

## CHAPTER 12

### THE SYNOPTIC CODE – DETAILED DESCRIPTION

12.1 GENERAL. Detailed coding instructions for each element of each group of the Synoptic code are given below. The instructions often include reference to entries on the Surface Weather Record Form 63–2322. In most cases, the observer will find that the preparation of the Synoptic message is simplified if the appropriate entries for lines and columns 1 to 42a on Form 63–2322 are completed before preparing the coded message. Observers may find that Form 63–9028, Tables for Synoptic Code, will assist them in encoding the synoptic report.

12.1.1 Complete instructions for recording the observed data on Form 63–2322 are given in Chapter 13.

#### 12.2 SECTION 0

12.2.1 Group  $M_iM_iM_jM_j$  This group is inserted by the communications computer in the message header for identification of synoptic bulletins and is encoded AAXX for synoptic reports from land stations. It is the first group of the second line of the message header. ( $M_iM_iM_jM_j$  is encoded BBXX for synoptic reports from ship stations.)

12.2.2 Group YYGG $i_w$  This group is inserted by the communications computer as the second group of the second line of the message header of a synoptic bulletin originating from a land station.

12.2.2.1 YY – Day of the month (UTC).

12.2.2.2 GG – Hour of the observation (UTC).

12.2.2.3  $i_w$  – Wind indicator, showing the units of wind speed and whether the wind speed is measured or estimated. The communications computer will insert the figure 4 for  $i_w$  at Canadian land stations. Observers on ships will have the option of specifying a 3 or 4, depending on whether or not the ships are equipped with anemometers. The following table for  $i_w$  is given for decoding purposes.

Code figure	$i_w$ Wind indicator	
0	Wind speed estimated	<div style="border: 1px solid black; width: 40px; height: 20px; display: inline-block;"></div> Wind speed in metres per second
1	Wind speed obtained from anemometer	
3	Wind speed estimated	<div style="border: 1px solid black; width: 40px; height: 20px; display: inline-block;"></div> Wind speed in knots
4	Wind speed obtained from anemometer	

#### 12.2.3 Group Iiii

12.2.3.1 II – Block number. All Canadian land stations use 71.

12.2.3.2 iii – Station number, as found in METSTAT.

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## 12.3 SECTION 1

12.3.1 Group  $i_{R_i}hVV$ 

12.3.1.1  $i_R$  – This symbol is an indicator to show whether or not the precipitation group  $6RRRt_R$  is included in the message and, if included, in what Section of the message it appears. The following code table shall be used.

WMO Code 1819

Code Figure $i_R$	Precipitation data are reported	Group $6RRRt_R$ is:
0	in Sections 1 and 3	included in both Sections
1	in Section 1	included
2	in Section 3	included
3	in none of the two sections 1 and 3	omitted (precipitation amount = 0)
4	in none of the two sections 1 and 3	omitted (precipitation amount not available)

12.3.1.1.1 Code figure 0 is not used for  $i_R$  in Canada. When the group  $6RRRt_R$  is included in the main synoptic report, it is included in Section 1, and  $i_R$  is encoded 1. When precipitation occurs at a station which transmits intermediate synoptic reports, and it occurs between a main synoptic hour and the subsequent intermediate synoptic hour, the  $6RRRt_R$  group will be included in the intermediate synoptic report, and  $i_R$  will be encoded 2.

12.3.1.2  $i_x$  – This symbol indicates whether the synoptic message has originated from a manned or an automatic station and secondly, whether or not the present and past weather group,  $7wwW_1W_2$ , is included. The following code table shall be used.

## WMO Code 1860

Code Figure $i_x$	Type of station operation	Group 7wwW <sub>1</sub> W <sub>2</sub> or 7w <sub>a</sub> w <sub>a</sub> W <sub>a1</sub> W <sub>a2</sub>
1	staffed	included
2	staffed	omitted (no significant phenomenon to report)
3	staffed	omitted (not observed, data not available)
4	automatic	included using Code tables 4677 and 4561
5	automatic	omitted (no significant phenomenon to report)
6	automatic	omitted (not observed, data not available)
7	automatic	included using Code tables 4680 and 4531

Note: Current automatic stations do not use indicator  $i_x = 4$ ; they normally use indicator  $i_x = 5, 6, \text{ or } 7$ .

12.3.1.2.1 Insignificant weather phenomena referred to by code figure 2 are defined in para. 12.3.10.

12.3.1.3  $h$  – height, above ground of the base of lowest cloud. When  $C_L$  clouds exist, the height of the base of the lowest layer is reported by  $h$ . When no  $C_L$  clouds exist,  $h$  is coded with reference to the height of the base of the lowest  $C_M$  cloud. The following code table shall be used.

## WMO Code 1600

Code Figure $h$	Coded Heights (Hourly Reports)
0	0 to less than 50 m      0, 1
1	50 m to less than 100 m      2, 3
2	100 m to less than 200 m      4, 5, 6
3	200 m to less than 300 m      7, 8, 9
4	300 m to less than 600 m      10 to 19
5	600 m to less than 1000 m      20 to 33
6	1000 m to less than 1500 m      34 to 49
7	1500 m to less than 2000 m      50 to 66
8	2000 m to less than 2500 m      67 to 83
9	Greater than 2500 m or no cloud      Greater than 83 (or no cloud)
/	Sky completely obscured, no cloud visible.

If coded cloud heights in the hourly report do not fit within the adjacent range of metric heights because of rounding, give precedence to the actual cloud height in selecting the code for  $h$ , rather than the coded value of the hourly report. For example, cloud height 290 m: code as 10 in hourly report; code  $h$  as 3 in synoptic report.

Note: When  $C_H$  clouds are observed without  $C_L$  or  $C_M$  clouds being present,  $h$  shall always be coded as 9.

12.3.1.3.1 If the sky is partially obscured by fog or other obscuring phenomena, h refers to the base of the lowest cloud observed, if any.

12.3.1.3.2 If the sky is completely obscured, h is recorded as X; however, if the sky is completely obscured and clouds are visible below the obscuration, h is reported as observed. For example, if the sky is completely obscured by snow in which the vertical visibility is 300 m and 1/10 of Stratus Fractus is observed at 150 m the coding for h would be 2.

12.3.1.4 VV – The horizontal visibility (Col. 31) shall be coded using the following table :

## WMO Code 4377

Miles	Code figure VV	Miles	Code Figure VV	Visibility	Code Figure VV
0	00	7	61	Less than 55 yards	90
1/8	02	8	62	55 yards, but less than 220	91
1/4	04	9	64	220 yards, but less than 550	92
3/8	06	10	66	550 yards, but less than 1100	93
1/2	08	11	67	1100 yards, but less than 2200	94
5/8	10	12	69	2200 yards, but less than 4400 (2.2 naut. mi.)	95
3/4	12	13	70	4400 yds., but less than 11,000 (5.4 naut. mi.)	96
1	16	14	72	5.4 naut. mi. but less than 11 naut. mi.	97
1 1/4	20	15	74	11 naut. mi., but less than 27 naut. mi.	98
1 1/2	24	19	80	27 naut. mi. or greater	99
1 3/4	28	22	81		
2	32	25	82	Note 1. Code figures 90 to 99 shall not be used except on special instructions from the ADMA	
2 1/4	36	28	83		
2 1/2	40	32	84		
3	48	35	85		
4	56	38	86	Note 2. When an hourly and a Synoptic Observation are taken at the same time and the entry in Column 31 is 15+, VV shall be reported as Code 74.	
5	58	41	87		
6	59	44	88		
		more than 44	89		

12.3.1.4.1 If the visibility recorded in Column 31 falls between two code figures, use the lower code figure. Thus, 20 miles shall be coded as 80; 30 miles as 83 etc.

### 12.3.2 Group Nddff

12.3.2.1 N – This symbol gives the fraction of the celestial dome covered by clouds, irrespective of their type. The following code table shall be used.

#### WMO Code 2700

Code  
Figure  
N

0	0	0
1	1/10 or less, but not zero	1 oktas or less, but not zero
2	2/10 – 3/10	2 oktas
3	4/10	3 oktas
4	5/10	4 oktas
5	6/10	5 oktas
6	7/10 and 8/10	6 oktas
7	9/10 or more but not 10/10	7 oktas or more, but not 8 oktas
8	10/10	8 oktas
9	Sky completely obscured by a surface-based layer or by an obscuring phenomenon based aloft.	
/	Cloud cover is not discernable for reasons other than fog or other meteorological phenomena, or, an observation is not made. The symbol "/" is normally used only in auto station reports. ■	

12.3.2.1.1 Normally N shall be coded with reference to the entry in Column 26 (Total Amount). However, because of some differences in the procedures for coding Hourly and Synoptic Observations some exceptions are necessary as indicated below:

- (a) When blue sky or stars are seen through a layer of fog or other obscuring phenomenon without any trace of cloud above this layer, N is reported as 0.

- (b) If clouds are seen through fog or other obscuring phenomenon their amount shall be evaluated as through the obscuration did not exist. In other words, partial obscurations may be disregarded and N is determined by considering that portion of the sky which is not obscured to be the entire sky. Examples follow:

Example 1: Refer to 0700 and 0800 observations. The sky is partially concealed by fog. In the portion which is not concealed there are equal parts of blue sky and cloud; the code for N would be 4 (4 oktas) in each case, i.e., in coding N the sky is considered to be half covered by cloud.

R RECORD		AT		STATE NAME AS IN MET STAT		PROVINCE		FROM		HOUR (UTC) DAY MONTH		19		TO		HOUR	
OBSERVATIONS																	
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Total Opacity	Total Amount	Type	19 Day	20 Hour	21 UTC	22 Temp	23 Sky Condition	24 Wind Dir	25 Wind Speed	26 Wind Char	27 Visib	28 Barom	29 Pres	30 Dew-Point	31 Rel. Hum	32 Clouds and Obscuring Phenomena	33 Type/Opacity
B	B			0700		-X	E 70 BKN										EG AS 2
7	7			0800		-X	E 270 BKN										E 4 CS 3
9	9			0900		-X	E 30 BKN										SS TG 4
0	0			1100			30 SCT										CU 1
0	0			1200			30 SCT 90 SCT										CU 1 AC 1
7	7			1300		-X											BS 7

Example 2: Refer to 0900 observation. The sky is partially concealed or obscured by a snow shower. The observer notes that the remainder of the sky is 20 % clear and 80% cloud covered. In coding N the sky is considered to be 80% covered by cloud, hence the code for N would be 6.

Example 3: Refer to 1100 and 1200 observations. The observer reports only a trace of cloud. The entry in Column 26 is 0, but since cloud is present the code for N would be 1.

Example 4: Refer to 1300 observation. The sky is partially concealed by blowing snow. In the portion which is not concealed there is no cloud. The code for N would be 0, i.e., in coding N the sky is considered to be clear.

12.3.2.1.2 Code Table For  $N$ ,  $N_h$  and  $N_S$  (may be used when the sky is partially obscured)

AMOUNT OF SKY OBSCURED (TENTHS)

0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0
1	1	1	1	2	2	2	2	4	8
2	2	2	2	2	3	4	6	8	
3	2	3	3	4	5	6	8		
4	3	4	5	6	6	8			
5	5	5	6	6	8				
6	6	6	7	8					
7	6	7	8	Figure obtained is the code figure					
8	7	8							
9	8								

12.3.2.1.3 With a mackerel sky (AC or SC perlucidus), breaks between the cloud elements always exist. Hence, even though these clouds extend over the whole celestial dome, the total amount shall be reported by  $N = 7$  or less.

12.3.2.1.4  $N = 9$  shall be reported when the sky is completely concealed by an obscuring phenomenon either surface-based or aloft. This instruction also applies when:

- (a) Clouds cover part of the sky below the vertical visibility or below an obscuring layer aloft.
- (b) Clouds are present below the extent of vertical visibility in a surface-based layer which has a summation opacity of 10/10. Examples:

AT _____		PROVINCE _____		FROM _____		19 _____		TO _____		19 _____				
STATION NAME AS IN METEOR		Visibility (M)	Weather and Obstructions to Vision	Sea Level Pressure (hPa)	Temperature °C (TENTHS)		WIND			Altimeter Setting (m)	CLOUDS AND/OR OBSCURING PHENOMENA Type/Opacity	REMARKS		
Sky Condition	30				31	Dry-Bulb	Dew-Point	Direction	Speed (k)				Character	30
(a)	5 SCT BLS OVC		12	31	34	35	36	37	38	39	SF2 KB			
(b)	5 SCT BLS X										SF2 SB			

12.3.2.1.5 Persistent condensation trails and cloud masses which have obviously developed from condensation trails shall be reported as cloud and considered when coding the cloud amount, N. Rapidly dissipating condensation trails shall not be considered in coding N.

12.3.2.2 dd - Wind direction(true). The 10-minute mean wind direction shall be coded to the nearest ten degrees (01-36) using the following table.

## WMO CODE 0877

DIRECTION	DEGREES	CODE FIGURE dd	DIRECTION	DEGREES	CODE FIGURE dd
CALM	Calm	00	SSW	195° - 204°	20
	005° - 014°	01		205° - 214°	21
NNE	015° - 024°	02		215° - 224°	22
	025° - 034°	03	SW	225° - 234°	23
	035° - 044°	04		235° - 244°	24
NE	045° - 054°	05	WSW	245° - 254°	25
	055° - 064°	06	255° - 264°	26	
ENE	065° - 074°	07	W	265° - 274°	27
	075° - 084°	08		275° - 284°	28
E	085° - 094°	09	WNW	285° - 294°	29
	095° - 104°	10		295° - 304°	30
ESE	105° - 114°	11		305° - 314°	31
	115° - 124°	12	NW	315° - 324°	32
SE	125° - 134°	13		325° - 334°	33
	135° - 144°	14	NNW	335° - 344°	34
SSE	145° - 154°	15		345° - 354°	35
	155° - 164°	16	N	355° - 004°	36
165° - 174°	17	Wind direc tion variable		99	
S	175° - 184°	18			
	185° - 194°	19			

Note: dd=99 shall not be used.



12.3.2.3 ff The Wind Speed in Knots (10Minute Mean). The following table is provided for conversion of miles per hour to knots. Refer also to para. 7.5.1.

CONVERSION OF MILES PER HOUR TO KNOTS

Miles Per Hour	0	1	2	3	4	5	6	7	8	9
	Knots		Knots		Knots		Knots		Knots	
0	0	1	2	3	3	4	5	6	7	8
10	9	10	10	11	12	13	14	15	16	17
20	17	18	19	20	21	22	23	23	24	25
30	26	27	28	29	30	30	31	32	33	34
40	35	36	36	37	38	39	40	41	42	43
50	43	44	45	46	47	48	49	50	50	51
60	52	53	54	55	56	56	57	58	59	60
70	61	62	63	63	64	65	66	67	68	69
80	70	70	71	72	73	74	75	76	76	77
90	78	79	80	81	82	83	83	84	85	86
*100	87									

Ex: 10 mph = 9 knots

NOTE: This table is not reversible.

11 mph = 10 knots

34 mph = 30 knots

35 mph = 30 knots

\*110 mph = (87 knots + 9 knots) = 96 knots

12.3.3 (00fff) This supplementary group is included in all synoptic reports when the wind speed, in the units indicated by  $i_w$ , is 99 or more. The group, when required, shall be included immediately following the Nddff group. Enter on form 63-2322 in the same box as Nddff but underneath the Nddff entries.

12.3.3.1 When the synoptic speed is 99 knots or more, the fff of the 00fff group shall contain the actual wind speed and the ff of the Nddff group shall be coded as 99.

Examples: An east wind of 118 knots shall be coded N0999 00118. A south wind of 99 knots shall be coded N1899 00099.

12.3.4 Group 1s<sub>n</sub>TTT

12.3.4.1 1 – Indicator figure of the group.

12.3.4.2s<sub>n</sub> – Sign of the temperature given by TTT. Use code figure 0 if the temperature is 0.0°C or warmer; use code figure 1 if the temperature is colder than 0.0°C.

12.3.4.3 TTT – Dry Bulb Temperature in tenths of a degree Celsius. Code the absolute value of the temperature for TTT as read, filling in a zero for the tens and units digit if required.

Examples:	Temperature	s <sub>n</sub>	TTT	1s <sub>n</sub> TTT
	15.3°C	0	153	10153
	-15.3°C	1	153	11153
	4.5°C	0	045	10045
	-0.9°C	1	009	11009
	0.0°C	0	000	10000

12.3.5 Group 2s<sub>n</sub>T<sub>d</sub>T<sub>d</sub>T<sub>d</sub>

12.3.5.1 2 – Indicator figure of the group.

12.3.5.2s<sub>n</sub> – Sign of the temperature given by T<sub>d</sub>T<sub>d</sub>T<sub>d</sub>. Use code figure 0 if the dew-point temperature is 0.0°C or warmer; use code figure 1 if the dew-point temperature is colder than 0.0°C.T<sub>d</sub>T<sub>d</sub>T<sub>d</sub> – Dew-point Temperature in tenths of a degree Celsius. Code the absolute value of the dewpoint for T<sub>d</sub>T<sub>d</sub>T<sub>d</sub>, filling in a zero for the tens and units digit as required.

Examples:	Dew-point Temperature	s <sub>n</sub>	T <sub>d</sub> T <sub>d</sub> T <sub>d</sub>	2s <sub>n</sub> T <sub>d</sub> T <sub>d</sub> T <sub>d</sub>
	12.1°C	0	121	20121
	-10.0°C	1	100	21100
	1.9°C	0	019	20019
	-0.1°C	1	001	21001
	0.0°C	0	000	20000

12.3.6 Group 3P<sub>0</sub>P<sub>0</sub>P<sub>0</sub>P<sub>0</sub>

This group shall be included in main synoptic reports only.

12.3.6.13 – Indicator figure of the group.

12.3.6.2 P<sub>0</sub>P<sub>0</sub>P<sub>0</sub>P<sub>0</sub> – Station pressure. Obtain the station pressure from Line 20 of Section 1 and code directly if the station pressure is less than 1000.0 hPa, omitting the decimal point.

Example: Station pressure = 3P<sub>0</sub>P<sub>0</sub>P<sub>0</sub>P<sub>0</sub>

987.2 = 39872

964.3 = 39643

999.0 = 39990 etc.

12.3.6.2.1 If the station pressure is 1000.0 hPa or more, code P<sub>0</sub>P<sub>0</sub>P<sub>0</sub>P<sub>0</sub> by omitting the thousands digit and record the hundreds, tens, units, and tenths digits directly, omitting the decimal point.

Example: Station pressure = 3 P<sub>0</sub>P<sub>0</sub>P<sub>0</sub>P<sub>0</sub>

1000.0 = 30000

1012.4 = 30124

1004.2 = 30042 etc.

## 12.3.7 Group 4PPPP

12.3.7.14 – Indicator figure of the group.

12.3.7.2 PPPP – Sea Level Pressure in Tenths of a Hectopascal. To obtain the code figure for PPPP, refer to the value recorded on Line 22, and use all four digits when sea level pressure is less than 1000 hPa. When sea level pressure is 1000 hPa or more, omit the thousands digit and record the hundreds, tens, units, and tenths digits directly. The decimal is always omitted.

Examples: Sea level pressure      Code for PPPP



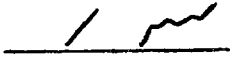


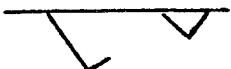
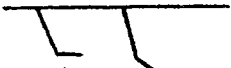
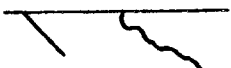
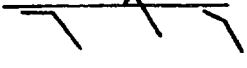
996.2                                  9962

1015.4                                0154

## 12.3.8 Group 5appp

12.3.8.15 – Indicator figure of the group.

12.3.8.2 a – Characteristic of Pressure Tendency During the Three Hour Period Preceding the Time of Observation. The 3-hour Characteristic shall be obtained from the barograph chart and coded in accordance with the following table:

CODE FIGURE	GRAPHIC REPRESENTATION	CHARACTERISTIC	ATMOSPHERIC PRESSURE
0		Increasing, then decreasing;	Same as or higher than 3 hours ago
1		Increasing, then steady; or increasing, then increasing more slowly;	
2		Increasing (steadily or unsteadily);	Higher than 3 hours ago
3		Decreasing or steady, then increasing; or increasing, then increasing more rapidly	
4		Steady	
5		Decreasing, then increasing;	Same as or lower than 3 hrs. ago
6		Decreasing, then steady; or decreasing, then decreasing more slowly;	
7		Decreasing (steadily or unsteadily);	Lower than 3 hours ago
8		Steady or increasing then decreasing; or, decreasing, then decreasing more rapidly.	

12.3.8.2.1 Detailed instructions for coding 'a' are given in para. 4.7.2.3.

12.3.8.3 ppp – Amount of Pressure Tendency During the Three Hours Preceding the Time of Observation, Expressed in Tenths of a Hectopascal. Obtain the 3 hour tendency amount, (see para. 4.7.1.1) and code directly for ppp inserting a zero in the place of the tens digit if the amount is less than 10 hPa and two zeros in the places of the tens and units digits if the amount is less than 1 hPa. Always omit the decimal point.

Examples:	Net 3-hour pressure change	Code for ppp
	11.2 hPa	112
	9.3 hPa	093
	0.8 hPa	008

### 12.3.9 Group 6RRR<sub>t<sub>R</sub></sub>

This group shall be included in main and intermediate synoptic reports if precipitation has occurred since the previous main synoptic observation. (See para. 12.3.1.1 on the use of the symbol i<sub>R</sub>.)

#### 12.3.9.16 – Indicator figure of the group.

12.3.9.2RRR – Amount of precipitation which has fallen during the period preceding the time of observation, as indicated by t<sub>R</sub>. Amounts are usually for a six hour period at the main synoptic observation and a three hour period at the intermediate observation. Six hour amounts shall be obtained from Column 12; three hour amounts shall be obtained from an intermediate reading of the standard rain gauge (see para. 12.4.8.2). Precipitation amounts are coded according to the following table.

WMO Code 3590

Amount mm	Code figure RRR	Amount mm	Code figure RRR
Trace	990	0 (not used)	000
0.1 (not used in Canada)	991	1	001
0.2	992	2	002
0.3	993	.	.
0.4	994	.	.
0.5	995	.	.
0.6	996	.	.
0.7	997	.	.
0.8	998	988	988
0.9	999	989 or more	989

Note: Precipitation amounts which are greater than 1.0 mm shall be rounded to the nearest whole millimetre prior to coding. If the precipitation amount is zero, then the 6-group is omitted.

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## 12.3.9.3

## WMO Code 4019

Code Figure	$t_R$ – Duration of period of reference for amount of precipitation (RRR), ending at the time of report
1	Total precipitation during the 6 hours preceding the observation
2	Total precipitation during the 12 hours preceding the observation
3	Total precipitation during the 18 hours preceding the observation
4	Total precipitation during the 24 hours preceding the observation
5	Total precipitation during the 1 hour preceding the observation
6	Total precipitation during the 2 hours preceding the observation
7	Total precipitation during the 3 hours preceding the observation
8	Total precipitation during the 9 hours preceding the observation
9	Total precipitation during the 15 hours preceding the observation

At stations where main synoptic observations and precipitation measurements are made every six hours,  $t_R$  shall be coded as 1. At stations where fewer than four main synoptic observations are made daily, code figures 2 to 4 may be used for  $t_R$ . At stations where intermediate synoptic observations are taken and transmitted, the 6-group shall be included, using code figures 5 to 9 for  $t_R$ . If there has been no precipitation, the 6-group, including  $t_R$ , is omitted.

12.3.10 Group 7wwW<sub>1</sub>W<sub>2</sub>

This group shall be included only if present and/or past weather phenomena of significance are observed. The 7-group is omitted when weather of no significance is observed; that is when ww may be coded 00, 01, 02, or 03 and past weather code figures 0, 1 or 2 apply.

## 12.3.10.1 7 – Indicator figure of the group.

12.3.10.2 ww – Present Weather. The “Weather and Obstructions to Vision” (Column 32) shall usually be coded for “ww”, however consideration shall also be given to any related information that may be recorded under Notes, Duration of Weather and Obstructions to Vision and Remarks. Detailed instructions follow:

ww Codes 00–49 inclusive are used to code present weather when there is no precipitation at the station at the time of observation.

ww Codes 50–99 inclusive are used to code present weather when precipitation is occurring at the station at the time of observation.

12.3.10.2.1 ww codes 50–99 are used not only to indicate the type of precipitation but also the intensity (light, moderate or heavy), and the character (continuous, intermittent or showery). Detailed instructions regarding precipitation types, character and intensity are given in Part A, Chapter 3.

12.3.10.2.2 Proper usage of the present weather (ww) codes requires a complete knowledge of:

- (a) "Definitions and Descriptions of Meteors" as given in the International Cloud Atlas, and ,
- (b) "Atmospheric Phenomena" instructions and definitions as given in Chapter 3 of this manual.

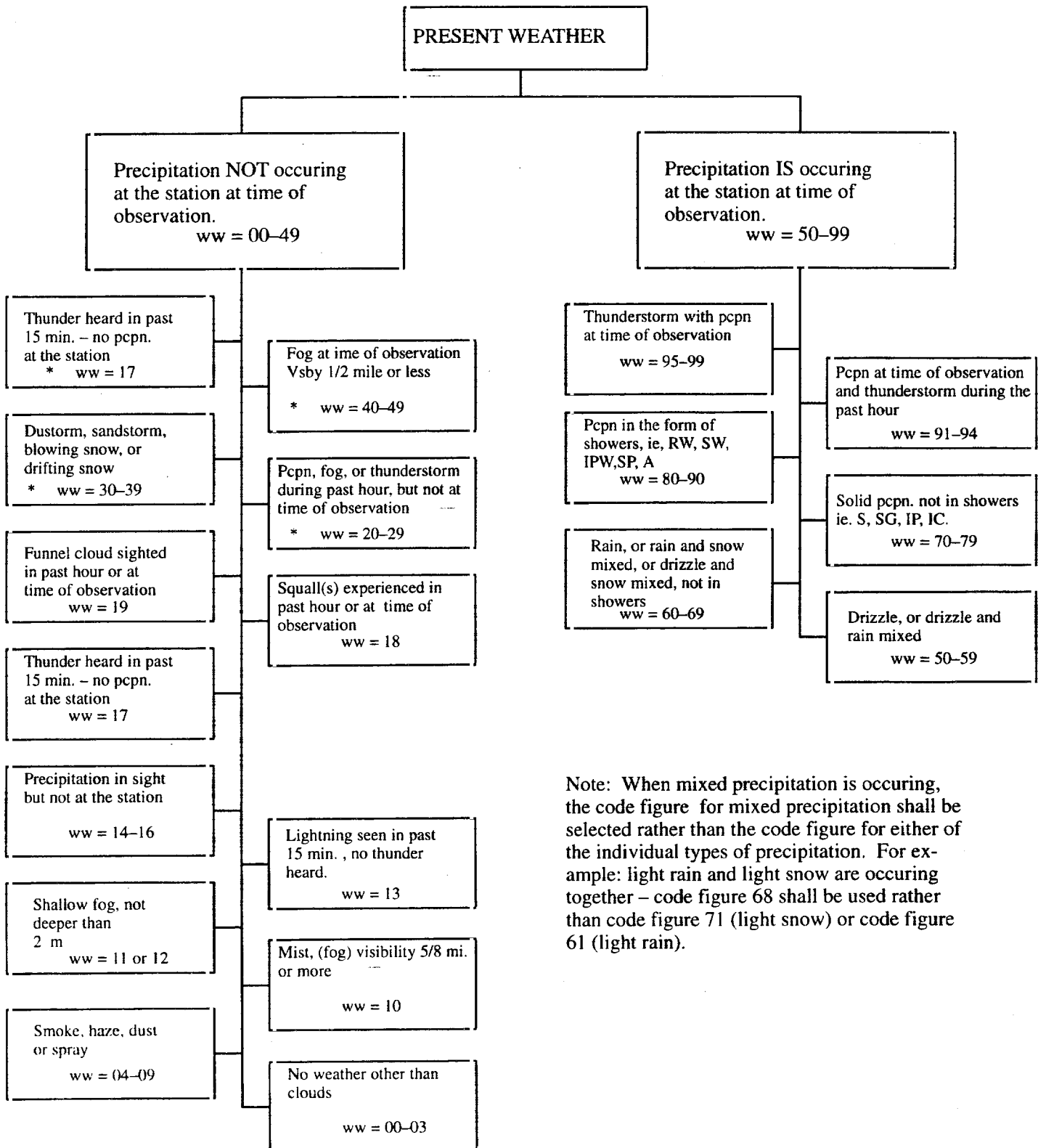
12.3.10.2.3 The first figure of the ww code corresponds to the ten principal categories of weather. Firstly, the decade most suitable to the general state of the weather is chosen; then, from that decade, the code figure is chosen which best describes the weather at the time of observation or (where specifically mentioned in the code) during the period of one hour immediately preceding it. In making the choice of the decade or in determining the complete code figure ww, one does not take into account meteorological phenomena which have been experienced more than one hour before the official time of observing the weather (with the one exception of thunder, which may have been heard up to 75 minutes before the official time of the weather observation. See ww codes 29 and 91-94.)

12.3.10.2.4 If more than one specification of the ww codes is applicable, the highest code figure is chosen, except that code 17 shall be given preference over codes 20-49.

Note: If a tornado is at or within sight of a station at the time of observation or within the past hour, the plain language word TORNADO shall be recorded and transmitted as the last group of Section 3. A tornado may also be reported in the 7-group simultaneously if ww = 19 is the highest present weather code applicable at the time. This coding shall apply to both main and intermediate synoptic reports, if applicable.

12.3.10.2.5 The following graphic guide, in which priority is indicated by the relative position of the block, may be used to assist in the selection for coding Present Weather. An abbreviated description of each of the code figures follows the chart.

## CHART FOR ASSISTING IN THE SELECTION OF THE PRESENT WEATHER CODE



Note: When mixed precipitation is occurring, the code figure for mixed precipitation shall be selected rather than the code figure for either of the individual types of precipitation. For example: light rain and light snow are occurring together - code figure 68 shall be used rather than code figure 71 (light snow) or code figure 61 (light rain).

\* Note: If code figure 17 is applicable together with one or more of ww codes 20-49, code figure 17 shall take precedence. See para. 12.3.10.2.4.



## 12.3.10.2.6 Present Weather Codes – WMO CODE 4677 – Detailed Description

Note 1: Throughout these detailed descriptions, the term “slight” when referring to precipitation intensity, shall be considered to mean light as defined in Chapter 3.

Note 2: Code figures 00, 01, 02, and 03 represent phenomena of little significance. When these code figures are applicable for ww, combined with a code figure of 2 or less for past weather ( $W_1 W_2$ ), then ww is neither recorded nor transmitted. See para. 12.3.10.

Note 3: Code figures 00, 01, 02 and 03 describe the general trend of changes in the state of the sky during the hour preceding the time of observation. The development (shown by increasing vertical extent or thickening) or dissolution (shown by decreasing vertical extent or thinning) is the most important factor that must be considered when choosing the most suitable number. The variation in sky cover is less important and should be used as the criterion when there is no general development or dissolution observable; ww = 00, 01 and 02 can each be used when the sky is clear at the time of observation. In this case the following interpretation shall apply:

- 00 – when the preceding conditions are not known;
- 01 – when the clouds have dissolved during the past hour;
- 02 – when the sky has been continuously clear during the past hour.

Note 4: Present weather code figures normally refer to the weather occurring at the time of observation. The following present weather codes are applicable to the one hour period preceding the official time of observation: ww = 00, 01, 02, 03, 18, 19, 20–28, 30–35, and 40–47. Codes 29 and 90–94 apply for a period of up to one hour and 15 minutes preceding the official time of observation.

Note 5: Although specifications for 04, 05 and 06 do not require visibility limits, smoke, haze and dust are usually associated with visibilities of 6 miles or less. Specifications for 07 and 10 require that the visibility be restricted to 6 miles or less.

Note 6: Code figures 20 to 29 shall never be used when precipitation is occurring at the station at the time of observation.

Note 7: Code figures 80 to 90 are used only when the precipitation is showery in character and is occurring at the station at the time of observation.

Note 8: The expressions “during the past hour” and “during the preceding hour” used in the ww code table refer to the full hour (60 minutes) preceding the official time at which the weather is observed for the Synoptic observation.

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June 1996

Code figure 00 shall be used when the cloud development during the preceding hour is unknown or has not been observed.

Code figure 01 shall be used when the clouds have shown a tendency to dissolve or to decrease in vertical development during the preceding hour, e.g., code figure 01 is applicable to the decrease of fine weather Cumulus late in the day.

Code figure 02 shall be used when there has been no appreciable change in the state of the sky during the preceding hour.

Code figure 03 shall be used when the clouds have shown a tendency to form or develop during the preceding hour; e.g., this figure is applicable when cumulus clouds are forming and also when fair weather Cumulus is developing into Cumulus Congestus.

Code figure 04 shall be used when the prevailing visibility is restricted by smoke, e.g., forest fire, industrial smoke or volcanic ash.

Code figure 05 shall be used when the obstruction to vision consists of lithometeors, generally known as "haze".

Code figure 06 shall be used when the prevailing visibility is restricted by dust suspended in the air, not raised by wind.

Code figure 07 shall be used when blowing dust or blowing sand is observed at or near the station at the time of observation and the prevailing visibility is observed to be not more than 6 miles, but no well-developed dust whirl(s) or sand whirl(s) and no duststorm or sandstorm seen, or in the case of ships, blowing spray at the station.

Code figure 08 shall be used when well developed dust whirls or sand whirls are seen at or near the station during the preceding hour or at the time of observation, but no duststorm or sandstorm.

Code figure 09 shall be used when a dust storm or sand storm is within sight at the time of observation or has occurred at the station during the preceding hour and the estimated or observed visibility in the dust storm or sandstorm is/was less than 5/8 mile.

Code figure 10 shall be used when fog or ice fog is observed and the prevailing visibility is 6 miles or less but not less than 5/8 mile (more correctly referred to as mist).

Code figure 11 shall be used when patches of shallow fog or ice fog are observed at the station at the time of observation. The depth of the fog shall not restrict visibility at eye level; however, the fog must be dense enough so that the apparent visibility in the fog is less than 5/8 mile.

Code figure 12 shall be used when more or less continuous shallow fog or ice fog is observed at the station at the time of observation. The depth of the fog shall not restrict visibility at eye level; however, the fog must be dense enough so that the apparent visibility in the fog is less than 5/8 mile. Code figure 12 shall be used in preference to code figure 11 when shallow fog is observed to cover more than half of the ground normally visible.

Code figure 13 shall be used when lightning is seen at the time of observation or within 15 minutes preceding the time of observation, but no thunder is heard.

Code figure 14 shall be used to report VIRGA, i.e., precipitation within sight, but not reaching the ground or the surface of the sea.

Code figure 15 shall be used when precipitation is within sight and is reaching the ground or the surface of the sea, at an estimated distance of more than 3 miles from the station.

Code figure 16 shall be used when precipitation is within sight and is reaching the ground or the surface of the sea, at an estimated distance of 3 miles or less from the station, but not at the station.

Code figure 17 shall be used when thunder is heard at the time of observation, or within 15 minutes preceding the time of observation, and no precipitation is occurring at the station at the time of observation.

Note: Whenever ww can be coded 17, this code figure shall be given preference over code figures 20-49.

Code figure 18 shall be used when squalls occur at the time of observation, or have occurred within the preceding hour.

Code figure 19 shall be used when a funnel cloud, waterspout, or tornado is within sight of the station at the time of observation or was observed during the preceding hour. In the case of a tornado, the plain language word TORNADO shall be recorded and transmitted as the last group of Section 3, whether or not ww is encoded as 19.

Amend. No 10  
Nov. 1, 1989

Code figure 20 shall be used when drizzle or snow grains have occurred at the station during the preceding hour, but are not occurring at the time of observation. If freezing drizzle has occurred during the preceding hour, use code figure 24.

Code figure 21 shall be used when rain (not rain showers) has occurred at the station during the preceding hour, but is not occurring at the time of observation. If freezing rain has occurred during the preceding hour, use code figure 24.

Code figure 22 shall be used when snow (not snow showers) or ice crystals have occurred at the station during the preceding hour, but are not occurring at the time of observation.

Code figure 23 shall be used when mixed rain and snow, or ice pellets, non-showery, have occurred at the station during the preceding hour but are not occurring at the time of observation.

Code figure 24 shall be used when freezing rain (non-showery) or freezing drizzle has occurred at the station during the preceding hour, but is not occurring at the time of observation.

Code figure 25 shall be used when a rain shower has occurred at the station during the preceding hour, but is not occurring at the time of observation.

Code figure 26 shall be used when a snow shower, or a shower of rain and snow has occurred at the station during the preceding hour, but is not occurring at the time of observation.

Code figure 27 shall be used when a shower of hail, or of hail and rain, has occurred at the station during the preceding hour, but is not occurring at the time of observation. For purposes of reporting code figure 27, hail may be considered to mean any one, or any combination of hail, snow pellets, or ice pellets (type b).

Code figure 28 shall be used when fog or ice fog, with visibility less than 5/8 mile has occurred at the station during the preceding hour, but is not occurring at the time of observation.

Code figure 29 shall be used when a thunderstorm with or without precipitation, has occurred at the station during the preceding hour, but neither thunder nor precipitation is occurring at the time of observation. This requires that the last thunder be heard 15 minutes or more before the time of observation. For purposes of reporting this code figure, the "preceding hour" is from 1 hour and 15 minutes ago to 15 minutes ago.