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The Climate of Oregon Climate Zone 6 North Central Area

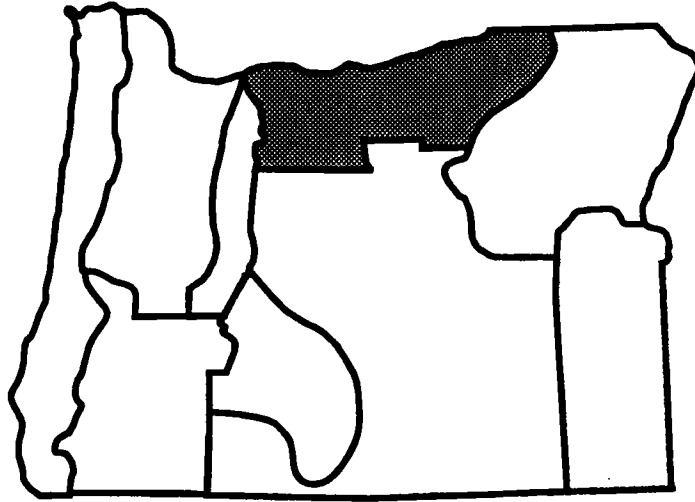
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The Climate of Oregon



Climate Zone 6
North Central Area

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Oregon Climate Zone Summary

Zone 6 -- North Central Area

North Central Oregon, climatic Zone 6, is a relatively dry region lying east of the Cascade Mountains. The Cascades serve as an effective moisture barrier, causing storms to dump much of their moisture west of the peaks and leaving areas to the east in a "rain shadow." As a result, Zone 6 is generally rather dry. The region extends from the Columbia River southward over hill country to the forested mountain areas which border climate Zone 7. The Columbia is used in irrigation, transportation and hydroelectric power, and therefore dominates the area.

This region is Oregon's major wheat producing area. Grain production on dry land farms is the main source of agricultural income except for the Hood River Valley, which produces mostly tree fruits. Despite relatively small dimensions, the latter is one of the most important production areas in the Northwest. Its annual income of approximately \$60 million derives mostly from pears, apples, and cherries. Other important commodities produced in Zone 6 include green peas, irrigated truck crops, beef cattle, sheep, alfalfa, and poultry.

Just as most of Oregon, this region has a definite winter rainfall climate. The months of November through February generally receive the most precipitation due to winter storms which bring rain to lower elevations and snow to higher ridges and peaks. Annual totals vary greatly and are proportional to elevation; some of the lower elevations receive less than 12 inches per year, while a few of the higher areas receive more than 40 inches. Occasional summer thunderstorms bring localized, occasionally heavy showers.

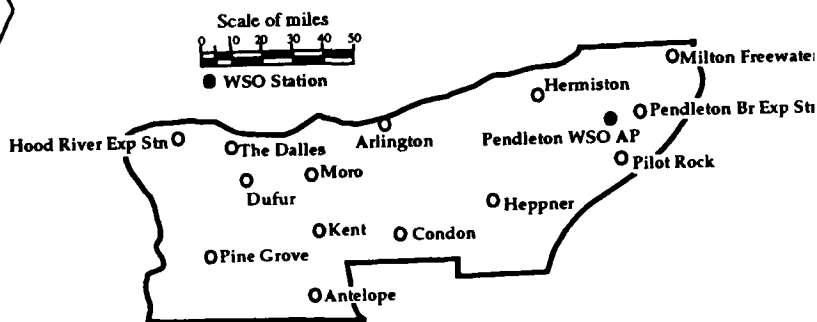
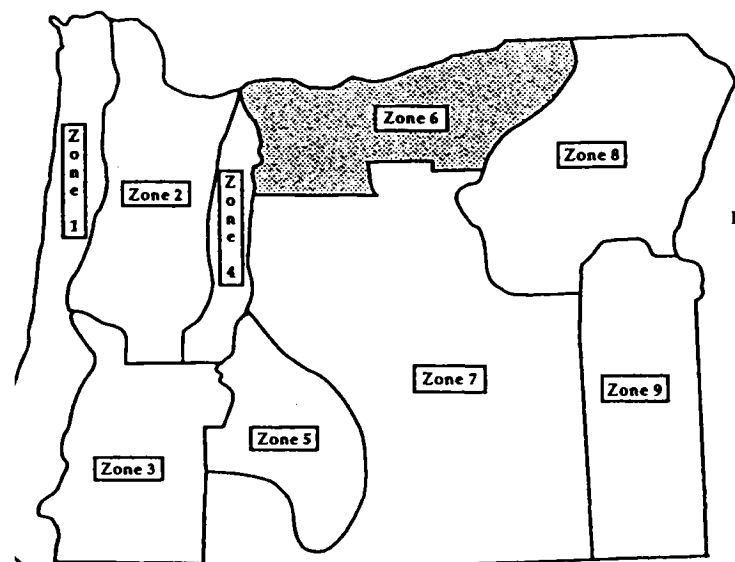


Table 1 lists normal monthly and annual precipitation for stations in Zone 6. Locations at the lowest elevations (adjacent to the Columbia) such as Arlington and Hermiston receive less than 10 inches per year. Precipitation increases steadily with elevation. Highest annual totals are found in the Blue Mountains along the extreme east border of the region, where totals exceeding 50 inches occur. Figure 1 is a map showing contours of normal annual precipitation in Zone 6; the gradient in precipitation from the lower areas along the north part of the region to the higher terrain in the south and east is evident from the figure.

The Columbia Gorge is a major east-west passageway connecting Zone 6 with the Willamette Valley and Oregon coast. Vigorous winds are common in and around the Gorge. During summer, wind direction is predominantly from the west, causing strong, steady winds within the Gorge and along the northern edge of Zone 6. These winds, in fact, make Hood River a world-renowned wind surfing location. Winter winds can blow from the west or the east and can reach speeds sufficient to cause widespread damage.

A major effect of the Gorge is a moderation of air temperatures near the Columbia by the allowance of maritime air to reach the area from the west; this can occur both in summer and winter. Occasionally, however, large-scale easterly flow brings very cold continental air to the region, resulting in extremely cold conditions. During such periods, the cold air passes westward through the Gorge, creating extreme conditions in the western valleys as well.

Table 2 lists normal monthly and annual temperatures in the region. Highest summer temperatures are observed at the low-lying points near the Columbia (i.e. Arlington, Hermiston, and Milton Freewater), while mean temperatures decrease with increasing elevation. Winter temperatures follow the same pattern with mildest temperatures at the lower elevation sites.

Median frost dates and length of the growing season are listed in Tables 3 and 4, respectively. These also follow the same elevation relationship evident in the temperature data: the longest growing seasons are in the mild and low elevation sites, while increasing elevation generally causes a shortening of the season. Arlington and Condon, both at nearly 3,000 feet above sea level, have much shorter growing seasons than lower sites such as The Dalles and Arlington.

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**Table 1. Monthly and Annual Precipitation (inches)
1961-1990 Means**

Name	Elevation (feet)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Antelope	2841	1.58	1.10	1.16	.95	1.11	1.02	.40	.70	.81	.89	1.86	1.74	13.41
Arlington	285	1.31	.88	.75	.64	.56	.38	.22	.32	.38	.56	1.29	1.62	8.83
Condon	2861	1.54	1.24	1.22	1.23	1.20	1.04	.44	.71	.75	1.00	1.90	1.85	14.10
Dufur	1330	1.92	1.28	1.21	.77	.71	.59	.27	.50	.55	.81	1.76	2.18	12.50
Heppner	1883	1.53	1.12	1.49	1.32	1.42	.92	.35	.69	.80	1.04	1.73	1.56	14.04
Hermiston	620	1.21	.84	.78	.71	.67	.46	.22	.40	.44	.62	1.28	1.37	9.06
Hood River	500	5.36	3.91	2.93	1.63	.95	.69	.25	.59	1.14	2.20	5.11	6.00	31.05
Kent	2723	1.34	1.00	1.02	.96	.92	.72	.46	.58	.61	.78	1.65	1.72	11.77
Milton-Freewater	971	1.71	1.17	1.52	1.20	1.27	.94	.46	.65	.77	1.08	1.84	1.71	14.43
Moro	1870	1.60	.89	.98	.80	.75	.56	.27	.54	.42	.69	1.60	1.71	10.81
Pendleton WSO	1482	1.51	1.14	1.16	1.04	.99	.64	.35	.53	.59	.86	1.58	1.63	12.02
Pilot Rock	1723	1.53	.99	1.38	1.32	1.22	1.20	.42	.76	.76	.91	1.61	1.52	13.64
Pine Grove	2220	3.29	2.33	1.55	.92	.68	.69	.25	.47	.68	1.15	2.78	3.24	18.34
The Dalles	102	2.24	1.81	1.22	.77	.48	.43	.20	.49	.50	.88	2.07	2.90	13.97

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Table 2. Monthly Temperatures (°F)
1961-1990 Means

Station	Code	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Antelope	Mean Maximum	40.2	46.1	52.1	58.5	67.0	76.1	84.6	84.2	75.3	63.6	48.6	40.1	61.4
	Mean Minimum	24.5	27.8	30.1	32.9	38.6	45.7	50.6	50.6	43.8	36.6	30.6	25.0	36.3
	Monthly Mean	32.4	36.9	41.1	45.7	52.9	60.9	67.6	67.4	59.6	50.1	39.4	32.6	48.8
Arlington	Mean Maximum	40.8	48.0	56.9	65.5	75.3	83.9	91.6	90.1	80.1	65.5	50.0	41.0	65.4
	Mean Minimum	28.8	32.0	36.1	41.4	48.2	55.8	60.9	60.5	51.6	41.9	35.6	29.5	43.3
	Monthly Mean	34.8	40.0	46.5	53.5	61.8	69.8	76.2	75.3	65.9	53.7	42.8	35.2	54.4
Condon	Mean Maximum	38.4	44.1	50.4	56.8	65.6	74.4	82.3	81.5	72.4	61.3	46.3	39.2	59.1
	Mean Minimum	23.6	27.5	30.1	33.2	38.9	45.2	50.0	50.3	43.5	36.2	29.9	24.2	35.8
	Monthly Mean	31.0	35.8	40.3	45.0	52.2	59.8	66.1	65.9	58.0	48.8	38.1	31.7	47.4
Dufur	Mean Maximum	40.7	47.6	55.1	62.0	70.3	78.0	85.1	84.5	76.6	64.2	48.8	40.6	62.9
	Mean Minimum	24.4	27.8	30.4	33.4	38.4	44.6	48.2	48.3	42.7	35.3	30.4	25.0	35.8
	Monthly Mean	32.5	37.7	42.8	47.7	54.4	61.3	66.6	66.4	59.6	49.8	39.6	32.8	49.4
Heppner	Mean Maximum	41.6	47.6	53.7	60.3	68.9	77.8	85.7	84.6	75.4	64.1	50.1	42.2	62.7
	Mean Minimum	25.9	29.8	33.1	36.0	42.0	48.6	52.4	52.7	45.9	38.4	32.4	26.6	38.7
	Monthly Mean	33.7	38.7	43.4	48.1	55.4	63.2	69.0	68.7	60.7	51.3	41.2	34.4	50.7
Hermiston	Mean Maximum	40.6	48.2	57.3	64.5	72.9	81.0	88.4	87.2	78.3	65.7	50.6	41.1	64.7
	Mean Minimum	25.7	29.3	33.8	38.7	45.7	53.0	57.4	56.3	47.5	37.4	32.3	26.3	40.2
	Monthly Mean	33.1	38.8	45.6	51.6	59.3	67.0	72.9	71.8	62.9	51.4	41.5	33.7	52.5
Hood River	Mean Maximum	40.6	46.8	53.7	60.0	67.5	74.2	80.1	80.5	74.0	63.4	49.3	41.3	61.0
	Mean Minimum	28.2	31.2	34.4	38.4	43.8	50.0	53.4	52.8	45.8	38.1	34.4	29.4	40.0
	Monthly Mean	34.4	39.0	44.1	49.2	55.6	62.1	66.8	66.6	59.9	50.8	41.9	35.3	50.5
Kent	Mean Maximum	38.0	43.9	50.5	56.9	65.6	74.6	83.4	83.1	73.9	62.4	46.9	39.2	59.4
	Mean Minimum	23.1	27.0	30.2	33.1	38.7	46.2	51.5	52.1	44.6	36.9	29.6	24.0	36.1
	Monthly Mean	30.5	35.5	40.3	45.1	52.2	60.4	67.5	67.6	59.3	49.6	38.2	31.6	47.7
Milton-Freewater	Mean Maximum	41.7	48.3	56.4	63.7	72.0	80.7	88.6	87.5	77.5	65.3	51.0	42.3	64.4
	Mean Minimum	27.8	32.5	37.3	41.8	47.8	54.6	59.2	58.0	50.0	41.4	34.5	28.3	42.7
	Monthly Mean	34.7	40.4	46.9	52.8	59.9	67.6	73.9	72.9	63.7	53.3	42.8	35.3	53.5
Moro	Mean Maximum	37.7	44.0	50.6	57.5	65.2	74.0	82.0	81.0	73.9	62.1	47.3	39.6	59.6
	Mean Minimum	23.7	28.6	31.5	35.8	41.5	48.7	53.9	53.1	45.8	37.0	31.3	26.0	38.1
	Monthly Mean	30.7	36.3	41.1	46.6	53.4	61.4	67.9	67.0	59.8	49.5	39.3	32.8	48.8
Pendleton WSO	Mean Maximum	39.7	46.9	54.2	61.3	70.0	79.5	87.8	86.2	76.3	63.8	48.9	40.5	62.9
	Mean Minimum	27.3	31.6	35.4	39.4	45.8	52.9	57.9	57.7	49.9	41.0	34.1	27.9	41.7
	Monthly Mean	33.5	39.2	44.8	50.3	57.9	66.2	72.9	72.0	63.1	52.4	41.5	34.2	52.3
Pilot Rock	Mean Maximum	42.1	48.0	55.0	61.8	70.3	79.6	88.9	87.5	77.7	65.9	51.3	42.7	64.2
	Mean Minimum	25.4	28.5	32.2	35.6	41.4	48.0	51.4	51.6	44.2	36.5	31.5	25.7	37.6
	Monthly Mean	33.8	38.3	43.6	48.7	55.9	63.8	70.1	69.5	61.0	51.2	41.4	34.2	50.9
Pine Grove	Mean Maximum	39.3	44.5	52.2	58.7	67.6	75.0	83.1	82.2	72.4	61.9	46.9	39.8	60.2
	Mean Minimum	24.4	27.5	31.3	34.2	41.0	47.6	52.9	52.7	44.3	36.8	30.2	25.0	37.2
	Monthly Mean	31.9	36.0	41.8	46.5	54.4	61.3	68.0	67.4	58.3	49.4	38.6	32.5	48.7
The Dalles	Mean Maximum	43.1	49.6	58.3	66.0	73.2	81.0	87.8	87.8	80.7	68.5	52.2	43.1	66.1
	Mean Minimum	29.9	32.7	36.9	42.4	48.5	55.6	60.0	59.2	51.2	42.4	36.1	30.6	43.9
	Monthly Mean	36.5	41.2	47.6	54.2	60.9	68.3	73.9	73.5	66.0	55.5	44.2	36.8	55.0

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Table 3. Median Frost Dates
1961-1990 Means

Station	Median Dates of Last Occurrence in Spring of				Median Dates of First Occurrence in Fall of			
	24° F	28° F	32° F	36° F	24° F	28° F	32° F	36° F
Antelope	19-Apr	10-May	29-May	25-Jun	8-Nov	12-Oct	22-Sep	11-Sep
Arlington	7-Mar	28-Mar	18-Apr	30-Apr	19-Nov	31-Oct	17-Oct	6-Oct
Condon	12-Apr	6-May	28-May	29-Jun	28-Oct	14-Oct	2-Oct	10-Sep
Dufur	12-Apr	7-May	29-May	18-Jun	29-Oct	11-Oct	29-Sep	11-Sep
Heppner	19-Mar	19-Apr	6-May	30-May	15-Nov	20-Oct	4-Oct	20-Sep
Hermiston 2 S	19-Mar	8-Apr	24-Apr	15-May	3-Nov	16-Oct	5-Oct	26-Sep
Hood River Exp. Stn.	17-Feb	1-Apr	4-May	21-May	27-Nov	22-Oct	8-Oct	23-Sep
Kent	1-Apr	7-May	25-May	9-Jun	8-Nov	19-Oct	4-Oct	10-Sep
Milton Freewater	26-Feb	20-Mar	7-Apr	27-Apr	17-Nov	30-Oct	10-Oct	4-Oct
Moro	27-Mar	19-Apr	18-May	29-May	2-Nov	16-Oct	5-Oct	16-Sep
Pendleton Br. Exp. Stn.	3-Apr	1-May	17-May	4-Jun	16-Oct	5-Oct	22-Sep	10-Sep
Pendleton WSO	18-Feb	16-Mar	15-Apr	4-May	26-Nov	9-Nov	19-Oct	5-Oct
Pilot Rock	2-Apr	21-Apr	16-May	30-May	30-Oct	14-Oct	3-Oct	13-Sep
Pine Grove	8-Apr	28-Apr	14-May	30-May	28-Oct	12-Oct	2-Oct	13-Sep
The Dalles	10-Feb	25-Feb	2-Apr	17-Apr	16-Dec	28-Nov	5-Nov	15-Oct

Table 4. Growing Season
1961-1990 Means

Station	Average Days Between Occurrences of			
	24° F	28° F	32° F	36° F
Antelope	203	155	116	78
Arlington	257	217	182	159
Condon	199	161	127	74
Dufur	200	157	123	86
Heppner	241	184	151	113
Hermiston 2 S	229	191	164	134
Hood River Exp. Stn.	285	204	157	125
Kent	221	166	132	93
Milton Freewater	266	224	186	161
Moro	221	180	141	111
Pendleton Br. Exp. Stn.	196	158	128	99
Pendleton WSO	282	239	187	154
Pilot Rock	211	176	141	106
Pine Grove	204	167	141	107
The Dalles	310	277	218	181