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FREQUENCIES OF DAILY EXTREMES IN TEMPERATURE IN THE SOUTH CASCADES AREA (DETROIT, MARION FORKS, McKENZIE BRIDGE, OAKRIDGE)

Question: "During a given 10-day period in the South Cascades area of Oregon, what is the likelihood that daily extremes in temperature will be seasonably high or low?"

Table 1: The values tabulated are based on actual observations of daily maximum temperature made at the stations indicated during the years 1949-58, and are presented on the basis of "days in 100 days". The numbers 0, 1, 2, and 3 above the data columns stand for classes of maximum temperature as follows:

0 maximum temperature below 30 F
1 maximum greater than 29 F, but less than 60 F
2 maximum greater than 59 F, but less than 90 F
3 maximum greater than 89 F

That is, during the first third of January at Detroit, daily maximum temperatures are most likely to be between 29 F and 60 F (class 1), this class having occurred at the rate of 98 days in 100 days. Seasonably low maximum temperatures (in this instance, class 0) and seasonably high temperatures (class 2) have occurred at the rates of 2 and 0 days in 100 days, respectively. Combining these statements, one sees that during the first third of January at Detroit seasonably normal temperatures (class 1) account for 98 per cent of the days, and of those remaining, 2/2 or 100 per cent, are seasonably low. Similar combinations of the data may be made for Marion Forks, McKenzie Bridge, and Oakridge and for other periods of the year.

Table 2: This Table presents data on daily minimum temperatures during the same years in a manner similar to that of Table 1. However, the numbers 0, 1, 2, and 3 in this Table stand for different temperatures than those in Table 1, as follows:

0 minimum temperature below 0 F
1 minimum greater than -1 F, but less than 30 F
2 minimum greater than 29 F, but less than 60 F
3 minimum greater than 59 F

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Table 1. Frequency of Daily Maximum Temperatures in the South Cascades Area, as Days in 100 Days.

Period	Detroit				Marion Forks				McKenzie Bridge				Oakridge			
	0	1	2	3	0	1	2	3	0	1	2	3	0	1	2	3
1 - 10	2	98			12	88			4	96				100		
Jan. 11 - 20	3	97			8	92				100				97	3	
21 - 31	8	92			16	84			4	96			1	99		
1 - 10	1	99			4	96				99	1			81	19	
Feb. 11 - 20	1	99			4	96			1	89	10			80	20	
21 - 29		89	11			99	1			81	19			69	31	
1 - 10		87	13		3	94	3			83	17			77	23	
Mar. 11 - 20		94	6			99	1			89	11			74	26	
21 - 31		85	15			98	2			71	29			47	53	
1 - 10		57	43			89	11			54	46			34	66	
Apr. 11 - 20		41	59			68	32			28	72			24	76	
21 - 30		44	56			66	34			41	59			37	61	2
1 - 10		34	66			51	49			20	80			22	76	2
May 11 - 20		30	64	6		33	66	1		25	65	10		12	78	10
21 - 31		22	76	2		35	65			19	73	8		10	87	3
1 - 10		23	72	5		31	64	5		15	77	8		11	81	8
June 11 - 20		21	75	4		28	70	2		12	81	7		1	89	10
21 - 30		8	86	6		20	77	3		8	82	10			91	9
1 - 10		4	83	13		8	81	11		1	82	17			82	18
July 11 - 20			79	21			82	18			68	32			71	29
21 - 31		2	79	19		4	81	15			66	34			67	33
1 - 10		1	85	14		2	85	13			82	18			72	28
Aug. 11 - 20			79	21		1	83	16		1	71	28			66	34
21 - 31		6	80	14		11	78	11		3	81	16			76	24
1 - 10		1	75	24			90	10		2	65	33		1	67	32
Sept. 11 - 20		8	79	13		20	78	2		1	77	22		2	77	21
21 - 30		12	80	8		30	70			4	79	17			86	14
1 - 10		33	63	4		43	57			41	51	8		21	74	5
Oct. 11 - 20		46	54			65	35			25	73	2		15	85	
21 - 31		54	46			91	9			53	47			31	69	
1 - 10		67	33			96	4			53	47			37	63	
Nov. 11 - 20	2	90	8		4	96				86	14			82	18	
21 - 30		96	4			100				83	17			75	25	
1 - 10		100			1	99				100				97	3	
Dec. 11 - 20		99	1		1	99				100				99	1	
21 - 31	1	99			5	95			2	98				100		

Table 2. Frequency of Daily Minimum Temperatures in the South Cascades Area, as Days in 100 Days.

Period	Detroit				Marion Forks				McKenzie Bridge				Oakridge			
	0	1	2	3	0	1	2	3	0	1	2	3	0	1	2	3
1 - 10	2	62	36		2	62	36			59	41			44	56	
Jan. 11 - 20		53	47		1	59	40			47	53			34	66	
21 - 31	4	46	50		5	56	39		1	51	48			52	48	
1 - 10	4	43	53		1	55	44			46	54			35	65	
Feb. 11 - 20		48	52			57	43			43	57			34	66	
21 - 29		50	50			62	38			38	62			27	73	
1 - 10		57	43			66	34			55	45			41	59	
Mar. 11 - 20		40	60			55	45			39	61			28	72	
21 - 31		26	74			39	61			29	71			10	90	
1 - 10		32	68			46	54			29	71			8	92	
Apr. 11 - 20		12	88			24	76			9	91			1	99	
21 - 30		18	82			29	71			16	84			2	98	
1 - 10		7	93			12	88			8	92			4	96	
May 11 - 20		2	98			2	98			2	98			6	94	
21 - 31		4	96			1	99			1	98	1		5	93	2
1 - 10			99	1			100				99	1		1	99	
June 11 - 20			97	3			99	1			99	1			98	2
21 - 30			99	1			100				99	1			97	3
1 - 10			100				99	1			98	2			98	2
July 11 - 20			100				98	2			99	1			97	3
21 - 31			100				100				99	1			98	2
1 - 10			100				99	1			99	1			100	
Aug. 11 - 20			100				100				100				99	1
21 - 31			100				100			2	97	1			98	2
1 - 10			100				100				99	1			99	1
Sept. 11 - 20			100				100				100				99	1
21 - 30		3	97			2	98			10	90				100	
1 - 10		2	98			3	97			11	89			1	97	2
Oct. 11 - 20		9	91			9	91			16	84			3	93	4
21 - 31		18	82			17	83			19	81			9	91	
1 - 10		33	67			30	70			39	61			21	79	
Nov. 11 - 20		34	66			34	66			30	70			30	70	
21 - 30		42	58			44	56			48	52			39	61	
1 - 10		34	66			32	68			28	72			32	68	
Dec. 11 - 20		49	61			46	54			43	57			26	74	
21 - 31		50	50			57	43			52	48			37	63	

As with maximum temperatures, one may compute that in the first third of January at Detroit, for instance, seasonably normal minimum temperatures (in this instance, class 1) account for 62 per cent of the days, while, of those remaining, 2/38, or 5 per cent, are seasonably low (class 0).

The data: One must keep in mind that observations of temperature summarized in these Tables were made about five feet above ground in official instrument shelters of the U. S. Weather Bureau at stations indicated. Not only will temperatures vary from place to place at a given time, but also they will be different nearer the earth's surface or farther from it than in the official shelter. In short, tabulated values presented here cannot be considered more than suggestions of the patterns in time and space of temperatures occurring on a given day.

Even with these various restrictions on interpreting the data, they will give the reader a rough idea of the levels of extreme temperatures likely at different times of the year in the South Cascades area of Oregon.

Similar data for Eugene and Salem are available in detail as Climatological Notes 38 and 43 of this series. In addition, detailed information on dates of last freeze in the spring and first freeze in the fall at various locations in Oregon will soon be made available in a publication by the Oregon Agricultural Experiment Station, Corvallis.

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