

2003

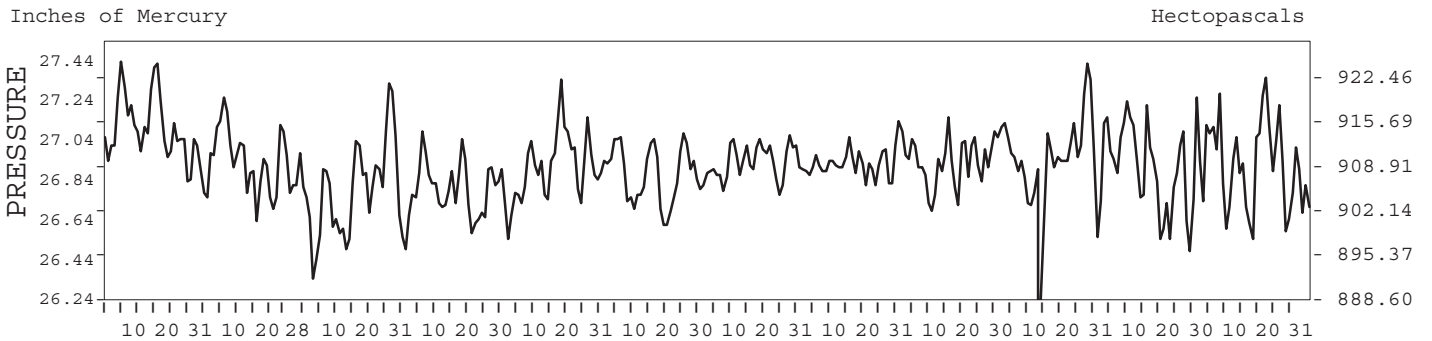
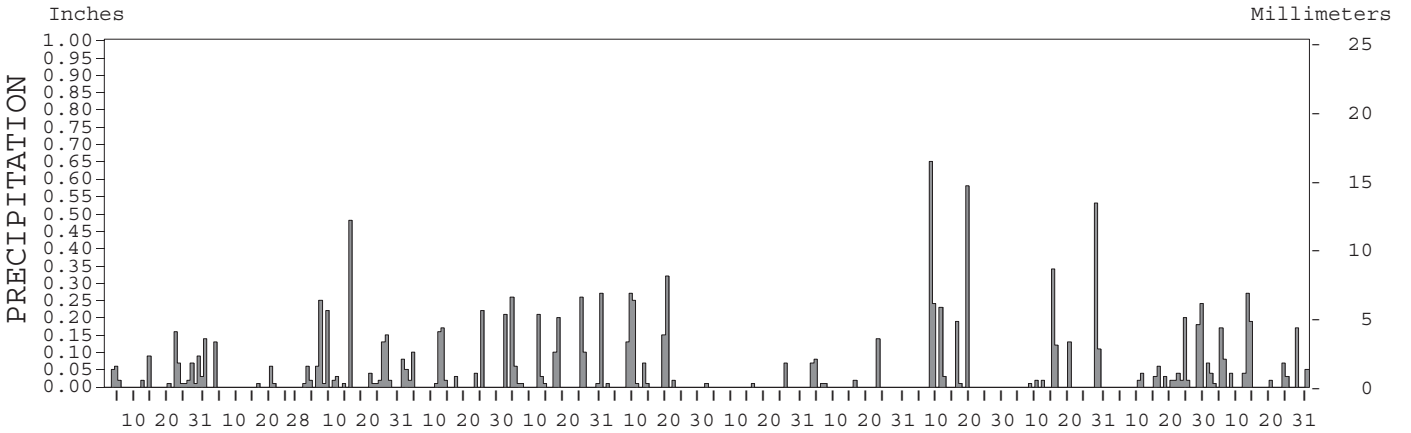
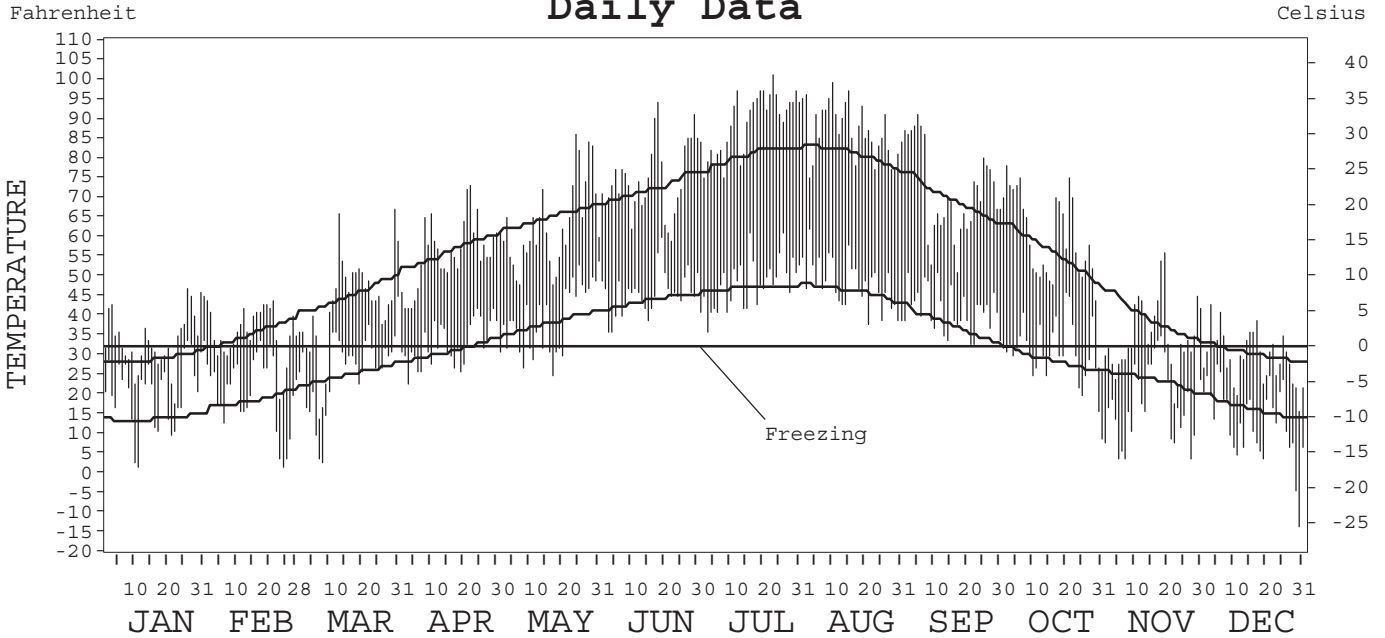
LOCAL CLIMATOLOGICAL DATA
ANNUAL SUMMARY WITH COMPARATIVE DATA



ISSN 0198-3040

KALISPELL,
MONTANA (FCA)

Daily Data



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Thomas R. Karl

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE	NATIONAL CLIMATIC DATA CENTER ASHEVILLE, NORTH CAROLINA	DIRECTOR NATIONAL CLIMATIC DATA CENTER
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METEOROLOGICAL DATA FOR 2003

KALISPELL, MT (FCA)

LATITUDE: 48° 18' 15" N LONGITUDE: 114° 15' 49" W ELEVATION (FT): GRND: 2978 BARO: 2981 TIME ZONE: MOUNTAIN (UTC + 7) WBAN: 24146

	ELEMENT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	33.9	35.7	43.1	55.9	63.0	74.6	88.9	86.9	71.4	58.4	35.1	29.6	56.4	
	HIGHEST DAILY MAXIMUM	47	44	67	73	86	94	101	99	91	78	56	43	101	
	DATE OF OCCURRENCE	26	21+	30	22	24	18	23	10	05	02	19	03	JUL 23	
	MEAN DAILY MINIMUM	21.2	20.8	26.6	33.0	39.2	45.9	48.2	48.1	41.5	30.8	18.4	13.4	32.3	
	LOWEST DAILY MINIMUM	2	2	3	23	25	36	36	38	33	9	4	-13	-13	
	DATE OF OCCURRENCE	11	24	08	03	17	04+	03	21	22+	31	27+	30	DEC 30	
	AVERAGE DRY BULB	27.6	28.3	34.9	44.5	51.1	60.3	68.6	67.5	56.5	44.6	26.8	21.5	44.4	
	MEAN WET BULB	26.8	26.2	31.1	39.2	45.0	52.2	55.1	54.9		39.4	24.7	22.1		
	MEAN DEW POINT	23.9	22.0	26.6	32.8	38.0	44.5	42.6	44.3		33.4	20.5	19.8		
	NUMBER OF DAYS WITH:														
	MAXIMUM ≥ 90°	0	0	0	0	0	3	17	13	1	0	0	0	0	34
	MAXIMUM ≤ 32°	16	7	5	0	0	0	0	0	0	2	14	21	65	
	MINIMUM ≤ 32°	28	26	24	17	12	0	0	0	0	20	27	31	185	
MINIMUM ≤ 0°	0	0	0	0	0	0	0	0	0	0	0	2	2		
H/C	HEATING DEGREE DAYS	1153	1023	926	609	428	168	33	24	261	625	1140	1340	7730	
	COOLING DEGREE DAYS	0	0	0	0	7	31	151	110	12	0	0	0	311	
RH	MEAN (PERCENT)	85	78	75	68	64	59	41	48	60	69	78	88	68	
	HOUR 05 LST	87	86	83	84	84	86	73	74	78	84	84	89	83	
	HOUR 11 LST	83	76	70	58	52	47	30	39	50	59	78	87	61	
	HOUR 17 LST	80	68	65	49	48	37	20	26	37	50	71	85	53	
	HOUR 23 LST	87	82	81	76	75	69	47	53	69	77	79	90	74	
S	PERCENT POSSIBLE SUNSHINE														
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	7	1	4	3	1	0	0	0	3	1	2	12	34	
	THUNDERSTORMS	0	0	1	3	4	7	3	7	6	2	0	0	33	
CLOUDINESS	SUNRISE-SUNSET: (OKTAS)														
	CEILOMETER (≤ 12,000 FT.)														
	SATELLITE (> 12,000 FT.)														
	MIDNIGHT-MIDNIGHT: (OKTAS)														
	CEILOMETER (≤ 12,000 FT.)														
	SATELLITE (> 12,000 FT.)														
	NUMBER OF DAYS WITH:														
	CLEAR														
	PARTLY CLOUDY														
	CLOUDY														
PR	MEAN STATION PRESS. (IN.)	27.08	26.92	26.79	26.78	26.89	26.86	26.92	26.92	26.94		26.90	26.91		
	MEAN SEA-LEVEL PRESS. (IN.)	30.28	30.10	29.93	29.88	29.99	29.92	29.95	29.96			30.08	30.10		
WINDS	RESULTANT SPEED (MPH)	0.6	0.9	1.9	1.4	1.8	0.8	0.7	1.8	0.7	1.3	1.0	0.4	1.0	
	RES. DIR. (TENS OF DEGS.)	21	15	16	14	16	17	19	18	13	20	18	23	17	
	MEAN SPEED (MPH)	3.4	3.8	6.9	6.3	6.7	5.6	5.6	5.4	5.5	5.1	5.0	2.1	5.1	
	PREVAIL. DIR. (TENS OF DEGS.)	22	16	16	15	15	14	15	15	15	16	16	17	15	
	MAXIMUM 2-MINUTE WIND:														
	SPEED (MPH)	31	38	31	26	29	24	26	30	29	35	39	17	39	
	DIR. (TENS OF DEGS.)	01	02	23	02	27	21	23	13	23	24	22	01	22	
	DATE OF OCCURRENCE	21	22	31	28+	25	30+	20	05	11	23	19	29	NOV 19	
	MAXIMUM 5-SECOND WIND:														
	SPEED (MPH)	43	46	39	32	36	33	33	36	35	43	47	21	47	
DIR. (TENS OF DEGS.)	36	02	24	02	22	03	22	13	23	24	22	36	22		
DATE OF OCCURRENCE	21	22	31	28+	16	05	20	05	11	23	19	29	NOV 19		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	0.86	0.21	1.55	0.90	1.74	1.24	0.09	0.33	1.93	1.28	0.92	1.25	12.30	
	GREATEST 24-HOUR (IN.)	0.23	0.13	0.48	0.26	0.33	0.52	0.07	0.15	0.88	0.56	0.42	0.46	0.88	
	DATE OF OCCURRENCE	22-23	03	16	12-13	25-26	09-10	26	03-04	08-09	28-29	28-29	13-14	SEP 08-09	
	NUMBER OF DAYS WITH:														
PRECIPITATION ≥ 0.01	16	4	18	11	14	10	3	6	7	8	13	14	124		
PRECIPITATION ≥ 0.10	2	1	5	4	8	5	0	1	5	5	3	4	43		
PRECIPITATION ≥ 1.00	0	0	0	0	0	0	0	0	0	0	0	0	0		
SNOWFALL	SNOW, ICE PELLETS, HAIL:														
	TOTAL (IN.)														
	GREATEST 24-HOUR (IN.)														
	DATE OF OCCURRENCE														
	MAXIMUM SNOW DEPTH (IN.)														
	DATE OF OCCURRENCE														
NUMBER OF DAYS WITH:															
SNOWFALL ≥ 1.0															

NORMALS, MEANS, AND EXTREMES

KALISPELL, MT (FCA)

LATITUDE: 48° 18' 15" N LONGITUDE: 114° 15' 49" W ELEVATION (FT): GRND: 2978 BARO: 2981 TIME ZONE: MOUNTAIN (UTC + 7) WBAN: 24146

ELEMENT		POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	28.9	35.2	44.9	56.0	64.7	71.9	80.2	80.5	69.0	55.3	38.6	30.1	54.6
	MEAN DAILY MAXIMUM	53	29.1	35.2	43.2	55.1	64.7	71.6	81.1	80.4	68.9	55.1	38.9	30.6	54.5
	HIGHEST DAILY MAXIMUM	54	53	64	72	84	94	96	104	105	99	86	69	57	105
	YEAR OF OCCURRENCE		1953	1995	1986	1977	1986	1955	1960	1961	1967	1992	1999	1979	AUG 1961
	MEAN OF EXTREME MAXS.	56	44.5	48.3	58.9	72.2	81.6	87.6	93.6	93.5	85.6	72.4	54.4	45.7	69.9
	NORMAL DAILY MINIMUM	30	13.8	18.4	24.8	30.8	37.9	43.5	46.7	45.8	37.1	28.4	23.2	16.1	30.5
	MEAN DAILY MINIMUM	53	13.8	17.8	23.4	31.1	38.6	44.7	48.0	46.9	38.9	30.0	23.7	17.0	31.2
	LOWEST DAILY MINIMUM	54	-38	-36	-29	10	19	26	30	30	16	-3	-28	-35	-38
	YEAR OF OCCURRENCE		1950	1950	1960	1951	1954	1999	1999	2000	1970	1984	1959	1990	JAN 1950
	MEAN OF EXTREME MINS.	56	-12.5	-5.5	4.0	19.7	26.4	33.2	37.3	35.9	26.7	17.1	3.9	-6.8	14.9
	NORMAL DRY BULB	30	21.4	26.8	34.9	43.4	51.3	57.7	63.5	63.2	53.1	41.9	30.9	23.1	42.6
	MEAN DRY BULB	56	21.2	26.4	32.6	43.0	51.6	58.3	64.7	63.7	54.0	42.1	31.2	23.5	42.7
	MEAN WET BULB	52	20.6	24.3	29.5	36.9	44.5	50.9	54.9	53.8	46.3	37.2	29.4	22.2	37.5
	MEAN DEW POINT	52	16.0	19.7	23.6	28.9	36.9	44.6	47.5	46.0	39.8	32.0	25.4	18.5	31.6
NORMAL NO. DAYS WITH:															
MAXIMUM ≥ 90°	30	0.0	0.0	0.0	0.0	0.2	0.8	5.1	5.8	0.4	0.0	0.0	0.0	12.3	
MAXIMUM ≤ 32°	30	16.7	8.4	2.4	0.1	0.0	0.0	0.0	0.0	0.0	0.5	6.4	17.3	51.8	
MINIMUM ≤ 32°	30	29.0	25.9	27.2	17.7	5.5	0.7	0.2	0.3	5.6	21.4	25.5	28.9	187.9	
MINIMUM ≤ 0°	30	6.1	2.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	*	0.9	4.0	14.2	
H/C	NORMAL HEATING DEG. DAYS	30	1359	1079	933	640	412	220	88	102	344	705	1014	1297	8193
	NORMAL COOLING DEG. DAYS	30	0	0	0	0	3	17	57	62	3	0	0	0	142
RH	NORMAL (PERCENT)	30	80	77	71	62	63	65	61	59	66	73	80	82	70
	HOUR 05 LST	30	82	82	81	79	81	85	84	82	84	86	84	84	83
	HOUR 11 LST	30	79	74	64	52	52	53	47	46	54	64	77	80	62
	HOUR 17 LST	30	75	66	54	43	44	46	38	35	42	52	72	78	54
	HOUR 23 LST	30	81	80	78	70	72	74	71	69	77	81	82	83	76
S	PERCENT POSSIBLE SUNSHINE														
W/O	MEAN NO. DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	43	5.2	4.6	2.6	0.9	1.1	1.0	1.1	1.1	2.0	4.4	4.8	5.2	34.0
	THUNDERSTORMS	53	0.0	0.0	0.3	1.0	2.9	5.6	5.5	5.2	2.2	0.4	0.1	0.0	23.2
CLOUDINESS	MEAN:														
	SUNRISE-SUNSET (OKTAS)	1			8.8		10.4	5.6							
	MIDNIGHT-MIDNIGHT (OKTAS)	1					10.4	5.6							
	MEAN NO. DAYS WITH:														
CLEAR	1		1.0	3.0		1.0	6.0		4.0	9.0					
PARTLY CLOUDY	1		3.0	1.0		2.0	6.0	1.0	1.0	2.0	1.0				
CLOUDY	1	1.0	7.0	10.0		21.0	9.0	1.0	3.0	6.0	14.0				
PR	MEAN STATION PRESSURE (IN)	31	26.96	26.93	26.86	26.88	26.87	26.89	26.93	26.93	26.96	26.97	26.93	26.96	26.92
	MEAN SEA-LEVEL PRES. (IN)	52	30.12	30.11	30.01	29.99	29.96	29.95	29.98	29.97	30.04	30.10	30.10	30.12	30.04
WINDS	MEAN SPEED (MPH)	28	6.3	6.0	7.0	7.7	7.5	6.7	6.3	6.1	6.1	5.2	5.1	4.8	6.2
	PREVAIL. DIR (TENS OF DEGS)	12	16	16	16	16	16	16	16	18	18	18	16	18	16
	MAXIMUM 2-MINUTE:														
	SPEED (MPH)	9	34	38	36	43	37	38	37	33	34	36	39	32	43
	DIR. (TENS OF DEGS)		04	02	01	23	26	26	23	04	15	25	22	03	23
	YEAR OF OCCURRENCE		1997	2003	2002	2000	1997	2001	2002	2002	1997	1999	2003	1995	APR 2000
	MAXIMUM 5-SECOND:														
SPEED (MPH)	9	43	46	44	53	52	48	45	44	45	46	47	57	57	
DIR. (TENS OF DEGS)		36	02	36	21	25	25	20	24	15	25	22	23	23	
YEAR OF OCCURRENCE		2003	2003	2002	2000	1997	2001	2002	1996	1997	1999	2003	1995	DEC 1995	
PRECIPITATION	NORMAL (IN)	30	1.47	1.15	1.11	1.22	2.04	2.30	1.41	1.25	1.20	0.96	1.45	1.65	17.21
	MAXIMUM MONTHLY (IN)	54	3.11	2.00	2.96	2.37	4.75	5.30	6.02	3.78	3.97	2.96	4.44	4.38	6.02
	YEAR OF OCCURRENCE		1970	1996	1987	1978	1990	1995	1993	1976	1985	1951	1959	1990	JUL 1993
	MINIMUM MONTHLY (IN)	54	0.20	0.21	0.08	0.26	0.23	0.43	0.02	T	0.01	0.04	0.26	0.32	T
	YEAR OF OCCURRENCE		1985	2003	1994	1968	2001	1977	1953	1955	1990	1953	1969	1954	AUG 1955
	MAXIMUM IN 24 HOURS (IN)	54	1.09	0.97	0.82	1.74	1.57	2.71	2.09	1.76	1.25	0.94	1.72	1.35	2.71
	YEAR OF OCCURRENCE		1982	1997	1987	1951	1998	1982	1987	1976	1959	1994	1989	1964	JUN 1982
NORMAL NO. DAYS WITH:															
PRECIPITATION ≥ 0.01	30	14.3	11.3	11.8	10.2	12.3	12.0	8.1	7.9	7.7	8.3	13.2	15.1	132.2	
PRECIPITATION ≥ 1.00	30	*	0.0	0.0	*	0.1	0.3	0.1	0.1	*	0.0	*	0.0	0.6	
SNOWFALL	NORMAL (IN)	30	14.7	10.0	6.7	2.4	0.2	0.2	0.0	0.*	0.*	1.4	9.9	16.2	61.7
	MAXIMUM MONTHLY (IN)	50	34.8	21.2	21.3	8.1	8.9	5.5	T	T	3.1	11.1	48.6	52.1	52.1
	YEAR OF OCCURRENCE		1970	1975	1996	1961	1964	1995	1992	1992	1968	1984	1996	1990	DEC 1990
	MAXIMUM IN 24 HOURS (IN)	50	11.8	13.3	7.7	10.0	7.5	5.5	T	T	3.0	6.2	20.1	15.4	20.1
	YEAR OF OCCURRENCE		1982	1997	1987	1951	1964	1995	1992	1992	1968	1951	1996	1951	NOV 1996
	MAXIMUM SNOW DEPTH (IN)	48	52	46	50	4	4	0	0	0	T	5	35	61	61
	YEAR OF OCCURRENCE		1997	1997	1997	1964	1951				1965	1984	1996	1996	DEC 1996
NORMAL NO. DAYS WITH:															
SNOWFALL ≥ 1.0	30	4.9	3.2	2.3	0.8	0.1	0.0	0.0	0.0	0.0	0.5	3.0	5.2	20.0	

PRECIPITATION (inches) 2003 KALISPELL, MT (FCA)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1974	1.94	1.02	1.39	1.92	1.06	1.75	0.64	0.70	1.18	0.12	1.04	1.21	13.97
1975	1.95	1.52	1.33	0.83	0.98	1.96	0.98	2.79	0.58	1.67	1.20	1.19	16.98
1976	1.36	1.40	0.35	0.97	1.79	1.69	1.64	3.78	0.36	0.38	0.47	0.65	14.84
1977	0.81	0.97	1.18	0.43	1.40	0.43	2.57	1.13	2.18	0.13	1.46	3.53	16.22
1978	2.30	0.71	0.67	2.37	2.47	0.91	1.50	2.64	0.80	0.07	1.43	0.87	16.74
1979	1.42	1.57	0.86	1.49	1.64	0.84	0.67	1.10	0.39	1.45	0.42	1.27	13.12
1980	2.15	1.92	0.86	1.52	3.90	2.96	0.81	1.60	0.74	0.78	0.49	2.54	20.27
1981	1.44	1.99	1.43	0.94	3.37	3.62	0.72	1.32	0.48	0.20	1.30	1.81	18.62
1982	2.66	1.60	0.92	1.32	0.78	4.05	1.59	0.82	1.92	0.52	1.43	1.88	19.49
1983	1.09	0.93	1.50	2.18	0.78	3.09	2.06	0.73	1.31	0.83	1.61	1.69	17.80
1984	0.78	0.66	1.34	1.53	1.56	1.77	0.51	0.88	1.88	1.85	1.77	1.22	15.75
1985	0.20	1.39	0.71	0.58	1.60	1.56	0.23	1.12	3.97	0.92	1.63	0.72	14.63
1986	2.22	1.87	0.32	0.83	2.45	2.17	1.42	0.68	2.78	0.51	1.84	0.52	17.61
1987	0.66	0.61	2.96	1.19	0.88	1.20	3.98	1.35	0.60	0.05	0.48	1.58	15.54
1988	0.97	0.84	0.80	0.94	2.83	1.49	0.87	0.29	2.10	0.46	1.03	2.32	14.94
1989	1.36	1.32	1.45	1.25	2.68	1.47	1.23	3.49	1.55	0.90	3.26	2.24	22.20
1990	1.79	0.95	1.12	1.48	4.75	1.16	2.37	2.27	0.01	2.07	1.58	4.38	23.93
1991	1.74	0.45	0.81	0.85	2.26	3.58	0.42	0.72	0.67	0.84	2.16	0.65	15.15
1992	1.17	0.79	0.94	1.02	1.18	3.65	2.37	0.71	1.02	0.71	1.59	1.99	17.14
1993	1.67	0.61	0.62	2.20	1.93	3.46	6.02	1.49	1.61	1.01	1.20	1.58	23.40
1994	1.09	1.41	0.08	1.47	1.50	2.01	0.24	0.05	0.45	2.37	1.07	0.97	12.71
1995	1.70	0.80	1.45	1.22	0.98	5.30	1.36	1.26	1.19	2.51	2.78	2.19	22.74
1996	2.59	2.00	1.77	2.34	4.34	1.56	0.70	0.79	1.71	1.48	3.23	3.27	25.78
1997	1.34	1.70	1.87	1.32	2.21	3.44	1.02	1.15	1.50	1.02	0.42	0.57	17.56
1998	1.03	0.28	2.23	1.18	4.25	3.53	2.30	0.34	1.32	0.82	1.72	2.01	21.01
1999	1.20	1.49	0.75	0.52	1.80	1.88	0.95	1.06	0.28	1.61	1.66	1.31	14.51
2000	1.11	1.22	0.99	0.80	1.13	1.55	0.48	0.26	1.39	0.41	0.37	0.79	10.50
2001	0.39	1.05	0.85	2.17	0.23	2.89	1.52	0.06	0.59	1.47	0.75	0.50	12.47
2002	0.65	0.50	0.95	0.66	2.38	1.93	1.37	1.20	1.23	0.08	0.73	1.24	12.92
2003	0.86	0.21	1.55	0.90	1.74	1.24	0.09	0.33	1.93	1.28	0.92	1.25	12.30
POR= 107 YRS	1.40	1.02	1.00	1.03	1.74	2.20	1.15	1.12	1.24	1.07	1.42	1.45	15.84

WBAN : 24146

AVERAGE TEMPERATURE (°F) 2003 KALISPELL, MT (FCA)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1974	20.2	31.7	33.7	44.8	48.3	63.4	65.9	63.2	53.8	42.8	34.3	29.0	44.3
1975	18.2	19.2	28.0	38.9	50.0	56.2	69.9	61.5	54.5	43.6	30.1	27.3	41.5
1976	24.1	29.0	31.6	44.8	53.4	56.3	64.6	62.8	56.8	41.4	31.3	27.2	43.6
1977	19.4	30.9	34.7	46.4	50.4	61.5	63.5	63.6	52.2	42.0	28.8	19.4	42.7
1978	19.7	25.5	34.6	44.0	48.8	59.5	64.5	61.6	54.0	42.7	25.9	14.2	41.3
1979	- .2	23.1	33.7	42.8	51.7	60.3	67.7	67.3	58.5	45.6	29.0	32.2	42.6
1980	12.1	27.4	32.8	48.0	55.4	57.6	63.8	59.4	55.5	43.9	33.2	28.5	43.1
1981	29.7	30.5	38.8	45.0	52.6	53.8	63.0	67.9	55.3	40.2	32.6	21.5	44.2
1982	17.0	21.1	35.7	38.2	48.8	60.4	61.5	63.2	53.3	40.9	28.5	23.3	41.0
1983	29.6	32.9	38.0	42.3	51.5	57.3	61.2	66.3	50.6	42.8	33.9	7.9	42.9
1984	25.7	31.7	37.9	42.9	48.6	56.6	65.4	65.6	50.5	38.5	32.1	16.3	42.7
1985	17.6	15.4	28.0	44.7	54.3	57.1	68.5	59.4	47.9	40.4	16.8	18.2	39.0
1986	24.8	23.8	40.3	43.6	54.2	64.3	60.2	67.9	51.2	43.4	29.4	24.9	44.0
1987	20.9	28.3	36.1	48.6	54.8	62.1	64.1	60.7	56.5	43.1	35.3	23.0	44.5
1988	19.5	30.5	37.9	47.6	51.7	62.5	64.9	64.2	54.3	48.5	35.5	24.0	45.1
1989	26.6	13.8	31.1	44.7	50.7	60.5	67.5	61.9	53.3	42.8	35.7	26.7	42.9
1990	29.5	25.9	36.5	45.1	50.1	57.7	66.8	65.8	59.8	41.1	35.1	15.6	44.1
1991	16.4	33.3	33.0	42.6	50.3	54.7	63.9	66.1	54.8	39.9	29.7	29.4	42.8
1992	28.4	34.3	41.0	45.6	54.2	62.8	62.0	62.7	51.8	45.6	32.8	18.2	45.0
1993	15.4	19.2	35.4	44.2	57.9	56.9	57.4	60.4	52.4	44.2	25.9	27.6	41.4
1994	32.0	20.9	36.9	45.4	52.6	56.3	66.5	66.3	55.6	41.3	28.9	24.8	44.0
1995	23.4	31.6	33.2	41.8	51.9	56.3	62.6	58.5	54.4	40.2	33.2	25.7	42.7
1996	16.5	24.3	29.4	43.4	47.0	58.5	64.6	62.4	51.5	41.3	26.9	18.7	40.4
1997	18.7	26.0	31.3	38.4	52.4	57.4	62.3	64.1	55.6	43.2	31.7	26.7	42.3
1998	24.8	32.5	35.0	45.1	54.6	56.9	68.1	65.3	59.3	41.6	36.3	25.8	45.4
1999	29.3	32.2	37.4	42.1	48.7	55.8	61.3	66.1	51.4	42.4	37.5	29.9	44.5
2000	24.2	27.2	37.2	43.9	50.5	57.1	63.9	63.6	51.8	42.0	26.8	19.3	42.3
2001	23.6	19.7	34.7	41.5	52.9	55.3	62.4	65.0	58.5	41.2	35.2	25.4	43.0
2002	26.4	25.2	25.2	42.3	48.2	58.2	67.6	61.2	54.7	36.9	33.0	29.7	42.4
2003	27.6	28.3	34.9	44.5	51.1	60.3	68.6	67.5	56.5	44.6	26.8	21.5	44.4
POR= 107 YRS	21.4	25.6	33.4	43.7	52.0	58.5	65.1	63.4	53.9	43.4	32.0	24.4	43.1

HEATING DEGREE DAYS (base 65°F) 2003 KALISPELL, MT (FCA)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1974-75	54	91	328	681	914	1109	1445	1277	1140	777	459	258	8533
1975-76	15	133	306	654	1040	1160	1261	1037	1028	598	354	271	7857
1976-77	64	104	244	723	1002	1162	1405	949	935	553	443	114	7698
1977-78	85	97	375	707	1081	1405	1397	1098	934	624	497	169	8469
1978-79	60	139	331	685	1167	1567	2023	1168	964	662	404	152	9322
1979-80	50	17	191	595	1071	1008	1639	1084	990	503	299	218	7665
1980-81	74	178	279	647	948	1121	1087	962	806	593	376	329	7400
1981-82	84	36	287	760	966	1342	1484	1226	901	797	495	154	8532
1982-83	133	88	343	742	1088	1286	1090	893	831	676	417	227	7814
1983-84	130	32	427	680	927	1768	1209	958	835	657	501	254	8378
1984-85	60	50	433	816	982	1503	1463	1387	1140	601	333	240	9008
1985-86	5	180	507	755	1439	1444	1238	1148	761	637	375	65	8554
1986-87	152	13	408	664	1061	1234	1360	1022	890	484	309	124	7721
1987-88	103	143	251	671	885	1296	1402	994	832	516	405	123	7621
1988-89	69	70	337	506	879	1265	1182	1429	1045	605	438	139	7964
1989-90	34	140	345	684	872	1177	1096	1086	877	589	457	239	7596
1990-91	40	61	157	733	891	1528	1503	880	985	665	446	302	8191
1991-92	70	47	300	772	1052	1096	1124	886	739	574	325	115	7100
1992-93	105	150	390	590	958	1447	1533	1275	909	615	234	238	8444
1993-94	235	148	375	634	1170	1154	1016	1230	868	581	378	259	8048
1994-95	48	55	273	731	1079	1237	1280	927	945	686	399	253	7913
1995-96	92	209	317	759	941	1209	1496	1174	1098	643	552	200	8690
1996-97	72	100	398	730	1138	1429	1428	1087	1042	792	387	222	8825
1997-98	93	77	281	671	993	1180	1240	905	924	592	317	236	7509
1998-99	17	61	195	719	855	1209	1099	910	850	678	502	276	7371
1999-00	132	60	400	696	819	1080	1257	1092	855	626	445	235	7697
2000-01	90	103	389	703	1137	1408	1277	1265	934	701	379	290	8676
2001-02	112	60	195	730	886	1220	1192	1108	1225	673	518	218	8137
2002-03	45	120	306	864	952	1088	1153	1023	926	609	428	168	7682
2003-	33	24	261	625	1140	1340							

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COOLING DEGREE DAYS (base 65°F) 2003 KALISPELL, MT (FCA)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1974	0	0	0	0	0	83	89	43	0	0	0	0	215
1975	0	0	0	0	0	0	177	30	0	0	0	0	207
1976	0	0	0	0	0	15	59	44	3	0	0	0	121
1977	0	0	0	2	0	17	48	62	0	0	0	0	129
1978	0	0	0	0	0	9	51	39	6	0	0	0	105
1979	0	0	0	0	0	18	142	96	2	0	0	0	258
1980	0	0	0	0	6	0	44	13	0	0	0	0	63
1981	0	0	0	0	0	0	32	135	2	0	0	0	169
1982	0	0	0	0	0	21	33	39	0	0	0	0	93
1983	0	0	0	0	4	4	17	83	4	0	0	0	112
1984	0	0	0	0	0	9	78	76	5	0	0	0	168
1985	0	0	0	0	6	9	120	12	0	0	0	0	147
1986	0	0	0	0	49	53	10	107	0	0	0	0	219
1987	0	0	0	0	0	43	84	18	2	0	0	0	147
1988	0	0	0	0	0	57	70	52	25	0	0	0	204
1989	0	0	0	0	0	13	118	52	0	0	0	0	183
1990	0	0	0	0	0	24	99	92	9	0	0	0	224
1991	0	0	0	0	0	0	41	86	0	0	0	0	127
1992	0	0	0	0	0	57	16	83	0	0	0	0	156
1993	0	0	0	0	23	3	5	11	0	0	0	0	42
1994	0	0	0	0	0	4	102	105	0	0	0	0	211
1995	0	0	0	0	0	0	25	13	7	0	0	0	45
1996	0	0	0	0	0	8	66	27	0	0	0	0	101
1997	0	0	0	0	0	0	18	57	6	0	0	0	81
1998	0	0	0	0	0	2	121	78	30	0	0	0	231
1999	0	0	0	0	3	9	25	101	0	0	0	0	138
2000	0	0	0	0	0	5	61	66	0	0	0	0	132
2001	0	0	0	0	8	3	37	66	7	0	0	0	121
2002	0	0	0	0	3	20	132	10	0	0	0	0	165
2003	0	0	0	0	7	31	151	110	12	0	0	0	311

SNOWFALL (inches) 2003 KALISPELL, MT (FCA)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1974-75	0.0	0.0	0.0	0.2	2.8	11.9	20.6	21.2	10.7	0.1	2.1	0.0	69.6
1975-76	0.0	0.0	0.0	3.8	12.6	9.2	15.9	10.2	3.3	2.0	0.0	0.0	57.0
1976-77	0.0	0.0	0.0	T	2.3	7.2	8.8	6.3	14.8	2.3	T	0.0	41.7
1977-78	0.0	0.0	0.0	T	13.1	32.5	26.7	8.0	2.6	4.8	T	0.0	87.7
1978-79	0.0	0.0	T	0.1	11.8	14.6	19.4	18.6	7.1	4.3	T	0.0	75.9
1979-80	0.0	0.0	0.0	0.4	2.2	12.0	27.4	11.6	11.3	0.2	T	0.0	65.1
1980-81	0.0	0.0	0.0	0.3	0.7	18.1	9.3	12.6	4.3	4.9	0.0	0.0	50.2
1981-82	0.0	0.0	0.0	T	1.7	16.3	32.7	6.6	1.9	6.8	0.2	0.0	66.2
1982-83	0.0	0.0	T	T	10.4	17.6	5.9	5.2	1.0	4.6	T	0.0	44.7
1983-84	0.0	0.0	0.0	0.0	6.8	21.3	8.6	7.4	2.8	0.4	T	0.0	47.3
1984-85	0.0	0.0	0.0	11.1	9.6	14.0	2.5	19.1	6.7	1.0	T	0.0	64.0
1985-86	0.0	0.0	T	1.0	12.7	11.9	19.8	17.2	0.4	0.5	T	0.0	63.5
1986-87	0.0	0.0	0.0	T	20.3	7.2	9.3	4.0	18.9	0.8	T	0.0	60.5
1987-88	0.0	0.0	0.0	T	5.5	14.0	8.7	8.2	2.7	2.3	T	0.0	41.4
1988-89	0.0	0.0	0.0	T	6.1	20.2	13.5	11.5	5.4	1.1	T	0.0	57.8
1989-90	T	0.0	0.0	0.4	3.2	13.6	12.6	11.5	6.4	7.6	0.4	0.0	55.7
1990-91	0.0	T	0.0	0.4	3.2	52.1	25.9	1.6	4.4	4.2	0.0	0.0	91.8
1991-92	0.0	0.0	0.0	6.3	14.7	4.6	10.6	4.4	T	1.7	T	0.0	42.3
1992-93	T	T	0.2	T	7.3	23.1	17.8	9.7	2.5	0.3	T	0.0	60.9
1993-94	0.0	0.0	0.0	0.0	16.6	14.4	8.6	18.0	T	4.2	T	T	61.8
1994-95	0.0	0.0	0.0	1.4	7.1	8.7	3.6	3.9	9.3	0.0	0.0	5.5	39.5
1995-96	0.0	0.0	0.0	0.0	17.6	14.5	27.3	1.2	21.3	T	2.0	0.0	0.0
1996-97	T	0.0	0.0	1.3	48.6	47.4	11.1	19.7	15.5	2.7	T	0.0	146.3
1997-98	0.0	T	0.0	T	2.5	4.7	8.9	1.6	8.4	0.1	0.0	0.0	26.2
1998-99	0.0	0.0	0.0	T	4.4	14.6	10.8	10.7	7.4	0.8	1.3		
1999-00													
2000-01													
2001-02													
2002-03													
2003-													
POR= 49 YRS	T	T	0.1	1.4	9.3	17.0	17.1	10.2	6.5	0.2	0.7	0.1	62.6

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REFERENCE NOTES :

<p>PAGE 1: THE TEMPERATURE GRAPH SHOWS NORMAL MAXIMUM AND NORMAL MINIMUM DAILY TEMPERATURES (SOLID CURVES) AND THE ACTUAL DAILY HIGH AND LOW TEMPERATURES (VERTICAL BARS).</p> <p>PAGE 2 AND 3: H/C INDICATES HEATING AND COOLING DEGREE DAYS. RH INDICATES RELATIVE HUMIDITY W/O INDICATES WEATHER AND OBSTRUCTIONS S INDICATES SUNSHINE. PR INDICATES PRESSURE. CLOUDINESS ON PAGE 3 IS THE SUM OF THE CEILOMETER AND SATELLITE DATA NOT TO EXCEED EIGHT EIGHTHS(OKTAS).</p> <p>GENERAL: T INDICATES TRACE PRECIPITATION, AN AMOUNT GREATER THAN ZERO BUT LESS THAN THE LOWEST REPORTABLE VALUE. + INDICATES THE VALUE ALSO OCCURS ON EARLIER DATES. BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA. NORMALS ARE 30-YEAR AVERAGES (1971 - 2000). ASOS INDICATES AUTOMATED SURFACE OBSERVING SYSTEM. PM INDICATES THE LAST DAY OF THE PREVIOUS MONTH. POR (PERIOD OF RECORD) BEGINS WITH THE JANUARY DATA MONTH AND IS THE NUMBER OF YEARS USED TO COMPUTE THE MEAN. INDIVIDUAL MONTHS WITHIN THE POR MAY BE MISSING. WHEN THE POR FOR A NORMAL IS LESS THAN 30 YEARS, THE NORMAL IS PROVISIONAL AND IS BASED ON THE NUMBER OF YEARS INDICATED. 0.* OR * INDICATES THE VALUE OR MEAN-DAYS-WITH IS BETWEEN 0.00 AND 0.05. CLOUDINESS FOR ASOS STATIONS DIFFERS FROM THE NON-ASOS OBSERVATION TAKEN BY A HUMAN OBSERVER. ASOS STATION CLOUDINESS IS BASED ON TIME-AVERAGED CEILOMETER DATA FOR CLOUDS AT OR BELOW 12,000 FEET AND ON SATELLITE DATA FOR CLOUDS ABOVE 12,000 FEET. THE NUMBER OF DAYS WITH CLEAR, PARTLY CLOUDY, AND CLOUDY CONDITIONS FOR ASOS STATIONS IS THE SUM OF THE CEILOMETER AND SATELLITE DATA FOR THE SUNRISE TO SUNSET PERIOD.</p>	<p>GENERAL CONTINUED: CLEAR INDICATES 0 - 2 OKTAS, PARTLY CLOUDY INDICATES 3 - 6 OKTAS, AND CLOUDY INDICATES 7 OR 8 OKTAS. WHEN AT LEAST ONE OF THE ELEMENTS (CEILOMETER OR SATELLITE) IS MISSING, THE DAILY CLOUDINESS IS NOT COMPUTED. WIND DIRECTION IS RECORDED IN TENS OF DEGREES (2 DIGITS) CLOCKWISE FROM TRUE NORTH. "00" INDICATES CALM. "36" INDICATES TRUE NORTH. RESULTANT WIND IS THE VECTOR AVERAGE OF THE SPEED AND DIRECTION. AVERAGE TEMPERATURE IS THE SUM OF THE MEAN DAILY MAXIMUM AND MINIMUM TEMPERATURE DIVIDED BY 2. SNOWFALL DATA COMPRISE ALL FORMS OF FROZEN PRECIPITATION, INCLUDING HAIL. A HEATING (COOLING) DEGREE DAY IS THE DIFFERENCE BETWEEN THE AVERAGE DAILY TEMPERATURE AND 65° F. DRY BULB IS THE TEMPERATURE OF THE AMBIENT AIR. DEW POINT IS THE TEMPERATURE TO WHICH THE AIR MUST BE COOLED TO ACHIEVE 100 PERCENT RELATIVE HUMIDITY. WET BULB IS THE TEMPERATURE THE AIR WOULD HAVE IF THE MOISTURE CONTENT WAS INCREASED TO 100 PERCENT RELATIVE HUMIDITY.</p> <p>ON JULY 1, 1996, THE NATIONAL WEATHER SERVICE BEGAN USING THE "METAR" OBSERVATION CODE THAT WAS ALREADY EMPLOYED BY MOST OTHER NATIONS OF THE WORLD. THE MOST NOTICEABLE DIFFERENCE IN THIS ANNUAL PUBLICATION WILL BE THE CHANGE IN UNITS FROM TENTHS TO EIGHTS(OKTAS) FOR REPORTING THE AMOUNT OF SKY COVER.</p>
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2003
KALISPELL,
MONTANA (FCA)

The climate of the Flathead Valley is influenced by the topography. The high mountains to the east form an effective barrier to many severe winter cold waves that move into areas east of the Rockies from Alberta. The mountains to the east rise abruptly 4,500 feet above the valley floor. The mountain snows and spring rains assure an adequate supply of water for the area.

In addition to Flathead Lake, the valley contains many smaller lakes, three rivers, and numerous streams and sloughs. Until late in the winter when a large portion of the lakes and sloughs become frozen, this water surface tends to limit temperature extremes. This effect is most noticeable in the southern end of the valley, because of the influence of Flathead Lake. Due to its size, Flathead Lake seldom freezes over.

The weather at the airport is considerably different in some respects from the weather in Kalispell. Generally there is more cloudiness at the airport since it is closer to the mountains to the east and north. Moist air moving in from the west and southwest, lifting and cooling as it moves over the mountains, is the major cause. On average there is more precipitation on the east side of the valley than on the west side. Average snowfall during the winter at the airport is 68 inches and in Kalispell it is 49 inches.

The annual prevailing wind direction at Kalispell is from the west. At the airport it is from the south. Wind speeds average considerably stronger at the airport than in Kalispell.

In the winter, when a cold wave moving down the east side of the Continental Divide does come over the mountains, the airport is in direct line of the pass the cold air comes through. During these cold waves the wind is from the northeast and will usually have speeds reaching 30 to 40 mph. The strongest gusts reported during these storms exceed 80 mph. As the cold air moves down the valley it spreads out, decreasing the wind velocity, and mixes with the warmer air of the valley. Unless these cold strong winds persist for 3 or 4 days, the wind in the lower part of the valley will be from the northwest, because of the influence of Flathead Lake and the mountains to the west. This wind is always much stronger in the northeast end of the valley where the airport is located than any other place in the valley. In the northwest corner where Whitefish is located, and in the southeast part of the valley, there is rarely much wind from this storm.

STATION LOCATION

KALISPELL, MONTANA

LOCATION	Occupied From	Occupied To	Airline Distances and Directions from previous Location	LATITUDE NORTH	LONGITUDE WEST	ELEVATION ABOVE										AUTOMATED OBSERVING EQUIPMENT *	* TYPE M = AMOS T = AUTOB S = ASOS W = AWOS REMARKS
						GROUND											
						SEA LEVEL GROUND	WIND INSTRUMENT	EXTREME THERMOMETERS	PSYCHROMETER	SUNSHINE SWITCH	TIPPING BUCKET	RAIN GAUGE	WINDHOLE	8 INCH RAIN GAUGE	HYGROMETER		
*NOTE: <u>AIRPORT</u> Administration Building Flathead County AP ++ ++ Name changed to Glacier Park International Airport, 1969.	5/12/49	02/01/94	8.5 mi. NNE	48°18'	114°16'	2965	d20	b6 h6	c5 h5			a4 g4 i4	a4 j4	e4 k4	M	a. 3 ft. to 10/1/58. b. 26 ft. to 9/1/59. c. 26 ft. to 9/1/59. d. 44 ft. to 7/1/59. e. Commissioned 1650 ft. NW of thermometer site 9/1/59; decommissioned 8/27/61; commissioned again on same site 10/1/64. M. Commissioned 1/24/61; decommissioned 7/1/64. g. Moved 50 ft. West 6/78. h. Moved 80 ft. SSW 3/17/83. i. Moved 100 ft. SSW 3/17/83. j. Moved 86 ft. SSW 3/17/83. k. Type change 9/26/85.	
Glacier Park Int'l AP	02/01/94	Present	NA	48°18'	114°16'	12978									S	ASOS commissioned 02/01/94. l. Ground Elevation	

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* NOTES: For earlier station history see previous edition.