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1955 FOREST FIRE WEATHER IN WESTERN OREGON AND WASHINGTON

By

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While fire-weather severity remained low for the third successive year in western Washington, 1955 brought near normal fire weather to western Oregon for the first time since 1952. Temperatures were cooler than normal throughout the season in both half States, with record or near record lows for April, May, and July. April, July, and October were unusually rainy while August was the driest of record in both western Oregon and western Washington.

Only in interior portions of southwest Oregon was there severe fire weather of appreciable duration. There, prolonged spring-summer drought culminated in a period of extreme burning index and dry lightning storms early in September. Elsewhere in western Oregon and Washington critical fire weather was confined to a few days in June and the period from August 1 to September 12. Fall rains commenced September 13 throughout the western portions of both States. No serious fire weather occurred after that date except for short periods in southern Oregon.

1/ The author is indebted to the U. S. Weather Bureau's Weather Records Processing Center at San Francisco and to the staff of the Weather Bureau Airport Station at Portland for the preparation of routine and special data used in this report. The author also wishes to acknowledge the excellent assistance of Mrs. Jean M. Myers, who made all the compilations and computations for this analysis.

As in previous years, the 1955 fire season (April through October) has been rated by: (1) total number of days when no rain fell, (2) average number of days since a wetting rain of one-fourth inch or more, and (3) burning index, a rating of the combined effect of relative humidity and wind speed on rate of fire spread. High burning index means high rate of spread. Seasonal ratings are averages of index values computed[2/] separately for a number of widely distributed Weather Bureau stations. Relative severity is then determined by comparing ratings of the current season with those of previous years. Some supplementary data are also presented showing frequency of days of low relative humidity, high burning index, and lightning storms.

Western Oregon

Although the 1955 fire season was not severe, weather conditions were generally more favorable for fire than in either 1953 or 1954 (table 1). With both March and April extremely wet and cold, the fire season got off to a slow start. May also was cold with frequent light rains. June was predominantly dry from the 5th to the 26th with parching east winds and high temperatures on the 8th and 9th. As a result, spring burning index was slightly above normal, though rainless days were fewer than normal.

The summer indexes, all higher than in 1954, were close to normal. July was second coldest of record and had above normal rainfall. August, on the other hand, was driest of record. The severest weather of the season occurred during the first week in September when temperatures soared into the midnineties along the coast and over 100° on three successive days in the Rogue River Valley. Lightning storms spread northward along the Cascades beginning the evening of September 4, setting many fires which were troublesome until general fall rains began September 13.

Except for a record low number of days since a wetting rain, 1955 fall indexes were slightly under 1954 and were near normal. The last half of September and most of October were rainier and colder than normal. Fall rainless periods were limited to September 17 - 26 and October 12 - 23.

2/ Although all days in the April through October fire season were used in the calculation of rainless days and number of days since a wetting rain, the burning index rating is based on only the 50 percent of days with highest burning index according to the Forest Service scale used in Region 6.

Table 1.--1955 fire-weather indexes and comparative data for western Oregon 1/

	Current year (1955)	Previous year (1954)	10-year average 1945-54	Lowest of record 2/	Year of low record	Highest of record 2/	Year of high record
Spring (April 1 - June 30)							
Burning index	29.0	22.5	24.8	15.9	1953	33.7	1951
Average days since wetting rain	16.9	17.1	14.8	5.5	1933	22.9	1935
Total rainless days	53.8	59.3	60.2	46.2	1948	75.8	1924
Summer (July 1 - Sept. 15)							
Burning index	32.4	25.3	32.1	25.3	1954	37.8	1945
Average days since wetting rain	37.8	29.0	37.9	15.9	1947	75.5	1935
Total rainless days	66.7	59.3	67.1	59.3	1954 1947	74.8	1929
Fall (Sept. 16 - Oct. 31)							
Burning index	19.0	19.6	18.2	10.0	1940	26.4	1936
Average days since wetting rain	3/ 5.3	11.8	20.8	6.0	1941	94.4	1932
Total rainless days	30.3	35.5	30.9	22.2	1950	42.5	1936
Season (April 1 - Oct. 31)							
Burning index	28.0	22.8	26.4	18.5	1953	31.3	1951
Average days since wetting rain	21.9	20.2	23.7	13.5	1941	48.8	1932
Total rainless days	150.8	154.0	159.5	139.5	1948	176.0	1952

1/ Indexes based on observations at the following Weather Bureau stations: burning index--Portland International Airport, Eugene, Sexton Summit, and Medford; rainfall indexes--Portland, Eugene, North Bend, and Medford.

2/ Burning index computed 1932 - 1955 except for 1933, 1934, 1937, and 1939. Average time since wetting rain and total number of rainless days computed 1922 - 1955 except 1923 and 1927.

3/ New low record.

Spring and summer rains were less frequent than usual in the southwestern interior. Medford, for example, went 137 days without a wetting rain--the longest drought period since the 150 days between wetting rains in 1938. At the more humid end of the State, Portland set new records for fewest rainless days, both in the spring and for the entire season.

Western Washington

For the entire fire season, weather conditions in western Washington were the least hazardous since 1948, although only slightly less so than the two preceding years. Indexes during all parts of the season were below the 10-year average except for total rainless days during the summer (table 2). New low records were set for burning index during both the fall and the entire season. Only the summer showed a greater fire danger than in the preceding year.

The 1955 fire season will be remembered as cold and damp. Following the coldest March on record, April was not only the coldest of record and wettest since 1937, but also had the greatest average State snowfall of record. May also was the coldest of record. Except for the rainless period June 5 - 16, spring was predominantly rainy with number of rainless days very nearly equalling the low record set in 1953. July started with a rainy week, and general rains occurred again around July 15, except in the north portion. A final week of wetting rains made July 1955 the second wettest in 66 years of record. August, in contrast, was the driest of record. The season's most severe weather occurred during dry east winds from June 8 to 10 and again on September 4 and 5. General fall rains began September 13, and no important fire weather occurred after that date.

Supplemental Information

Although the seasonal ratings for western Washington and western Oregon are based primarily on the three indexes discussed above, additional data on frequency of days of low relative humidity, high burning index, and lightning storms are summarized in tables 3, 4, and 5. Records of lightning storm frequency are for national forests in both eastern and western portions of Oregon and Washington.

Table 2.--1955 fire-weather indexes and comparative data for western Washington 1/

	Current year (1955)	Previous year (1954)	10-year average 1945-54	Lowest of record 2/	Year of low record	Highest of record 2/	Year of high record
Spring (April 1 - June 30)							
Burning index	14.4	16.3	17.9	11.6	1953	24.3	1951
Average days since wetting rain	4.7	8.8	8.6	4.0	1942	15.7	1938
Total rainless days	44.3	51.0	55.2	43.7	1953	69.7	1938
Summer (July 1 - Sept. 15)							
Burning index	12.8	10.0	19.4	10.0	1954	24.8	1945
Average days since wetting rain	15.7	12.9	24.8	8.3	1943	60.5	1951
Total rainless days	61.0	53.0	59.9	49.3	1948	67.5	1951
Fall (Sept. 16 - Oct. 31)							
Burning index	3/ 5.1	8.2	10.5	8.2	1954	15.6	1952
Average days since wetting rain	3.4	8.2	7.4	2.9	1941	28.3	1942
Total rainless days	23.0	26.7	26.9	19.0	1941	38.0	1936
Season (April 1 - Oct. 31)							
Burning index	3/ 11.8	12.3	17.3	12.3	1954	21.4	1951
Average days since wetting rain	8.4	10.1	14.4	7.0	1948	28.9	1951
Total rainless days	128.3	130.7	143.4	122.7	1941	162.3	1938

1/ Indexes based on observations at the following Weather Bureau stations: burning index--Toledo, Seattle (Boeing Field), Bellingham, and Stampede Pass; rainfall indexes--Toledo, Hoquiam-Aberdeen, and Bellingham.

2/ Burning index computed 1944-1955. Average time since wetting rain and total number of rainless days computed 1936-1955.

3/ New low record.

Table 3.--Number of days with 4:30 p.m. relative humidities 30 percent 1/ or less between April 1 and October 31

Station	1955	1954	Least number	Year of least	Greatest number	Year of greatest
Western Oregon						
Portland	9	10	8	1941 1948	37	1938
Eugene	24	14	12	1941	65	1951
Sexton Summit	2/ 4	14	6	1940	53	1945
Medford	114	110	46	1948	135	1951
Western Washington						
Toledo	4	5	1	1948	26	1951
Stampede Pass	6	3	1	1948	20	1951
Boeing Field	4	11	2	1948	30	1951
Bellingham	1	1	0	1945-1948 1952-1953	6	1946

1/ Oregon forest laws and supplemental regulations require all power driven machinery on forest land to cease operation when the relative humidity drops to 30 percent during the fire season.

2/ New low record.

Table 4.--Number of days with 4:30 p.m. burning index greater than 28 1/ between April 1 and October 31

Station	1955	1954	Least number	Year of least	Greatest number	Year of greatest
Western Oregon						
				1935		1944
Portland	11	10	7	1953	27	1945
Eugene	45	29	14	1942	76	1951
Sexton Summit	23	20	8	1947	47	1936
Medford	82	24	17	1953	94	1949
Western Washington						
Toledo	0	1	0	1955	12	1951
Stampede Pass	4	6	4	1955	34	1951
Boeing Field	7	8	4	1953	44	1951
Bellingham	1	2	0	1945	7	1951
				1948		

1/ Burning index greater than 28 is equivalent to class 6 or greater on the Forest Service Region 6 burning index scale.

Table 5.--Number of days with lightning storms over each of the national forests in Oregon and Washington between July 1 and September 15

National forest	1950	1951	1952	1953	1954	1955
Western Oregon						
Rogue	14	16	13	13	3	2
Umpqua	1	4	10	11	2	2
Willamette	2	3	9	7	1	1
Mt. Hood	2	2	12	14	2	8
Siskiyou	2	2	8	6	0	2
Siuslaw	0	1	2	4	1	1
Average	3.5	4.7	9.0	9.2	1.5	2.7
Eastern Oregon						
Deschutes	8	8	19	11	8	7
Fremont	13	14	20	17	5	8
Ochoco	8	11	18	19	9	12
Malheur	12	12	22	20	8	8
Umatilla	15	18	21	20	13	12
Whitman	18	15	18	26	13	10
Wallowa	14	22	14	18	9	13
Average	12.6	14.3	18.9	17.4	9.3	10.0
Western Washington						
Gifford Pinchot	5	2	4	6	2	9
Snoqualmie	10	8	10	10	5	6
Mt. Baker	7	6	6	11	3	1
Olympic	1	1	1	4	0	1
Average	5.8	4.3	5.3	7.8	2.5	4.2
Eastern Washington						
Okanogan	19	15	13	22	10	15
Wenatchee	8	10	6	7	4	7
Average	13.5	12.5	9.5	14.5	7.0	11.0