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The Climate of Oregon Climate Zone 9 Southeast Area

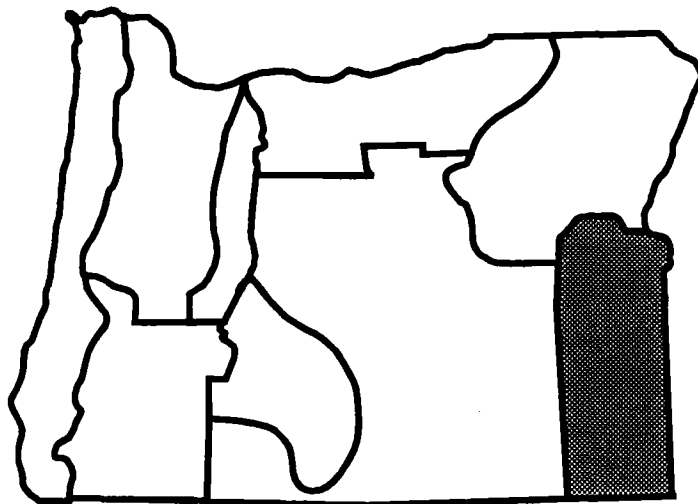
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The Climate of Oregon



Climate Zone 9
Southeast Area

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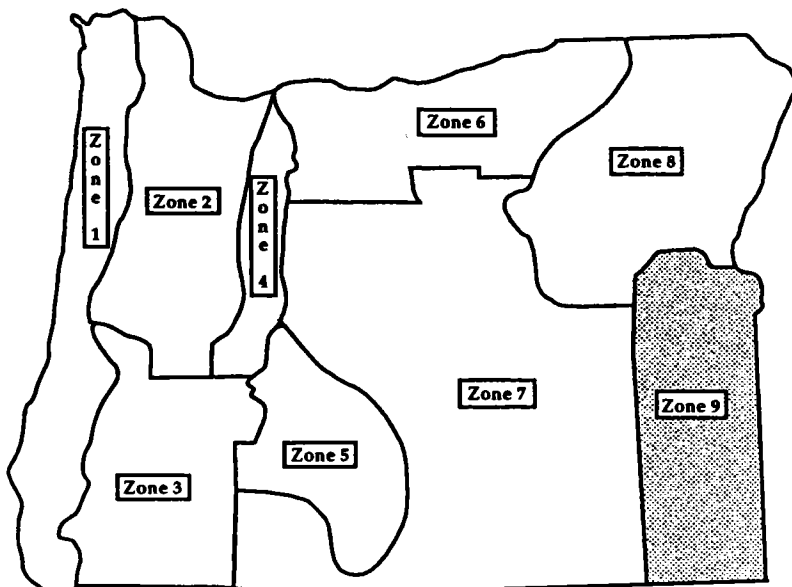
March, 1993

Oregon Climate Zone Summary

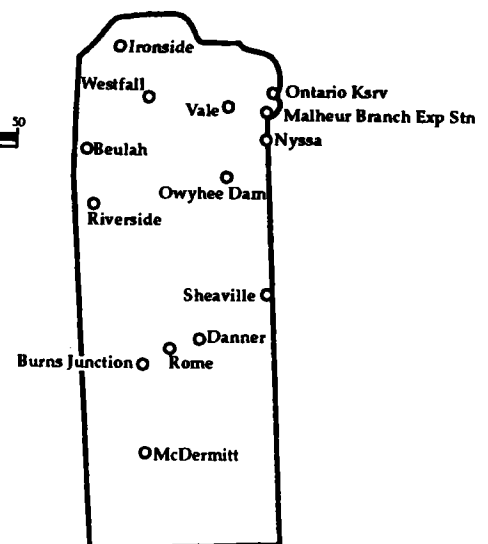
Zone 9 -- Southeast Area

Oregon climate Zone 9 occupies the southeast corner of the state, and is limited to the confines of Malheur County, the state's second largest county. This is a region of high desert, mountain ranges, plateaus, and river valleys, with elevations ranging from slightly above 2,000 feet to nearly 8,000 feet above sea level. Less than 30,000 people occupy the nearly 10,000 square miles which comprise Malheur County. Most reside in the Ontario - Nyssa - Vale areas near the northeast border. More than 90 percent of the county is range land, two-thirds of which is controlled by the Bureau of Land Management.

Principal industries in Zone 9 are agriculture, livestock, food processing, and recreation. Agriculture has played the dominant role in the economy, especially as irrigated acreage has increased. Extensive irrigation in the northeastern valleys is the center of very productive and diversified farming. Oregon State University's Malheur Experiment Station, west of Ontario, has been an active agricultural research center for many years, specializing in new farming practices and testing of alternative crops. Among the chief crops grown in the area are potatoes, sugar beets, onions, peas, tomatoes, berries, and sweet corn. Experiments with exotic melons, squash, and other cash crops (much of them for export to the Orient) are also continuing.



Scale of miles
0 10 20 30 40 50



With the exception of a few of the higher mountain areas, Zone 9 receives low amounts of precipitation; most of the region averages less than 15 inches of total precipitation per year. The driest portions are in valleys near Rome and Burns Junction. These sites average 7.62 and 8.04 inches per year, respectively. On the other hand, locations in the Trout Creek Mountains in the southeast corner receive up to 30 inches per year. Figure 1 is a map showing estimated annual precipitation in Zone 9 based on 1961-90 normals. In even the wettest locations, however, annual precipitation is much lower than evaporation. Average annual evaporation at Malheur Experiment Station is well above 50 inches per year, most of it coming during the months of April through September.

Unlike most of Oregon, annual precipitation in Zone 9 is distributed rather evenly throughout the year. Table 1 shows normal monthly and annual precipitation at various locations in the region. Although winter months tend to have the highest total precipitation, the relative contribution of those months to the annual total is much lower than in areas further west. Some locations, such as McDermitt and Rome, report their highest precipitation values during the late spring. Others, such as Danner and Sheaville, have nearly uniform monthly normals for the entire period of October through June. The driest month throughout the region is July.

Due to its distance from the Pacific Ocean, Zone 9 is characterized by large annual temperature variations. Table 2 lists normal monthly temperatures for Zone 9 measurement stations. Summers are quite warm with daytime highs averaging in the high 80's or low 90's from June through September. Malheur Experiment Station (MES) averages about 50 days per year with temperatures of 90°F or above, mostly during July and August. Summer nights are cool, however, due to the generally clear skies and dry air: even in the warmest months, nighttime lows average in the low to mid 50's. During winter, average highs are mostly in the 30's and lows in the teens. MES averages about 140 days per year with minimum temperatures of 32°F or below; on 26 of those days, maximum temperatures remain below freezing as well. Occasionally, very cold air reaches the area from the north, causing lows to drop below 0°F. MES averages about 6 sub-zero days per year.

Table 3 lists median dates of several low temperature thresholds at Zone 9 stations, while Table 4 lists average days between those thresholds. While stations in the northeast (MES and Nyssa) have an average of 140-160 days between 32°F temperatures, some of the higher stations have much shorter growing seasons. Examples would be Sheaville (4,620 feet) with an average of 87 days between frost dates, and Danner (4,230 feet), which averages 92 days.

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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
Beulah	3270	1.42	.96	1.08	.72	.98	.91	.37	.57	.55	.67	1.56	1.64	11.50
Burns Junction	3930	.71	.83	.97	.91	.84	.59	.57	.57	.54	.48	.81	.63	8.04
Danner	4230	1.35	.92	1.17	1.17	1.09	1.19	.44	.61	.78	.93	1.26	1.16	12.57
Ironside	3920	1.33	.98	.93	.74	1.04	.98	.44	.77	.57	.61	1.36	1.70	11.31
Juntura	2830	1.24	.83	.92	.80	.96	1.05	.43	.55	.53	.66	1.32	1.54	11.10
Malheur Exp St	2230	1.27	.94	.98	.73	.82	.79	.24	.52	.54	.64	1.26	1.39	10.13
Mc Dermitt	4460	.76	.58	.90	.91	1.29	1.08	.39	.57	.56	.62	.96	.87	9.35
Nyssa	2180	1.25	1.02	.91	.81	.80	.89	.25	.49	.62	.67	1.25	1.42	10.40
Ontario	2150	1.33	.87	.82	.63	.73	.72	.20	.44	.53	.61	1.30	1.50	9.68
Owyhee Dam	2400	.98	.75	.83	.85	.91	1.19	.34	.54	.54	.57	.92	1.08	9.48
Riverside	3330	1.08	.83	1.05	.71	.89	.85	.48	.57	.51	.61	1.06	1.18	9.76
Rome	3380	.58	.50	.83	.69	1.01	1.05	.36	.46	.58	.55	.82	.63	7.62
Sheaville	4620	1.64	1.21	1.27	1.22	1.26	1.24	.46	.65	.65	.99	1.62	1.56	12.48
Vale	2220	1.17	.83	.89	.71	.79	.81	.35	.51	.56	.64	1.16	1.35	9.77
Westfall	3140	1.31	.83	.81	.78	.97	1.08	.35	.71	.52	.53	1.33	1.35	11.83

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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
Beulah	Mean Maximum	36.3	44.5	53.0	61.9	71.5	80.9	90.3	88.6	79.5	67.1	49.5	37.8	64.0
	Mean Minimum	16.4	22.2	27.2	32.3	40.3	47.7	53.5	51.6	41.6	31.5	24.1	17.7	34.4
	Monthly Mean	26.4	33.3	40.1	47.1	55.9	64.3	71.9	70.1	60.6	49.0	36.9	27.7	49.2
Burns Junction	Mean Maximum	38.5	47.0	54.2	63.6	71.9	83.2	92.1	89.7	80.6	68.4	50.5	41.2	65.2
	Mean Minimum	16.9	23.0	27.6	32.9	40.0	48.6	54.0	51.4	41.8	32.5	24.1	17.6	34.2
	Monthly Mean	27.7	35.0	40.9	48.2	55.9	65.9	73.1	70.6	61.0	50.4	37.3	29.4	49.6
Danner	Mean Maximum	38.3	46.4	52.1	60.1	68.7	79.1	88.1	86.8	76.3	66.7	49.6	39.8	65.3
	Mean Minimum	14.7	21.6	24.3	28.2	34.8	43.2	48.2	46.1	37.1	27.3	21.7	15.1	31.7
	Monthly Mean	26.4	34.2	38.2	44.1	51.9	61.4	68.2	66.6	57.0	47.3	35.5	27.3	48.3
Ironside	Mean Maximum	33.5	38.6	49.3	57.9	65.8	76.2	86.4	86.2	74.3	62.6	45.0	34.0	60.6
	Mean Minimum	14.9	18.9	26.4	31.7	38.4	46.1	52.9	52.6	42.1	32.4	23.1	14.8	34.0
	Monthly Mean	24.2	28.8	37.9	44.5	52.1	61.1	69.6	69.4	58.4	47.5	34.1	24.5	47.6
Malheur Exp St	Mean Maximum	33.7	42.8	54.4	63.9	73.4	82.7	91.3	89.7	78.5	65.0	47.8	35.7	63.2
	Mean Minimum	18.5	24.7	31.0	37.1	45.0	52.8	58.1	55.8	45.9	35.8	28.7	20.7	37.8
	Monthly Mean	26.1	33.7	42.7	50.5	59.2	67.8	74.7	72.8	62.2	50.4	38.2	28.2	50.5
Mc Dermitt	Mean Maximum	40.3	46.7	52.6	61.0	70.6	80.7	91.1	88.7	78.9	67.6	50.6	41.2	64.0
	Mean Minimum	18.0	22.8	25.2	29.2	36.6	44.1	49.4	47.8	39.4	32.1	25.5	19.1	32.3
	Monthly Mean	29.2	34.8	38.9	45.1	53.7	62.3	70.3	68.2	59.2	49.8	38.0	30.3	48.1
Nyssa	Mean Maximum	34.0	43.3	54.9	63.9	73.0	81.8	90.9	89.1	78.4	65.5	48.6	36.1	63.3
	Mean Minimum	20.0	25.3	31.4	38.1	45.9	53.9	58.9	56.7	46.7	36.6	29.6	22.0	38.8
	Monthly Mean	27.0	34.3	43.2	51.0	59.4	67.8	74.9	72.9	62.6	51.0	39.1	29.0	51.0
Ontario	Mean Maximum	35.3	44.7	56.4	66.3	76.4	86.2	95.7	93.3	81.7	67.4	49.4	37.0	65.8
	Mean Minimum	19.1	24.8	30.6	36.2	44.0	51.7	57.4	54.5	44.3	34.5	28.3	20.6	37.2
	Monthly Mean	27.2	34.8	43.5	51.3	60.2	68.9	76.5	73.9	63.0	50.9	38.8	28.8	51.5
Owyhee Dam	Mean Maximum	38.5	46.0	55.6	64.3	74.0	83.7	92.7	91.2	79.9	67.2	50.8	39.6	65.3
	Mean Minimum	21.8	27.2	32.4	37.3	43.4	49.9	53.4	52.8	45.8	37.9	30.4	22.8	37.9
	Monthly Mean	30.1	36.6	44.0	50.8	58.7	66.8	73.1	72.0	62.9	52.6	40.6	31.2	51.6
Riverside	Mean Maximum	37.1	45.3	53.9	62.3	71.5	81.2	90.1	87.9	78.2	65.6	49.2	37.8	63.3
	Mean Minimum	19.4	24.4	28.1	31.9	39.1	47.2	52.8	51.1	41.6	32.0	26.4	19.0	34.3
	Monthly Mean	28.2	34.9	41.0	47.1	55.3	64.2	71.5	69.5	59.9	48.8	37.8	28.4	48.8
Rome	Mean Maximum	40.0	47.9	54.6	62.9	73.2	82.4	92.4	90.6	79.9	68.2	51.6	41.0	65.2
	Mean Minimum	17.7	23.4	25.8	29.9	38.5	46.4	51.2	48.5	38.6	30.2	24.1	18.3	32.6
	Monthly Mean	28.8	35.7	40.2	46.4	55.9	64.4	71.9	69.6	59.3	49.2	37.8	29.7	49.0
Sheaville	Mean Maximum	36.4	42.6	48.5	57.2	66.9	76.2	87.2	85.9	75.0	64.0	46.9	37.7	60.1
	Mean Minimum	16.1	21.3	24.7	29.1	35.9	43.2	48.9	47.9	38.5	30.8	23.7	16.8	31.2
	Monthly Mean	26.0	31.9	36.6	43.1	51.4	59.7	68.0	66.9	56.7	47.4	35.4	27.0	45.7
Vale	Mean Maximum	35.9	45.0	56.6	66.3	75.6	85.3	94.2	91.9	80.3	66.7	49.7	37.6	65.4
	Mean Minimum	18.4	24.3	30.2	35.4	43.4	51.4	56.8	54.4	44.3	34.3	27.8	20.1	36.7
	Monthly Mean	27.1	34.6	43.4	50.8	59.5	68.3	75.4	73.2	62.3	50.5	38.8	28.8	51.1
Westfall	Mean Maximum	34.7	42.6	52.4	60.8	71.3	80.0	90.5	89.4	78.9	65.1	47.4	36.2	61.8
	Mean Minimum	17.3	23.9	28.2	33.0	41.8	48.3	54.8	53.5	44.6	35.0	26.9	19.3	35.4
	Monthly Mean	26.0	33.3	40.3	46.8	56.7	64.3	72.5	71.4	61.7	50.1	37.1	27.7	48.4

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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
Danner	3-May	23-May	8-Jun	27-Jun	26-Sep	17-Sep	9-Sep	23-Aug
Nyssa	18-Mar	8-Apr	29-Apr	10-May	10-Nov	19-Oct	7-Oct	30-Sep
Ontario KSRV	1-Apr	20-Apr	10-May	24-May	18-Oct	6-Oct	27-Sep	14-Sep
Owyhee Dam	17-Mar	9-Apr	30-Apr	16-May	3-Nov	16-Oct	8-Oct	26-Sep
Rome 2 NE	29-Apr	12-May	31-May	11-Jun	5-Oct	21-Sep	12-Sep	3-Sep
Sheaville	9-May	26-May	17-Jun	30-Jun	5-Oct	21-Sep	12-Sep	2-Sep

Table 4. Growing Season
1961-1990 Means

Station	Average Days Between Occurrences of			
	24° F	28° F	32° F	36° F
Danner	148	118	92	55
Nyssa	235	195	164	140
Ontario KSRV	202	167	140	115
Owyhee Dam	232	190	161	134
Rome 2 NE	165	136	112	86
Sheaville	149	117	89	68

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