

2002

LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA



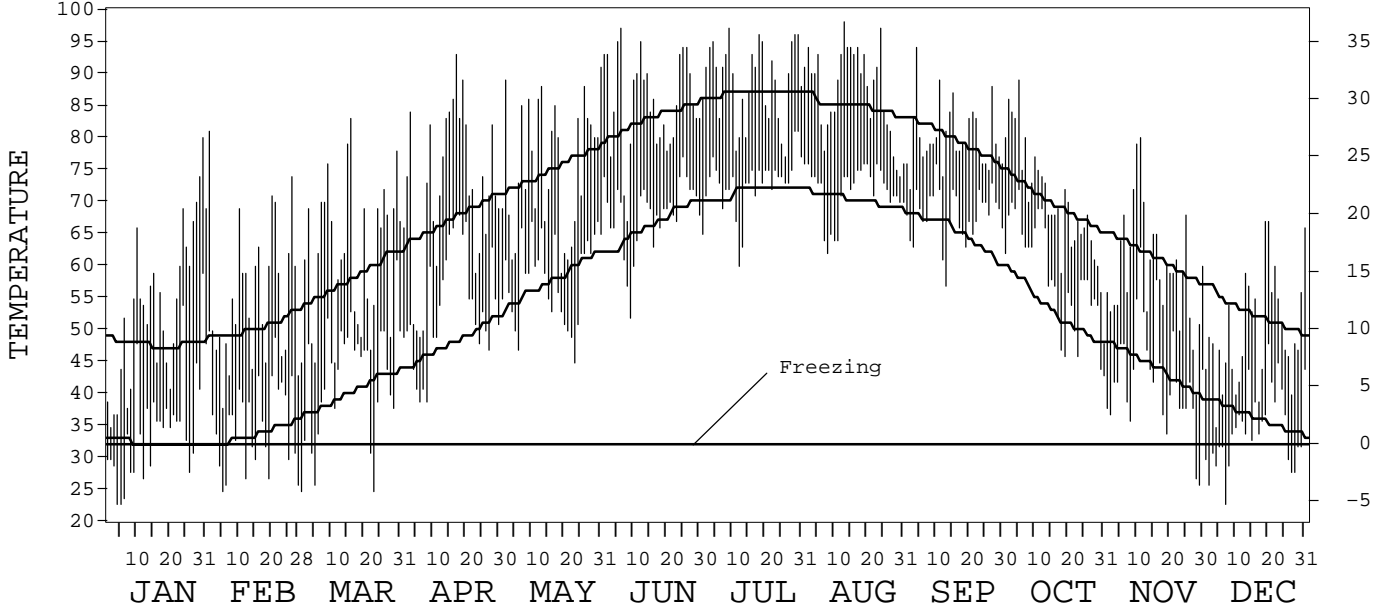
ISSN 0198-5345

NORFOLK,
VIRGINIA (ORF)

Daily Data

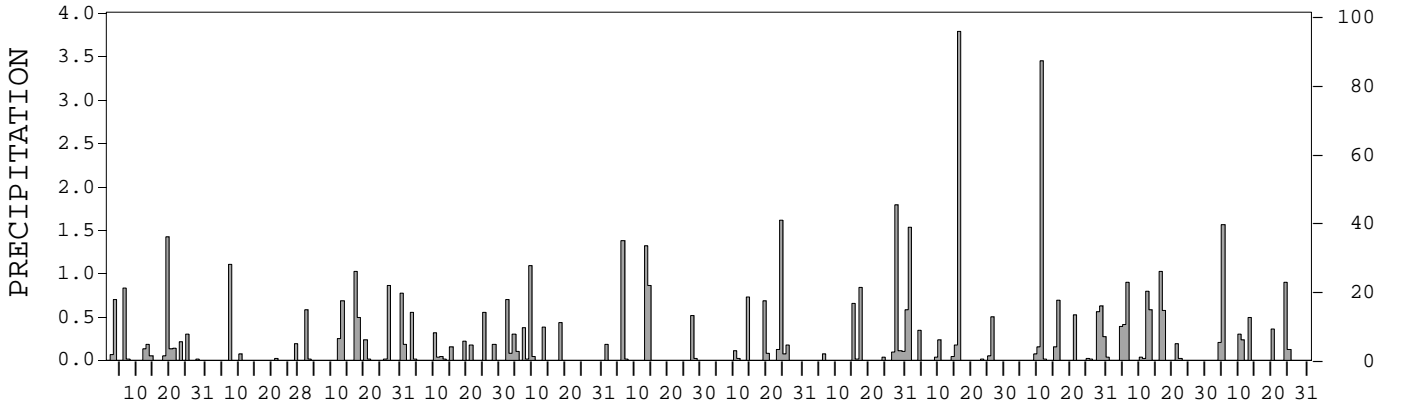
Fahrenheit

Celsius



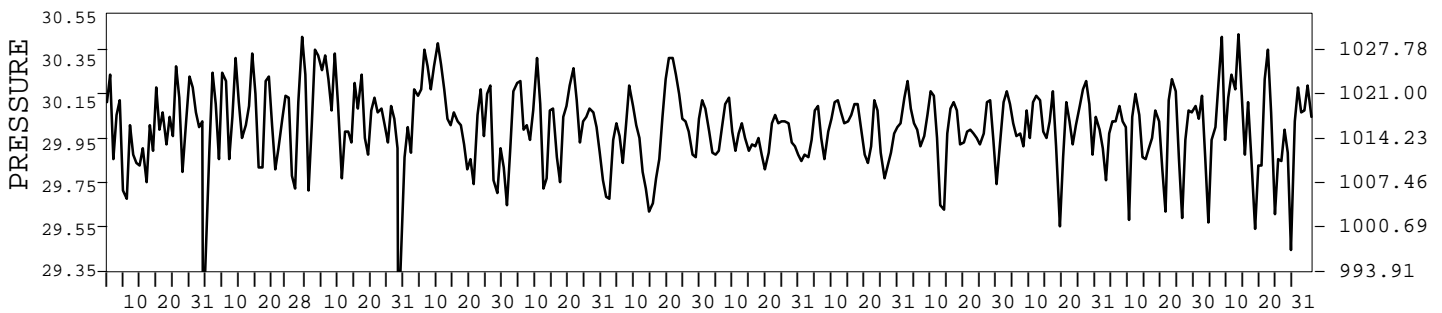
Inches

Millimeters



Inches of Mercury

Hectopascals



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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE

NATIONAL CLIMATIC DATA CENTER ASHEVILLE, NORTH CAROLINA

DIRECTOR NATIONAL CLIMATIC DATA CENTER

METEOROLOGICAL DATA FOR 2002

NORFOLK, VA (ORF)

LATITUDE: 36° 54' 13" N LONGITUDE: 76° 11' 31" W ELEVATION (FT): GRND: 66 BARO: 69 TIME ZONE: EASTERN (UTC + 5) WBAN: 13737

ELEMENT		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	53.9	55.6	61.8	71.7	75.5	85.5	88.7	87.2	80.1	70.2	59.7	49.9	70.0	
	HIGHEST DAILY MAXIMUM	80	81	83	93	91	97	97	98	94	89	80	67	98	
	DATE OF OCCURRENCE	30	01	16	17	31	06	09	13	04	05	11	20+	AUG 13	
	MEAN DAILY MINIMUM	35.2	35.7	42.5	53.7	57.9	68.1	72.8	71.7	68.0	58.5	42.5	34.7	53.4	
	LOWEST DAILY MINIMUM	23	25	25	39	45	52	60	62	57	43	26	23	23	
	DATE OF OCCURRENCE	05+	05	23+	08+	23	09	12	08	13	31	29	07	DEC 07	
	AVERAGE DRY BULB	44.6	45.7	52.2	62.7	66.7	76.8	80.8	79.5	74.1	64.4	51.1	42.3	61.7	
	MEAN WET BULB		40.0		55.8	60.3	68.8	72.8	72.2	69.1	60.0	46.7	38.7		
	MEAN DEW POINT		31.0		50.0	54.9	64.4	68.9	68.5	66.1	56.6	41.1	33.0		
	NUMBER OF DAYS WITH:														
	MAXIMUM ≥ 90°	0	0	0	1	1	11	17	15	1	0	0	0	0	46
	MAXIMUM ≤ 32°	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	MINIMUM ≤ 32°	12	11	5	0	0	0	0	0	0	0	2	13	43	
MINIMUM ≤ 0°	0	0	0	0	0	0	0	0	0	0	0	0	0		
H/C	HEATING DEGREE DAYS	629	537	398	158	75	3	0	0	115	418	697	3030		
	COOLING DEGREE DAYS	5	1	8	97	134	365	495	454	276	100	9	1944		
RH	MEAN (PERCENT)	69	59	69	67	68	69	70	72	77	77	71	72	70	
	HOUR 01 LST	74	69	76	75	78	81	82	80	85	82	79	75	78	
	HOUR 07 LST	80	71	78	78	73	77	78	80	82	83	81	78	78	
	HOUR 13 LST	59	48	56	54	55	54	56	59	68	68	57	63	58	
	HOUR 19 LST	65	55	66	65	64	65	64	68	76	78	69	71	67	
S	PERCENT POSSIBLE SUNSHINE														
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG (VISBY ≤ 1/4 MI)	1	0	1	1	1	1	1	0	1	1	0	0	8	
	THUNDERSTORMS	0	0	3	5	4	7	5	6	3	0	0	0	35	
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.)		30.07		30.08	30.04	30.00	29.98	30.03	30.01	30.03	29.99	30.05		
	MEAN SEA-LEVEL PRESS. (IN.)		30.10		30.11	30.07	30.03	30.01	30.06	30.04	30.06	30.02	30.08		
WINDS	RESULTANT SPEED (MPH)		2.1		0.9	1.7	1.0	1.8	1.4	3.4	4.4	2.9	2.6		
	RES. DIR. (TENS OF DEGS.)		32		19	15	20	21	14	08	07	27	31		
	MEAN SPEED (MPH)	9.2	10.1	10.6	10.7	10.4	9.7	8.1	8.2	8.4	8.3	8.1	10.1	9.3	
	PREVAIL. DIR. (TENS OF DEGS.)	24	23	23	23	24	25	26	06	07	06	23	26	24	
	MAXIMUM 2-MINUTE WIND:														
	SPEED (MPH)	32	38	35	33	36	29	29	38	26	28	29	30	38	
	DIR. (TENS OF DEGS.)	03	25	01	05	25	27	07	24	05	05	25	26	24	
	DATE OF OCCURRENCE	03	01	22	03	18	27	11	17	10	14	29	21+	AUG 17	
	MAXIMUM 5-SECOND WIND:														
	SPEED (MPH)	44	48	43	40	46	39	35	44	33	35	35	39	48	
DIR. (TENS OF DEGS.)	02	25	01	05	31	27	22	24	05	05	24	25	25		
DATE OF OCCURRENCE	03	01	22	03	13	27	19	17	10	14	29	21	FEB 01		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	4.22	1.38	4.91	2.40	3.50	4.28	3.59	4.27	6.69	6.55	4.92	4.16	50.87	
	GREATEST 24-HOUR (IN.)	1.55	1.10	1.51	0.55	1.13	1.39	1.72	1.79	3.79	3.46	1.30	1.76	3.79	
	DATE OF OCCURRENCE	19-20	07	17-18	25+	09-10	06-07	23-24	28	16	10-11	05-06	04-05	SEP 16	
	NUMBER OF DAYS WITH:														
	PRECIPITATION ≥ 0.01	14	4	11	12	10	7	9	10	10	13	11	8	119	
PRECIPITATION ≥ 0.10	9	2	8	8	7	5	6	6	6	8	8	8	81		
PRECIPITATION ≥ 1.00	1	1	1	0	1	2	1	1	2	1	1	1	13		
SNOWFALL	SNOW, ICE PELLETS, HAIL:														
	TOTAL (IN.)	7.2	0.2	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	T	7.4	
	GREATEST 24-HOUR (IN.)	6.6	0.2	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	T	6.6	
	DATE OF OCCURRENCE	03	27				01						05+	JAN 03	
	MAXIMUM SNOW DEPTH (IN.)														
	DATE OF OCCURRENCE														
NUMBER OF DAYS WITH:															
SNOWFALL ≥ 1.0	1	0	0	0	0	0	0	0	0	0	0	0	1		

HEATING DEGREE DAYS (base 65°F) 2002 NORFOLK, VA (ORF)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1973-74	0	0	0	83	353	575	504	599	377	183	63	0	2737
1974-75	0	0	16	213	371	584	584	547	541	382	47	0	3285
1975-76	0	0	6	98	290	671	804	443	362	186	62	6	2928
1976-77	0	0	0	245	566	726	1104	657	330	150	40	1	3819
1977-78	0	0	0	158	321	661	860	902	580	235	72	3	3792
1978-79	0	0	3	162	268	614	787	879	499	213	52	5	3482
1979-80	0	0	0	190	272	616	759	872	564	196	58	2	3529
1980-81	0	0	11	181	449	699	994	610	605	159	96	0	3804
1981-82	0	0	12	189	423	739	907	636	495	303	21	0	3725
1982-83	0	4	6	177	334	498	762	674	426	295	85	3	3264
1983-84	0	0	27	126	370	718	908	522	601	281	54	3	3610
1984-85	0	0	16	37	450	432	928	686	421	172	21	0	3163
1985-86	0	0	6	61	162	731	790	637	465	228	69	1	3150
1986-87	0	1	8	88	311	620	779	730	538	306	58	0	3439
1987-88	0	0	0	252	320	582	851	646	474	266	86	15	3492
1988-89	0	0	2	265	324	692	602	601	486	282	80	0	3334
1989-90	0	0	12	134	356	928	541	417	410	234	39	3	3074
1990-91	0	0	13	102	301	444	657	527	386	166	19	2	2617
1991-92	0	0	22	132	377	542	686	575	496	262	125	1	3218
1992-93	0	0	9	179	337	623	638	722	555	246	22	5	3336
1993-94	0	0	10	140	353	726	877	599	414	111	89	0	3319
1994-95	0	0	0	113	239	463	614	651	411	190	45	0	2726
1995-96	0	0	4	80	497	769	810	681	614	237	99	7	3798
1996-97	0	0	1	123	559	561	728	532	418	314	82	44	3362
1997-98	0	0	1	148	434	663	573	492	466	211	60	0	3048
1998-99	0	0	2	127	367	513	583	567	531	226	60	0	2976
1999-00	0	0	4	146	282	588	762	570	374	227	28	1	2982
2000-01	0	0	13	133	466	825	793	583	571	239	52	0	3675
2001-02	0	0	19	163	275	468	629	537	398	158	75	3	2725
2002-	0	0	0	115	418	697							

WBAN : 13737

COOLING DEGREE DAYS (base 65°F) 2002 NORFOLK, VA (ORF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1973	0	0	16	27	112	363	420	424	307	64	17	1	1751
1974	3	0	16	64	124	244	419	390	213	26	32	0	1531
1975	2	3	0	22	157	366	429	460	233	55	17	0	1744
1976	1	13	11	102	110	337	417	347	193	27	0	0	1558
1977	0	4	16	66	145	289	515	502	347	24	22	0	1930
1978	0	0	0	9	96	286	352	487	257	36	3	9	1535
1979	0	0	11	13	112	171	385	426	239	54	22	0	1433
1980	0	0	0	11	153	274	499	497	351	45	1	1	1832
1981	0	0	0	51	103	407	468	320	189	29	0	0	1567
1982	0	0	1	8	166	257	428	331	164	39	21	4	1419
1983	0	0	0	21	115	250	481	440	265	62	4	0	1638
1984	0	0	0	5	146	345	368	426	188	102	5	2	1587
1985	0	5	20	91	146	284	419	382	267	97	28	0	1739
1986	0	0	2	2	153	343	537	367	237	109	15	0	1765
1987	0	0	0	2	168	364	544	461	285	0	7	0	1831
1988	0	0	1	18	118	280	477	498	173	17	10	0	1592
1989	0	9	30	31	106	412	447	399	286	69	10	0	1799
1990	0	8	52	51	98	324	489	407	218	137	8	5	1797
1991	0	0	13	71	269	347	534	456	248	43	18	11	2010
1992	0	0	0	63	51	220	527	336	270	23	9	0	1499
1993	0	0	0	23	136	345	579	438	305	31	18	0	1875
1994	0	0	11	111	94	447	562	400	229	30	20	8	1912
1995	2	0	4	59	143	330	574	475	226	102	6	0	1921
1996	0	0	1	55	116	320	401	312	227	31	10	0	1473
1997	0	7	7	7	59	262	443	360	218	63	0	0	1426
1998	7	0	33	37	143	338	440	440	317	39	0	12	1806
1999	4	0	0	25	112	275	509	458	222	42	4	0	1651
2000	0	0	7	10	196	342	358	368	216	51	0	0	1548
2001	0	0	3	40	108	331	357	435	187	57	15	3	1536
2002	5	1	8	97	134	365	495	454	276	100	9	0	1944

SNOWFALL (inches) 2002 NORFOLK, VA (ORF)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1973-74	0.0	0.0	0.0	0.0	0.0	1.4	T	0.9	7.5	0.0	0.0	0.0	9.8
1974-75	0.0	0.0	0.0	0.0	0.0	T	0.3	T	0.8	T	0.0	0.0	1.1
1975-76	0.0	0.0	0.0	0.0	0.0	T	T	T	0.0	0.0	0.0	0.0	T
1976-77	0.0	0.0	0.0	0.0	T	1.0	4.7	1.4	0.0	0.0	0.0	0.0	7.1
1977-78	0.0	0.0	0.0	0.0	0.0	T	1.3	9.2	2.3	0.0	0.0	0.0	12.8
1978-79	0.0	0.0	0.0	0.0	0.0	0.0	1.0	12.7	T	0.0	0.0	0.0	13.7
1979-80	0.0	0.0	0.0	0.0	0.0	0.0	9.3	18.9	13.7	0.0	0.0	0.0	41.9
1980-81	0.0	0.0	0.0	0.0	0.0	T	T	0.0	0.3	0.0	0.0	0.0	0.3
1981-82	0.0	0.0	0.0	0.0	0.0	1.8	4.2	0.1	T	T	0.0	0.0	6.1
1982-83	0.0	0.0	0.0	0.0	0.0	0.4	T	3.0	T	T	0.0	0.0	3.4
1983-84	0.0	0.0	0.0	0.0	0.0	T	T	5.2	T	0.0	0.0	0.0	5.2
1984-85	0.0	0.0	0.0	0.0	0.0	T	4.3	0.0	T	0.0	0.0	0.0	4.3
1985-86	0.0	0.0	0.0	0.0	0.0	T	3.6	1.1	T	T	0.0	0.0	4.7
1986-87	0.0	0.0	0.0	0.0	0.0	T	1.6	1.0	1.2	T	0.0	0.0	3.8
1987-88	0.0	0.0	0.0	0.0	0.3	T	4.4	T	T	0.0	0.0	0.0	4.7
1988-89	0.0	0.0	0.0	0.0	0.0	T	T	24.4	T	0.5	0.0	0.0	24.9
1989-90	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	T	0.0	0.0	T	0.5
1990-91	0.0	0.0	0.0	0.0	0.0	T	0.0	T	T	0.0	0.0	0.0	T
1991-92	0.0	T	0.0	0.0	0.0	T	T	0.0	T	T	0.0	0.0	T
1992-93	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.9	1.7	0.0	0.0	0.0	3.9
1993-94	0.0	0.0	0.0	0.0	0.0	3.9	7.4	1.2	0.3	0.0	T	0.0	12.8
1994-95	0.0	0.0	0.0	0.0	0.0	0.0	T	0.3	T	0.0	0.0	0.0	0.3
1995-96	0.0	0.0	0.0	0.0	0.0	T	6.2	11.0					
1996-97													
1997-98													
1998-99													
1999-00							9.0						
2000-01									0.3	0.0	0.0	0.0	
2001-02	0.0	0.0	0.0	0.0	0.0	0.0	7.2	0.2	0.0	0.0	0.0	T	7.4
2002-	0.0	0.0	0.0	0.0	0.0	T							
POR= 48 YRS	0.0	T	0.0	0.0	0.0	0.9	2.8	2.7	1.0	0.0	T	T	7.4

WBAN : 13737

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 (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.</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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2002
NORFOLK,
VIRGINIA (ORF)

The city of Norfolk, Virginia, is located near the coast and the southern border of the state. It is almost surrounded by water, with the Chesapeake Bay immediately to the north, Hampton Roads to the west, and the Atlantic Ocean only 18 miles to the east. It is traversed by numerous rivers and waterways and its average elevation above sea level is 13 feet. There are no nearby hilly areas and the land is low and level throughout the city. The climate is generally marine. The geographic location of the city with respect to the principal storm tracks, is especially favorable, being south of the average path of storms originating in the higher latitudes and north of the usual tracks of hurricanes and other tropical storms.

The winters are usually mild, while the autumn and spring seasons usually are delightful. Summers, though warm and long, frequently are tempered by cool periods, often associated with northeasterly winds off the Atlantic. Temperatures of 100 degrees or higher occur infrequently. Extreme cold waves seldom penetrate the area and temperatures of zero or below are almost nonexistent. Winters pass, on occasion, without a measurable amount of snowfall. Most of the snowfall in Norfolk is light and generally melts within 24 hours.

Based on the 1951-1980 period, the average first occurrence of 32 degrees Fahrenheit in the fall is November 17 and the average last occurrence in the spring is March 23.

STATION LOCATION

NORFOLK, VIRGINIA

LOCATION	Occupied From	Occupied To	Airline Distances and Directions from previous Location	LATITUDE NORTH	LONGITUDE WEST	ELEVATION ABOVE										AUTOMATIC OBSERVING EQUIPMENT *	* TYPE M = AMOS T = AUTOB S = ASOS W = AWOS REMARKS
						SEA LEVEL		GROUND									
						GROUND	SEA SURFACE	WIND INSTRUMENT	EXTREME THERMOMETER S	PSYCHROMETER	SUNSHINE SWITCH	TIPPING BUCKET	WEIGHING RAIN GAGE	8 INCH RAIN GAGE	HYGROMETER		
*NOTE: <u>AIRPORT</u> Norfolk Municipal AP+	3/05/52	03/01/96	0.25 mi. N	36°54'	76°12'	c24	a34 b78 e20 h33	6	6	%64	3		3	#4 f4 g4	#. Telepsychrometer (4') 3/5/52 to 8/31/59. Hygro comm. 470' SE of office 8/31/59. a. Direct reading sensor on field. b. Autographic record sensor. c. 26 ft. to 8/31/59 and 22 ft. to 12/8/59. d. Data source to 8/31/59. e. Relocated 8/24/73. f. Moved 1210 ft. Se on 5/18/78. %. Commissioned 8/2/53. g. Type change 1/22/80. h. Moved 80 ft. NW 3/5/82.		
International Airport	03/01/96	Present	NA	36°54'	76°12'	i66								S	ASOS Commissioned 03/01/96 i. Ground elevation.		

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