NCEI Marine Data Documentation

Note: Missing data is indicated with “null” unless otherwise noted.

WMO Code Tables referenced herein can be found in the WMO Publication No. 306, Manual on Codes.

Identification - Ship or buoy call sign or identification number

Latitude - Given in tenths of degrees between -90.0 and 90.0 with values between 0 and 90 in the Northern Hemisphere (e.g. 24.5). Values between -90.0 and 0.0 are in the Southern Hemisphere (e.g. -62.5).

Longitude - Given in tenths of degrees between 0.0 and 360.0 with values between 180 and 360 in the Western Hemisphere. If location is in Eastern Hemisphere this value represents a conventional longitude with East (i.e. “E”) designation. If the location is in the Western Hemisphere (e.g. Eastern Pacific), it will have a value greater than 180.0. For these, subtract 360.0 from value and multiply by -1 to obtain conventional longitude assigned with a West (i.e. “W”) designation. For example:

86.5 = 86.5E longitude,

270.5 = -1(270.5-360)W = -1(-89.5)W = 89.5W

Time of Observation – YYYY-MM-DDThh:mm:ss. Given as Year (YYYY) – Month (MM) – Day (DD) followed by “T” (for time) and Hour (hh) : Minute (mm) : Seconds (ss). Times are in UTC. (e.g. 2015-03-01T00:00:00)

Ice Accretion on ship (WMO Code Table 1751) – Left blank if not reported. Otherwise type of ice accretion is given as follows:

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

Thickness of Ice Accretion on ship (centimeters) – Thickness of ice on ship/buoy

Rate of Ice Accretion on ship (WMO Code Table 3551) - Left blank if not reported. Otherwise type of ice accretion is given as follows:

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

Sea Level Pressure – Given in tenths of hectoPascals (hPa/millibars) (e.g. 1009.7)

Characteristics of Pressure Tendency (WMO Code Table 0200) – Tendency of the change in pressure, defined as follows:

Code	Meaning
0	Increasing, then decreasing
1	Increasing steadily or unsteadily
2	Increasing steadily or unsteadily
3	Decreasing or steady then increasing OR increasing then increasing more rapidly
4	Steady. Pressure same as 3 hrs. ago
5	Decreasing then increasing OR decreasing then decreasing more slowly
6	Decreasing, then steady OR decreasing, then decreasing more slowly
7	Decreasing steadily or unsteadily
8	Steady or increasing then decreasing OR decreasing then decreasing more rapidly

Note: For 0 pressure is the same or higher than 3 hours ago. For 4, pressure is the same as 3 hours ago. For 5 pressure is the same or lower than 3 hours ago. For 1-3, pressure is higher than 3 hours ago and for 6-8 pressure is lower than 3 hours ago. Left blank if unreported.

Pressure Change - Amount of change in pressure during previous 3 hours in tenths of hectoPascals or inches of mercury depending on user specification (standard or metric option). Left blank if unreported.

Air Temperature - Air temperature in tenths of degrees Celsius or Fahrenheit depending on user specification (standard or metric option).

Wet Bulb Temperature - Wet-bulb temperature in tenths of degrees Celsius or Fahrenheit depending on user specification (standard or metric option).

Dew Point Temperature - Dew point temperature in tenths of degrees Celsius or Fahrenheit depending on user specification (standard or metric option).

Sea Surface Temperature - Sea surface temperature in tenths of degrees Celsius or Fahrenheit depending on user specification (standard or metric option).

Wave Direction (WMO Code Table 0877) – Direction from which waves come in tens of degrees (e.g. 36 = north, 09 = east, 18 = south, etc.).

- 37 = waves confused, direction indeterminate with wave heights less than or equal to 4.75m.
- 38 = waves confused, direction indeterminate with wave heights less than 4.75m. Undefined conversions are left blank. See the following table for further info:

Code	Ran,..,.	0	1	2	3	4
01	$-14	10	11			?
02	1$-24	20	23	25	23	?
03	2$-34	30	34			?
04	3$-44	40	45		45	?
05	4$-54	50	56	45		?
06	5$-64	60	68		68	?
07	6$-74	70	79	65		?
08	75-64	80	90		90	?
09	8$-94	90	101	90		
10	95-104	100	113		113	
11	**10S-114**	110	124	115		
12	11$-124	120	135		135	
13	12$-134	130	148			
14	135-144	140	158	135	158	
15	**145-154**	150	169			
16	15$-164	160	180	155	180	
17	16$-174	170	191			
18	17$-184	180	203	180	203	
19	185-194	190	214			
20	195-204	200	225	205	225	
21	**20S.214**	210	236			
22	21$-224	220	248		248	
23	22$-234	230	259	225		
24	23$-244	240	270		270	
25	24$-254	250	281	245		
26	255-264	260	293		293	
27	26$-274	270	304	270		
28	27$-284	280	315		315	
29	285-294	290	326	295		
30	29$-304	300	338		338	
31	305-314	310	349			
32	315-324	320	360	315	360	
33	**325-334**	330				
34	33$-344	340		335		
35	345-354	350				
36	355-4	360		360		
00 (calm)		361	361	361	361	
99 /variable)		362	362	362	362	

Wave Period – Period of wind waves in seconds. Left blank if unreported. "-" indicates calm or period not determined. Blank if not reported. For data prior to 1968 see table D5a below for further info:

Table D5a. Conversion for *WP* always, and for *SP* prior to 1968.

Seconds	Code	Interval
5	2	5 seconds or less
7	3	6-7 seconds
9	4	8-9 seconds
11	5	10-11 seconds
13	6	12-13 seconds
15	7	14-15 seconds
17	8	16-17 seconds
19	9	18-19 seconds
21	0	20-21 seconds
22	1	over 21 seconds
0	–	calm or period not determined

Table D5b. Conversion for *SP* beginning 1 January 1968.

Seconds	Code	Interval
10	0	10 seconds
11	1	11 seconds
12	2	12 seconds
13	3	13 seconds
14	4	14 seconds or more
5	5	5 seconds or less
6	6	6 seconds
7	7	7 seconds
8	8	8 seconds
9	9	9 seconds
0	–	calm or period not determined

Wave Height – height of waves in half-meters (i.e. 1=0.5m, 2=1m, etc.) or feet depending on user specification (standard or metric option). Blank if not reported.

Swell Direction (WMO Code Table 0877) – Direction from which swells come in tens of degrees (e.g. 36 = north, 09 = east, 18 = south, etc.).

- 37 = swells confused, direction indeterminate with swell heights less than or equal to 4.75m.
- 38 = swells confused, direction indeterminate with swell heights less than 4.75m.

Swell Period - Period of swells in seconds. For data prior to 1968 see Table D5 above for further info.

Swell Height – Height of swells in half-meters (i.e. 1=0.5m, 2=1m, etc.) or feet depending on user specification (standard or metric option). Blank if not reported.

Total Cloud Amount (WMO Code Table 2700) – Amount of celestial dome covered by cloud in oktas (i.e. eighths).

Code value	Oktas of celestial dome covered
0	Clear
1	1 okta or less but not zero
2-6	2-6 oktas
7	7 oktas or more but not 8 oktas
9	Sky obscured by fog and/or other meteorological phenomena

Blank if not reported.

Low Cloud Amount – Amount of sky covered by low clouds (e.g. cumulus, stratus, stratocumulus) in oktas (i.e. eighths) . If no low clouds present the amount of all the middle (CM) clouds present are reported (e.g. altocumulus, nimbostratus, altostratus). Blank when not reported.

Low Cloud Type (WMO Code Table 0513) - A code designation of 0-9 defining the predominate type of low clouds (Stratus, Cumulus or Stratocumulus or Cumulonimbus).

Code value	Cloud Type
0	no low clouds
1	Cumulus (little vertical extent, fair weather)
2	Cumulus (moderate or strong vertical extent, sometimes towering or w/stratocumulus and other cumulus at the same level
3	Cumulonimbus (without anvil, cumulus, stratocumulus, stratus often present too)
4	Stratocumulus formed by the spreading out of Cumulus (Cumulus often present too)
5	Stratocumulus not formed as a result of the spreading out of Cumulus
6	Stratus (continuous sheet or layer or ragged shreds)
7	Stratus fractus of bad weather (usually below Nimbostratus or Altostratus)
8	Cumulus and Stratocumulus not formed from the spreading out of Cumulus (at different levels)
9	Cumulonimbus (with anvil)
A	Low clouds not visible due to darkness, obscuration, etc.

Cloud Height Indicator (not reported on pdf output)

0	Estimated
1	Measured
Blank	Unreported

Cloud Height (WMO Code Table 1600) – The decoded height of the base of the lowest cloud above the surface using the following table:

Code value	Height
0	0-50 meters
1	50-100 meters
2	100-200 meters
3	200-300 meters
4	300-600 meters
5	600 – 1000 meters
6	1000 – 1500 meters
7	1500 – 2000 meters
8	2000 – 2500 meters
9	2500 meters or more OR no clouds
A	height of cloud base unknown/ base of clouds lower than station w/tops higher than

	station

Middle Cloud Type (WMO Code Table 0515) – A code designation of 0-9 defining the predominate type of middle clouds (Altostratus, Altocumulus or Nimbostratus).

Code value	Cloud Type
0	no middle clouds
1	Altostratus or Nimbostratus (semi-transparent)
2	Dense Altostratus or Nimbostratus
3	Altocumulus (mostly or completely semi-transparent)
4	Altocumulus (patches at 1 or more levels)
5	Altocumulus (semi-transparent, in bands progressively invading the sky)
6	Altocumulus (resulting from spreading out of cumulus or cumulonimbus)
7	Altocumulus (opaque, in one or more layers not progressively invading the sky)
8	Altocumulus (w/towers or cumuliform tufts)
9	Altocumulus (chaotic sky, generally at several levels)
A	Middle clouds not visible due to darkness, low clouds, obscuration, etc.

High Cloud Type - A code designation of 0-9 defining the predominate type of high clouds (Cirrus, Cirrostratus or Cirrocumulus).

Code value	Cloud Type
0	no high clouds
1	Cirrus (filaments, strands or hooks not progressively invading the sky)
2	Dense Cirrus (patches or remains of Cumulonimbus)
3	Dense Cirrus (remains of anvil of Cumulonimbus)
4	Dense Cirrus (hooks or filaments progressively invading the sky)
5	Cirrus w/Cirrostratus or Cirrostratus alone (progressively invading the sky, less than 45 degrees above horizon)
6	Cirrus w/Cirrostratus or Cirrostratus alone (progressively invading the sky, more than 45 degrees above horizon)
7	Cirrostratus (veil covering celestial dome)
8	Cirrostratus (Not progressively invading the sky, not covering the celestial dome)
9	Cirrocumulus (alone or w/Cirrus, but Cirrocumulus is predominate. Not completely covering celestial dome)
A	High clouds not visible due to darkness, lower clouds, obscuration, etc.

Visibility (WMO Code Table 4377) – Horizontal visibility at the surface in kilometers, from which, in reporting visibility at sea, WMO Manual on Codes (Reg 12.2.1.3.2) states that the decile 90 – 99 shall be used.

Code	Distance
90	less than 0.05 km
91	0.05 km
92	0.2 km
93	0.5 km
94	1 km
95	2 km
96	4 km
97	10 km
98	20 km
99	50 or more km

Visibility Indicator – Defined in table below (not reported on pdf output).

Code	Definition
0	Estimated/Unknown
1	Measured

Present Weather (WMO Code Table 4561) – see Table D3 at http://www1.ncdc.noaa.gov/pub/data/vosclim/R2.5-imma_short.pdf

Past Weather (WMO Code Table 4561)- Defined in table below.

Code value	Definition
0	Cloud covering ½ or less of the sky throughout the appropriate period
1	Cloud covering more than ½ of the sky during part of the appropriate period and covering ½ or less during part of the period.
2	Cloud covering more than ½ of the sky throughout the appropriate period
3	Sandstorm, duststorm or blowing snow
4	Fog or ice fog or thick haze
5	Drizzle
6	Rain
7	Snow or rain and snow mixed
8	Shower(s)
9	Thunderstorm(s) with or without precipitation

Wind Direction – direction from which wind is blowing in degrees (e.g. 360 = north, 180 = south, 90 = east, etc.).

Wind Speed – wind speed given in tenths of a meter per second or knots depending on user specification (standard or metric option). Decimal is omitted.