

Appendix A

Identified Events

Table A.1. Chronological ordering of all identified Sacramento heat wave events based on the definition that requires at least 3 consecutive days having temperature anomalies greater than or equal to 10, with one of those days having an anomaly greater than or equal to 15. Unfiltered data. Information given includes start and end date, maximum temperature in °F (°C), minimum temperature in °F (°C), average temperature in °F (°C), and duration (in number of days) of the heat event.

Event#	Start	End	MaxT	MinT	AvgT	Duration
1	19790911	19790916	104 (40)	99 (37)	102.17 (38.98)	6
2	19830911	19830915	104 (40)	100 (38)	101.80 (38.78)	5
3	19850609	19850616	105 (41)	99 (37)	102.12 (38.96)	8
4	19880716	19880719	112 (44)	105 (41)	108.00 (42.22)	4
5	19880824	19880826	105 (41)	101 (38)	103.67 (39.82)	3
6	19880903	19880905	108 (42)	105 (41)	107.00 (41.67)	3
7	19900619	19900621	105 (41)	100 (38)	102.00 (38.89)	3
8	19900710	19900713	109 (43)	104 (40)	106.50 (41.39)	4
9	19900805	19900811	109 (43)	104 (40)	106.71 (41.51)	7
10	19900928	19900930	101 (38)	95 (35)	97.33 (36.29)	3
11	19910607	19910611	102 (39)	95 (35)	98.80 (37.11)	5
12	19910702	19910704	112 (44)	107 (42)	109.33 (42.96)	3
13	19920602	19920604	99 (37)	95 (35)	97.00 (36.11)	3
14	19920815	19920820	106 (41)	99 (37)	102.33 (39.07)	6
15	19940609	19940611	103 (39)	95 (35)	98.67 (37.04)	3
16	19960602	19960608	104 (40)	97 (36)	100.71 (38.17)	7
17	19960630	19960702	106 (41)	100 (38)	103.33 (39.63)	3
18	19960809	19960815	110 (43)	103 (39)	107.00 (41.67)	7
19	19970804	19970807	108 (42)	102 (39)	105.75 (40.97)	4
20	19980803	19980805	108 (42)	103 (39)	105.33 (40.74)	3
21	20000613	20000616	105 (41)	99 (37)	101.75 (38.75)	4
22	20020604	20020606	101 (38)	95 (35)	97.00 (36.11)	3
23	20030626	20030628	105 (41)	102 (39)	103.33 (39.63)	3
24	20060720	20060725	111 (44)	103 (39)	106.67 (41.48)	6

Table A.2. Chronological ordering of all identified Sacramento heat wave events based on the definition as in Table A.1, except for filtered data.

Event#	Start	End	MaxT °F(°C)	MinT °F(°C)	AvgT °F(°C)	Duration
1	19790911	19790916	104.99(40.55)	99.23(37.35)	101.93(38.85)	6
2	19830911	19830915	103.45(39.69)	100.48(38.04)	101.68(38.71)	5
3	19840916	19840918	101.59(38.66)	95.71(35.39)	99.23(37.35)	3
4	19850609	19850617	103.63(39.79)	98.30(36.83)	101.51(38.62)	9
5	19880716	19880719	111.09(43.94)	104.00(40.00)	107.85(42.14)	4
6	19880903	19880905	109.90(43.28)	104.10(40.06)	106.48(41.38)	3
7	19900805	19900811	109.87(43.26)	102.72(39.29)	106.51(41.39)	7
8	19910608	19910611	102.38(39.10)	98.67(37.04)	99.74(37.63)	4
9	19910701	19910704	112.27(44.59)	100.94(38.30)	107.25(41.81)	4
10	19910923	19910925	100.22(37.90)	95.19(35.11)	97.94(36.63)	3
11	19920815	19920820	104.57(40.32)	100.02(37.79)	102.46(39.14)	6
12	19940609	19940611	101.76(38.76)	95.60(35.33)	98.87(37.15)	3
13	19960602	19960608	102.63(39.24)	97.96(36.64)	100.73(38.18)	7
14	19960809	19960815	109.71(43.17)	103.31(39.62)	107.11(41.73)	7
15	19980803	19980805	107.66(42.03)	103.33(39.63)	105.31(40.73)	3
16	20000613	20000616	103.87(39.93)	99.08(37.27)	101.90(38.83)	4
17	20030626	20030628	104.82(40.46)	101.55(38.64)	103.32(39.62)	3
18	20060721	20060724	111.15(43.97)	105.03(40.57)	108.43(42.46)	4

Table A.3. Chronological ordering of all identified Sacramento heat wave events based on the definition that requires at least 3 consecutive days having temperature anomalies greater than or equal to 10, with one of those days having an anomaly greater than or equal to 15, and an average maximum temperature greater than or equal to 100°F (38°C). Unfiltered data.

Event#	Start	End	MaxT °F(°C)	MinT °F(°C)	AvgT °F(°C)	Duration
1	19790911	19790916	104 (40)	99 (37)	102.17 (38.98)	6
2	19830911	19830915	104 (40)	100 (38)	101.80 (38.78)	5
3	19850609	19850616	105 (41)	99 (37)	102.12 (38.96)	8
4	19880716	19880719	112 (44)	105 (41)	108.00 (42.22)	4
5	19880824	19880826	105 (41)	101 (38)	103.67 (39.82)	3
6	19880903	19880905	108 (42)	105 (41)	107.00 (41.67)	3
7	19900619	19900621	105 (41)	100 (38)	102.00 (38.89)	3
8	19900710	19900713	109 (43)	104 (40)	106.50 (41.39)	4
9	19900805	19900811	109 (43)	104 (40)	106.71 (41.51)	7
10	19910702	19910704	112 (44)	107 (42)	109.33 (42.96)	3
11	19920815	19920820	106 (41)	99 (37)	102.33 (39.07)	6
12	19960602	19960608	104 (40)	97 (36)	100.71 (38.17)	7
13	19960630	19960702	106 (41)	100 (38)	103.33 (39.63)	3
14	19960809	19960815	110 (43)	103 (39)	107.00 (41.67)	7
15	19970804	19970807	108 (42)	102 (39)	105.75 (40.97)	4
16	19980803	19980805	108 (42)	103 (39)	105.33 (40.74)	3
17	20000613	20000616	105 (41)	99 (37)	101.75 (38.75)	4
18	20030626	20030628	105 (41)	102 (39)	103.33 (39.63)	3
19	20060720	20060725	111 (44)	103 (39)	106.67 (41.48)	6

Table A.4. Chronological ordering of all identified Sacramento heat wave events based on the definition as in Table A.3, except for filtered data.

Event#	Start	End	MaxT °F(°C)	MinT °F(°C)	AvgT °F(°C)	Duration
1	19790911	19790916	104.99(40.55)	99.23(37.35)	101.93(38.85)	6
2	19830911	19830915	103.45(39.69)	100.48(38.04)	101.68(38.71)	5
3	19850609	19850617	103.63(39.79)	98.30(36.83)	101.51(38.62)	9
4	19880716	19880719	111.09(43.94)	104.00(40.00)	107.85(42.14)	4
5	19880903	19880905	109.90(43.28)	104.10(40.06)	106.48(41.38)	3
6	19900805	19900811	109.87(43.26)	102.72(39.29)	106.51(41.39)	7
7	19910701	19910704	112.27(44.59)	100.94(38.30)	107.25(41.81)	4
8	19920815	19920820	104.57(40.32)	100.02(37.79)	102.46(39.14)	6
9	19960602	19960608	102.63(39.24)	97.96(36.64)	100.73(38.18)	7
10	19960809	19960815	109.71(43.17)	103.31(39.62)	107.11(41.73)	7
11	19980803	19980805	107.66(42.03)	103.33(39.63)	105.31(40.73)	3
12	20000613	20000616	103.87(39.93)	99.08(37.27)	101.90(38.83)	4
13	20030626	20030628	104.82(40.46)	101.55(38.64)	103.32(39.62)	3
14	20060721	20060724	111.15(43.97)	105.03(40.57)	108.43(42.46)	4

Event Rankings

Table A.5 (a). Ranking of Sacramento heat waves based on the highest event maximum temperatures. Heat waves were identified using the definition as in Table A.1, using unfiltered data. Information includes rank number, start and end dates, and maximum temperature of the events in °F (°C).

Rank	Start	End	Tmax, °F (°C)
1	19910702	19910704	112 (44)
2	19880716	19880719	112 (44)
3	20060720	20060725	111 (44)
4	19960809	19960815	110 (43)
5	19900805	19900811	109 (43)
6	19900710	19900713	109 (43)
7	19880903	19880905	108 (42)
8	19980803	19980805	108 (42)
9	19970804	19970807	108 (42)
10	19920815	19920820	106 (41)
11	19960630	19960702	106 (41)
12	20030626	20030628	105 (41)
13	19900619	19900621	105 (41)
14	19850609	19850616	105 (41)
15	19880824	19880826	105 (41)
16	20000613	20000616	105 (41)
17	19960602	19960608	104 (40)
18	19830911	19830915	104 (40)
19	19790911	19790916	104 (40)
20	19940609	19940611	103 (39)
21	19910607	19910611	102 (39)
22	19900928	19900930	101 (38)
23	20020604	20020606	101 (38)
24	19920602	19920604	99 (37)

Table A.5 (b). Just as in Table A.5 (a), except for filtered data.

Rank	Start	End	Tmax, °F (°C)
1	19910701	19910704	112.27 (44.59)
2	20060721	20060724	111.15 (43.97)
3	19880716	19880719	111.09 (43.94)
4	19880903	19880905	109.90 (43.28)
5	19900805	19900811	109.87 (43.26)
6	19960809	19960815	109.71 (43.17)
7	19980803	19980805	107.66 (42.03)
8	19790911	19790916	104.99 (40.55)
9	20030626	20030628	104.82 (40.46)
10	19920815	19920820	104.57 (40.32)
11	20000613	20000616	103.87 (39.93)
12	19850609	19850617	103.63 (39.79)
13	19830911	19830915	103.45 (39.69)
14	19960602	19960608	102.63 (39.24)
15	19910608	19910611	102.38 (39.10)
16	19940609	19940611	101.76 (38.76)
17	19840916	19840918	101.59 (38.66)
18	19910923	19910925	100.22 (37.90)

Table A.6 (a). Ranking of Sacramento heat waves based on the highest consecutive 3-day anomaly averages. Heat waves were identified using the definition as in Table A.1, using unfiltered data. Information includes start and end date, the date of the start of the highest 3-day anomaly average, and the highest 3-day anomaly average of the event.

Rank	Start	End	Max Anom Date	Max Anom Avg
1	19910702	19910704	19910702	18.77
2	19960602	19960608	19960604	17.89
3	19790911	19790916	19790914	16.93
4	20060720	20060725	20060722	16.92
5	19850609	19850616	19850611	16.88
6	19880716	19880719	19880717	16.56
7	19960809	19960815	19960810	16.05
8	19880903	19880905	19880903	15.37
9	20000613	20000616	20000613	15.27
10	19830911	19830915	19830913	14.75
11	19900805	19900811	19900808	14.49
12	20030626	20030628	20030626	14.40
13	19970804	19970807	19970805	14.35
14	19910607	19910611	19910609	14.24
15	19900710	19900713	19900711	13.58
16	19880824	19880826	19880824	13.42
17	19920815	19920820	19920818	13.42
18	19960630	19960702	19960630	13.39
19	20020604	20020606	20020604	13.23
20	19980803	19980805	19980803	13.18
21	19900619	19900621	19900619	12.96
22	19920602	19920604	19920602	12.69
23	19940609	19940611	19940609	12.57
24	19900928	19900930	19900928	11.79

Table A.6 (b). Just as in Table A.6 (a), except for filtered data.

Rank	Start	End	Max Anomaly Average
1	19910701	19910704	18.69
2	19960602	19960608	17.72
3	20060721	20060724	16.91
4	19850609	19850617	16.82
5	19880716	19880719	16.63
6	19790911	19790916	16.34
7	19960809	19960815	16.11
8	20000613	20000616	15.40
9	19880903	19880905	14.93
10	19830911	19830915	14.63
11	19900805	19900811	14.43
12	20030626	20030628	14.35
13	19910608	19910611	13.98
14	19920815	19920820	13.49
15	19840916	19840918	13.42
16	19980803	19980805	13.11
17	19940609	19940611	12.79
18	19910923	19910925	12.53

Table A.7. Ranking of Sacramento heat waves based on the highest event maximum temperatures. Heat waves were identified using the definition as in Table A.3, using unfiltered data. Information as in Table A.5.

Rank	Start	End	Tmax, °F (°C)
1	19910702	19910704	112 (44)
2	19880716	19880719	112 (44)
3	20060720	20060725	111 (44)
4	19960809	19960815	110 (43)
5	19900805	19900811	109 (43)
6	19900710	19900713	109 (43)
7	19970804	19970807	108 (42)
8	19880903	19880905	108 (42)
9	19980803	19980805	108 (42)
10	19960630	19960702	106 (41)
11	19920815	19920820	106 (41)
12	20030626	20030628	105 (41)
13	20000613	20000616	105 (41)
14	19900619	19900621	105 (41)
15	19880824	19880826	105 (41)
16	19850609	19850616	105 (41)
17	19830911	19830915	104 (40)
18	19790911	19790916	104 (40)
19	19960602	19960608	104 (40)

Table A.8. Ranking of Sacramento heat waves based on the highest consecutive 3-day anomaly averages. Heat waves were identified using the definition as in Table A.3, using unfiltered data. Information includes start and end dates and the highest 3-day anomaly average of the event.

Rank	Start	End	Max Anomaly Average
1	19910702	19910704	18.77
2	19960602	19960608	17.89
3	19790911	19790916	16.93
4	20060720	20060725	16.92
5	19850609	19850616	16.88
6	19880716	19880719	16.56
7	19960809	19960815	16.05
8	19880903	19880905	15.37
9	20000613	20000616	15.27
10	19830911	19830915	14.75
11	19900805	19900811	14.49
12	20030626	20030628	14.40
13	19970804	19970807	14.35
14	19900710	19900713	13.58
15	19920815	19920820	13.42
16	19880824	19880826	13.42
17	19960630	19960702	13.39
18	19980803	19980805	13.18
19	19900619	19900621	12.96

Event Matchings

Table A. 9. The number of total heat wave events and top heat wave matches, according to the rankings based on 1) the highest consecutive 3-day anomaly averages and 2) the highest event maximum temperatures. The percent of the top 15 events that match Sacramento's top 15 heat wave events are also given for each of the ranking methods. Heat waves are identified by the definition in Table A.1, using unfiltered data.

	City	Total Number of Events at each station	Number of Matching Dates of Top 15 Sac Events, based on 3-Day Anomaly Average Ranking	Top 15 Sac Event Matches, based on 3-Day Anomaly Average Ranking	% of Sac Top 15 Events Matching Top 15 Events at station, based on 3-Day Anomaly Average Ranking	Number of Matching Dates of Top 15 Sac Events, based on Max Temp Ranking	Top 15 Sac Event Matches, based on Max Temp Ranking	% of Sac Top 15 Events Matching Top 15 Events at station, based on Max Temp Rankings
1	Redding	30	21	5	33.3	19	6	40
2	Red Bluff	31	29	6	40	33	8	53.3
3	Colusa	14	29	6	40	17	4	26.7
4	Sacramento	24	76	*	*	67	*	*
5	Stockton	15	43	9	60	29	6	40
6	Modesto	13	32	6	40	23	5	33.3
7	Merced	4	15	3	20	5	1	6.7
8	Fresno	8	17	3	20	8	1	6.7
9	Visalia	7	20	3	20	8	1	6.7
10	Bakersfield	11	23	5	33.3	6	2	13.3
11	Crescent City	4	0	0	0	0	0	0
12	Eureka	1	0	0	0	0	0	0
13	Covelo	20	19	5	33.3	12	4	26.7
14	Graton	37	17	6	40	12	4	26.7
15	San Francisco	32	13	5	33.3	9	3	20
16	Monterey	26	10	4	26.7	3	1	6.7
17	San Luis Obispo	30	9	3	20	5	2	13.3
18	Santa Barbara	9	3	1	6.7	5	2	13.3
19	Santa Ana	18	13	4	26.7	7	2	13.3
20	Vista	22	8	3	20	3	1	6.7
21	Seattle	28	7	2	13.3	8	3	20
22	Spokane	23	5	2	13.3	3	1	6.7
23	Yakima	15	12	3	20	12	3	20
24	Portland	40	2	1	6.7	8	3	20
25	Eugene	35	10	3	20	7	2	13.3
26	Medford	30	6	2	13.3	6	2	13.3
27	Pendleton	25	4	1	6.7	7	2	13.3
28	Baker City	25	4	2	13.3	1	1	6.7
29	Reno	4	5	1	6.7	5	1	6.7
30	Tonopah	1	6	1	6.7	0	0	0

Table A.10. Just as in Table A.9, except with heat waves identified by the definition in Table A.3, using unfiltered data.

	City	Total Number of Events at each station	Number of Matching Dates of Top 15 Sac Events, based on 3-Day Anomaly Average Ranking	Top 15 Sac Event Matches, based on 3-Day Anomaly Average Ranking	% of Sac Top 15 Events Matching Top 15 Events at station, based on 3-Day Anomaly Average Ranking	Number of Matching Dates of Top 15 Sac Events, based on Max Temp Ranking	Top 15 Sac Event Matches, based on Max Temp Ranking	% of Sac Top 15 Events Matching Top 15 Events at station, based on Max Temp Rankings
1	Redding	28	21	5	33.3	22	7	46.7
2	Red Bluff	31	36	7	46.7	28	8	53.3
3	Colusa	11	22	5	33.3	9	3	20
4	Sacramento	19	76	*	*	63	*	*
5	Stockton	14	33	7	46.7	25	6	40
6	Modesto	11	24	5	33.3	15	4	26.7
7	Merced	4	14	3	20	8	2	13.3
8	Fresno	7	15	2	13.3	0	0	0
9	Visalia	5	13	2	13.3	0	0	0
10	Bakersfield	11	21	4	26.7	3	1	6.7
11	Crescent City	0	0	0	0	0	0	0
12	Eureka	0	0	0	0	0	0	0
13	Covelo	15	16	4	26.7	12	4	26.7
14	Graton	13	11	4	26.7	3	1	6.7
15	San Francisco	0	0	0	0	0	0	0
16	Monterey	0	0	0	0	0	0	0
17	San Luis Obispo	2	0	0	0	0	0	0
18	Santa Barbara	0	0	0	0	0	0	0
19	Santa Ana	7	3	1	6.7	7	2	13.3
20	Vista	4	3	1	6.7	3	1	6.7
21	Seattle	0	0	0	0	0	0	0
22	Spokane	1	0	0	0	0	0	0
23	Yakima	3	3	1	6.7	9	2	13.3
24	Portland	4	4	1	6.7	5	1	6.7
25	Eugene	6	5	2	13.3	5	1	6.7
26	Medford	15	9	4	26.7	8	2	13.3
27	Pendleton	6	7	2	13.3	7	2	13.3
28	Baker City	1	0	0	0	0	0	0
29	Reno	1	0	0	0	0	0	0
30	Tonopah	0	0	0	0	0	0	0

Table A.11 Just as in Table A.9, except with heat waves identified by the definition in Table A.1, using filtered data.

	City	Total Number of Events at each station	Number of Matching Dates of Top 15 Sac Events, based on 3-Day Anomaly Average Ranking	Top 15 Sac Event Matches, based on 3-Day Anomaly Average Ranking	% of Sac Top 15 Events Matching Top 15 Events at station, based on 3-Day Anomaly Average Ranking	Number of Matching Dates of Top 15 Sac Events, based on Max Temp Ranking	Top 15 Sac Event Matches, based on Max Temp Ranking	% of Sac Top 15 Events Matching Top 15 Events at station, based on Max Temp Rankings
1	Redding	29	24	6	40	18	6	40
2	Red Bluff	29	36	7	46.7	42	9	60
3	Colusa	15	31	7	46.7	29	6	40
4	Sacramento	18	76	*	*	*	*	*
5	Stockton	14	30	6	40	33	7	46.7
6	Modesto	13	33	7	46.7	30	6	40
7	Merced	5	14	3	20	14	3	20
8	Fresno	6	18	3	20	15	2	13.3
9	Visalia	5	16	2	13.3	13	2	13.3
10	Bakersfield	10	21	4	26.7	21	4	26.7
11	Crescent City	2	3	1	6.7	3	1	6.7
12	Eureka	1	0	0	0	0	0	0
13	Covelo	22	20	5	33.3	20	5	33.3
14	Graton	41	18	6	40	17	6	40
15	San Francisco	29	20	7	46.7	13	5	33.3
16	Monterey	30	10	4	26.7	13	5	33.3
17	San Luis Obispo	29	5	2	13.3	3	1	6.7
18	Santa Barbara	11	8	3	20	5	2	13.3
19	Santa Ana	15	16	5	33.3	13	4	26.7
20	Vista	20	18	6	40	13	4	26.7
21	Seattle	31	6	2	13.3	7	3	20
22	Spokane	27	5	2	13.3	8	2	13.3
23	Yakima	14	6	2	13.3	6	2	13.3
24	Portland	40	3	2	13.3	6	2	13.3
25	Eugene	35	7	3	20	7	3	20
26	Medford	31	7	3	20	13	5	33.3
27	Pendleton	33	0	0	0	7	2	13.3
28	Baker City	22	2	1	6.7	0	0	0
29	Reno	4	6	1	6.7	6	1	6.7
30	Tonopah	0	0	0	0	0	0	0

Table A.12 Just as in Table A.9, except with heat waves identified by the definition in Table A.3, using filtered data.

	City	Total Number of Events at each station	Number of Matching Dates of Top 14 Sac Events, based on 3-Day Anomaly Average Ranking	Top 14 Sac Event Matches, based on 3-Day Anomaly Average Ranking	% of Sac Top 14 Events Matching Top 15 Events at station, based on 3-Day Anomaly Average Ranking	Number of Matching Dates of Top 14 Sac Events, based on Max Temp Ranking	Top 14 Sac Event Matches, based on Max Temp Ranking	% of Sac Top 14 Events Matching Top 15 Events at station, based on Max Temp Rankings
1	Redding	27	21	5	35.7	18	6	42.9
2	Red Bluff	29	36	7	50	42	9	64.3
3	Colusa	12	22	5	35.7	22	5	35.7
4	Sacramento	14	72	*	*	72	*	*
5	Stockton	13	33	7	50	33	7	50
6	Modesto	10	24	5	35.7	24	5	35.7
7	Merced	5	14	3	21.4	14	4	28.6
8	Fresno	6	15	2	14.3	15	2	14.3
9	Visalia	4	13	2	14.3	13	2	14.3
10	Bakersfield	9	21	4	28.6	21	4	28.6
11	Crescent City	0	0	0	0	0	0	0
12	Eureka	0	0	0	0	0	0	0
13	Covelo	15	16	4	28.6	16	4	28.6
14	Graton	14	11	4	28.6	11	4	28.6
15	San Francisco	0	0	0	0	0	0	0
16	Monterey	0	0	0	0	0	0	0
17	San Luis Obispo	1	0	0	0	0	0	0
18	Santa Barbara	0	0	0	0	0	0	0
19	Santa Ana	5	3	1	7.1	3	1	7.1
20	Vista	3	3	1	7.1	3	1	7.1
21	Seattle	0	0	0	0	0	0	0
22	Spokane	0	0	0	0	0	0	0
23	Yakima	3	3	1	7.1	3	1	7.1
24	Portland	4	4	1	7.1	4	1	7.1
25	Eugene	8	5	2	14.3	5	2	14.3
26	Medford	15	9	4	28.6	9	4	28.6
27	Pendleton	7	7	2	14.3	7	2	14.3
28	Baker City	1	0	0	0	0	0	0
29	Reno	1	0	0	0	0	0	0
30	Tonopah	0	0	0	0	0	0	0

Matches Due to Chance

Tables A.13-A.15. The expected number of the top 15 event date matches due to chance for the corresponding identification and ranking methods. Also listed are the total number of the top 15 event dates and the observed number of matches of the top 15 event dates for each station. Expected number of matches due to chance was estimated by the formula: $n2/3416 = X/n1$, where $n1$ was defined as the total number of heat wave dates in the top 15 events at Sacramento, and $n2$ was the total number of heat wave dates in the top 15 events for each of the other stations.

Table A.13. As described above, for unfiltered data, the first definition of a heat wave, and the event maximum temperature ranking method.

City	Total # of Days in Top 15 Events (n1=Sacramento, n2=other stations)	Expected # of Top Event Date Matches by Chance (X)	Observed # of Top Event Date Matches (m)
Sacramento	67	*	*
Redding	63	1.24	19
Red Bluff	80	1.57	33
Colusa	63	1.24	17
Stockton	65	1.27	29
Modesto	57	1.12	23
Merced	21	0.41	5
Fresno	36	0.71	8
Visalia	42	0.82	8
Bakersfield	48	0.94	6
Crescent City	13	0.25	0
Eureka	3	0.06	0
Covelo	77	1.51	12
Graton	60	1.18	12
San Francisco	48	0.94	9
Monterey	54	1.06	3
San Luis Obispo	64	1.26	5
Santa Barbara	33	0.65	5
Santa Ana	64	1.26	7
Vista	68	1.33	3
Seattle	64	1.26	8
Spokane	75	1.47	3
Yakima	71	1.39	12
Portland	64	1.26	8
Eugene	61	1.20	7
Medford	70	1.37	6
Pendleton	69	1.35	7
Baker City	74	1.45	1
Reno	19	0.37	5
Tonopah	9	0.18	0

Table A.14. As described above, for filtered data, the first definition of a heat wave, and the 3-day anomaly average ranking method.

City	Total # of Days in Top 15 Events (n1=Sacramento, n2=other stations)	Expected # of Top Event Date Matches by Chance (X)	Observed # of Top Event Date Matches (m)
Sacramento	76	*	*
Redding	76	1.69	24
Red Bluff	90	2.00	36
Colusa	66	1.47	31
Stockton	59	1.31	30
Modesto	58	1.29	33
Merced	24	0.53	14
Fresno	29	0.65	18
Visalia	27	0.60	16
Bakersfield	50	1.11	21
Crescent City	7	0.16	3
Eureka	3	0.07	0
Covelo	87	1.94	20
Graton	64	1.42	18
San Francisco	50	1.11	20
Monterey	51	1.13	10
San Luis Obispo	66	1.47	5
Santa Barbara	42	0.93	8
Santa Ana	66	1.47	16
Vista	73	1.62	18
Seattle	70	1.56	6
Spokane	90	2.00	5
Yakima	65	1.45	6
Portland	67	1.49	3
Eugene	62	1.38	7
Medford	75	1.67	7
Pendleton	72	1.60	0
Baker City	88	1.96	2
Reno	23	0.51	6
Tonopah	0	0	0

Table A.15. As described above, for filtered data, the first definition of a heat wave, and the event maximum temperature ranking method.

City	Total # of Days in Top 15 Events (n1=Sacramento, n2=other stations)	Expected # of Top Event Date Matches by Chance (X)	Observed # of Top Event Date Matches (m)
Sacramento	76	*	*
Redding	65	1.45	18
Red Bluff	86	1.91	42
Colusa	66	1.47	29
Stockton	59	1.31	33
Modesto	58	1.29	30
Merced	24	0.53	14
Fresno	29	0.65	15
Visalia	27	0.60	13
Bakersfield	50	1.11	21
Crescent City	7	0.16	3
Eureka	3	0.07	0
Covelo	82	1.82	20
Graton	60	1.33	17
San Francisco	48	1.07	13
Monterey	48	1.07	13
San Luis Obispo	68	1.51	3
Santa Barbara	42	0.93	5
Santa Ana	66	1.47	13
Vista	73	1.62	13
Seattle	65	1.45	7
Spokane	78	1.74	8
Yakima	65	1.45	6
Portland	65	1.45	6
Eugene	58	1.29	7
Medford	66	1.47	13
Pendleton	73	1.62	7
Baker City	84	1.87	0
Reno	23	0.51	6
Tonopah	0	0	0

Appendix B

Figure B.1-B.10. Daily maximum temperatures for summers in which the top 15 heat wave events in Sacramento took place. Events were defined by at least 3 consecutive days having temperature anomalies greater than or equal to 10, with one of those days having an anomaly greater than or equal to 15, and ranked by the highest 3-day anomaly averages. Unfiltered data.

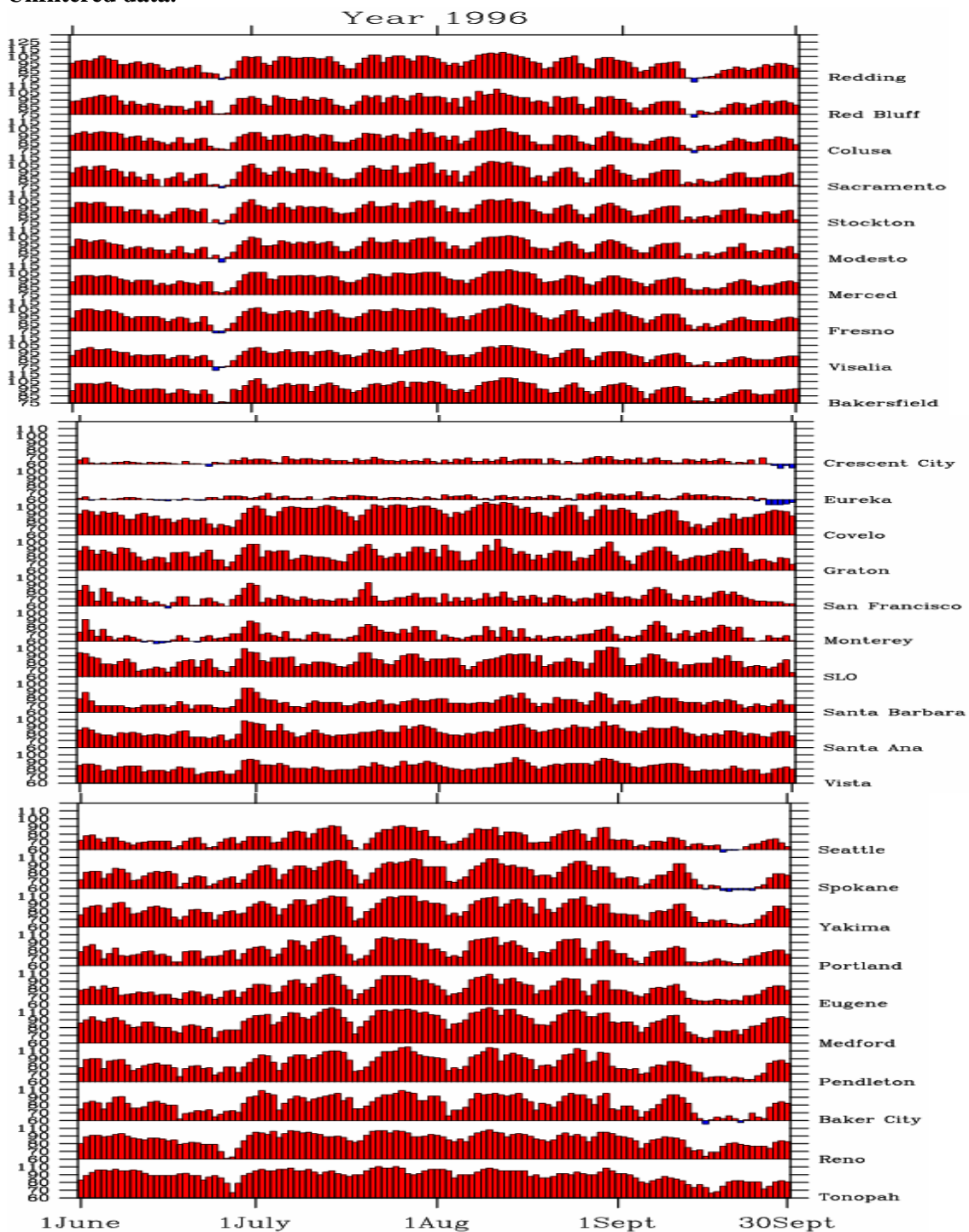


Figure B.1. 1996 Heat Waves: 02 June to 08 June and 09 August to 15 August

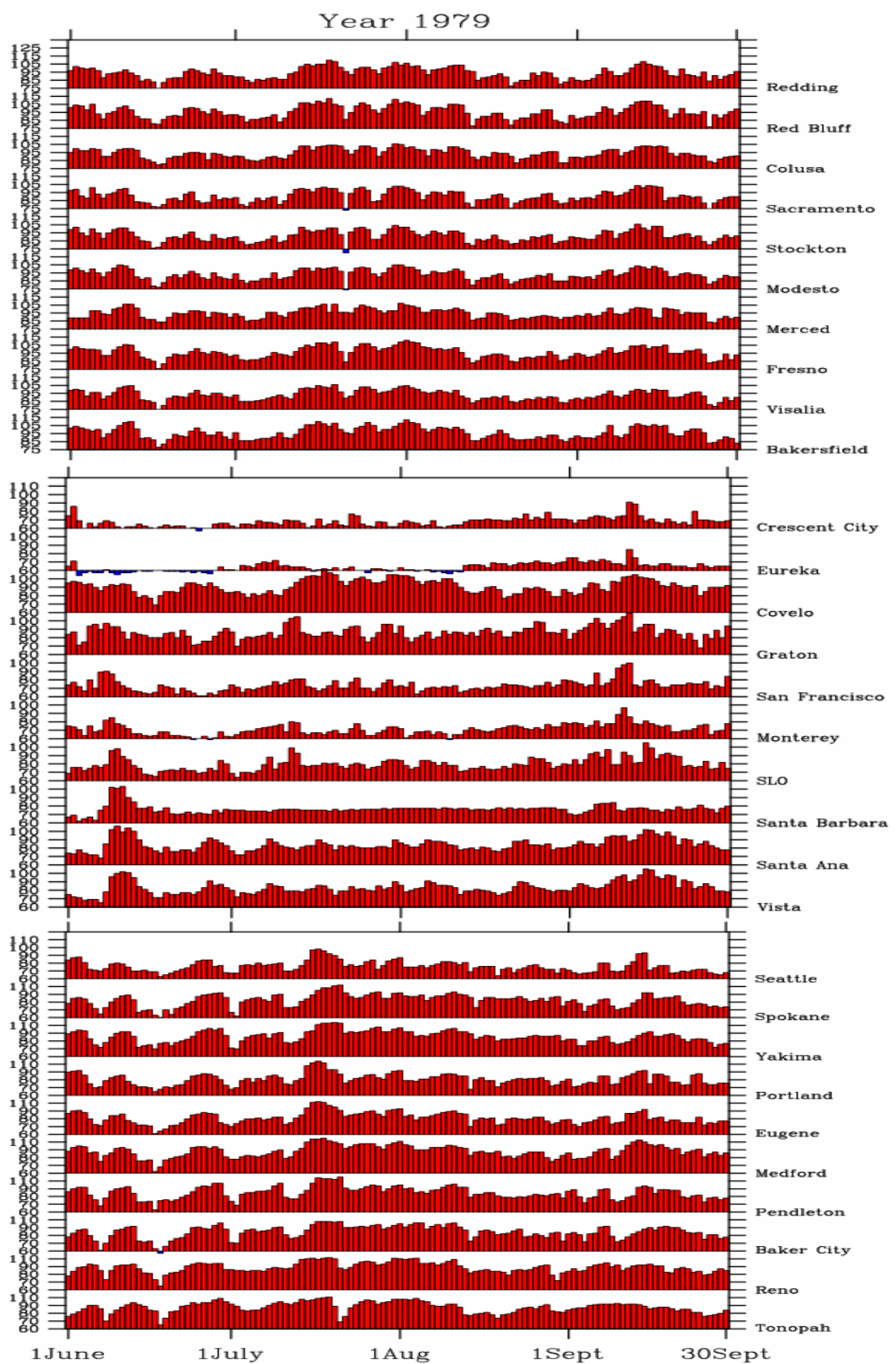


Figure B.2. 1979 Heat Wave: 11 September to 16 September

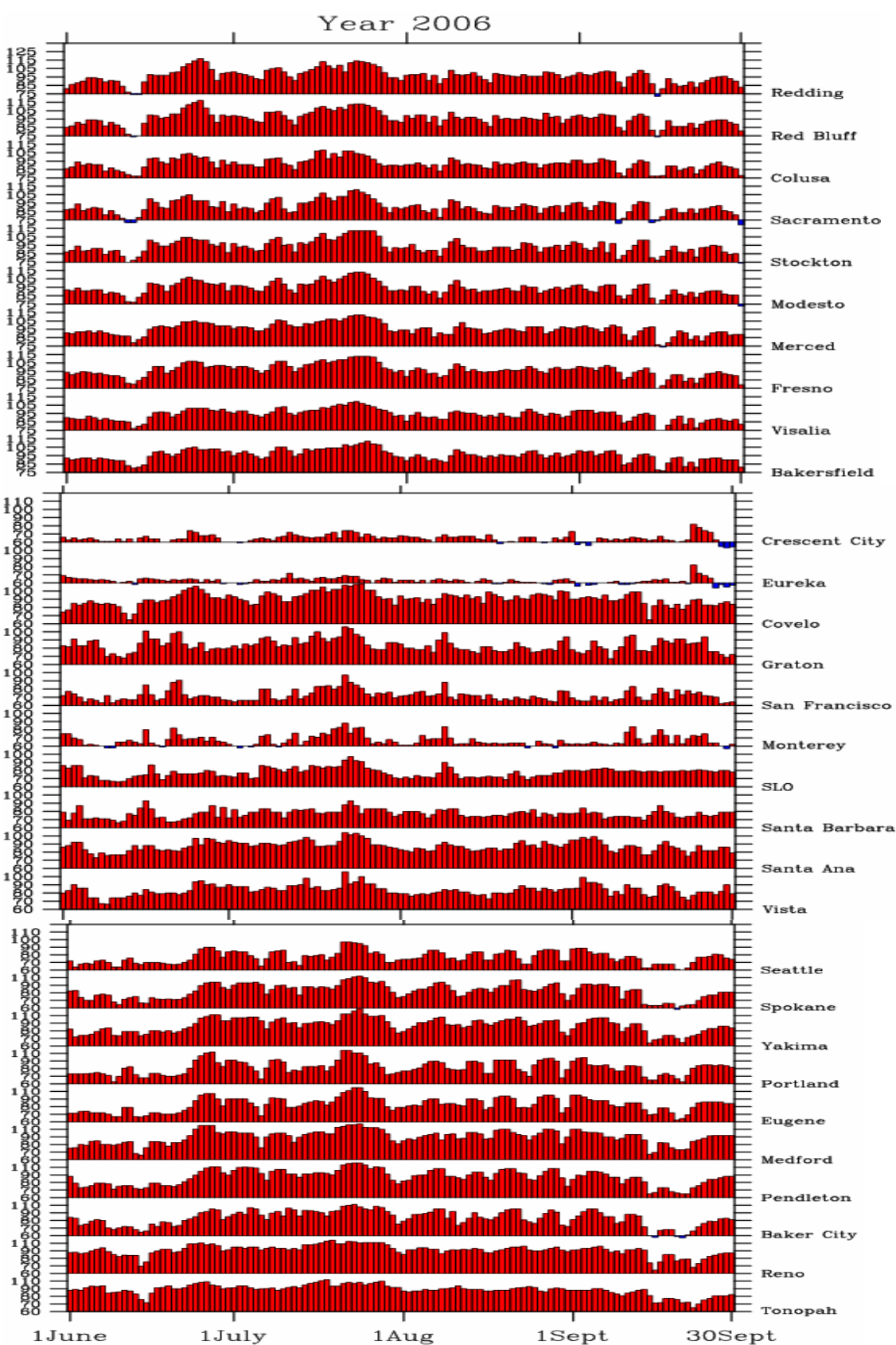


Figure B.3. 2006 Heat Wave: 20 July to 25 July

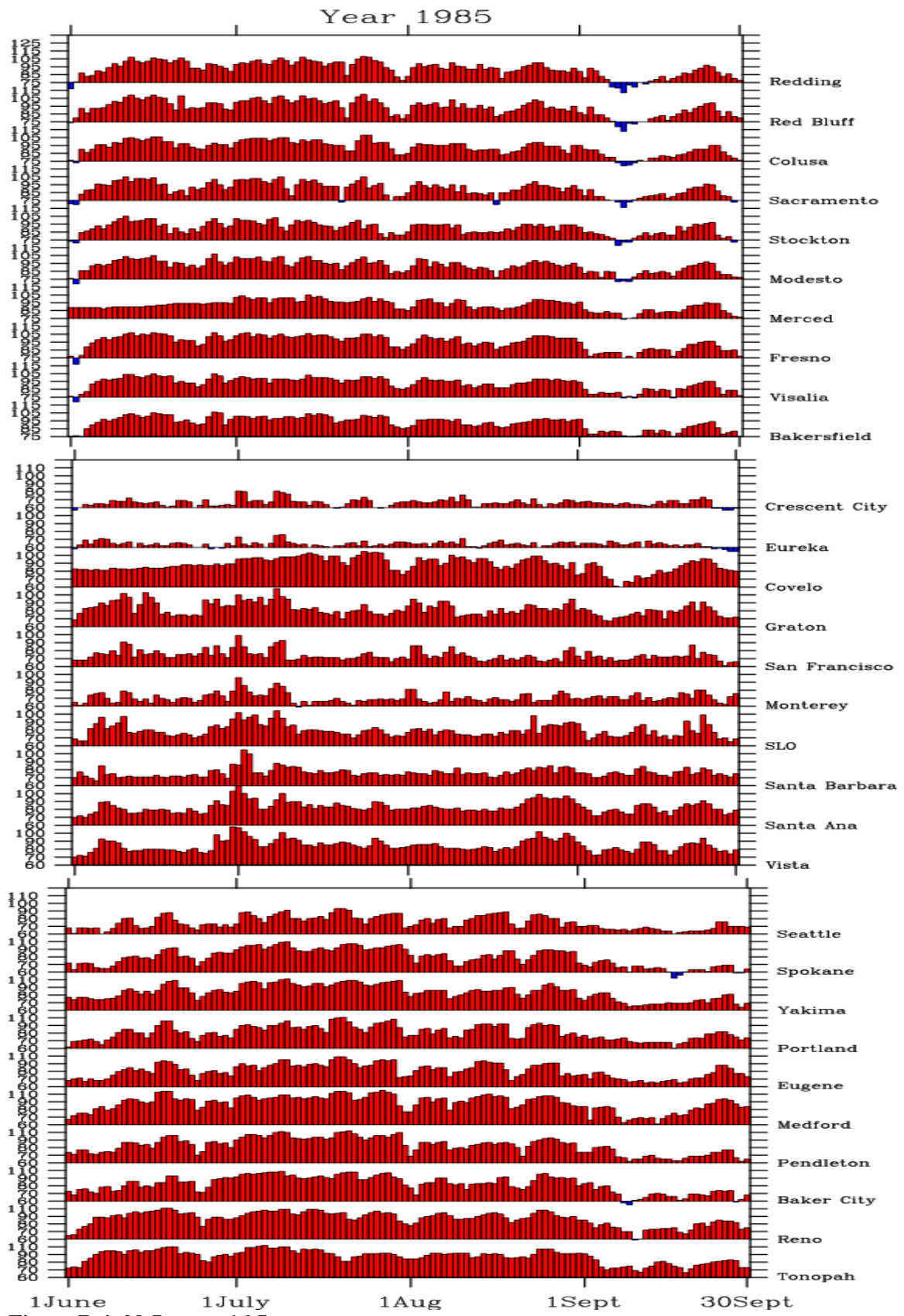


Figure B.4. 09 June to 16 June

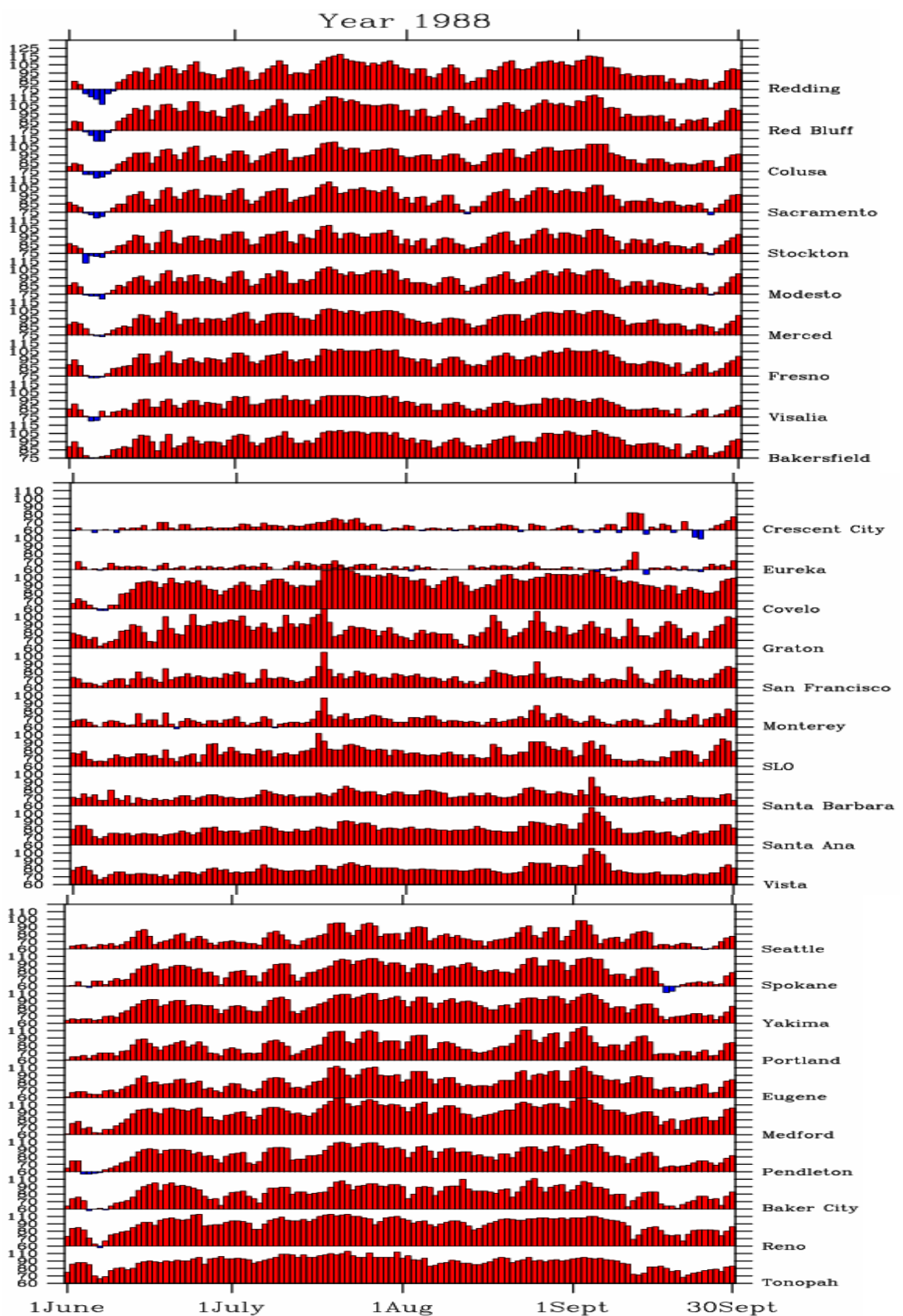


Figure B.5. 1988 Heat Waves: 16 July to 19 July and 03 September to 05 September

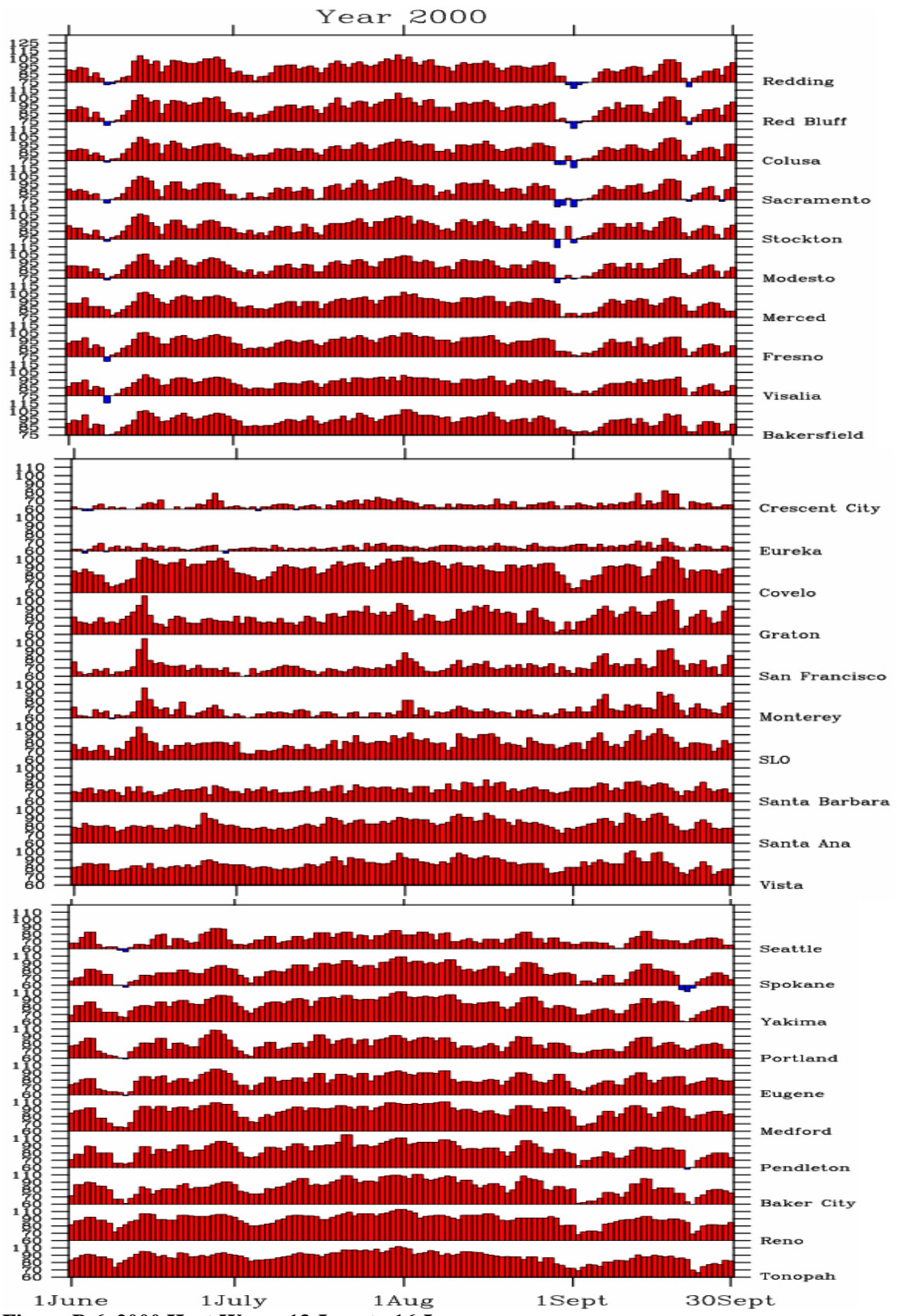


Figure B.6. 2000 Heat Wave: 13 June to 16 June

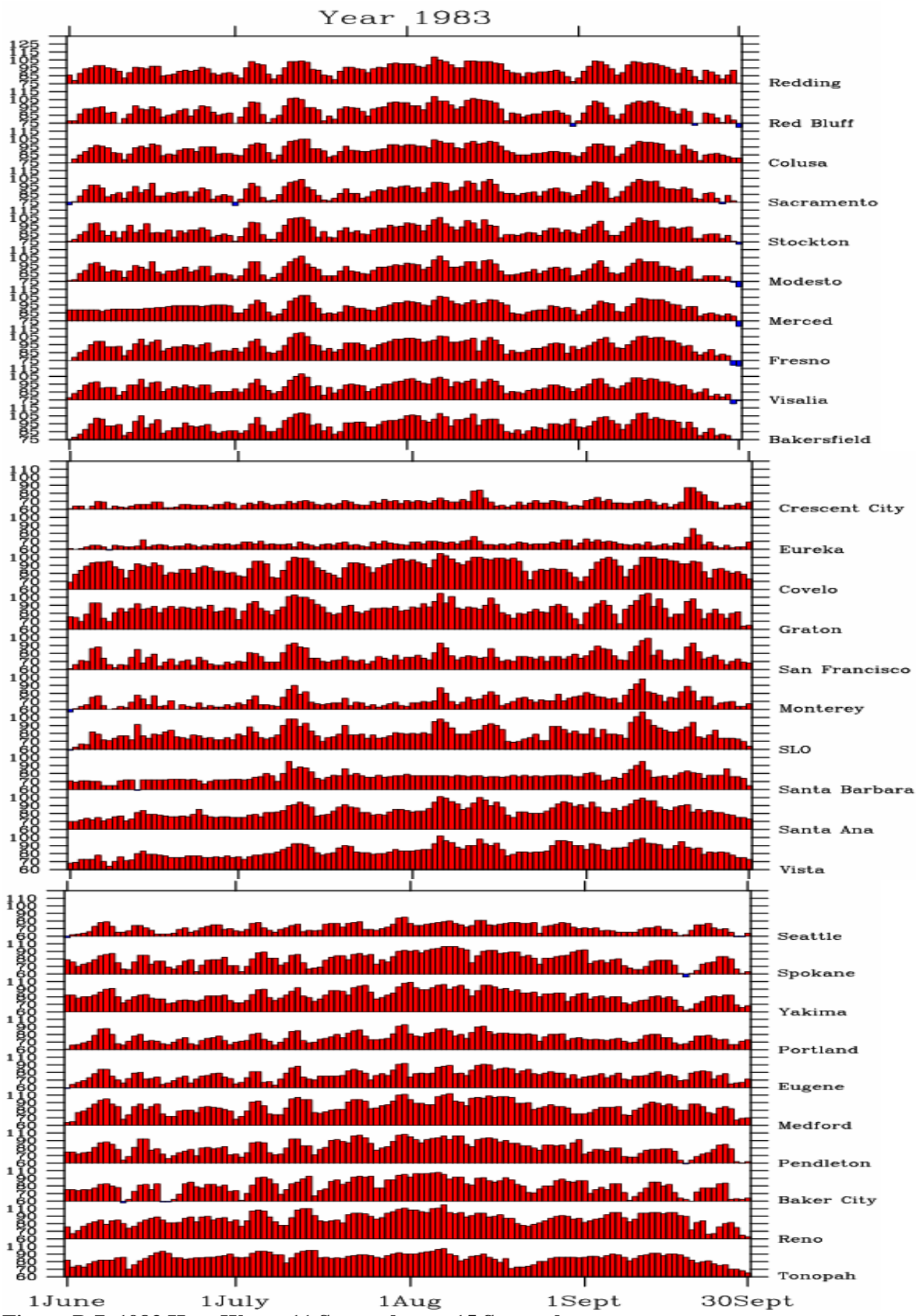


Figure B.7. 1983 Heat Wave: 11 September to 15 September

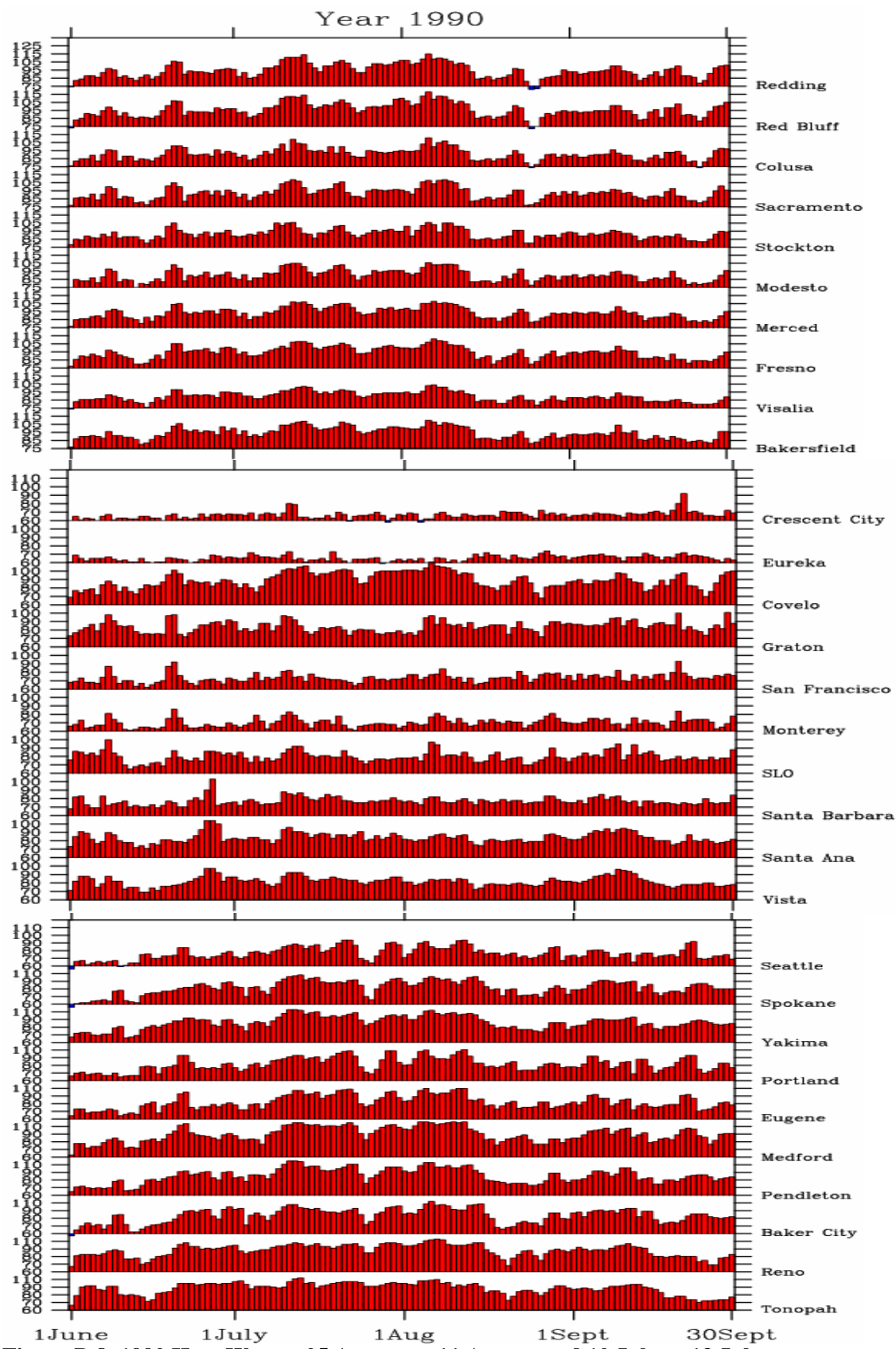


Figure B.8. 1990 Heat Waves: 05 August to 11 August and 10 July to 13 July

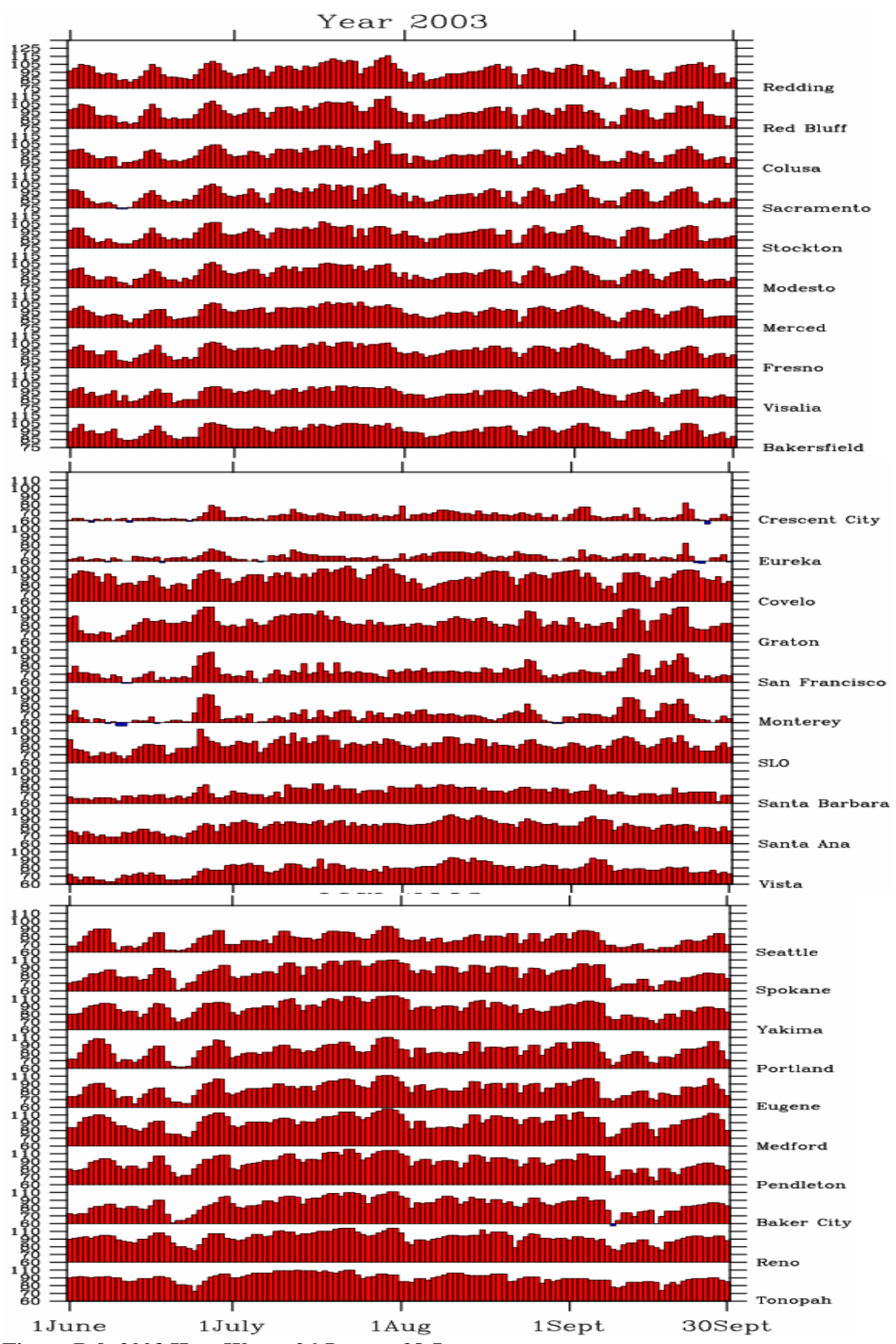


Figure B.9. 2003 Heat Wave: 26 June to 28 June

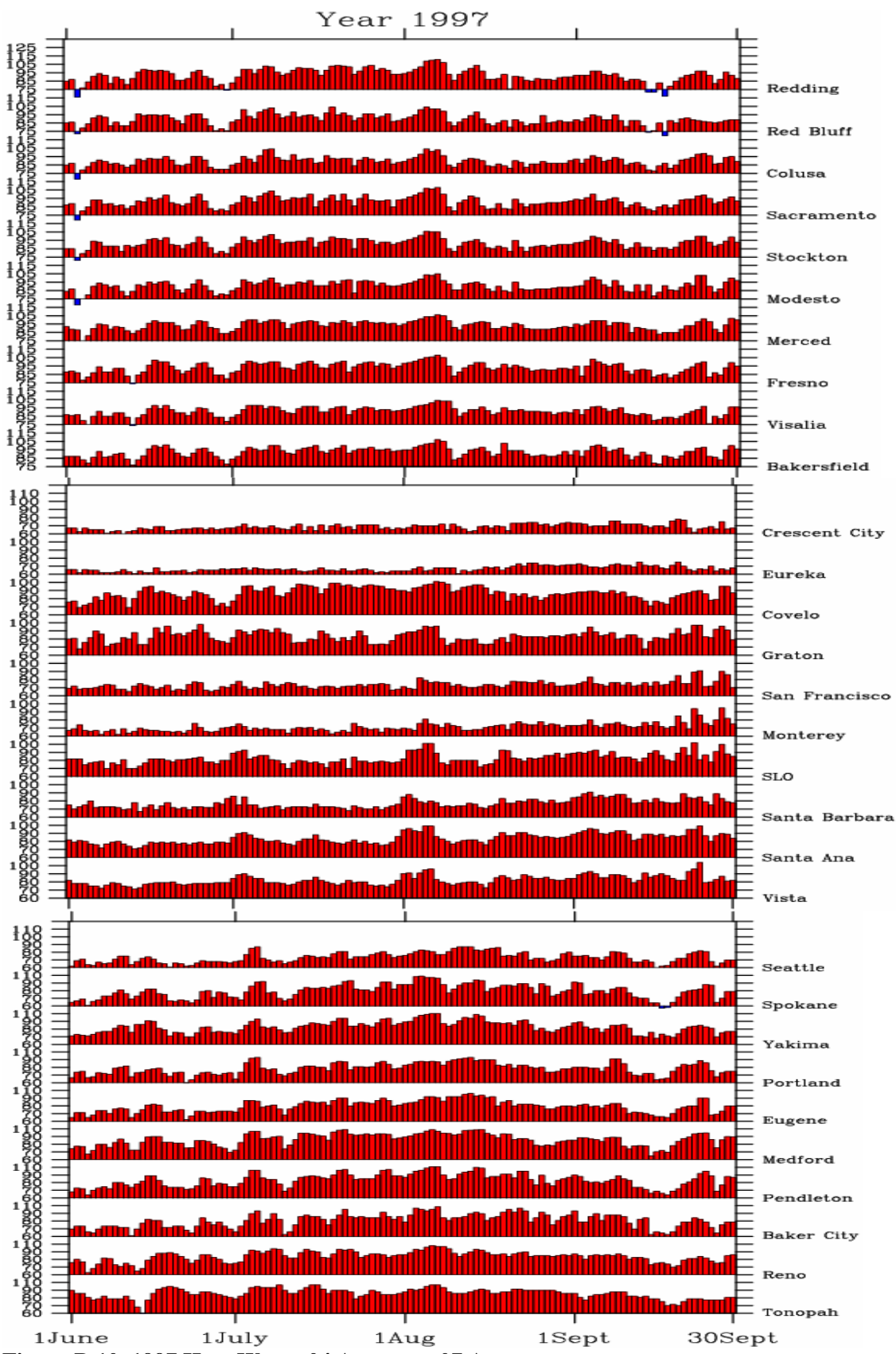


Figure B.10. 1997 Heat Wave: 04 August to 07 August

Figures B.11-B.40. Frequency distributions for each station of the 1,000 randomly generated 15-member ensemble averages of maximum temperatures from that station, plus the 99.5% value and the 'target' ensemble mean of the temperatures from that station on the onset dates of the top-ranked heat wave events in Sacramento, ranked by the highest 3-day anomaly averages. Maximum temperatures on x-axis are in degrees Fahrenheit.

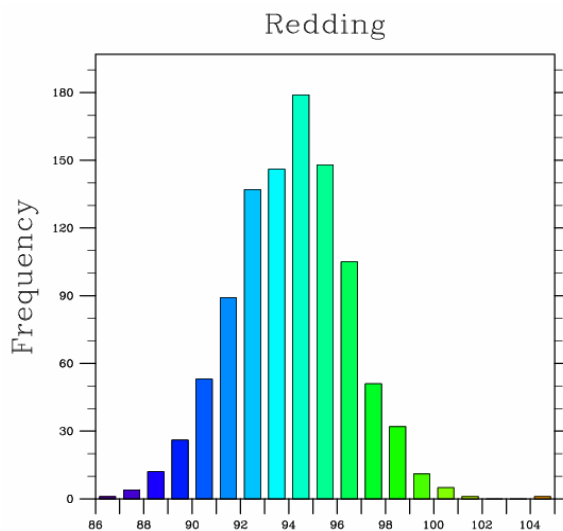


Figure B.11. 99.5% value = 100.47
Target Ensemble Average = 104.8

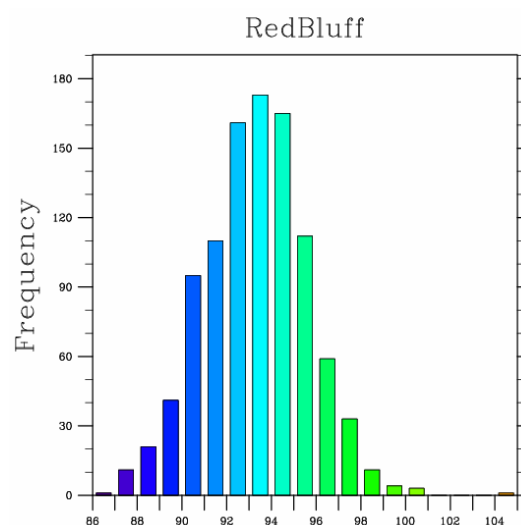


Figure B.12. 99.5% value = 99.93
Target Ensemble Average = 104.6

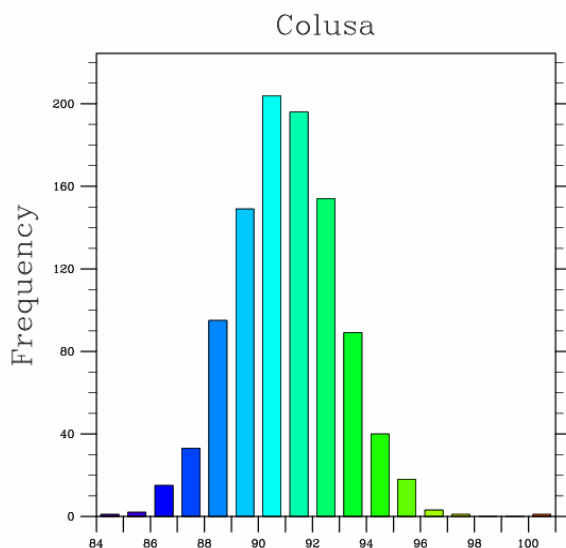


Figure B.13. 99.5% value = 96.20
Target Ensemble Average = 100.6

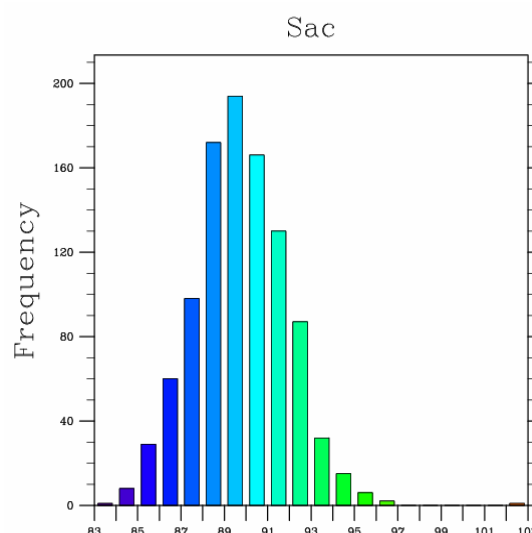
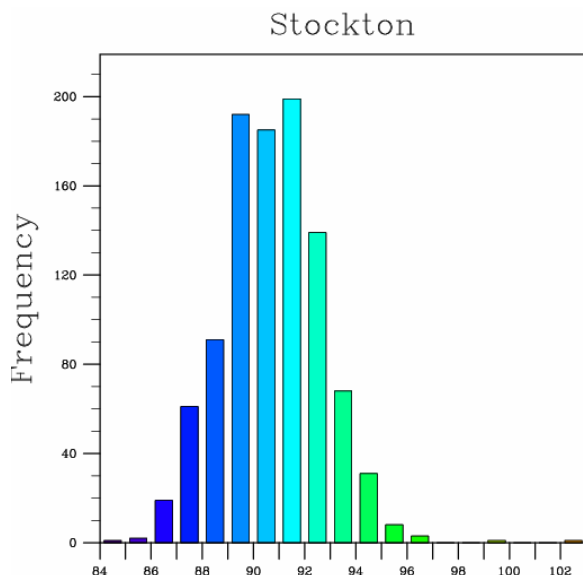
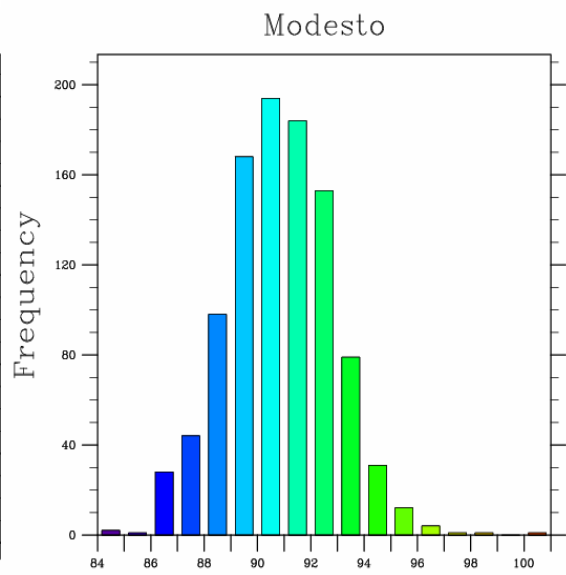


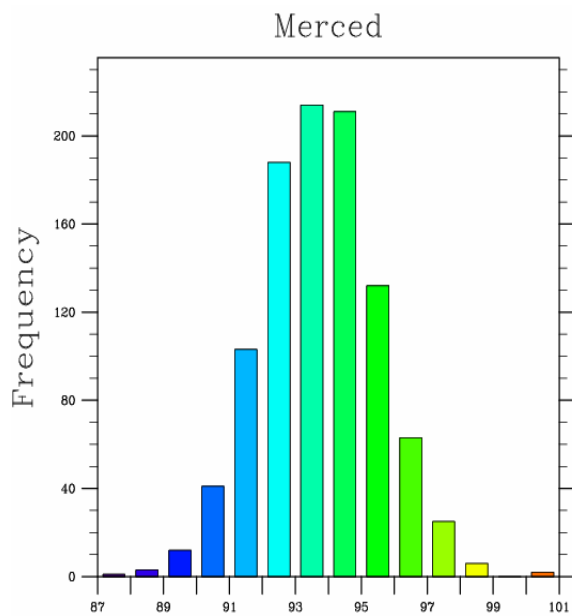
Figure B.14. 99.5% value = 95.57
Target Ensemble Average = 102.5



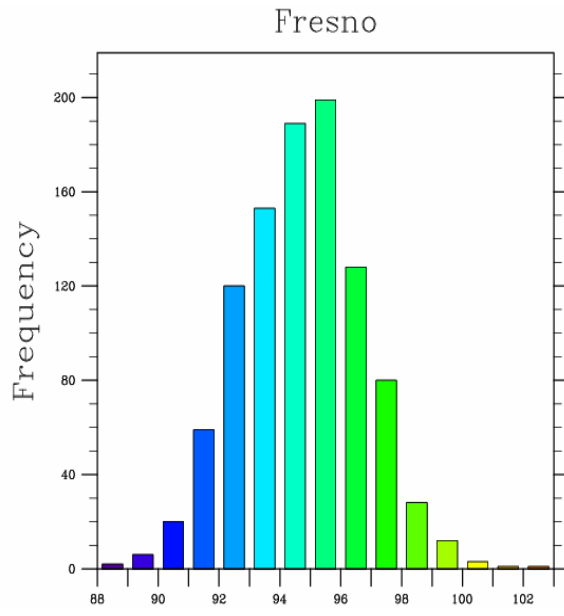
**Figure B.15. 99.5% value = 96.03
Target Ensemble Average = 102.3**



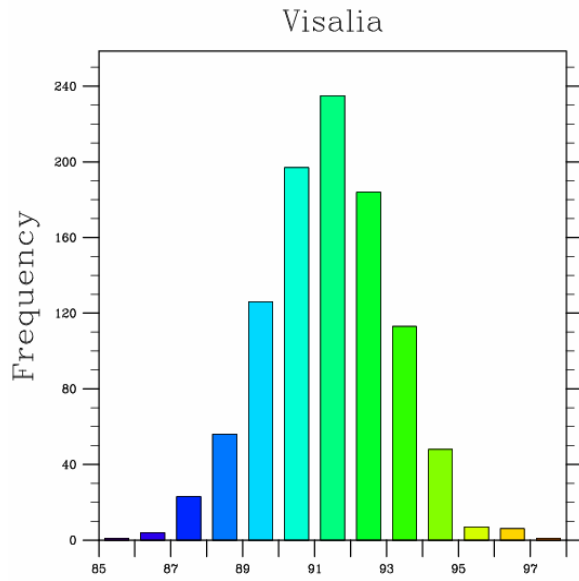
**Figure B.16. 99.5% value = 96.13
Target Ensemble Average = 100.8**



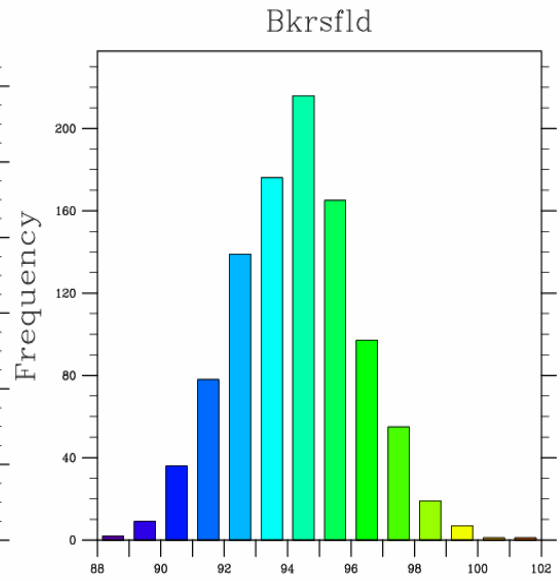
**Figure B.17. 99.5% value = 98.23
Target Ensemble Average = 100.3**



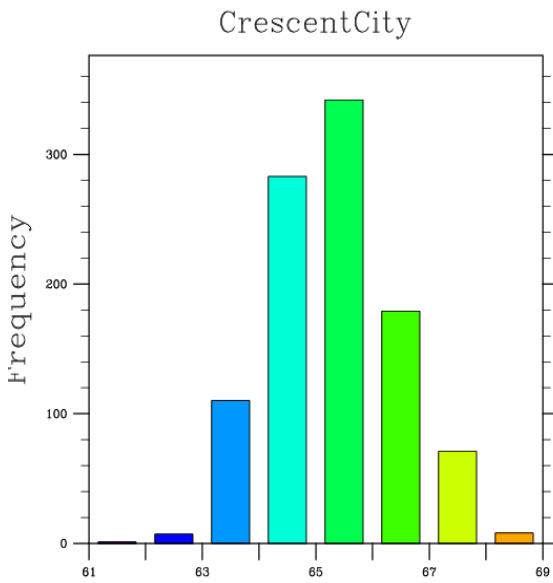
**Figure B.18. 99.5% value = 99.93
Target Ensemble Average = 102.4**



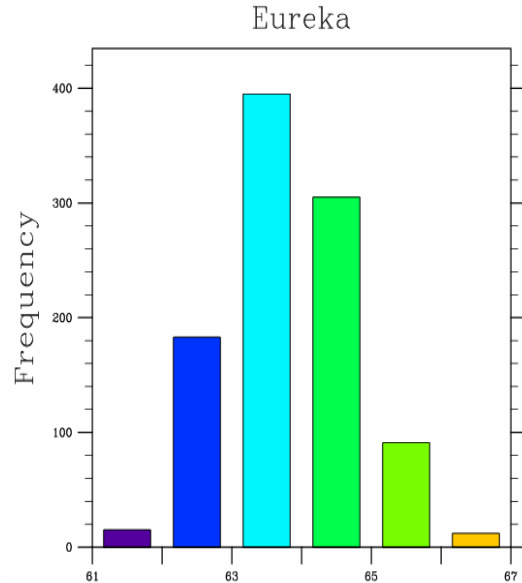
**Figure B.19. 99.5% value = 96.10
Target Ensemble Average = 97.7**



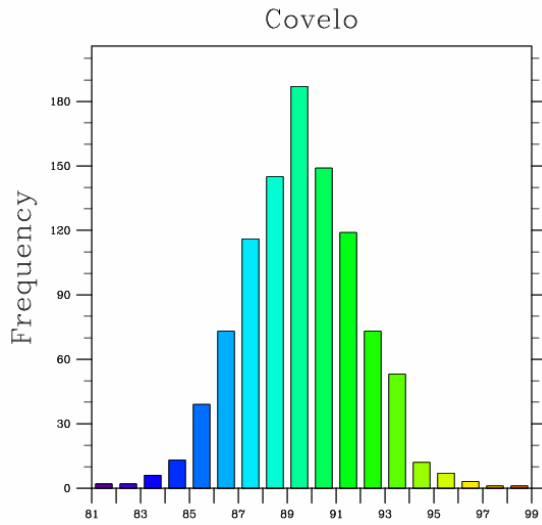
**Figure B.20. 99.5% value = 99.23
Target Ensemble Average = 101.1**



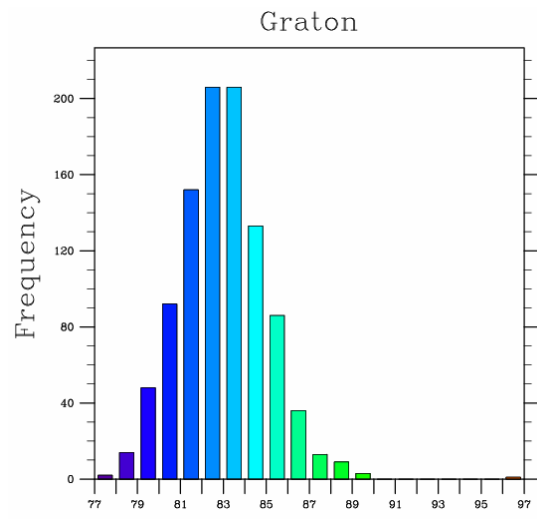
**Figure B.21. 99.5% value = 68.47
Target Ensemble Average = 67.7**



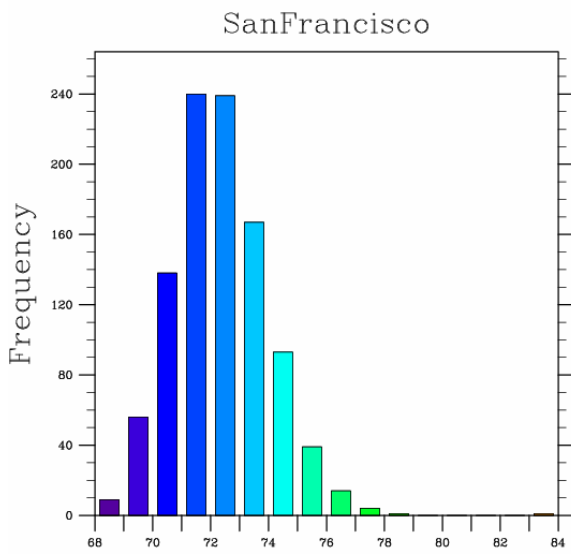
**Figure B.22. 99.5% value = 66.57
Target Ensemble Average = 64.1**



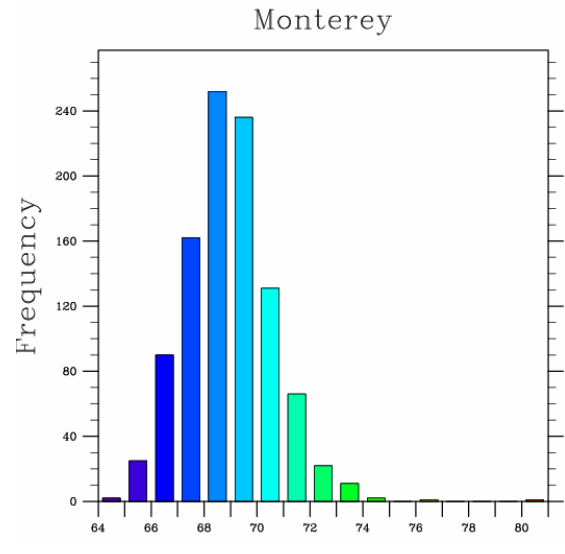
**Figure B.23. 99.5% value = 96.00
Target Ensemble Average = 98.8**



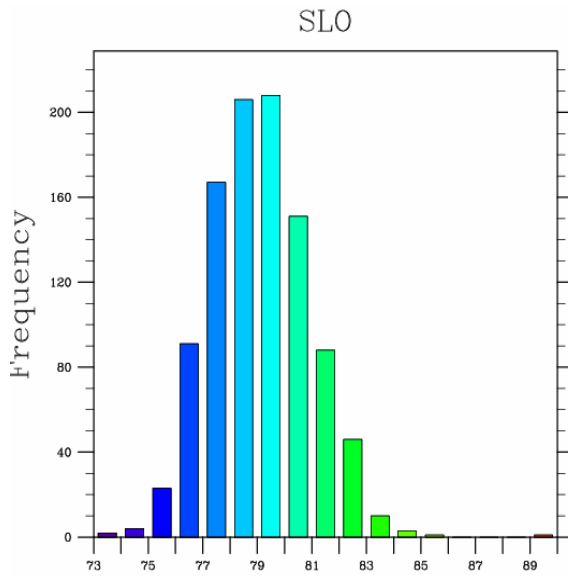
**Figure B.24. 99.5% value = 88.70
Target Ensemble Average = 96.1**



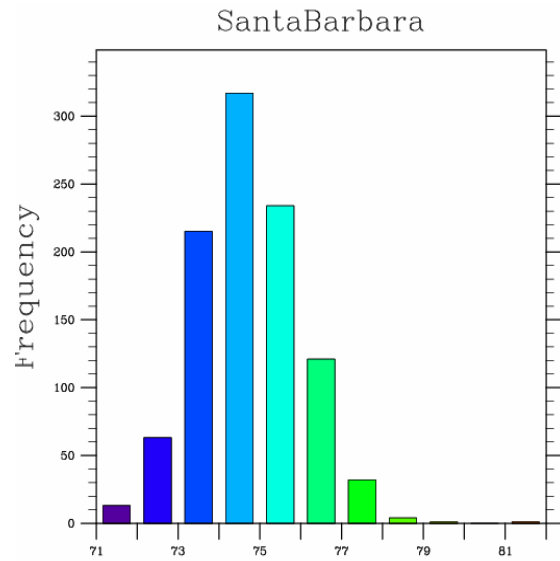
**Figure B.25. 99.5% value = 77.10
Target Ensemble Average = 83.6**



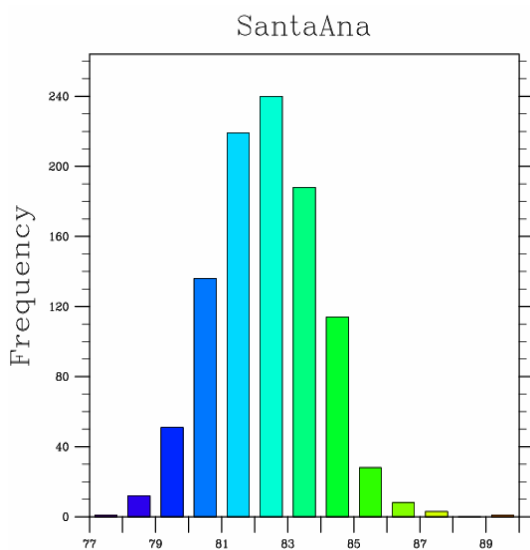
**Figure B.26. 99.5% value = 73.63
Target Ensemble Average = 80.1**



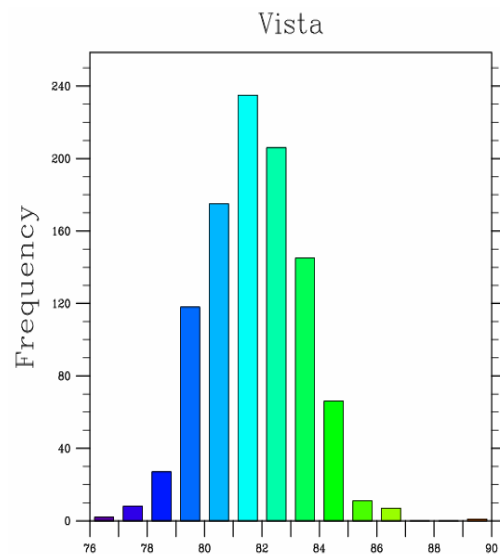
**Figure B.27. 99.5% value = 83.90
Target Ensemble Average = 89.9**



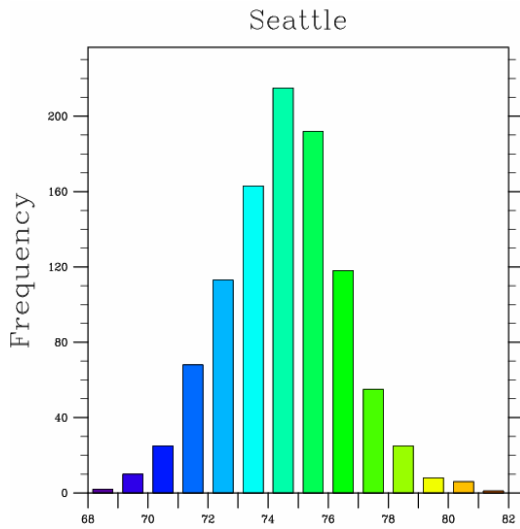
**Figure B.28. 99.5% value = 78.17
Target Ensemble Average = 78.5**



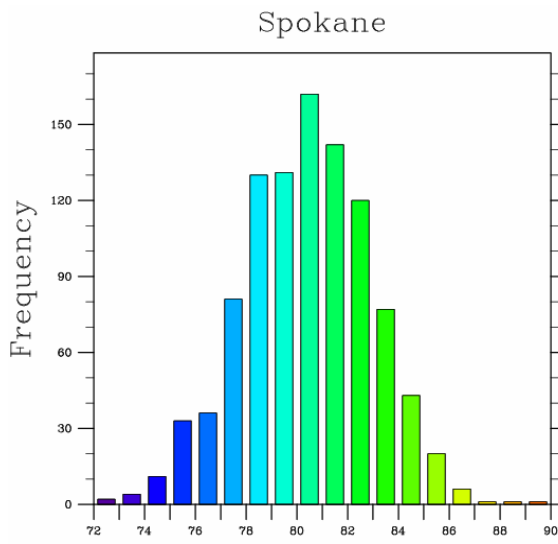
**Figure B.29. 99.5% value = 86.80
Target Ensemble Average = 86.9**



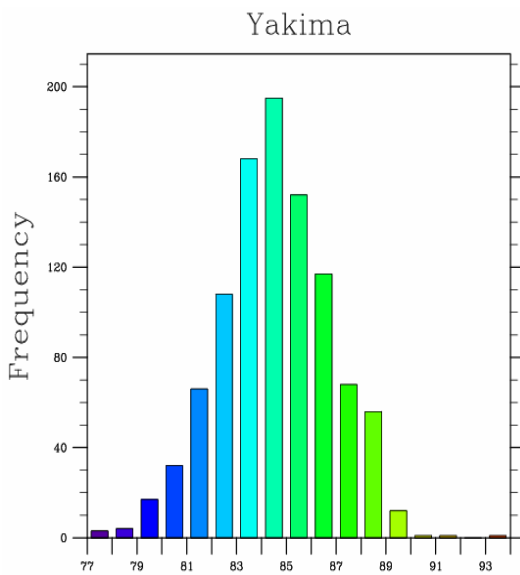
**Figure B.30. 99.5% value = 86.33
Target Ensemble Average = 86.6**



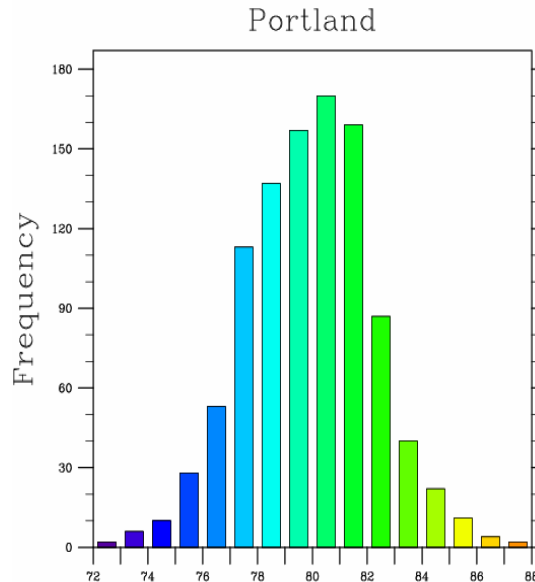
**Figure B.31. 99.5% value = 80.37
Target Ensemble Average = 78.7**



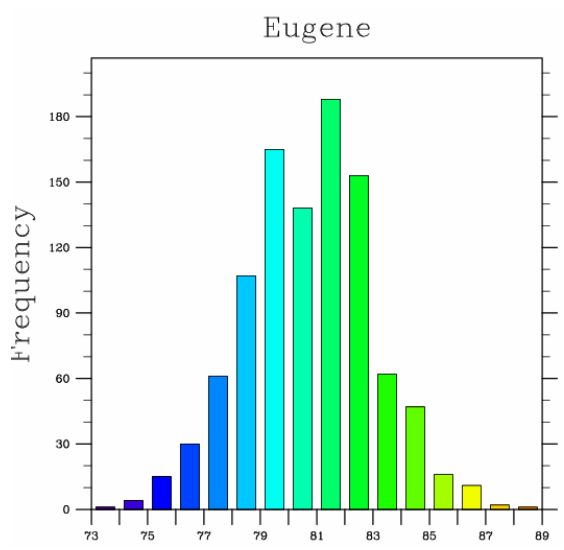
**Figure B.32. 99.5% value = 86.30
Target Ensemble Average = 82.5**



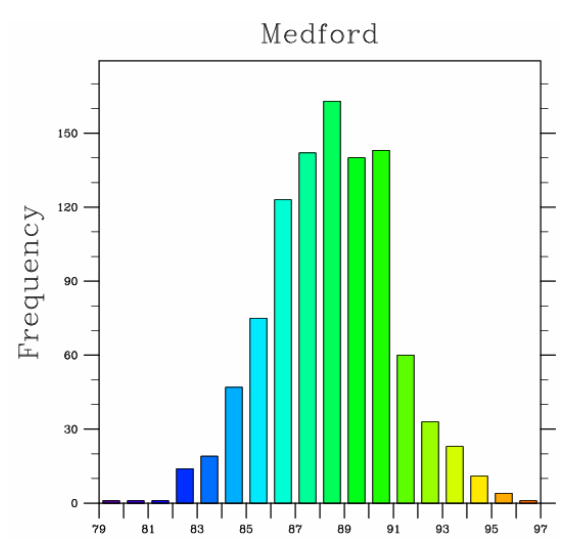
**Figure B.33. 99.5% value = 89.58
Target Ensemble Average = 87.8**



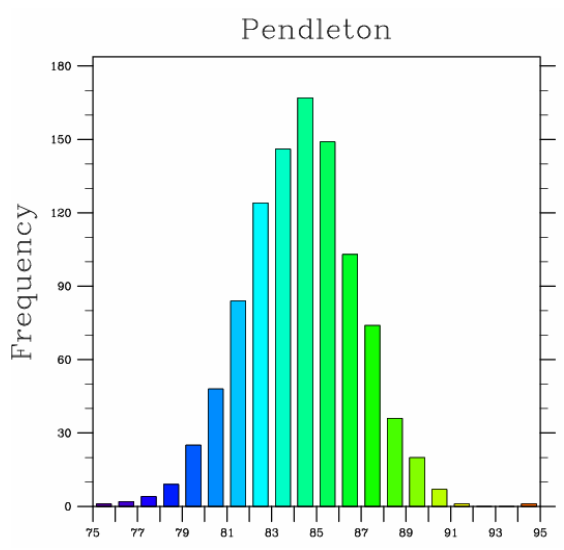
**Figure B.34. 99.5% value = 86.44
Target Ensemble Average = 86.0**



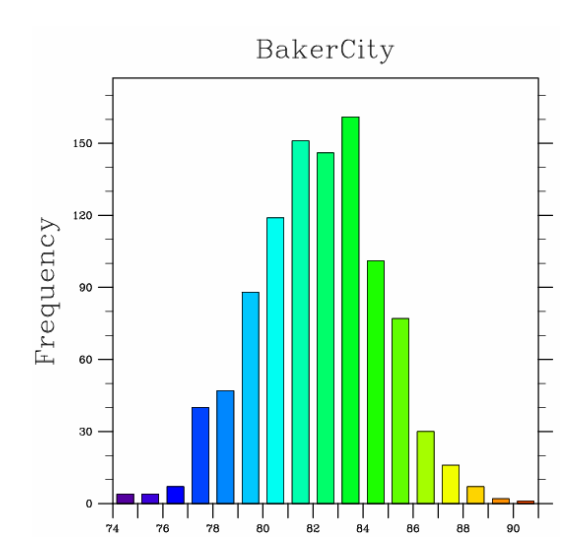
**Figure B.35. 99.5% value = 86.87
Target Ensemble Average = 85.6**



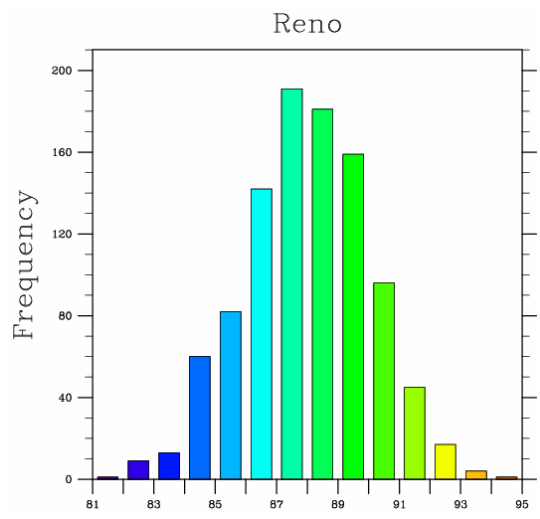
**Figure B.36. 99.5% value = 95.01
Target Ensemble Average = 94.8**



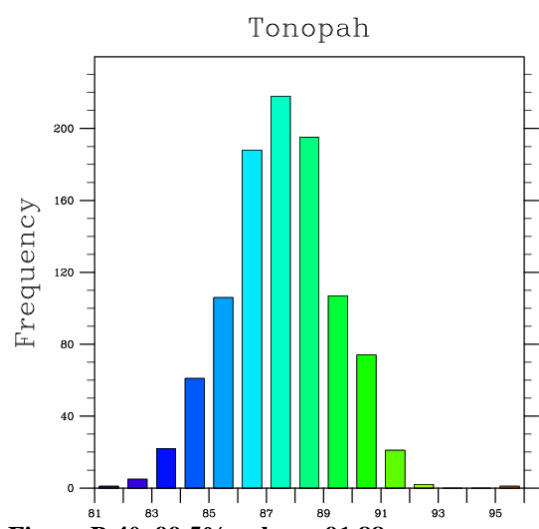
**Figure B.37. 99.5% value = 90.30
Target Ensemble Average = 87.8**



**Figure B.38. 99.5% value = 88.71
Target Ensemble Average = 84.0**



**Figure B.39. 99.5% value = 93.13
Target Ensemble Average = 92.5**



**Figure B.40. 99.5% value = 91.88
Target Ensemble Average = 91.85**

Table B.1. The 99.5% values, and target mean ensemble values from the bootstrap resampling frequency distribution. YES signifies that the target mean ensemble average exceeded the 99.5% value, and NO signifies that the target mean ensemble did not exceed the 99.5% threshold value. Temperatures are in degrees Fahrenheit (Celsius).

City	99.5% Value, °F (°C)	Target Mean Ensemble Value, °F (°C)	YES/NO	City	99.5% Value, °F (°C)	Target Mean Ensemble Value, °F (°C)	YES/NO
Redding	100.47 (38.04)	104.8 (40.4)	YES	Monterey	73.63 (23.13)	80.1 (26.7)	YES
Red Bluff	99.93 (37.74)	104.6 (40.3)	YES	San Luis Obispo	83.90 (28.83)	89.9 (32.2)	YES
Colusa	96.20 (35.67)	100.6 (38.1)	YES	Santa Barbara	78.17 (25.65)	78.5 (25.8)	YES
Sacramento	95.57 (35.32)	102.5 (39.2)	YES	Santa Ana	86.80 (30.44)	86.9 (30.5)	YES
Stockton	96.03 (35.57)	102.3 (39.1)	YES	Vista	86.33 (30.18)	86.6 (30.3)	YES
Modesto	96.13 (35.63)	100.8 (38.2)	YES	Seattle	80.37 (26.87)	78.7 (25.9)	NO
Merced	98.23 (36.79)	100.3 (37.9)	YES	Spokane	86.30 (30.17)	82.5 (28.1)	NO
Fresno	99.93 (37.74)	102.4 (39.1)	YES	Yakima	89.58 (31.99)	87.8 (31.0)	NO
Visalia	96.10 (35.61)	97.7 (36.5)	YES	Portland	86.44 (30.24)	86.0 (30.0)	NO
Bakersfield	99.23 (37.35)	101.1 (38.4)	YES	Eugene	86.87 (30.48)	85.6 (29.8)	NO
Crescent City	68.47 (20.26)	67.7 (19.8)	NO	Medford	95.01 (35.01)	94.8 (34.9)	NO
Eureka	66.57 (19.21)	64.1 (17.8)	NO	Pendleton	90.30 (32.39)	87.8 (31.0)	NO
Covelo	96.00 (35.56)	98.8 (37.1)	YES	Baker City	88.71 (31.51)	84.0 (28.9)	NO
Graton	88.70 (31.50)	96.1 (35.6)	YES	Reno	93.13 (33.96)	92.5 (33.6)	NO
San Francisco	77.10 (25.06)	83.6 (28.7)	YES	Tonopah	91.88 (33.27)	91.85 (33.25)	NO