



HOURLY PRECIPITATION DATA

MARYLAND AND DELAWARE

JULY 2011

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A handwritten signature in black ink, which appears to read "Thomas R. Karl".

**Director
National Climatic Data Center**

noaa

National Oceanic and
Atmospheric Administration

National Environmental Satellite,
Data and Information Service

National Climatic Data Center
Asheville, North Carolina

DAILY PRECIPITATION TOTALS

JULY 2011

GAGE	STATION	TOTAL	DAY OF MONTH																														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
F	DELAWARE	1.5							.8			.1									.1					.1				.3	.1		
T	NEWARK UNIV FARM	3.73			.02				T	2.48		T		T							.35				T		.63			.25	T		
T	MARYLAND	2.77			.55	T		T	.10	.83		.17		.26							.16				.06		.64			T			
F	BALTIMORE WASH INTL AP	2.7			.9					1.2		.2		.2												.2							
F	BELTSVILLE	.0 P	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T	FEDERALSBURG	4.06			.23				1.52	.29		.06		.28							1.30						.38						
F	MD SCI CTR BALTIMORE	.0 P	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	SAVAGE RIVER DAM																																

HOURLY PRECIPITATION

STATION	DATE	A.M. HOUR ENDING												P.M. HOUR ENDING												TOTAL
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
DELAWARE NEWARK UNIV FARM	8													.1	.2		.1		.1	.2	.1				.1	.8
	11																								.1	.1
	19																						.1			.1
	25																						.1			.1
	28																						.2	.1		.3
	29						.1																			.1
	3						.02																			.02
	7																									T
	8													.01	.19	.31	1.40	.19	.37	.01	T	T		T		2.48
	11																						T			T
	13														T	T										T
	19																			T	.35					.35
	23																				T	T				T
	25														T	.01	T				.04	.58	T			.63
WILMINGTON NEW CASTLE	28														T	T		T	T		.01	.12	.11	.01		.25
	29					T														T	T					T
MARYLAND BALTIMORE WASH INTL AP	3				.08	.22	.09												.16							.55
	4																				T	T				T
	6										T	T														T
	7																			T	.10	T				.10
	8												.03			.01	.68	.11	T							.83
	11																				.03	.14				.17
	13														T	.26	T		T							.26
	19															T	.16									.16
	23								.06																	.06
	25													.02	.51		.11									.64
	28																					T				T
BELTSVILLE	3				.2	.2										.3	.8	.1	.3	.1	.1					.9
	8																									1.2
	11															.2					.2					.2
	13																									.2
	25												.1	.1												.2
FEDERALSBURG	1		{ -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
MD SCI CTR BALTIMORE	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3				.05	.09	.09																			.23
	7																		.06	.31	.84	.31				1.52
	8											.08				.01	.11	.09								.29
	11																					.06				.06
	13															.04			.24							.28
	19															1.30										1.30
SAVAGE RIVER DAM	25													.19	.19											.38
	1		{ -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

MONTHLY PRECIPITATION MAXIMA

STATION	MAXIMA FOR MEASURMENT									MAXIMUM ACCUMULATION
	MINUTES			HOURS						
	15	30	45	1	2	3	6	12	24	
DELAWARE NEWARK UNIV FARM WILMINGTON NEW CASTLE	.1 29/0530+	.2 08/1915+	.3 08/1430	.3 08/1915+ 1.40 08/1600	.4 08/1945+ 1.71 08/1600	.4 08/2045+ 1.96 08/1800	.8 08/1945+ 2.47 08/1900+	.8 09/0145+ 2.48 08/2400+	.8 09/1345+ 2.48 09/1200+	
MARYLAND BALTIMORE WASH INTL AP BELTSVILLE FEDERALSBURG MD SCI CTR BALTIMORE SAVAGE RIVER DAM	.7 08/1515	.9 08/1515	1.0 08/1515	.68 08/1600 1.0 08/1530+ 1.30 19/1500	.79 08/1700 1.2 08/1630 1.30 19/1600+	.80 08/1700 1.2 08/1730+ 1.46 07/2100	.83 08/1700 1.2 08/2030+ 1.52 07/2300+	.83 08/2300+ 1.2 09/0230+ 1.52 08/0500+	.93 08/1900+ 1.2 09/1430+ 1.81 08/1700	

REFERENCE NOTES

Hourly Precipitation Data (HPD) are obtained from recording rain gages. The rain gage may be located at a National Weather Service, Federal Aviation Administration, or Cooperative Observer Station. HPD time resolution is 15 minutes or 1 hour. Published data are displayed at an hourly resolution. Precipitation values in this bulletin are in inches. Times are local standard.

Standard rain gage types:

F	Weighing gage	: reported in inches to tenths
T	Tipping bucket	: reported in inches to hundredths
U	Weighing gage	: reported in inches to hundredths
N	Not specified	

HPD maxima cover 9 time periods from 15 minutes to 24 hours and do not necessarily end on whole hours. Stations that report hourly data only will not have maxima computed for periods less than 1 hour. If any data are missing, no maxima are computed. MAXIMUM ACCUMULATION is the largest accumulated precipitation amount from times with unknown data distribution during a month. Clock mechanisms sometimes stick or stop; some of the special symbols in the HPD section are used when such "signatures" are found in the data.

Information contained in the station name:

//	Rain gage equipped with a wind shield.
#	Inactive station. Symbol found by station name in the Station Index.
\$	Experimental rain gage or unusual measurement procedure which may have some effect on HPD. Common types are: \$1 rain gage with a heated orifice \$2 rain gage with an automatic siphon \$3 rain gage with a remote orifice and funnel
8 SW	or other numbers and letters following the name, indicate the distance in miles, and the direction, from the nearest post office.

Special symbols in the HPD:

a	Begin accumulation sometime within the hour period or day period.
A	End accumulation during the day or hour. Will follow the distribution amount.
*	Temporal distribution unknown. First HPD value that follows is the total accumulated amount.
E	Estimated monthly total by spatial modelling.
i	Incomplete hourly total. One (1) or more 15 minute periods are missing.
I	Incomplete daily or incomplete monthly total. One (1) or more periods are missing.
P	Daily or monthly total excludes highly suspect data value(s).
q	Hourly total excludes one (1) or more questionable 15 minute periods.

Q	Questionable 15 minute data. Seen in Maxima tables.
R	Time of occurrence is suspect. Amount is included in daily total.
T	Trace amounts are included only for Federally funded meteorological observing sites.
X	Value greater than 9.99 - refer to Hourly Precipitation Section for daily total.
Z	Probable melting frozen precipitation included in total.
[Begin missing period during the hour (inclusive) or day.
]	End missing period during the hour (inclusive) or day.
{	Begin delete period during the hour (inclusive) or day.
}	End delete period during the hour (inclusive) or day.
m	Data missing for part or all of the period.
-	Data deleted for part or all of the period.
+	Duplicate maxima for same time period; latest is shown.

NOTE: Missing (m) flag in the MONTHLY PRECIPITATION TOTALS page represents missing and/or deleted data for part or all of period.

NOTE: Only the first and last rows of long groups of missing (m), deleted (-), and accumulated (*) data are shown.

NOTE: The special symbols in the HPD appear as a suffix to type "F" values, or directly below type "T" and type "U" gage values.

NOTE: TIPPING BUCKET precipitation gages become increasingly inaccurate with increasing rainfall intensities. TIPPING BUCKET gages also may NOT correctly report the amount or time distribution during frozen or freezing precipitation events (i.e. snow, hail, sleet, or freezing rain).

NOTE: Users of data from this publication may notice that daily totals may differ from those listed in the CLIMATOLOGICAL DATA (CD) publication. There are two primary reasons for the differences. The first is because the precipitation values are measured by two different gage types. The second reason is that the totals may be measured at different times. Most manual measurements are made at or near 8 AM or 5 PM local time while the daily totals from the hourly precipitation gages are computed on a midnight (calendar day) basis.

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STATION INDEX

MARYLAND AND DELAWARE

JULY 2011

Station	Index No.	County	Drainage	Latitude	Longitude	Elevation Ft.	Years Of
DELAWARE							
NEWARK UNIV FARM	6410	NEW CASTLE	2	39 40	75 45	90	97
WILMINGTON NEW CASTLE	9595	NEW CASTLE	2	39 40	75 36	79	63
MARYLAND							
BALTIMORE WASH INTL AP	0465	ANNE ARUNDEL	3	39 10	76 41	156	76
BELTSVILLE	0700	PRINCE GEORG	5	39 02	76 56	145	73
FEDERALSBURG	3090	CAROLINE	1	38 42	75 46	20	40
MD SCI CTR BALTIMORE	5718	BALTIMORE (C		39 17	76 37	20	13
SAVAGE RIVER DAM	8065	GARRETT	5	39 31	79 08	1495	64

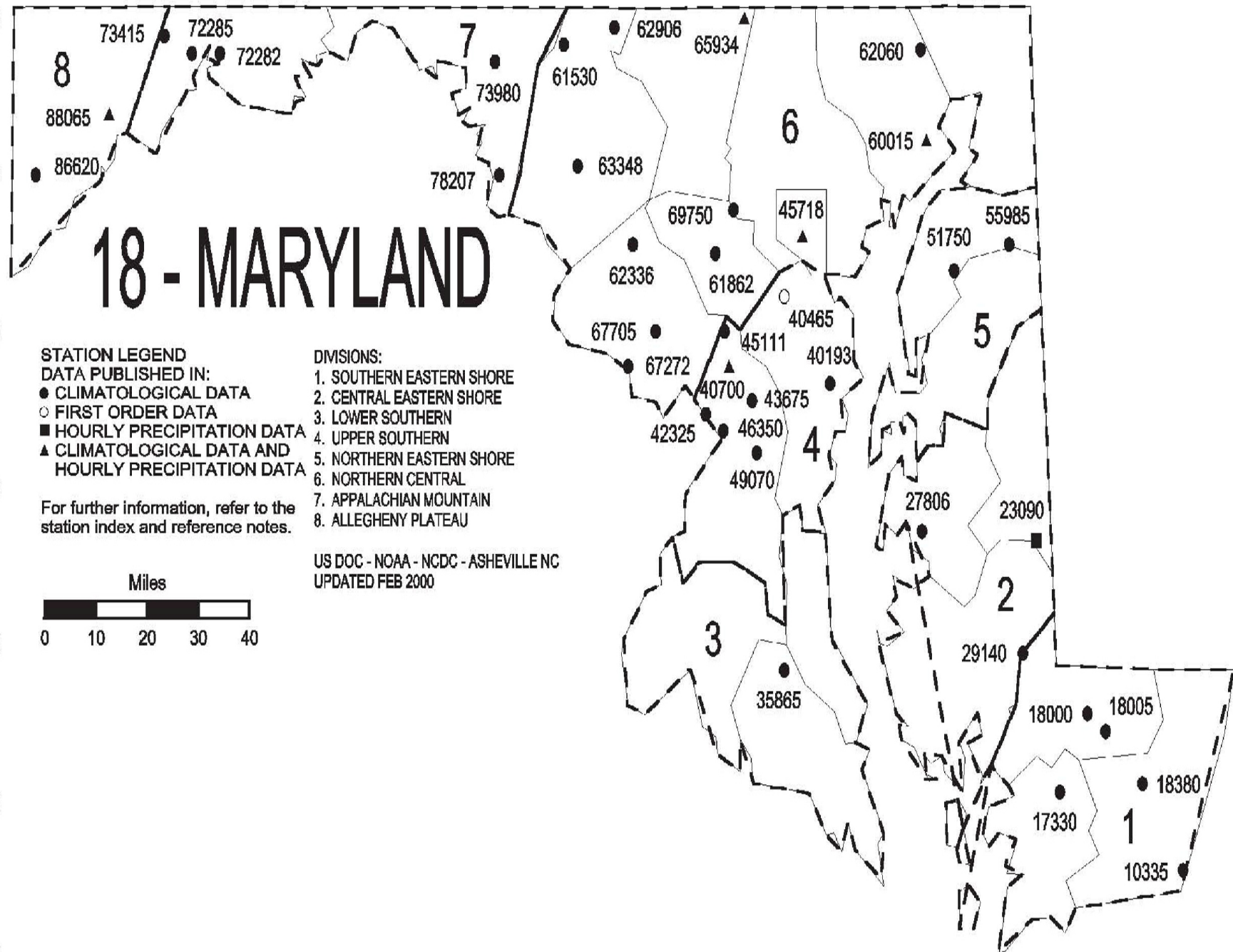
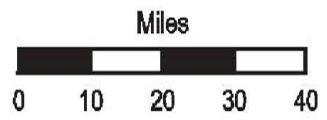
18 - MARYLAND

- STATION LEGEND**
DATA PUBLISHED IN:
● CLIMATOLOGICAL DATA
○ FIRST ORDER DATA
■ HOURLY PRECIPITATION DATA
▲ CLIMATOLOGICAL DATA AND
HOURLY PRECIPITATION DATA

For further information, refer to the
station index and reference notes.

- DIVISIONS:**
1. SOUTHERN EASTERN SHORE
2. CENTRAL EASTERN SHORE
3. LOWER SOUTHERN
4. UPPER SOUTHERN
5. NORTHERN EASTERN SHORE
6. NORTHERN CENTRAL
7. APPALACHIAN MOUNTAIN
8. ALLEGHENY PLATEAU

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07 - DELAWARE

STATION LEGEND
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- △ CLIMATOLOGICAL DATA AND
HOURLY PRECIPITATION DATA

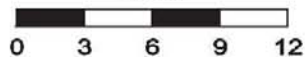
For further information, refer to the
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DIVISIONS:

1. NORTHERN
2. SOUTHERN

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Updated FEB 2000

Miles



39.80

39.60

39.40

39.20

39.00

38.80

38.60

38.40

-75.80

-75.65

-75.50

-75.35

-75.20

-75.05

-74.90

19605 ●

16410 ■

19595 ○

1

22730 ●

2

25915 ●

23595 ●

25320 ●

These and other publications are available from the National Climatic Data Center

Hourly Precipitation Data

This publication contains hourly precipitation amounts obtained from recording rain gages located at National Weather Service, Federal Aviation Administration, and cooperative observer stations. Published data are displayed in inches and tenths or inches and hundredths at local standard time. HPD includes maximum precipitation for nine (9) time periods from 15 minutes to 24 hours, for selected stations.

Climatological Data

Monthly editions contain station daily maximum and minimum temperatures and precipitation. Some Stations provide daily snowfall, snow depth, evaporation, and soil temperature data. Each edition also contains monthly summaries for heating and cooling degree days (65 degree F base). The July issue contains a recap of monthly heating degree days and snow data for the preceding July through June.

The Annual issue contains monthly and annual averages of temperature, precipitation, temperature extremes, freeze data, soil temperatures, evaporation, and a recap of monthly cooling degree days.

Storm Data

Monthly issues contain a chronological listing, by states, of occurrences of storms and unusual weather phenomena. Reports contain information on storm paths, deaths, injuries, and property damage. An "Outstanding storms of the month" section highlights severe weather events with photographs, illustrations, and narratives. The December issue includes annual tornado, lightning, flash flood, and tropical cyclone summaries.

Monthly Climatic Data for the World

This publication contains monthly means for temperature, pressure, precipitation, vapor pressure, and sunshine for approximately 2,000 surface data collection stations worldwide and monthly mean upper air temperatures, dew point depressions, and wind velocities for approximately 500 observing sites.

Local Climatological Data

LCD publications summarize temperature, relative humidity, precipitation, cloudiness, wind speed and direction observations for several hundred cities in the U.S. and its territories. Each monthly publication also contains 3 hourly weather observations for that month and a hourly summary of precipitation. Annual LCD publications contain a summary of the past calendar year as well as historical averages and extremes.

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