Ship Weather Reports Encoding & Decoding

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Importance of Weather Forecasting for Mariner

- Helps greatly in preventing accidents that lead to losses in trade and cargo shipping, material damage, human injuries, and even deaths.
- It can help ships and their crews to navigate better, and to make decisions that reduce risks for example special decisions about safe routes to cross.
- High winds, storms and waves are among the most important types of weather that can cause marine accidents.

Marine Weather Forecasting Tools

- Weather Stations
- Satellites
- Weather Buoys

Reference

- NWS observing Handbook No.1 - Marine weather observations

https://www.vos.noaa.gov/ObsHB-508/ObservingHandbook1_2010_508_compliant.pdf

Content

- Ship Weather Report (**Numbers**)
  - Information included
  - Meanings of each group
  - Example of decoding
- Met Stations model (**Plot/Model**)
- Synoptic observation Chart

Ship Weather Report (Numbers)

- Information included
- Meanings of each group
- Example of decoding

Ship Weather Report

- **What is a Ship weather Report ?**

Coded report of surface observation from a sea station.

Code for Ship Weather Reports

Code format

B B X X	CALLSIGN		
Y Y G G iw	9 9 La La La	Qc Lo Lo Lo Lo	4 ix h V V
N d d f f	1 Sn T T T	2 Sn Td Td Td	4 P P P P
5 a p p p	7 w w W1 W2	8 Nh CL CM CH	2 2 2 Ds Vs
0 Ss Tw Tw Tw	2 Pw Pw Hw Hw	3 dw1 dw1 / /	4Pw1Pw1Hw1Hw1
6 Is Es Es Rs	8 Sw Tb Tb Tb	ICE	ci Si bi Di zi

Ship Weather Report

Information included

Call sign, date and time	Ship's course
Amount, type, height of clouds	Ship's average speed
Position groups	Sea surface temperature
Wind direction and speed	Period and height of waves
Air temperature	Period and height of swells
Dew point	Wet bulb temperature
Mean sea level pressure and pressure tendency	Sea ice
Present and past weather	

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5 a p p p	7 w w W1 W2	8 Nh CL CM CH	2 2 2 Ds Vs
0 Ss Tw Tw Tw	2 Pw Pw Hw Hw	3 dw1 dw1 / /	4Pw1Pw1Hw1Hw1
6 Is Es Es Rs	8 Sw Tb Tb Tb	ICE	ci Si bi Di zi

Ship Weather Report

Meanings of each group

Code	Meaning
B B X X	Identifier of a ship weather report Surface report from Ship **BBXX** Surface report from Coastal Station **AAXX**
CALLSIGN	Call sign of the VOS
Y Y G G iw	Y Y - Day of the month (UTC) G G - Time of observation to the nearest hour (UTC) iw - Wind speed indicator (Table number 1855)
9 9 La La La	9 9 - Indicator for sea station position groups La La La - Latitude, degrees and tenths (Example 235 = 23.5 North)
Qc Lo Lo Lo Lo	Qc - Quadrant of the globe (Table number 3333) Lo Lo Lo Lo - Longitude, degrees and tenths (Example 565 = 56.5 East)
4 ix h V V	IR : 4 - Indicates that precipitation group is omitted ix - Indicator for weather group (Table number 1860) h - Height of base of the lowest cloud (Table number 1600) V V - Horizontal visibility (Table number 4377)

B B X X	CALLSIGN		
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Wind speed unit indicator (table number 1855)

0 -- m/s (estimated)
1 -- m/s (from anemometer)
2 -- knots (estimated)
3 -- knots (from anemometer)

Qc -- Quadrant of the globe (table number 3333)

1 -- North east
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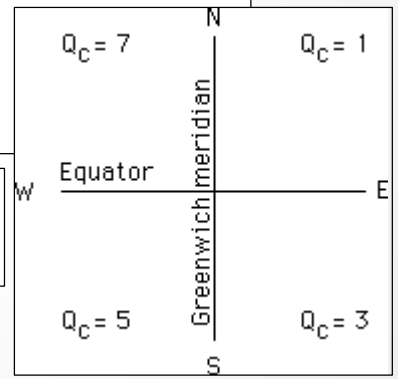

ix - Indicator for weather group (table number 1860)

1 -- Weather group included
2 -- Weather group omitted, no significant weather

h - Height of base of the lowest cloud (table number 1600)

Code figure	
0	0 to 99 feet
1	100 to 299 feet
2	300 to 599 feet
3	600 to 899 feet
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5	1900 to 3199 feet
6	3200 to 4899 feet
7	4900 to 6499 feet
8	6500 to 7999 feet
9	8000 or higher or no clouds
/	Height of base of cloud is not known

Horizontal visibility (table number 4377)

- 90 -- less than 0.05 km
- 91 -- 0.05 km
- 92 -- 0.2 km
- 93 -- 0.5 km
- 94 -- 1 km
- 95 -- 2 km
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Quadrant of the Globe

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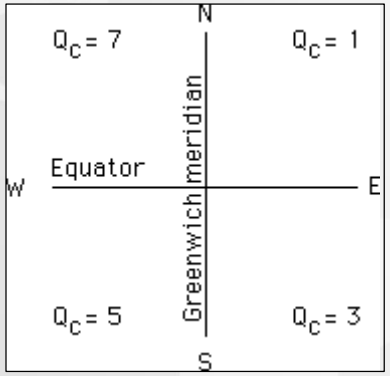

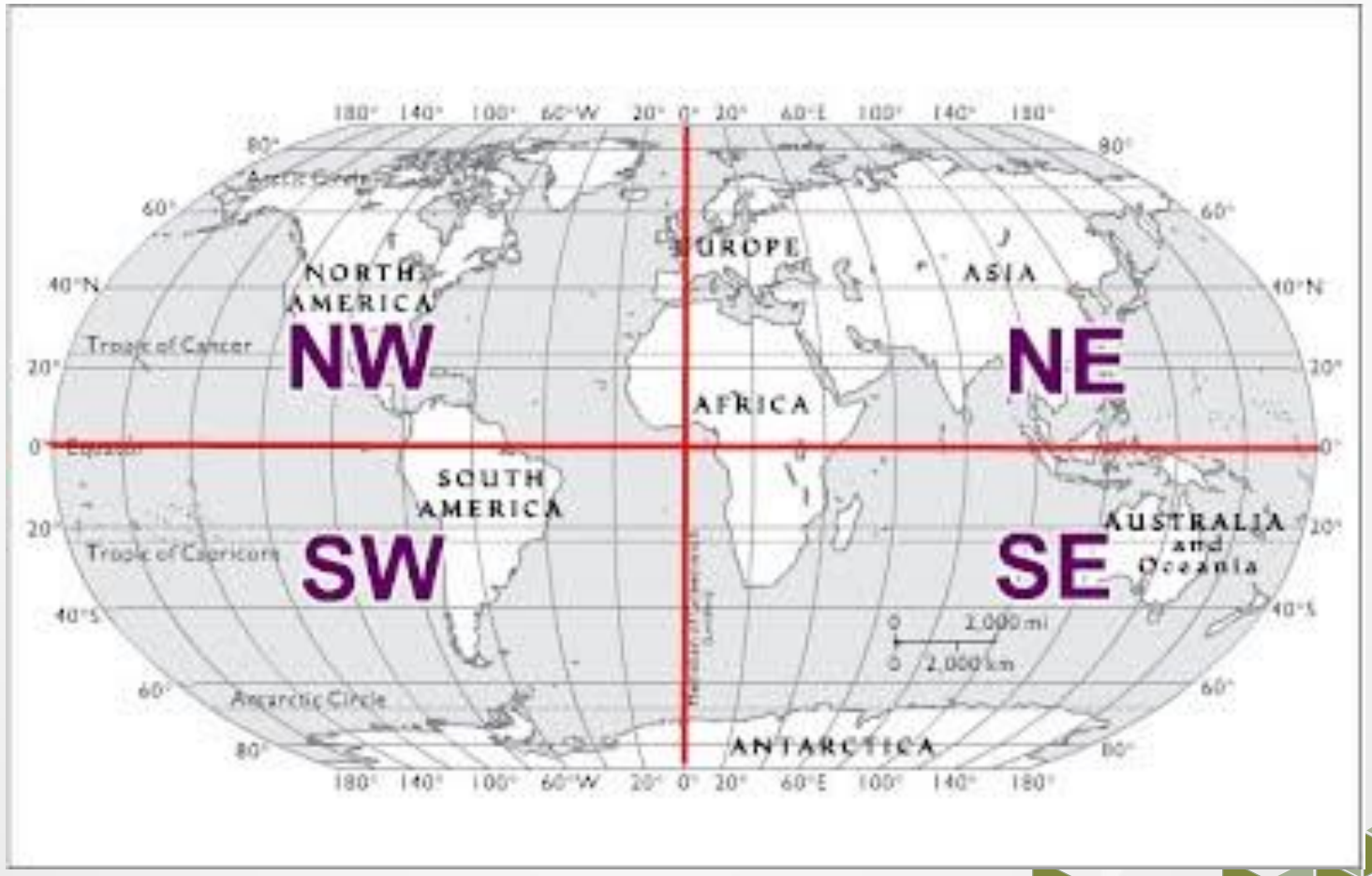

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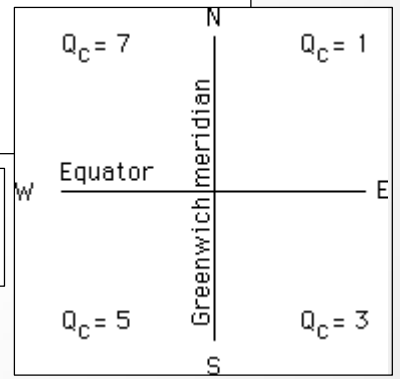

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h - Height of base of the lowest cloud

Approximate Cloud Heights

Range	Polar Regions	Temperate Regions	Tropical Regions
High	3,000 to 7,600 meters (10,000 to 25,000 feet)	5,000 to 13,700 meters (16,5000 to 45,000 feet)	6,100 to 18,300 meters (20,000 to 60,000 feet)
Middle	2,000 to 4,000 meters (6,500 to 13,000 feet)	2,000 to 7,000 meters (6,500 to 23,000 feet)	2,000 to 7,600 meters (6,500 to 25,000 feet)
Low	Surface to 2,000 meters (Surface to 6,500 feet)	Surface to 2,000 meters (Surface to 6,500 feet)	Surface to 2,000 meters (Surface to 6,500 feet)

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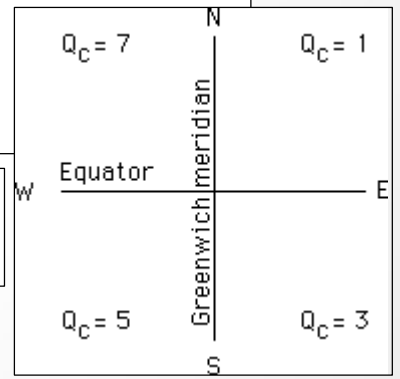

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Horizontal visibility

Distance to the Horizon at Sea

Height of eye above the Sea Surface		Horizon Distance	
Meters	Feet	Kilometers	Nautical Miles
5	1.52	4.8	2.6
10	3.05	6.9	3.7
15	4.57	8.3	4.5
20	6.10	9.6	5.2
25	7.62	10.9	5.9
30	9.14	11.9	6.4
35	10.67	12.8	6.9
40	12.19	13.7	7.4
45	13.72	14.5	7.8
50	15.24	15.4	8.3
55	16.76	16.1	8.7
60	18.29	16.4	9.1
65	19.81	17.4	9.4
70	21.34	18.2	9.8
75	22.86	18.7	10.1
80	24.38	19.5	10.5
85	25.91	20.0	10.8
90	27.43	20.6	11.1
95	28.96	21.1	11.4
100	30.48	21.7	11.7
105	32.00	22.2	12.0
110	33.53	22.8	12.3
115	35.05	23.1	12.5
120	36.58	23.7	12.8

Code for Visibility, VV

Code figs.	Visibility in m/km	Visibility in yd./naut. mi.	Code figs.
90	less than 50 m	less than 55 yd.	90
91	50 but less than 200 m	55 but less than 220 yd.	91
92	200 but less than 500 m	220 but less than 550 yd.	92
93	500 but less than 1000 m	550 but less than ½ n. mi.	93
94	1 but less than 2 km	½ but less than 1 n. mi.	94
95	2 but less than 4 km	1 but less than 2 n. mi.	95
96	4 but less than 10 km	2 but less than 5 n. mi.	96
97	10 but less than 20 km	5 but less than 11 n. mi.	97
98	20 but less than 50 km	11 but less than 27 n. mi.	98
99	50 km or more	27 n. mi. or more	99

The visibility ranges corresponding to various weather types are as follows:

- 90, 91, 92 — Heavy snow, heavy drizzle
- 93 — Moderate snow, moderate drizzle
- 94, 95, 96 — Heavy rain
- 97, 98, 99 — Moderate rain, Light rain
- Light snow, light drizzle
- Fog, thick haze: 90, 91, 92, 93
- Mist, haze: 94, 95, 96

Ship Weather Report

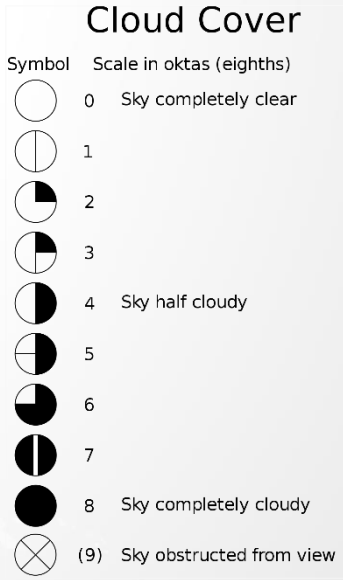
Meanings of each group

N d d f f	1 Sn T T T	2 Sn Td Td Td	4 P P P P

Code	Meaning
N d d f f	N - Total cloud amount (table 2700) d d - Direction of surface winds (true direction, in tens of degrees) f f - Speed of surface winds
1 sn T T T	1 - Group indicator for air temperature sn - Sign of temperature (0 for 0°C or above, 1 for below 0°C) T T T - Air temperature in whole degrees or and tenths (example 10260)
2 sn Td Td Td	2 - Group indicator for dew-point temperature sn - Sign of temperature (0 for 0°C or above, 1 for below 0°C) Td Td Td - Temperature of dew-point in whole degrees or and tenths (example 20224)
4 P P P P	4 - Group indicator for pressure P P P P - Mean sea level pressure in hectopascal and tenths, thousands digit omitted (example 40150) = 1,015.0 hPa

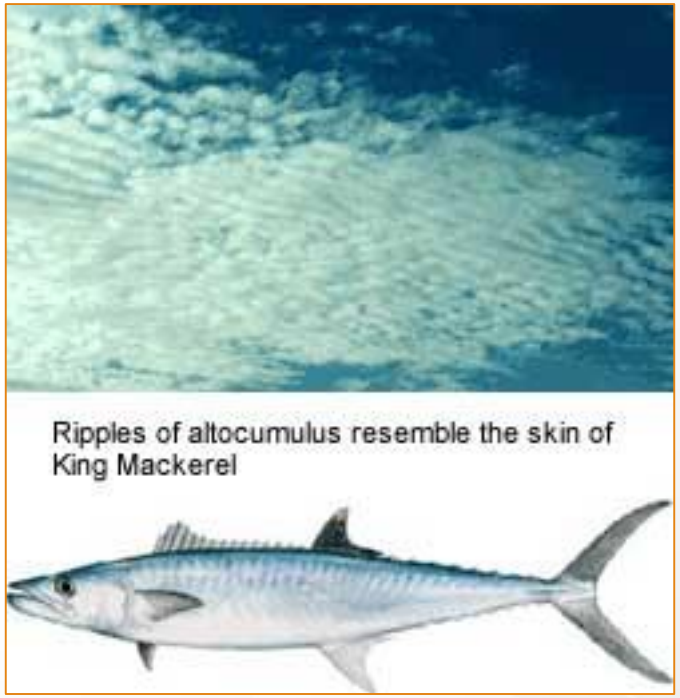
Total cloud amount (table number 2700)

1 -- 1/8th
2 -- 2/8ths
3 -- 3/8ths
4 -- 4/8ths
5 -- 5/8ths
6 -- 6/8ths
7 -- 7/8ths
8 -- 8/8ths (overcast)
9 -- sky obscured
/ -- no observation



A mackerel sky

(Altocumulus, stratocumulus, or cirrocumulus covering the whole sky)



Wind

1. Beaufort scale
2. an anemometer
3. the effects of the wind on people or objects aboard ship.

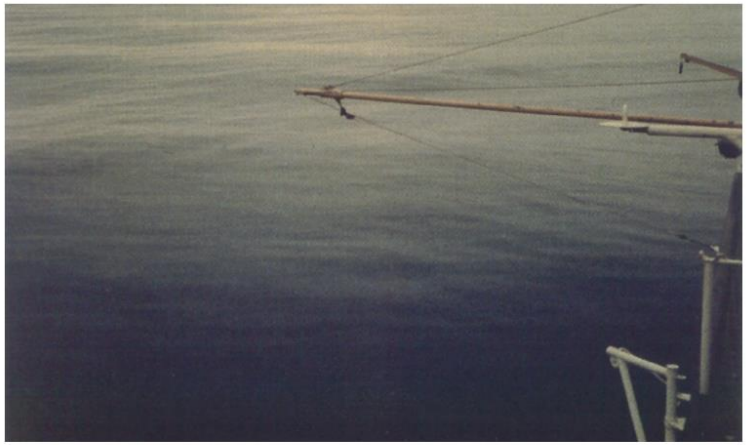
Code for Wind Speed, ff

Code Figs. (Knots)	Mean Speed	Beau-fort	Description	Sea criterion when sea fully developed	Probable ht. of waves in m (ft) Average		Maximum	
00	00	0	Calm	Sea like a mirror	-			-
01 - 03	02	1	Light Air	Ripples with the appearance of scales are formed, but without foam crests	0.1	(¼)	0.1	(¼)
04 - 06	05	2	Light breeze	Small wavelets, still short but more pronounced, crests have a glassy appearance and do not break	0.2	(½)	0.3	(1)
07 - 10	09	3	Gentle breeze	Large wavelets, crests begin to break; foam of glassy appearance; perhaps scattered white horses	0.6	(2)	1	(3)
11 - 16	13	4	Modt. breeze	Small waves, becoming longer; fairly frequent white horses	1	(3½)	1.5	(5)
17 - 21	19	5	Fresh breeze	Moderate waves, taking a more pronounced long form; many white horses are formed (chance of some spray)	2	(6)	2.5	(8½)
22 - 27	24	6	Strong breeze	Large waves begin to form; white foam crests are more extensive everywhere (probably some spray)	3	(9½)	4	(12)
28 - 33	30	7	Near gale	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind	4	(13½)	5.5	(19)
34 - 40	37	8	Gale	Moderately high waves of greater length; edges of crests begin to break into the spindrift; the foam is blown in well-marked streaks along the direction of the wind	5.5	(18)	7.5	(25)
41 - 47	44	9	Strong gale	High waves; dense streaks of foam along the direction of the wind; crests of waves begin to topple, tumble and roll over; spray may affect visibility	7	(23)	10	(32)
48 - 55	52	10	Storm	Very high waves with long overhanging crests; the resulting foam, in great patches, is blown in dense white streaks along the direction of the wind; on the whole, the surface of the sea takes a white appearance; tumbling of the sea becomes heavy and shock-like; visibility affected	9	(29)	12.5	(41)
56 - 63	60	11	Violent Storm	Exceptionally high waves (small and medium-sized ships might be for a time lost to view behind the waves); the sea is completely covered with long white patches of foam lying along the direction of the wind; everywhere the edges of the wave crests are blown into froth; visibility affected	11.5	(37)	16	(52)
64 and over	–	12	Hurricane	The air is filled with foam and spray; sea completely white with driving spray; visibility very seriously affected	14	(45)	-	

Effect of Apparent Wind on Ships

Apparent Speed (Knots)	Indication
Less than 1	Calm, smoke rises vertically.
1 - 3	Smoke drifts from funnel.
4 - 6	Wind felt on face. Smoke rises at about 80°.
7 - 10	Wind extends light flag and pennants. Smoke rises at about 70°.
11 - 16	Wind raises dust and loose paper on deck. Smoke rises at about 50˚. No noticeable sound in the rigging. Slack halyards curve and sway. Heavy flag flaps limply.
17 - 21	Wind felt strongly on face. Smoke rises at 30˚. Slack halyards whip while bending continuously to leeward. Taut halyards maintain slightly bent position. Low whistle in the rigging. Heavy flag doesn't fully extend but flaps over entire length.
22 - 27	Wind stings face in temperature below 2˚C. Slight ef fort in maintaining balance against the wind. Smoke rises at 15˚. Both slack and taut halyards whip slightly in bent position. Low moaning, rather than whistle, in the rigging. Heavy flag extends and flaps more vigorously.
28 - 33	Necessary to lean slightly into the wind to maintain balance. Smoke rises at 5˚ to 10˚. Higher pitched moaning and whistling heard from rigging. Halyards still whip slightly. Heavy flag extends fully and flaps only at the end. Oilskins and loose clothing inflate and pull against the body.
34 - 40	Head pushed back by the force of the wind if allowed to relax. Oilskins and loose clothing inflate and pull strongly. Halyards rigidly bent. Loud whistle from rigging. Heavy flag straight out and whipping.

Beaufort Scale



Beaufort Number	Descriptive Term	Knots	Specification
0	Calm	0	Sea like a mirror.

Beaufort Number	Descriptive Term	Knots	Specification
4	Moderate	11-16	Small waves, becoming longer; fairly frequent white horses.

Beaufort Number	Descriptive Term	Knots	Specification
9	Strong gale	41-47	High waves; dense streaks of foam along the direction of the wind; crests of waves begin to topple, tumble, and roll over; spray may affect visibility.

Beaufort Number	Descriptive Term	Knots	Specification
12	Hurricane	64 and over	The air is filled with foam and spray; sea completely white with driving spray; visibility very seriously affected.

Ship Weather Report

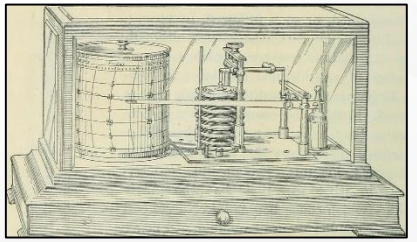
Meanings of each group

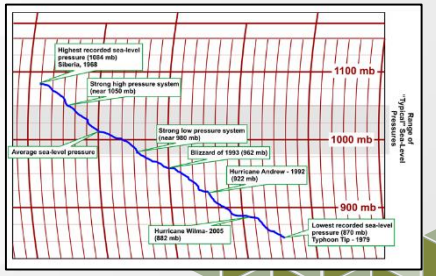
5 a p p p	7 w w W1 W2	8 Nh CL CM CH	2 2 2 Ds Vs

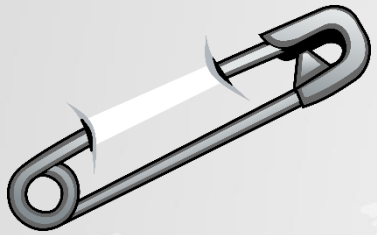
Code	Meaning
5 a p p p	5 - Group indicator for pressure change a - Characteristic changes in atmospheric pressure in last 3 hours (table 0200) p p p - Change of pressure in tenths of hectopascal during last 3 hours (example 52007) is that the pressure has fallen and then risen by **0.7 hPa** during the last three hours.
7 w w W1 W2	7 - Group indicator for weather w w - Present weather (table 4677) W1 W2 - Past weather during the preceding 6 hours (table 4561)
8 Nh CL CM CH	8 - Group indicator for clouds Nh - Total amount of low clouds (or medium clouds, if no low clouds) CL - Type of low clouds: Cu, Cb, Sc, St (table 0513) CM - Type of medium clouds: Ac, As, Ns (table 0515) CH - Type of high clouds: Ci, Cs, Cc (table 0509) (Example 84531)
2 2 2 Ds Vs	2 2 2 - Section indicator for maritime data Ds - Ship's course made good during the past 3 hours (table 0700) Vs - Ship's average speed during the past 3 hours (table 4451)

a - Characteristic changes in atmospheric pressure in last 3 hours (table 0200)
0 -- Increasing, then decreasing -- resultant pressure same or higher
1 -- Increasing, then steady -- resultant pressure higher
2 -- Increasing steadily -- resultant pressure higher
3 -- Decreasing or steady, then increasing -- resultant pressure higher
4 -- Steady -- resultant pressure same
5 -- Decreasing, then increasing -- resultant pressure lower
6 -- Decreasing, then steady -- resultant pressure lower
7 -- Decreasing steadily -- resultant pressure lower
8 -- Increasing or steady, then decreasing -- resultant pressure lower

(example 79586)
7 = indicator,
95 = code for present weather Thunderstorm and rain
86 = Code for past weather Shower and rain







W1 W2 - Past weather during the preceding 6 hours (table 4561)

0 -- cloud covering less than half of sky
1 -- cloud covering more than half of sky during part of period and more than half during part of period
2 -- cloud covering more than half of sky
3 -- sandstorm, dust storm or blowing snow
4 -- fog, or thick haze
5 -- drizzle
6 -- rain
7 -- snow or mixed rain and snow
8 -- showers
9 -- thunderstorms

C_H -- High cloud type (table number 0509)

0 -- no high clouds
1 -- cirrus fibratus (wispy)
2 -- cirrus spissatus (dense in patches)
3 -- cirrus spissatus cumulogenitus (formed out of anvil)
4 -- cirrus unicus or fibratus (progressively invading sky)
5 -- bands of cirrus or cirrostratus invading sky (less than 45 degree above horizon)
6 -- bands of cirrus or cirrostratus invading sky (more than 45 degree above horizon)
7 -- cirrostratus covering whole sky
8 -- cirrostratus not covering sky but not invading
9 -- cirrocumulus
/ -- high clouds unobserved due to darkness or obscuration

C_L -- Low cloud type (table number 0513)

0 -- no low clouds
1 -- cumulus humulis or fractus (no vertical development)
2 -- cumulus mediocris or congestus (moderate vertical development)
3 -- cumulonimbus calvus (no outlines nor anvil)
4 -- stratocumulus cumulogenitus (formed by spreading of cumulus)
5 -- stratocumulus
6 -- stratus nebulosus (continuous sheet)
7 -- stratus or cumulus fractus (bad weather)
8 -- cumulus and stratocumulus (multilevel)
9 -- cumulonimbus with anvil
/ -- low clouds unobserved due to darkness or obscuration

Ds - Ship's course made good during the past 3 hours (table number 0700)

0 -- calm
1 -- NE
2 -- E
3 -- SE
4 -- S
5 -- SW
6 -- W
7 -- NW
8 -- N
9 -- unknown

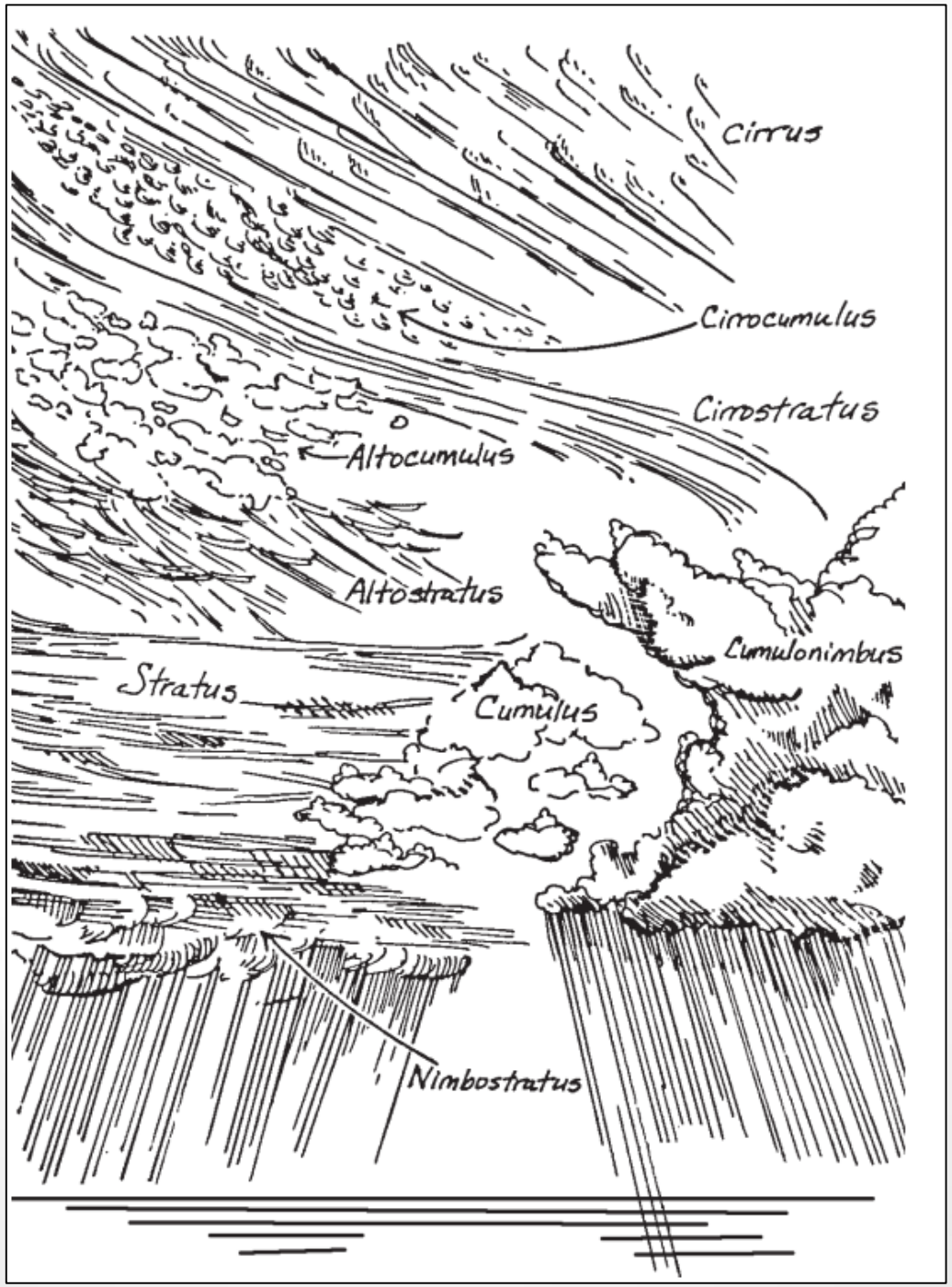
Vs - Ship's average speed during the past 3 hours (table number 4451)

0 -- 0 knots
1 -- 1 to 5 knots
2 -- 6 to 10 knots
3 -- 11 to 15 knots
4 -- 16 to 20 knots
5 -- 21 to 25 knots
6 -- 26 to 30 knots
7 -- 31 to 35 knots
8 -- 36 to 40 knots
9 -- over 40 knots

C_M -- Middle cloud type (table number 0515)

0 -- no middle clouds
1 -- altostratus translucidous (mostly transparent)
2 -- altostratus opacus or nimbostratus
3 -- altocumulus translucidous (mostly transparent)
4 -- patches of altocumulus (irregular, lenticular)
5 -- bands of altocumulus
6 -- altocumulus cumulogenitus (formed by spreading of cumulus)
7 -- altocumulus (multilayers)
8 -- altocumulus castellanus (having cumuliform tufts)
9 -- altocumulus of a chaotic sky
/ -- middle clouds unobserved due to darkness or obscuration

Cloud types


Cirrus
Cirrocumulus
Cirrostratus
Altocumulus
Altostratus
Cumulonimbus
Stratus
Cumulus
Nimbostratus

Ship Weather Report

Meanings of each group

0 Ss Tw Tw Tw	2 Pw Pw Hw Hw	3 dw1 dw1 / /	4Pw1Pw1Hw1Hw1

Code	Meaning
0 ss Tw Tw Tw	0 - Group indicator for sea surface temperature ss - Sign and type of measurement of sea surface temperature (table 3850) Tw Tw Tw - Sea surface temperature in whole degrees and tenths (example 00220)
2 Pw Pw Hw Hw	2 - Group indicator for wind waves Pw Pw - Period of wind waves in seconds Hw Hw - Height of wind waves in units of half meter
3 dw1 dw1 / /	3 - Group indicator for swell directions dw1 dw1 - Direction in tens of degree from which the predominant swell is coming
4 Pw1 Pw1 Hw1 Hw1	4 - Group indicator for period and height of the predominant swell Pw1 Pw1 - Period of the first (predominant) swell in seconds Hw1 Hw1 - Height of the first (predominant) swell in units of half meter

ss - Sign and type of measurement of sea surface temperature (table number 3850)

Code figure	type of measurement	
0	Positive or 0	Intakes
1	Negative	Intake
2	Positive or 0	Bucket
3	Negative	Buckets
4	Positive or 0	Hull contact sensor
5	Negative	Hull contact sensor
6	Positive or 0	Other
7	Negative	Other

(example 20305)
2= indicator
03 = period of wave 3 seconds
05 = height of the wave 5 x 0.5= 2.5 meters

(example 30933)
3= indicator
090= direction of the first swell
330= direction of the second swell

The method of measurement varies based on the code figure:

- **Intake** refers to sea water taken in through ship's systems.
- **Bucket** refers to a bucket used to measure the water temperature.
- **Hull contact sensor** measures temperature from a sensor attached to the ship's hull.
- **Other** refers to any other measurement method.

ss - **Sign and type of measurement of sea surface temperature (table number 3850)**

Code figure	type of measurement	
0	Positive or 0	Intakes
1	Negative	Intake
2	Positive or 0	Bucket
3	Negative	Buckets
4	Positive or 0	Hull contact sensor
5	Negative	Hull contact sensor
6	Positive or 0	Other
7	Negative	Other

Ship Weather Report

Meanings of each group

6 Is Es Es Rs	8 sw Tb Tb Tb	ICE	ci Si bi Di zi

Code	Meaning
6 Is Es Es Rs	6 - Group indicator for ice accretion Is - Type of ice accretion (table 1751) EsEs - Thickness of ice in cm Rs - Rate of ice accretion (table 3551)
8 sw Tb Tb Tb	8 - Group indicator for wet bulb temperature sw - Sign and type of wet bulb temperature (table 3855) Tb Tb Tb - Wet bulb temperature in whole degrees and tenths
ICE	Indicator, ice group follows
ci Si bi Di zi (table 0639)	ci - Concentration or arrangement of sea ice Si - State of development bi - Ice of land origin Di - Bearing of principal ice edge zi - Ice situation and trend over preceding 3 hours

I_s - Ice accretion on ships (table number 1751)

Code
1 Icing from ocean spray
2 Icing from fog
3 Icing from spray and fog
4 Icing from rain
5 Icing from spray and rain

Rs - Rate of ice accretion (table number 3551)

0 Ice not building up

1 Ice building up slowly

2 Ice building up rapidly

3 Ice melting or breaking up slowly

4 Ice melting or breaking up rapidly

Sw - Indicator for the sign and type of wet-bulb temperature reported (table number 3855)

0 Positive or zero measured wet-bulb temperature
1 Negative measured wet-bulb temperature
2 Iced bulb measured wet-bulb temperature
5 Positive or zero computed wet-bulb temperature
6 Negative computed wet-bulb temperature
7 Iced bulb computed wet-bulb temperature

Break ?

Ship Weather Report

- **Here is an example of a Ship coded weather report;**

BBXX

BRAVO 20123 99252 10595 41494

81412 10285 20269 40100 53012 79586 8597/ 22265 00280 20405 31705 40506 50407=

EXAMPLE

Surface report from Coastal Station **AAXX**
Surface report from Ship **BBXX**

BXX	BBXX identifier of ship weather report
BRAVO	call sign of the ship.
20123 YYGGiw	YY - 20 : day of the month 20th. GG - 12: time of observation UTC iw - 3 : means wind speed report estimated in knots
99252 99LaLaLa	99: indicator for sea station position groups. LaLaLa – 25.2: latitude 25.2 N.

Ship Weather Report

- **Here is an example of a Ship coded weather report;**

BBXX

BRAVO 20123 99252 10595 41494

81412 10285 20269 40100 53012 79586 8597/ 22265 00280 20405 31705 40506 50407=

EXAMPLE

10595	Qc - 1: Quadrant of the globe. north east) LoLoLoLo – 0595: longitude 059.5
41494 4ixhW	4 - : indicate that precipitation group is omitted. ix – 1: weather group included h – 4: height of lowest cloud is between 900 to 1899 feet. VV – 94 : horizontal visibility is 1 km
81412 Nddff	N -8 : total amount of clouds in octas (overcast) dd – 14: direction of surface wind southeast ff – 12: speed of surface wind is 12 knots
10285 1snTTT	1 - group indicator for air temperature. sn – 0: sign of air temperature positive. TTT – 285: Air temperature 28.5 C

Ship Weather Report

- **Here is an example of a Ship coded weather report;**

BBXX

BRAVO 20123 99252 10595 41494

81412 10285 20269 40100 53012 79586 8597/ 22265 00280 20405 31705 40506 50407=

EXAMPLE

20269 2snTdTdTdTd	2 - group indicator for dew point temperature sn – 0 sign of dew point temperature positive TdTdTdTd – 269 dew point temperature 26.9 C
40100 4PPPP	4 - : group indicator for mean sea level pressure. PPPP – 0100: Mean sea level pressure 1010.0 hPa
53012 5appp	5 - : group indicator for pressure tendency. a – 3: code for pressure change (decreasing) ppp – 012: pressure change by 1.2 hPa last 3 hours.
79586	7 - : group indicator for present and past weather. ww – 95: code for present weather (thunderstorm and rain. W1W2 – 86: code for the past weather (shower and rain)

Ship Weather Report

- **Here is an example of a Ship coded weather report;**

BBXX

BRAVO 20123 99252 10595 41494

81412 10285 20269 40100 53012 79586 8597/ 22265 00280 20405 31705 40506 50407=

EXAMPLE

8597/ 8NhCLCMCH	8 - : group indicator for cloud group. Nh – 5: amount of low clouds (5 octas). CL– 9: code for type of low cloud (Cumulonimbus). CM – 7: code for type of medium cloud (altocumulus) CH - / : Code for type of high cloud. high clouds cannot be observed due to obscuration
22265 222DsVs	222 - : section indicator for maritime data. Ds - 6 : code for ship course (direction where the ship is moving (west). Vs – 5: code for ship average speed last 3 hours (21 to 25 knots) .
00280 0SsTwTwTw	0 - : indicator for sea surface temperature. Ss - 0 : sign and type of measurement positive or zero intake. TwTwTw – 280: sea surface temperature 28.0 C
20405 2PwPwHwHw	2 - : indicator for wind waves. PwPw - 04 : period of wind waves in seconds (4 seconds). HwHw – 05: height of wind waves in units of half meter. (05 X 0.5= 2.5 meters)

Ship Weather Report

- **Here is an example of a Ship coded weather report;**

BBXX

BRAVO 20123 99252 10595 41494

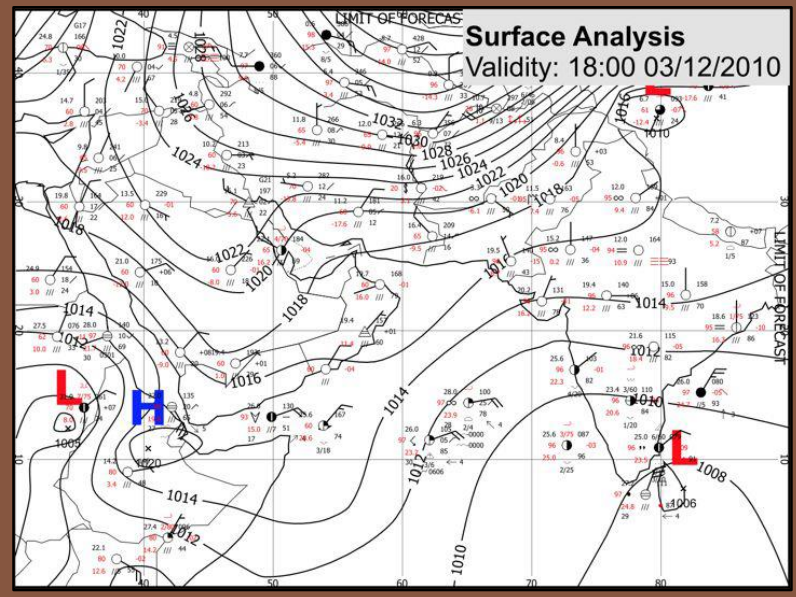
81412 10285 20269 40100 53012 79586 8597/ 22265 00280 20405 31705 40506 50407=

EXAMPLE

31705 3dw1dw1dw2dw2	3 - : indicator for swell directions. dw1dw1 - 17 : direction of first swell (from 170 degrees). dw2dw2 – 05: direction of second swell (from 050 degrees)
40506 4Pw1Pw2Hw1Hw1	4 - : indicator for period and height of first swell group. Pw1Pw1 - 05 : period of first swell (05 seconds). Hw1Hw1 – 06: height of first swell in unit of half meter. (06 X 0.5=3 meters)
50407 5Pw2Pw2Hw2Hw2	5 - : indicator for period and height of second swell group. Pw2Pw2 - 04 : period of second swell (04 seconds). Hw2Hw2 – 07: height of second swell in unit of half meter. (07 X 0.5=3.5 meters)

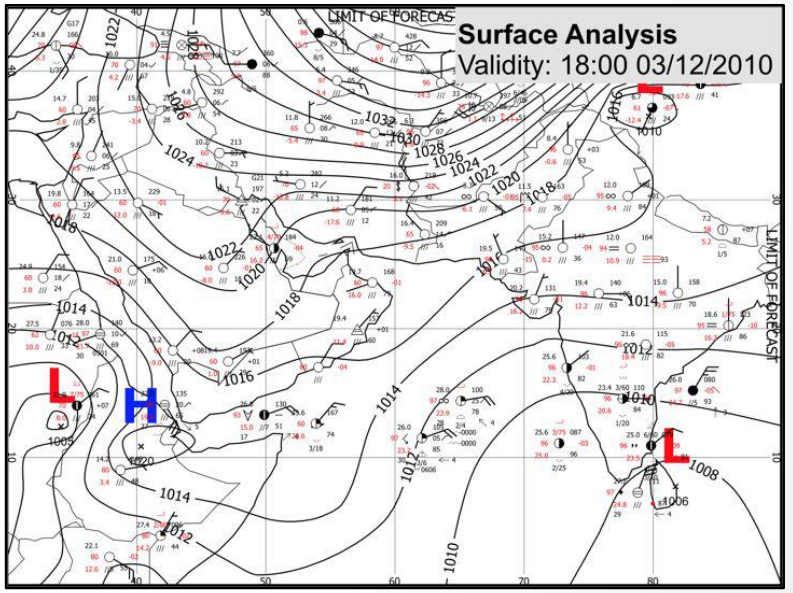
decode

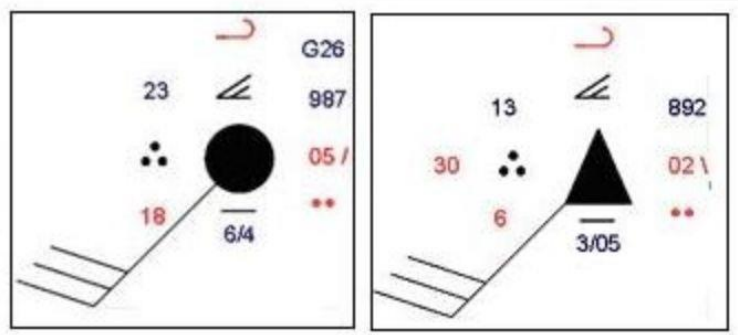
Met Stations model (Plot/Model)



Station models

- **Station Model / Surface Plot:** Simple symbols to display large amounts of meteorological information in a small area.
- The charts use simple symbols to show information.
- The plot is based around one of two shapes.
    - CIRCLES are for manual observations,
    - TRIANGLES for automatic observations.





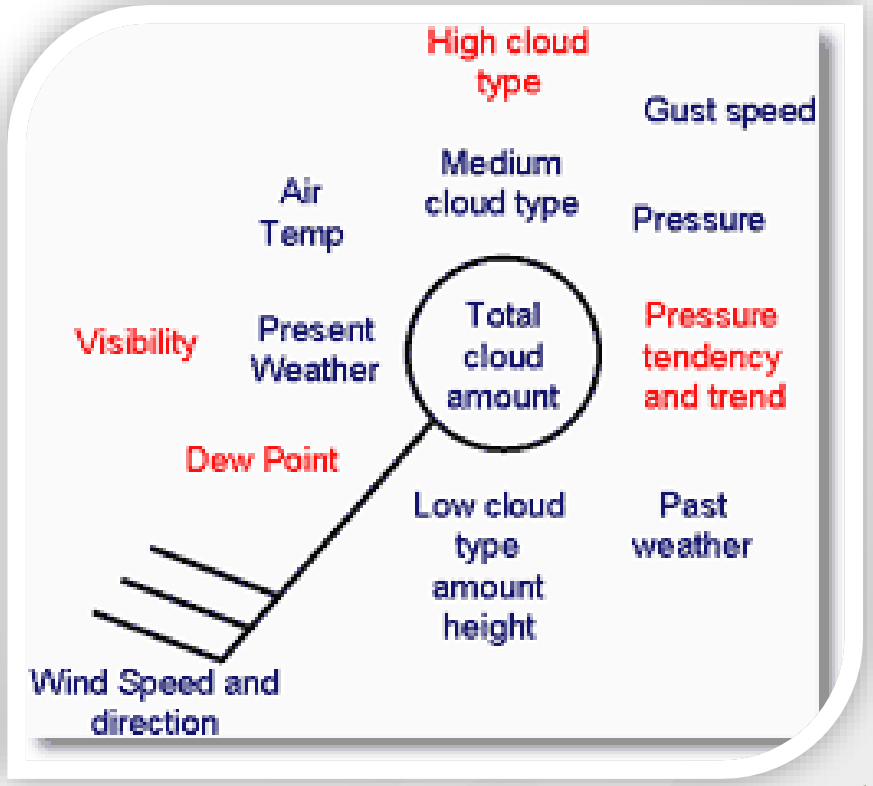
Station Plots

- High Cloud plotted in **Red**.
- Dew Point in **Red**.
- Falling pressure tendency in **Red**,

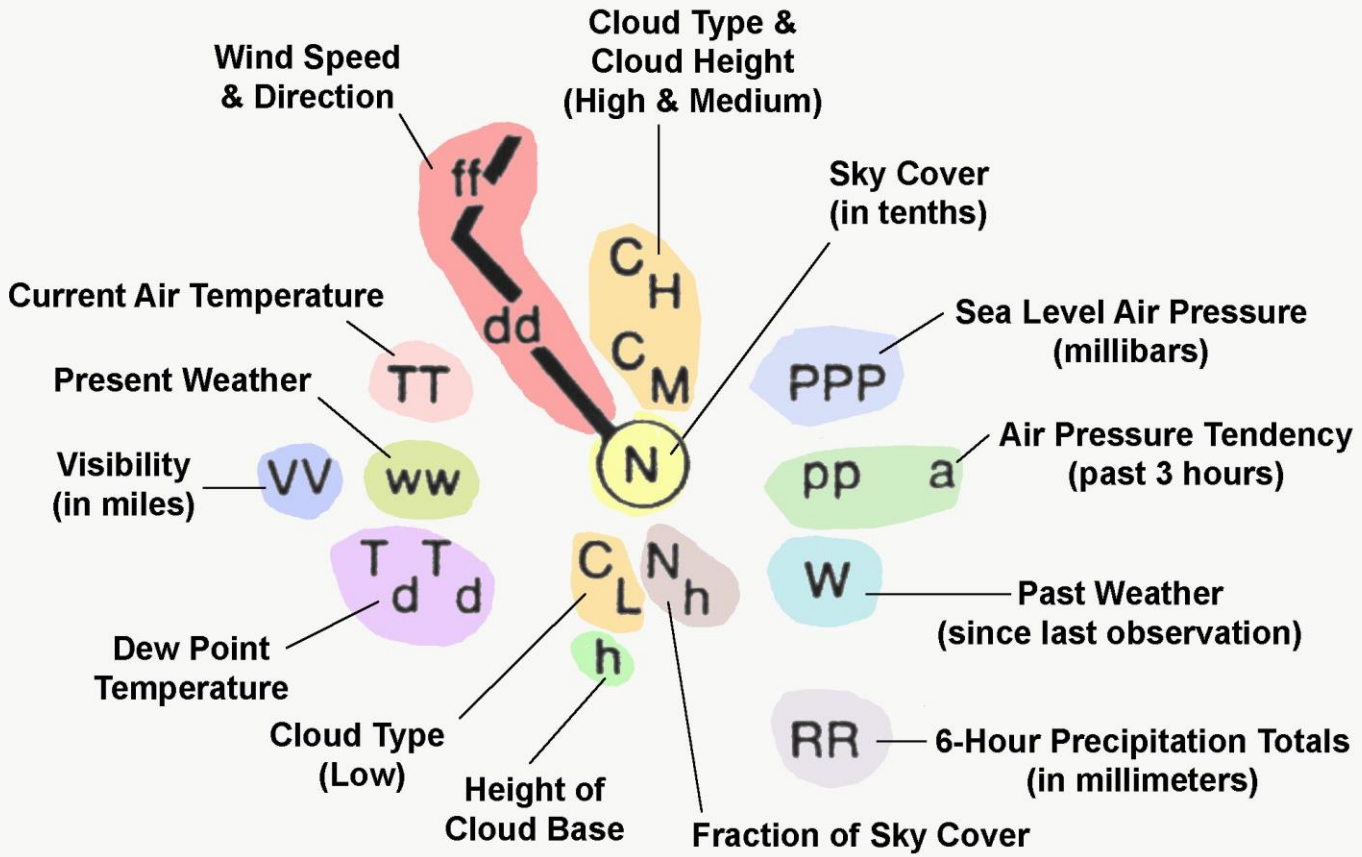
Pressure is plotted with the last 3 figures only,

for example: 1032.6 is 326 998.6 is 986

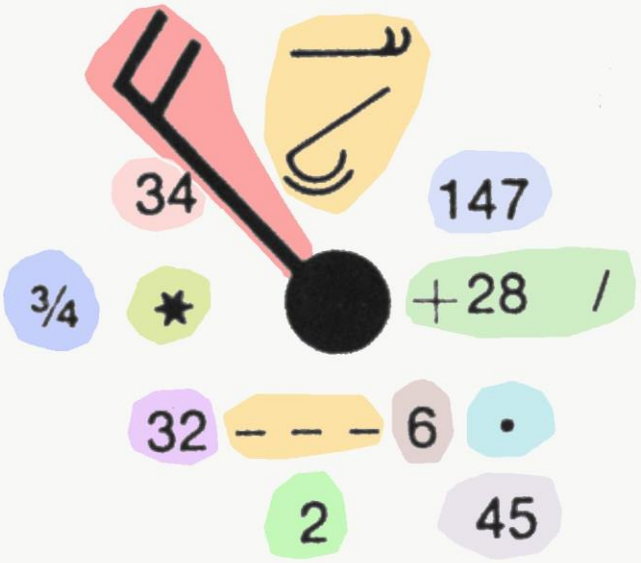
- steady or rising in **Black**.
- Sea temperature in **Black**
- Visibility in **Red**
- All others in **Black**.



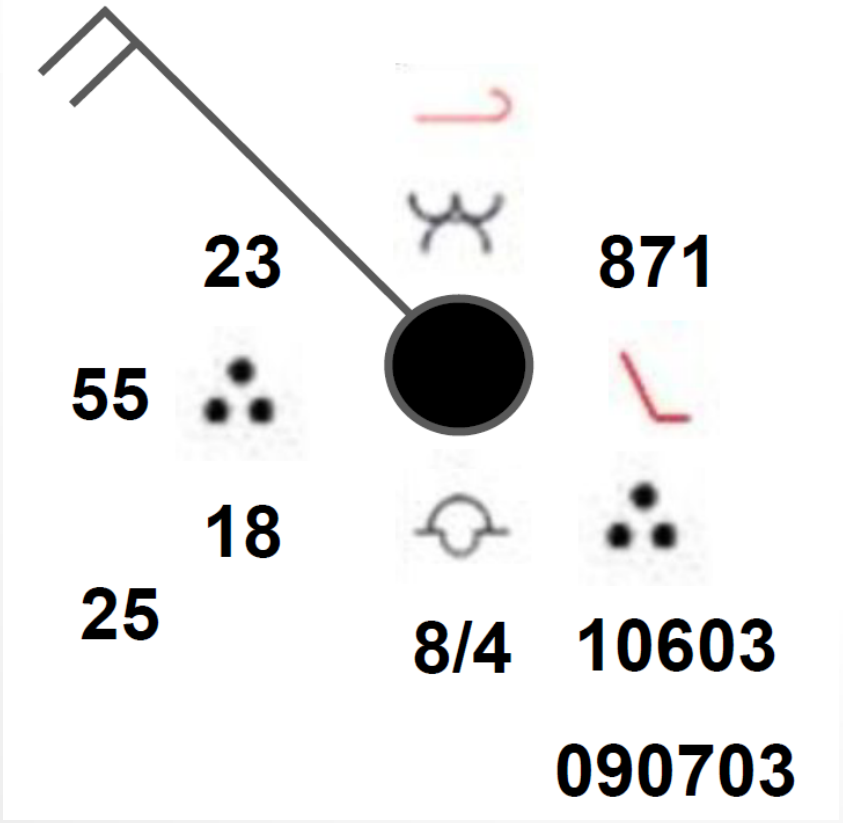
Symbolic Station Model



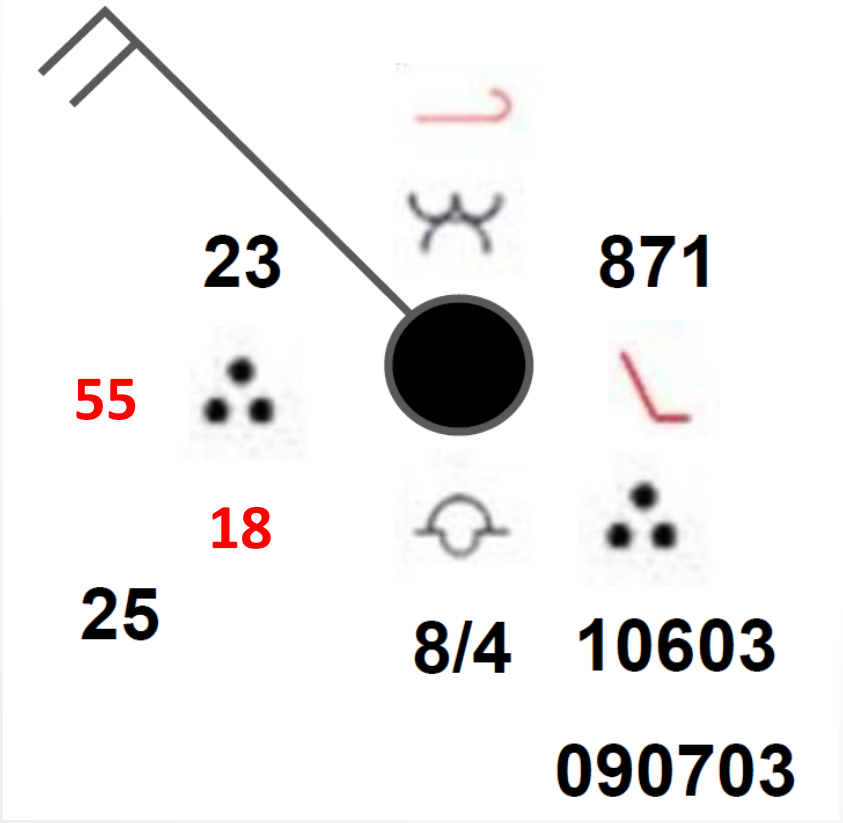
Sample Plotted Report



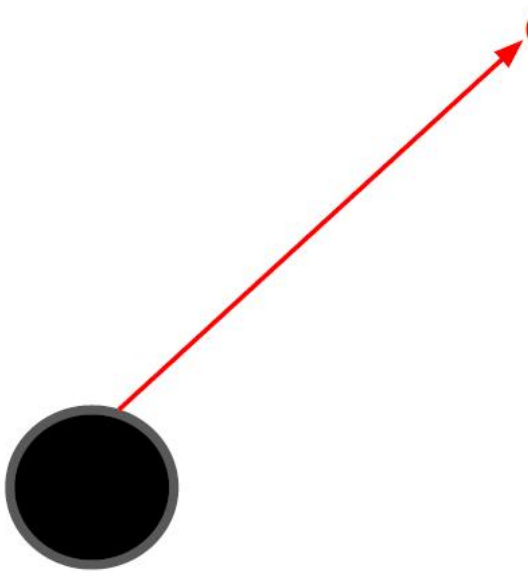
Station plot - example



Station plot - example



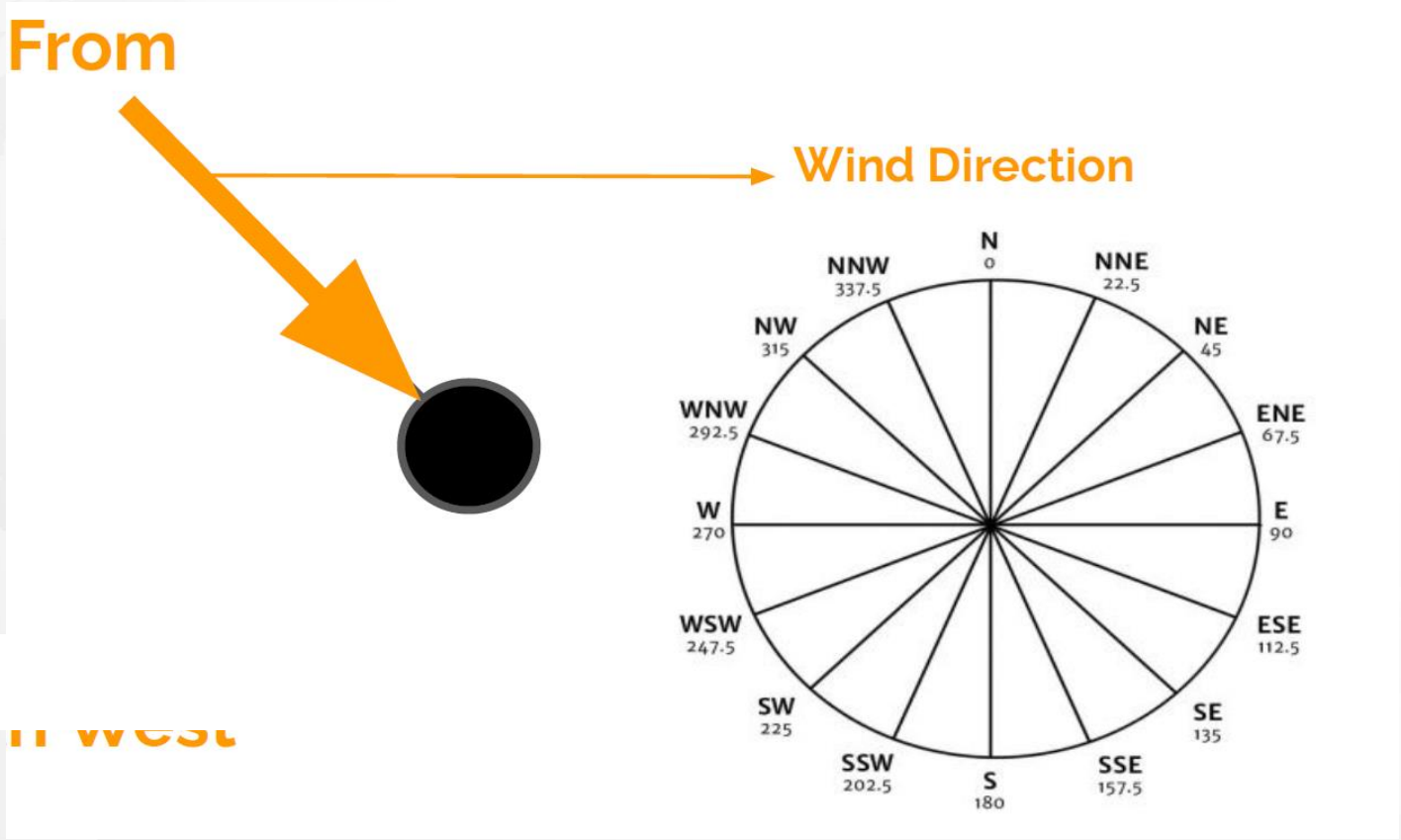
Overcast



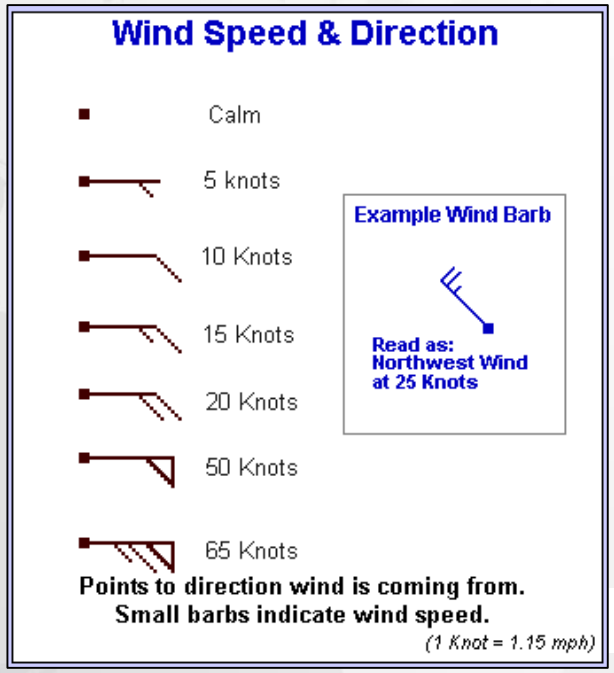
Cloud Cover

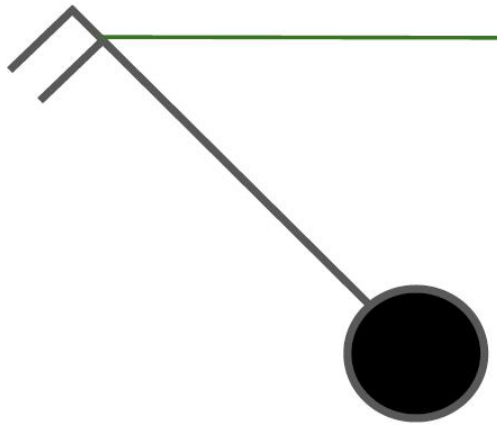
- No clouds
- Less than one-tenth or one-tenth
- Two-tenths or three-tenths
- Four-tenths
- Five-tenths
- Six-tenths
- Seven-tenths or eight-tenths
- Nine-tenths
- Completely overcast
- Sky obscured

North west


From
Wind Direction
N
0
NNE
22.5
NE
45
ENE
67.5
E
90
ESE
112.5
SE
135
SSE
157.5
S
180
SSW
202.5
SW
225
WSW
247.5
W
270
WNW
292.5
NW
315
NNW
337.5

18 – 22 Knots



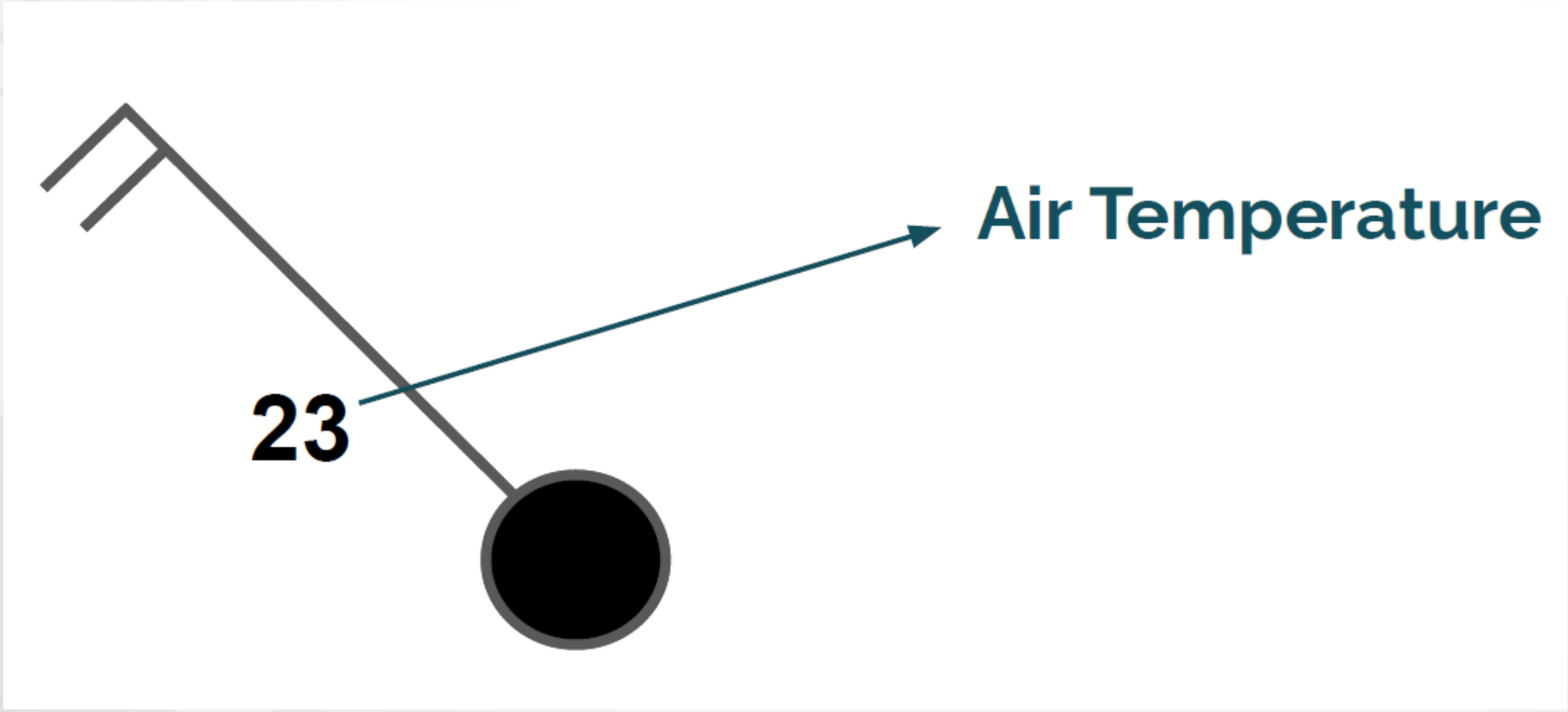


Knots

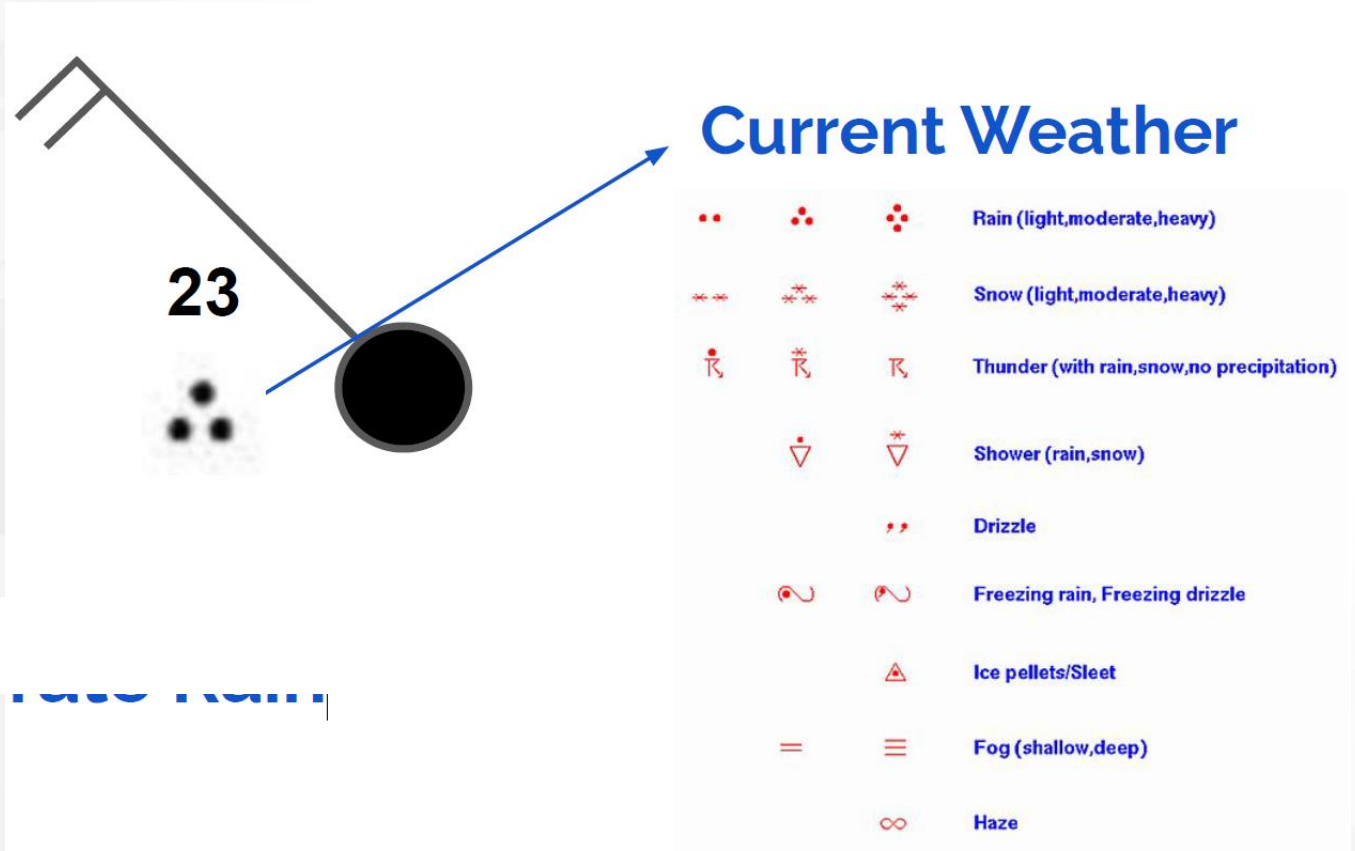
Wind Speed

Speed (knots)	Symbol	Speed (knots)	Symbol
Less than 1		33–37	
1–2		38–42	
3–7		43–47	
8–12		48–52	
13–17		53–57	
18–22		58–62	
23–27		98–102	
28–32		103–107	

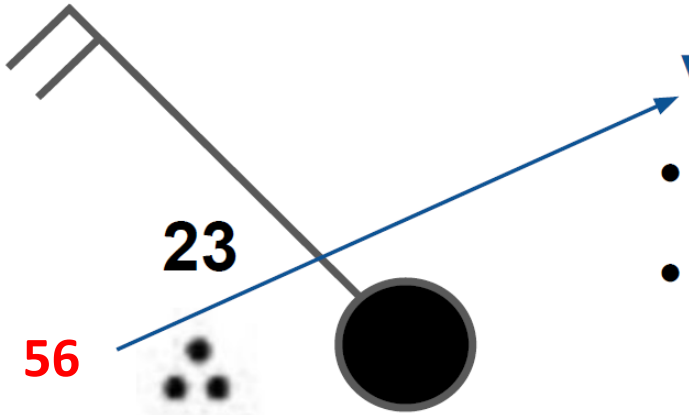
23 °C



Moderate Rain



6 km



Visibility

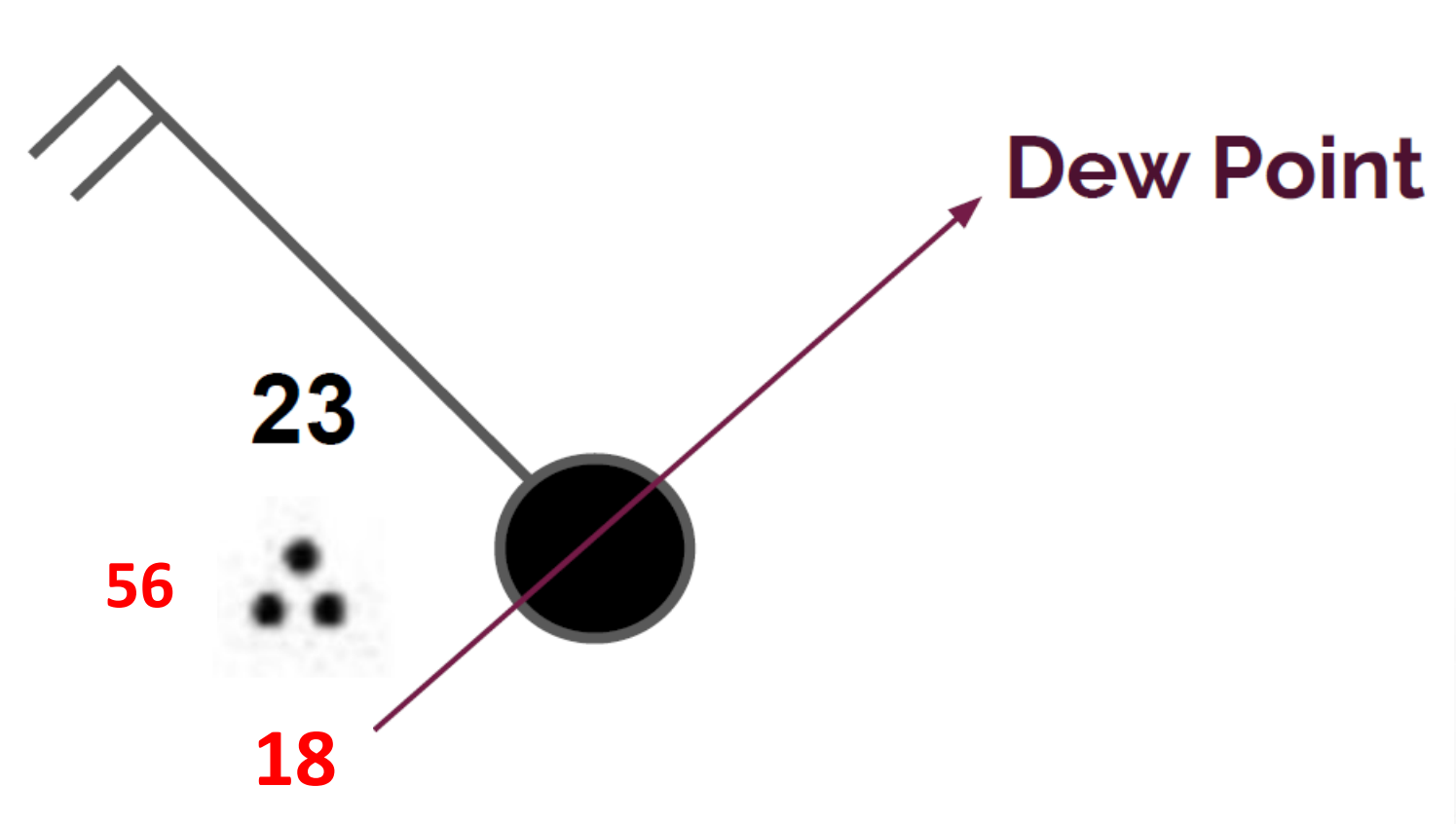
- In either meters or kilometres
- Visibilities below five kilometres are recorded to the nearest 100 metres
- Visibilities above five kilometres are given to the nearest kilometre

(0-50)--------(0.0-5.0 km)
(56-80)------(06-30 km)
(81-88)------(35-70 km)

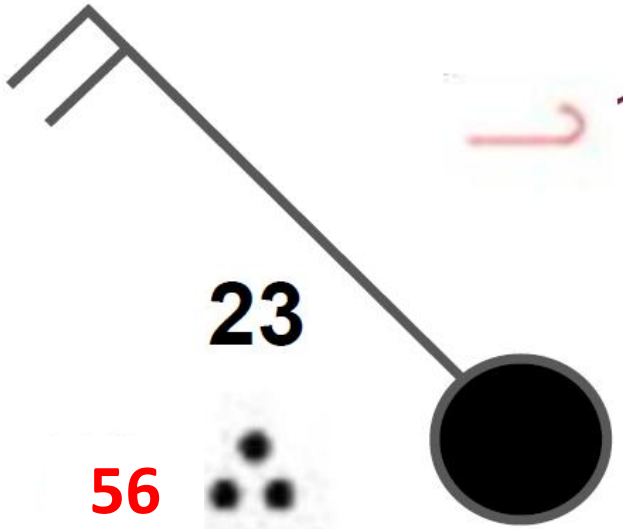
Table 1: Codes for visibilities of less than five kilometres					
Code	Distance (km)	Code	Distance (km)	Code	Distance (km)
00	<0.0	19	1.9	38	3.8
01	0.1	20	2.0	39	3.9
02	0.2	21	2.1	40	4.0
03	0.3	22	2.2	41	4.1
04	0.4	23	2.3	42	4.2
05	0.5	24	2.4	43	4.3
06	0.6	25	2.5	44	4.4
07	0.7	26	2.6	45	4.5
08	0.8	27	2.7	46	4.6
09	0.9	28	2.8	47	4.7
10	1.0	29	2.9	48	4.8
11	1.1	30	3.0	49	4.9
12	1.2	31	3.1	50	5.0

Table 2: Codes for visibilities of more than five kilometres			
Code	Distance (km)	Code	Distance (km)
56	6	73	23
57	7	74	24
58	8	75	25
59	9	76	26
60	10	77	27
61	11	78	28
62	12	79	29
63	13	80	30
64	14	81	35
65	15	82	40
66	16	83	45
67	17	84	50
68	18	85	55
69	19	86	60
70	20	87	65
71	21	88	70
72	22	89	>70

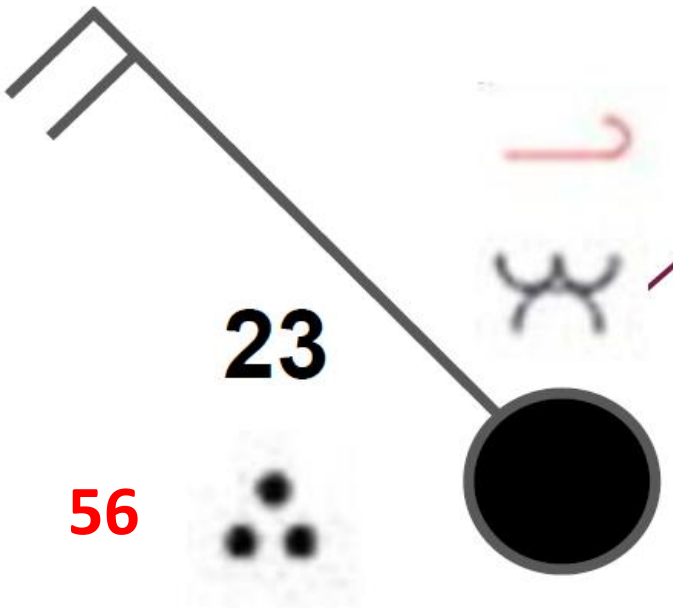
18 °C



High Cloud Type

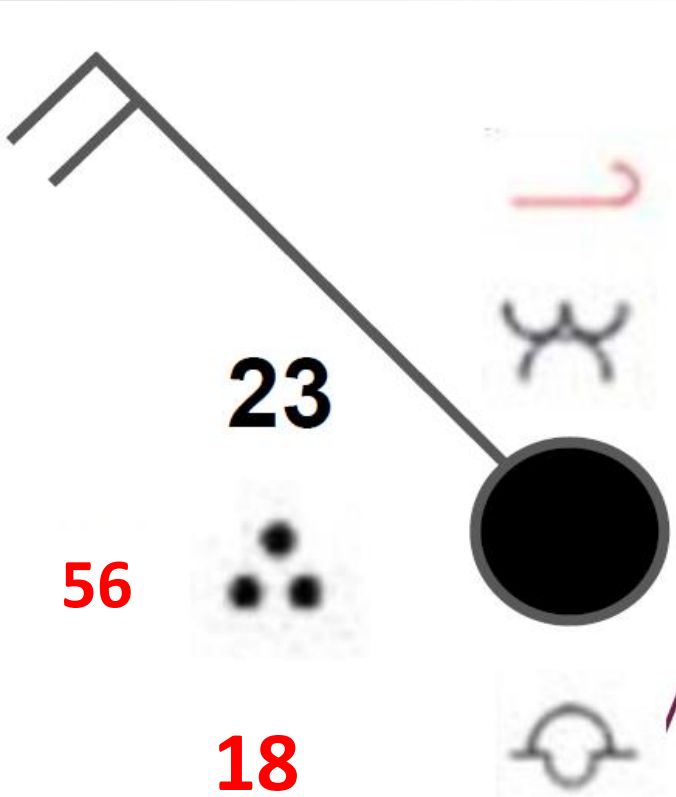


	Cirrus in the form of filaments, strands or hooks, not progressively invading the sky.
	Dense cirrus in patches, which do not increase and seem to be the remains of the upper part of cumulonimbus; or cirrus with sproutings in the form of small turrets or battlements.
	Dense cirrus, often in the form of an anvil; being the remains of the upper parts of cumulonimbus.
7	Cirrus in the form of hooks or of filaments, or both, progressively invading the sky; they generally become denser as a whole.
2	Cirrus and cirrostratus, or cirrostratus alone; progressively invading the sky, but not reaching 45° above the horizon.
2	Cirrus and cirrostratus, or cirrostratus alone; progressively invading the sky, reaching more that 45° above the horizon, but without the sky being totally covered.
2	Veil of cirrostratus covering the celestial dome.
	Cirrostratus not progressively invading the sky and not completely covering the celestial dome.
2	Cirrocumulus alone, or cirrocumulus accompanied by cirrus or cirrostratus or both, but cirrocumulus is predominant.



Medium Cloud Type

	Altostratus through which the sun or moon may be weakly visible.
	Altostratus, dense enough to hide the sun or moon, or nimbostratus.
	Altocumulus, the greater part of which is semi-transparent and at a single level
	Patches of altocumulus, the greater part of which is semi-transparent the clouds occur at one or more levels
	Semi-transparent altocumulus in bands, or altocumulus in one or more fairly continuous layers, progressively invading the sky.
	Altocumulus resulting from the spreading out of cumulus (or cumulonimbus).
	Altocumulus in two or more layers, not progressively invading the sky or altocumulus together with altostratus or nimbostratus.
	Altocumulus with sproutings in the form of small towers or battlements.
	Altocumulus of a chaotic sky, generally at several levels.



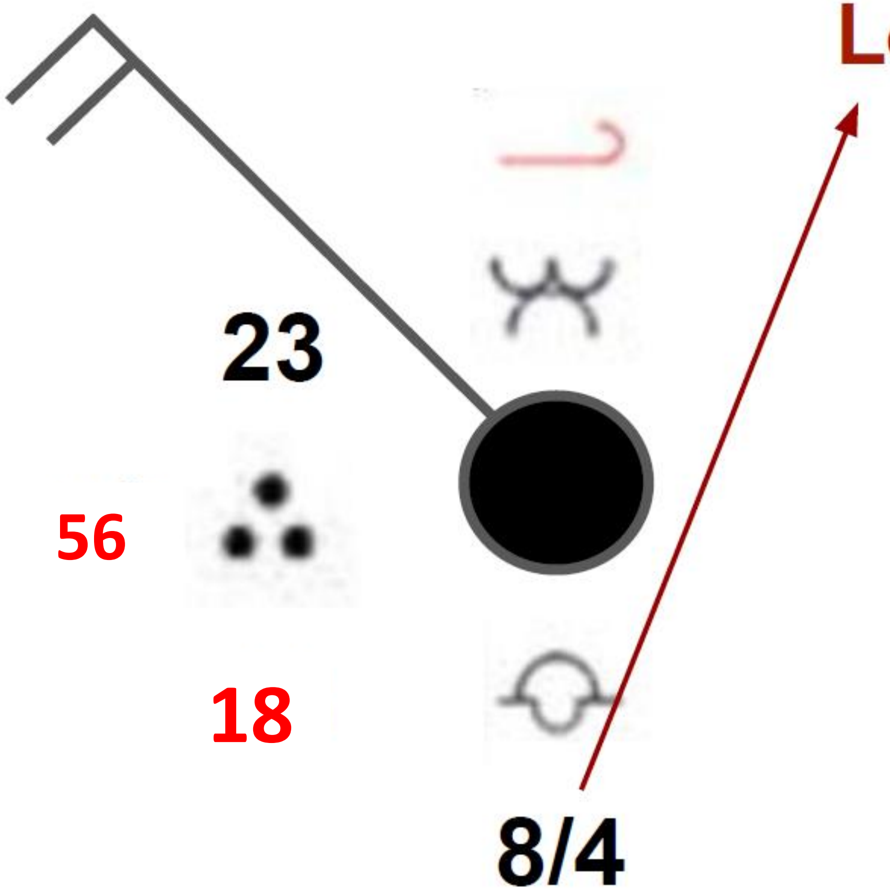
Low Cloud Type

	Cumulus with little vertical extent
	Cumulus of moderate or strong vertical extent,
	Cumulonimbus without fibrous or anvil top
	Stratocumulus formed by the spreading out of cumulus
	Stratocumulus not resulting from the spreading out of cumulus
—	Stratus in a more or less continuous sheet or layer,
---	Stratus fractus of bad weather
	Cumulus and stratocumulus at a different levels
	Cumulonimbus, fibrous or anvil top

CAA
هيئة الطيران المدني
CIVIL AVIATION AUTHORITY

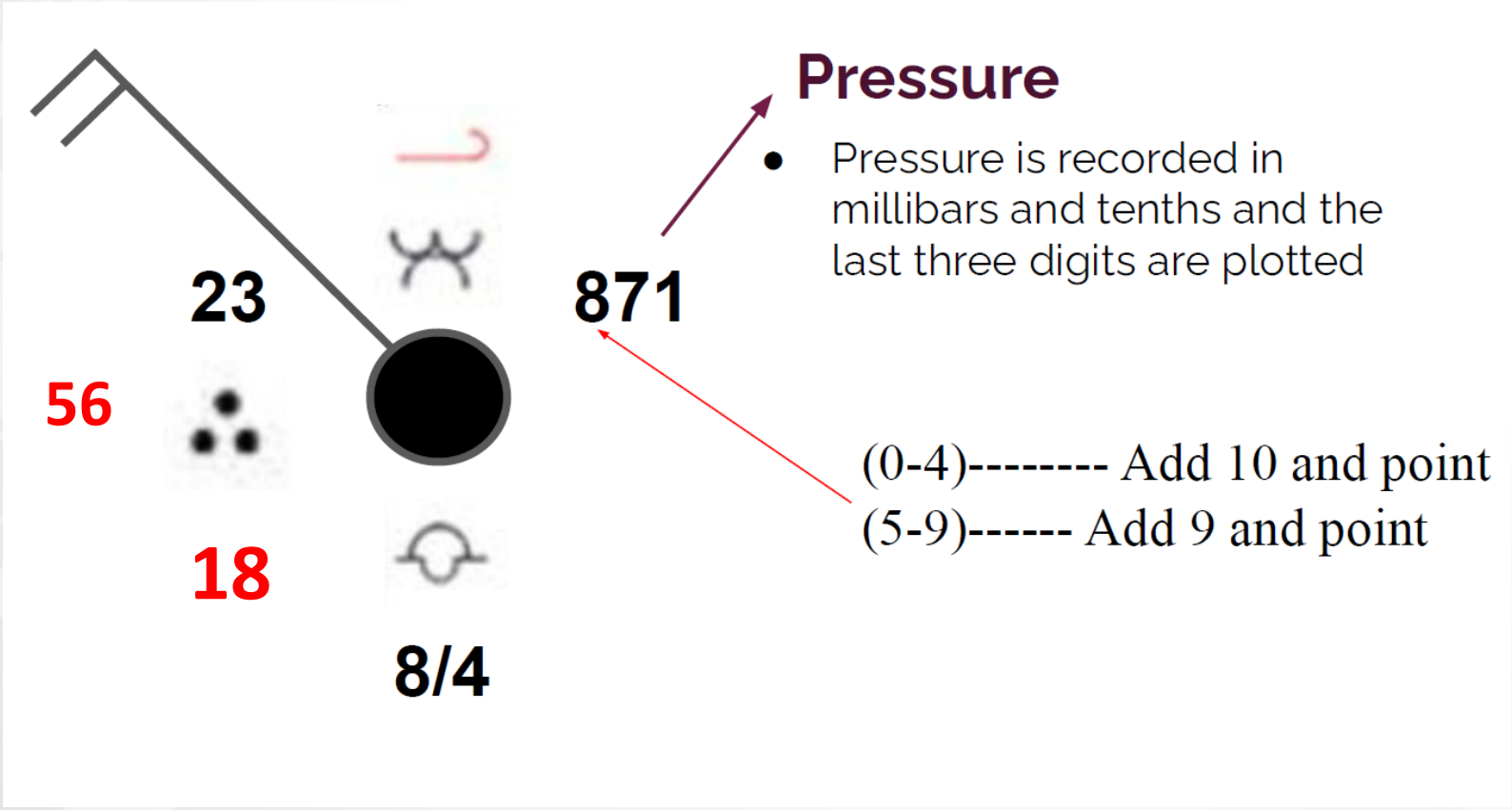
0 to 8

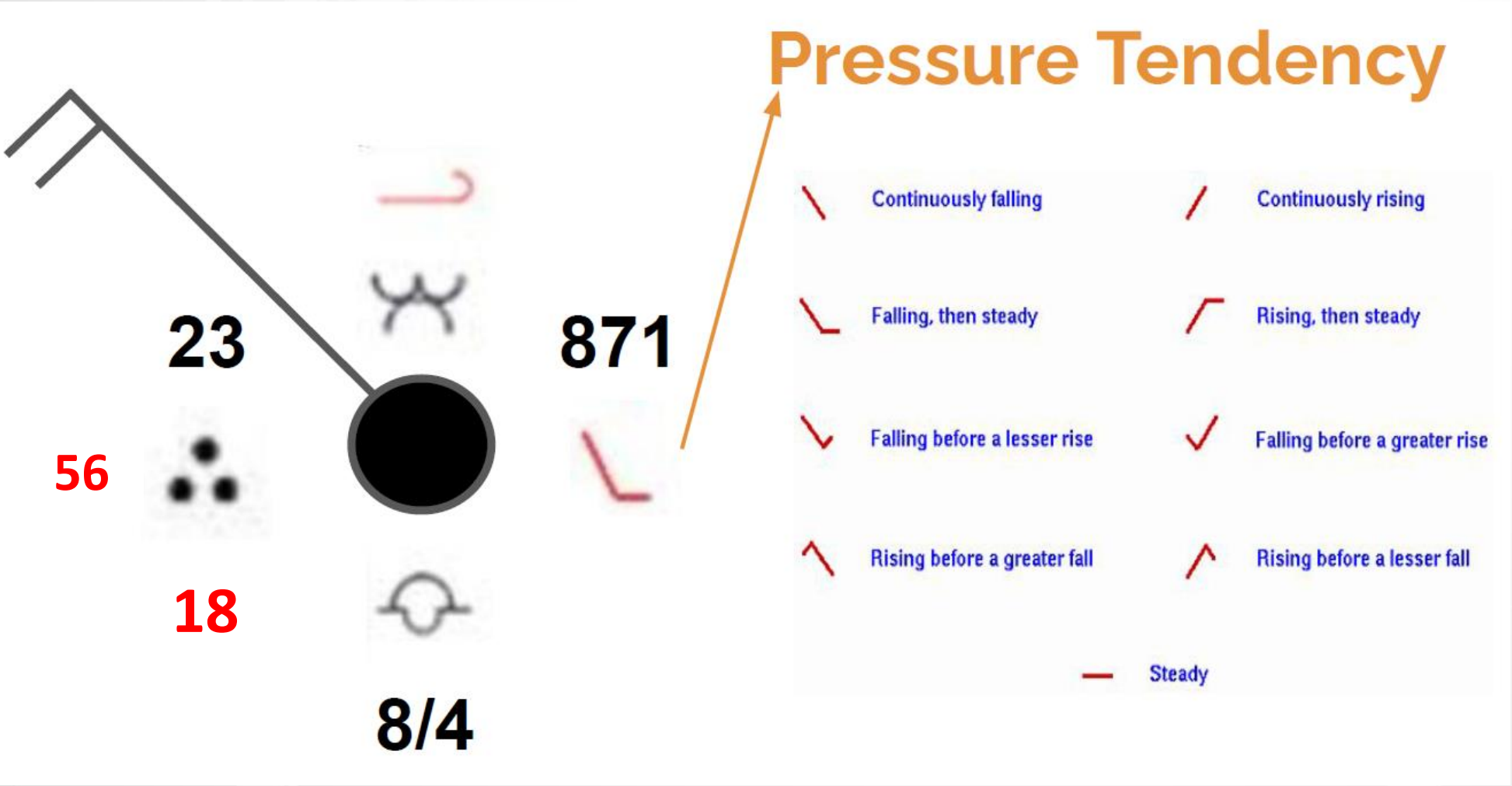
Low Cloud Cover / Height

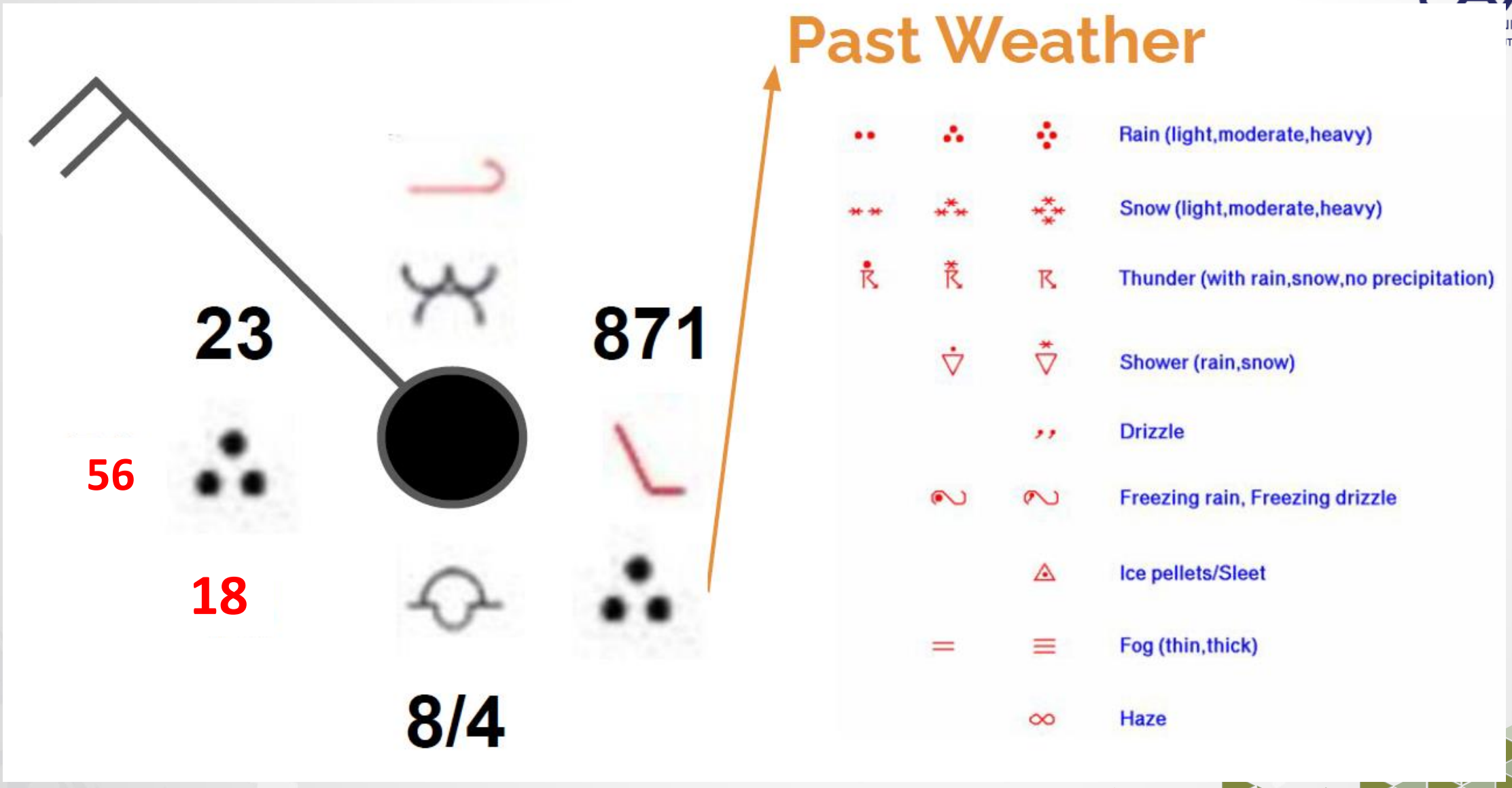


Cloud heights for manned stations	
Code	Height in feet
0	0-149
1	150-299
2	300-599
3	600-999
4	1,000-1,999
5	2,000-2,999
6	3,000-4,999
7	5,000-6,499
8	6,500-7,999
9	8,000 or above
/	Cloud height unknown

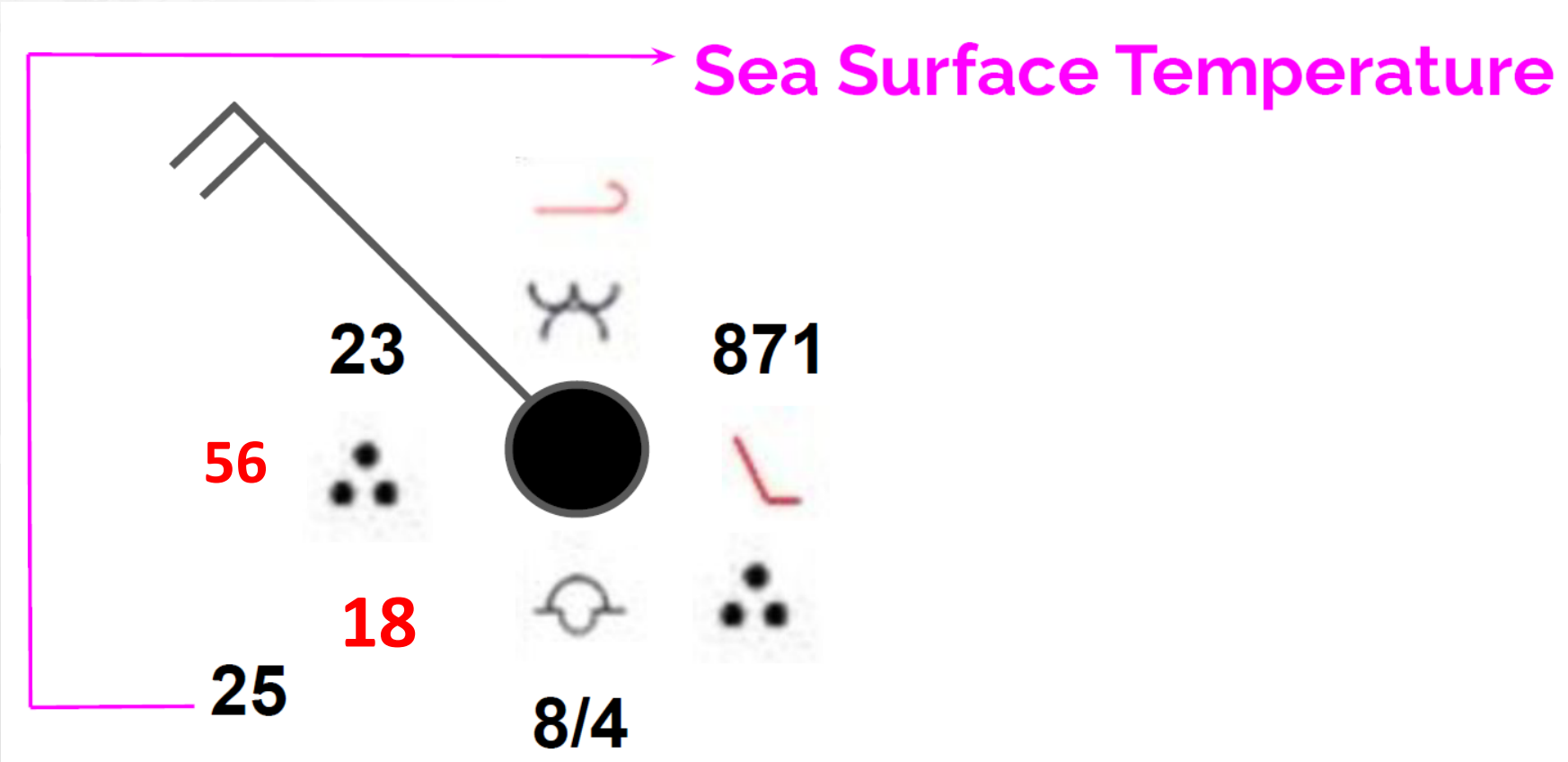
987.1 mb


23
56
18
871
8/4
Pressure
Pressure is recorded in millibars and tenths and the last three digits are plotted
(0-4)-------- Add 10 and point
(5-9)------ Add 9 and point

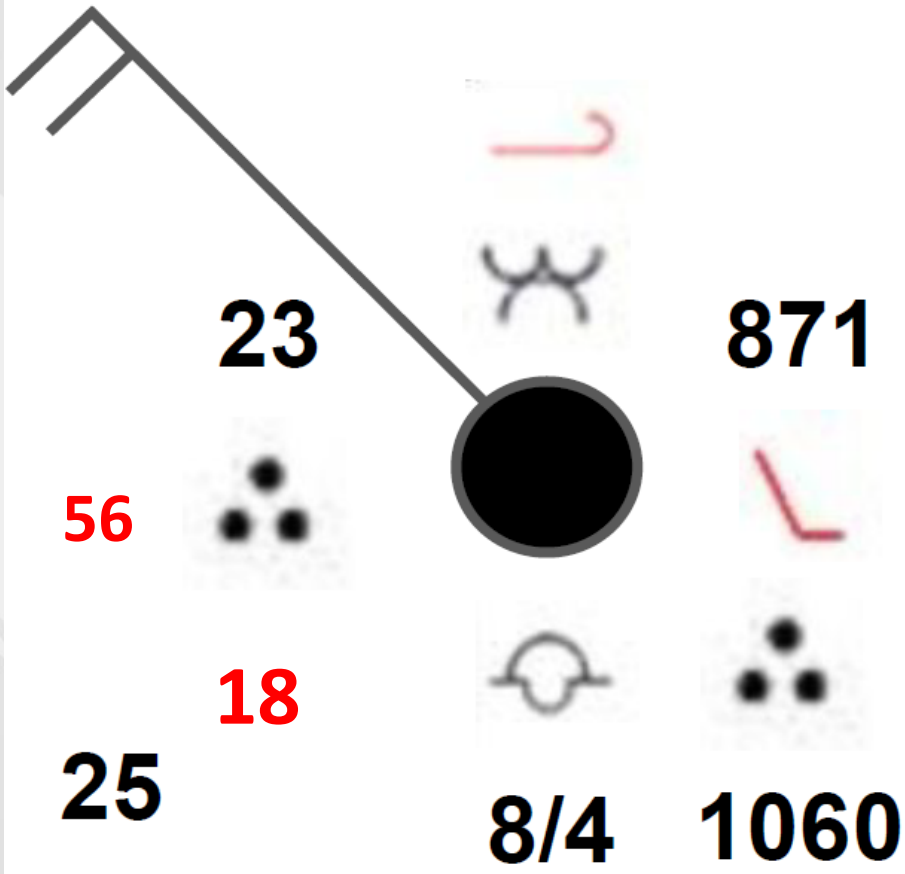

23
871
56
18
8/4
Pressure Tendency
Continuously falling
Continuously rising
Falling, then steady
Rising, then steady
Falling before a lesser rise
Falling before a greater rise
Rising before a greater fall
Rising before a lesser fall
Steady


23
871
56
18
8/4
Past Weather
Rain (light,moderate,heavy)
Snow (light,moderate,heavy)
Thunder (with rain,snow,no precipitation)
Shower (rain,snow)
Drizzle
Freezing rain, Freezing drizzle
Ice pellets/Sleet
Fog (thin,thick)
Haze

25 °C



Wave Information



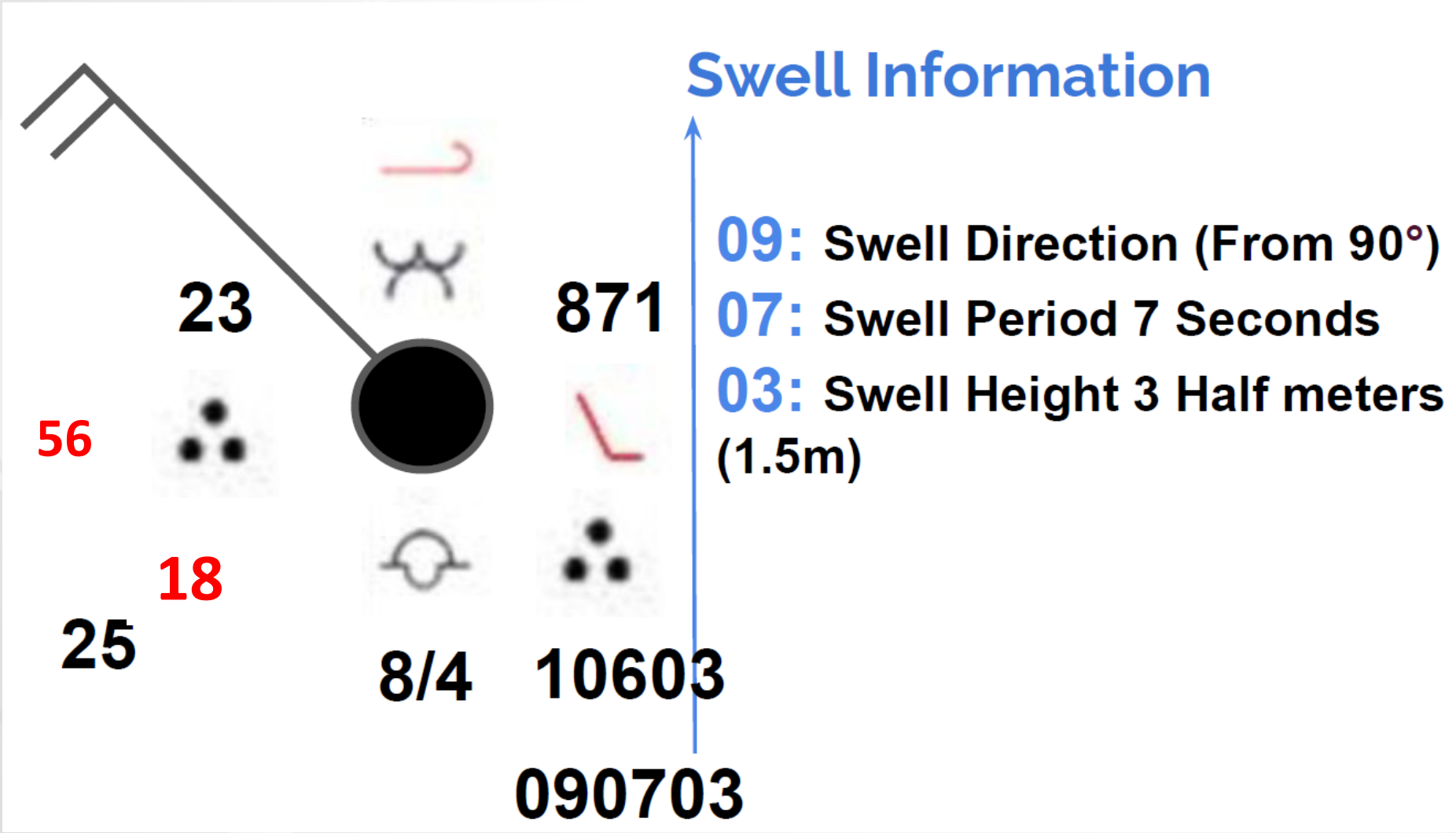
1: Group Identifier (Bouey)

06: Wave Period 6 Seconds

03: Wave Height 3 Half meters

(1.5)

2: Group Identifier (Ship)


Swell Information
09: Swell Direction (From 90°)
07: Swell Period 7 Seconds
03: Swell Height 3 Half meters
(1.5m)
23
871
56
18
25
8/4
10603
090703

Tasks

https://www.e-education.psu.edu/meteo3/l1_p6.html

https://quizizz.com/admin/quiz/5c7f1af3c506c7001bd58d8c/weather-station-models

https://www.weather.gov.hk/en/wservice/tsheet/pms/shipcode.htm?menu=services

Thanks