

United States Climate Normals, 1971-2000 National Weather Service Snow Normals

National Climatic Data Center/NESDIS/NOAA October 1, 2002

Description:

A climate normal is defined, by convention, as the arithmetic mean of a climatological element computed over three consecutive decades (WMO, 1989). Based upon this definition, snow normals have been computed for the 1971-2000 period for over 500 National Weather Service first-order stations (please see attached inventory). Snow normals were computed for mean snowfall (503 stations), mean snow depth (267 stations), number of days with snowfall >=0.1" (525 stations), and number of days with snowfall >=1.0" (525 stations). The snow normals data includes four monthly ASCII files and two daily ASCII files (derived from the monthly products):

Monthly Products:

Description	Filename*	Code
Mean snowfall	NWS_SNOW_MNFALL_mth.dat	874
Mean snow depth	NWS_SNOW_MNDPTH_mth.dat	884
Number of days with snowfall ≥ 0.1 "	NWS_SNOW_NDYF01_mth.dat	894
Number of days with snowfall >= 1.0"	NWS_SNOW_NDYF10_mth.dat	895

^{*}Format: (I6,I3,12(I6,1x),I7) COOP ID, Code, JAN value, ..., ANNUAL value

Daily Products:

Description	Filename*	Code
Mean snowfall	NWS_SNOW_MNFALL_dly.dat	7
Mean snow depth	NWS_SNOW_MNDPTH_dly.dat	8

^{*}Format: (I6,I1,365(I3)) COOP ID, Code, JAN 1 value, ..., DEC 31 value (No value for FEB 29)

In addition to the data files above, a number of formatted files, in an easy-to-read layout with station information, have been prepared:

Formatted Products:

Description	Filename*				
Mean snowfall (monthly/daily)	NWS_SNOW_MNFALL_fmt.dat				
Mean snow depth (monthly/daily)	NWS_SNOW_MNDPTH_fmt.dat				
Number of days with snowfall >=0.1";1.0"	NWS SNOW NDYFXX fmt.dat				

^{*}Header information includes Cooperative Network ID, station name, state abbreviation, NCDC climate division, NWS call sign, latitude/longitude (degrees/minutes/seconds), elevation (feet), and other normals elements (X=maximum temperature, N=minimum temperature, P=precipitation). Trace values are indicated with a 'T'.

Computational Methodology:

The snow normals were computed from sequential values for the 1971-2000 period. These values were obtained from the National Climatic Data Center's U.S. Snow Climatology database. For snowfall, the stringent standard for assigning missing monthly values in the Snow Climatology was relaxed in order to maximize completeness of the sequential values.

Thirty-year normals for each month were computed based on the average of non-missing months (with a minimum of ten non-missing years required). The annual value is the sum of the twelve monthly normals. For snow depth and number of days elements, the monthly normals were computed to hundredths of an inch, and then rounded as appropriate for the element: to whole inches for snow depth (with non-zero values of less than 0.50" assigned a Trace); and to tenths of a day for number of days elements. Monthly snowfall was computed to a tenth of an inch, with non-zero of less than 0.05" assigned a trace). All trace values are indicated with a '-88' in the data files and 'T' in the formatted files.

Daily snowfall and snow depth values are *not* simple means of the observed daily values. They are interpolated from the much less variable monthly normals by use of the natural spline function (Greville, 1967). The procedure involved constructing a cumulative series of monthly sums from the monthly normals. The cumulative series was for a 24-month period (July, August, ..., December, January, ..., December, January, ..., June), so that the interpolating function could adequately fit the end points in the annual series.

For daily snow depth, values were computed to hundredths of an inch, rounded to tenths of an inch, spline fit using the monthly values times the number of days, and then rounded to whole inches (with non-zero values of less than 0.50" assigned a trace). Then, consecutive days of trace values separated from the primary winter season rise and fall on non-zero consecutive values were assigned a value of zero to remove spurious trace amounts. For daily snowfall, spline values were augmented with trace values proportional to one-half the number the preceding or following count of days with 0.1" (with less than 10 days of zero values between traces assigned a trace). Non-trace daily snowfall values sum to a non-trace monthly value.

Greville, T.N.E., 1967: "Spline functions, interpolation, and numerical quadrature," Mathematical Methods for Digital Computers, Vol. II, A. Ralston and H.S. Wilf (eds.), pp.156-168, Wiley, New York.
 World Meteorological Organization, 1989: Calculation of Monthly and Annual 30-Year Standard Normals, WCDP-No. 10, WMO-TD/No. 341, Geneva: World Meteorological Organization.

NWS Snow Normals Station Inventory

(COOP ID, Call Sign, Elements, Name, State Abbreviation)

Elements:

A: Mean Snowfall

B: Mean Snow Depth

C: Number of Days with snowfall >= 0.1"
D: Number of Days with snowfall >= 1.0"

			ANNISTON METRO AP	AL				PASO ROBLES MUNICIPAL AP	CA
			BIRMINGHAM INTL AP	AL				RED BLUFF AP	CA
			HUNTSVILLE INTL AP	AL				RIVERSIDE FIRE STA 3	CA
			MOBILE RGNL AP	AL				SACRAMENTO AP	CA
			MONTGOMERY DANNELLY AP	AL				SALINAS AP	CA
			MUSCLE SHOALS AP	AL				SANDBERG	CA
			TUSCALOOSA ACFD	AL				SAN DIEGO LINDBERGH AP	CA
			DEER VALLEY (PHOENIX)	AZ				SAN FRANCISCO INTL AP	CA
			DOUGLAS BISBEE INTL AP	AZ				SANTA BARBARA MNCPL AP	CA
			FLAGSTAFF PULLIAM AP	AZ				SANTA MARIA AP	CA
			PHOENIX SKY HRBR INTL AP	AZ				STOCKTON AP	CA
			SAFFORD AGRICULTRL CTR	AZ				SUSANVILLE 2 SW	CA
			SHOW LOW AP	AZ				THERMAL RGNL AP	CA
028820	KTUS	ABCD	TUCSON INTL AP	AZ	048973	KTOA	ABCD	TORRANCE	CA
029439	KINW	ABCD	WINSLOW AP	AZ	049122				CA
			YUMA AP	AZ	049473	KWVI	ABCD	WATSONVILLE WATERWORKS	CA
032300	KELD	ABCD	EL DORADO S AZ RGNL AP	AR	049866	KSIY	ABCD	YREKA SISKIYOU CO	CA
032444	KFYV	ABCD	FAYETTEVILLE EXP STN	AR	050114	KAKO	A-CD	AKRON 1 N	CO
032574	KFSM	ABCD	FORT SMITH RGNL AP	AR	050130	KALS	A-CD	ALAMOSA BERGMAN FIELD	CO
033165	KHRO	ABCD	HARRISON BOONE CO AP	AR	051778	KCOS	A-CD	COLORADO SPRINGS MNPL AP	CO
034248	KLIT	ABCD	LITTLE ROCK ADAMS AP	AR	052220	KDEN	A-CD	DENVER STAPELTON	CO
035320	KLZK	ABCD	NORTH LITTLE ROCK AP	AR	053488	KGJT	A-CD	GRAND JUNCTION WALKER AP	CO
037048	KTXK	ABCD	TEXARKANA WEBB FIELD	AR	054720	KLHX	A-CD	LA JUNTA 4 NNE	CO
040192	KFUL	ABCD	ANAHEIM	CA	055018	KLIC	A-CD	LIMON	CO
040442	KBFL	ABCD	BAKERSFIELD KERN CO AP	CA	056740	KPUB	A-CD	PUEBLO AP	CO
040609	KBUO	ABCD	BEAUMONT 1 E	CA	058434	KTAD	A-CD	TRINIDAD AP	CO
040822	KBIH	ABCD	BISHOP AP	CA				BRIDGEPORT SIKORSKY AP	CT
040897	KBLU	A-CD	BLUE CANYON	CA	063456	KBDL	A-CD	HARTFORD BRADLEY INTL AP	CT
040927	KBLH	ABCD	BLYTHE AP	CA	064767	KMMK	ABCD	MIDDLETOWN 4 W (MERIDEN)	CT
041194	KBUR	ABCD	BURBANK VALLEY PUMP PLNT	CA	079595	KILG	A-CD	WILMINGTON NEW CASTLE AP	DE
041424	KCZZ	ABCD	CAMPO	CA	080211	KAAF	ABCD	APALACHICOLA AP	FL
041733	KNID	ABCD	CHINA LAKE ARMITAGE	CA	081986	KCEW	ABCD	CRESTVIEW BOB SIKES AP	FL
			CRESCENT CITY 3 NNW	CA				CROSS CITY 2 WNW	FL
			DAGGETT BARSTOW AP	CA				DAYTONA BEACH INTL AP	FL
			EUREKA WFO WOODLEY IS	CA				FORT LAUDERDALE	FL
			FONTANA KAISER (ONTARIO)	CA				FORT MYERS (PAGE AP)	FL
			FRESNO YOSEMITE INTL	CA				GAINESVILLE RGNL AP	FL
			IMPERIAL	CA				JACKSONVILLE INTL AP	FL
			LANCASTER ATC	CA				KEY WEST INTL AP	FL
			LONG BEACH AP	CA				MELBOURNE WFO	FL
			LOS ANGELES INTL AP	CA				MIAMI INTL AP	FL
			LOS ANGELES DOWNTOWN USC	CA				NAPLES	FL
	~		MODESTO CITY-COUNTY AP	CA				ORLANDO INTL AP	FL
			MONTEREY	CA				PANAMA CITY 5 NE	FL
			MORRO BAY FIRE DEPT	CA				PENSACOLA RGNL AP	FL
	~		MOUNT SHASTA	CA				ST PETERSBURG	FL
			NEEDLES AP	CA				SANFORD ORLANDO	FL
			NEWARK (OAKLAND)	CA				TALLAHASSEE MUNICIPAL AP	FL
			OXNARD (CAMARILLO)	CA				TAMPA INTL AP	FL
046635	KFSP	ARCD	PALM SPRINGS	CA	089214	KVKB	ARCD	VERO BEACH MUNI ARPT	FL

480695	KBPI	CD	BIG PINEY	WY	502820	PAED	A-CD	ELMENDORF AFB	ΑK
481570	KCPR	A-CD	CASPER NATRONA CO AP	WY	502968	PAFA	A-CD	FAIRBANKS INTL AP	AK
481675	KCYS	A-CD	CHEYENNE MUNICIPAL AP	WY	503465	PAGK	A-CD	GULKANA AP	AK
483855	KGCC	ABCD	GILLETTE 6 SE	WY	503490	PAHN	A-CD	HAINES	AK
484910	KJAC	A-CD	JACKSON	WY	503665	PAHO	A-CD	HOMER AP	ΑK
485345	KP60	A-CD	LAKE YELLOWSTONE	WY				ILIAMNA AP	ΑK
485390	KLND	A-CD	LANDER AP	WY	504100	PAJN	A-CD	JUNEAU INTL AP	ΑK
485415	KLAR	A-CD	LARAMIE RGNL AP	WY	504546	PAEN	A-CD	KENAI MUNICIPAL AP	ΑK
487533	${\tt KRWL}$	A-CD	RAWLINS AP	WY	504766	PAKN	A-CD	KING SALMON AP	ΑK
487760	KRIW	ABCD	RIVERTON	WY	504988	PADQ	ABCD	KODIAK AP	ΑK
487845	KRKS	A-CD	ROCK SPRINGS AP	WY	505076	PAOT	A-CD	KOTZEBUE WIEN AP	ΑK
488155	KSHR	A-CD	SHERIDAN AP	WY	505769	PAMC	A-CD	MCGRATH AP	ΑK
489785	KWRL	A-CD	WORLAND MUNICIPAL AP						ΑK
500026					506586	PAOR	A-CD	NORTHWAY AP	ΑK
500280	PANC	A-CD	ANCHORAGE INTL AP	AK	507783	PAPT	A-CD	PUNTILLA	ΑK
500352	PANT	ABCD	ANNETTE AP	AK	508118	PASN	A-CD	ST PAUL ISLAND AP	ΑK
			BARROW AP		508419	PASY	A-CD	SHEMYA USAF BASE	ΑK
500754	PABE	A-CD	BETHEL AP	AK	508494	PASI	A-CD	SITKA JAPONSKI AP	ΑK
500761	PABT	A-CD	BETTLES AP	AK					ΑK
500770	PABI	A-CD	BIG DELTA ALLEN AAF	AK	509014	PATA	A-CD	TANANA AP UMIAT	ΑK
501492	PALR	A-CD	CHANDALAR LAKE	AK	509539	PAUM	CD	UMIAT	ΑK
502102	PACD	A-CD	COLD BAY AP	AK	509686	PAVW	A-CD	VALDEZ WALES	ΑK
									ΑK
502457	PADL	CD	DILLINGHAM AP	AK	509941	PAYA	A-CD	YAKUTAT AP	ΑK
502785	PALV	ABCD	ELFIN COVE	AK					