 | 45 | 1.5 | 13 | 48 - 40 | 3 |
| 49.5 - 38 | ○ | 1.0-2.0 | 40 | 0.0 | 35 - 32 | 495 | | | 35 | 1.5 | 3.8 | 40 - 37 | 9 |
| 38 - 37 | — | | 30 | 0.1 | 26 - 23 | 444 | | | 25 | 1.5 | 7.9 | 37 - 20 | 2 |
| 37 - 22 | ○ | 0.5-1.0 | 20 | 0.0 | 18 - 15 | 410 | | | 15 | 1.5 | 3.5 | 20 - 15 | 4 |
| 22 - 21 | — | | 10 | 0.0 | 8 - 5 | 402 | | | 5 | 1.5 | 6.6 | 15 - 0 | 3 |
| 21 20 | ○ | 1.0-2.0 | 0 | 0.1 | | | | | | | | | |
| 20 - 19.5 | — | | | | 52 - 0 | 392 | | | | | | | |
| 19.5 - 0 | ○ | 1.0-2.0 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。




付図 1.69　積雪断面観測図

**Fig. A1.69**　Profiles of physical properties of snow cover.




付図 1.70　積雪断面観測図

**Fig. A1.70**　Profiles of physical properties of snow cover.

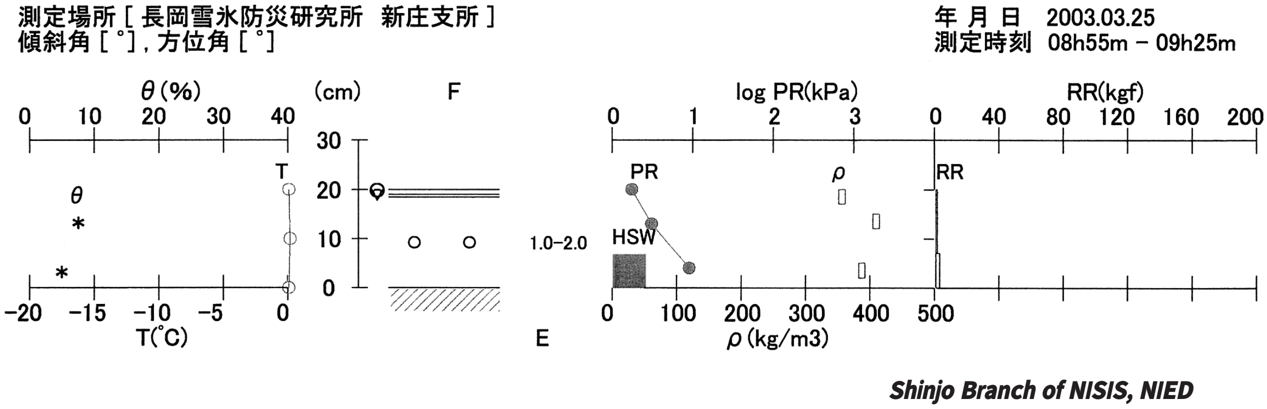
**付表 2.71**　　積雪断面観測結果

**Table A2.71**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温（時刻） | 風速（時刻） | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2003.03.25 | 20 cm | 67 mm | 336 kg/m$^3$ | ◎ | 3.8 ˚C(09h00m) | 0.4 m/s(09h00m) | 08h55m - 09h25m |
| **緯度** | **経度** | **標高** | **傾斜角** | **方位角** | **座標軸** | **測定者** | **測定場所** |
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,KK,OO,KI | 長岡雪氷防災研究所 新庄支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 $\rho$(kg/m$^3$) | | 含水率 $\theta$(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | $\rho$ | | $\theta$ | | *1 $\phi$ (cm) | PR | H | RR |
| 20 - 19 | ○ | 1.0-2.0 | 20 | 0.0 | 20 - 17 | 355 | 15 - 12 | 8 | 20 | 1.5 | 1.7 | 20 - 7 | 1 |
| 19 18.5 | ▽ | | 10 | 0.1 | 15 - 12 | 408 | 5 - 2 | 5 | 13 | 1.5 | 3 | 7 - 0 | 3 |
| 18.5 - 0 | ○ | 1.0-2.0 | 0 | 0.0 | 5 - 2 | 386 | | | 4 | 1.5 | 8.8 | | |
| | | | | | 20 - 0 | 336 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: $\phi$ は円板径を表わす。




**付図 1.71**　積雪断面観測図

**Fig. A1.71**　Profiles of physical properties of snow cover.

付表 2.72　積雪断面観測結果

**Table A2.72**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 2004.01.06 | 8 cm | 6 mm | 75 kg/m$^3$ | | ⦶ | -2.6 ˚C(09h05m) | 0 m/s(09h05m) | 09h01m - 09h32m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| | | m | ° | ° | | M.O,K.K,O.O,K.I | 長岡雪氷防災研究所 新庄支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 8 - 2 | + | 0.5-1.0 | 8 | -0.1 | 8 - 5 | 51 | | | 7 | 1.5 | 0.4 | 8 - 0 | 1 |
| 2 0 | ○ | 0.5-1.0 | 5 | 0.6 | 3 - 0 | 144 | | | 5 | 1.5 | 0.8 | | |
| | | | 0 | 0.0 | | | | | 2 | 1.5 | 3.8 | | |
| | | | | | 8 - 0 | 75 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。

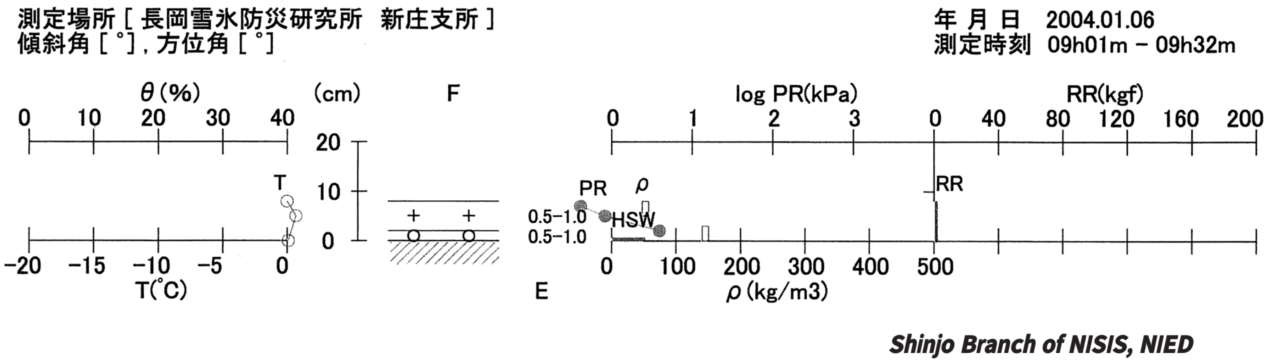
付表 2.73　積雪断面観測結果

**Table A2.73**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|---|
| 2004.01.15 | 55 cm | 86 mm | 157 kg/m$^3$ | | ⁎ | -3.3 ˚C(09h20m) | 1.5 m/s(09h20m) | 09h03m - 09h45m |
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38° 47'N | 140° 19'E | 127 m | ° | ° | | MO,KK,OO,KI | 長岡雪氷防災研究所 新庄支所 | |

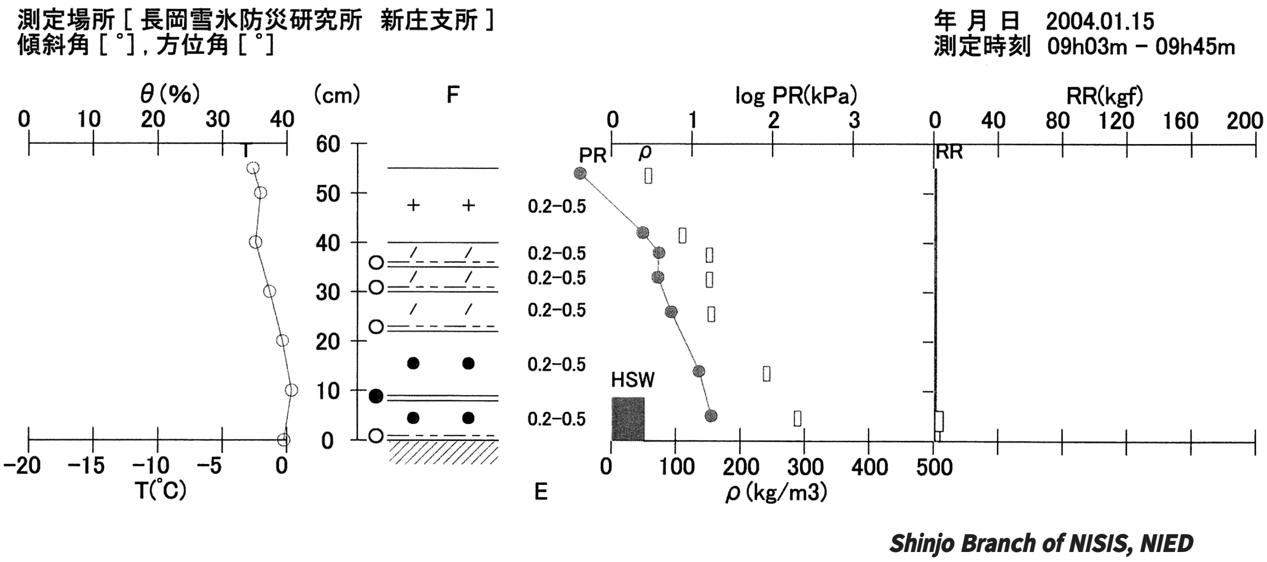
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 55 - 40 | + | 0.2-0.5 | 55 | -2.7 | 55 - 52 | 56 | | | 54 | 1.5 | 0.4 | 55 - 6 | 1 |
| 40 36 | / | 0.2-0.5 | 50 | -2.1 | 43 - 40 | 109 | | | 42 | 1.5 | 2.4 | 6 - 2 | 5 |
| 36 - 35 | ○ | 0.5-1.0 | 40 | -2.5 | 39 - 36 | 151 | | | 38 | 1.5 | 3.8 | 2 - 0 | 3 |
| 35 - 31 | / | 0.2-0.5 | 30 | -1.4 | 34 - 31 | 151 | | | 33 | 1.5 | 3.7 | | |
| 31 - 30 | ○ | 0.5-1.0 | 20 | -0.4 | 27 - 24 | 154 | | | 26 | 1.5 | 5.4 | | |
| 30 - 23 | / | 0.2-0.5 | 10 | 0.3 | 15 - 12 | 240 | | | 14 | 1.5 | 12 | | |
| 23 22 | ○ | 0.2-0.5 | 0 | -0.3 | 6 - 3 | 288 | | | 5 | 1.5 | 17 | | |
| 22 - 9 | ● | 0.2-0.5 | | | | | | | | | | | |
| 9 - 8 | ●,○ | 0.2-0.5 | | | 55 - 0 | 157 | | | | | | | |
| 8 - 1 | ● | 0.2-0.5 | | | | | | | | | | | |
| 1 - 0 | ○ | 0.5-1.0 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




付図 1.72　積雪断面観測図

**Fig. A1.72**　Profiles of physical properties of snow cover.




付図 1.73　積雪断面観測図

**Fig. A1.73**　Profiles of physical properties of snow cover.

## 付表 2.74 積雪断面観測結果

**Table A2.74** Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2004.01.26 | 68 cm | 156 mm | 229 kg/m$^3$ | ⁎ | -0.4 ˚C(09h30m) | 1 m/s(09h30m) | 09h00m - 09h53m |
| **緯度** | **経度** | **標高** | **傾斜角 / 方位角** | **座標軸** | **測定者** | **測定場所** | |
| 38˚47'N | 140˚19'E | 127 m | ˚ / ˚ | | MO,KK,OO,KI | 長岡雪氷防災研究所 新庄支所n | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 68 - 54 | + | 0.5-1.0 | 68 | -0.9 | 68 - 65 | 74 | 6 - 3 | 1 | 67 | 1.5 | 1.6 | 68 - 35 | 1 |
| 54 53 | ○ | 0.5-1.0 | 60 | -1.5 | 57 - 54 | 80 | | | 56 | 1.5 | 0.8 | 35 - 30 | 3 |
| 53 - 49 | / | 0.2-0.5 | 50 | -1.3 | 52 - 49 | 151 | | | 51 | 1.5 | 2.8 | 30 - 21 | 16 |
| 49 - 48.5 | ○ | 0.2-0.5 | 40 | -1.2 | 46 - 43 | 222 | | | 45 | 1.5 | 14 | 21 - 18 | 6 |
| 48.5 - 32 | ● | 0.2-0.5 | 30 | -0.6 | 36 - 33 | 179 | | | 35 | 1.5 | 15 | 18 - 16 | 7 |
| 32 - 26 | ○ | 0.5-1.0 | 20 | 0.0 | 30 - 27 | 312 | | | 29 | 1.5 | 43 | 16 - 13 | 4 |
| 26 23 | ●,○ | 0.2-0.5 | 10 | 0.0 | 26 - 23 | 403 | | | 25 | 1.5 | 46 | 13 - 2 | 10 |
| 23 - 17 | ○ | 0.5-1.0 | 0 | 0.3 | 20 - 17 | 306 | | | 19 | 1.5 | 15 | 2 - 0 | 5 |
| 17 - 16 | ● | 0.2-0.5 | | | 14 - 11 | 326 | | | 13 | 1.5 | 20 | | |
| 16 - 15 | ○ | 0.5-1.0 | | | 6 - 3 | 322 | | | 5 | 1.5 | 7.7 | | |
| 15 - 11 | ● | 0.2-0.5 | | | | | | | | | | | |
| 11 - 10 | ○ | 0.5-1.0 | | | 68 - 0 | 229 | | | | | | | |
| 10 - 2 | ●,○ | 0.2-0.5 | | | | | | | | | | | |
| 2 0 | ○ | 0.5-1.0 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。

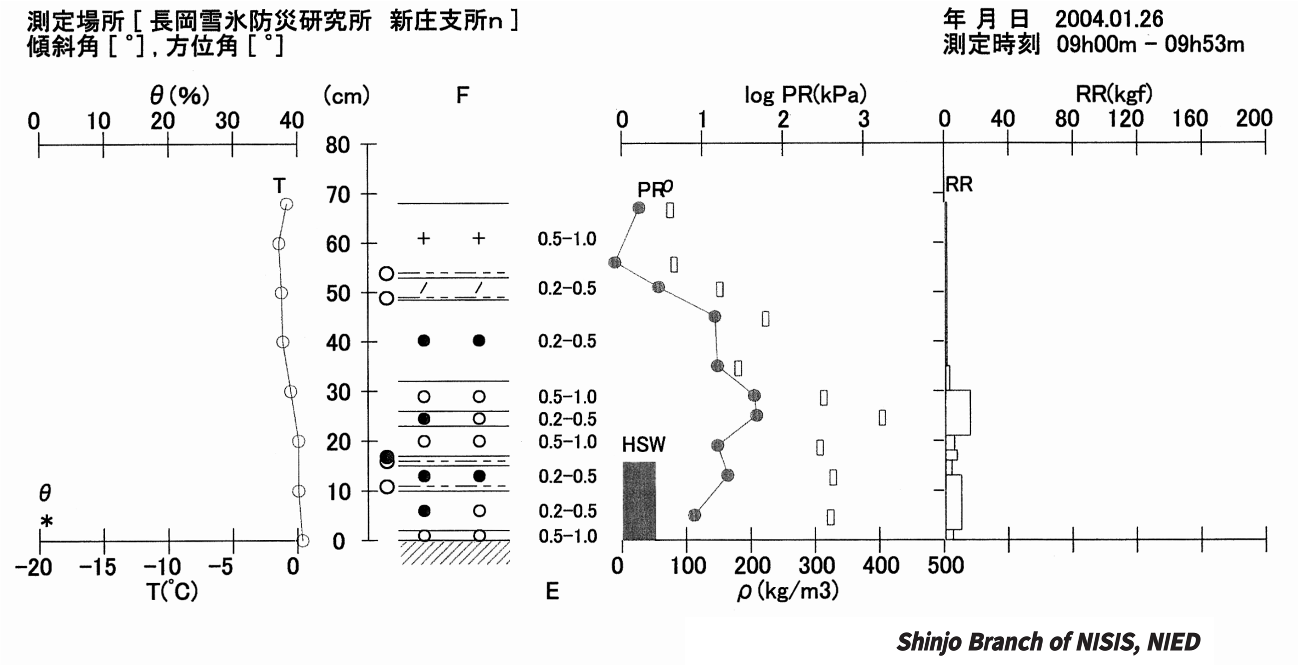
## 付表 2.75 積雪断面観測結果

**Table A2.75** Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2004.02.05 | 76 cm | 216 mm | 284 kg/m$^3$ | ⁎ | -0.5 ˚C(09h20m) | 3.2 m/s(09h20m) | 09h03m - 10h10m |
| **緯度** | **経度** | **標高** | **傾斜角 / 方位角** | **座標軸** | **測定者** | **測定場所** | |
| 38˚47'N | 140˚19'E | 127 m | ˚ / ˚ | | MO,KH,KS,SY | 長岡雪氷防災研究所 新庄支所 | |

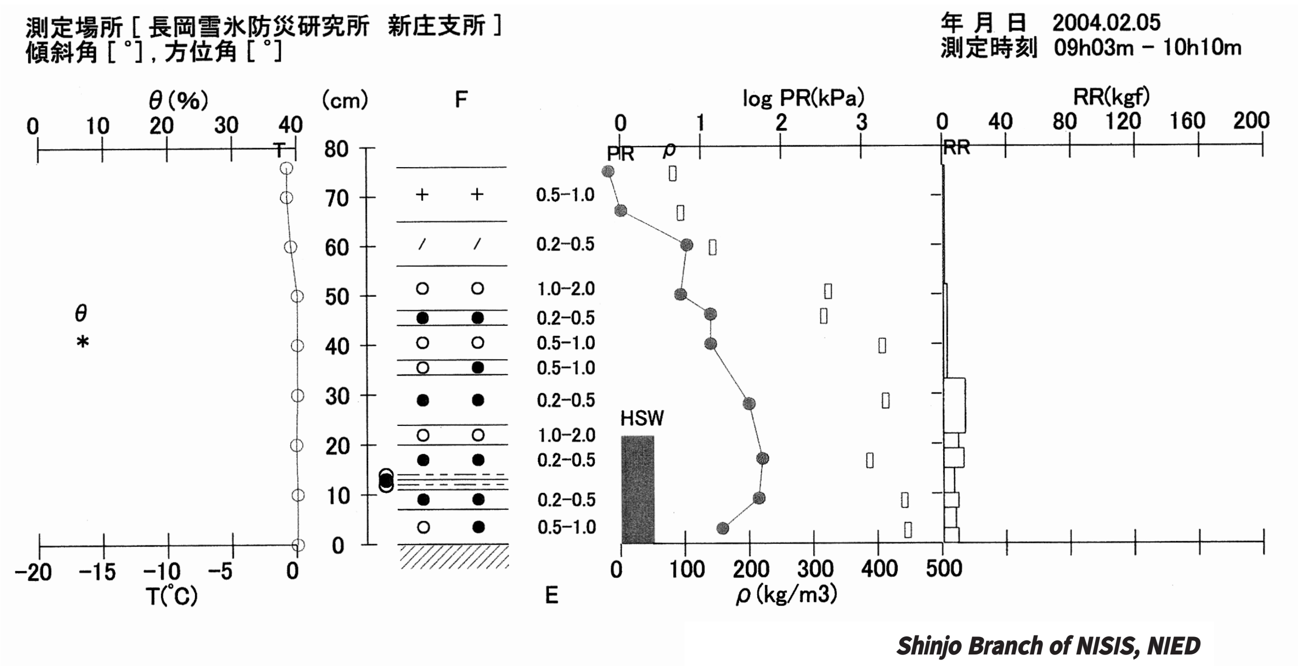
| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 76 - 65 | + | 0.5-1.0 | 76 | -0.8 | 76 - 73 | 81 | 43 - 40 | 7 | 75 | 1.5 | 0.7 | 76 - 52 | 1 |
| 65 56 | / | 0.2-0.5 | 70 | -0.8 | 68 - 65 | 93 | | | 67 | 1.5 | 1 | 52 - 33 | 2 |
| 56 - 47 | ○ | 1.0-2.0 | 60 | -0.5 | 61 - 58 | 143 | | | 60 | 1.5 | 6.6 | 33 - 22 | 14 |
| 47 - 44 | ● | 0.2-0.5 | 50 | 0.0 | 52 - 49 | 322 | | | 50 | 1.5 | 5.5 | 22 - 19 | 9 |
| 44 - 37 | ○ | 0.5-1.0 | 40 | 0.0 | 47 - 44 | 315 | | | 46 | 1.5 | 13 | 19 - 15 | 13 |
| 37 - 34 | ○,● | 0.5-1.0 | 30 | 0.0 | 41 - 38 | 406 | | | 40 | 1.5 | 13 | 15 - 10 | 7 |
| 34 24 | ● | 0.2-0.5 | 20 | -0.1 | 30 - 27 | 411 | | | 28 | 1.5 | 39 | 10 - 7 | 9 |
| 24 - 20 | ○ | 1.0-2.0 | 10 | 0.0 | 18 - 15 | 386 | | | 17 | 1.5 | 57 | 7 - 3 | 8 |
| 20 - 14 | ● | 0.2-0.5 | 0 | 0.0 | 10 - 7 | 440 | | | 9 | 1.5 | 51 | 3 - 0 | 9 |
| 14 - 13 | ○ | 0.5-1.0 | | | 4 - 1 | 445 | | | 3 | 1.5 | 18 | | |
| 13 - 12 | ● | 0.2-0.5 | | | | | | | | | | | |
| 12 - 11 | ○ | 0.5-1.0 | | | 76 - 0 | 284 | | | | | | | |
| 11 - 7 | ● | 0.2-0.5 | | | | | | | | | | | |
| 7 0 | ○,● | 0.5-1.0 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




付図 1.74　積雪断面観測図

**Fig. A1.74**　Profiles of physical properties of snow cover.




付図 1.75　積雪断面観測図

**Fig. A1.75**　Profiles of physical properties of snow cover.

付表 2.76　　積雪断面観測結果

**Table A2.76**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2004.02.16 | 89 cm | 282 mm | 317 kg/m$^3$ | ＊ | 1.2 ˚C(09h27m) | 2.8 m/s(09h27m) | 09h03m - 10h05m |

| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,KH,KS,KK | 長岡雪氷防災研究所　新庄支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 89 - 75 | ＋ | 0.5-1.0 | 89 | 0.0 | 89 - 86 | 169 | 70 - 67 | 8 | 87 | 1.5 | 3.2 | 89 - 47 | 1 |
| 75 64 | ○,● | 1.0-2.0 | 80 | 0.0 | 81 - 78 | 103 | 40 - 37 | 0 | 80 | 1.5 | 1.9 | 47 - 45 | 8 |
| 64 - 50 | ○,● | 0.5-1.0 | 70 | 0.0 | 71 - 68 | 348 | | | 70 | 1.5 | 5.4 | 45 - 35 | 4 |
| 50 - 45 | ○ | 1.0-2.0 | 60 | 0.0 | 60 - 57 | 412 | | | 58 | 1.5 | 22 | 35 - 27 | 5 |
| 45 - 44 | — | | 50 | 0.0 | 49 - 46 | 432 | | | 47 | 1.5 | 24 | 27 - 18 | 14 |
| 44 - 40 | ○ | 0.5-1.0 | 40 | 0.0 | 43 - 40 | 344 | | | 42 | 1.5 | 13 | 18 - 16 | 10 |
| 40 38 | ● | 0.2-0.5 | 30 | 0.0 | 33 - 30 | 465 | | | 31 | 1.5 | 30 | 16 - 12 | 18 |
| 38 - 26 | ○,● | 1.0-2.0 | 20 | 0.0 | 25 - 22 | 357 | | | 23 | 1.5 | 58 | 12 - 9 | 9 |
| 26 - 22 | ● | 0.2-0.5 | 10 | 0.0 | 20 - 17 | 323 | | | 18 | 1.5 | 22 | 9 - 0 | 9 |
| 22 - 16 | ○ | 0.5-1.0 | 0 | 0.2 | 15 - 12 | 415 | | | 14 | 1.5 | 72 | | |
| 16 - 11 | ● | 0.2-0.5 | | | 10 - 7 | 365 | | | 8 | 1.5 | 44 | | |
| 11 - 7 | ○ | 0.5-1.0 | | | 6 - 3 | 405 | | | 4 | 1.5 | 30 | | |
| 7 - 3 | ●,○ | 0.2-0.5 | | | | | | | | | | | |
| 3 0 | ○ | 0.5-1.0 | | | 89 - 0 | 317 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。

付表 2.77　　積雪断面観測結果

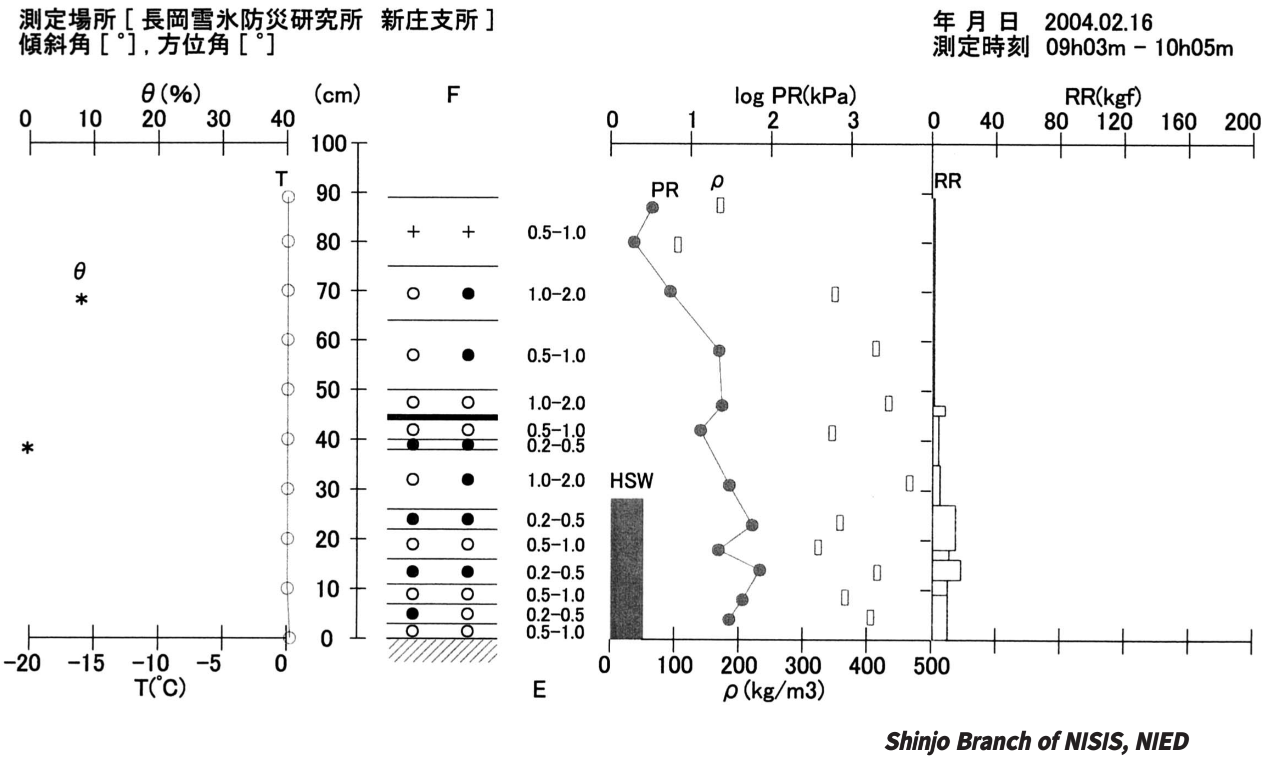
**Table A2.77**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2004.02.25 | 66 cm | 268 mm | 406 kg/m$^3$ | ◎ | 6.9 ˚C(09h05m) | 0.8 m/s(09h05m) | 08h55m - 09h34m |

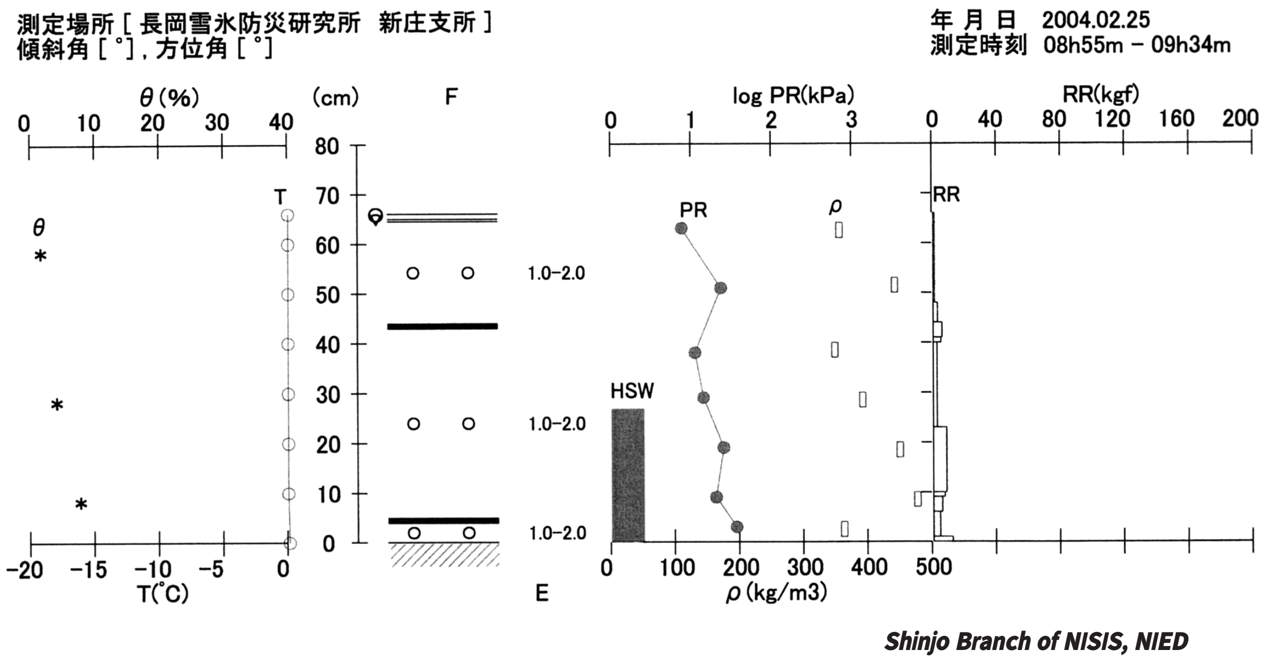
| 緯度 | 経度 | 標高 | 傾斜角 | 方位角 | 座標軸 | 測定者 | 測定場所 |
|---|---|---|---|---|---|---|---|
| 38˚47'N | 140˚19'E | 127 m | ˚ | ˚ | | MO,KS,KK,SY | 長岡雪氷防災研究所　新庄支所 |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ, (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 66 - 65 | ○ | 1.0-2.0 | 66 | 0.0 | 64 - 61 | 355 | 60 - 57 | 2 | 63 | 1.5 | 7.5 | 66 - 48 | 1 |
| 65 64.5 | ▽ | | 60 | 0.0 | 53 - 50 | 441 | 30 - 27 | 4 | 51 | 1.5 | 23 | 48 - 44 | 3 |
| 64.5 - 44 | ○ | 1.0-2.0 | 50 | 0.0 | 40 - 37 | 348 | 10 - 7 | 8 | 38 | 1.5 | 11 | 44 - 41 | 6 |
| 44 - 43 | — | | 40 | 0.0 | 30 - 27 | 391 | | | 29 | 1.5 | 14 | 41 - 40 | 5 |
| 43 - 5 | ○ | 1.0-2.0 | 30 | 0.0 | 20 - 17 | 449 | | | 19 | 1.5 | 25 | 40 - 23 | 2 |
| 5 - 4 | — | | 20 | 0.0 | 10 - 7 | 476 | | | 9 | 1.5 | 20 | 23 - 10 | 8 |
| 4 0 | ○ | 1.0-2.0 | 10 | 0.0 | 4 - 1 | 362 | | | 3 | 1.5 | 36 | 10 - 9 | 7 |
| | | | 0 | 0.1 | | | | | | | | 9 - 6 | 6 |
| | | | | | 66 - 0 | 406 | | | | | | 6 - 1 | 4 |
| | | | | | | | | | | | | 1 - 0 | 12 |
| 備考 | | | | | | | | | | | | | |

*1:φは円板径を表わす。




付図 1.76 積雪断面観測図
**Fig. A1.76** Profiles of physical properties of snow cover.




付図 1.77 積雪断面観測図
**Fig. A1.77** Profiles of physical properties of snow cover.

付表 2.78　　積雪断面観測結果

**Table A2.78**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2004.03.05 | 63 cm | 220 mm | 349 kg/m$^3$ | ◎ | -2 ˚C(09h10m) | 2.3 m/s(09h10m) | 08h54m - 09h40m |
| 緯度 | 経度 | 標高 | 傾斜角 / 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ / ˚ | | MO,KS,KK,SY | 長岡雪氷防災研究所 新庄支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 63 - 59 | ＋ | 0.5-1.0 | 63 | 0.0 | 63 - 60 | 55 | 38 - 35 | 7 | 62 | 1.5 | 0.4 | 63 - 53 | 1 |
| 59 58 | ○ | 0.5-1.0 | 60 | 0.0 | 58 - 55 | 248 | 25 - 22 | 6 | 56 | 1.5 | 11 | 53 - 39 | 41 |
| 58 - 55 | ● | 0.2-0.5 | 50 | -0.7 | 50 - 47 | 398 | 10 - 7 | 0 | 49 | 1.5 | 72 | 39 - 12 | 4 |
| 55 - 41 | ○ | 1.0-2.0 | 40 | 0.0 | 39 - 36 | 434 | | | 37 | 1.5 | 72 | 12 - 9 | 13 |
| 41 - 40 | — | | 30 | 0.0 | 30 - 27 | 416 | | | 28 | 1.5 | 14 | 9 - 5 | 10 |
| 40 - 35 | ○ | 1.0-2.0 | 20 | 0.0 | 18 - 15 | 470 | | | 17 | 1.5 | 42 | 5 - 0 | 21 |
| 35 34.5 | — | | 10 | 0.0 | 6 - 3 | 424 | | | 5 | 1.5 | 48 | | |
| 34.5 - 21 | ○ | 1.0-2.0 | 0 | 0.0 | | | | | | | | | |
| 21 - 20.5 | — | | | | 63 - 0 | 349 | | | | | | | |
| 20.5 - 0 | ○ | 1.0-2.0 | | | | | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。

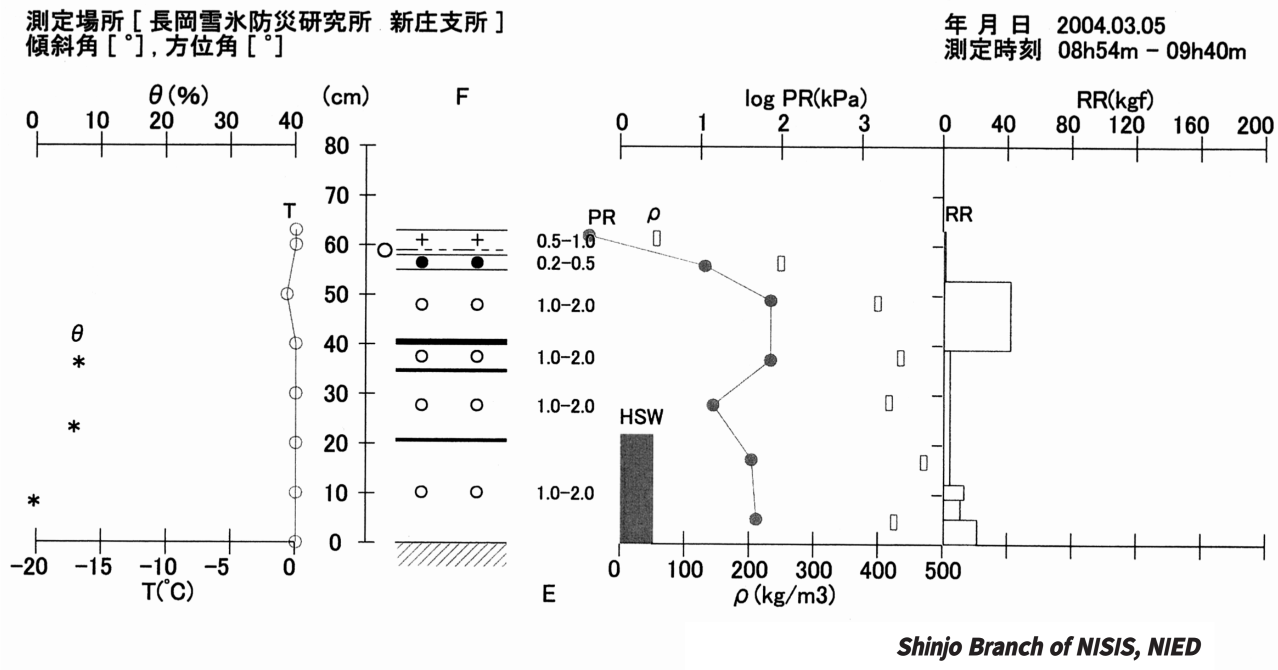
付表 2.79　　積雪断面観測結果

**Table A2.79**　Physical properties of snow cover obtained by the snow pit observation.

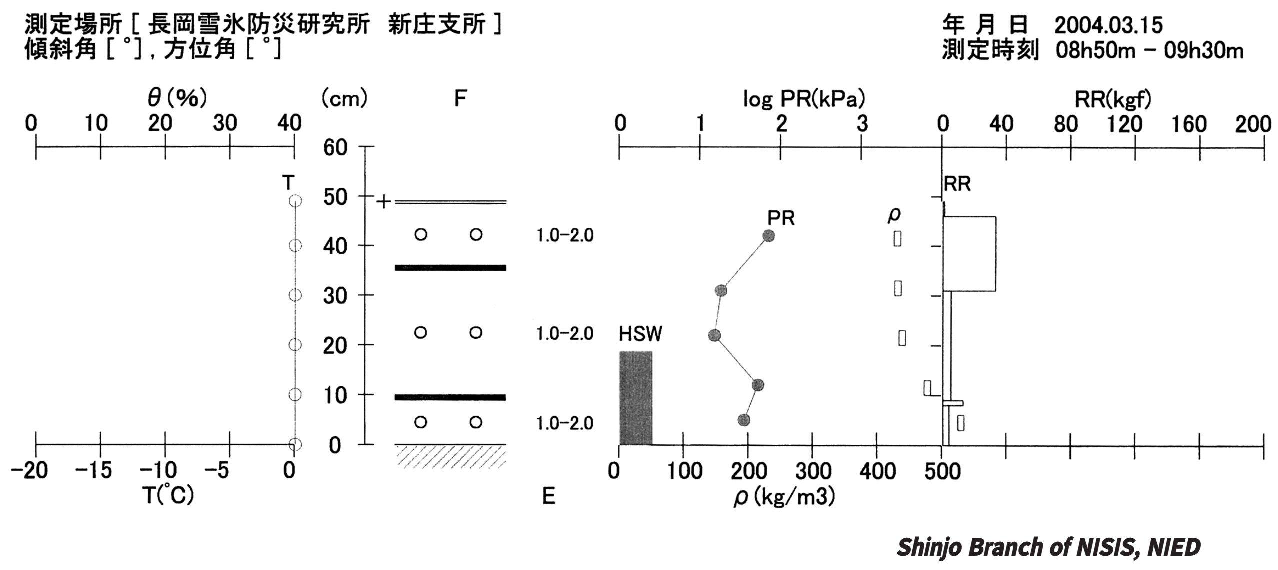
| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2004.03.15 | 49 cm | 187 mm | 381 kg/m$^3$ | ＊ | -0.8 ˚C(09h00m) | 0.8 m/s(09h00m) | 08h50m - 09h30m |
| 緯度 | 経度 | 標高 | 傾斜角 / 方位角 | 座標軸 | 測定者 | 測定場所 | |
| | | m | ˚ / ˚ | | M.O,K.S,K.K,S.Y | 長岡雪氷防災研究所 新庄支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 49 - 48.5 | ＋ | 0.5-1.0 | 49 | 0.0 | 43 - 40 | 430 | | | 42 | 1.5 | 70 | 49 - 46 | 1 |
| 48.5 36 | ○ | 1.0-2.0 | 40 | 0.0 | 33 - 30 | 431 | | | 31 | 1.5 | 18 | 46 - 31 | 33 |
| 36 - 35 | — | | 30 | 0.0 | 23 - 20 | 438 | | | 22 | 1.5 | 15 | 31 - 9 | 5 |
| 35 - 10 | ○ | 1.0-2.0 | 20 | 0.0 | 13 - 10 | 477 | | | 12 | 1.5 | 52 | 9 - 8 | 13 |
| 10 - 9 | — | | 10 | 0.0 | 6 - 3 | 529 | | | 5 | 1.5 | 35 | 8 - 0 | 4 |
| 9 - 0 | ○ | 1.0-2.0 | 0 | 0.0 | | | | | | | | | |
| | | | | | 49 - 0 | 381 | | | | | | | |
| 備考 | | | | | | | | | | | | | |

*1: φ は円板径を表わす。




付図 1.78　積雪断面観測図
**Fig. A1.78**　Profiles of physical properties of snow cover.




付図 1.79　積雪断面観測図
**Fig. A1.79**　Profiles of physical properties of snow cover.

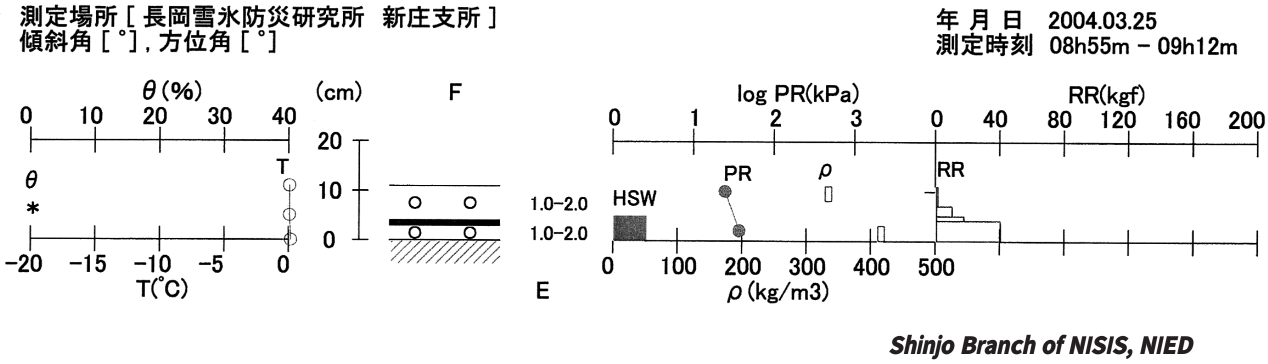
付表 2.80　　積雪断面観測結果

**Table A2.80**　Physical properties of snow cover obtained by the snow pit observation.

| 年 月 日 | 積雪深 | 積雪相当水量 | 全層平均密度 | 天気 | 気温(時刻) | 風速(時刻) | 測定時刻 |
|---|---|---|---|---|---|---|---|
| 2004.03.25 | 11 cm | 49 mm | 450 kg/m$^3$ | ◎ | 3.3 ˚C(09h11m) | 2.1 m/s(09h11m) | 08h55m - 09h12m |
| 緯度 | 経度 | 標高 | 傾斜角 / 方位角 | 座標軸 | 測定者 | 測定場所 | |
| 38˚47'N | 140˚19'E | 127 m | ˚ / ˚ | | MO,KK,OO,KI | 長岡雪氷防災研究所 新庄支所 | |

| 雪質:F,粒度:E | | | 雪温 T(˚C) | | 密度 ρ(kg/m$^3$) | | 含水率 θ(%) | | 硬度 PR(kPa) | | | ラム硬度 RR(kgf) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 高さ (cm) | F | E (mm) | | T | | ρ | | θ | | *1 φ (cm) | PR | H | RR |
| 11 - 4 | ○ | 1.0-2.C | 11 | 0.0 | 11 - 8 | 333 | 8 - 5 | 0 | 10 | 1.5 | 24 | 11 - 7 | 1 |
| 4 3 | — | | 5 | 0.0 | 3 - 0 | 415 | | | 2 | 1.5 | 36 | 7 - 5 | 10 |
| 3 - 0 | ○ | 1.0-2.0 | 0 | 0.1 | | | | | | | | 5 - 4 | 17 |
| | | | | | 11 - 0 | 450 | | | | | | 4 - 0 | 40 |
| 備考 | | | | | | | | | | | | | |

*1: φは円板径を表わす。




**付図 1.80**　積雪断面観測図

**Fig. A1.80**　Profiles of physical properties of snow cover.