

Appendix B - Climate data

Table B1 - Southern Oscillation Index (SOI), Pacific Decadal Oscillation (PDO), and divisional climate data. All data is for water years. SOI data derived from < <http://iri.ideo.columbia.edu> >. PDO data derived from < <http://tao.atmos.washington.edu/main.html> >. Climate division data from < <http://www.wrcc.dri.edu/spi/divplot1map.html> >. Climate divisions are Cascade Foothills (CFH), Cascade Mountains West (CMW), and Cascade Mountains East (CME).

Year	SOI	PDO	Average Temperature (°C)			Total Precipitation (cm)		
			CFH	CMW	CME	CFH	CMW	CME
1957	0.6	-0.8	11.2	7.2	8.7	146	204	76
1958	-0.1	-0.7	9.8	6.0	7.0	199	292	94
1959	0.2	0.6	9.5	6.1	7.1	166	248	72
1960	-0.2	-0.1	10.5	7.3	7.9	182	266	90
1961	-1.5	0.6	9.2	6.0	6.5	142	209	72
1962	-0.6	0.2	9.9	6.9	7.6	150	198	73
1963	-0.9	0.0	9.3	5.9	6.7	175	246	74
1964	-0.5	-0.9	9.5	6.4	7.0	144	210	83
1965	-0.3	-1.1	10.0	6.8	7.5	140	185	65
1966	-0.9	0.5	10.4	7.5	8.6	161	226	72
1967	-0.3	0.2	10.0	7.0	7.6	189	274	87
1968	-0.5	-1.1	9.3	6.2	6.3	162	229	82
1969	0.1	-0.4	9.9	6.9	7.2	140	184	58
1970	-1.3	2.0	9.1	6.3	6.6	184	261	86
1971	-1.2	-0.6	9.0	6.2	6.5	202	307	112
1972	-0.5	-0.2	9.3	6.6	7.3	121	166	46
1973	-0.6	2.3	9.5	6.3	7.0	202	307	100
1974	-0.7	1.4	9.4	6.3	7.1	160	233	84
1975	-0.7	0.8	9.2	6.3	6.8	200	292	93
1976	0.7	-1.0	9.9	7.3	7.7	112	166	40
1977	0.1	-1.0	10.0	6.9	7.3	164	252	89
1978	0.2	-0.1	9.4	6.5	6.7	120	178	47
1979	0.6	-0.7	9.7	6.6	7.0	153	220	74
1980	0.9	-0.1	10.6	7.8	8.0	166	240	75
1981	0.2	-1.1	9.7	6.7	6.9	178	253	91
1982	1.4	-2.9	10.2	7.2	7.2	181	247	94
1983	1.0	-0.1	9.7	6.5	6.7	175	244	79
1984	0.6	0.1	9.4	6.4	6.3	137	184	57
1985	0.9	-0.4	9.8	6.7	6.7	156	216	66
1986	1.9	-2.4	10.8	8.1	8.2	147	204	62
1987	0.9	0.3	10.2	7.6	7.7	143	196	62
1988	-0.2	1.6	10.1	7.3	7.6	148	214	63
1989	0.0	-0.6	10.7	8.3	8.7	171	242	70

Table B1 - Continued - Southern Oscillation Index (SOI), Pacific Decadal Oscillation (PDO), and divisional climate data.

Year	SOI	PDO	Average Temperature (°C)			Total Precipitation (cm)		
			CFH	CMW	CME	CFH	CMW	CME
1990	-0.9	-1.0	10.7	8.3	8.7	171	242	70
1991	0.8	-2.1	9.8	7.0	7.5	191	280	75
1992	1.3	-1.9	11.5	8.8	9.1	143	200	62
1993	0.6	-1.7	10.0	6.7	6.8	139	196	58
1994	0.2	-0.9	10.6	8.4	8.5	122	178	47
1995	0.7	0.5	10.4	8.1	7.5	175	247	88
1996	1.2	-1.0	10.2	7.9	7.2	214	314	87
1997	0.7	-1.6	10.1	8.0	7.2	234	336	89
1998	1.9	-0.6	10.9	8.6	8.8	150	213	73

Table B2 Climate station identification, location, elevation, and operational period. Data from < <http://www.wrcc.dri.edu/summary/climsmwa.html> >. Operational period in year / month / day. For instance 19310101 is January 1, 1931.

Station		Location		Elev	Operational Period	
ID#	Name	Lat	Long	m	Start	End
451992	Darrington RS.	48°15'	121°36'	110	19310101	19980930
452157	Diablo Dam	48°43'	121°09'	271	19310101	19980930
453730	Holden Village	48°12'	120°47'	189	19620601	19980930
455133	Mazama	48°36'	120°26'	665	19500405	19980930
455840	Newhalem	48°41'	121°15'	162	19590101	19980930
458059	Stehekin	48°20'	120°42'		19310101	19980930
458715	Upper Baker Dam	48°39'	121°41'	210	19651001	19980930

Tables B3 - Climate station average annual temperature (°C).
 Data from < <http://www.wrcc.dri.edu/summary/climsmwa.html> >.

Year	Station ID - - - >							
	451992	452157	453160	453730	455133	455840	458059	458715
1958	10.7	13.7	10.4	...	...	...	10.2	...
1959	9.1	12.8	8.6	...	...	...	8.6	...
1960	8.6	12.1	8.2	...	...	9.8	8.6	...
1961	9.5	12.8	10.2	...	...	10.8	9.4	...
1962	8.6	12.5	8.1	...	...	9.4	8.2	...
1963	9.5	12.2	8.6	6.0	...	10.3	8.5	...
1964	8.8	11.5	...	5.1	...	9.2	8.3	...
1965	8.6	11.4	...	5.9	...	9.7	7.8	...
1966	9.5	12.8	11.5	9.0	...	9.9	8.8	8.8
1967	9.9	12.7	9.8	6.9	...	10.5	9.4	9.4
1968	8.7	12.7	9.2	5.2	...	9.9	8.5	8.8
1969	8.5	11.8	10.3	4.6	...	9.1	7.2	7.8
1970	9.5	12.5	8.9	5.6	6.0	10.2	8.5	8.9
1971	8.4	12.0	8.5	4.5	4.1	9.0	8.4	7.7
1972	8.1	11.5	8.5	4.3	5.3	8.8	8.2	7.5
1973	9.2	12.1	8.0	5.3	6.6	9.7	9.3	8.3
1974	8.6	12.0	7.7	5.2	4.9	10.0	9.1	8.3
1975	9.3	11.3	8.5	5.2	6.1	9.7	8.2	8.4
1976	8.6	11.4	7.4	5.0	5.6	9.0	8.6	8.0
1977	9.6	12.0	8.5	6.0	7.1	10.2	9.4	9.2
1978	9.4	12.6	7.9	5.1	6.4	9.6	8.6	8.9
1979	9.4	12.4	...	3.9	6.0	9.2	8.1	8.4
1980	9.4	12.2	6.4	4.5	6.5	9.5	8.6	8.9
1981	10.3	12.5	9.1	5.2	7.3	10.2	9.3	9.6
1982	9.3	11.7	8.2	4.5	6.1	9.0	8.4	8.7
1983	10.1	12.5	7.7	4.6	6.6	9.8	9.5	9.0
1984	9.2	11.8	...	4.8	6.1	9.1	8.1	8.7
1985	9.1	13.7	...	4.1	5.6	9.0	8.3	8.3
1986	9.6	12.7	...	4.8	6.1	9.3	8.4	8.4
1987	10.9	12.9	...	5.6	8.0	11.2	9.7	9.7
1988	10.8	12.0	...	5.4	7.4	12.1	9.3	9.0
1989	9.5	12.1	...	5.0	6.9	9.7	9.0	8.7
1990	10.8	12.8	...	5.8	7.9	10.3	9.9	9.2
1991	9.6	12.5	...	4.8	7.4	9.2	8.7	8.2
1992	12.1	13.5	...	6.1	8.3	11.2	10.3	10.2
1993	8.8	12.2	...	4.1	6.1	9.4	8.4	8.4
1994	10.2	12.8	...	5.7	7.9	10.4	10.0	9.6
1995	...	12.9	...	3.6	6.7	9.8	8.9	8.4
1996	9.1	11.9	...	4.9	6.2	9.3	8.3	8.6
1997	9.1	12.8	...	4.2	6.0	8.9	5.7	8.5
1998	9.3	13.2	...	6.3	8.2	10.7	10.3	9.7

Tables B4 - Climate station average August-September temperature (°C).
 Data from < <http://www.wrcc.dri.edu/summary/climsmwa.html> >.

Year	Station ID							
	451992	452157	453160	453730	455133	455840	458059	458715
1958	16.6	17.5	15.7	...	...	...	18.0	...
1959	14.6	15.1	13.9	...	...	...	15.2	...
1960	14.2	16.0	14.9	...	...	16.4	15.9	...
1961	15.3	17.4	16.2	...	...	17.9	17.1	...
1962	15.4	16.1	14.8	...	...	16.6	15.8	...
1963	16.9	18.1	17.4	15.0	...	18.3	16.8	...
1964	14.2	14.9	14.0	13.0	...	15.2	14.4	...
1965	15.1	16.6	12.9	15.0	...	16.8	15.7	...
1966	16.0	17.3	16.1	15.2	...	17.3	17.4	15.8
1967	18.3	19.4	18.7	16.9	...	19.6	18.9	17.9
1968	15.0	16.2	15.2	12.8	...	16.2	15.8	14.8
1969	14.7	15.7	15.2	13.6	...	15.6	15.7	14.5
1970	15.0	15.7	15.1	12.8	14.0	15.8	15.9	14.2
1971	15.8	16.5	15.8	13.2	14.4	16.9	17.8	15.2
1972	14.6	15.7	15.3	12.8	14.8	16.1	16.3	14.5
1973	15.1	16.4	14.3	13.9	17.0	16.9	18.3	15.0
1974	18.1	18.4	17.9	15.0	17.4	18.8	13.0	16.6
1975	15.8	16.3	14.7	13.9	15.5	16.9	12.2	15.2
1976	15.4	16.2	14.2	13.4	15.0	16.5	17.2	15.3
1977	16.1	17.4	15.4	13.8	17.0	17.0	18.3	15.9
1978	15.1	15.6	14.1	12.5	15.0	15.1	16.6	14.6
1979	17.4	17.6	15.6	14.5	17.4	17.4	18.5	16.8
1980	15.6	15.8	...	12.6	15.6	15.5	16.9	14.8
1981	17.8	17.8	...	12.9	17.6	17.6	18.8	16.6
1982	16.5	16.3	...	13.4	15.9	15.9	17.6	15.7
1983	15.2	15.7	...	12.2	15.4	15.6	16.8	17.4
1984	15.9	15.6	...	12.9	15.3	15.7	16.7	15.4
1985	15.9	15.3	...	12.5	15.1	16.0	16.6	14.9
1986	17.4	17.6	...	14.2	17.1	17.6	18.5	16.2
1987	17.5	17.8	...	14.8	18.0	17.7	19.0	16.3
1988	16.1	16.7	...	13.3	16.8	16.4	17.7	15.4
1989	16.9	17.1	...	13.3	16.6	17.2	17.8	15.8
1990	18.3	18.5	...	14.7	18.5	18.7	19.4	17.1
1991	17.5	17.8	...	14.5	18.1	17.7	19.1	16.5
1992	16.5	16.2	...	12.8	16.2	16.3	17.7	15.1
1993	15.9	17.1	...	12.9	16.5	17.1	18.0	16.0
1994	18.2	17.7	...	14.5	18.3	17.8	19.3	16.8
1995	18.4	16.8	...	13.5	16.0	16.6	17.5	16.7
1996	17.0	16.2	...	13.6	16.2	15.8	17.4	14.9
1997	17.7	19.6	...	14.4	17.1	17.6	21.0	17.0
1998	16.6	18.7	...	16.5	19.4	18.5	21.1	17.3

Table B5 - Climate station total annual precipitation (cm).
 Data from < <http://www.wrcc.dri.edu/summary/climsmwa.html> >.

Year	Station ID							
	451992	452157	453160	453730	455133	455840	458059	458715
1958	174	148	140	...	...	...	78	...
1959	253	263	199	...	...	...	100	...
1960	217	192	176	...	...	216	83	...
1961	226	222	178	...	...	238	84	...
1962	184	163	130	...	...	182	67	...
1963	174	179	139	71	...	192	84	...
1964	246	229	...	99	...	239	82	...
1965	186	162	...	82	...	186	87	...
1966	170	152	...	41	...	175	73	223
1967	232	208	174	109	...	234	88	278
1968	238	248	221	132	...	274	105	319
1969	215	185	90	90	...	189	99	236
1970	169	157	131	78	46	159	68	199
1971	255	201	170	120	39	219	94	258
1972	273	250	217	131	67	280	115	319
1973	137	116	95	32	86	142	50	207
1974	277	256	183	134	35	242	92	355
1975	198	182	56	115	54	194	94	240
1976	272	294	214	146	53	280	113	333
1977	133	156	114	51	59	144	49	176
1978	198	195	129	120	25	197	114	242
1979	140	156	...	62	72	163	62	178
1980	210	197	135	84	36	194	96	251
1981	201	220	178	90	68	216	94	258
1982	226	208	203	106	50	218	124	241
1983	233	200	180	104	73	193	98	239
1984	220	204	...	97	75	199	96	273
1985	165	123	...	65	52	163	72	190
1986	191	201	...	82	46	196	87	242
1987	180	172	...	82	45	159	88	228
1988	154	181	...	83	48	...	80	196
1989	174	175	...	85	46	156	86	221
1990	196	215	...	101	48	206	94	268
1991	224	284	...	127	52	256	126	334
1992	179	176	...	92	68	181	82	228
1993	144	141	...	78	56	155	69	200
1994	151	159	...	67	46	161	64	202
1995	146	196	...	100	42	184	103	263
1996	192	257	...	132	77	250	101	328
1997	297	211	...	128	75	277	90	348
1998	187	150	...	125	80	162	81	217

Tables B6 - Climate station total precipitation (cm) for August and September.
 Data from < <http://www.wrcc.dri.edu/summary/climsmwa.html> >.

Year	Station ID - - - >							
	451992	452157	453160	453730	455133	455840	458059	458715
1958	15	17	17	...	...	...	6	...
1959	32	34	34	...	...	...	14	...
1960	15	10	20	...	...	15	7	...
1961	17	13	27	...	...	17	11	...
1962	24	21	25	...	...	23	11	...
1963	9	13	4	9	...	16	15	...
1964	23	22	...	7	...	24	10	...
1965	10	12	...	8	...	15	12	...
1966	8	6	...	3	...	6	12	7
1967	9	8	10	3	...	8	4	9
1968	20	21	22	10	...	25	14	29
1969	26	24	26	10	...	22	13	29
1970	16	17	13	5	5	18	6	23
1971	16	14	6	5	3	15	8	15
1972	28	27	15	13	4	27	24	25
1973	9	9	5	4	8	8	7	13
1974	2	4	0	3	4	5	7	6
1975	14	9	12	8	0	9	11	15
1976	14	14	16	5	4	15	9	18
1977	26	14	14	12	8	15	13	23
1978	26	26	26	18	5	25	20	34
1979	13	12	...	7	9	14	8	14
1980	21	22	17	9	10	19	12	23
1981	14	11	18	4	4	11	13	16
1982	12	18	...	8	4	17	13	18
1983	19	16	...	10	6	14	20	4
1984	15	17	...	12	8	16	8	17
1985	14	11	...	9	3	12	10	12
1986	9	9	...	6	6	10	8	13
1987	5	5	...	1	2	4	7	8
1988	10	16	...	7	0	16	12	22
1989	10	5	...	2	3	6	9	10
1990	8	11	...	6	2	12	15	12
1991	11	10	...	4	4	10	8	18
1992	14	16	...	8	2	17	15	22
1993	7	7	...	6	2	6	16	3
1994	11	8	...	4	3	8	6	14
1995	33	11	...	5	4	12	10	8
1996	13	10	...	3	3	11	8	18
1997	25	3	...	14	4	21	4	31
1998	2	2	...	1	5	2	9	3