

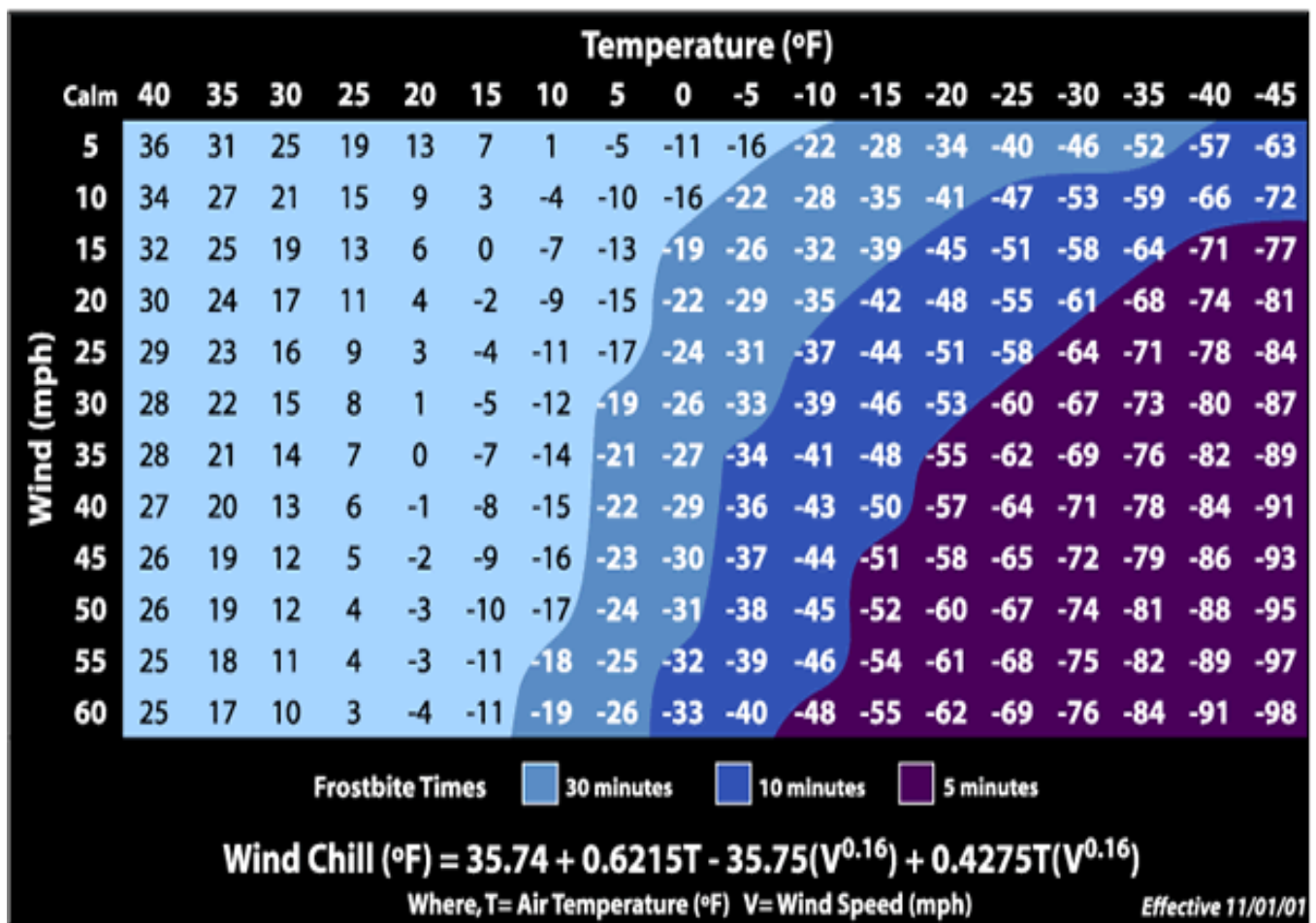
APPENDIX F

Various Weather Related Charts and Indices

The Wind chill table shows the cooling effect of wind on humans and animals. Winds of more than 45 mph add little to the chilling. Wind chills should be calculated with sustained wind speeds.



Wind Chill Chart



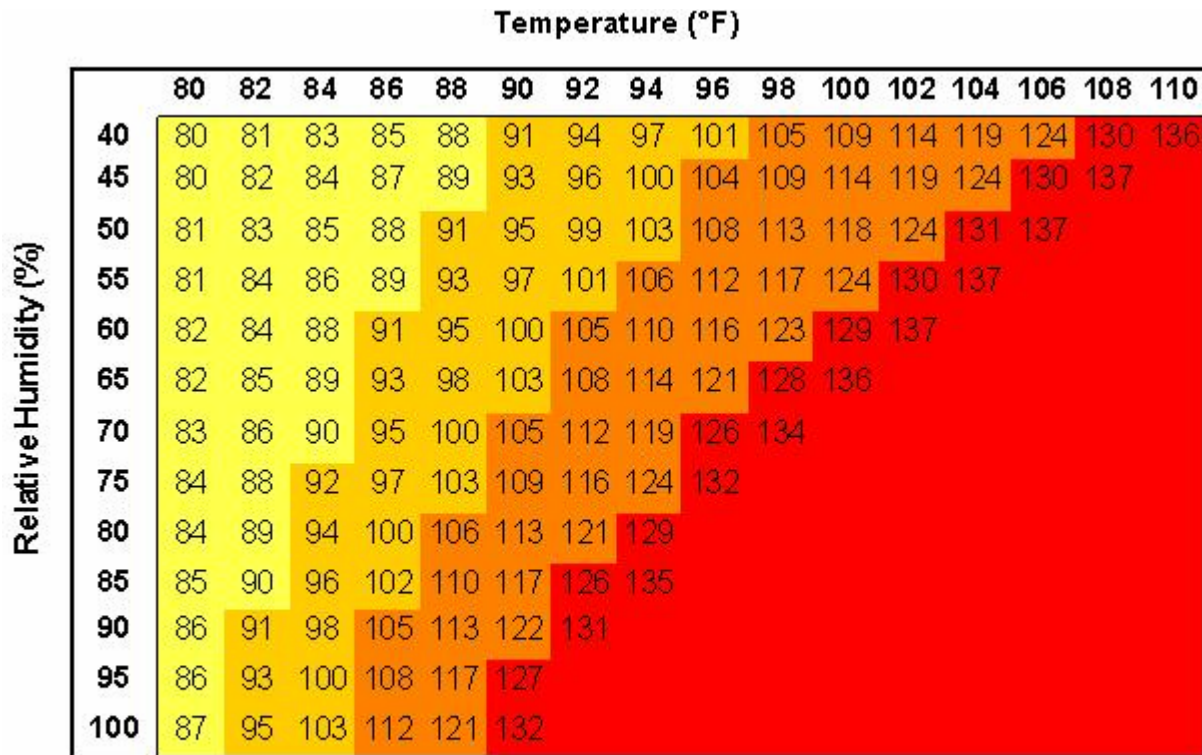
Heat Warnings

Heat is the number one weather-related killer in the U.S., with an average of at least 1500 excess deaths attributed to heat during a typical summer. Looking at Seattle area weather and mortality statistics back to the mid 1970s, an average of three or four fatalities have occurred each summer. High temperatures reaching into the 90s can cause heat related health issues, however warm nights following hot days significantly add to the body's stress.

The NWS has developed a Heat Health Watch/Warning System that tailors excessive heat guidance to specific regions in the country. The Seattle area was the 15th urban region of at least 500,000 population to implement this new system in 2005. Below is a sample heat/health chart used by most of the U.S., including Eastern Washington, but not Western Washington.

National Heat Health Watch/Warning System

(not applicable to Western Washington)



Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution
 Extreme Caution
 Danger
 Extreme Danger














Wind Speed

Descriptive terms used in zone forecasts:

- 0–5 mph Light or light and variable
- 5–15 mph None used
- 15–25 mph Breezy or Brisk (for cold weather)
- 20–30 mph Windy
- 30–40 mph Very Windy
- 40 mph or higher Strong, Damaging, Dangerous, High

Beaufort Scales for Land and Sea

On Land.....

Beaufort number	Wind Speed (mph)	Seaman's term		Effects on Land
0	Under 1	Calm		Calm; smoke rises vertically.
1	1-3	Light Air		Smoke drift indicates wind direction; vanes do not move.
2	4-7	Light Breeze		Wind felt on face; leaves rustle; vanes begin to move.
3	8-12	Gentle Breeze		Leaves, small twigs in constant motion; light flags extended.
4	13-18	Moderate Breeze		Dust, leaves and loose paper raised up; small branches move.
5	19-24	Fresh Breeze		Small trees begin to sway.
6	25-31	Strong Breeze		Large branches of trees in motion; whistling heard in wires.
7	32-38	Moderate Gale		Whole trees in motion; resistance felt in walking against the wind.
8	39-46	Fresh Gale		Twigs and small branches broken off trees.
9	47-54	Strong Gale		Slight structural damage occurs; slate blown from roofs.
10	55-63	Whole Gale		Seldom experienced on land; trees broken; structural damage occurs.
11	64-72	Storm		Very rarely experienced on land; usually with widespread damage.
12	73 or higher	Hurricane Force		Violence and destruction.

At Sea.....

Force	Windspeed Knots	Description	Sea Condition
0	0	Calm	Sea like a mirror
1	1 - 3	Light Air	Ripples but without foam crests
2	4 - 6	Light Breeze	Small wavelets. Crests do not break
3	7 - 10	Gentle Breeze	Large wavelets. Perhaps scattered white horses
4	11 - 16	Moderate	Small waves. Fairly frequent white horses.

		Breeze	
5	17 - 21	Fresh Breeze	Moderate waves, many white horses
6	22 - 27	Strong Breeze	Large waves begin to form; white foam crests, probably spray
7	28 - 33	Near Gale	Sea heaps up and white foam blown in streaks along the direction of the wind
8	34 - 40	Gale	Moderately high waves, crests begin to break into spindrift
9	41 - 47	Strong Gale	High waves. Dense foam along the direction of the wind. Crests of waves begin to roll over. Spray may affect visibility
10	48 - 55	Storm	Very high waves with long overhanging crests. The surface of the sea takes a white appearance. The tumbling of the sea becomes heavy and shock like. Visibility affected
11	56 - 63	Violent Storm	Exceptionally high waves. The sea is completely covered with long white patches of foam lying in the direction of the wind. Visibility affected
12	64+	Hurricane	The air is filled with foam and spray. Sea completely white with driving spray. Visibility very seriously affected.

Knots to Miles Per Hour Conversion Chart

Surface Weather Observations - METAR always have wind speeds recorded in knots. The conversion table below will provide a quick conversion for winds from calm to 99 knots. The converted values are all rounded to the nearest integer. For a more accurate conversion use the following formula:

$$1 \text{ KNOT} = 1.15155 \text{ MILES PER HOUR}$$

K T S	0	1	2	3	4	5	6	7	8	9
	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH
0	0	1	2	3	5	6	7	8	9	10
10	12	13	14	15	16	17	18	20	21	22
20	23	24	25	26	28	29	30	31	32	33
30	35	36	37	38	39	40	41	43	44	45
40	46	47	48	49	51	52	53	54	55	56
50	58	59	60	61	62	63	64	66	67	68
60	69	70	71	72	74	75	76	77	78	79
70	81	82	83	84	85	86	87	89	90	91
80	92	93	94	96	97	98	99	100	101	102
90	104	105	106	107	108	109	110	112	113	114

Enhanced F Scale for Tornado Damage
An update to the the original F-scale by a team of meteorologists and wind engineers, to be implemented in the U.S. on 1 February 2007.

FUJITA SCALE	DERIVED EF	OPERATIONAL
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			SCALE		EF SCALE	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110
2	113-157	118-161	2	110-137	2	111-135
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

*** **IMPORTANT NOTE ABOUT ENHANCED F-SCALE WINDS:** *The Enhanced F-scale still is a set of wind estimates (not measurements) based on damage.* Its uses three-second gusts estimated at the point of damage based on a judgment of 8 levels of damage to the 28 indicators listed below. These estimates vary with height and exposure. **Important:** The 3 second gust is not the same wind as in standard surface observations. Standard measurements are taken by weather stations in open exposures, using a directly measured, "one minute mile" speed.

Modified Mercalli Earthquake Intensity Scale

- I. Not felt except by a very few under especially favorable circumstances.
- II. Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
- III. Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibration like a passing truck.
- IV. During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, disturbed; walls make creaking sound. Sensation is like a heavy truck striking building. Standing motorcars rocked noticeably.
- V. Felt by nearly everyone; many awakened. Some dishes, windows, etc. broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.
- VI. Felt by all; many frightened and run outdoors. Some heavy furniture moved; a few instances of cracked plaster or damaged chimneys. Damage slight.
- VII. Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures. Some chimneys broken. Noticed by persons driving motorcars.
- VIII. Damage slight to specially designed structures; considerable in ordinary substantial building, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motorcars disturbed.