Water-Data Report 2008

12447200 OKANOGAN RIVER AT MALOTT, WA

Upper Columbia Basin
Okanogan Subbasin

LOCATION.--Lat 48°16′53″, long 119°42′12″ referenced to North American Datum of 1927, in SW ¼ sec.9, T.32 N., R.25 E., Okanogan County, WA, Hydrologic Unit 17020006, on right bank 75 ft upstream from highway bridge at Malott, 0.1 mi upstream from Loup Loup Creek, and at mile 17.0.

DRAINAGE AREA.--8,080 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--April 1958 to current year. April 1958 to September 1965, published as "near Malott." Records published for both sites December 1965 to July 1967.

REVISED RECORDS.--WDR WA-75-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 783.55 ft above NGVD of 1929. April 1958 to November 1965, water-stage recorder at site 3.9 mi downstream at NGVD of 1929.

REMARKS.--Records good except for estimated daily discharges, which are fair. Diversions upstream from station for irrigation of about 22,000 acres in the United States and 55,000 acres in Canada. Flow regulated by Okanagan and Skaha Lakes and by natural storage in other lakes. U.S. Geological Survey satellite telemeter at station. Published as "near Brewster" prior to 1964 and as "near Malott" 1963-66 (station 12447300).

AVERAGE DISCHARGE FOR PERIOD OF RECORD.--50 years (water years 1959-2008), 3,026 ft^3/s, 2,192,000 acre-ft/yr, includes records for "near Malott" site located 3.9 miles downstream, water years 1959-65. 43 years (water years 1966-2008), 3,027 ft^3/s, 2,193,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,600 ft^3/s, June 3, 1972, gage height, 22.16 ft; minimum observed, 288 ft^3/s, Sept. 4, 1970, gage height, 2.03 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,700 ft^3/s, May 22, gage height, 13.85 ft; minimum daily discharge, 520 ft^3/s, Jan. 26.

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	852	1,180	e895	e1,000	e730	820	663	1,690	15,800	6,370	1,290	1,510
2	851	1,140	e800	e960	e730	817	697	1,880	15,200	6,420	1,290	1,630
3	931	1,100	e900	e920	e750	808	767	1,890	14,600	6,260	1,260	1,550
4	939	1,080	e925	e1,000	e770	808	780	1,880	13,400	5,830	1,220	1,480
5	962	1,040	904	e1,140	e770	778	877	1,970	12,900	5,610	1,170	1,440
6	1,050	1,040	1,780	e1,100	e800	765	961	2,250	11,900	5,340	1,120	1,420
7	1,020	1,110	2,860	e1,050	e830	757	1,040	2,950	11,200	4,870	1,060	1,400
8	997	1,140	2,410	e1,000	e850	689	1,030	3,620	10,400	4,510	1,010	1,390
9	970	1,100	1,700	e960	e870	665	1,040	4,040	9,550	3,870	1,010	1,370
10	960	1,100	e1,400	e900	e900	670	1,060	4,000	9,010	3,430	1,000	1,360
11	1,120	1,140	e1,250	e960	e900	685	1,050	3,920	8,940	3,220	1,000	1,350
12	1,130	1,220	e1,150	e980	e890	686	1,040	3,960	9,600	2,950	1,040	1,330
13	1,090	1,280	e1,400	e980	e890	694	1,040	4,100	9,770	2,700	988	1,290
14	1,100	1,230	e1,350	e1,000	e890	705	1,060	4,050	9,820	2,490	986	1,120
15	1,030	1,190	e1,350	e920	e870	738	1,070	4,240	9,820	2,320	987	1,090
16	997	1,160	e1,380	e760	e850	730	1,170	4,950	9,490	2,220	942	1,250
17	987	1,100	e1,400	e700	e830	730	1,350	7,350	9,060	2,110	842	1,380
18	978	1,130	e1,390	e780	e820	724	1,350	10,600	8,760	2,010	758	1,220
19	973	1,180	e1,350	e860	e810	719	1,270	13,700	8,530	1,930	730	1,040
20	983	1,180	e1,430	e940	e790	709	1,190	16,400	7,900	1,850	741	907
21	971	1,120	e1,400	e860	e770	709	1,200	18,400	7,400	1,790	784	917
22	977	1,010	e1,350	e710	e760	704	1,170	19,500	7,330	1,730	785	1,050
23	999	905	e1,280	e630	e770	697	1,140	18,900	7,590	1,660	891	1,180
24	985	844	e1,230	e560	e780	692	1,140	16,900	7,490	1,640	1,220	1,170
25	1,000	793	e1,180	e530	e790	681	1,130	15,500	7,030	1,680	1,740	1,090
26	1,320	752	e1,190	e520	e800	680	1,110	14,800	6,580	1,690	1,710	1,020
27	1,500	753	e1,170	e560	e810	693	1,080	15,000	6,290	1,600	1,650	985
28	1,460	840	e1,130	e610	e820	683	1,080	16,200	6,080	1,490	1,570	837
29	1,320	e900	e1,140	e630	843	686	1,100	16,700	5,950	1,420	1,440	802
30	1,260	e905	e1,070	e670	---	691	1,260	16,700	6,170	1,380	1,350	801
31	1,220	---	e1,000	e720	---	669	---	16,500	---	1,340	1,400	---
Total	32,932	31,662	41,164	25,910	23,683	22,282	31,915	284,540	283,560	93,730	34,984	36,379
Mean	1,062	1,055	1,328	836	817	719	1,064	9,179	9,452	3,024	1,129	1,213
Max	1,500	1,280	2,860	1,140	900	820	1,350	19,500	15,800	6,420	1,740	1,630
Min	851	752	800	520	730	665	663	1,690	5,950	1,340	730	801
Ac-ft	65,320	62,800	81,650	51,390	46,980	44,200	63,300	564,400	562,400	185,900	69,390	72,160

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2008, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	1,143	1,480	1,300	1,257	1,404	1,707	2,881	8,506	9,757	3,894	1,556	1,127
Max	1,847	4,747	4,402	3,013	2,979	3,975	7,015	16,420	29,290	10,990	4,150	2,963
(WY)	(1998)	(1991)	(1996)	(2005)	(1991)	(2007)	(1996)	(1972)	(1972)	(1972)	(1993)	(1997)
Min	605	574	565	540	569	601	928	4,319	2,625	938	390	372
(WY)	(1988)	(1988)	(1971)	(1988)	(2001)	(1988)	(2001)	(1977)	(1992)	(1977)	(2003)	(1988)

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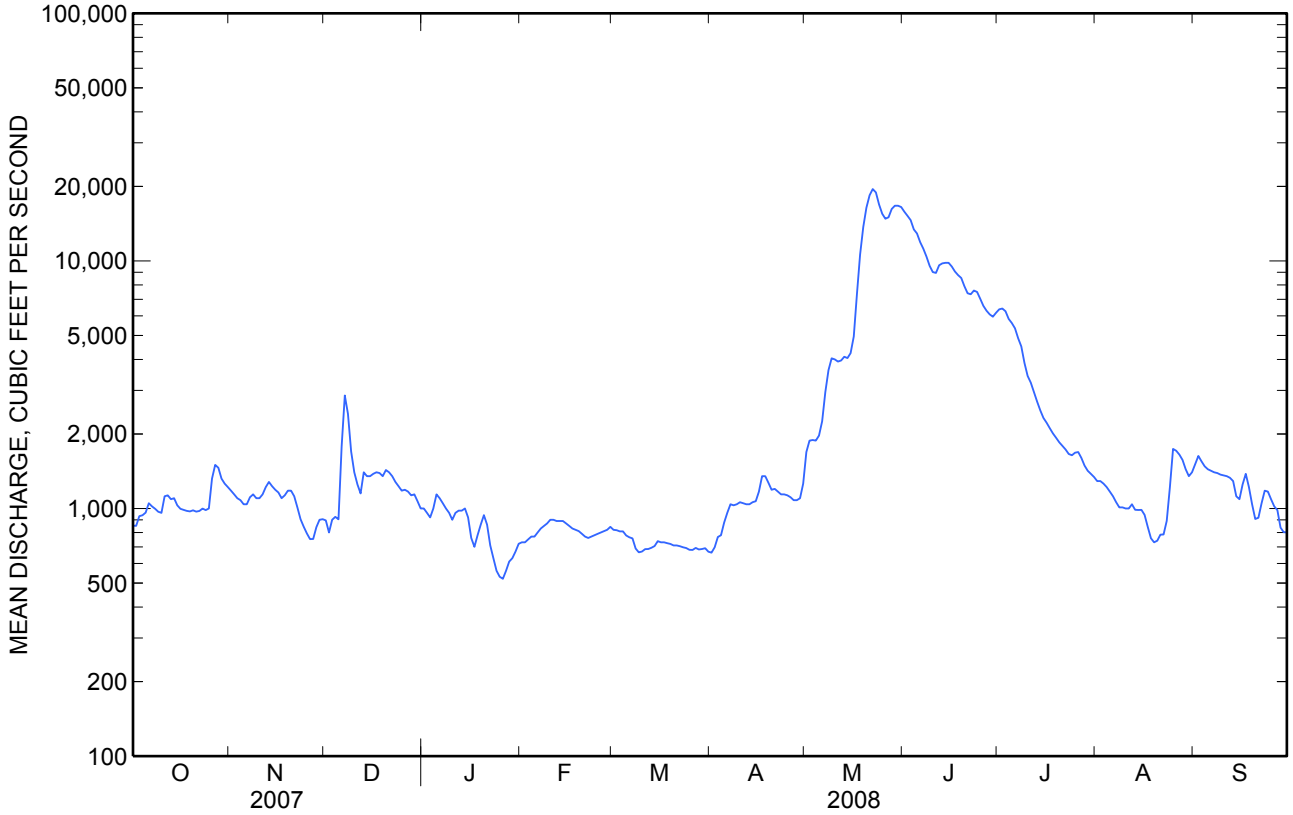
SUMMARY STATISTICS

	Calendar Year 2007		Water Year 2008		Water Years 1966 - 2008	
Annual total	1,125,069		942,741			
Annual mean	3,082		2,576		3,027	
Highest annual mean					6,312	1972
Lowest annual mean					1,334	2001
Highest daily mean	13,400	Jun 7	19,500	May 22	45,300	Jun 3, 1972
Lowest daily mean	595	Sep 11	520	Jan 26	288	Sep 4, 1970
Annual seven-day minimum	623	Sep 6	577	Jan 23	296	Aug 30, 1970
Annual runoff (ac-ft)	2,232,000		1,870,000		2,193,000	
10 percent exceeds	7,480		7,430		7,810	
50 percent exceeds	1,400		1,110		1,480	
90 percent exceeds	836		730		691	



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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Daily water temperature records November 1969 to June 1971 and March 2005 to current year. Chemical analyses 1959-62, 1963-70 (partial record station), 1972, 1975-94.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: November 1969 to June 1971, March 2005 to current year.

INSTRUMENTATION.--Water temperature recorder with 15-minute logging interval since March 2005.

REMARKS.--Records excellent except Oct. 1 - Nov. 18, Dec. 8 - Jan. 29, Feb. 21 - July 9 which are good, and Nov. 19 - Dec. 7 which are fair.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 29.5°C, July 24, 2006; minimum, 0.0°C, on many days during winter.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 27.6°C, Aug. 17; minimum, 0.0°C, on several days during November to December.

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		October			November			December			January	
1	14.5	12.4	13.3	5.9	4.8	5.4	0.3	0.0	0.1	0.5	0.2	0.4
2	14.2	12.8	13.6	5.4	4.4	4.9	0.0	0.0	0.0	0.4	0.3	0.4
3	13.5	11.9	12.6	5.6	4.4	4.9	0.0	0.0	0.0	0.4	0.2	0.3
4	12.8	11.4	12.1	6.6	4.9	5.6	1.1	0.0	0.5	0.4	0.3	0.3
5	13.1	11.3	12.2	6.3	5.3	5.8	1.6	0.9	1.2	0.4	0.2	0.3
6	12.8	11.1	12.0	6.0	5.2	5.6	1.9	1.2	1.5	0.4	0.2	0.3
7	13.4	12.3	12.8	6.0	5.4	5.7	1.8	0.0	0.9	0.4	0.2	0.3
8	13.0	11.8	12.5	6.3	5.8	6.0	0.1	0.0	0.1	0.4	0.3	0.4
9	13.4	12.0	12.8	7.1	6.3	6.7	0.1	0.0	0.1	0.4	0.2	0.3
10	13.1	12.4	12.7	8.0	7.0	7.5	0.1	0.0	0.1	0.4	0.2	0.4
11	12.9	11.7	12.3	7.3	6.6	6.9	0.2	0.0	0.1	0.5	0.2	0.3
12	13.6	12.4	12.9	6.7	6.1	6.5	0.2	0.0	0.1	0.5	0.4	0.5
13	12.7	11.2	12.0	6.1	5.4	5.7	0.1	0.0	0.1	0.5	0.3	0.4
14	12.6	11.1	11.9	5.5	4.6	4.9	0.1	0.0	0.1	0.5	0.3	0.4
15	12.3	10.9	11.7	4.9	4.2	4.6	0.2	0.0	0.1	0.5	0.3	0.4
16	12.6	11.6	12.1	5.5	4.8	5.1	0.2	0.1	0.1	0.5	0.3	0.4
17	12.0	10.7	11.2	5.0	4.6	4.8	0.2	0.1	0.1	0.5	0.3	0.4
18	11.1	9.6	10.1	4.9	4.5	4.7	0.2	0.1	0.1	0.5	0.3	0.4
19	10.5	9.2	9.7	4.7	4.0	4.4	0.2	0.1	0.1	0.5	0.3	0.4
20	10.4	9.2	9.9	4.3	3.0	3.6	0.2	0.1	0.1	0.5	0.3	0.5
21	9.9	8.6	8.9	3.0	1.6	2.3	0.2	0.1	0.1	0.5	0.3	0.4
22	9.5	8.4	8.9	1.6	0.8	1.1	0.2	0.1	0.1	0.5	0.3	0.4
23	9.9	8.3	9.1	0.8	0.0	0.2	0.2	0.1	0.1	0.5	0.3	0.4
24	10.0	8.9	9.5	0.3	0.1	0.2	0.2	0.1	0.1	0.5	0.3	0.5
25	9.5	8.3	9.0	0.5	0.3	0.4	0.3	0.1	0.2	0.5	0.4	0.5
26	8.8	7.7	8.3	0.6	0.4	0.5	0.3	0.2	0.3	0.5	0.4	0.5
27	8.2	7.2	7.6	0.4	0.1	0.3	0.4	0.2	0.3	0.5	0.3	0.4
28	7.8	7.2	7.5	0.3	0.0	0.1	0.4	0.2	0.3	0.5	0.3	0.4
29	7.4	6.8	7.0	0.1	0.0	0.0	0.4	0.2	0.3	0.6	0.3	0.5
30	7.1	6.1	6.6	0.6	0.0	0.3	0.4	0.2	0.3	0.6	0.4	0.5
31	6.5	5.7	6.0	---	---	---	0.4	0.2	0.3	0.6	0.4	0.5
Month	14.5	5.7	10.6	8.0	0.0	3.8	1.9	0.0	0.3	0.6	0.2	0.4

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TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		February			March			April			May	
1	0.6	0.4	0.5	7.0	5.0	6.0	8.8	5.9	7.3	14.2	12.1	13.1
2	0.6	0.4	0.5	6.6	5.0	5.8	10.1	6.7	8.3	14.0	12.0	13.1
3	0.6	0.4	0.5	7.2	5.7	6.3	9.9	7.7	8.9	14.3	12.9	13.6
4	0.6	0.4	0.5	6.7	5.3	6.1	9.4	8.4	8.9	15.7	13.1	14.3
5	0.6	0.4	0.5	7.3	5.1	6.2	10.5	7.8	9.1	16.2	14.6	15.3
6	0.6	0.4	0.5	7.3	5.4	6.4	11.0	9.0	10	16.6	14.8	15.6
7	0.6	0.4	0.5	7.6	6.1	6.9	10.8	8.5	9.7	16.5	15.3	15.8
8	0.6	0.5	0.6	9.0	6.8	7.8	10.4	9.1	9.7	15.4	13.3	14.1
9	0.6	0.4	0.6	8.4	7.3	7.9	11.0	8.1	9.5	13.3	11.1	12.3
10	0.6	0.5	0.6	8.2	7.3	7.8	12.1	9.0	10.5	12.6	10.7	11.4
11	0.7	0.5	0.6	8.8	7.4	8.1	12.8	9.8	11.2	12.0	10.9	11.5
12	0.7	0.5	0.6	8.7	7.2	8.0	14.1	10.4	12.2	13.0	10.4	11.8
13	0.7	0.5	0.6	8.4	7.5	8.0	14.8	12.0	13.4	12.6	11.1	11.6
14	0.7	0.5	0.6	8.3	7.7	7.9	15.4	13.1	14.1	13.7	10.8	12.1
15	0.7	0.5	0.6	9.0	7.1	8.0	13.7	11.9	12.6	14.2	11.7	12.9
16	0.7	0.4	0.6	8.9	6.7	7.8	13.6	10.5	12.0	15.1	12.3	13.7
17	0.7	0.5	0.6	9.9	7.4	8.6	13.7	11.2	12.3	15.4	14.0	14.7
18	0.7	0.4	0.6	9.6	7.6	8.7	12.7	11.5	12.0	14.5	11.9	13.2
19	0.7	0.4	0.6	9.3	7.5	8.4	11.5	10.3	10.9	11.9	10.3	10.9
20	0.7	0.5	0.6	9.2	7.4	8.4	10.5	9.2	9.8	10.4	9.0	9.7
21	0.7	0.4	0.6	9.7	7.8	8.7	10.6	8.5	9.6	9.2	8.3	8.8
22	0.6	0.4	0.5	9.5	7.3	8.4	11.3	8.7	9.9	9.3	8.0	8.7
23	0.6	0.4	0.5	9.2	8.0	8.5	10.6	9.2	9.9	11.1	9.2	10.0
24	0.6	0.4	0.5	8.8	6.8	7.9	10.0	8.3	9.1	11.2	10.2	10.8
25	0.7	0.4	0.6	9.1	6.9	8.0	12.1	8.7	10.2	12.0	10.5	11.1
26	0.6	0.4	0.5	8.5	7.3	8.0	13.4	9.7	11.5	12.5	11.4	11.9
27	0.7	0.4	0.5	8.3	6.8	7.7	13.9	11.5	12.6	12.4	11.0	11.5
28	5.0	0.5	2.9	8.0	6.2	6.9	15.8	12.2	13.8	11.9	9.8	10.7
29	6.1	4.4	5.2	8.2	5.3	6.6	15.3	12.8	14.0	12.4	11.0	11.7
30	---	---	---	8.0	6.1	7.0	14.9	12.6	13.6	13.1	11.4	12.2
31	---	---	---	7.6	6.0	6.9	---	---	---	13.0	11.8	12.4
Month	6.1	0.4	0.8	9.9	5.0	7.5	15.8	5.9	10.9	16.6	8.0	12.3

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TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		June			July			August			September	
1	13.6	12.2	12.8	22.4	20.4	21.4	23.4	20.9	22.0	19.6	17.4	18.4
2	13.5	12.0	12.5	21.7	20.3	21.0	23.4	20.3	21.7	18.8	17.5	18.2
3	12.3	10.8	11.3	21.1	19.8	20.3	23.6	20.1	21.8	19.1	17.3	18.1
4	12.5	11.0	11.6	20.7	19.3	19.9	24.5	20.6	22.5	19.7	17.6	18.5
5	12.4	11.4	11.9	21.0	19.2	20.2	25.1	21.3	23.2	19.7	18.1	18.9
6	12.1	10.8	11.3	21.0	19.1	20.1	24.9	22.1	23.6	20.5	18.4	19.3
7	11.6	10.4	10.9	21.4	19.2	20.4	25.3	22.6	24.0	19.9	18.4	19.1
8	12.8	11.3	12.0	21.9	19.7	20.8	24.8	23.1	23.7	20.1	17.9	18.9
9	12.8	12.3	12.6	22.5	20.4	21.4	24.0	22.1	22.9	19.9	18.2	18.9
10	12.8	12.2	12.5	22.0	20.6	21.2	23.4	21.0	22.2	19.2	17.3	18.2
11	12.8	11.9	12.4	21.6	19.3	20.5	23.7	20.3	22.0	19.5	17.2	18.3
12	14.0	12.3	13.2	21.9	20.1	21.0	23.9	21.0	22.5	19.9	17.7	18.7
13	14.7	13.7	14.2	21.8	20.2	21.0	25.0	21.7	23.3	19.4	17.4	18.3
14	15.6	14.4	15.0	22.2	20.0	21.1	25.6	22.3	24.0	19.6	16.8	18.1
15	16.1	15.2	15.6	22.9	20.8	21.8	26.6	23.0	24.8	19.6	16.9	18.3
16	16.2	15.0	15.6	23.8	21.1	22.3	27.3	23.8	25.6	19.3	16.8	18.1
17	16.3	15.0	15.7	24.2	21.9	22.9	27.6	24.7	26.2	19.7	17.4	18.4
18	15.9	15.1	15.4	23.8	22.0	22.9	26.9	25.3	26.1	20.2	17.9	18.9
19	15.3	14.2	14.7	23.9	21.9	22.9	25.7	23.4	24.4	20.1	17.8	19.0
20	15.1	13.8	14.5	24.7	22.1	23.3	23.9	22.4	23.0	19.5	18.1	18.7
21	15.0	14.5	14.7	25.0	22.6	23.7	22.4	20.9	21.6	18.7	17.5	18.1
22	16.3	14.7	15.5	25.0	23.0	23.9	22.2	19.7	21.0	17.5	16.1	16.8
23	16.1	15.1	15.6	23.8	22.4	23.1	22.2	19.4	20.8	16.4	14.6	15.6
24	16.6	14.8	15.6	24.4	21.5	22.8	21.6	20.0	20.9	16.1	15.0	15.5
25	16.6	15.4	15.9	24.3	22.4	23.4	21.0	20.2	20.5	16.2	14.3	15.2
26	17.1	15.5	16.2	24.7	22.3	23.4	20.6	19.1	19.9	15.7	14.2	15.0
27	18.5	15.6	17.0	24.6	22.5	23.4	20.4	19.0	19.6	15.8	14.2	15.0
28	19.2	16.8	17.9	24.8	22.2	23.4	20.0	18.8	19.3	15.8	13.6	14.8
29	20.5	17.7	19.1	23.5	22.0	22.6	21.9	19.3	20.3	16.1	13.8	14.9
30	21.8	19.3	20.5	23.3	20.6	21.9	20.8	19.5	20.1	16.0	14.0	15.0
31	---	---	---	23.3	20.6	22.0	19.6	18.2	18.8	---	---	---
Month	21.8	10.4	14.5	25.0	19.1	21.9	27.6	18.2	22.3	20.5	13.6	17.6

	Max	Min	Mean
Year	27.6	0.0	10.3