

Appendix B

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
 Miss or blank is a missing value

SAN DIEGO, CA (32°44'N, 117°10'W) 13 feet (4 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE*														
Mean (millibars)	1018.5	1017.9	1016.6	1015.5	1014.5	1013.0	1013.3	1013.1	1012.2	1014.3	1016.8	1018.2	1015.3	48
TEMPERATURE (°F)														
Mean	57.1	58.4	59.5	62.1	64.1	66.8	70.7	72.2	71.2	67.4	62.1	57.7	64.1	48
Mean daily maximum	65.4	66.2	66.3	68.4	69.2	71.8	75.9	77.5	77.1	74.2	70.5	66.3	70.8	48
Mean daily minimum	48.3	50.0	52.2	55.3	58.4	61.4	65.1	66.5	64.8	60.2	53.2	48.5	57.0	48
Extreme (highest)	88	90	93	98	96	101	95	98	111	107	97	88	111	48
Extreme (lowest)	29	36	39	44	48	51	55	58	51	43	38	34	29	48
RELATIVE HUMIDITY														
Average percentage	60.5	54.0	41.0	29.7	19.7	5.3	7.7	6.3	-3.2	18.2	43.4	56.6	28.1	48
CLOUD COVER														
Percent of time clear	36.4	33.7	28.2	26.9	22.6	23.6	29.3	30.8	37.2	33.4	42.8	39.1	32.0	48
Percent of time scattered	18.3	17.6	19.5	19.2	17.5	16.7	20.1	20.9	18.8	18.6	18.5	19.8	18.8	48
Percent of time broken	17.7	19.1	21.0	19.8	16.3	12.4	13.6	13.9	12.5	15.3	16.4	17.0	16.2	48
Percent of time overcast	27.6	29.5	31.4	34.1	43.7	47.3	36.9	34.4	31.5	32.8	22.3	24.0	32.9	48
PRECIPITATION (inches)														
Mean amount	2.1	1.6	1.9	0.7	0.1	0.0	0.0	0.0	0.1	0.3	1.1	1.4	9.9	48
Greatest amount	9.0	5.4	6.9	3.7	1.7	0.8	0.2	2.1	1.9	1.7	5.8	6.6	19.4	48
Least amount	T	0.0	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	48
Maximum amount (24 hours)	2.5	1.7	2.1	1.4	1.4	0.4	0.2	1.4	0.9	1.0	2.0	2.1	2.5	48
Mean number of days	9	8	10	7	7	5	3	2	3	4	6	7	71	48
SNOW														
Mean amount	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	T	48
Greatest amount	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	T	48
Least amount	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48
Maximum amount (24 hours)	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	T	48
Mean number of days	Miss	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Miss	Miss	48
WIND														
Percentage with gales	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	48
Mean wind speed (knots)	5.3	5.7	6.6	6.9	7.0	6.8	6.6	6.5	6.3	5.7	5.2	4.9	6.1	48
Direction (percentage of observations)														
North	6.7	6.4	5.5	4.9	3.9	4.5	5.8	6.5	7.0	7.8	7.1	7.4	6.1	48
North Northeast	4.6	4.5	3.8	3.6	3.2	3.2	3.8	4.5	5.5	5.4	5.2	4.9	4.4	48
Northeast	5.5	5.2	4.3	3.4	2.3	2.1	2.1	2.9	3.3	4.8	5.2	5.3	3.9	48
East Northeast	4.9	4.5	3.8	2.7	1.8	1.0	0.7	1.2	1.8	3.5	4.7	4.6	2.9	48
East	4.2	3.9	3.6	2.5	1.3	0.8	0.4	0.7	1.5	2.4	4.4	4.2	2.5	48
East Southeast	4.0	3.8	3.6	2.5	1.5	0.8	0.4	0.5	0.9	1.9	3.7	3.8	2.3	48
Southeast	3.5	3.1	2.6	1.9	1.0	0.7	0.4	0.5	0.8	1.7	2.4	3.3	1.8	48
South Southeast	4.6	3.7	3.3	2.9	2.5	2.2	1.6	1.5	2.2	2.4	3.6	3.5	2.8	48
South	6.0	5.9	6.2	6.6	8.2	8.5	7.2	6.1	5.7	5.1	5.0	5.1	6.3	48
South Southwest	4.6	5.2	6.0	7.4	10.2	10.9	10.3	8.1	6.4	5.4	4.1	4.2	6.9	48
Southwest	4.0	4.3	5.8	7.4	10.0	10.3	9.2	7.5	5.9	5.2	4.1	3.8	6.5	48
West Southwest	3.6	4.5	6.5	7.1	10.5	9.2	7.2	6.9	5.1	4.7	3.8	3.4	6.1	48
West	4.8	5.4	7.4	8.6	9.5	8.2	8.1	8.3	6.8	5.9	4.5	4.3	6.8	48
West Northwest	10.1	11.8	14.7	17.3	16.9	18.1	20.4	21.3	18.3	14.7	11.9	9.6	15.5	48
Northwest	10.4	11.4	10.9	11.6	10.9	12.6	14.5	15.3	17.0	14.0	11.5	10.8	12.6	48
North Northwest	6.6	6.8	5.6	5.5	4.5	5.7	7.0	7.1	8.9	7.8	7.2	7.4	6.7	48
Calm	12.0	10.0	6.7	4.5	2.3	1.8	1.4	1.6	3.5	7.3	11.6	14.6	6.4	48
Direction (mean speed, knots)														
North	4.2	4.3	4.5	4.5	4.5	4.9	4.7	4.6	4.5	4.3	4.1	4.2	4.4	48
North Northeast	4.5	4.6	4.6	4.5	4.6	4.5	4.7	4.5	4.5	4.4	4.2	4.5	4.5	48
Northeast	4.6	4.2	4.3	4.3	4.3	4.1	4.2	4.1	4.3	4.2	4.3	4.7	4.3	48
East Northeast	4.4	4.5	4.4	4.1	4.3	4.1	3.9	3.7	4.0	4.2	4.3	4.6	4.3	48
East	4.1	4.1	4.0	4.1	3.7	3.4	3.1	3.7	3.8	3.8	3.9	4.3	4.0	48
East Southeast	5.2	5.3	5.3	5.4	5.1	4.5	4.1	4.5	4.8	5.4	5.1	5.0	5.1	48
Southeast	6.1	6.4	6.5	6.3	5.9	5.4	4.8	5.6	5.2	5.4	5.7	5.8	6.0	48
South Southeast	7.9	8.3	8.7	7.9	6.9	7.1	6.6	6.7	7.1	6.4	6.9	7.0	7.4	48
South	7.1	8.0	8.0	7.4	7.0	6.9	6.3	6.5	6.6	6.1	6.5	6.2	6.9	48
South Southwest	6.6	6.8	7.7	7.7	7.3	7.4	6.7	6.6	6.4	6.6	6.5	6.1	6.9	48
Southwest	6.2	7.1	7.6	7.6	7.6	7.4	6.9	7.0	6.8	7.0	6.4	5.9	7.1	48
West Southwest	6.5	6.9	7.9	7.9	7.7	7.1	6.6	6.7	6.8	7.0	6.4	5.8	7.1	48
West	6.3	6.9	8.1	7.9	7.6	6.9	6.8	6.7	6.7	7.0	6.2	6.3	7.1	48
West Northwest	7.6	7.9	8.8	8.7	8.1	8.0	7.8	8.0	8.0	7.9	7.7	7.5	8.0	48
Northwest	7.0	7.6	8.0	8.2	8.0	7.5	7.3	7.2	7.3	7.4	7.3	7.0	7.5	48
North Northwest	5.3	5.7	5.8	6.1	6.0	5.8	5.6	5.4	5.7	5.5	5.3	5.4	5.6	48
VISIBILITY														
Mean number of days with fog	11	9	8	6	6	7	6	7	9	11	11	11	102	48

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

LOS ANGELES, CA (33°56'N, 118°23'W) 100 feet (30.5 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE*														
Mean (millibars)	1018.5	1017.8	1016.4	1015.5	1014.3	1013.1	1013.3	1013.1	1012.4	1014.5	1017.0	1018.2	1015.3	44
TEMPERATURE (°F)														
Mean	56.2	57.5	58.1	60.6	62.8	66.0	69.3	70.4	69.7	66.6	61.7	57.3	63.0	49
Mean daily maximum	64.8	65.6	65.4	67.6	69.1	72.0	75.3	76.5	76.3	74.1	70.6	66.2	70.3	49
Mean daily minimum	47.1	48.9	50.3	53.0	56.1	59.5	62.7	63.8	62.6	58.7	52.4	47.9	55.3	49
Extreme (highest)	88	92	95	102	97	104	97	98	110	106	101	94	110	49
Extreme (lowest)	27	34	37	43	45	48	52	51	47	43	38	32	27	49
RELATIVE HUMIDITY														
Average percentage	59.8	52.6	39.1	29.9	17.8	5.6	8.3	6.2	-1.1	20.5	45.3	57.2	28.3	44
CLOUD COVER														
Percent of time clear	33.9	33.2	31.5	34.4	31.3	34.2	36.9	38.4	38.3	35.5	39.1	37.6	35.4	44
Percent of time scattered	19.3	18.5	21.0	20.0	17.8	16.4	20.9	21.1	19.2	20.5	20.7	20.0	19.6	44
Percent of time broken	16.1	16.2	16.6	15.7	13.9	11.9	14.2	13.8	13.0	14.5	15.7	15.4	14.7	44
Percent of time overcast	30.7	32.1	30.9	29.9	36.9	37.5	28.0	26.8	29.5	29.5	24.6	27.0	30.3	44
PRECIPITATION (inches)														
Mean amount	2.8	2.4	1.9	0.7	0.1	0.0	0.0	0.1	0.2	0.2	1.3	1.6	11.8	49
Greatest amount	12.7	11.0	6.3	4.5	2.5	0.7	0.3	2.4	1.9	1.7	7.4	5.7	29.4	49
Least amount	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	49
Maximum amount (24 hours)	4.5	3.9	3.1	1.2	1.6	0.7	0.2	2.1	1.6	1.7	5.6	2.8	5.6	49
Mean number of days	8	7	8	6	5	4	2	2	3	4	5	6	60	49
SNOW														
Mean amount	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	49
Greatest amount	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	49
Least amount	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49
Maximum amount (24 hours)	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	49
Mean number of days	Miss	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Miss	49
WIND														
Percentage with gales	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	44
Mean wind speed (knots)	5.8	6.5	7.0	7.4	7.2	6.9	6.7	6.6	6.3	6.0	5.8	5.7	6.5	44
Direction (percentage of observations)														
North	4.7	4.0	3.0	2.1	1.3	0.7	1.1	1.3	1.3	2.5	4.5	5.0	2.6	44
North Northeast	5.5	3.6	2.5	1.3	0.8	0.6	0.6	0.7	1.2	2.0	4.4	5.7	2.4	44
Northeast	7.9	5.6	4.0	2.3	1.4	1.1	0.7	1.0	1.7	3.2	6.3	8.3	3.6	44
East Northeast	9.6	7.3	6.2	4.8	3.2	2.0	1.5	1.6	2.6	5.2	8.4	9.3	5.1	44
East	11.5	10.5	8.8	7.5	5.8	4.2	3.3	3.7	5.3	8.0	10.5	11.1	7.5	44
East Southeast	8.0	7.8	6.2	5.9	4.3	4.0	3.2	3.1	4.5	6.2	7.6	8.2	5.7	44
Southeast	4.1	4.8	4.3	4.0	3.7	4.1	3.3	3.3	3.9	4.1	3.8	3.8	3.9	44
South Southeast	2.2	2.4	2.4	2.3	2.3	2.5	2.2	2.0	2.5	2.2	2.2	2.0	2.3	44
South	2.0	2.5	2.2	2.7	2.4	2.7	2.9	2.5	3.2	2.3	2.0	1.6	2.4	44
South Southwest	1.8	2.0	2.2	2.0	2.2	2.2	2.0	2.3	2.3	1.8	1.6	1.5	2.0	44
Southwest	3.9	5.2	6.3	7.4	9.2	9.8	8.3	8.5	7.4	6.5	4.3	3.3	6.7	44
West Southwest	12.2	15.7	21.6	26.6	31.7	33.9	34.8	33.7	29.4	23.4	14.9	11.3	24.1	44
West	11.0	13.4	16.7	19.3	21.3	20.9	23.3	22.7	20.5	17.5	13.4	10.9	17.6	44
West Northwest	3.1	3.1	3.7	3.6	3.5	3.6	3.8	3.7	3.2	3.7	3.0	3.0	3.4	44
Northwest	2.3	2.0	1.7	1.7	1.2	1.3	2.0	1.9	1.7	1.6	2.0	2.7	1.8	44
North Northwest	3.0	3.0	2.4	2.0	0.9	0.9	1.2	1.4	1.3	1.8	3.0	4.0	2.1	44
Calm	7.4	7.1	6.0	4.7	5.0	5.7	5.9	6.7	8.0	8.3	8.1	8.4	6.8	44
Direction (mean speed, knots)														
North	6.3	6.9	6.3	5.9	4.2	3.1	3.3	3.6	3.5	4.8	5.8	6.5	5.7	44
North Northeast	5.5	6.1	5.1	4.7	4.7	3.9	3.6	4.2	4.3	5.0	5.3	5.8	5.3	44
Northeast	5.4	5.5	5.2	5.2	4.5	4.3	3.9	3.7	4.3	4.9	5.2	5.4	5.2	44
East Northeast	5.4	5.2	5.0	5.1	4.7	4.4	4.3	4.5	4.4	4.7	5.0	5.2	5.0	44
East	5.4	5.4	5.3	5.0	4.8	4.6	4.5	4.4	4.6	4.5	5.0	5.1	5.0	44
East Southeast	5.3	5.7	5.4	5.2	5.1	5.0	4.7	4.9	4.9	4.5	5.1	5.1	5.1	44
Southeast	5.8	5.9	6.0	5.5	5.4	5.2	5.1	4.9	4.9	4.8	5.2	5.3	5.4	44
South Southeast	5.3	5.8	5.7	5.6	5.0	4.9	4.8	4.6	4.5	4.3	5.0	5.2	5.1	44
South	5.4	5.9	5.1	5.1	4.5	4.4	4.3	4.2	4.3	4.2	4.6	5.0	4.7	44
South Southwest	7.1	8.4	7.0	6.6	5.9	5.3	4.8	5.0	5.2	5.2	6.4	6.1	6.0	44
Southwest	6.9	7.4	7.9	7.6	7.6	7.2	6.9	6.6	6.8	6.6	6.7	6.4	7.1	44
West Southwest	7.6	8.3	9.2	9.2	8.9	8.6	8.4	8.4	8.4	8.1	7.7	7.4	8.5	44
West	8.1	8.9	9.8	9.9	9.1	8.6	8.3	8.4	8.3	8.4	8.2	7.8	8.7	44
West Northwest	7.1	7.5	8.3	8.3	7.4	6.6	5.9	6.0	6.3	6.5	7.4	6.9	7.0	44
Northwest	7.1	7.8	6.9	6.6	5.4	4.7	4.5	4.4	4.8	5.1	7.0	7.3	6.1	44
North Northwest	7.3	10.0	8.7	9.5	5.9	4.4	4.1	4.0	4.3	6.3	7.9	8.5	7.5	44
VISIBILITY														
Mean number of days with fog	11	10	8	7	6	6	7	8	9	11	11	11	105	49

* Sea level pressure is station pressure reduced to sea level

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

SAN FRANCISCO, CA (37°37'N, 122°23'W) 8 feet (2.4 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE*														
Mean (millibars)	1020.1	1019.3	1018.0	1017.5	1016.1	1014.5	1014.7	1014.7	1014.1	1016.6	1019.0	1020.3	1017.1	43
TEMPERATURE (°F)														
Mean	48.9	51.9	53.5	55.7	58.3	61.4	62.7	63.4	64.1	61.1	55.0	49.7	57.2	50
Mean daily maximum	55.6	59.1	60.8	63.7	66.4	69.9	71.3	71.9	73.3	70.2	62.9	56.2	65.2	50
Mean daily minimum	41.6	44.3	45.7	47.2	49.7	52.4	53.7	54.5	54.3	51.5	46.7	42.6	48.7	50
Extreme (highest)	72	77	85	92	97	106	105	100	103	99	85	75	106	50
Extreme (lowest)	26	30	31	36	39	43	44	45	41	37	31	24	24	50
RELATIVE HUMIDITY														
Average percentage	75.6	67.7	55.4	49.8	36.0	20.2	21.7	22.3	15.5	40.8	64.8	77.8	45.6	43
CLOUD COVER														
Percent of time clear	25.7	28.8	26.6	31.5	36.8	43.1	49.8	44.8	50.3	43.8	32.6	27.6	36.8	43
Percent of time scattered	16.3	16.2	19.0	20.4	20.6	20.1	19.6	20.6	17.7	18.4	18.0	16.6	18.6	43
Percent of time broken	17.1	18.2	21.0	20.2	18.1	14.3	13.7	15.1	14.1	16.1	18.8	17.0	17.0	43
Percent of time overcast	40.8	36.8	33.3	27.9	24.6	22.5	16.9	19.5	17.9	21.7	30.5	38.8	27.6	43
PRECIPITATION (inches)														
Mean amount	4.2	3.1	3.0	1.2	0.3	0.1	0.0	0.0	0.2	1.0	2.3	3.4	19.2	50
Greatest amount	11.2	9.5	9.0	6.3	3.8	0.8	0.3	0.6	2.3	7.3	7.9	12.3	38.3	50
Least amount	0.2	T	0.0	T	T	T	0.0	T	T	T	T	0.0	8.6	50
Maximum amount (24 hours)	5.5	2.2	1.9	2.3	1.5	0.8	0.3	0.3	2.2	2.6	2.3	3.1	5.5	50
Mean number of days	14	12	15	11	9	7	6	8	6	8	11	13	120	50
SNOW														
Mean amount	0.0	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	50
Greatest amount	1.5	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	1.5	50
Least amount	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50
Maximum amount (24 hours)	1.5	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	1.5	50
Mean number of days	Miss	Miss	Miss	0	0	0	0	0	0	0	0	Miss	Miss	50
WIND														
Percentage with gales	0.08	0.06	0.04	0.04	0.08	0.04	0.03	0.00	0.00	0.02	0.04	0.12	0.09	43
Mean wind speed (knots)	6.7	7.7	9.4	10.8	11.8	12.0	11.7	11.0	9.8	8.3	6.9	6.8	9.4	43
Direction (percentage of observations)														
North	4.3	3.3	2.5	1.5	0.8	1.0	1.0	0.9	1.3	2.2	3.5	4.7	2.2	43
North Northeast	5.6	3.8	2.3	1.3	1.0	1.2	1.2	1.1	1.9	2.7	3.2	5.0	2.5	43
Northeast	6.0	4.2	2.7	1.8	1.6	1.7	1.8	1.7	2.6	3.7	4.7	5.7	3.2	43
East Northeast	5.8	4.1	2.4	1.8	1.5	1.1	1.1	1.3	1.9	2.7	4.1	6.4	2.8	43
East	5.4	4.1	2.4	1.1	0.7	0.5	0.3	0.4	1.0	1.9	3.6	5.8	2.3	43
East Southeast	6.5	4.5	2.2	0.9	0.5	0.3	0.2	0.2	0.4	1.5	4.4	6.4	2.3	43
Southeast	9.4	6.6	4.2	2.0	0.7	0.5	0.2	0.3	0.7	2.2	6.6	8.9	3.5	43
South Southeast	6.8	5.2	3.9	2.2	1.1	0.5	0.2	0.5	1.0	2.6	5.4	6.9	3.0	43
South	7.2	6.2	5.5	3.7	2.4	1.4	0.8	1.2	2.3	4.2	6.5	7.4	4.1	43
South Southwest	5.1	5.4	4.7	3.8	2.9	2.4	1.0	1.5	2.3	3.6	5.0	4.5	3.5	43
Southwest	4.1	4.6	5.4	4.7	4.3	2.8	2.2	2.2	3.6	3.9	4.5	3.9	3.8	43
West Southwest	3.8	5.1	6.2	7.3	8.9	8.8	6.3	6.5	6.4	5.1	4.1	3.4	6.0	43
West	5.5	8.8	14.5	20.0	24.7	26.5	18.3	19.2	16.2	12.8	7.1	4.9	14.9	43
West Northwest	8.9	17.3	26.4	33.5	33.6	33.3	33.5	32.1	32.5	28.6	17.6	9.5	25.6	43
Northwest	3.7	6.5	7.9	9.9	12.0	15.0	26.7	25.3	20.2	13.3	7.5	4.4	12.7	43
North Northwest	1.5	2.0	1.8	1.2	1.0	1.5	3.1	3.1	2.5	1.8	1.7	1.7	1.9	43
Calm	10.9	8.2	5.0	3.5	2.8	2.1	2.7	3.0	3.8	7.5	10.6	10.6	5.9	43
Direction (mean speed, knots)														
North	7.6	8.1	8.3	8.2	6.2	5.5	6.4	6.5	6.7	8.9	7.3	8.5	7.8	43
North Northeast	6.4	6.7	7.8	7.1	6.8	7.0	6.7	6.8	6.3	6.6	6.5	7.0	6.8	43
Northeast	6.2	6.0	6.1	5.9	6.3	6.8	7.1	6.8	6.1	5.7	6.0	6.4	6.2	43
East Northeast	6.1	6.0	5.6	5.7	5.9	5.8	6.0	5.9	5.6	5.3	6.0	6.6	6.0	43
East	6.0	5.5	5.9	5.5	5.1	4.9	5.2	5.3	5.4	5.4	5.6	5.8	5.7	43
East Southeast	6.3	6.4	7.4	7.6	5.3	4.5	4.1	6.0	5.9	6.1	6.4	6.2	6.4	43
Southeast	7.6	8.0	8.9	9.1	6.5	5.7	5.8	5.8	5.9	7.1	7.2	7.5	7.6	43
South Southeast	7.1	7.1	7.8	8.3	7.1	7.4	5.8	5.7	5.6	6.8	6.7	6.8	7.1	43
South	8.0	8.4	8.7	8.6	7.0	6.2	5.9	5.3	5.6	6.9	6.7	7.4	7.5	43
South Southwest	8.8	9.8	9.0	9.1	10.0	8.9	8.3	7.6	7.4	6.7	7.0	8.2	8.5	43
Southwest	8.4	8.3	8.1	9.1	10.1	10.1	9.3	8.3	7.9	6.8	7.3	8.2	8.4	43
West Southwest	8.0	7.8	8.5	9.2	10.2	10.6	10.3	9.7	8.4	7.3	7.1	8.2	9.1	43
West	8.3	9.9	11.2	12.7	13.9	13.8	13.0	12.3	11.3	10.0	8.5	8.3	12.0	43
West Northwest	9.3	10.7	12.4	13.1	13.8	13.5	12.7	12.0	11.4	10.8	9.9	9.4	12.0	43
Northwest	8.2	9.4	10.5	11.4	11.9	12.3	12.8	12.4	11.5	10.3	8.9	9.0	11.4	43
North Northwest	7.1	7.7	8.1	8.0	8.0	8.7	10.0	9.9	9.2	8.3	7.0	8.5	8.6	43
VISIBILITY														
Mean number of days with fog	17	12	7	4	4	3	4	4	6	9	12	17	99	50

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

SACRAMENTO, CA (38°31'N, 121°30'W) 18 feet (5.5 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE*														
Mean (millibars)	1020.7	1019.1	1017.2	1015.9	1014.0	1012.0	1011.8	1012.2	1012.2	1015.3	1019.0	1020.7	1015.8	47
TEMPERATURE (°F)														
Mean	45.7	50.7	53.8	58.8	65.2	71.5	75.6	74.8	71.8	64.4	53.4	45.8	61.0	48
Mean daily maximum	53.0	59.8	64.1	71.4	79.8	87.3	92.9	91.5	87.5	77.9	63.6	53.2	73.6	48
Mean daily minimum	37.8	41.0	43.0	45.8	50.2	55.1	57.9	57.6	55.7	50.3	42.7	37.9	48.0	48
Extreme (highest)	70	76	88	93	105	115	114	109	108	101	87	72	115	48
Extreme (lowest)	20	23	26	32	34	41	48	48	43	35	26	18	18	48
RELATIVE HUMIDITY														
Average percentage	82.2	66.1	47.0	34.1	14.6	-5.4	-6.7	-2.5	-3.4	28.3	65.2	82.5	33.3	48
CLOUD COVER														
Percent of time clear	22.8	31.4	34.1	39.2	46.9	63.3	78.5	76.3	71.1	55.2	38	22.3	48.5	47
Percent of time scattered	12.9	16.4	18.6	19.8	21.5	19.0	13.1	13.7	15.2	18.5	17.6	14.1	16.7	47
Percent of time broken	12.4	16.3	17.4	18.7	17.5	11.4	6.3	7.4	8.7	12.3	14.4	12.4	12.8	47
Percent of time overcast	51.9	35.9	29.9	22.3	14.1	6.3	2.1	2.5	5.0	13.9	29.9	51.2	22.0	47
PRECIPITATION (inches)														
Mean amount	3.7	2.8	2.5	1.2	0.4	0.1	0.0	0.0	0.3	0.9	2.2	2.8	17.3	48
Greatest amount	9.6	8.7	8.1	4.2	3.1	1.2	0.7	0.6	2.7	7.5	7.4	12.6	33.4	48
Least amount	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	5.5	48
Maximum amount (24 hours)	3.0	2.6	1.8	2.1	1.5	1.1	0.7	0.6	1.7	3.7	2.4	2.8	3.7	48
Mean number of days	13	11	11	7	4	2	1	1	2	5	9	12	78	49
SNOW														
Mean amount	T	0.0	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	48
Greatest amount	T	2.0	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	2.0	48
Least amount	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48
Maximum amount (24 hours)	T	2.0	T	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	2.0	48
Mean number of days	Miss	Miss	0	0	0	0	0	0	0	0	0	Miss	Miss	49
WIND														
Percentage with gales	0.15	0.05	0.05	0.01	0.01	0.00	0.00	0.01	0.02	0.02	0.03	0.09	0.04	48
Mean wind speed (knots)	6.2	6.5	7.4	7.5	7.9	8.4	7.8	7.4	6.4	5.6	5.3	5.8	6.8	48
Direction (percentage of observations)														
North	5.9	5.1	3.7	3.0	2.8	2.0	0.9	1.2	3.2	5.3	5.8	5.8	3.7	48
North Northeast	1.8	1.6	1.3	0.7	0.6	0.4	0.4	0.3	0.8	1.4	1.6	2.1	1.1	48
Northeast	1.8	1.7	1.1	0.8	0.6	0.4	0.2	0.2	0.6	1.3	1.7	1.7	1.0	48
East Northeast	1.4	1.4	0.8	0.7	0.4	0.3	0.1	0.1	0.6	0.8	1.2	1.6	0.8	48
East	3.5	3.2	2.3	1.8	1.0	0.6	0.4	0.4	1.0	2.0	2.9	3.5	1.9	48
East Southeast	5.7	5.2	4.6	3.5	2.1	1.7	1.5	1.7	2.3	3.8	4.6	5.3	3.5	48
Southeast	13.5	11.1	10.0	7.9	6.1	5.0	5.7	6.5	7.1	7.2	9.4	11.5	8.4	48
South Southeast	11.6	10.2	9.2	7.1	6.4	7.8	10.0	9.9	8.0	6.3	8.0	10.9	8.8	48
South	7.0	8.3	9.6	10.2	12.3	14.6	18.3	17.5	12.1	8.3	6.1	6.3	10.9	48
South Southwest	3.4	5.3	9.5	12.6	17.7	21.2	25.0	23.2	15.7	8.4	4.0	2.9	12.5	48
Southwest	2.8	4.8	10.8	16.1	20.5	21.9	21.3	19.7	15.6	9.2	3.8	2.7	12.5	48
West Southwest	1.6	2.2	3.8	4.9	4.8	4.2	4.5	5.0	4.6	3.5	2.1	1.4	3.5	48
West	2.0	2.9	2.9	3.0	2.8	2.5	2.3	2.7	2.8	2.5	2.0	2.1	2.5	48
West Northwest	3.0	3.6	3.8	3.6	3.2	2.8	2.2	2.2	3.1	3.0	3.3	2.8	3.0	48
Northwest	7.4	8.4	8.2	7.9	6.7	5.4	2.5	2.6	5.0	7.7	9.0	8.2	6.6	48
North Northwest	10.1	9.9	9.0	8.8	6.6	5.4	1.7	1.9	6.6	10.2	11.6	11.0	7.7	48
Calm	17.9	15.3	10.0	8.0	6.0	4.5	3.7	5.4	11.3	19.3	23.1	20.3	12.1	48
Direction (mean speed, knots)														
North	6.9	7.1	8.2	7.8	8.0	7.3	5.6	5.4	6.7	6.8	6.8	6.6	7.0	48
North Northeast	5.4	5.5	6.1	6.6	6.0	6.9	4.5	5.2	5.1	5.6	5.5	5.6	5.6	48
Northeast	4.6	4.5	4.4	4.9	5.0	5.4	4.2	4.2	4.4	4.5	4.3	4.3	4.5	48
East Northeast	4.3	4.7	5.2	4.9	4.8	4.9	5.3	4.3	4.4	4.4	4.3	4.5	4.6	48
East	4.4	4.4	4.7	4.7	4.0	4.6	3.8	3.8	4.4	4.2	4.4	4.4	4.4	48
East Southeast	5.7	5.7	5.7	5.4	5.1	5.2	4.6	4.9	4.8	4.7	5.0	5.6	5.3	48
Southeast	8.4	8.1	7.8	6.6	5.9	5.8	5.8	5.7	5.7	5.8	7.2	7.9	7.0	48
South Southeast	10.1	9.6	8.8	7.5	6.5	6.4	6.3	6.5	6.1	6.7	8.3	9.9	7.9	48
South	7.4	7.2	7.4	7.1	7.4	8.0	7.5	7.4	6.6	6.2	6.4	6.8	7.2	48
South Southwest	7.8	8.2	8.6	9.1	9.6	10.1	9.4	9.1	8.5	7.9	7.7	7.2	9.0	48
Southwest	7.4	8.5	9.3	9.3	10.0	10.5	9.8	9.4	9.0	8.4	7.4	7.0	9.4	48
West Southwest	6.0	6.4	7.2	7.6	7.9	8.0	7.3	6.9	6.5	6.4	5.3	5.7	7.0	48
West	5.0	4.5	5.8	5.8	5.7	5.9	5.6	5.6	5.1	4.6	4.4	4.4	5.2	48
West Northwest	5.6	6.1	7.0	7.5	7.0	7.0	6.2	6.1	5.5	5.6	5.6	5.5	6.3	48
Northwest	7.3	8.3	9.6	9.6	9.0	8.8	6.8	6.7	7.2	7.3	7.3	7.3	8.1	48
North Northwest	8.7	9.8	10.5	10.6	9.8	9.6	7.0	6.8	8.4	9.1	8.3	8.7	9.2	48
VISIBILITY														
Mean number of days with fog	22	14	8	3	1	Miss	Miss	1	2	7	16	22	96	49

* Sea level pressure is station pressure reduced to sea level

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
 Miss or blank is a missing value

EUREKA, CA (40°48'N, 124°07'W) 59 feet (18 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
TEMPERATURE (°F)														
Mean	48.0	49.3	49.4	50.6	53.2	55.7	57.0	58.0	57.4	55.0	51.8	48.7	52.9	47
Mean daily maximum	54.1	55.3	55.2	56.0	58.1	60.2	61.4	62.4	62.8	60.9	58	54.9	58.3	47
Mean daily minimum	41.4	42.8	43.2	44.7	47.8	50.6	52.2	53.1	51.6	48.6	45.1	42.1	46.9	47
Extreme (highest)	78	80	76	80	82	81	76	82	86	87	78	77	87	47
Extreme (lowest)	26	27	30	34	36	41	46	47	42	32	29	21	21	47
PRECIPITATION (inches)														
Mean amount	6.6	5.0	5.3	2.8	1.6	0.6	0.1	0.3	0.7	2.7	5.6	6.4	38.1	47
Greatest amount	13.9	10.8	11.1	10.6	6.0	2.5	1.1	3.4	3.3	13.0	16.5	14.1	67.2	47
Least amount	0.6	0.1	1.1	0.3	0.0	T	0.0	T	T	0.0	0.2	0.5	21.0	47
Maximum amount (24 hours)	3.7	4.8	2.9	2.3	1.4	1.1	0.8	1.5	1.4	5.0	2.7	3.3	5.0	47
Mean number of days	17	16	19	14	12	9	7	7	8	12	15	16	152	32
SNOW														
Mean amount	0.1	0.1	0.0	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	47
Greatest amount	2.8	3.5	1.0	T	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.9	3.5	47
Least amount	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47
Maximum amount (24 hours)	1.5	2.0	0.9	T	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.9	2.0	47
Mean number of days	1	1	Miss	Miss	0	0	0	0	0	0	0	Miss	2	32
VISIBILITY														
Mean number of days with fog	13	11	10	12	13	16	22	23	21	21	15	15	192	32

SEATTLE (PORTAGE BAY), WA (47°39'N, 122°18'W) 20 feet (6.1 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
TEMPERATURE (°F)														
Mean	41.1	43.7	46.5	51.0	56.5	61.1	65.2	65.0	60.7	53.8	46.8	42.7	52.9	92
Mean daily maximum	45.3	48.9	52.7	58.3	64.3	69.0	74.1	73.5	68.1	59.6	51.4	46.7	59.4	92
Mean daily minimum	36.4	38.0	39.8	43.2	48.3	52.7	55.8	56.1	52.8	47.5	41.7	38.2	45.9	92
Extreme (highest)	67	70	76	87	92	100	100	97	92	82	73	65	100	92
Extreme (lowest)	0	1	22	30	35	40	44	46	36	19	0	9	0	92
PRECIPITATION (inches)														
Mean amount	5.0	3.7	3.2	2.1	1.6	1.4	0.6	0.8	1.6	2.9	5.1	5.3	33.9	92
Greatest amount	10.9	8.1	7.2	5.2	4.6	3.7	2.1	5.4	5.6	8.0	11.2	15.3	48.1	92
Least amount	0.6	0.3	0.4	0.1	0.3	0.0	0.0	T	0.0	0.1	0.5	1.0	19.5	92
Maximum amount (24 hours)	4.2	2.2	2.5	2.0	1.1	1.4	0.9	1.5	1.7	2.5	2.6	3.4	4.2	92
Mean number of days	28	25	27	24	23	23	17	19	20	25	26	28	285	25
SNOW														
Mean amount	4.0	1.9	0.6	0.1	0.0	0.0	0.0	0.0	0.0	T	0.6	1.4	8.5	92
Greatest amount	31.0	35.4	8.6	2.4	0.0	0.0	0.0	0.0	0.0	T	9.6	13.5	63.6	92
Least amount	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	92
Maximum amount (24 hours)	11.5	21.5	5.5	1.5	0.0	0.0	0.0	0.0	0.0	T	6.0	10.0	21.5	92
Mean number of days	7	4	3	1	0	0	0	0	0	Miss	1	3	19	25
VISIBILITY														
Mean number of days with fog	3	2	1	1	1	1	1	3	4	3	3	3	26	25

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

PORTLAND, OR (45°36'N, 122°36'W) 21 feet (6.4 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE*														
Mean (millibars)	1019.4	1018.2	1016.9	1018.0	1017.5	1017.3	1017.5	1016.7	1016.6	1018.1	1018.8	1019.4	1017.9	47
TEMPERATURE (°F)														
Mean	39.5	43.3	47.5	52.0	57.9	63.4	68.3	68.4	63.6	55.1	46.2	41.4	53.9	62
Mean daily maximum	44.7	50.0	55.6	61.2	67.7	73.2	79.5	79.5	74.5	64.0	52.4	46.3	62.5	62
Mean daily minimum	33.8	36.1	38.9	42.3	47.6	53.0	56.6	56.7	52.3	45.7	39.5	36.0	44.9	62
Extreme (highest)	65	71	83	90	100	102	107	107	105	92	73	65	107	62
Extreme (lowest)	-2	-3	19	29	29	39	43	44	34	26	13	6	-3	62
RELATIVE HUMIDITY														
Average percentage	69.2	56.9	43.5	55.1	50.5	48.1	49.5	42.3	40.6	55.7	62.8	68.6	53.7	47
CLOUD COVER														
Percent of time clear	11.6	11.3	10.2	12.1	14.0	19.0	37.8	33.4	33.9	18.9	10.4	7.9	18.4	47
Percent of time scattered	8.6	10.5	12.2	13.8	15.9	17.1	17.2	19.1	17.6	15.4	10.4	9.1	13.9	47
Percent of time broken	12.9	15.8	19.2	21.0	22.9	21.5	16.3	16.5	16.8	18.1	15.9	14.4	17.6	47
Percent of time overcast	66.8	62.4	58.4	53.2	47.2	42.3	28.8	31.0	31.7	47.5	63.3	68.5	50.2	47
PRECIPITATION (inches)														
Mean amount	5.3	4.0	3.7	2.4	2.0	1.5	0.5	0.8	1.6	3.0	5.3	6.5	37.3	62
Greatest amount	12.8	11.4	8.1	6.2	4.3	4.0	2.6	4.5	4.3	8.4	14.4	17.4	55.4	62
Least amount	0.0	0.6	1.1	0.5	0.1	0.0	0.0	T	T	0.1	0.3	1.3	22.4	62
Maximum amount (24 hours)	2.4	1.8	2.0	1.8	1.4	1.9	1.0	1.4	2.2	2.4	2.4	3.9	2.4	62
Mean number of days	22	19	21	19	16	13	7	8	11	16	21	23	196	48
SNOW														
Mean amount	3.3	1.3	0.5	T	T	0.0	0.0	0.0	0.0	0.0	0.5	1.5	7.0	48
Greatest amount	41.4	13.2	12.9	T	T	0.0	0.0	0.0	0.0	0.0	8.2	15.7	44.3	48
Least amount	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	48
Maximum amount (24 hours)	9.3	6.1	7.6	T	T	0.0	0.0	0.0	0.0	0.0	7.0	8.0	9.3	48
Mean number of days	6	3	2	1	Miss	0	0	0	0	0	1	4	17	48
WIND														
Percentage with gales	0.04	0.04	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.09	47
Mean wind speed (knots)	8.6	8.0	7.2	6.4	6.2	6.2	6.6	6.1	5.7	5.7	7.5	8.4	6.9	47
Direction (percentage of observations)														
North	1.3	1.6	2.6	3.8	5.7	8.2	9.6	8.2	5.3	2.9	1.5	1.5	4.4	47
North Northeast	0.8	0.8	1.1	1.2	2.0	2.2	2.7	2.4	2.1	1.3	0.8	0.9	1.5	47
Northeast	1.0	1.0	1.1	2.0	1.8	1.8	1.7	1.8	1.5	1.3	1.0	0.9	1.4	47
East Northeast	2.1	2.1	2.4	2.3	2.2	1.8	1.6	1.5	2.0	1.5	1.3	1.5	1.8	47
East	8.3	7.5	6.1	4.8	3.7	2.4	1.7	1.8	3.8	4.2	5.1	6.8	4.7	47
East Southeast	25.4	22.7	15.0	8.5	4.8	3.4	1.8	2.5	6.2	12.5	20.6	24.8	12.3	47
Southeast	13.7	12.0	7.6	4.4	3.0	1.8	1.1	2.3	4.4	8.6	12.8	14.3	7.1	47
South Southeast	3.8	3.5	3.6	3.1	2.3	1.9	1.4	1.8	2.9	4.1	4.8	3.9	3.1	47
South	8.1	7.6	8.5	7.9	5.8	5.1	2.7	3.8	5.0	7.1	9.0	7.8	6.5	47
South Southwest	8.6	9.3	9.6	7.9	5.6	4.9	2.1	2.8	4.6	6.2	8.8	9.0	6.6	47
Southwest	4.2	4.4	5.1	5.2	4.2	3.0	1.6	2.1	3.4	3.9	4.5	4.5	3.8	47
West Southwest	2.6	2.5	4.0	4.6	3.9	2.9	2.3	2.1	3.7	3.6	3.1	2.7	3.2	47
West	2.8	3.5	4.8	5.7	5.7	5.2	4.5	4.8	6.4	5.8	4.1	3.0	4.7	47
West Northwest	3.7	4.8	7.2	9.6	12.0	11.6	12.3	12.4	11.8	8.2	5.0	3.5	8.5	47
Northwest	2.9	3.8	6.0	10.6	16.0	19.2	25.2	23.7	15.1	8.4	4.3	3.1	11.6	47
North Northwest	1.5	2.0	3.6	6.9	12.1	16.1	22.1	18.6	10.2	5.0	2.1	1.9	8.6	47
Calm	9.5	11.2	11.7	11.6	9.4	8.7	6	7.7	11.8	15.6	11.6	10.1	10.4	47
Direction (mean speed, knots)														
North	3.8	3.9	4.8	5.1	5.6	6.2	6.0	5.7	5.3	4.8	4.5	4.2	5.5	47
North Northeast	4.4	4.4	4.7	4.7	4.8	5.0	4.9	4.8	5.0	4.8	4.6	4.8	4.8	47
Northeast	4.7	4.7	4.9	4.6	4.8	4.7	4.8	4.7	5.6	4.6	4.5	5.0	4.8	47
East Northeast	9.3	6.9	6.2	5.8	5.6	5.3	5.6	5.8	8.1	6.5	6.7	7.3	6.6	47
East	11.6	9.9	8.2	7.0	5.6	4.9	5.3	5.1	8.6	8.0	10.4	11.1	8.9	47
East Southeast	10.6	9.9	8.6	7.3	6.4	5.7	5.8	5.9	6.7	8.0	10	10.8	9.3	47
Southeast	9.1	9.2	8.1	6.5	6.0	5.8	5.9	5.4	5.6	6.8	8.3	9.0	8.0	47
South Southeast	7.6	8.0	7.6	6.8	6.8	6.1	6.3	5.8	5.6	6.3	7.0	7.1	6.9	47
South	10.5	9.9	9.6	8.7	7.6	6.8	6.6	6.4	6.6	7.9	9.4	9.9	8.7	47
South Southwest	12.4	12.4	11.4	10.1	8.6	8.5	8.5	7.6	8.4	9.5	11.1	12.3	10.7	47
Southwest	10.2	10.6	10.0	9.0	8.2	7.9	7.3	7.2	6.8	7.3	9.0	9.9	8.9	47
West Southwest	7.4	7.6	7.8	7.4	7.1	7.1	6.3	5.9	5.6	5.2	6.4	6.8	6.7	47
West	4.9	5.7	6.2	6.3	6.1	6.0	5.6	5.5	5.0	4.7	5.1	5.3	5.5	47
West Northwest	5.5	6.0	6.6	6.8	6.8	7.0	7.1	6.7	6.3	5.6	5.8	5.6	6.5	47
Northwest	5.7	6.2	6.8	7.0	7.2	7.3	7.6	7.2	6.7	6.0	5.8	6.0	7.0	47
North Northwest	5.6	5.3	6.2	6.9	7.2	7.5	7.8	7.4	6.9	6.2	5.5	5.7	7.2	47
VISIBILITY														
Mean number of days with fog	15	12	9	7	5	4	3	5	12	18	17	16	123	48

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
 Miss or blank is a missing value

ASTORIA, OR (46°09'N, 123°53'W) 8 feet (2.4 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE*														
Mean (millibars)	1017.6	1017.5	1015.9	1018.0	1018.0	1018.1	1018.9	1018.0	1017.3	1017.7	1017.2	1018.1	1017.7	43
TEMPERATURE (°F)														
Mean	42.3	44.4	45.7	48.3	52.8	57.1	60.3	60.9	58.7	52.9	46.9	43.0	51.2	43
Mean daily maximum	47.9	51.0	53.0	55.8	60.4	64.1	67.6	68.7	67.7	61.2	53.4	48.6	58.3	43
Mean daily minimum	36.2	37.3	37.8	40.3	44.7	49.5	52.5	52.6	49.2	44.2	39.9	36.9	43.5	43
Extreme (highest)	67	72	73	83	87	93	100	96	95	85	71	64	100	43
Extreme (lowest)	11	9	22	29	30	37	39	39	33	26	15	6	6	43
RELATIVE HUMIDITY														
Average percentage	51.4	49.8	34.1	54.5	54.8	55.9	63.7	54.8	47.6	52.0	46.7	56.5	51.9	47
CLOUD COVER														
Percent of time clear	11.5	11.7	9.3	10.1	10.1	9.8	18.3	16.9	23.5	16.5	10.8	10.0	13.3	40
Percent of time scattered	10.2	11.0	12.9	14.1	15.8	15.9	16.3	18.2	18.9	17.0	12.6	12.6	14.6	40
Percent of time broken	13.1	14.6	17.5	19.0	20.9	18.2	15.5	15.8	16.1	15.6	16.1	15.2	16.4	40
Percent of time overcast	65.2	62.7	60.4	56.9	53.2	56.2	49.9	49.1	41.6	50.9	60.5	62.2	55.6	40
PRECIPITATION (inches)														
Mean amount	9.9	7.5	7.0	4.9	2.9	2.5	1.1	1.3	2.7	5.9	10.3	10.5	67.0	43
Greatest amount	18.9	21.8	13.4	9.4	6.6	5.4	4.3	5.2	6.9	12.5	17.4	16.5	87.3	43
Least amount	0.6	1.3	0.9	1.3	0.3	0.5	0.0	0.0	0.0	0.5	1.4	2.6	41.5	43
Maximum amount (24 hours)	4.5	2.8	2.5	2.7	1.7	2.0	1.7	1.6	2.4	3.5	3.6	3.5	4.5	43
Mean number of days	23	21	23	22	20	19	16	15	15	19	23	24	240	43
SNOW														
Mean amount	2.1	0.4	0.5	0.0	T	0.0	0.0	0.0	0.0	T	0.2	1.1	4.3	42
Greatest amount	26.3	4.0	6.7	1.1	T	0.0	0.0	0.0	0.0	T	4.6	19.0	27.3	42
Least amount	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42
Maximum amount (24 hours)	10.8	4.0	4.5	1.0	T	0.0	0.0	0.0	0.0	T	4.3	5.7	10.8	42
Mean number of days	4	2	2	1	Miss	0	0	0	0	Miss	1	3	13	43
WIND														
Percentage with gales	0.12	0.05	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.08	0.09	0.13	45
Mean wind speed (knots)	8.0	7.7	7.7	7.5	7.4	7.4	7.5	7.0	6.5	6.4	7.5	7.8	7.4	45
Direction (percentage of observations)														
North	1.3	1.9	2.2	2.1	2.4	2.2	2.3	2.3	2.5	2.1	1.2	1.0	1.9	45
North Northeast	1.6	1.5	1.7	1.3	1.0	0.8	0.4	0.8	2.0	1.8	1.4	1.1	1.3	45
Northeast	4.9	4.4	3.3	1.8	1.3	0.9	0.6	0.7	2.8	3.9	4.1	4.5	2.7	45
East Northeast	11.4	10.1	4.9	2.7	1.5	1.0	0.7	0.7	3.2	6.0	9.2	11.5	5.2	45
East	16.5	12.5	7.6	5.2	2.8	2.1	1.2	1.9	4.4	8.2	13.7	16.2	7.7	45
East Southeast	11.5	10.4	9.1	7.4	5.5	4.1	3.4	4.8	7.7	11.1	13.0	13.9	8.5	45
Southeast	7.1	7.3	9.6	8.4	6.6	5.7	4.7	6.5	9.3	11.1	9.6	8.5	7.9	45
South Southeast	4.0	4.7	5.5	5.0	3.9	3.8	3.0	3.7	5.2	5.7	5.8	4.5	4.5	45
South	7.8	8.6	8.6	6.6	5.5	5.1	4.3	5.4	6.4	7.7	8.4	7.5	6.8	45
South Southwest	7.7	8.0	8.0	7.4	6.3	6.6	5.4	6.7	7.6	7.8	7.4	6.5	7.1	45
Southwest	5.8	6.3	7.8	9.5	10.2	11.3	10.4	11.3	9.4	6.9	5.2	4.9	8.3	45
West Southwest	4.1	4.3	5.6	8.6	9.6	9.6	9.2	9.6	6.7	4.3	3.8	4.0	6.6	45
West	3.9	4.4	6.2	8.3	10.4	10.3	10.3	8.6	5.2	3.4	3.2	3.7	6.5	45
West Northwest	2.3	3.0	5.6	8.4	11.1	12.2	14.2	10.9	6.4	3.4	2.7	2.8	7.0	45
Northwest	1.4	2.6	5.1	8.0	12.0	13.9	18.3	14.5	8.8	4.5	1.8	1.2	7.7	45
North Northwest	0.9	1.5	2.5	3.3	4.2	5.9	7.4	5.5	4.1	2.4	0.8	0.7	3.3	45
Calm	7.7	8.6	6.9	6.3	6.3	5.5	5.4	6.8	8.8	10.2	8.3	7.8	7.4	45
Direction (mean speed, knots)														
North	4.5	4.9	5.5	6.1	6.1	6.7	6.7	6.1	5.7	5.5	5.0	5.2	5.8	45
North Northeast	6.1	6.1	6.9	6.9	6.7	6.0	7.6	6.2	7.4	7.0	6.5	6.2	6.7	45
Northeast	7.1	7.5	7.9	7.9	7.0	6.9	7.4	7.1	8.6	8.2	7.5	7.9	7.7	45
East Northeast	7.6	7.6	7.5	7.1	6.3	5.6	5.8	6.3	7.5	7.1	7.2	7.5	7.3	45
East	7.1	6.7	5.9	5.3	4.2	4.0	4.1	4.0	5.3	5.7	6.4	6.8	6.2	45
East Southeast	6.6	6.1	5.5	5.1	4.4	4.3	4.3	4.2	4.6	5.0	5.8	6.3	5.5	45
Southeast	5.8	5.9	5.5	5.0	4.7	4.4	4.3	4.4	4.5	4.8	5.6	6.1	5.1	45
South Southeast	8.4	8.2	7.5	6.5	5.7	5.4	5.2	5.1	5.5	6.9	8.2	8.4	6.9	45
South	13.1	12.4	10.9	9.3	7.2	6.7	6.3	6.4	7.5	9.4	12.1	12.9	10.0	45
South Southwest	14.0	12.9	11.7	10.2	8.8	8.0	7.4	7.6	8.7	10.2	13.2	13.7	10.7	45
Southwest	11.9	10.8	10.2	9.4	8.6	8.0	7.0	7.2	7.7	8.7	11.2	11.8	8.9	45
West Southwest	10.5	9.5	8.9	8.5	7.8	7.4	6.8	6.7	6.8	7.5	9.1	10.1	7.9	45
West	9.3	8.5	8.7	8.1	7.8	7.5	7.3	6.8	6.6	6.6	8.8	9.6	7.8	45
West Northwest	10.1	9.7	10.2	9.5	9.4	9.2	9.5	9.5	9.0	8.2	10.6	10.7	9.5	45
Northwest	8.6	8.7	9.9	10.7	10.6	10.5	10.5	10.3	9.8	8.7	9.9	10.3	10.2	45
North Northwest	6.1	7.0	7.9	8.6	9.0	9.6	9.3	9.1	8.5	7.5	7.9	7.5	8.7	45
VISIBILITY														
Mean number of days with fog	18	16	15	14	12	13	13	17	18	20	17	18	191	43

* Sea level pressure is station pressure reduced to sea level

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

SEATTLE-TACOMA, WA (47°27'N, 122°18'W) 450 feet (137 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE*														
Mean (millibars)	1017.5	1016.9	1016	1017.3	1017.3	1017.2	1017.9	1017	1017	1017.8	1017.3	1017.5	1017.2	48
TEMPERATURE (°F)														
Mean	39.7	42.9	45.3	49.4	55.6	60.7	65.0	64.9	60.5	52.6	45.2	40.9	51.9	48
Mean daily maximum	44.5	48.8	52.2	57.3	64.3	69.6	75.1	74.6	69.4	59.5	50.4	45.4	59.3	48
Mean daily minimum	34.5	36.6	37.9	41.0	46.3	51.3	54.4	54.7	51.2	45.3	39.5	35.8	44.1	48
Extreme (highest)	64	70	75	85	93	96	100	99	98	89	74	64	100	48
Extreme (lowest)	0	1	11	29	28	38	43	44	35	28	6	6	0	48
RELATIVE HUMIDITY														
Average percentage	49.7	44.5	35.3	47.7	48.3	46.8	53.6	45.2	44.6	53.2	48	49.6	47.2	48
CLOUD COVER														
Percent of time clear	9.5	10.6	11.2	11.1	12.9	15.5	31.5	28.4	27.7	15.0	8.9	7.9	15.9	48
Percent of time scattered	9.3	11.2	14.1	15.2	18.7	18.5	18.5	19.0	17.7	15.4	11.1	9.7	14.9	48
Percent of time broken	13.6	15.7	19.2	21.7	23.5	23	17.9	18.1	17.9	19.1	16.1	15.3	18.4	48
Percent of time overcast	67.6	62.4	55.5	52.0	44.9	43.0	32.1	34.6	36.7	50.4	63.9	67.1	50.8	48
PRECIPITATION (inches)														
Mean amount	5.6	4.1	3.7	2.5	1.6	1.4	0.7	1.1	1.8	3.4	5.9	5.8	38.0	48
Greatest amount	12.9	9.1	8.4	6.5	4.7	3.8	2.3	4.5	5.9	7.7	10.7	11.8	55.1	48
Least amount	0.5	0.3	0.5	0.3	0.1	0.1	T	0.0	T	0.3	0.7	1.3	23.7	48
Maximum amount (24 hours)	2.9	2.9	2.7	2.6	1.8	1.7	0.8	1.6	1.6	2.7	3.4	2.1	3.4	48
Mean number of days	23	19	21	19	16	14	10	11	12	17	22	23	207	48
SNOW														
Mean amount	4.9	1.7	1.3	0.1	T	0.0	0.0	0.0	0.0	0.0	0.9	2.6	11.6	48
Greatest amount	57.2	13.1	18.2	2.3	T	0.0	0.0	0.0	0.0	2.0	17.5	22.1	60.6	48
Least amount	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	48
Maximum amount (24 hours)	20.0	7.0	6.0	1.2	T	0.0	0.0	0.0	0.0	2.0	7.8	9.3	20.0	48
Mean number of days	7	4	3	1	Miss	0	0	0	0	Miss	2	5	22	48
WIND														
Percentage with gales	0.03	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.13	48
Mean wind speed (knots)	8.4	8.3	8.4	8.2	7.7	7.6	7.2	6.9	7.1	7.4	8.2	8.4	7.8	48
Direction (percentage of observations)														
North	6.4	7.2	7.5	6.7	8.3	9.2	9.9	10.2	12.8	9.8	6.7	6.0	8.4	48
North Northeast	7.6	7.8	7.2	6.6	7.9	8.3	10.3	9.0	10.9	9.1	6.9	7.4	8.3	48
Northeast	4.8	4.2	4.1	4.2	4.6	4.3	5.0	5.1	5.4	4.2	3.8	4.0	4.5	48
East Northeast	2.8	2.9	1.8	1.5	1.2	1.0	1.3	1.2	1.8	1.6	2.3	2.6	1.8	48
East	6.5	5.3	4.0	2.6	1.5	1.0	0.8	1.1	2.2	3.0	4.6	6.0	3.2	48
East Southeast	9.5	7.8	6.2	3.6	2.3	1.4	0.8	1.5	3.0	6.2	8.3	9.7	5.0	48
Southeast	9.3	7.9	6.9	5.8	3.6	2.7	1.9	2.9	5.4	8.6	11.0	10.8	6.4	48
South Southeast	7.2	7.5	6.7	5.7	4.6	3.5	2.8	3.7	4.7	7.1	8.6	8.5	5.9	48
South	14.1	13.7	12.7	12.4	10.6	10.1	8.1	9.7	10.4	13.3	16.1	15.5	12.2	48
South Southwest	13.7	13.7	15.1	15.9	14.9	15.2	13.1	12.5	11.0	11.5	12.4	13.1	13.5	48
Southwest	6.9	8.1	10.7	13.3	13.4	15.2	13.2	11.3	7.7	7.0	6.3	6.5	10.0	48
West Southwest	1.9	2.5	4.0	5.6	6.4	6.9	7.0	6.6	3.8	2.7	2.0	1.9	4.3	48
West	1.0	1.5	1.9	3.2	4.2	4.9	5.8	5.5	3.2	2.1	1.3	1.0	3.0	48
West Northwest	0.6	1.1	1.7	2.5	3.8	4.0	4.6	4.7	3.1	2.3	0.8	0.7	2.5	48
Northwest	0.8	1.2	2.0	2.5	3.4	3.4	4.1	3.8	2.6	2.1	1.0	0.6	2.3	48
North Northwest	1.7	2.7	3.7	3.9	5.6	5.2	7.2	6.2	6.1	3.8	2.2	1.5	4.1	48
Calm	5.5	5.5	4.3	4.4	4.2	3.9	4.3	5.0	6.2	6.1	5.9	5.0	5.0	48
Direction (mean speed, knots)														
North	8.3	8.3	8.4	8.6	8.5	8.3	8.2	7.8	8.3	7.8	8.2	7.8	8.2	48
North Northeast	7.9	7.9	8.0	8.2	8.2	8.1	8.0	7.7	8.0	8.3	7.8	7.8	8.0	48
Northeast	7.1	7.4	7.2	7.9	8.1	8.0	7.9	7.5	7.5	7.2	7.3	7.0	7.5	48
East Northeast	7.1	6.8	7.0	6.8	6.5	5.9	6.5	6.0	5.5	5.7	6.4	6.6	6.5	48
East	7.3	7.2	6.5	6.4	5.3	5.2	4.0	4.4	5.3	6.0	6.6	7.0	6.5	48
East Southeast	7.7	7.4	7.0	6.4	5.8	5.5	5.4	5.2	5.7	6.5	7.7	7.6	7.0	48
Southeast	7.0	6.9	6.9	6.8	6.7	6.3	6.2	6.2	6.2	6.6	7.2	7.1	6.8	48
South Southeast	7.5	7.4	7.3	7.1	6.6	6.4	6.6	6.2	6.4	6.8	7.5	7.6	7.1	48
South	9.8	9.4	9.0	8.5	7.4	7.2	6.7	6.7	7.3	8.5	9.9	9.8	8.6	48
South Southwest	12.1	11.8	11.1	10.1	9.0	8.5	7.8	7.9	8.8	10.1	11.5	12.0	10.1	48
Southwest	12.8	12.4	12.0	11.1	9.8	9.3	8.3	8.2	9.2	10.4	11.7	13.0	10.4	48
West Southwest	8.9	8.7	9.6	8.7	8.1	7.8	7.1	7.1	7.0	7.4	8.9	8.9	8.0	48
West	4.3	5.5	6.3	6.6	6.3	6.3	6.3	6.1	5.9	4.8	5.2	4.5	6.0	48
West Northwest	5.4	5.5	6.1	6.3	6.3	6.5	6.8	6.5	5.9	5.6	4.8	5.1	6.2	48
Northwest	6.1	6.5	7.0	7.4	7.2	7.1	7.1	6.9	6.3	6.3	6.8	6.3	6.9	48
North Northwest	8.2	8.1	8.0	8.7	8.6	8.1	8.4	8.3	8.0	7.2	7.3	7.3	8.1	48
VISIBILITY														
Mean number of days with fog	18	15	13	10	8	8	8	11	16	19	19	19	164	48

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
 Miss or blank is a missing value

QUILLAYUTE, WA (47°57'N, 124°33'W) 179 feet (54.6 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE*														
Mean (millibars)	1016.6	1016.3	1014.8	1017.0	1017.5	1017.8	1018.9	1017.8	1017.8	1017.8	1015.4	1016.9	1017.1	29
TEMPERATURE (°F)														
Mean	40.4	42.4	44.0	46.7	51.7	55.9	59.3	59.7	57.1	50.4	44.3	40.7	49.4	29
Mean daily maximum	46.3	49.3	51.9	55.1	60.5	64.2	68.2	69.0	67.1	59.1	50.8	46.2	57.4	29
Mean daily minimum	34.1	34.9	35.7	37.8	42.4	46.9	49.8	49.9	46.6	41.2	37.4	34.6	41.0	29
Extreme (highest)	65	73	72	83	92	96	97	99	97	83	69	64	99	29
Extreme (lowest)	7	11	19	24	29	33	38	36	28	24	5	7	5	29
RELATIVE HUMIDITY														
Average percentage	41.3	37.8	22.8	45.4	50.1	53.0	64.3	53.4	52.5	52.9	29.2	44.4	45.7	29
CLOUD COVER														
Percent of time clear	12.0	13.2	11.9	9.8	10.4	10.9	16.3	20.0	25.0	16.8	8.8	12.5	14.0	29
Percent of time scattered	9.2	11.3	13.7	12.6	14.9	14.4	16.3	16.3	18.0	16.4	12.6	11.8	14.0	29
Percent of time broken	11.8	14.1	16.2	18.5	19.5	17.6	14.8	16.9	15.1	15.7	16.3	14.8	15.9	29
Percent of time overcast	67.1	61.3	58.1	59.1	55.2	57.1	52.7	46.8	41.8	51.1	62.3	60.8	56.0	29
PRECIPITATION (inches)														
Mean amount	13.7	12.0	10.9	7.7	5.2	3.1	2.3	2.8	4.6	10.0	14.2	14.8	101.7	29
Greatest amount	23.9	20.6	21.8	13.9	12.4	8.5	11.0	15.0	10.9	27.1	29.1	27.8	131.6	29
Least amount	1.2	0.8	1.8	2.9	1.0	0.4	0.3	0.3	0.1	1.3	4.4	3.6	60.2	29
Maximum amount (24 hours)	7.1	5.0	4.0	2.6	3.5	1.5	5.3	4.2	3.2	4.8	5.2	6.7	7.1	29
Mean number of days	23	20	22	22	20	19	16	15	15	20	23	24	239	29
SNOW														
Mean amount	4.6	2.9	1.6	0.3	T	0.0	0.0	0.0	T	T	1.0	2.7	13.1	29
Greatest amount	40.1	16.1	10.2	2.8	T	0.0	0.0	0.0	T	T	15.6	11.6	58.3	29
Least amount	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	29
Maximum amount (24 hours)	8.0	7.1	7.5	2.1	T	0.0	0.0	0.0	T	T	7.7	7.3	8.0	29
Mean number of days	5	4	4	3	Miss	0	0	0	Miss	Miss	2	5	23	29
WIND														
Percentage with gales	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	29
Mean wind speed (knots)	5.8	5.9	5.8	5.5	5.2	5.1	4.8	4.5	4.3	4.7	5.6	5.8	5.2	29
Direction (percentage of observations)														
North	2.2	2.4	2.9	2.3	3.2	2.9	3.3	4.2	4.2	3.2	2.4	2.3	3.0	29
North Northeast	3.9	4.0	4.0	2.6	2.4	1.9	2.4	2.3	4.1	4.4	3.5	3.7	3.3	29
Northeast	11.5	10.6	6.7	4.7	3.5	2.4	2.2	2.7	6.0	6.7	9.3	10.0	6.3	29
East Northeast	11.3	11.0	8.2	6.8	4.8	2.9	2.7	2.9	5.8	8.0	11.5	11.3	7.3	29
East	7.2	7.8	6.3	5.5	3.8	2.3	2.1	2.6	3.8	5.9	8.2	8.2	5.3	29
East Southeast	4.8	5.0	5.0	4.4	3.1	2.3	1.6	1.9	2.6	4.7	5.4	5.2	3.8	29
Southeast	6.6	7.1	6.8	5.1	3.4	2.7	2.1	2.0	3.0	5.9	7.7	7.8	5.0	29
South Southeast	10.0	10.0	9.0	7.0	5.5	5.3	3.6	4.8	6.2	9.1	10.5	11.1	7.7	29
South	8.1	9.6	9.3	9.1	8.3	9.0	7.4	8.8	8.7	9.5	8.6	7.6	8.7	29
South Southwest	4.5	4.5	5.5	6.1	6.5	6.8	6.3	6.6	5.7	4.2	4.2	3.9	5.4	29
Southwest	3.3	3.9	4.3	5.2	6.5	7.1	6.7	6.9	4.7	3.5	2.9	2.6	4.8	29
West Southwest	2.7	2.9	3.9	6.3	7.6	7.5	8.2	7.2	5.2	3.6	2.2	2.3	5.0	29
West	3.3	2.8	3.9	6.7	7.0	7.3	7.4	5.5	3.9	3.2	2.8	2.9	4.7	29
West Northwest	2.5	2.2	4.3	7.0	8.0	9.3	8.8	7.0	4.4	3.0	3.1	2.7	5.2	29
Northwest	1.3	1.4	2.9	3.9	6.3	8.3	9.7	7.2	3.8	2.0	1.6	1.5	4.2	29
North Northwest	1.1	1.5	1.9	2.6	4.2	5.0	6.0	5.2	3.9	2.1	1.2	1.2	3.0	29
Calm	15.8	13.7	14.8	14.8	16.4	17.6	19.5	22.4	24	20.9	14.8	15.9	17.6	29
Direction (mean speed, knots)														
North	3.9	4.2	4.4	4.4	4.3	4.5	4.7	4.3	4.4	4.0	4.1	4.1	4.3	29
North Northeast	5.8	5.8	5.7	5.2	5.0	5.0	4.4	4.6	5.2	5.2	5.4	5.6	5.3	29
Northeast	7.0	7.2	6.5	5.7	5.1	5.1	4.5	4.4	5.6	5.5	6.3	6.9	6.2	29
East Northeast	5.1	5.3	5.0	4.5	4.2	4.1	4.0	4.1	4.4	4.5	4.9	5.2	4.8	29
East	4.5	4.5	4.4	4.2	3.9	3.6	3.7	3.5	3.8	4.1	4.4	4.5	4.2	29
East Southeast	5.0	5.0	5.2	4.8	4.4	4.2	4.0	4.0	4.2	4.5	4.9	5.2	4.8	29
Southeast	7.3	7.4	7.4	6.9	5.9	5.5	5.5	5.4	5.8	6.9	7.5	7.7	7.0	29
South Southeast	8.5	8.5	8.3	7.3	6.8	6.1	5.8	6.2	6.4	7.7	8.4	8.6	7.7	29
South	8.3	8.1	8.1	7.4	6.7	6.0	5.8	5.8	6.2	7.2	8.3	8.5	7.2	29
South Southwest	8.9	8.3	8.1	7.5	7.1	6.7	6.4	6.0	6.1	7.0	8.7	9.0	7.3	29
Southwest	9.4	9.0	8.7	8.1	7.1	7.2	6.7	6.4	6.5	7.2	8.8	9.6	7.6	29
West Southwest	9.0	7.7	7.9	7.3	7.2	6.8	6.6	6.6	6.3	6.5	8.0	8.6	7.1	29
West	7.6	6.5	7.2	7.3	6.9	6.4	6.3	6.3	5.8	5.8	6.4	7.1	6.6	29
West Northwest	8.5	7.8	7.5	7.1	7.1	6.7	6.4	6.2	6.4	6.6	7.4	8.5	7.0	29
Northwest	7.0	7.5	7.5	7.3	7.0	6.8	6.5	6.5	6.4	6.5	6.8	7.9	6.8	29
North Northwest	5.7	5.1	6.5	6.3	6.4	6.0	6.3	6.1	5.5	5.1	6.0	5.4	6.0	29
VISIBILITY														
Mean number of days with fog	21	19	20	17	17	18	19	20	20	22	21	22	236	29

* Sea level pressure is station pressure reduced to sea level

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
 Miss or blank is a missing value

TATOOSH ISLAND, WA (48°23'N, 124°44'W) 115 feet (35.1 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE*														
Mean (millibars)	1015.6	1015.7	1014.8	1016.9	1017.6	1017.7	1018.5	1017.7	1016.5	1016.2	1015.8	1015.0	1016.5	19
TEMPERATURE (°F)														
Mean	41.4	43.3	43.5	46.9	50.6	53.4	55.4	56.2	55.1	52.0	47.3	44.1	49.1	18
Mean daily maximum	44.7	46.9	47.4	51.0	54.6	57.2	59.2	60.1	59.5	55.9	50.8	47.4	52.9	18
Mean daily minimum	37.6	39.2	39.1	42.4	46.1	49.2	51.1	51.8	50.2	47.7	43.3	40.3	44.8	18
Extreme (highest)	57	63	66	69	74	82	80	76	80	70	64	61	82	18
Extreme (lowest)	14	20	25	33	37	43	46	45	43	36	19	14	14	18
RELATIVE HUMIDITY														
Average percentage	30.9	31.9	23.2	44.4	51.4	52.0	60.5	52.1	40.1	36.7	32.5	24.9	40.1	19
CLOUD COVER														
Percent of time clear	11.0	11.3	9.2	10.1	10.3	9.6	15.9	13.5	20.1	13.8	10.5	7.4	11.9	19
Percent of time scattered	11.6	11.3	14.0	14.4	16.4	12.8	12.4	12.3	15.9	16.5	13.9	11.6	13.6	19
Percent of time broken	13.0	13.9	17.7	16.3	18.4	15.8	13.6	13.9	13.5	15.7	14.7	14.0	15.1	19
Percent of time overcast	64.4	63.6	59.1	59.2	55.0	61.7	58.1	60.3	50.5	54.0	60.9	67.1	59.5	19
PRECIPITATION (inches)														
Mean amount	10.9	9.5	7.9	5.4	2.6	2.5	2.0	2.3	3.3	8.6	11.5	12.5	79.6	18
Greatest amount	20.0	21.1	14.8	10.2	6.1	6.3	6.0	4.7	7.0	13.6	22.1	16.8	101.6	18
Least amount	1.8	4.2	2.9	0.6	0.8	0.4	0.0	0.1	1.1	2.5	4.4	7.2	68.7	18
Maximum amount (24 hours)	2.9	2.7	2.6	3.0	1.6	2.1	1.5	2.1	1.9	3.8	3.7	3.2	3.8	18
Mean number of days	25	22	24	20	19	19	18	19	16	20	23	26	251	18
SNOW														
Mean amount	4.4	2.1	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	3.0	13.5	17
Greatest amount	32.3	10.4	24.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0	7.5	20.2	34.5	17
Least amount	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	17
Maximum amount (24 hours)	8.5	5.2	10.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	4.7	7.0	10.3	17
Mean number of days	6	4	4	Miss	0	0	0	0	0	0	1	4	19	18
WIND														
Percentage with gales	6.09	3.59	1.21	1.01	0.19	0.07	0.02	0.02	0.28	2.06	3.87	5.49	2.32	19
Mean wind speed (knots)	17.4	15.9	14.1	12.2	10.3	9.1	8.9	8.9	10.4	14.1	16.6	17.4	12.9	19
Direction (percentage of observations)														
North	0.8	1.5	1.9	2.1	1.7	1.5	1.2	1.7	2.9	1.4	0.8	1.0	1.5	19
North Northeast	0.4	0.3	0.4	0.4	0.6	0.7	0.7	0.7	1.1	0.5	0.7	0.4	0.6	19
Northeast	3.9	4.9	5.6	5.4	4.9	3.6	3.4	4.2	10.6	8.4	4.1	2.5	5.1	19
East Northeast	10.0	9.1	8.4	6.8	3.8	3.6	3.4	4.0	11.5	12.5	10.6	9.9	7.8	19
East	31.5	24.2	22.1	13.7	8.6	5.8	4.0	6.3	12.9	23.8	30.4	27.2	17.5	19
East Southeast	4.0	3.2	2.3	1.5	0.7	0.6	0.3	0.4	1.0	1.7	3.3	3.3	1.8	19
Southeast	6.5	5.7	5.3	4.3	2.4	1.4	1.4	1.8	2.2	4.8	6.9	6.3	4.1	19
South Southeast	5.6	6.1	5.7	3.5	3.0	3.5	2.7	3.5	4.3	6.1	5.6	6.3	4.6	19
South	13.0	13.8	12.6	14.2	15.5	19.5	24.1	30.6	20.9	15.2	12.9	14.5	17.2	19
South Southwest	3.1	2.5	3.6	5.4	5.9	9.1	12.6	11.8	6.1	4.1	2.7	2.9	5.8	19
Southwest	6.4	7.9	8.8	11.8	14.7	17.6	21.8	17.5	10.0	6.7	6.5	7.2	11.5	19
West Southwest	2.9	2.9	4.2	5.5	7.3	8.0	6.5	4.7	3.2	2.7	2.8	2.6	4.5	19
West	6.7	10.5	11.1	14.6	21.1	17.6	12.2	7.5	7.5	6.5	6.9	8.7	11.0	19
West Northwest	1.7	2.7	2.9	4.1	4.4	3.0	1.6	0.9	1.3	2.2	2.0	2.8	2.5	19
Northwest	1.5	3.1	3.1	4.0	2.7	1.6	1.2	1.4	1.5	1.4	2.2	2.5	2.2	19
North Northwest	0.4	0.4	0.4	0.5	0.4	0.4	0.3	0.2	0.3	0.2	0.4	0.3	0.3	19
Calm	1.3	1.3	1.8	2.4	2.4	2.7	2.8	2.8	2.7	1.9	1.1	1.6	2.1	19
Direction (mean speed, knots)														
North	8.1	6.6	6.7	5.8	5.3	5.2	5.8	4.7	5.3	5.2	8.1	7.2	5.9	19
North Northeast	11.0	7.5	10.0	7.9	8.4	6.6	6.7	6.4	7.7	6.6	11.1	10.1	8.2	19
Northeast	18.1	13.8	12.2	11.8	11.4	9.7	8.2	9.5	10.8	12.7	14.6	12.4	12.0	19
East Northeast	18.4	16.9	15.5	13.7	13.2	10.5	10.9	10.3	13.8	17.6	17.4	19.0	15.8	19
East	18.5	16.6	15.8	13.2	11.9	10.3	9.3	8.2	11.8	15.2	17.4	19.2	15.8	19
East Southeast	14.7	14.7	13.9	11.6	11.5	8.0	6.7	7.6	11.3	14.3	15.7	14.3	13.8	19
Southeast	12.9	13.4	11.8	11.5	8.4	8.2	8.3	8.9	9.5	12.0	13.3	13.9	12.0	19
South Southeast	15.8	16.4	15.2	14.5	12.9	11.3	11.2	11.3	12.9	16.3	16.1	17.9	14.9	19
South	19.1	17.9	14.8	14.3	11.8	10.9	10.6	10.8	11.6	15.0	19.0	20.1	13.9	19
South Southwest	22.9	18.9	15.5	14.4	11.9	10.3	11.1	9.5	10.5	14.4	22.2	21.7	13.1	19
Southwest	20.1	17.7	14.2	12.3	9.9	9.0	8.7	8.1	8.3	13.5	19.0	18.1	11.7	19
West Southwest	16.1	15.6	13.6	11.8	9.4	8.1	7.7	7.3	8.6	10.9	15.3	15.5	10.7	19
West	16.6	15.0	14.0	11.5	9.7	7.9	6.7	6.5	7.7	11.3	14.6	15.8	11.0	19
West Northwest	16.4	16.2	17.1	12.2	10.3	9.4	7.4	6.6	10.6	15.3	16.8	16.6	13.2	19
Northwest	13.8	13.4	10.1	10.3	8.0	7.7	6.3	5.5	6.5	11.6	14.4	13.1	10.4	19
North Northwest	10.8	10.5	7.1	6.0	6.3	7.3	6.6	5.2	5.2	5.5	11.1	8.8	7.8	19
VISIBILITY														
Mean number of days with fog	11	11	9	9	10	14	18	21	17	13	10	12	155	18

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

HILO, HI (19°43'N, 155°04'W) 36 feet (10.9 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE*														
Mean (millibars)	1016.0	1016.0	1017.6	1017.8	1017.7	1017.5	1016.8	1016.3	1015.3	1015.6	1016.1	1016.2	1016.6	46
TEMPERATURE (°F)														
Mean	71.7	71.5	71.9	72.7	73.8	75.2	75.9	76.4	76.3	75.7	74.1	72.3	74.0	46
Mean daily maximum	79.5	79.3	79.2	79.5	80.9	82.4	82.8	83.4	83.7	83.0	81.0	79.6	81.2	46
Mean daily minimum	63.4	63.3	64.2	65.3	66.3	67.5	68.6	69.0	68.5	67.9	66.7	64.6	66.3	46
Extreme (highest)	91	92	93	89	94	90	89	93	92	91	90	93	94	46
Extreme (lowest)	54	53	54	59	59	61	62	63	61	62	58	55	53	46
RELATIVE HUMIDITY														
Average percentage	34.6	35.1	50.6	52.7	52.2	50.4	43.0	37.6	28.4	31.1	36.5	37.4	40.7	46
CLOUD COVER														
Percent of time clear	11.1	11.1	4.7	1.3	1.6	1.8	1.6	2.0	3.2	3.8	4.5	8.6	4.6	46
Percent of time scattered	27.1	25.4	22.2	17.1	17.5	22.8	21.1	22.1	25.8	24.3	21.3	24.6	22.6	46
Percent of time broken	26.1	25.8	28.5	30.5	30.6	34.0	33.8	33.7	32.4	31.8	29.1	28.5	30.4	46
Percent of time overcast	35.6	37.7	44.5	51.0	50.2	41.4	43.4	42.1	38.5	40.1	45.2	38.3	42.3	46
PRECIPITATION (inches)														
Mean amount	9.2	11.5	13.5	13.5	9.4	6.4	10.1	10.7	8.2	9.7	15.3	12.6	130.6	46
Greatest amount	32.2	45.5	49.9	43.2	25.0	13.2	28.5	26.9	21.8	26.1	45.7	50.8	211.2	46
Least amount	0.3	0.5	0.8	2.9	2.7	1.8	3.8	2.6	1.5	2.4	1.0	0.2	68.0	46
Maximum amount (24 hours)	9.5	16.8	15.6	9.6	7.8	2.8	5.9	9.6	8.6	8.6	15.4	9.3	16.8	46
Mean number of days	21	20	26	28	29	28	30	29	26	27	26	24	314	46
SNOW														
Mean amount	0	0	0	0	0	0	0	0	0	0	0	0	0	46
Greatest amount	0	0	0	0	0	0	0	0	0	0	0	0	0	46
Least amount	0	0	0	0	0	0	0	0	0	0	0	0	0	46
Maximum amount (24 hours)	0	0	0	0	0	0	0	0	0	0	0	0	0	46
Mean number of days	0	0	0	0	0	0	0	0	0	0	0	0	0	46
WIND														
Percentage with gales	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93	46
Mean wind speed (knots)	6.5	6.7	6.7	6.5	6.4	6.1	6.0	5.9	5.9	5.8	5.9	6.3	6.2	46
Direction (percentage of observations)														
North	6.5	7.1	6.5	5.9	5.3	4.5	5.7	5.4	5.5	5.0	5.1	5.7	5.7	46
North Northeast	4.6	5.2	5.6	5.7	5.4	5.7	6.7	6.6	6.1	4.7	3.7	4.4	5.4	46
Northeast	3.5	4.7	5.8	7.1	6.8	8.1	8.5	8.2	6.5	5.8	4.8	3.7	6.1	46
East Northeast	3.4	3.9	6.1	7.4	7.0	8.6	8.0	7.9	6.1	5.6	4.9	4.0	6.1	46
East	4.1	4.4	6.0	6.1	6.9	7.2	5.9	5.8	5.1	5.0	4.8	3.9	5.4	46
East Southeast	5.5	5.6	5.9	5.2	5.9	4.6	3.6	3.5	4.1	4.8	5.4	5.5	5.0	46
Southeast	4.8	4.5	3.9	3.2	2.7	2.5	2.0	2.0	2.4	3.0	3.8	4.5	3.3	46
South Southeast	4.3	3.2	2.3	2.0	1.9	1.6	1.4	1.5	1.8	2.4	3.0	3.5	2.4	46
South	5.9	5.8	4.6	4.4	4.2	3.2	3.0	3.1	3.4	3.9	4.9	5.7	4.3	46
South Southwest	12.1	10.7	9.0	8.1	7.6	7.3	5.7	6.6	8.5	9.5	9.5	11.1	8.8	46
Southwest	18.3	17.0	15.0	14.1	14.3	15.2	13.8	14.8	18.4	18.9	19.0	18.6	16.4	46
West Southwest	9.9	9.3	10.7	11.8	11.8	13.2	13.6	13.1	13.7	13.8	12.4	11.4	12.1	46
West	4.3	5.0	5.4	6.4	6.8	6.8	7.6	7.5	6.7	5.7	5.8	4.7	6.1	46
West Northwest	1.9	2.4	2.6	2.9	3.2	2.8	3.3	3.7	2.5	2.6	2.8	2.5	2.8	46
Northwest	2.3	2.8	2.4	2.7	2.8	2.0	2.7	2.5	2.2	2.3	2.2	2.7	2.5	46
North Northwest	4.2	4.1	3.6	3.1	3.0	2.2	3.3	2.8	2.6	2.5	3.1	4.1	3.2	46
Calm	4.9	4.5	4.8	4.5	5.0	5.2	5.6	5.4	5.0	5.0	5.5	4.5	5.0	46
Direction (mean speed, knots)														
North	8.6	9.1	8.8	7.9	7.7	6.5	6.5	6.8	6.8	6.7	7.6	8.3	7.7	46
North Northeast	8.0	8.7	8.1	8.1	8.1	7.5	7.4	7.3	7.2	7.3	7.3	7.6	7.7	46
Northeast	7.5	8.3	8.2	7.9	7.8	7.9	7.7	7.4	7.3	7.1	7.0	7.7	7.7	46
East Northeast	7.5	8.2	8.1	8.3	8.3	8.2	8.1	8.1	7.7	7.3	7.5	7.7	8.0	46
East	7.9	8.3	8.7	8.6	8.7	8.4	8.1	8.0	8.0	7.8	7.5	7.4	8.2	46
East Southeast	9.4	9.7	9.7	9.7	9.1	9.1	8.5	8.5	8.4	8.6	8.0	8.6	9.0	46
Southeast	9.3	9.3	9.6	9.7	8.3	7.5	7.3	7.6	8.0	8.3	8.4	8.8	8.7	46
South Southeast	8.3	7.7	7.2	7.2	6.3	5.8	5.3	5.9	6.1	6.7	6.9	7.8	7.1	46
South	6.0	5.3	5.2	5.1	5.0	4.2	4.3	4.4	4.6	4.6	5.1	5.4	5.0	46
South Southwest	5.2	5.1	5.1	5.0	5.0	4.8	4.7	4.7	4.8	4.8	4.9	5.0	4.9	46
Southwest	5.4	5.5	5.4	5.2	5.3	5.2	5.2	5.1	5.3	5.3	5.3	5.4	5.3	46
West Southwest	5.8	5.7	5.7	5.6	5.7	5.6	5.5	5.5	5.7	5.5	5.5	5.7	5.6	46
West	5.4	5.5	5.4	5.4	5.5	5.4	5.4	5.5	5.5	5.3	5.4	5.4	5.4	46
West Northwest	5.8	5.8	5.5	5.6	5.5	5.3	5.3	5.3	5.3	5.4	5.6	5.5	5.5	46
Northwest	7.0	7.0	6.9	6.3	6.5	5.5	5.5	5.7	5.6	5.8	6.2	6.9	6.3	46
North Northwest	8.5	8.9	8.4	7.3	7.5	6.1	6.0	6.6	6.3	6.6	7.6	8.4	7.5	46
VISIBILITY														
Mean number of days with fog	Miss	Miss	Miss	Miss	0	Miss	Miss	Miss	Miss	Miss	Miss	Miss	1	46

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
Miss or blank is a missing value

HONOLULU, HI (21°20'N, 157°55'W) 7 feet (2.1 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE*														
Mean (millibars)	1015.6	1015.8	1017.3	1017.5	1017.4	1017.2	1016.5	1015.9	1015.0	1015.2	1015.7	1015.8	1016.2	46
TEMPERATURE (°F)														
Mean	73.0	73.0	74.2	75.7	77.4	79.4	80.4	81.3	81.0	79.6	77.3	74.5	77.2	46
Mean daily maximum	79.9	80.0	81.0	82.3	84.1	86.0	86.9	87.9	87.9	86.4	83.7	81.0	83.9	46
Mean daily minimum	65.5	65.5	67.0	68.6	70.2	72.2	73.4	74.2	73.5	72.3	70.4	67.5	70.0	46
Extreme (highest)	87	88	89	89	93	92	94	93	95	94	93	89	95	46
Extreme (lowest)	52	53	55	56	60	65	66	67	66	61	57	54	52	46
RELATIVE HUMIDITY														
Average percentage	31.3	32.9	48.3	49.6	48.8	46.6	39.9	33.8	25.4	27.5	32.1	33.4	37.5	46
CLOUD COVER														
Percent of time clear	12.4	10.7	7.4	4.4	3.6	3.2	2.9	3.3	5.9	5.9	6.5	9.9	6.3	46
Percent of time scattered	44.3	44.7	46.5	44.4	48.0	52.6	56.3	56.0	55.7	49.6	46.7	42.7	49.0	46
Percent of time broken	26.3	27.9	28.7	34.5	34.4	35.1	34.5	32.7	30.8	31.8	31.8	30.1	31.6	46
Percent of time overcast	17.0	16.7	17.4	16.7	14.0	9.0	6.3	7.9	7.5	12.8	15.0	17.3	13.1	46
PRECIPITATION (inches)														
Mean amount	3.3	2.6	2.8	1.3	0.9	0.3	0.5	0.5	0.7	2.0	2.5	3.5	21.5	46
Greatest amount	13.3	13.6	20.7	8.9	7.2	2.4	2.3	3.0	2.0	11.1	14.7	17.2	42.7	46
Least amount	0.1	0.0	0.0	0.0	0.0	T	0.0	T	0.0	0.1	0.0	0.0	5.0	46
Maximum amount (24 hours)	6.4	5.5	15.3	3.9	3.4	2.0	2.1	2.1	1.3	7.4	5.3	7.8	15.3	46
Mean number of days	17	16	19	20	19	19	20	18	17	18	19	18	220	46
SNOW														
Mean amount	0	0	0	0	0	0	0	0	0	0	0	0	0	46
Greatest amount	0	0	0	0	0	0	0	0	0	0	0	0	0	46
Least amount	0	0	0	0	0	0	0	0	0	0	0	0	0	46
Maximum amount (24 hours)	0	0	0	0	0	0	0	0	0	0	0	0	0	46
Mean number of days	0	0	0	0	0	0	0	0	0	0	0	0	0	46
WIND														
Percentage with gales	0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.95	46
Mean wind speed (knots)	8.3	8.8	9.9	10.2	10.3	11.0	11.4	11.2	9.8	9.1	9.3	9.1	9.9	46
Direction (percentage of observations)														
North	5.8	5.4	5.1	4.4	3.0	1.4	0.9	1.3	2.5	3.8	4.6	5.0	3.6	46
North Northeast	5.1	4.7	4.9	4.6	4.1	2.7	2.4	2.5	3.7	4.3	4.5	4.7	4.0	46
Northeast	13.6	17.1	20.5	26.7	28.2	31.0	30.8	30.6	25.9	23.3	20.7	18.5	23.9	46
East Northeast	18.9	22.7	31.8	37.4	40.4	47.4	52.1	49.8	43.1	35.6	35.1	27.9	36.9	46
East	5.1	5.6	7.7	6.7	7.8	8.8	9.0	8.9	7.7	8.1	8.3	6.5	7.5	46
East Southeast	1.8	1.6	1.2	1.0	1.2	1.0	0.9	0.9	1.3	1.4	1.7	1.7	1.3	46
Southeast	3.0	2.8	2.3	1.8	1.6	0.8	0.7	1.1	1.7	2.5	2.2	2.8	1.9	46
South Southeast	4.2	3.0	2.7	2.1	1.7	1.1	0.5	0.7	1.9	2.3	2.6	3.3	2.2	46
South	5.5	4.1	3.1	2.1	1.9	0.9	0.4	0.6	1.8	2.4	2.5	3.5	2.4	46
South Southwest	4.2	3.1	2.2	1.3	1.0	0.6	0.1	0.2	0.8	1.5	1.5	2.3	1.6	46
Southwest	4.6	3.9	2.0	1.1	0.8	0.4	0.1	0.2	0.7	1.2	1.3	2.6	1.6	46
West Southwest	3.3	2.8	1.5	0.6	0.5	0.2	0.1	0.2	0.4	0.6	0.6	1.4	1.0	46
West	2.8	2.7	1.5	0.6	0.6	0.2	0.1	0.2	0.5	0.9	0.8	1.8	1.0	46
West Northwest	3.8	3.7	2.1	1.1	1.2	0.6	0.3	0.5	1.2	1.8	2.0	3.0	1.8	46
Northwest	7.8	7.4	5.1	3.5	2.6	1.1	0.8	1.1	2.6	4.0	5.0	6.6	4.0	46
North Northwest	6.0	6.0	4.3	3.3	2.2	1.0	0.6	0.8	2.2	3.4	4.0	5.3	3.3	46
Calm	5.1	3.9	2.5	2.2	1.8	1.2	0.7	1.0	2.4	3.2	2.9	3.4	2.5	46
Direction (mean speed, knots)														
North	5.8	6.1	6.4	5.9	5.7	4.7	5.0	4.9	4.9	5.0	5.6	6.0	5.7	46
North Northeast	7.4	7.8	8.4	8.3	8.8	8.1	8.9	8.2	7.4	7.4	7.7	7.7	8.0	46
Northeast	9.6	10.9	11.5	11.8	11.5	11.8	11.9	11.7	10.9	10.6	10.6	10.9	11.3	46
East Northeast	10.7	11.3	12.0	11.9	11.5	11.7	11.9	11.9	11.0	10.7	11.3	11.4	11.5	46
East	9.7	9.6	10.4	10.2	9.8	10.5	10.7	10.4	9.5	9.6	10.2	9.9	10.1	46
East Southeast	9.2	8.6	9.5	8.5	8.4	8.4	9.4	10.0	8.3	8.8	9.4	9.1	9.0	46
Southeast	9.9	10.3	11.1	9.4	10.3	10.1	10.7	11.6	11.1	10.6	10.5	10.3	10.4	46
South Southeast	9.9	9.6	9.8	10.1	9.3	10.5	9.8	9.9	9.0	9.5	10.1	9.7	9.7	46
South	8.8	7.9	7.9	7.7	7.2	7.6	7.1	8.2	7.6	7.6	7.6	8.3	8.0	46
South Southwest	9.3	8.2	8.4	8.2	7.8	7.8	6.2	9.0	8.2	7.9	7.5	8.8	8.4	46
Southwest	9.7	9.0	9.4	8.7	8.6	8.0	8.9	9.2	8.6	8.0	8.1	8.8	9.0	46
West Southwest	10.1	9.5	9.5	7.4	7.8	7.5	6.4	10.1	7.5	8.0	7.6	8.7	9.1	46
West	7.5	7.6	6.6	4.9	4.2	4.9	3.1	5.0	4.1	4.4	4.6	6.5	6.3	46
West Northwest	5.4	5.4	5.4	5.0	4.5	4.5	4.5	4.4	4.4	4.6	4.7	5.1	5.0	46
Northwest	5.6	5.8	5.8	5.5	5.3	5.2	5.2	5.1	4.9	5.0	5.5	5.5	5.5	46
North Northwest	6.0	6.2	5.7	5.8	5.5	4.8	4.9	4.9	4.8	5.0	5.5	5.9	5.7	46
VISIBILITY														
Mean number of days with fog	0	0	Miss	Miss	Miss	Miss	0	0	0	Miss	Miss	Miss	Miss	46

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

CLIMATOLOGICAL TABLES

T = trace (not measurable) amount of precipitation
 Miss or blank is a missing value

LIHUE, HI (21°59'N, 159°21'W) 103 feet (31.4 m)														
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	YEARS OF RECORD
SEA LEVEL PRESSURE*														
Mean (millibars)	1015.9	1016.2	1017.8	1018.2	1018.2	1017.9	1017.4	1016.7	1015.7	1015.8	1016.2	1016.2	1016.8	45
TEMPERATURE (°F)														
Mean	71.6	71.6	72.5	73.9	75.7	77.8	78.9	79.6	79.3	77.8	75.7	73.1	75.6	46
Mean daily maximum	77.9	77.9	78.2	79.2	81.0	83.0	83.9	84.7	84.8	83.3	80.8	78.6	81.1	46
Mean daily minimum	64.8	64.8	66.3	68.0	69.9	72.1	73.3	74.0	73.3	71.8	70.0	67.1	69.7	46
Extreme (highest)	85	86	88	88	88	89	89	90	90	90	89	86	90	46
Extreme (lowest)	50	52	51	56	59	61	62	66	65	61	57	52	50	46
RELATIVE HUMIDITY														
Average percentage	34.1	36.7	53.1	56.5	56.6	54.2	48.8	42.5	31.9	33.4	37.0	37.0	43.4	45
CLOUD COVER														
Percent of time clear	16.1	15.9	9.2	4.1	3.1	3.2	1.8	2.5	4.9	6.4	7.1	11.8	7.1	45
Percent of time scattered	31.4	31.7	30.6	28.7	33.0	38.7	37.9	38.0	44.9	37.8	32.8	31.0	34.8	45
Percent of time broken	29.2	29.0	32.2	36.0	37.3	37.8	40.5	38.7	35.4	34.4	33.7	31.9	34.7	45
Percent of time overcast	23.4	23.4	28.0	31.2	26.6	20.4	19.8	20.8	14.8	21.3	26.4	25.4	23.4	45
PRECIPITATION (inches)														
Mean amount	5.4	3.6	4.2	3.0	2.6	1.5	2.1	1.9	2.2	4.4	5.4	5.5	42.3	46
Greatest amount	17.5	11.3	14.5	10.6	12.5	4.8	8.8	8.1	10.8	18.0	18.4	22.9	74.4	46
Least amount	0.3	T	0.3	0.3	0.4	0.4	0.7	0.7	0.4	1.0	0.5	0.5	16.4	46
Maximum amount (24 hours)	10.7	5.4	5.1	5.3	4.9	2.0	4.9	5.3	7.1	7.8	9.7	11.2	10.7	46
Mean number of days	20	19	23	24	23	23	26	25	22	24	24	22	275	46
SNOW														
Mean amount	0	0	0	0	0	0	0	0	0	0	0	0	0	46
Greatest amount	0	0	0	0	0	0	0	0	0	0	0	0	0	46
Least amount	0	0	0	0	0	0	0	0	0	0	0	0	0	46
Maximum amount (24 hours)	0	0	0	0	0	0	0	0	0	0	0	0	0	46
Mean number of days	0	0	0	0	0	0	0	0	0	0	0	0	0	46
WIND														
Percentage with gales	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.97	45
Mean wind speed (knots)	9.6	9.9	10.9	11.5	11	11.3	11.9	11.4	10.1	10.0	10.5	10.2	10.7	45
Direction (percentage of observations)														
North	4.9	5.5	4.5	4.3	2.9	1.1	1.0	1.3	2.1	3.6	4.9	5.2	3.4	45
North Northeast	6.5	6.6	7.2	7.7	7.0	4.5	5.7	5.4	5.5	7.0	7.2	7.0	6.4	45
Northeast	13.6	18.3	23.8	31.3	34.7	36.5	41.2	39.7	31.3	26.2	22.6	19.9	28.3	45
East Northeast	14.8	17.4	25.8	30.2	31.9	42.8	42.2	40.9	35.7	29.4	26.6	19.7	29.9	45
East	7.1	7.7	9.4	8.9	8.8	7.0	6.1	7.1	8.5	8.7	8.8	8.0	8.0	45
East Southeast	2.2	2.6	2.3	1.3	1.6	0.8	0.5	0.6	1.4	1.8	2.1	2.4	1.6	45
Southeast	1.3	1.4	0.8	0.7	0.7	0.4	0.2	0.3	0.5	1.1	1.1	1.6	0.8	45
South Southeast	2.2	1.6	1.1	0.9	0.6	0.3	0.1	0.3	0.4	1.0	1.3	1.7	1.0	45
South	4.5	2.9	2.0	1.7	0.8	0.6	0.2	0.4	0.7	1.6	2.6	3.3	1.8	45
South Southwest	4.4	3.0	1.5	0.6	0.4	0.1	0.0	0.1	0.4	0.8	1.2	2.6	1.2	45
Southwest	7.1	5.4	2.2	0.7	0.6	0.2	0.0	0.2	0.7	1.1	2.0	3.9	2.0	45
West Southwest	7.6	6.1	3.5	1.3	1.2	0.6	0.2	0.3	1.4	2.4	2.8	4.7	2.7	45
West	12.6	10.9	7.8	4.3	4.0	2.6	1.0	1.6	5.2	7.1	7.7	9.7	6.2	45
West Northwest	6.1	5.6	4.3	3.2	2.9	1.6	0.9	1.3	3.7	4.8	5.1	5.6	3.7	45
Northwest	1.9	1.9	1.5	1.0	1.0	0.6	0.5	0.4	1.1	1.3	1.4	1.6	1.2	45
North Northwest	3.1	3.0	2.6	1.7	1.2	0.7	0.6	0.6	1.2	1.9	2.5	2.8	1.8	45
Calm	0.4	0.6	0.4	0.4	0.4	0.2	0.1	0.1	0.4	0.6	0.3	0.4	0.4	45
Direction (mean speed, knots)														
North	9.0	8.7	8.8	8.1	7.7	5.8	6.6	5.9	6.2	7.2	8.9	8.4	8.1	45
North Northeast	12.1	12.0	11.9	11.6	11.0	9.7	10.4	10.3	9.8	10.7	11.6	11.7	11.1	45
Northeast	12.3	12.5	12.9	12.9	12.2	11.8	11.9	11.5	11.1	11.3	12.3	12.7	12.0	45
East Northeast	11.8	12.2	13.2	13.1	12.1	12.2	12.6	12.1	11.2	11.6	12.5	12.7	12.2	45
East	10.4	10.6	11.7	12.1	10.7	10.9	11.9	11.3	10.2	10.8	11.4	11.2	11.1	45
East Southeast	8.1	8.5	9.5	9.7	9.5	10.3	12.2	10.8	8.9	8.9	10.5	9.3	9.4	45
Southeast	8.5	8.4	8.3	8.5	7.9	8.6	10.2	9.9	8.9	8.8	8.7	8.6	8.6	45
South Southeast	9.4	9.7	9.5	10.1	8.5	10.6	9.1	10.4	8.6	9.7	9.9	10.7	9.8	45
South	9.8	9.1	9.1	9.5	8.1	8.0	8.0	9.6	7.5	8.4	9.6	9.9	9.3	45
South Southwest	10.7	10.1	10.1	9.1	8.6	9.4	8.0	12.5	8.7	9.5	9.4	10.5	10.1	45
Southwest	10.5	10.5	10.2	8.0	7.8	7.4	7.5	9.3	7.9	7.9	8.3	10.0	9.8	45
West Southwest	7.8	8.3	7.0	5.9	6.7	5.7	6.5	5.7	6.2	5.9	6.4	6.8	7.1	45
West	6.1	5.9	5.6	5.4	5.2	5.1	5.0	5.1	5.5	5.5	5.4	5.9	5.7	45
West Northwest	5.9	5.8	5.5	5.6	5.5	5.2	5.3	5.4	5.6	5.7	5.5	5.6	5.6	45
Northwest	5.9	6.4	5.8	6.2	5.7	5.0	5.1	5.4	5.5	5.7	6.0	6.3	5.9	45
North Northwest	7.1	7.8	7.7	7.1	6.4	5.8	6.0	6.3	5.9	6.2	7.2	7.4	7.0	45
VISIBILITY														
Mean number of days with fog	Miss	Miss	Miss	Miss	Miss	Miss	Miss	0	0	Miss	Miss	Miss	1	46

* Sea level pressure is station pressure reduced to sea level

These tables were prepared by the National Climatic Data Center (NCDC), National Environmental Satellite, Data & Information Service (NESDIS), NOAA

METEOROLOGICAL TABLES

COASTAL AREA OFF SAN DIEGO, CA Between 31°N to 34°N and 116°W to 120°W													
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots ¹	0.4	0.5	0.4	0.4	0.3	0.1	0.0	0.0	0.1	0.1	0.2	0.5	0.2
Wave Height > 9 feet ¹	0.8	1.3	1.7	1.8	1.2	0.8	0.5	0.3	0.4	0.6	0.9	1.2	0.9
Visibility < 2 nautical miles ¹	4.4	4.5	2.8	2.4	1.5	3.2	2.9	2.2	3.0	4.7	3.3	4.0	3.2
Precipitation ¹	3.6	3.6	2.4	1.7	1.2	1.4	0.8	0.5	0.9	0.9	2.1	3.1	1.8
Temperature > 69° F	1.2	0.8	1.2	1.4	1.9	3.0	9.2	14.7	14.8	9.0	4.4	1.7	5.4
Mean Temperature (°F)	58.3	58.4	58.5	59.3	60.4	62.1	64.7	66.4	66.5	65.2	62.7	59.9	61.9
Temperature < 33° F ¹	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mean RH (%)	77	79	78	79	81	83	84	84	83	81	77	76	80
Overcast or Obscured ¹	19.4	21.4	22.2	25.7	37.9	48.1	45.7	38.8	31.4	26.3	15.4	16.7	29.3
Mean Cloud Cover (8 ^{ths})	3.8	3.9	4.1	4.2	5.0	5.5	5.6	5.3	4.6	4.2	3.4	3.5	4.4
Mean SLP (mbs)	1018	1018	1017	1015	1015	1013	1013	1013	1012	1014	1017	1018	1015
Ext. Max. SLP (mbs)	1040	1040	1037	1034	1030	1029	1027	1027	1028	1031	1035	1040	1040
Ext. Min. SLP (mbs)	996	996	995	998	999	998	999	998	997	997	999	995	995
Prevailing Wind Direction	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
Thunder and Lightning ¹	0.1	0.1	0.2	0.1	0.0	0.1	0.2	0.1	0.3	0.2	0.1	0.1	0.1

COASTAL AREA OFF POINT MUGU, CA Between 34°N to 36°N and 119°W to 125°W													
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots ¹	1.0	1.5	2.0	2.2	1.8	1.5	0.7	0.4	0.5	0.9	1.1	1.4	1.3
Wave Height > 9 feet ¹	4.4	6.0	8.1	10.4	10.6	8.1	5.3	4.4	3.9	3.8	4.6	6.4	6.4
Visibility < 2 nautical miles ¹	4.5	6.3	4.6	4.9	5.7	5.8	8.5	8.0	7.7	8.7	5.5	5.6	6.3
Precipitation ¹	5.5	5.8	5.0	3.2	1.6	1.7	1.5	1.6	1.4	1.4	3.4	4.8	3.0
Temperature > 69° F	0.6	0.5	0.5	0.5	0.7	1.4	3.4	3.6	4.2	2.6	1.5	0.8	1.7
Mean Temperature (°F)	55.5	55.8	55.9	56.7	57.6	59.4	61.1	62.1	62.8	61.7	59.5	57.4	58.8
Temperature < 33° F ¹	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mean RH (%)	79	79	80	80	82	84	86	86	85	84	81	79	82
Overcast or Obscured ¹	21.2	25.7	24.4	24.5	32.1	40.0	50.6	48.2	36.6	29.4	18.9	20.4	31.4
Mean Cloud Cover (8 ^{ths})	4.1	4.3	4.3	4.2	4.5	4.7	5.4	5.4	4.6	4.3	3.7	3.9	4.5
Mean SLP (mbs)	1019	1019	1018	1017	1016	1015	1015	1015	1014	1016	1018	1019	1017
Ext. Max. SLP (mbs)	1036	1036	1045	1043	1035	1031	1033	1030	1032	1034	1040	1039	1045
Ext. Min. SLP (mbs)	987	992	990	996	997	995	998	998	996	998	996	991	987
Prevailing Wind Direction	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
Thunder and Lightning ¹	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1

COASTAL AREA OFF SAN FRANCISCO, CA Between 36°N to 38°N and 121°W to 126°W													
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots ¹	2.2	2.2	2.9	2.9	2.9	2.4	1.1	0.8	1.0	1.5	1.9	2.9	2.1
Wave Height > 9 feet ¹	6.2	5.9	7.8	9.1	9.8	7.4	5.8	4.8	4.2	3.8	5.3	7.1	6.5
Visibility < 2 nautical miles ¹	7.8	7.3	4.6	3.4	4.7	6.2	7.9	7.6	8.2	8.9	8.8	8.1	6.9
Precipitation ¹	9.4	7.4	6.9	3.8	2.7	2.6	2.0	2.1	2.0	2.6	5.2	7.7	4.4
Temperature > 69° F	0.2	0.1	0.2	0.2	0.4	0.7	1.1	2.0	2.4	1.3	0.5	0.3	0.8
Mean Temperature (°F)	53.7	53.9	54.1	54.2	55.6	57.6	59.2	60.5	61	59.7	57.4	55.2	56.9
Temperature < 33° F ¹	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mean RH (%)	82	83	81	81	83	85	86	87	85	85	83	81	84
Overcast or Obscured ¹	30.2	30.6	28.9	25.7	31.8	38.4	49.8	46.9	35.9	30.3	25.3	27.4	33.7
Mean Cloud Cover (8 ^{ths})	4.8	4.8	4.8	4.4	4.7	4.7	5.3	5.1	4.5	4.3	4.3	4.5	4.7
Mean SLP (mbs)	1019	1019	1018	1018	1017	1016	1016	1016	1015	1017	1019	1019	1017
Ext. Max. SLP (mbs)	1050	1051	1049	1041	1040	1042	1032	1031	1039	1033	1044	1042	1051
Ext. Min. SLP (mbs)	984	985	983	989	994	995	999	998	1000	997	996	989	983
Prevailing Wind Direction	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	N	NW
Thunder and Lightning ¹	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1

¹ Percentage Frequency

These data are based upon observations made by ships in transit. These ships tend to avoid bad weather when possible thus biasing the data toward good weather samples.

METEOROLOGICAL TABLES

COASTAL AREA OFF POINT ARENA, CA Between 38°N to 40°N and 122°W to 127°W													
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots ¹	3.6	3.1	3.3	4.1	6.1	4.8	4.0	2.4	2.6	2.8	2.6	3.4	3.6
Wave Height > 9 feet ¹	9.8	9.8	10.3	12.6	15.3	11.1	11.2	8.1	7.6	60	7.4	9.1	10.1
Visibility < 2 nautical miles ¹	8.0	8.6	5.7	4.1	5.2	7.0	9.4	10.0	11.8	9.7	9.4	10.4	8.2
Precipitation ¹	11.1	10.5	9.4	5.6	3.2	2.3	1.8	1.6	2.0	4.4	9.0	12.0	5.6
Temperature > 69° F	0.2	0.1	1.0	0.3	1.2	2.4	2.3	3.8	3.1	1.6	0.7	0.1	1.5
Mean Temperature (°F)	52.3	52.9	53.6	53.6	55.3	57.4	59.1	60.4	60.5	58.9	56.2	53.5	56.4
Temperature < 33° F ¹	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mean RH (%)	82	81	80	80	82	84	85	85	85	85	82	82	83
Overcast or Obscured ¹	33.6	34.2	29.5	25.1	26.3	31.2	39.2	38.6	34.2	29.0	31.4	34.9	32.3
Mean Cloud Cover (8 ^{ths})	5.0	5.0	4.7	4.4	4.2	4.3	4.7	4.6	4.3	4.2	4.6	5.0	4.6
Mean SLP (mbs)	1019	1019	1018	1018	1017	1016	1016	1015	1015	1017	1019	1019	1017
Ext. Max. SLP (mbs)	1047	1036	1041	1043	1043	1042	1035	1030	1030	1033	1041	1051	1051
Ext. Min. SLP (mbs)	985	984	982	994	993	996	998	997	1000	995	985	991	982
Prevailing Wind Direction	N	NW	NW	NW	NW	NW	NW	NW	NW	NW	N	N	NW
Thunder and Lightning ¹	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.2	0.2	0.1	0.3	0.2

COASTAL AREA OFF EUREKA, CA Between 40°N to 42°N and 124°W to 127°W													
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots ¹	6.5	5.1	4.4	3.2	4.6	3.4	3.7	2.4	3.2	2.9	4.2	6.0	4.1
Wave Height > 9 feet ¹	10.8	8.8	10.7	5.5	9.9	7.4	8.8	5.9	6.9	5.0	7.7	11.3	8.2
Visibility < 2 nautical miles ¹	6.9	7.2	5.3	3.2	4.6	6.6	11.0	11.0	11.1	9.8	8.9	7.4	7.7
Precipitation ¹	15.1	12.9	12.2	8.2	4.3	3.2	2.1	3.2	3.3	6.1	12.3	15.0	7.6
Temperature > 69° F	0.0	0.0	0.0	0.1	0.2	0.8	0.9	2.2	1.7	0.8	0.2	0.0	0.6
Mean Temperature (°F)	51.7	51.8	52.1	52.6	54.2	56.7	58.2	59.5	59.5	57.6	55.0	52.5	55.3
Temperature < 33° F ¹	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Mean RH (%)	84	83	82	81	83	84	86	87	86	85	83	83	84
Overcast or Obscured ¹	38.8	39.8	35.8	31.6	31.4	32.4	40.4	40.5	35.5	33.2	36.5	37.5	36.1
Mean Cloud Cover (8 ^{ths})	5.4	5.5	5.3	4.9	4.8	4.6	4.8	4.8	4.3	4.5	5.2	5.4	4.9
Mean SLP (mbs)	1018	1018	1018	1019	1019	1018	1017	1017	1015	1017	1018	1018	1018
Ext. Max. SLP (mbs)	1042	1060	1047	1036	1050	1045	1043	1042	1044	1043	1037	1038	1060
Ext. Min. SLP (mbs)	960	982	984	985	992	992	998	993	990	987	978	984	960
Prevailing Wind Direction	S	S	N	N	N	N	N	N	N	N	N	S	N
Thunder and Lightning ¹	0.3	0.8	0.2	0.3	0.1	0.2	0.1	0.0	0.2	0.4	0.5	0.4	0.3

COASTAL AREA OFF NORTH BEND, OR Between 42°N to 44°N and 124°W to 127°W													
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots ¹	6.5	5.8	4.0	2.4	1.6	2.3	2.1	1.3	1.4	1.8	4.5	5.6	2.9
Wave Height > 9 feet ¹	11.9	11.4	9.8	5.5	5.4	4.7	5.2	3.2	3.3	4.9	11.3	12	6.5
Visibility < 2 nautical miles ¹	6.3	6.9	4.5	5.0	4.5	4.9	7.7	14.8	8.7	9.8	5.9	7.1	7.4
Precipitation ¹	18.7	17.7	15.9	10.1	7.6	5.7	3.6	4.0	4.6	6.8	15.2	18.2	9.3
Temperature > 69° F	0.0	0.0	0.0	0.1	0.3	0.7	1.3	1.5	1.2	0.4	0.1	0.1	0.6
Mean Temperature (°F)	49.7	50.0	50.3	51.5	53.6	56.5	58.9	59.3	59.8	57.0	54.0	51.1	55.0
Temperature < 33° F ¹	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Mean RH (%)	83	82	82	81	82	84	86	87	86	85	83	83	84
Overcast or Obscured ¹	42.9	43.2	39.4	34.0	33.6	37.0	37.6	43.6	32.9	34.4	41.4	40.4	38.0
Mean Cloud Cover (8 ^{ths})	5.7	5.7	5.6	5.2	5.1	5.3	4.8	5.2	4.4	4.7	5.5	5.6	5.2
Mean SLP (mbs)	1018	1017	1017	1019	1019	1019	1019	1017	1016	1018	1018	1018	1018
Ext. Max. SLP (mbs)	1037	1051	1039	1043	1042	1046	1040	1037	1038	1050	1050	1045	1051
Ext. Min. SLP (mbs)	969	973	984	980	988	995	997	992	985	982	976	961	961
Prevailing Wind Direction	S	S	S	N	N	N	N	N	N	N	S	S	N
Thunder and Lightning ¹	0.4	0.7	0.1	0.2	0.2	0.1	0.1	0.1	0.3	0.3	0.6	0.5	0.3

¹ Percentage Frequency

These data are based upon observations made by ships in transit. These ships tend to avoid bad weather when possible thus biasing the data toward good weather samples.

METEOROLOGICAL TABLES

COASTAL AREA OFF NEWPORT, OR Between 44°N to 46°N and 123°W to 127°W													
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots ¹	6.0	3.8	3.2	1.2	0.6	0.5	0.4	0.3	0.4	2.0	4.6	7.9	2.0
Wave Height > 9 feet ¹	12.4	7.7	8.9	3.5	2.8	2.2	1.8	1.7	2.2	4.4	9.9	13.9	4.6
Visibility < 2 nautical miles ¹	6.1	8.0	4.5	3.4	4.2	4.0	4.4	7.5	6.5	7.1	6.5	7.3	5.7
Precipitation ¹	20.7	18.1	16.3	12.7	8.8	7.9	4.7	5.9	6.7	11.4	16.9	19.5	10.8
Temperature > 69° F	0.0	0.0	0.0	0.0	0.2	0.6	1.5	1.7	1.5	0.4	0.1	0.0	0.6
Mean Temperature (°F)	48.2	48.6	48.9	50.4	53.6	57.0	59.9	60.4	60.7	57.4	53	49.7	55.1
Temperature < 33° F ¹	0.5	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.1
Mean RH (%)	82	82	81	81	81	82	84	85	84	83	82	84	83
Overcast or Obscured ¹	44.8	42.6	39.4	34.6	35.5	40.6	40.0	40.1	34.0	33.6	40.4	44.1	38.8
Mean Cloud Cover (8 ^{ths})	6.0	5.8	5.7	5.5	5.5	5.8	5.5	5.5	4.8	5.0	5.7	5.9	5.5
Mean SLP (mbs)	1017	1017	1016	1019	1019	1019	1019	1018	1017	1018	1017	1017	1018
Ext. Max. SLP (mbs)	1040	1055	1042	1052	1049	1044	1042	1041	1055	1040	1043	1044	1055
Ext. Min. SLP (mbs)	970	960	972	986	993	990	996	992	985	966	981	964	960
Prevailing Wind Direction	S	S	S	N	N	N	N	N	N	N	S	S	N
Thunder and Lightning ¹	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.2	0.6	0.3	0.3

COASTAL AREA OFF ASTORIA, WA Between 46°N to 48°N and 122°W to 127°W													
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots ¹	5.1	4.9	3.9	1.4	0.7	0.3	0.1	0.3	0.5	2.4	5.1	6.6	2.3
Wave Height > 9 feet ¹	8.0	6.9	5.9	3.4	1.9	1.7	1.3	0.9	1.3	4.0	8.7	9.3	4.0
Visibility < 2 nautical miles ¹	8.0	7.0	5.8	3.6	4.5	4.7	5.7	8.7	6.7	7.5	5.7	7.8	6.3
Precipitation ¹	21.1	19.7	17.6	13.1	10.9	8.6	5.1	6.5	7.8	12.5	20.0	22.0	13.0
Temperature > 69° F	0.0	0.0	0.0	0.0	0.2	0.6	2.1	2.0	1.2	0.2	0.0	0.0	0.6
Mean Temperature (°F)	45.6	47.0	47.7	49.6	52.9	56.4	59.5	60.3	59.8	56.1	50.9	47.6	53.4
Temperature < 33° F ¹	2.3	0.6	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	1.4	0.4
Mean RH (%)	84	84	82	82	84	84	85	87	85	84	83	84	84
Overcast or Obscured ¹	46.4	43.7	38.4	35.0	36.3	41.5	42.1	41.9	32.3	35.4	41.7	45.6	39.9
Mean Cloud Cover (8 ^{ths})	6.0	5.9	5.6	5.6	5.7	6.0	5.6	5.5	4.8	5.2	5.8	6.0	5.6
Mean SLP (mbs)	1017	1016	1016	1018	1018	1018	1019	1018	1017	1017	1016	1017	1017
Ext. Max. SLP (mbs)	1045	1041	1058	1040	1050	1043	1038	1037	1049	1040	1042	1050	1058
Ext. Min. SLP (mbs)	970	975	974	978	985	988	991	991	978	980	964	963	963
Prevailing Wind Direction	S	S	S	NW	NW	NW	NW	NW	N	S	S	S	NW
Thunder and Lightning ¹	0.2	0.3	0.3	0.1	0.2	0.1	0.1	0.2	0.3	0.3	0.5	0.3	0.2

COASTAL AREA OFF SEATTLE, WA Between 48°N to 50°N and 122°W to 129°W													
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots ¹	3.6	2.8	2.3	1.2	0.8	0.6	0.3	0.3	0.5	1.7	3.1	3.4	1.6
Wave Height > 9 feet ¹	17.4	18.0	16.8	15.0	6.7	6.1	1.9	2.1	4.7	16.0	24.0	30.5	12.3
Visibility < 2 nautical miles ¹	11.4	10.4	8.1	7.1	6.6	6.7	9.2	14.0	12.0	13.2	11.7	12.1	10.3
Precipitation ¹	24.4	24.4	19.6	16.7	13.5	10.8	7.5	5.8	9.2	16.6	24.0	24.9	15.6
Temperature > 69° F	0.0	0.0	0.0	0.1	0.5	1.6	3.0	2.8	1.2	0.3	0.0	0.0	0.9
Mean Temperature (°F)	44.0	45.3	46.1	48.7	52.8	56.3	58.8	59.3	58.2	53.7	48.3	45.5	52.1
Temperature < 33° F ¹	3.3	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.9	0.4
Mean RH (%)	84	84	82	82	82	82	84	85	84	84	83	84	83
Overcast or Obscured ¹	46.3	43.3	34.5	32.8	32.7	33.1	32.6	32.9	30.6	36.5	38.4	41.3	35.8
Mean Cloud Cover (8 ^{ths})	6.2	6.0	5.5	5.5	5.4	5.5	5.1	5.0	4.7	5.4	5.9	6.0	5.5
Mean SLP (mbs)	1014	1015	1014	1016	1017	1017	1018	1017	1017	1016	1014	1014	1016
Ext. Max. SLP (mbs)	1041	1057	1041	1060	1044	1042	1048	1040	1050	1041	1043	1048	1060
Ext. Min. SLP (mbs)	951	974	967	977	987	988	993	990	973	967	966	964	951
Prevailing Wind Direction	SE	SE	SE	NW	NW	NW	NW	NW	NW	SE	SE	SE	NW
Thunder and Lightning ¹	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.2

¹ Percentage Frequency

These data are based upon observations made by ships in transit. These ships tend to avoid bad weather when possible thus biasing the data toward good weather samples.

METEOROLOGICAL TABLES

COASTAL AREA OFF HAWAIIAN (WINDWARD) ISLANDS Between 18°N to 22°N and 154°W to Island													
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots ¹	1.4	0.8	1.3	0.4	0.0	0.1	0.2	0.2	0.1	0.2	1.1	1.9	0.6
Wave Height > 9 feet ¹	4.0	4.0	5.6	3.9	2.5	1.3	1.9	1.8	0.5	1.8	4.7	6.3	3.2
Visibility < 2 nautical miles ¹	1.2	0.6	0.3	0.5	0.2	0.3	0.2	1.0	0.6	0.4	0.6	0.3	0.5
Precipitation ¹	5.7	5.5	5.6	5.8	3.1	6.4	4.0	5.4	3.1	2.7	5.7	4.0	4.8
Temperature > 69° F	89.9	84.7	87.5	85.8	93.2	94.2	99.7	99.9	99.8	99.6	99.1	95.5	93.8
Mean Temperature (°F)	74.1	73.5	73.5	74.1	75.6	76.7	77.7	78.5	78.7	78.3	76.8	75.0	76.0
Temperature < 33° F ¹	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mean RH (%)	79	79	78	78	77	77	78	79	77	77	78	78	78
Overcast or Obscured ¹	12.5	13.0	14.7	13.2	7.6	7.1	6.9	7.0	5.7	8.4	11.9	11.0	9.9
Mean Cloud Cover (8 ^{ths})	4.1	4.2	4.5	4.5	4.1	4.3	4.2	4.1	3.9	4.0	4.4	4.1	4.2
Mean SLP (mbs)	1015	1016	1017	1017	1017	1017	1017	1016	1015	1015	1016	1016	1016
Ext. Max. SLP (mbs)	1030	1033	1038	1030	1028	1030	1030	1030	1031	1030	1033	1028	1038
Ext. Min. SLP (mbs)	998	996	997	1001	1002	1002	1002	1002	1001	999	1000	1001	996
Prevailing Wind Direction	E	E	E	E	E	E	E	E	E	E	E	E	E
Thunder and Lightning ¹	0.7	0.4	0.4	0.3	0.1	0.1	0.1	0.3	0.2	0.3	0.4	0.4	0.3

COASTAL AREA OFF HAWAIIAN (LEEWARD) ISLANDS Between 18°N to 22°N and from Island to 160°W													
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots ¹	0.5	0.4	0.8	0.4	0.1	0.1	0.1	0.2	0.1	0.2	0.4	0.9	0.3
Wave Height > 9 feet ¹	2.3	2.5	2.9	2.0	0.9	0.7	1.2	0.9	0.9	1.5	2.2	4.5	1.8
Visibility < 2 nautical miles ¹	0.7	0.7	0.3	0.5	0.3	0.3	0.2	0.2	0.2	0.3	0.5	0.4	0.4
Precipitation ¹	4.0	4.6	4.0	3.7	3.2	2.2	2.1	2.2	2.1	2.8	3.9	4.5	3.2
Temperature > 69° F	94.7	93.6	93.1	97.0	99.1	99.8	99.8	99.9	99.9	99.8	99.7	97.6	97.8
Mean Temperature (°F)	75.1	74.7	74.7	75.7	77.1	78.5	79.2	79.7	80	79.3	77.9	76.2	77.4
Temperature < 33° F ¹	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mean RH (%)	77	77	77	78	77	77	77	77	77	77	78	78	77
Overcast or Obscured ¹	9.0	10.4	11.9	11.6	7.0	5.4	4.1	4.2	4.8	7.4	9.6	10.4	8.0
Mean Cloud Cover (8 ^{ths})	3.7	3.8	4.1	4.2	4.0	4.0	3.8	3.6	3.6	3.9	4.0	4.0	3.9
Mean SLP (mbs)	1015	1015	1016	1017	1017	1016	1016	1016	1015	1015	1015	1015	1016
Ext. Max. SLP (mbs)	1032	1030	1037	1031	1031	1031	1031	1032	1031	1032	1032	1033	1037
Ext. Min. SLP (mbs)	993	998	1000	1000	1001	1002	1003	1001	1000	999	998	998	993
Prevailing Wind Direction	E	E	E	E	E	E	E	E	E	E	E	E	E
Thunder and Lightning ¹	0.4	0.5	0.5	0.3	0.2	0.1	0.2	0.1	0.2	0.4	0.7	0.5	0.3

COASTAL AREA OFF BARKING SANDS, HI Between 36°N to 38°N and 72°W to 76°W													
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots ¹	0.6	0.4	0.6	0.2	0.1	0.3	0.2	0.1	0.0	0.2	0.8	0.7	0.3
Wave Height > 9 feet ¹	3.0	6.2	5.0	5.3	1.8	1.5	2.9	1.4	0.9	1.7	4.5	7.7	3.4
Visibility < 2 nautical miles ¹	0.7	0.4	0.3	0.3	0.2	0.1	0.1	0.2	0.5	0.4	0.4	0.6	0.3
Precipitation ¹	3.8	3.5	4.3	3.9	2.4	1.8	2.1	3.0	2.0	3.1	4.6	5.3	3.3
Temperature > 69° F	84.1	77.0	80.4	88.0	96.1	98.5	99.8	99.9	99.5	99.0	98.3	93.3	93.0
Mean Temperature (°F)	73.4	72.7	73.0	73.7	75.2	76.9	77.9	78.8	79.1	78.0	76.6	74.5	75.9
Temperature < 33° F ¹	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mean RH (%)	78	78	78	78	79	80	79	79	78	77	78	78	78
Overcast or Obscured ¹	11.3	13.9	13.5	12.4	8.7	5.1	4.6	4.7	3.6	8.7	11.9	14.7	9.3
Mean Cloud Cover (8 ^{ths})	3.9	4.2	4.3	4.4	4.2	3.9	4.0	4.0	3.7	3.9	4.1	4.3	4.1
Mean SLP (mbs)	1015	1016	1018	1018	1018	1018	1017	1017	1016	1016	1016	1016	1017
Ext. Max. SLP (mbs)	1028	1031	1031	1032	1030	1030	1027	1026	1030	1026	1032	1029	1032
Ext. Min. SLP (mbs)	997	999	998	1000	1007	1002	1004	1002	1002	1001	1002	995	995
Prevailing Wind Direction	E	E	E	E	E	E	E	E	E	E	E	E	E
Thunder and Lightning ¹	0.6	0.3	0.3	0.5	0.3	0.1	0.3	0.5	0.3	0.5	0.7	0.7	0.4

¹ Percentage Frequency

These data are based upon observations made by ships in transit. These ships tend to avoid bad weather when possible thus biasing the data toward good weather samples.

METEOROLOGICAL TABLES

COASTAL AREA OFF FRENCH FRIGATE SHOALS Between 23°N to 25°N and 165°W to 168°W													
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots ¹	1.7	1.3	0.4	0.9	0.2	0.0	0.3	0.0	0.1	0.3	1.6	1.4	0.7
Wave Height > 9 feet ¹	6.7	5.4	3.5	5.2	1.5	0.5	1.5	0.3	0.4	3.0	3.1	7.5	3.1
Visibility < 2 nautical miles ¹	1.1	0.9	0.8	0.3	0.3	0.2	0.4	0.4	0.0	0.3	0.6	0.6	0.5
Precipitation ¹	5.4	4.8	6.1	4.8	4.2	1.8	2.8	4.2	2.9	4.0	6.7	4.5	4.4
Temperature > 69° F	68.7	66.4	68.5	80.7	94.1	99.6	99.9	99.9	100	99.8	97.9	87.1	88.9
Mean Temperature (°F)	72.0	71.7	71.9	73.1	75.0	77.9	78.7	79.4	79.4	78.5	76.4	73.8	75.7
Temperature < 33° F ¹	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mean RH (%)	77	78	79	78	79	79	79	79	78	77	78	76	78
Overcast or Obscured ¹	16.8	14.1	16.1	16.1	10.8	3.9	4.4	7.0	5.0	9.5	14.9	13.6	11
Mean Cloud Cover (8 ^{ths})	4.6	4.2	4.6	4.8	4.3	3.9	4.2	4.2	3.9	4.3	4.5	4.4	4.3
Mean SLP (mbs)	1015	1016	1018	1019	1018	1018	1018	1017	1016	1016	1016	1016	1017
Ext. Max. SLP (mbs)	1029	1027	1030	1031	1026	1027	1029	1026	1022	1026	1029	1034	1034
Ext. Min. SLP (mbs)	991	1000	1001	998	1002	1004	1009	1007	1002	1004	1003	991	991
Prevailing Wind Direction	E	E	E	E	E	E	E	E	E	E	E	E	E
Thunder and Lightning ¹	0.1	0.3	0.4	0.4	0.1	0.2	0.2	0.4	0.2	0.6	0.7	0.5	0.4

COASTAL AREA OFF MIDWAY ISLAND Between 27°N to 28°N and 176°W to 179°W													
WEATHER ELEMENTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Wind > 33 knots ¹	4.1	3.0	2.2	0.8	0.1	0.0	0.2	0.0	0.1	0.3	1.3	3.4	1.4
Wave Height > 9 feet ¹	11.0	12.2	4.7	2.8	1.6	0.2	1.0	0.9	1.4	2.0	7.3	11.2	5.3
Visibility < 2 nautical miles ¹	0.9	0.4	0.6	0.8	0.7	1.1	0.1	0.0	0.1	0.2	1.1	0.8	0.6
Precipitation ¹	7.6	6.2	5.3	6.6	4.0	4.5	5.9	5.3	5.9	4.7	6.5	6.0	5.7
Temperature > 69° F	23.9	17.0	27.2	38.6	65.6	96.4	99.7	99.8	99.8	97.0	81.6	49.5	64.5
Mean Temperature (°F)	67.7	66.8	68.1	69.4	72.5	76.9	79.3	80.2	79.7	76.7	73.8	70.4	73.2
Temperature < 33° F ¹	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mean RH (%)	77	77	79	79	80	80	80	80	78	78	78	78	79
Overcast or Obscured ¹	24.3	21.9	22.6	22.0	16.6	13.3	7.4	9.4	13.2	12.8	17.3	21.2	17.1
Mean Cloud Cover (8 ^{ths})	5.3	5.0	5.0	5.1	4.9	4.5	4.3	4.5	4.5	4.6	4.8	5.0	4.8
Mean SLP (mbs)	1015	1016	1019	1021	1019	1019	1020	1019	1017	1018	1017	1017	1018
Ext. Max. SLP (mbs)	1030	1033	1032	1044	1030	1029	1032	1033	1035	1029	1030	1035	1044
Ext. Min. SLP (mbs)	987	998	993	1001	998	1002	1008	1002	1002	1002	1001	983	983
Prevailing Wind Direction	W	W	E	E	E	E	E	E	E	E	E	SW	E
Thunder and Lightning ¹	0.9	0.2	0.4	0.3	0.0	0.0	1.3	0.4	0.7	0.3	0.5	0.1	0.4

¹ Percentage Frequency

These data are based upon observations made by ships in transit. These ships tend to avoid bad weather when possible thus biasing the data toward good weather samples.

Atmospheric Pressure Conversion Table

Inches	Millibars	Inches	Millibars	Inches	Millibars
28.44	963	29.32	993	30.21	1023
28.53	966	29.41	996	30.30	1026
28.62	969	29.50	999	30.39	1029
28.70	972	29.59	1002	30.48	1032
28.79	975	29.68	1005	30.56	1035
28.88	978	29.77	1008	30.65	1038
28.97	981	29.86	1011	30.74	1041
29.06	984	29.94	1014	30.83	1044
29.15	987	30.03	1017	30.92	1047
29.24	990	30.12	1020	31.01	1050

Mean Surface Water Temperatures and Densities

	La Jolla, CA	Newport Bay, CA	Los Angeles (Outer Harbor), CA	Santa Monica, CA	Avila Beach, CA	Pacific Grove, CA	San Francisco (Fort Point), CA	Alameda, CA	Crescent City, CA	Astoria (Tongue Point), OR	Neah Bay, WA	Seattle (Elliot Bay), WA	Hilo, HI	Honolulu, HI	Kaneohe Bay, HI	Midway Island
Years of Record	56	17	49	27	27	51	51	33	37	48	37	50	26	28	16	28

Jan	Temp (°C)	13.9	14.0	13.9	13.5	12.4	11.8	10.4	10.3	9.6	4.7	7.3	8.6	22.3	24.4	22.7	19.7
	Density	24.9	24.4	24.7	24.9	24.5	24.7	21.1	17.3	20.8	0.1	22.4	20.4	19.6	25.4	25.3	26.4
Feb	Temp (°C)	13.9	14.5	14.2	13.7	12.5	12.0	10.9	11.9	9.9	5.4	7.4	8.2	22.2	24.3	22.7	19.5
	Density	24.8	24.4	24.6	24.9	24.4	24.6	20.0	15.6	20.7	-0.2	22.2	20.0	19.2	25.6	25.4	26.4
Mar	Temp (°C)	14.4	15.4	14.7	13.9	12.3	12.2	11.6	13.9	10.2	7.4	7.9	8.2	22.1	24.3	23.3	20.1
	Density	24.8	24.5	24.8	25.0	24.7	24.6	19.9	15.7	21.1	-0.5	22.5	19.9	19.0	25.6	25.1	26.5
Apr	Temp (°C)	15.4	16.6	15.4	14.7	12.5	12.4	12.4	16.1	10.7	10.5	9.1	8.9	22.2	24.7	23.8	21.0
	Density	24.9	24.5	24.9	25.0	24.9	24.7	20.0	16.5	21.8	-0.7	22.7	19.5	17.6	25.8	25.3	26.5
May	Temp (°C)	16.9	17.7	16.2	15.7	13.1	12.8	13.1	17.8	11.5	13.4	10.6	10.3	22.7	25.4	25.1	22.7
	Density	25.0	24.9	25.1	25.2	25.2	24.9	20.7	17.6	22.6	-0.7	23.2	19.5	18.2	25.8	25.4	26.6
Jun	Temp (°C)	18.4	19.0	17.7	17.5	14.1	13.4	13.9	19.4	12.5	15.8	11.6	11.9	23.3	26.0	26.2	25.1
	Density	25.0	25.0	25.1	25.2	25.4	25.0	21.5	18.7	23.3	-0.6	23.2	19.9	18.9	25.8	25.9	26.7
Jul	Temp (°C)	19.9	20.3	18.9	19.2	15.4	13.8	14.7	20.5	13.6	18.6	11.8	13.1	23.7	26.4	26.3	26.4
	Density	25.0	25.0	25.1	25.2	25.4	25.0	22.9	20.5	24.0	-0.5	23.7	20.7	18.5	25.9	25.9	26.7
Aug	Temp (°C)	20.8	21.2	19.7	19.9	15.9	13.9	15.2	20.5	14.3	19.3	11.6	13.4	23.9	26.8	26.6	26.9
	Density	25.0	25.0	25.1	25.2	25.3	25.0	23.7	21.8	24.1	-0.2	23.9	21.4	18.6	25.9	26.0	26.6
Sep	Temp (°C)	19.3	19.9	19.0	19.0	15.7	14.2	15.5	20.2	13.5	17.5	11.3	13.0	24.2	26.9	26.7	26.9
	Density	24.9	25.0	25.1	25.1	25.2	25.0	23.8	22.4	24.2	0.4	23.8	21.8	19.2	25.9	26.0	26.6
Oct	Temp (°C)	18.0	18.7	18.1	17.6	15.0	13.7	14.8	17.7	12.1	14.0	10.6	12.2	24.1	26.9	26.2	25.1
	Density	24.9	24.9	25.0	25.0	25.1	24.9	23.8	21.9	24.0	1.0	23.4	21.8	19.5	25.9	25.9	26.5
Nov	Temp (°C)	16.3	16.4	16.5	15.7	13.9	12.9	13.0	14.4	11.2	9.4	9.4	10.8	23.5	26.1	24.7	23.2
	Density	24.9	24.6	24.9	25.0	24.9	24.8	23.2	21.1	22.8	0.9	22.9	21.5	19.3	25.8	25.6	26.5
Dec	Temp (°C)	14.9	14.7	14.8	14.3	12.8	12.4	11.2	11.4	10.2	6.2	8.2	9.6	22.7	25.0	23.1	21.3
	Density	24.9	24.5	24.8	24.9	24.8	24.8	22.4	19.5	21.8	0.5	22.5	20.9	18.9	25.7	25.4	26.4
Mean	Temp (°C)	16.8	17.4	16.6	16.2	13.8	13.0	13.1	16.2	11.7	11.8	9.7	10.7	23.1	25.6	24.8	23.2
	Density	24.9	24.7	24.9	25.0	25.0	24.8	21.9	19.0	22.6	0.0	23.0	20.6	18.9	25.6	25.6	26.5

F (Fahrenheit) = 1.8C (Celsius) + 32

Density as used in this table is the specific gravity of the sea water or the ratio between the weight of a sea-water sample and the weight of an equal volume of distilled water at 15°C (59°F).

Table for Estimating Time of Transit																			
Distance (nautical miles)	Speed (knots)																		
	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	30
	days/ hours	days/ hours	days/ hours	days/ hours	days/ hours	days/ hours	days/ hours	days/ hours	days/ hours	days/ hours	days/ hours	days/ hours	days/ hours	days/ hours	days/ hours	days/ hours	days/ hours	days/ hours	days/ hours
10	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	-	-	-	-	-	-
20	0/3	0/2	0/2	0/2	0/2	0/2	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1
30	0/4	0/3	0/3	0/3	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/1	0/1	0/1	0/1	0/1	0/1
40	0/5	0/4	0/4	0/4	0/3	0/3	0/3	0/3	0/3	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/1
50	0/6	0/6	0/5	0/5	0/4	0/4	0/4	0/3	0/3	0/3	0/3	0/3	0/3	0/2	0/2	0/2	0/2	0/2	0/2
60	0/8	0/7	0/6	0/5	0/5	0/5	0/4	0/4	0/4	0/4	0/3	0/3	0/3	0/3	0/3	0/3	0/3	0/2	0/2
70	0/9	0/8	0/7	0/6	0/6	0/5	0/5	0/5	0/4	0/4	0/4	0/4	0/4	0/3	0/3	0/3	0/3	0/3	0/2
80	0/10	0/9	0/8	0/7	0/7	0/6	0/6	0/5	0/5	0/4	0/4	0/4	0/4	0/4	0/4	0/3	0/3	0/3	0/3
90	0/11	0/10	0/9	0/8	0/8	0/7	0/6	0/6	0/6	0/5	0/5	0/5	0/5	0/4	0/4	0/4	0/4	0/4	0/3
100	0/13	0/11	0/10	0/9	0/8	0/8	0/7	0/7	0/6	0/6	0/6	0/5	0/5	0/5	0/5	0/4	0/4	0/4	0/3
200	1/1	0/22	0/20	0/18	0/17	0/15	0/14	0/13	0/13	0/12	0/11	0/11	0/10	0/10	0/9	0/9	0/8	0/8	0/7
300	1/14	1/9	1/6	1/3	1/1	0/23	0/21	0/20	0/19	0/18	0/17	0/16	0/15	0/14	0/14	0/13	0/13	0/12	0/10
400	2/2	1/20	1/16	1/12	1/9	1/7	1/5	1/3	1/1	1/0	0/22	0/21	0/20	0/19	0/18	0/17	0/17	0/16	0/13
500	2/15	2/8	2/2	1/21	1/18	1/14	1/12	1/9	1/7	1/5	1/4	1/2	1/1	1/0	0/23	0/22	0/21	0/20	0/17
600	3/3	2/19	2/12	2/7	2/2	1/22	1/19	1/16	1/14	1/11	1/9	1/8	1/6	1/5	1/3	1/2	1/1	1/0	0/20
700	3/16	3/6	2/22	2/16	2/10	2/6	2/2	1/23	1/20	1/17	1/15	1/13	1/11	1/9	1/8	1/6	1/5	1/4	0/23
800	4/4	3/17	3/8	3/1	2/19	2/14	2/9	2/5	2/2	1/23	1/20	1/18	1/16	1/14	1/12	1/11	1/9	1/8	1/3
900	4/17	4/4	3/18	3/10	3/3	2/21	2/16	2/12	2/8	2/5	2/2	1/23	1/21	1/19	1/17	1/15	1/14	1/12	1/6
1000	5/5	4/15	4/4	3/19	3/11	3/5	2/23	2/19	2/15	2/11	2/8	2/5	2/2	2/0	1/21	1/19	1/18	1/16	1/9
2000	10/10	9/6	8/8	7/14	6/23	6/10	5/23	5/13	5/5	4/22	4/15	4/9	4/4	3/23	3/19	3/15	3/11	3/8	2/19
3000	15/15	13/21	12/12	11/9	10/10	9/15	8/22	8/8	7/20	7/8	6/23	6/14	6/6	5/23	5/16	5/10	5/5	5/0	4/4
4000	20/20	18/21	16/16	15/4	13/21	12/20	11/22	11/3	10/10	9/19	9/6	8/19	8/8	7/22	7/14	7/6	6/23	6/16	5/13
5000	26/1	23/4	20/20	18/23	17/9	16/1	14/21	13/21	13/1	12/6	11/14	10/23	10/10	9/22	9/11	9/1	8/16	8/8	6/23
6000	31/6	27/19	25/0	22/17	20/20	19/6	17/21	16/16	15/15	14/17	13/21	13/4	12/12	11/22	11/9	10/21	10/10	10/0	8/8

Determination of Wind Speed by Sea Condition					
Miles per hour	Knots	Descriptive	Sea Conditions	Wind Force (Beaufort)	Probable Wave Height (feet)
0-1	0-1	Calm	Sea smooth and mirror like	0	-
1-3	1-3	Light Air	Scale-like ripples without foam crests	1	¼
4-7	4-6	Light Breeze	Small, short wavelets; crests have a glassy appearance and do not break.	2	½
8-12	7-10	Gentle Breeze	Large wavelets; some crests begin to break; foam has glassy appearance. Occasional white foam crests.	3	2
13-18	11-16	Moderate Breeze	Small waves, become longer; fairly frequent white foam crests.	4	4
19-24	17-21	Fresh Breeze	Moderate waves, taking a more pronounced long form; many white foam crests; there may be some spray.	5	6
25-31	22-27	Strong Breeze	Large waves begin to form; white foam crests are more extensive everywhere; there may be some spray.	6	10
32-38	28-33	Near Gale	Sea heaps up and white foam from breaking waves begin to be blown in streaks along the direction of the wind; spindrift begins.	7	14
39-46	34-40	Gale	Moderately high waves of greater length; edges of crests break into spindrift; foam is blown in well-marked streaks along the direction of the wind.	8	18
47-54	41-47	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 reduce visibility.	9	23
55-63	48-55	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 is white in appearance. The tumbling of the sea becomes heavy and shock-like. Visibility is reduced.	10	29
64-72	56-63	Violent Storm	Exceptionally high waves that may obscure small and medium-sized ships. 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 is reduced.	11	37
73+	64+	Hurricane	The air is filled with foam and spray. Sea completely white with driving spray; visibility is very much reduced.	12	45

Pacific Ocean Distances (nautical miles)																										
	Midway Island	Port Allen, HI	Nawiliwili, HI	Pearl Harbor, HI	Honolulu, HI	Kahalui, HI	Kawaihae, HI	Hilo, HI	Kuluk Bay, AK	Unimak Pass, AK	Kodiak, AK	Anchorage, AK	Seward, AK	Port Valdez, AK	Cape Spencer, AK	Sitka, AK	Ketchikan, AK	Seattle, WA	Swiftsure Bank, WA	Cape Flattery, WA	Portland, OR	Astoria, OR	San Francisco, CA	Los Angeles, CA	Long Beach, CA	San Diego, CA
Panama Canal 8°53.0'N., 79°31.0'W.	5707	4777	4767	4690	4685	4609	4594	4527	5604	5228	4924	5117	4940	4984	4603	4538	4387	4044	-	3920	3888	3803	3270	2939	2939	2867
San Diego, CA 32°43.0'N., 117°10.5'W.	3097	2347	2330	2283	2278	2212	2219	2175	2806	2412	2115	2303	2124	2174	1787	1723	1575	1228	-	1104	1074	989	455	95	94	-
Long Beach, CA 33°46.2'N., 118°13.3'W.	3034	2302	2284	2241	2236	2173	2183	2143	2725	2331	2034	2223	2043	2092	1707	1643	1497	1148	-	1024	992	908	374	3	-	-
Los Angeles, CA 33°45.0'N., 118°16.2'W.	3031	2299	2281	2238	2233	2170	2180	2140	2722	2328	2031	2220	2040	2089	1703	1639	1493	1144	-	1020	989	904	371	-	-	-
San Francisco, CA 37°48.5'N., 122°24.0'W.	2792	2146	2128	2096	2091	2036	2051	2019	2403	1990	1693	1882	1702	1745	1366	1302	1156	807	-	683	652	567	-	-	-	-
Astoria, OR 46°11.7'N., 123°50.0'W.	2724	2281	2262	2251	2246	2207	2235	2214	2071	1626	1261	1435	1242	1239	883	815	660	278	-	153	85	-	-	-	-	-
Portland, OR 45°33.0'N., 122°41.7'W.	2809	2366	2347	2336	2331	2292	2320	2299	2156	1711	1346	1520	1327	1324	968	900	745	362	-	238	-	-	-	-	-	-
Cape Flattery, WA 48°26.0'N., 124°47.0'W.	2694	2308	2289	2290	2285	2245	2276	2260	-	-	-	-	-	-	-	-	-	124	10	-	-	-	-	-	-	-
Swiftsure Bank, WA 48°31.0'N., 125°00.0'W.	-	-	-	-	-	-	-	-	1973	1510	1124	1294	1100	1100	739	681	518	134	-	-	-	-	-	-	-	-
Seattle, WA 47°36.2'N., 122°20.3'W.	2818	2432	2413	2414	2409	2369	2400	2384	2107	1644	1258	1428	1234	1234	976*	815	659*	-	-	-	-	-	-	-	-	-
Ketchikan, AK 55°20.5'N., 131°38.7'W.	2570	2387	2368	2388	2383	2361	2405	2398	1656	1193	742	892	682	713	307	224	-	-	-	-	-	-	-	-	-	-
Sitka, AK 57°03.1'N., 135°20.5'W.	2481	2380	2361	2390	2385	2365	2412	2410	1490	1027	564	708	464	479	85	-	-	-	-	-	-	-	-	-	-	-
Cape Spencer, AK 58°10.0'N., 136°38.3'W.	2472	2407	2388	2416	2411	2398	2445	2447	1450	987	505	641	422	400	-	-	-	-	-	-	-	-	-	-	-	-
Port Valdez, AK 61°06.0'N., 146°24.0'W.	2386	2445	2429	2473	2468	2463	2513	2524	1224	761	280	385	144	-	-	-	-	-	-	-	-	-	-	-	-	-
Seward, AK 60°06.0'N., 149°26.0'W.	2250	2351	2332	2378	2373	2377	2432	2439	1115	652	175	274	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anchorage, AK 61°14.2'N., 149°53.3'W.	2305	2459	2440	2482	2477	2479	2535	2542	1151	688	242	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kodiak, AK 57°47.1'N., 152°25.1'W.	2088	2203	2184	2235	2230	2233	2289	2296	968	505	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unimak Pass, AK 54°20.0'N., 164°45.0'W.	1680	1972	1963	2024	2028	2044	2110	2126	463	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kuluk Bay, AK 51°51.6'N., 176°37.6'W.	1460	1990	1989	2057	2061	2099	2164	2198	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hilo, HI 19°44.1'N., 155°03.5'W.	1338	297	287	201	196	121	83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kawaihae, HI 20°02.3'N., 155°49.9'W.	1278	240	230	145	140	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kahalui, HI 20°54.0'N., 156°28.2'W.	1232	193	181	94	89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Honolulu, HI 21°18.5'N., 157°52.3'W.	1150	106	96	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pearl Harbor, HI 21°20.0'N., 157°58.3'W.	1146	102	92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nawiliwili, HI 21°57.4'N., 159°21.5'W.	1069	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Port Allen, HI 24°51.1'N., 159°35.6'W.	1042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Midway Island 28°13.0'N., 177°22.0'W.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* via inside passage

		Distances on Columbia River System (nautical and statute miles)																										
		Johnson Bar Landing, ID	Lewiston, ID	Central Ferry, WA	Ice Harbor Dam, WA	Harrisburg, OR	Corvallis, OR	Albany, OR	Salem, OR	Oregon City, OR	Portland, OR	Richland, WA	Pasco, WA	Port of Walla Walla, WA	McNary Lock & Dam	Umatilla, OR	Arlington, OR	John Day Lock & Dam	The Dalles Lock & Dam	Hood River (town), OR	Bonneville Lock & Dam	Vancouver, WA	St. Helens, OR	Longview, WA	Astoria, OR	Warrenton, OR	Iwaco, WA	Columbia River (mouth)
Columbia River	Columbia River (mouth)	483	404	354	291	230	203	192	162	110	97	293	285	276	254	251	210	188	166	148	126	92	75	58	12	11	6	•
	Iwaco, WA	484	404	355	292	230	203	193	163	111	98	294	286	276	254	252	211	189	167	149	127	93	76	59	13	12	•	7
	Warrenton, OR	475	396	346	283	222	195	184	154	103	89	285	277	268	246	244	202	180	159	140	118	84	67	50	4	•	14	13
	Astoria, OR	470	391	342	278	217	190	180	149	98	85	281	273	263	241	239	198	175	154	136	114	80	62	45	•	5	15	14
	Longview, WA	425	345	296	233	171	144	134	104	52	39	235	227	217	195	193	152	130	108	90	68	34	17	•	52	58	68	67
	St. Helens, OR	411	332	282	219	158	131	121	90	39	25	222	214	204	182	180	138	117	95	76	55	20	•	20	71	77	87	86
	Vancouver, WA	391	312	262	199	145	118	108	77	26	13	202	193	184	162	160	118	96	75	56	35	•	23	39	92	97	107	106
	Bonneville Lock & Dam	356	277	228	164	180	153	142	112	61	47	167	159	149	127	125	84	62	40	22	•	40	63	78	131	136	146	145
	Hood River (town), OR	335	256	206	143	201	174	164	134	82	69	145	137	128	106	103	62	40	18	•	5	64	87	104	157	161	171	170
	The Dalles Lock & Dam	316	237	188	124	220	193	183	152	101	87	127	119	109	87	85	44	22	•	21	46	86	109	124	177	183	192	191
	John Day Lock & Dam	294	215	166	102	242	215	204	174	123	109	105	97	87	65	63	22	•	25	46	71	110	135	150	203	207	217	216
	Arlington, OR	273	194	144	81	263	236	226	195	144	130	83	75	66	44	42	•	25	51	71	97	136	159	175	228	232	243	242
	Umatilla, OR	231	152	103	39	305	278	268	237	186	172	42	34	24	2	•	48	72	98	119	144	184	207	222	275	281	290	289
McNary Lock & Dam	229	150	101	37	307	280	270	239	188	174	40	32	22	•	2	51	75	100	122	146	186	209	224	277	283	292	292	
Port of Walla Walla, WA	207	128	79	15	329	302	292	261	210	196	18	10	•	25	28	76	100	125	147	171	212	235	250	303	308	318	318	
Pasco, WA	204	125	75	12	339	312	301	271	220	206	8	•	12	37	39	86	112	137	158	183	222	246	261	314	319	329	328	
Willamette River	Richland, WA	212	133	83	20	347	320	309	279	228	214	•	9	21	46	48	96	121	146	167	192	232	255	270	323	328	338	337
	Portland, OR	403	324	275	211	133	106	96	65	14	•	246	237	226	200	198	150	125	100	79	54	15	29	45	98	102	113	112
	Oregon City, OR	417	338	288	225	119	92	82	51	•	16	262	253	242	216	214	166	142	116	94	70	30	45	60	113	119	128	127
	Salem, OR	468	389	340	276	68	41	31	•	59	75	321	312	300	275	273	224	200	175	154	129	89	104	120	171	177	188	186
	Albany, OR	499	420	370	307	37	10	•	36	94	110	356	346	336	311	308	260	235	211	189	163	124	139	154	207	212	222	221
	Corvallis, OR	509	430	380	317	27	•	12	47	106	122	368	359	348	322	320	272	247	222	200	176	136	151	166	219	224	234	234
	Harrisburg, OR	536	457	407	344	•	31	43	78	137	153	399	390	379	353	351	303	278	253	231	207	167	182	197	250	255	265	265
Snake River	Ice Harbor Dam, WA	192	113	63	•	396	365	353	318	259	243	23	14	17	43	45	93	117	143	165	189	229	252	268	320	326	336	335
	Central Ferry, WA	129	50	•	72	468	437	426	391	331	316	96	86	91	116	119	166	191	216	237	262	302	325	341	394	398	409	407
	Lewiston, ID	79	•	58	130	526	495	483	448	389	373	153	144	147	173	175	223	247	273	295	319	359	382	397	450	456	465	465
	Johnson Bar Landing, ID	•	91	148	221	617	586	574	539	480	464	244	235	238	264	266	314	338	364	386	410	450	473	489	541	547	557	556

Distance of Visibility for Objects Having Various Elevations

Height (feet)	Distance (nautical miles)	Distance (statute miles)	Height (meters)
1	1.2	1.3	0.3
2	1.7	1.9	0.6
3	2.0	2.3	0.9
4	2.3	2.7	1.2
5	2.6	3.0	1.5
6	2.9	3.3	1.8
7	3.1	3.6	2.1
8	3.3	3.8	2.4
9	3.5	4.0	2.7
10	3.7	4.3	3.1
11	3.9	4.5	3.4
12	4.1	4.7	3.7
13	4.2	4.9	4.0
14	4.4	5.0	4.3
15	4.5	5.2	4.6
16	4.7	5.4	4.9
17	4.8	5.6	5.2
18	5.0	5.7	5.5
19	5.1	5.9	5.8
20	5.2	6.0	6.1
21	5.4	6.2	6.4
22	5.5	6.3	6.7
23	5.6	6.5	7.0
24	5.7	6.6	7.3
25	5.9	6.7	7.6
26	6.0	6.9	7.9
27	6.1	7.0	8.2
28	6.2	7.1	8.5
29	6.3	7.3	8.8
30	6.4	7.4	9.1
31	6.5	7.5	9.5
32	6.6	7.6	9.8
33	6.7	7.7	10.1
34	6.8	7.9	10.4
35	6.9	8.0	10.7
36	7.0	8.1	11.0
37	7.1	8.2	11.3
38	7.2	8.3	11.6
39	7.3	8.4	11.9
40	7.4	8.5	12.2
41	7.5	8.6	12.5
42	7.6	8.7	12.8
43	7.7	8.8	13.1
44	7.8	8.9	13.4
45	7.8	9.0	13.7
46	7.9	9.1	14.0
47	8.0	9.2	14.3
48	8.1	9.3	14.6
49	8.2	9.4	14.9
50	8.3	9.5	15.2
55	8.7	10.0	16.8
60	9.1	10.4	18.3
65	9.4	10.9	19.8
70	9.8	11.3	21.3
75	10.1	11.7	22.9
80	10.5	12.0	24.4
85	10.8	12.4	25.9
90	11.1	12.8	27.4
95	11.4	13.1	29.0
100	11.7	13.5	30.5
105	12.0	13.8	32.0
110	12.3	14.1	33.5
115	12.5	14.4	33.1
120	12.8	14.7	36.6
125	13.1	15.1	38.1
130	13.3	15.4	39.6
135	13.6	15.6	41.2
140	13.8	15.9	42.7
145	14.1	16.2	44.2
150	14.3	16.5	45.7
160	14.8	17.0	48.8
170	15.3	17.6	51.8
180	15.7	18.1	54.9
190	16.1	18.6	57.9
200	16.5	19.0	61.0
210	17.0	19.5	64.0
220	17.4	20.0	67.1
230	17.7	20.4	70.1
240	18.1	20.9	73.2
250	18.5	21.3	76.2
260	18.9	21.7	79.3
270	19.2	22.1	82.3
280	19.6	22.5	85.3
290	19.9	22.9	88.4
300	20.3	23.3	91.4
310	20.6	23.7	94.5
320	20.9	24.1	97.5
330	21.3	24.5	100.6
340	21.6	24.8	103.6
350	21.9	25.2	106.7
360	22.2	25.5	109.7
370	22.5	25.9	112.8
380	22.8	26.2	115.8
390	23.1	26.6	118.9
400	23.4	26.9	121.9
410	23.7	27.3	125.0
420	24.0	27.6	128.0
430	24.3	27.9	131.1
440	24.5	28.2	134.1
450	24.8	28.6	137.2
460	25.1	28.9	140.2
470	25.4	29.2	143.3
480	25.6	29.5	146.3
490	25.9	29.8	149.4
500	26.2	30.1	152.4
510	26.4	30.4	155.5
520	26.7	30.7	158.5
530	26.9	31.0	161.5
540	27.2	31.3	164.6
550	27.4	31.6	167.6
560	27.7	31.9	170.7
570	27.9	32.1	173.7
580	28.2	32.4	176.8
590	28.4	32.7	179.8
600	28.7	33.0	182.9
620	29.1	33.5	189.0
640	29.5	34.1	195.1
660	30.1	34.6	201.2
680	30.5	35.1	207.3
700	31.0	35.6	213.4
720	31.4	36.1	219.5
740	31.8	36.6	225.6
760	32.3	37.1	231.7
780	32.7	37.6	237.7
800	33.1	38.1	243.8
820	33.5	38.6	249.9

This table gives the approximate geographic range of visibility for an object which may be seen by an observer. It is necessary to add to the distance for the height of any object the distance corresponding to the height of the observer's eye above sea level.

Example – determine the geographic visibility of an object 65 feet above the water, for an observer whose eye is 35 feet above the water:

9.4 nautical miles = **Height of object** (65 feet)

6.9 nautical miles = **Height of observer** (35 feet)

16.3 nautical miles = **Computed geographic visibility**

Conversion of Degrees to Points and Points to Degrees

Deg °	Min '	Points
000	00	N
002	49	
005	38	N ½ E
008	26	
011	15	N x E
014	04	
016	53	N x E ½ E
019	41	
022	30	NNE
025	19	
028	08	NNE ½ E
030	56	
033	45	NE x N
036	34	
039	23	NE ½ N
042	11	
045	00	NE
047	49	
050	38	NE ½ E
053	26	
056	15	NE x E
059	04	
061	53	NE x E ½ E
064	41	
067	30	ENE
070	19	
073	08	ENE ½ E
075	56	
078	45	E x N
081	34	
084	23	E ½ N
087	11	
090	00	E
092	49	
095	38	E ½ S
098	26	
101	15	E x S
104	04	
106	53	ESE ½ E
109	41	
112	30	ESE
115	19	
118	08	SE x E ½ E
120	56	
123	45	SE x E
126	34	
129	23	SE ½ E
132	11	
135	00	SE
137	49	
140	38	SE ½ S
143	26	
146	15	SE x S
149	04	
151	53	SSE ½ E
154	41	
157	30	SSE
160	19	
163	08	S x E ½ E
165	56	
168	45	S x E
171	34	
174	23	S ½ E
177	11	

Deg °	Min '	Points
180	00	S
182	49	
185	38	S ½ W
188	26	
191	15	S x W
194	04	
196	53	S x W ½ W
199	41	
202	30	SSW
205	19	
208	08	SSW ½ W
210	56	
213	45	SW x W
216	34	
219	23	SW ½ S
222	11	
225	00	SW
227	49	
230	38	SW ½ W
233	26	
236	15	SW x W
239	04	
241	53	SW x W ½ W
244	41	
247	30	WSW
250	19	
253	08	WSW ½ W
255	56	
258	45	W x S
261	34	
264	23	W ½ S
267	11	
270	00	W
272	49	
275	38	W ½ S
278	26	
281	15	W x N
284	04	
286	53	WNW ½ W
289	41	
292	30	WNW
295	19	
298	08	NW x W ½ W
300	56	
303	45	NW x W
306	34	
309	23	NW ½ W
312	11	
315	00	NW
317	49	
320	38	NW ½ N
323	26	
326	15	NW x N
329	04	
331	53	NNW ½ W
334	41	
337	30	NNW
340	19	
343	08	N x W ½ W
345	56	
348	45	N x W
351	34	
354	23	N ½ W
357	11	

Standard Abbreviations Used In Broadcasts

Aids to Navigation		Organizations	
Aeronautical Radiobeacon	AERO RBN	Commander, Coast Guard District (#)	CCGD(#)
Articulated Daybeacon	ART DBN	Coast Guard	CG
Articulated Light	ART LT	Corps of Engineers	COE
Destroyed	DESTR	National Geospatial-Intelligence Agency	NGA
Discontinued	DISCONTD	National Ocean Service	NOS
Established	ESTAB	National Weather Service	NWS
Exposed Location Buoy	ELB	Vessels	
Fog Signal Station	FOG SIG	Aircraft	A/C
Large Navigation Buoy	LNB	Fishing Vessel	F/V
Light	LT	Liquefied Natural Gas Carrier	LNG
Light List Number	LLNR	Motor Vessel ²	M/V
Lighted Bell Buoy	LBB	Pleasure Craft	P/C
Lighted Buoy	LB	Research Vessel	R/V
Lighted Gong Buoy	LGB	Sailing Vessel	S/V
Lighted Horn Buoy	LHB	Compass Directions	
Lighted Whistle Buoy	LWB	North	N
Ocean Data Acquisition System	ODAS	South	S
Privately Maintained	PRIV MAINTD	East	E
Radar Beacon	RACON	West	W
Radar Reflector	RA REF	Northeast	NE
Temporarily Replaced by Unlighted Buoy	TRUB	Northwest	NW
Temporarily Replaced by Lighted Buoy	TRLB	Southeast	SE
Whistle	WHIS	Southwest	SW
Light Characteristics		Months	
Alternating	AL	January	JAN
Characteristic	CHAR	February	FEB
Composite Group-Flashing	FL(2+1)	March	MAR
Composite Group-Occulting	OC(2+1)	April	APR
Continuous Quick-Flashing	Q	May	MAY
Fixed and Flashing	FFL	June	JUN
Fixed	F	July	JUL
Group-Flashing	FL(3)	August	AUG
Group-Occulting	OC(2)	September	SEP
Interrupted Quick-Flashing	IQ	October	OCT
Isophase	ISO	November	NOV
Morse Code	MO(A)	December	DEC
Occulting	OC	Days of the Week	
Single-Flashing	FL	Monday	MON
Colors ¹		Tuesday	TUE
Black	B	Wednesday	WED
Blue	BU	Thursday	THU
Green	G	Friday	FRI
Orange	OR	Saturday	SAT
Red	R	Sunday	SUN
White	W		
Yellow	Y		

¹ Color refers to light characteristics of Aids to Navigation only

² M/V includes: Steam Ship, Container Vessel, Cargo Vessel, etc.

Standard Abbreviations Used In Broadcasts (continued)

Countries and States	
Alabama	AL
Alaska	AK
American Samoa	AS
Arizona	AZ
Arkansas	AR
California	CA
Canada	CN
Colorado	CO
Connecticut	CT
Delaware	DE
District of Columbia	DC
Florida	FL
Georgia	GA
Guam	GU
Hawaii	HI
Idaho	ID
Illinois	IL
Indiana	IN
Iowa	IA
Kansas	KS
Kentucky	KY
Louisiana	LA
Maine	ME
Maryland	MD
Marshall Islands	MH
Massachusetts	MA
Mexico	MX
Michigan	MI
Minnesota	MN
Mississippi	MS
Missouri	MO
Montana	MT
Nebraska	NE
Nevada	NV
New Hampshire	NH
New Jersey	NJ
New Mexico	NM
New York	NY
North Carolina	NC
North Dakota	ND
Northern Mariana Islands	MP
Ohio	OH
Oklahoma	OK
Oregon	OR
Pennsylvania	PA
Puerto Rico	PR
Rhode Island	RI
South Carolina	SC

South Dakota	SD
Tennessee	TN
Texas	TX
United States	US
Utah	UT
Vermont	VT
Virgin Islands	VI
Virginia	VA
Washington	WA
West Virginia	WV
Wisconsin	WI
Wyoming	WY
Various	
Anchorage	ANCH
Anchorage Prohibited	ANCH PROHIB
Approximate	APPROX
Atlantic	ATLC
Authorized	AUTH
Average	AVG
Bearing	BRG
Breakwater	BKW
Broadcast Notice to Mariners	BNM
Channel	CHAN
Code of Federal Regulations	CFR
Continue	CONT
Degrees (temp; geo pos)	DEG
Diameter	DIA
Edition	ED
Effect/Effective	EFF
Entrance	ENTR
Explosive Anchorage	EXPLOS ANCH
Fathom(s)	FM(S)
Foot/Feet	FT
Harbor	HBR
Height	HT
Hertz	HZ
Horizontal Clearance	HOR CL
Hour	HR
International Regulations for Preventing Collisions at Sea	COLREGS
Kilohertz	KHZ
Kilometer	KM
Knot(s)	KT(S)
Latitude	LAT
Local Notice to Mariners	LNM
Longitude	LONG
Maintained	MAINTD
Maximum	MAX
Megahertz	MHZ
Millibar	MB

Standard Abbreviations Used In Broadcasts (continued)
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Various (continued)	
Millimeter	MM
Minute (time; geographic position)	MIN
Moderate	MOD
Mountain, Mount	MT
Nautical Mile(s)	NM
Notice to Mariners	NM
Obstruction	OBSTR
Occasion/Occasionally	OCCASION
Operating Area	OPAREA
Pacific	PAC
Point(s)	PT(S)
Position	POS
Position Approximate	PA
Pressure	PRES
Private/Private	PRIV
Prohibited	PROHIB
Publication	PUB
Range	RGE
Reported	REP
Restricted	RESTR

Rock	RK
Saint	ST
Second (time; geographic position)	SEC
Signal Station	SIG STA
Station	STA
Statute Mile(s)	SM
Storm Signal Station	S SIG STA
Temporary	TEMP
Thunderstorm	TSTORM
Through	THRU
True	T
Uncovers; Dries	UNCOV
Universal Coordinate Time	UTC
Urgent Marine Information Broadcast	UMIB
Velocity	VEL
Vertical Clearance	VERT CL
Visibility	VIS
Yard(s)	YD
Warning	WARN
Weather	WX
Wreck	WK

Conversion Factors			
	Known Value	Multiply By	Unknown Value
Linear	inches	25.40	millimeters
		2.540	centimeters
	centimeters	0.032808	feet
	feet	30.48	centimeters
		0.3048	meters
		0.00016458	nautical miles
	yard	0.9144	meters
	meters	3.2808	feet
		1.094	yards
		0.0005399	nautical miles
	statute miles	0.86897	nautical miles
		1.6093	kilometers
	nautical miles	1,609.3	meters
		1.151	statute miles
Area	square feet	0.0929	square meters
		0.0002296	acres
	square meters	10.764	square feet
		0.0002471	acres
	acres	4,046.9	square meters
		43,560	square feet
	hectare	0.404685	hectare
2.471054		acres	
10,000		square meters	
Depths	fathoms	1.8288	meters
	meters	0.54681	fathoms
		3.2808	feet
feet	0.3048	meters	
Rate	feet per second	0.5925	knots
		0.6818	miles per hour
		30.48	centimeters per second
	statute miles per hour	0.8689	knots
		1.467	feet per second
		0.447	meters per second
	knots	1.151	miles per hour
		0.5144	meters per second
		1.6878	feet per second
	centimeters per second	0.01944	knots
0.02237		miles per hour	
0.032808		feet per second	
Mass	grams	0.035275	ounces
		0.002205	pounds
	ounces	28.349	grams
	pounds	0.45359	kilograms
	short tons	2,000	pounds
		0.89286	long tons
0.9072	metric tons		

Mass	long tons	2,240	pounds
		1.12	short tons
		1.016	metric tons
metric tons	metric tons	1,000	kilograms
		0.9842	long tons
		1.1023	short tons
		2,204.6	pounds
Volume	barrels (petroleum)	42	gallons (US)
		158.99	liters
	barrels (liquid, US)	31.5	gallons (US)
		26.229	gallons (British)
	gallons (US)	119.24	liters
		0.02381	barrels (petroleum)
	liters	3.7854	liters
		0.26417	gallons (US)

Measurements and Equivalencies	
Unit	Equivalency
nautical mile	1,852 meters 6,076.12 feet
statute mile	5,280 feet 1,609.3 meters 1.6093 kilometers
cable	0.1 nautical mile (CN) 720 feet (US)
fathom	6 feet 1.8288 meters
foot	0.3048 meter
inch	2.54 centimeters
meter	39.37 inches 3.281 feet 1.0936 yards
kilometer	1,000 meters
knot	1.6877 feet per second 0.5144 meters per second
miles per hour (statute)	1.466 feet per second 0.44704 meters per second
acre	43,560 square feet 4,046.82 square meters
pound (avoirdupois)	453.59 gram
gram	0.0022046 pound (avoirdupois) 0.035274 ounce
short ton	2,000 pounds
long ton	2,240 pounds
metric ton	2,204.6 pounds
kilogram	2.2 pounds
liter	1.0567 quarts
barrel (petroleum)	42 gallons (US)

