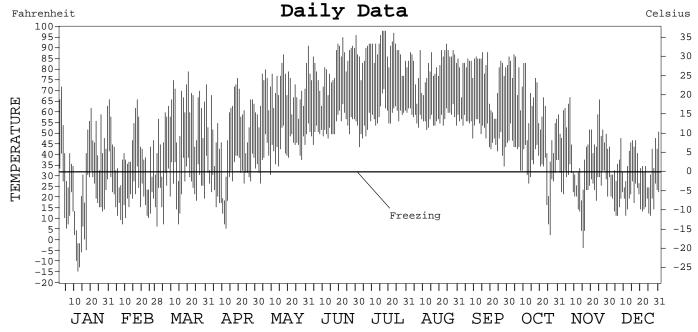
1997

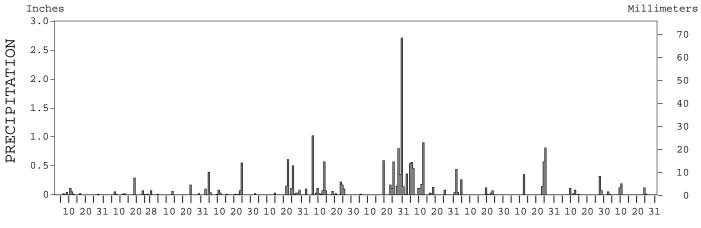
LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA

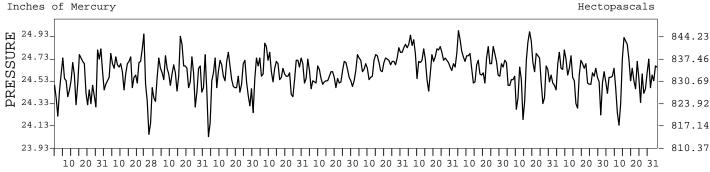


DENVER, COLORADO (DEN)

ISSN 0198-7690







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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NATIONAL ENVIRONMENTAL SATELLITE, DATA, CLIMATIC DATA CENTER AND INFORMATION SERVICE

NATIONAL ASHEVILLE, NORTH CAROLINA

ACTING DIRECTOR NATIONAL CLIMATIC DATA CENTER

METEOROLOGICAL DATA FOR 1997

DENVER, CO (DEN)

LATITUDE: LONGITUDE: ELEVATION (FT): TIME ZONE: WBAN: 03017 39° 52′ 00″ N 104° 40′ 00″ W GRND: 5414 BARO: 5382 MOUNTAIN (UTC+ 7) ELEMENT JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC YEAR MEAN DAILY MAXIMUM 39.9 40.9 58.5 53.3 70.8 82.1 88.4 81.9 78.1 63.6 45.8 36.7 61.7 76 HIGHEST DAILY MAXIMUM 72 66 79 87 96 98 92 88 87 67 51 98 07 02 17 17 24 JUL 18+ DATE OF OCCURRENCE 2.0 19 3.0 18+ 18+ 04 31 25.7 7 27.7 57.7 MEAN DAILY MINIMUM 15.8 19.0 42.4 53.5 57.4 50.4 35.7 23.8 19.1 35.7 6 2.7 45 44 LOWEST DAILY MINIMUM -148 52 35 3 -3 12 -14 01 DATE OF OCCURRENCE 12 08 12 03 04 02 12 28 26 15 26+ **JAN 12** AVERAGE DRY BULB 42.1 32.7 49.7 27.9 30.0 40.5 56.6 67.8 73.1 69.7 64.3 34.8 27.9 48.7 MEAN WET BULB 22.4 25.5 34.4 47.5 56.6 58.0 59.3 53.5 40.1 29.0 24.8 40.3 MEAN DEW POINT 13.1 18.1 18.2 26.4 39.1 49.1 47.1 53.2 45.7 28.6 21.2 18.2 31.5 NUMBER OF DAYS WITH: MAXIMUM ≥ 90° Λ Λ Ω n Λ Q 15 Λ Λ Λ 2.4 MAXIMUM ≤ 32° 9 6 2 3 0 0 0 0 0 1 6 11 38 MINIMUM ≤ 32 27 27 23 21 3 0 Λ 0 0 9 26 31 167 MINIMUM ≤ 0 5 Ω Ω 0 0 0 0 0 0 n 0 1 6 975 264 35 HEATING DEGREE DAYS 1142 704 728 2 11 92 475 895 1142 6465 COOLING DEGREE DAYS 0 0 0 126 260 160 77 8 0 0 11 0 642 MEAN (PERCENT) 60 67 45 63 57 58 47 62 58 49 63 68 58 HOUR 05 LST 67 76 58 79 78 79 64 80 73 59 69 69 71 HOUR 11 LST 42 37 51 41 47 42 41 62 46 RH 52 57 33 51 HOUR 17 LST 57 58 28 46 44 45 38 53 46 39 64 67 49 69 HOUR 23 LST 75 67 71 71 70 72 67 66 49 76 58 56 PERCENT POSSIBLE SUNSHINE NUMBER OF DAYS WITH: 0 HEAVY FOG(VISBY ≤ 1/4 MI) 2 2 21 7 THUNDERSTORMS 0 0 1 18 15 12 0 56 SUNRISE-SUNSET: (OKTAS) CEILOMETER (\leq 12,000 FT.) SATELLITE (> 12,000 FT.) CLOUDINES MIDNIGHT-MIDNIGHT: (OKTAS) CEILOMETER (≤ 12,000 FT.) SATELLITE (> 12,000 FT.) NUMBER OF DAYS WITH: CLEAR PARTLY CLOUDY CLOUDY 24.72 24.69 29.97 29.96 MEAN STATION PRESS. (IN.) 24.52 24.58 24.58 24.52 24.61 24.56 24.68 24.56 24.57 24.55 24.59 MEAN SEA-LEVEL PRESS. (IN.) 30.01 30.07 29.97 29.92 29.92 29.78 29.90 29.90 30.05 RESULTANT SPEED (MPH) 0.8 2.4 0.8 2.7 2.1 3.1 2.5 4.0 1.8 1.6 1.4 1.4 3.1 RES. DIR. (TENS OF DEGS.)
MEAN SPEED (MPH) 20 01 09 21 20 21 36 21 16 18 22 25 21 10.7 9.8 10.1 8.8 9.3 9.9 11.9 9.4 10.0 11.3 11.2 10.1 8.7 PREVAIL.DIR.(TENS OF DEGS.) 22 21 21 16 21 16 17 21 2.2 20 2.2 2.1 21 MAXIMUM 2-MINUTE WIND: SPEED (MPH) 36 40 47 52 32 52 33 43 36 47 38 36 33 DIR. (TENS OF DEGS.) 29 32 22 29 32 30 23 02 30 32 36 03 18 DATE OF OCCURRENCE 23 31 03 2.7 05 18 0.8 16 06 11 04 2.7 MAR 27 MAXIMUM 5-SECOND WIND: 47 44 53 53 56 SPEED (MPH) 36 39 56 43 54 45 39 39 DIR. (TENS OF DEGS.) 29 29 32 34 03 22 18 32 01 19 01 30 32 DATE OF OCCURRENCE 31 +0.3 27 04 18+ 23 0.8 16 07 +11 0.427 MAR 27 WATER EQUIVALENT: 0.54 1.57 2.57 0.97 19.57 0.26 5.60 1.87 TOTAL (IN.) 0.26 1.30 3.52 0.61 0.50 GREATEST 24-HOUR (IN.) 0.11 0.29 0.17 0.61 0.70 1.02 3.06 0.90 0.48 1.12 0.39 0.19 3.06 DATE OF OCCURRENCE 10-11 18 24 23-24 21-22 06 29-30 12 01-02 24-25 27-28 10 JUL 29-30 NUMBER OF DAYS WITH: 7 PRECIPITATION ≥ 0.01 9 4 11 10 14 10 13 101 PRECIPITATION ≥ 0.10 1 3 4 9 9 3 47 PRECIPITATION ≥ 1.00 n n 0 n 0 1 1 0 n Ω n Ω 2 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

DENVER, CO (DEN)

	DENVER, CO (DEN) LATITUDE: LONGITUDE: ELEVATION (ET): TIME ZONE: WRAN: 03017														
39	LATITUDE: LONGITUDE: ELEVATION (FT): TIME ZONE: WBAN: 03017 39° 52′ 00″ N 104° 40′ 00″ W GRND: 5414 BARO: 5382 MOUNTAIN (UTC+ 7)													3017	
TEMPERATURE °F	ELEMENT NORMAL DAILY MAXIMUM MEAN DAILY MAXIMUM HIGHEST DAILY MAXIMUM YEAR OF OCCURRENCE MEAN OF EXTREME MAXS. NORMAL DAILY MINIMUM MEAN DAILY MINIMUM LOWEST DAILY MINIMUM YEAR OF OCCURRENCE MEAN OF EXTREME MINS. NORMAL DRY BULB MEAN DRY BULB MEAN DRY BULB MEAN DRY BULB MEAN DEW POINT NORMAL NO. DAYS WITH: MAXIMUM > 90° MAXIMUM > 32° MINIMUM > 32° MINIMUM > 0°	30 2 2 30 2 2	40.8 72 1997 70.5 13.8 14.1 -14 1997 -13.2 28.2 27.5 21.8 11.9	45.2 69 1996 67.5 18.3 18.7 -16 1996 -4.0 32.3 32.0 25.9 15.0	54.0 79 1997 76.3 23.7 24.2 -2 1996 2.7 38.0 39.2	14.3 46.8 43.8 23.4	67.7 93 1996 87.7 41.2 42.1 27 1997 30.7 55.9 54.9 30.6	93.0 50.1 51.8 39 1996	47.3 72.1 72.5 58.1	86.7 99 1995 96.3 54.2 57.7 42 1995 47.7 69.8 72.2 58.7	75.8 97 1995 93.0 45.1 48.7 25 1996 29.0 61.0 62.2 51.0	87 1997 84.7 34.2 35.4 3 1997 14.7 50.2 49.7 39.4	51.1 74 1995 71.3 23.4 24.8 -3 1997 3.7 37.6 38.0 31.3	43.3 69 1995 62.0 15.3 19.3 -9 1996 1.3 29.6 31.3 25.8 15.7	YEAR 63.9 62.7 99 AUG 1995 81.6 33.9 35.4 -16 FEB 1996 18.0 48.9 49.1 35.3 30.3
H/C	NORMAL HEATING DEG. DAYS NORMAL COOLING DEG. DAYS	30 30		916 0	837 0	546 0		84 102	0 224	11 160		459 0	822 0	1097 0	6363 534
RH	NORMAL (PERCENT) HOUR 05 LST HOUR 11 LST HOUR 17 LST HOUR 23 LST														
Ø	PERCENT POSSIBLE SUNSHINE														
M/0	MEAN NO. DAYS WITH: HEAVY FOG(VISBY≤1/4 MI) THUNDERSTORMS	2 2	1.0	2.0	2.2	2.5 1.2		0.5 16.0	1.5 16.0	2.0 11.7		2.7		0.6	20.1 58.7
CLOUDINESS	MEAN: SUNRISE-SUNSET (OKTAS) MIDNIGHT-MIDNIGHT (OKTAS) MEAN NO. DAYS WITH: CLEAR PARTLY CLOUDY CLOUDY	1 1 1 1 1	3.0	5.0 10.0 2.0 6.0	5.3 9.0 6.0	7.2 7.2 6.0 4.0 13.0	6.4 10.0 5.5	2.5 3.0 12.0 9.0 5.0	2.0 2.0 1.0	2.5 2.0 7.0 9.0 3.0	6.0 6.0 5.0	9.0		2.5 13.0 1.0 2.0	
PR	MEAN STATION PRESSURE(IN) MEAN SEA-LEVEL PRES. (IN)	2 2	24.49 29.98	24.56	24.58	24.53	24.58	24.61	24.69	24.69	24.65	24.57	24.58 30.00	24.52	24.59 29.94
	MEAN SPEED (MPH) PREVAIL.DIR(TENS OF DEGS)	2				11.2 16		10.1 16	9.7 22	9.5 21		10.8	9.3		9.9 21
WINDS	MAXIMUM 2-MINUTE: SPEED (MPH) DIR. (TENS OF DEGS) YEAR OF OCCURRENCE MAXIMUM 5-SECOND:	2	41 28 1996	24	28	43 26 1995		32	47 18 1997	38 32 1997	30	44 34 1995	26	30	28
	SPEED (MPH) DIR. (TENS OF DEGS) YEAR OF OCCURRENCE	2	48 29 1996		56 32 1997	51 25 1995		48 11 1995	54 18 1997	45 32 1997		53 19 1997		30	56 32 MAR 1997
PRECIPITATION	NORMAL (IN) MAXIMUM MONTHLY (IN) YEAR OF OCCURRENCE MINIMUM MONTHLY (IN) YEAR OF OCCURRENCE MAXIMUM IN 24 HOURS (IN) YEAR OF OCCURRENCE NORMAL NO. DAYS WITH: PRECIPITATION ≥ 0.01 PRECIPITATION ≥ 1.00	30 2 2 2	0.50 0.29 1996 0.26 1997 0.13 1996	0.54 1997 0.09 1996 0.29	0.77 1996 0.26 1997 0.63	1.68 2.44 1995 0.33 1996 0.61 1997	4.67 1995 1.57 1997 1.16	3.07 1995 1.77 1996	1997 1.01 1996 3.06	3.52 1997 0.56 1996 0.90	2.34 1996 0.97 1997 1.22	1.87 1997 0.39 1996 1.12	0.61 1997 0.31 1995 0.39	0.50 1997 0.06 1995 0.19	16.11 5.60 JUL 1997 0.06 DEC 1995 3.06 JUL 1997
SNOWFALL	NORMAL (IN) MAXIMUM MONTHLY (IN) YEAR OF OCCURRENCE MAXIMUM IN 24 HOURS (IN) YEAR OF OCCURRENCE MAXIMUM SNOW DEPTH (IN) YEAR OF OCCURRENCE NORMAL NO. DAYS WITH: SNOWFALL \geq 1.0														

PRECIPITATION (inches) 1997 DENVER, CO (DEN)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1995 1996 1997	0.29 0.26	0.09 0.54	0.28 0.77 0.26	2.44 0.33 1.30	4.67 2.40 1.57	3.07 1.77 2.57	2.31 1.01 5.60	1.04 0.56 3.52	2.28 2.34 0.97	0.72 0.39 1.87	0.31 0.38 0.61	0.06 0.06 0.50	10.39 19.57
POR= 2 YRS	0.27	0.31	0.39	1.35	2.56	2.49	3.63	2.16	1.64	1.49	0.48	0.28	17.05

WBAN: 03017 AVERAGE TEMPERATURE (°F) 1997 DENVER, CO (DEN)

717 11010		шиног	(r)	100,		DEIVE	.,	DHIV)			r	1	
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1995 1996	27.0	33.9	39.3 36.0	42.9 48.0	50.0 58.1	62.2 68.2	70.9 73.4	75.3 71.6	61.7 60.8	48.5 50.9	41.8 37.2	33.0 33.0	49.8
1997	27.9	30.0	42.1	40.5	56.6	67.8	73.1	69.7	64.3	49.7	34.8	27.9	48.7
POR= 2 YRS	27.5	32.0	39.9	43.0	55.4	66.5	72.6	71.6	62.8	49.7	37.2	30.5	49.1

HEATING DEGREE DAYS (base 65°F) 1997 DENVER, CO (DEN)

IIDAITI	10 01	<u> D</u> 11.	ib (Dar	JC 03 I	1 1 1 1		BIC, CO	(D L 1)					
YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1994-95									788	655	457	132	
1995-96 1996-97	26	2 4	188 192	505 444	686 824	981 985	1166 1142	894 975	893 704	230 728	29 264	0	5600 6297
1997-	2	11	92	475	895	1142							

COOLIN	NG DEGI	REE DA	YS (bas	se 65°E	7) 1997	DENV	ZER, CC	(DEN)					
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1995 1996	0	0	0	0 3 0	0 26	55 133	212 269	327 215	98 71	0 13	0	0	730
1997	0	0	0	0	11	126	260	160	77	8	0	0	642

WBAN : 03017

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
POR=													

WBAN : 03017

REFERENCE NOTES:

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).

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).

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 (1961 - 1990). 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.

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 $65\,^{\circ}$ 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

WET BULB IS THE TEMPERATURE THE AIR WOULD HAVE IF THE MOISTURE CONTENT WAS INCREASED TO 100 PERCENT RELATIVE HUMIDITY.

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.

1997 DENVER, COLORADO (DEN)

Denver enjoys the invigorating climate that prevails over much of the central Rocky Mountain region, without the extremely cold mornings of the high elevations during winter, or the hot afternoons of summer at lower altitudes. Extremely warm or cold weather in Denver is usually of short duration.

Situated a long distance from any moisture source, and separated from the Pacific Ocean by several high mountain barriers, Denver enjoys low relative humidity, light precipitation, and abundant sunshine.

Air masses from four different sources influence Denver weather. These include arctic air from Canada and Alaska, warm, moist air from the Gulf of Mexico, warm, dry air from Mexico and the southwestern deserts, and Pacific air modified by its passage over mountains to the west.

In winter, the high altitude and mountains to the west combine to moderate temperatures in Denver. Invasions of cold air from the north, intensified by the high altitude, can be abrupt and severe. However, many of the cold air masses that spread southward out of Canada never reach the altitude of Denver, but move off over the lower plains to the east. Surges of air from the west are moderated in their descent down the east face of the Rockies, and reach Denver in the form of chinook winds that often raise temperatures into the 60s, even in midwinter.

In spring, polar air often collides with warm, moist air from the Gulf of Mexico and these collisions result in frequent, rapid and drastic weather changes. Spring is the cloudiest, windiest, and wettest season in the city. Much of the precipitation falls as snow, especially in March and early April. Stormy periods are interspersed with stretches of mild, sunny weather that quickly melt previous snow cover.

Summer precipitation falls mainly from scattered thunderstorms during the afternoon and evening. Mornings are usually clear and sunny, with clouds forming during early afternoon to cut off the sunshine at what would otherwise be the hottest part of the day. Severe thunderstorms, with large hail and heavy rain occasionally occur in the city, but these conditions are more common on the plains to the east.

Autumn is the most pleasant season. Few thunderstorms occur and invasions of cold air are infrequent. As a result, there is more sunshine and less severe weather than at any other time of the year.

Based on the 1951-1980 period, the average first occurrence of 32 degrees Fahrenheit in the fall is October 8 and the average last occurrence in the spring is May 3.

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				추	Ŏ	SEA		ELE		GROUI					A U T O	<u>-776-0</u>
LOCATION	OCCUPIED FROM	OCCUPIED TO	AIRLINE DISTANCES AND DIRECTIONS FROM PREVIOUS LOCATION	LA TI TU DD E	LO NG I T Ü D E WEST	SEP GROUND HEMMERATURE	WHND INSTRUMENTS	EXTREME THERMOMETERS	PSYCHROMETER	SUNSHINE	RAIN GAGE TIPPING BUCKET	WEIGHING RAIN GAGE	8 INCH RAHN GAGE	HYGROTHERMOMETER	MATHC OBSERVING	
CITY - Denver, CO	03/01/95	Present		39°52'	104°40'	5414		NA NA	NA .	NA		NA .	NA.		S S	a - Hourly and summary of the day observations began at the new Denver International Airport 03/01/95 ASOS Commissioned 03/01/95
SUBSCRIPTION: Price and ordering info	rmation a	 vailable	I through: Nat	I Lional C INQUIRIE	 limatic S/COMMEN	I Data Ce TS CAL	nter L:	r, Fed (704)	ı dera 271	1 1 Bu: - 480	ı ildir 0	ı ng, i	ı Ashevi	llle	, No:	rth Carolina 28801.

National Climatic Data Center 151 Patton Avenue, Rm 120 Asheville NC 28801-5001

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