

SOUTHWEST PACIFIC MARINE

This reference manual was prepared for use with punched card deck 112, produced from several classified sources of observational data, containing manuscript reports, such as ship weather observation logs and other original data.

One of the chief problems in using the various meteorological publications giving daily synoptic data was the selection of the reports for punching which would result in the most complete, reliable, and uniform data.

Every possible effort was made to secure all reports of daily observations in existence. Where published reports were not available, original records and microfilm of original records were in some cases secured. It is certain, however, that ship observations have been made for which records are not available at the present time.

Data for some areas are meager, simply because few observations were made, as those areas are removed from the regular trade routes and ships rarely enter them.

Ship observations taken in the Southwest Pacific area have been punched for about six years of record, starting with January 1932 and ending in the latter part of 1937.

WEATHER ELEMENTS PUNCHED

The number of weather elements reported varied greatly in different sources, and certain elements rarely appeared. However, when reported, the elements shown in the heading of the I.B.M. card form 728519, "Ship Observations in the International Code", which card appears on the right-hand side of this page, were punched.

GENERAL PRACTICES

Arbitrary ship numbers for part of the record were punched in columns 47, 48, 49, as a plotting medium in connection with the Southwest Pacific Map Project. However, this information no longer has any significance.

Wind force Beaufort 0 - 9, was punched in column 19. Beaufort force 10, 11, or 12 is indicated by a 9 punched in column 19 and either a 1, 2, or 3, respectively, punched in column 46.

In most cases, unless otherwise designated, "X's" were punched in the appropriate columns of the card to indicate one or more elements of an observation was missing. Occasionally, blank spaces were used to indicate missing data.

In addition to Greenwich Mean Time, which is punched in columns 15-16, of each observation reported, source time was punched in columns 50-51 from January 1932 through some time in 1935. Thereafter these columns were not punched.

Only columns 1 through 46 were utilized for the punching of weather data. Information in any other column has served its purpose and is no longer significant.

FORM OF PUNCH CARD USED

A sample of the card form used is shown below:

CARD CONTENT					SOURCE CONTENT	
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
1-2	Month	01-12	January - December		Jan.-Dec.	
3-4	Day	01-31	Day of month		01-31	
5-6	Year	32-37	1932 - 1937		1932-1937	
7	Day of Week	1-7	Day of week		1 - 7	
8	Quadrant of Globe	0-1-2-3 5-6-7-8	Division of globe		Same as Code	
9-11	Latitude	000-090	Angular distance north or south of equator		Tenths of a Degree	
12-14	Longitude	000-090	Distance east or west measured by the arc between two meridians, one of which passes through any given point and the other through a point chosen as standard of reference, usually Greenwich, Eng.		Tenths of a Degree	
15-16	Hour	00-23	0000-2359	Greenwich Mean Time.	0000-2359	
17-18	Wind Direction	00	Calm		Letters and Direction Arrows	
		02	North-northeast			
		04	Northeast			
		06	East-northeast			
		08	East			
		10	East-southeast			
		12	Southeast			
		14	South-southeast			
		16	South			
		18	South-southwest			
		20	Southwest			
		22	West-southwest			
		24	West			
		26	West-northwest			
		28	Northwest			
		30	North-northwest			
		32	North			
19	Wind Force	XX	Missing data	Both X's and blank used to indicate no data.	Blank or M	Knots and miles per hour converted to Beaufort before punching.
		Blank				
		0	Less than 1			
		1	1-3			
		2	4-7			
		3	8-12			
		4	13-18			
		5	19-24	When wind force was 10, 11, or 12, a 1, 2 or 3, respectively, was punched in column 46 and a 9 punched in column 19.	Knots or Miles per Hour	
		6	25-31			

CARD CONTENT					SOURCE CONTENT	
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
19	Wind Force	7	32-38		Knots or Miles per Hour	
		8	39-46			
		9	47-54			
		9*	55-63*			
		9*	64-75*			
		9*	Above 75*			
			*Code as "9" and add Gale, Storm or Hur- ricane, as appro- priate.			
		X Blank	Missing data	Both X and blank used to indicate no data.	Blank or M	
20-21	Present Weather	00	Cloudless (from no clouds up to but not including 1/10)		Different Symbols	
		01	Partly cloudy (from exactly 1/10 to ex- actly 5/10)			
		02	Cloudy (over 5/10 up to and including exactly 9/10)			
		03	Overcast (over 9/10)			
		04	Low fog, whether on ground or at sea			
		05	Haze (but visibility 1,000 meters, 1,100 yards or more)			
		06	Dust devils seen			
		07	Distant Lightning			
		08	Light fog (visibil- ity 1,000 meters, 1,100 yards or more)			
		09	Fog at a distance, but not at station (or ship)			
		10	Precipitation with- in sight			
		11	Thunder, without precipitation at station (or ship)			
		12	Dust storm within sight, but not at station (or ship)			
		13	Ugly, threatening sky			
		14	Squally weather			
		15	Heavy squalls in last three hours			
		16	Waterspouts seen in last three hours			
		17	Visibility reduced by smoke			

CARD CONTENT					SOURCE CONTENT	
Col- umns	item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
20-21	Present Weather	18	Blowing dust (visi- bility 1,000 meters, 1,100 yards or more)	<u>In last hour, but not at time of observation.</u>	Different Symbols	
		19	Signs of tropical storm or hurricane			
		20	Precipitation in any form			
		21	Drizzle			
		22	Continuous or inter- mittent rain			
		23	Continuous or inter- mittent snow			
		24	Continuous or inter- mittent rain and snow, mixed			
		25	Rain showers			
		26	Snow showers			
		27	Hail, or rain and hail, showers			
		28	Light or moderate thunderstorm	<u>With precipitation in last hour, but no precipitation at time of observation.</u>		
		29	Heavy thunderstorm			
		30	Duststorm or sand- storm			
		31	Duststorm or sand- storm, has decreased			
		32	Duststorm or sand- storm, no appreciable change			
		33	Duststorm or sand- storm, has increased	<u>Generally low.</u>		
		34	Line of duststorms			
		35	Storm of drifting snow			
		36	Light or moderate storm of drifting snow	<u>Generally high.</u>		
		37	Heavy storm of drift- ing snow			
		38	Light or moderate storm of drifting snow			
		39	Heavy storm of drift- ing snow	<u>But not at time of observation.</u>		
		40	Fog			
		41	Moderate fog in last hour			
		42	Thick or dense fog in last hour	<u>Has become thinner during last hour.</u>		
		43	Fog, sky discernible			
		44	Fog, sky not discern- ible	<u>No appreciable change during last hour.</u>		
		45	Fog, sky discernible			
		46	Fog, sky not discern- ible			

CARD CONTENT					SOURCE CONTENT	
Col- umns	item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
20-21	Present Weather	47	Fog, sky discerni- ble	} <u>Has begun or be- come thicker dur- ing last hour.</u>	Different Symbols	
		48	Fog, sky not dis- cernible			
		49	Fog in patches			
		50	Drizzle	} <u>Light drizzle.</u>		
		51	Intermittent			
		52	Continuous			
		53	Intermittent	} <u>Moderate drizzle.</u>		
		54	Continuous			
		55	Intermittent	} <u>Heavy drizzle.</u>		
		56	Continuous			
		57	Drizzle and fog			
		58	Light or moderate drizzle and rain			
		59	Heavy drizzle and light rain			
		60	Rain			
		61	Intermittent			
		62	Continuous			
		63	Intermittent			
		64	Continuous			
		65	Intermittent			
		66	Continuous			
		67	Rain and fog			
		68	Light or moderate			
		69	Heavy			
		70	Snow			
		71	Intermittent			
		72	Continuous			
		73	Intermittent			
		74	Continuous			
		75	Intermittent			
		76	Continuous			
		77	Snow and fog			
		78	Snow grains			
		79	Ice Crystals; or sleet (U.S. defini- tion)			
		80	Showers			
		81	Showers of light or moderate			
		82	Showers of heavy			
		83	Showers of light or moderate			
		84	Showers of heavy			
		85	Showers of light or moderate			
		86	Showers of heavy			
		87	Showers of snow pel- lets			
		88	Showers of light or moderate			
		89	Showers of heavy			

CARD CONTENT					SOURCE CONTENT	
Col- umns	item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
20-21	Present Weather	90	Thunderstorm with precipitation fall- ing	At time of observation.	Different Symbols	
		91	Rain and thunder in last hour, but only rain			
		92	Precipitation and thunder during last hour, but only snow, or rain and snow mixed			
		93	Light thunderstorm, without hail, but with rain or snow			
		94	Light thunderstorm, with small hail			
		95	Moderate thunderstorm, without hail, but with rain or snow			
		96	Moderate thunderstorm, with small hail			
		97	Heavy thunderstorm, without hail, but with rain or snow			
		98	Thunderstorm, combined with dust-storm			
		99	Heavy thunderstorm, with hail			
		XX Blank	Missing data	Both X's and blank used to indicate no data.	Blank or M	
22-23	Atmos- pheric Pressure	00-99	800 to 1099 milli- bars		Inches, Mil- limeters, Millibars	All pressures were reduced to sea level, standard gravity, and cor- rected for temperature.
		XX Blank	Missing data	Both X's and blank used to indicate no data.	Blank or M	
24	Visibility			Visibility in Miles		Various Units
				Objects are visible at	Objects not visible at	
		0		-	1/32 (55 yds.)	
		1		1/32 (55 yds.)	1/8 (220 yds.)	
		2		1/8 (220 yds.)	5/16 (550 yds.)	
		3		5/16 (550 yds.)	5/8 (1,100 yds.)	
		4		5/8 (1,100 yds.)	1-1/4 (2,200 yds.)	
		5		1-1/4 (2,200 yds.)	2-1/2 miles	
		6		2-1/2 miles	6 miles	
		7		6 miles	12 miles	
		8		12 miles	30 miles	
		9		30 miles	-	
		X Blank	Missing data	Both X and blank used to indicate no data.		Blank or M

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CARD CONTENT					SOURCE CONTENT	
Col- umns	item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
25-26	Air Tempera- ture	00-99	0° Fahrenheit to 99° Fahrenheit		-20 to 130	
		00-99	100° Fahrenheit to 199° Fahrenheit			
		01-99	-99° Fahrenheit to 1° Fahrenheit			
		XX Blank	Missing data	Both X's and blank used to indicate no data.	Blank or M	
27-28	Sea Tempera- ture	00-99	0° Fahrenheit to 99° Fahrenheit		Whole De- grees F.	
		XX Blank	Missing data	Both X's and blank used to indicate no data.	Blank or M	
29-30	Wet Bulb Tempera- ture	00-99	0° Fahrenheit to 99° Fahrenheit	This element rarely reported.	Whole De- grees F.	
		01-99	-1° Fahrenheit to -99° Fahrenheit			
		XX Blank	Missing data	Both X's and blank used to indicate no data.	Blank or M	
31	State of Sea		Height of wave, crest to trough:		Same as Code	
		0	0			
		1	Less than 1 foot			
		2	1 to 3 feet			
		3	3 to 5 feet			
		4	5 to 8 feet			
		5	8 to 12 feet			
		6	12 to 20 feet			
		7	20 to 40 feet			
		8	Over 40 feet			
		9	Confused			
		X Blank	Missing data	Both X and blank used to indicate no data.	Blank or M	
32	Form of Low Cloud	0	No low clouds		Same as Code	
		1	Cumulus of fine weather			
		2	Cumulus heavy and swelling, without anvil top			
		3	Cumulonimbus			
		4	Stratocumulus formed by the flattening of cumulus			
		5	Layer of stratus or stratocumulus			
		6	Low broken up clouds of bad weather			
		7	Cumulus of fine wea- ther and stratocumu- lus			

CARD CONTENT					SOURCE CONTENT	
Col- umns	item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
32	Form of Low Cloud	8	Heavy or swelling cumulus, or cumulo- nimbus, and strato- cumulus		Same as Code	
		9	Heavy or swelling cumulus (or cumulo- nimbus) and low ragged clouds of bad weather			
		X Blank	Missing data	Both X and blank used to indicate no data.	Blank or M	
33	Form of Middle , Cloud	0	No middle clouds		Same as Code	
		1	Typical altostratus, thin			
		2	Typical altostratus, thick (or nimbo- stratus)			
		3	Alto cumulus, or high stratocumulus, sheet at one level only			
		4	Alto cumulus in small isolated patches; individual clouds often show signs of evaporation and are more or less lenticu- lar in shape			
		5	Alto cumulus arranged in more or less parallel bands, or an ordered layer ad- vancing over sky			
		6	Alto cumulus formed by a spreading out of the tops of cumu- lus			
		7	Alto cumulus asso- ciated with altostra- tus or altostratus with a partially altocumulus character			
		8	Alto cumulus castel- latus or scattered cumuliform tufts			
		9	Alto cumulus in sev- eral sheets at dif- ferent levels, gen- erally associated with thick fibrous veils of cloud and a chaotic appearance of the sky			



CARD CONTENT					SOURCE CONTENT	
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
33	Form of Middle Cloud	<u>X</u> Blank	Missing data	Both X and blank used to indicate no data.	Blank or M	
34	Form of High Cloud	0	No high clouds (no cirrus clouds)		Same as Code	
		1	Cirrus, delicate, not increasing, scattered and iso- lated masses			
		2	Cirrus, delicate, not increasing, abundant, but not forming a continuous layer			
		3	Cirrus of anvil clouds, usually dense			
		4	Cirrus, increasing, generally in the form of hooks ending in a point or in a small tuft			
		5	Cirrus (often in po- lar bands) or cirro- stratus advancing over the sky, but not more than 45° above the horizon			
		6	Cirrus (often in po- lar bands) or cirro- stratus advancing over the sky and more than 45° above the horizon			
		7	Veil of cirrostratus covering the whole sky			
		8	Cirrostratus, not increasing and not covering the whole sky			
		9	Cirrocumulus pre- dominating, asso- ciated with a small quantity of cirrus			
		<u>X</u> Blank	Missing data	Both X and blank used to indicate no data.	Blank or M	
35	Total Amount of Clouds	0	Absolutely no clouds		Various Units	
		1	Less than one-tenth			
		2	One-tenth			
		3	Two- or three-tenths			

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CARD CONTENT					SOURCE CONTENT	
Col- umns	item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
35	Total Amount of Clouds	4	Four-, five-, six- tenths		Various Units	
		5	Seven- or eight- tenths			
		6	Nine-tenths			
		7	More than nine- tenths, but with openings			
		8	Sky fully covered			
		9	Sky obscured by fog, duststorm, etc.			
		X	Missing data			
		Blank				
36	Tempera- ture Difference (Air and Water)	0	More than 9° F.		Degrees Fahrenheit	
		1	6° to 9°			
		2	3° to 6°			
		3	1° to 3°			
		4	No difference or less than 1° F. higher			
		5	Less than 1° F.			
		6	1° to 3°			
		7	3° to 6°			
		8	6° to 9°			
		9	More than 9°			
		X	Missing data			
		Blank				
37	Character of Swell	0	No swell		Same as Code	
		1	Low swell, short or average length			
		2	Low swell, long			
		3	Moderate swell, short			
		4	Moderate swell, average length			
		5	Moderate swell, long			
		6	Heavy swell, short			
		7	Heavy swell, average length			
		8	Heavy swell, long			
		9	Confused swell			
		X	Missing data			
		Blank				
38	Direction of Swell	0	No sea or swell		C NE ENE, E, ESE SE SSE, S, SSW SW	
		1	Northeast			
		2	East			
		3	Southeast			
		4	South			
		5	Southwest			

CARD CONTENT					SOURCE CONTENT	
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
38	Direction of Swell	6	West		WSW, W, WNW	
		7	Northwest		NW	
		8	North		NNW, N, NNE	
		9	All directions or no definite direction			
		X Blank	Missing data	Both X and blank used to indicate no data.	Blank or M	
39	Past Weather	0	Clear or scattered clouds		Letters	
		1	Broken clouds or variable sky			
		2	Overcast			
		3	Sandstorm or dust- storm, or storm of drifting snow			
		4	Fog, or thick dust haze (visibility less than 1,000 me- ters, 1,100 yards)			
		5	Drizzle			
		6	Rain			
		7	Snow or sleet			
		8	Showers			
		9	Thunderstorm			
		X Blank	Missing data	Both X and blank used to indicate no data.	Blank or M	
40	Amount of Low Clouds	0	Absolutely no clouds		Various Units	
		1	Less than one-tenth			
		2	One-tenth			
		3	Two- or three-tenths			
		4	Four-, five-, six- tenths			
		5	Seven- or eight- tenths			
		6	Nine-tenths			
		7	More than nine-tenths but with openings			
		8	Sky fully covered			
		9	Sky obscured by fog, duststorm, etc.			
		X Blank	Missing data	Both X and blank used to indicate no data.	Blank or M	
41	Direction of Ship	0	No sea or swell or ship hove to		Same as Code	
		1	Northeast			
		2	East			
		3	Southeast			
		4	South			
		5	Southwest			
		6	West			
		7	Northwest			

CARD CONTENT					SOURCE CONTENT			
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices		
41	Direction of Ship	8	North	Both X and blank used to indicate no data.	Same as Code			
		9	All directions or no definite direction		Blank or M			
		X Blank	Missing data					
42	Speed of Ship	0	Ship stopped	Both X and blank used to indicate no data.	Knots			
		1	1 to 3 knots					
		2	4 to 6 knots					
		3	7 to 9 knots					
		4	10 to 12 knots					
		5	13 to 15 knots					
		6	16 to 18 knots					
		7	19 to 21 knots					
		8	22 to 24 knots					
		9	Over 24 knots					
		X Blank	Missing data		Blank or M			
		43	Character- istic of Pressure Change		0		Rising, then falling	Barometer now higher than, or the same as 3 hours ago.  Barometer now lower than 3 hours ago.
1	Rising, then steady; or rising, then ris- ing more slowly							
2	Rising unsteadily, or unsteady							
3	Rising steadily, or steady							
4	Falling or steady, then rising; or ris- ing, then rising more quickly							
5	Falling, then rising							
6	Falling, then steady; or falling, then falling more slowly							
7	Falling unsteadily, or unsteady							
8	Falling steadily							
9	Steady or rising, then falling; or falling, then falling more quickly							
X Blank	Missing data			Both X and blank used to indicate no data.	Blank or M			
44-45	Amount of Pressure Change			00-99	0 to 99 fifths of a millibar	Both X's and blank used to indicate no data.	Fifths of a Millibar	
		XX Blank	Missing data	Blank or M				

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CARD CONTENT					SOURCE CONTENT	
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
46	Wind Force	1	10 - whole gale	When wind force was 10, 11, or 12, a 1, 2, or 3, respectively, was punched in column 46, and a 9 was punched in column 19.	Description	
		2	11 - storm			
		3	12 - hurricane			
		Blank	9 or less		0 - 9	
47-49	Ship Number	000-999	Arbitrary ship number	An arbitrary ship number was punched in these columns for part of the record as a medium for plotting the Southwest Pacific maps. Having served its purpose, the information no longer has any significance.	000-999	
		Blank	Discontinued the punching of record ship number		Blank	
50-51	Hour	00-23	Source time	All source time converted to Greenwich Mean Time.	00-23	
52-80	In most cases, these columns were not used. However, if they were used the data are of no significance.					