

U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR JANUARY, 1898.

MARYLAND AND DELAWARE SECTION
OF THE
CLIMATE AND CROP SERVICE
OF THE
WEATHER BUREAU.

IN COOPERATION WITH THE
MARYLAND STATE WEATHER SERVICE.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF
WILLIS L. MOORE,
CHIEF OF WEATHER BUREAU,

BY

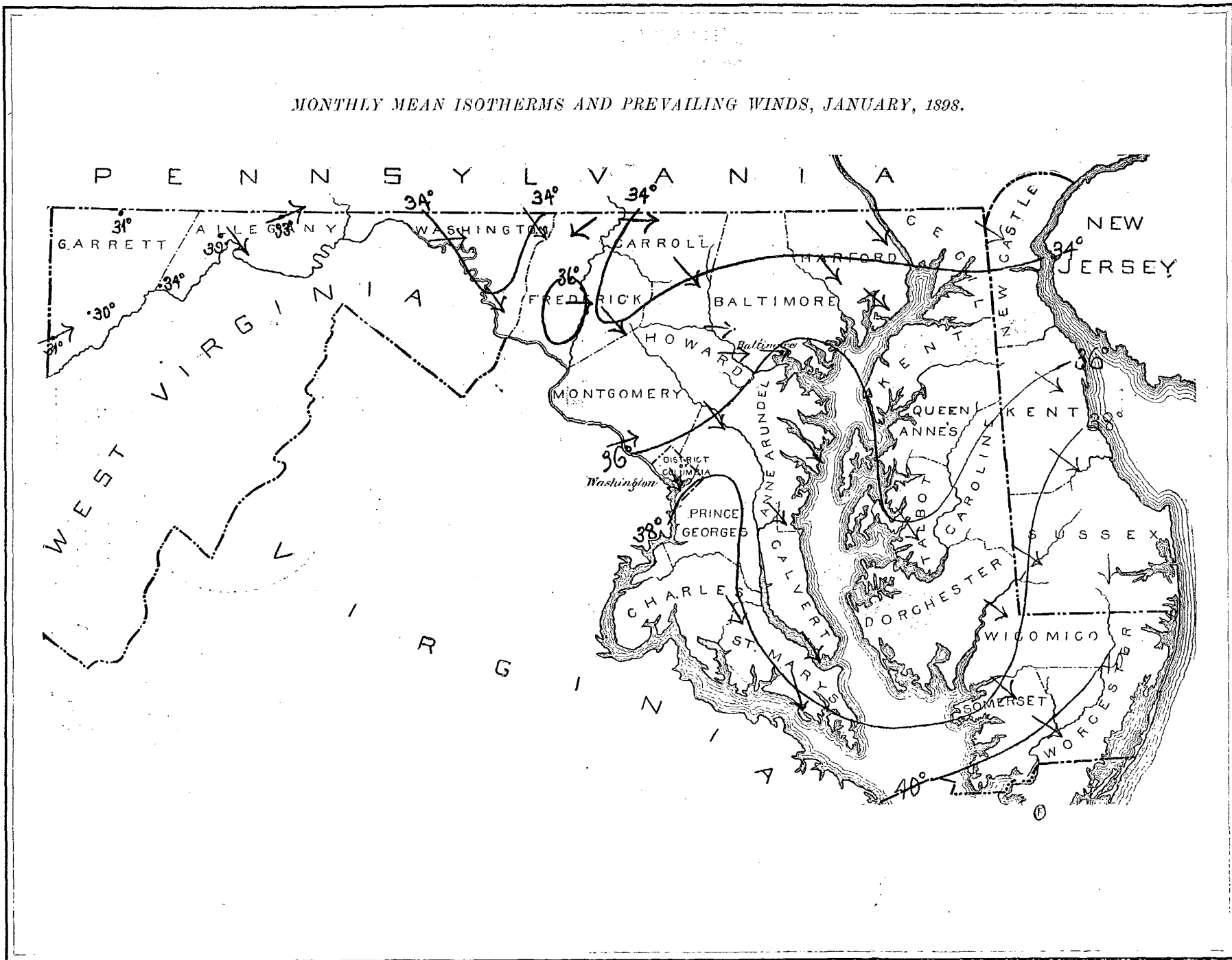
F. J. WALZ,
SECTION DIRECTOR.



BALTIMORE, MD.:
WEATHER BUREAU OFFICE,
JOHNS HOPKINS UNIVERSITY.

1898.

MONTHLY MEAN ISOTHERMS AND PREVAILING WINDS, JANUARY, 1898.



U. S. DEPARTMENT OF AGRICULTURE,
CLIMATE AND CROP SERVICE
 OF THE
WEATHER BUREAU.

Central Office, } } WILLIS L. MOORE,
 WASHINGTON, D. C. } } Chief.

IN COOPERATION WITH THE
 MARYLAND STATE WEATHER SERVICE.

MARYLAND AND DELAWARE SECTION,

F. J. WALZ, Section Director,
 BALTIMORE, MD.

Vol. III.

BALTIMORE, MD.

No. 1.

MARYLAND STATE WEATHER SERVICE.

THE ESTABLISHMENT OF TWENTY SPECIAL STATIONS.

In Maryland, as in most other States, the compilation and printing of the monthly climate and crop statistics has recently been undertaken by the National Weather Bureau.

The State Weather Service, thus relieved of this duty, is enabled to take up profitable lines of research not hitherto possible. The director, Dr. W. B. Clark, has, therefore, inaugurated a series of special investigations bearing upon the physiography, climatology, hydrography, forestry, and the crop conditions of Maryland, to be carried on in cooperation with the bureaus and divisions of the U. S. Department of Agriculture and of the Office of the U. S. Geological Survey most closely identified with the above-mentioned lines of research.

In cooperation with the Chief of the U. S. Weather Bureau, Prof. Willis L. Moore, a complete climatological survey of the State is in contemplation. Two special problems in this connection are the study of the influence of Chesapeake Bay and of the mountains of Washington County upon the crops in their respective vicinities.

In order to determine the character of the influence of the Bay upon crops along its shores and to what extent this influence is felt inland; four series of special stations have been established: one to the north of Baltimore, at Chase, in Baltimore County, another to the south of Baltimore, at Lake Shore, in Anne Arundel County; on the Eastern Shore one series is located in Kent County, at the entrance of Sassafras River into the Bay, another in Queen Anne County in the neighborhood of Queenstown, and on Kent Island.

When completed, each series will contain three stations, one at the water's edge, another at a distance of half a mile inland, and a third at a distance of 1.5 miles from the water. Three stations have also been established in Worcester County, between Ocean City on the Atlantic Coast, and Berlin, about six or seven miles inland.

In the selection of the particular localities for the establishment of these stations, the character of the soil was taken into account as well as the distance from the water. The

regions selected include representative truck soils, wheat and corn lands, and fruit lands.

Washington County with its great diversity in physiography, offers an excellent field for the study of climate and crops in their relation to topographic features. In the eastern portion there is the Blue Ridge, rising to over 2,000 feet, in the west, North Mountain, somewhat lower, while between these ranges extends the rich and fertile valley of Hagerstown. The mountain slopes produce some of the finest peaches in the State; the valley is famous for its bountiful wheat and corn harvests.

The new stations in Washington County have been established at different elevations upon the mountain slopes bordering the Hagerstown Valley on the east and west.

In the Smithsburg region one station has been located near the upper limit of the peach belt, at an elevation of about 900 feet, a second at an elevation of about 750 feet, a third at an elevation of about 600 feet, near the lower limit of successful peach culture. Two stations have been placed in the neighborhood of Boonsboro; one at an elevation of 650 feet, the other at 900 feet. In the western part of the county two stations have been located in the neighborhood of Clear Spring: one at the base of North Mountain at an elevation of about 500 feet, and the other on the slope at an elevation of about 650 feet. In the center of the valley the station in operation at Hagerstown has been supplied with additional instruments.

All of these special stations are to be equipped with self-registering maximum and minimum thermometers for air temperature, self-registering maximum solar radiation and minimum terrestrial radiation thermometers, a hygrometer, and a 3-inch rain gauge. Standard thermometer shelters have been supplied for the air temperature thermometers and the hygrometer. These shelters are mounted in an open space about four feet above the ground. The radiation thermometers will be mounted six inches above ground and over sod. The rain gauge rests upon the ground. Observations of soil temperatures and of moisture contents will also be made at certain selected stations, under the direction of Prof. Milton Whitney, Chief of the Division of Soils of the U. S. Department of Agriculture.

In the establishment of these stations competent observers have at all places been found, who have freely volunteered their services in carrying on this new line of work.

A list of special stations thus far established, or in course of establishment, with the names of cooperating observers is here given:

| Stations. | Counties. | Observers. |
|-----------------------------|--------------------|----------------------|
| BAY SHORE. | | |
| Betterton 1..... | Kent | E. A. Corey. |
| Coleman 2..... | Kent | James S. Harris. |
| Queenstown 1..... | Queen Anne | Dr. W. K. Carroll. |
| Queenstown 2..... | Queen Anne ..... | ..... |
| Kent Island 3..... | Queen Anne | P. T. Price. |
| Chase 1..... | Baltimore..... | Wm. H. Evans. |
| Chase 2..... | Baltimore..... | J. W. Crouch. |
| Lake Shore 1..... | Anne Arundel | Jeff. M. Cook. |
| Lake Shore 2..... | Anne Arundel | W. H. Chairs. |
| NEAR ATLANTIC COAST. | | |
| Sinepuxent Bay 1..... | Worcester | Jas. B. Dirickson. |
| East of Berlin 2..... | Worcester | William Disharoon. |
| Berlin 3..... | Worcester | Dr. E. J. Dirickson. |

A list of special stations.—Continued.

| Stations. | Elevation, feet. | Observers. |
|---------------------|------------------|---------------------|
| WASHINGTON COUNTY. | | |
| Smithsburg 1..... | 900 | Dr. D. W. Crowther. |
| Smithsburg 2..... | 750 | Jos. L. Miller. |
| Chewsville 3..... | 600 | Daniel E. Oswald. |
| Boonsboro 1..... | 900 | Samuel L. Ford. |
| Boonsboro 2..... | 650 | Chas. E. Huntzberg. |
| Clear Spring 1..... | 650 | W. W. Frantz. |
| Clear Spring 2..... | 500 | W. E. Loose, jr. |
| Hagerstown..... | 550 | Prof. C. E. Carl. |

With the above system of special observing stations, together with the existing stations of the Weather Bureau, it is believed that valuable data will soon be in hand for the discussion of the influence of the Bay and of the mountains upon the climate and crops of Maryland.

* * *

CLIMATOLOGY OF THE MONTH.

ATMOSPHERIC PRESSURE—IN INCHES AND HUNDRETHS.

Monthly mean at Washington, D. C., 30.08; at Baltimore, 30.05; average, 30.06; highest, 30.54 at Washington, D. C., and Baltimore, on the 19th; lowest, 29.41 at Baltimore, on the 23d.

TEMPERATURE—IN DEGREES FAHRENHEIT.

The monthly mean (entire territory), 35.5, is 4.2 above the normal.

The highest monthly mean was 43.0, at Pocomoke City.

The lowest monthly mean was 30.4, at Deer Park.

The highest temperature recorded during the month was 72, at Grantsville, on the 15th.

The lowest temperature recorded during the month was -2, at Deer Park, on the 30th.

The greatest local monthly range was 71, at Grantsville.

The least local monthly range was 41, at Solomons.

The greatest daily range was 38, at Deer Park, on the 4th.

The least daily range was 1, at Sunnyside, on the 13th.

PRECIPITATION—IN INCHES AND HUNDRETHS.

The monthly average (entire territory) 3.57, was 0.38 above the normal.

The greatest amount was 8.95, at Sunnyside.

The least amount was 1.24, at Pocomoke City.

The greatest amount in twenty-four hours was 1.50, at Sunnyside, on the 22d and 23d.

The average number of rainy days, 11.

WIND.

The prevailing direction was from the northwest.

The total movement was 4,097 miles, at Baltimore, and 5,631 miles, at Washington, D. C.

The maximum wind velocity was 33 miles per hour from the northwest, at Washington, D. C., on the 26th.

MISCELLANEOUS.

The following are dates on which various miscellaneous phenomena occurred:

Snow.—Annapolis, 25, 29, 31; Bachman's Valley, 9, 16, 19, 25, 31; Baltimore, 1, 10, 25, 29, 31; Cherryfields, 18, 19, 25, 29, 31; Charlotte Hall, 25, 31; Cumberland, 9, 22, 30, 31; Darlington, 9, 31; Deer Park, 1, 28, 29, 31; Dover, 31; Easton, 31; Fallston, 1, 3, 10, 19, 25, 27, 29, 31; Flintstone, 10, 22, 31; Frederick, 10, 25, 29, 31; Grantsville, 1, 3, 16, 23, 26, 29, 31; Green Spring Furnace, 9, 22, 29, 30, 31; Hagerstown, 29, 31; Jewell, 6, 25, 29, 31; Laurel, 25, 31; McDonogh, 29,

30; Mardela Springs, 30, 31; College Park, 25, 31; Milford, Del., 31; Millsboro, Del., 25; Mt. St. Mary's, 29, 31; Newark, Del., 10, 25, 29, 30; New Market, 9, 19, 25, 26, 29, 31; Pocomoke City, 31; Port Deposit, 10, 25, 30; Princess Anne, 29, 31; St. Charles College, 25, 31; Seaford, 1, 29, 31; Sharpsburg, 10, 19, 22, 25, 29, 31; Smithsburg, 19, 25, 28, 29, 31; Solomons, 18, 25, 29, 31; Sunnyside, 1, 3, 16, 17, 23, 25, 27, 29, 30, 31; Taneytown, 1, 9, 25, 29, 31; Van Bibber, 25, 28, 30, 31; Western Maryland College, 6, 9, 25, 28, 29, 30, 31; Westernport, 3, 25, 28, 30, 31; Woodstock, 9, 25, 29, 31.

Sleet.—Baltimore, 9, 10, 22, 25; Charlotte Hall, 25; Cumberland, 19, 25; Deer Park, 20; Fallston, 22, 25; Flintstone, 9, 10, 25; Grantsville, 25; Green Spring Furnace, 22, 25; College Park, 25; Millsboro, Del., 31; Mt. St. Mary's, 10, 23, 25; Princess Anne, 25, 31; St. Charles College, 10; Sharpsburg, 9, 22, 25; Smithsburg, 9; Western Maryland College, 25; Woodstock, 10, 19.

Hail.—Annapolis, 25; Bachman's Valley, 9, 16, 19, 23; Charlotte Hall, 19, 25; Cumberland, 25; Flintstone, 9, 10, 25; Grantsville, 25; Laurel, 26; McDonogh, 25; Mardela Springs, 9; Millsboro, Del., 25; Mt. St. Mary's, 10; New Market, 10, 19, 25; St. Charles College, 10; Seaford, Del., 9, 25; Solomons, 25; Sunnyside, 25; Taneytown, 9; Woodstock, 9, 19.

Fogs.—Annapolis, 11, 12; Bachman's Valley, 11, 12; Baltimore, 6, 11, 12, 13, 20; Cherryfields, 11, 12, 20; Green Spring Furnace, 11; Jewell, 11, 12, 20; Laurel, 11, 12; Mardela Springs, 10, 11, 12, 20, 22, 31; Millsboro, Del., 20; Mt. St. Mary's, 11, 12, 15; New Market, 8, 9, 19; Port Deposit, 13; Princess Anne, 11, 12; St. Charles College, 11, 12; Solomons, 11, 12, 20; Taneytown, 11; Woodstock, 4, 11, 12, 20, 22.

High winds.—Heavy northwest gales at Annapolis on the 1st and 23d; Bachman's Valley, 1; Baltimore, 23; Boettcher-ville, 23, 31; Easton, 1, 24; Green Spring Furnace, 23, 26; Laurel, 22, 23, 26, 31; Mardela Springs, 23, 26; St. Charles College, 26, 27; Seaford, Del., 23; Smithsburg, 22, 23; Taneytown, 23; Van Bibber, 23; Woodstock, 23, 24, 26, 27, 29.

Thunderstorm.—On the 25th at Annapolis, Bachman's Valley, Baltimore, Cumberland, Frederick, Grantsville, McDonogh, Mt. St. Mary's, New Market, St. Charles College, Smithsburg, Sunnyside, Taneytown, Woodstock; at Princess Anne on the 20th and 23d.

Halos, solar.—Bachman's Valley, 17; Green Spring Furnace, 17; Jewell, 17; Mardela Springs, 30; Washington, 14, 17.

Halos, lunar.—Cumberland, 7; Jewell, 4, 7; Mt. St. Mary's 7; Princess Anne, 7; St. Charles, 7; Solomons, 7.

Corona, lunar.—Cherryfields, 2; Millsboro, Del., 2, 30.

Auroras.—Princess Anne, 19, 24.

* * *

We are pleased to acknowledge the receipt of an interesting letter from Mr. E. G. Kinsell, voluntary observer at Green Spring Furnace, giving an account of an intensely heavy fall of rain which occurred in Washington County in August, 1887. The letter will be published in full in the February Report.

This storm was recalled to Mr. Kinsell through the account of the heavy rainfall at Jewell, Md., last July, printed in the December Report. We would be pleased to receive and give space to accounts of any similar unusual storms or phenomena that may come to the minds of any of the voluntary observers or others:

Climatological data for Maryland and Delaware, January, 1898.

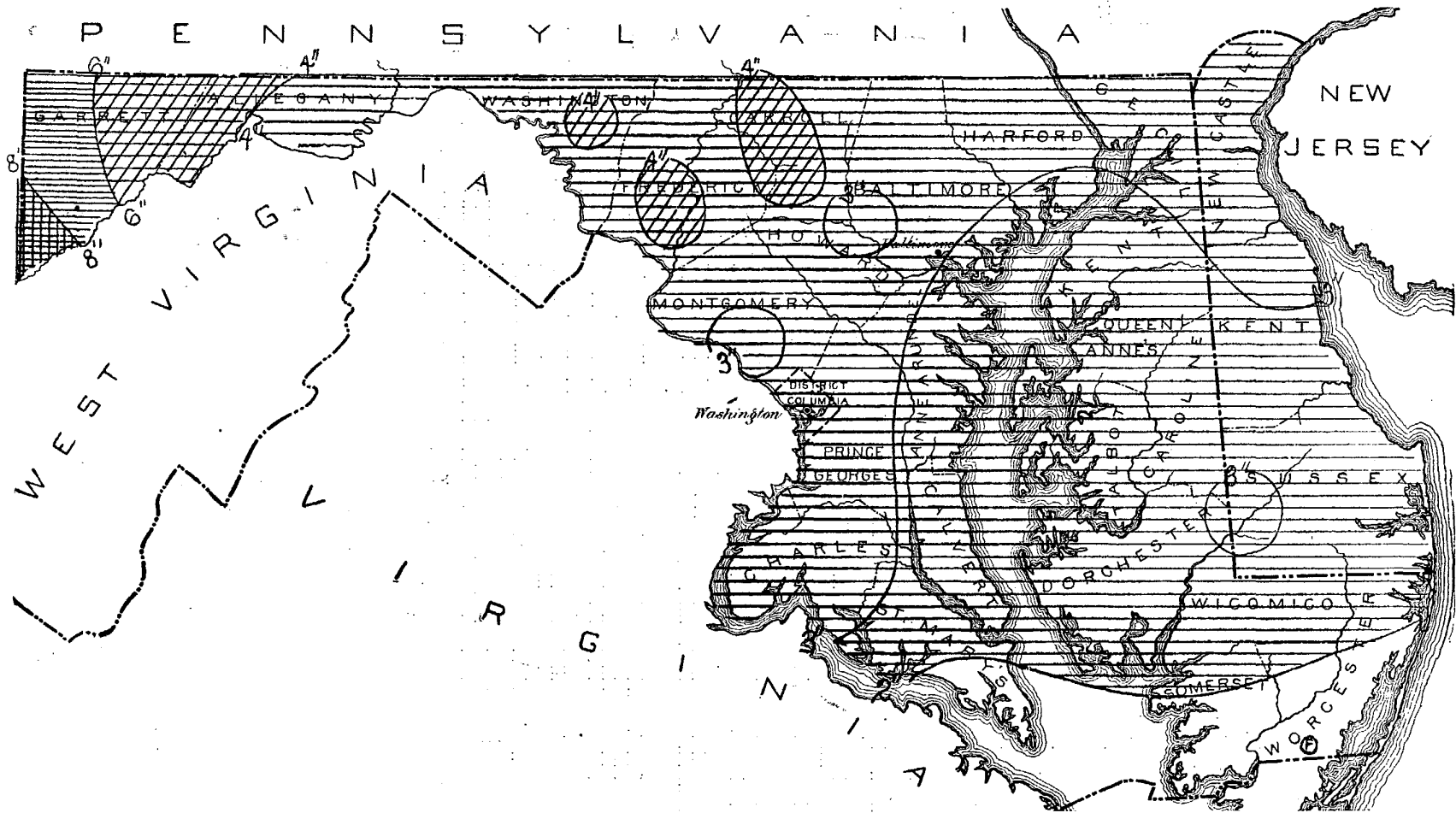
| Stations. | Counties. | Elevation, feet. | Length of record, years. | Temperature, in degrees Fahrenheit. | | | | | Precipitation, in inches. | | | | | Sky. | | | Prevailing direction of wind. | Observers. | |
|-----------------------------|-------------------|------------------|--------------------------|-------------------------------------|----------------------------|----------|-------|---------|---------------------------|-----------------------|--------|----------------------------|-----------------------|----------------------------|--------------------|--------------------|-------------------------------|------------|----------------------------|
| | | | | Mean. | Departure from the normal. | Highest. | Date. | Lowest. | Date. | Greatest daily range. | Total. | Departure from the normal. | Greatest in 24 hours. | Total snowfall (unmelted). | Number rainy days. | Number clear days. | | | Number partly cloudy days. | Number cloudy days. |
| WESTERN MARYLAND. | | | | | | | | | | | | | | | | | | | |
| Boettcherville | Allegheny | 700 | 8 | 33.8 | +5.7 | 64 | 13 | 14 | 4 | 29 | 3.77 | +0.92 | 1.30 | 2.0 | 10 | 9 | 6 | 16 | F. F. Brown. |
| Chamberland | Allegheny | 722 | 39 | 39.3 | +7.8 | 59 | 12 | 13 | 31 | 26 | 4.57 | +2.24 | 1.30 | 1.5 | 9 | 9 | 9 | 16 | Howard Shriver. |
| Deer Park | Garrett | 2,457 | 3 | 39.4 | ..... | 61 | 12 | 30 | 38 | 7 | 69 | ..... | 1.20 | 25.0 | 15 | ..... | ..... | ..... | S. P. Spécht. |
| Flintstone | Allegheny | 800 | 3 | 33.2 | ..... | 56 | 8 | 11 | 4 | 32 | 3.99 | ..... | 0.93 | 5.5 | 9 | 7 | 9 | 15 | N. T. Downs. |
| Grantsville | Garrett | 2,400 | 3 | 30.8 | ..... | 72 | 15 | 1 | 30 | 32 | 6.53 | ..... | 1.05 | 19.5 | 14 | 5 | 6 | 20 | J. S. Miller. |
| Green Spring Furnace | Washington | 500 | 6 | 33.8 | +7.1 | 59 | 8 | 13 | 5 | 33 | 3.44 | ..... | 0.96 | 2.4 | 12 | 13 | 10 | 8 | W. E. G. Kinsell. |
| Hagerstown | Washington | 550 | 4 | ..... | ..... | 59 | 16 | 15 | 3 | 31 | 3.99 | ..... | 1.00 | 3.0 | 9 | 9 | 5 | 17 | Prof. C. E. Carl. |
| Sharpsburg | Washington | 450 | 4 | 33.4 | ..... | 57 | 8 | 15 | 2 | 27 | 3.40 | ..... | 1.06 | 2.0 | 12 | 8 | 10 | 13 | R. L. Hiberger. |
| Smithsburg | Washington | 750 | 1 | 33.7 | ..... | 54 | 8 | 13 | 2 | 21 | 3.52 | ..... | 0.99 | 3.5 | 12 | 10 | 13 | ..... |  |
| Sunnyside | Garrett | 2,440 | 6 | 31.0 | +8.7 | 61 | 12 | 3 | 2 | 31 | 3.95 | +5.00 | 1.50 | 29.0 | 21 | 5 | 0 | 26 | J. G. Knauer. |
| Westernport | Allegheny | 1,000 | 4 | 33.8 | ..... | 65 | 12 | 8 | 31 | 33 | 4.73 | ..... | 1.31 | 4.8 | 10 | ..... | ..... | ..... | Prof. O. H. Bruce. |
| Average | | | | 33.3 | +7.3 | | | | | | 4.96 | +2.72 | | 8.9 | 12 | 8 | 7 | 15 | nw. |
| NORTHERN-CENTRAL MD. | | | | | | | | | | | | | | | | | | | |
| Bachman's Valley | Carroll | 860 | 5 | 32.0 | ..... | 53 | 8 | 12 | 2 | 23 | 3.74 | ..... | 0.71 | 6.5 | 9 | 16 | 6 | 9 | nw. |
| Baltimore | Baltimore | 123 | 64 | 37.0 | +2.8 | 60 | 8 | 17 | 2 | 25 | 2.99 | -0.34 | 1.04 | 5.4 | 12 | 6 | 14 | 11 | w. |
| Darlington Academy | Harford | 300 | 9 | 34.4 | +5.9 | 58 | 13 | 13 | 2 | 24 | 3.54 | -0.14 | 0.88 | 5.0 | 8 | 15 | 7 | 9 | nw. |
| Fallston School | Harford | 450 | 30 | 33.9 | +3.6 | 56 | 13 | 17 | 2 | 22 | 3.40 | -0.02 | 0.90 | 7.2 | 14 | 5 | 16 | 10 | nw. |
| Frederick | Frederick | 250 | 26 | 35.5 | +3.9 | 60 | 13 | 17 | 4 | 24 | 4.05 | +0.80 | 1.26 | 4.5 | 12 | 6 | 12 | 13 | w. |
| Great Falls | Montgomery | 150 | 10 | 35.4 | +5.3 | 61 | 10 | 11 | 2 | 30 | 2.92 | -0.39 | 0.90 | ..... | 10 | ..... | ..... | ..... | sw. |
| Johns Hopkins Hospital | Baltimore | 124 | 4 | 35.7 | ..... | 60 | 8 | 14 | 2 | 28 | 3.13 | ..... | 0.74 | 4.5 | 12 | 12 | 6 | 13 | var. |
| McDonogh School | Frederick | 545 | 23 | ..... | ..... | 61 | 12 | 9 | 31 | 33 | 3.78 | +0.56 | 1.09 | 4.0 | 11 | 6 | 16 | 9 | ne. |
| Mt. St. Mary's College | Frederick | 720 | 38 | 33.2 | ..... | 57 | 12 | 13 | 2 | 23 | 3.14 | +0.49 | 0.72 | 5.0 | 10 | 9 | 12 | 10 | nw. |
| New Market | Howard | 550 | 15 | 33.2 | +2.1 | 57 | 12 | 13 | 2 | 23 | 3.14 | +0.49 | 0.72 | 5.0 | 10 | 9 | 12 | 10 | nw. |
| St. Charles College | Carroll | 300 | 4 | 35.2 | ..... | 57 | 13 | 10 | 3 | 29 | 3.29 | ..... | 1.11 | 4.0 | 10 | 10 | 14 | 11 | w. |
| Taneytown | Harford | 495 | 3 | 34.0 | ..... | 57 | 13 | 13 | 1 | 25 | 4.29 | ..... | 1.31 | 6.6 | 12 | 8 | 12 | 11 | w. |
| Van Bibber | Carroll | 20 | 3 | 34.0 | ..... | 56 | 13 | 13 | 1 | 26 | 3.58 | ..... | 0.95 | ..... | 10 | 17 | 1 | 13 | nw. |
| Western Maryland Coll. | Carroll | 720 | 4 | 34.2 | ..... | 58 | 13 | 8 | 31 | 25 | 4.06 | ..... | 1.04 | 7.5 | 9 | 12 | 12 | 7 | nw. |
| Woodstock College | Baltimore | 392 | 29 | 34.9 | +4.1 | 60 | 12 | 14 | 2 | 27 | 2.28 | -1.41 | 0.68 | 4.8 | 11 | 9 | 10 | 12 | w. |
| Average | | | | 34.5 | +4.0 | | | | | | 3.39 | -0.05 | | 5.3 | 11 | 10 | 11 | 11 | nw. |
| SOUTHERN MARYLAND. | | | | | | | | | | | | | | | | | | | |
| Annapolis | Anne Arundel | 20 | 25 | 38.4 | ..... | 61 | 13 | 19 | 2 | 22 | 2.37 | -0.94 | 0.71 | 4.0 | 8 | 13 | 9 | 9 | nw. |
| Charlotte Hall School | St. Mary's | 167 | 5 | 38.3 | ..... | 66 | 15 | 19 | 2 | 33 | 3.20 | ..... | 0.76 | 4.0 | 7 | 13 | 9 | 9 | nw. |
| Cherryfields | St. Mary's | 20 | 6 | 37.6 | ..... | 60 | 13 | 15 | 2 | 22 | 1.62 | ..... | 0.58 | 2.0 | 12 | 9 | 15 | 7 | nw. |
| Distributing Reservoir | Dist. of Columbia | 120 | 86 | 36.7 | +5.9 | 60 | 13 | 15 | 2 | 22 | 2.47 | +0.37 | 0.86 | ..... | 10 | ..... | ..... | ..... | nw. |
| Jewell | Anne Arundel | 165 | 11 | 37.0 | +2.5 | 60 | 13 | 15 | 2 | 22 | 2.47 | -0.75 | 0.80 | 2.5 | 11 | 16 | 3 | 12 | nw. |
| Laurel | Prince George's | 150 | 4 | 35.8 | ..... | 60 | 13 | 14 | 3 | 29 | 3.30 | ..... | 0.95 | 4.0 | 7 | 2 | 18 | 11 | nw. |
| Md. Agricultural College | Prince George's | 170 | 7 | 37.8 | +3.3 | 61 | 8 | 16 | 4 | 32 | 3.87 | -0.12 | 1.23 | ..... | 9 | ..... | ..... | ..... | nw. |
| Receiving Reservoir | Dist. of Columbia | 160 | 8 | 36.6 | +5.7 | 60 | 13 | 19 | 2 | 22 | 3.70 | +0.28 | 0.88 | ..... | 12 | ..... | ..... | ..... | nw. |
| Solomon's | Calvert | 20 | 7 | 38.3 | +4.9 | 60 | 13 | 19 | 2 | 22 | 2.54 | -0.57 | 0.70 | 1.0 | 13 | 8 | 5 | 18 | nw. |
| Washington | Dist. of Columbia | 112 | 28 | 36.6 | +4.0 | 63 | 13 | 17 | 4 | 29 | 3.54 | +0.14 | 1.02 | 5.5 | 15 | 14 | 5 | 12 | nw. |
| Average | | | | 37.3 | +4.4 | | | | | | 3.00 | -0.23 | | 3.3 | 10 | 11 | 9 | 11 | nw. |
| EASTERN MARYLAND. | | | | | | | | | | | | | | | | | | | |
| Chestertown | Kent | 80 | 14 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Denton | Caroline | 42 | 9 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Easton | Talbot | 35 | 9 | 36.0 | +3.0 | 63 | 13 | 17 | 2 | 29 | 2.83 | -0.35 | 1.15 | 1.0 | 10 | 14 | 7 | 10 | nw. |
| Mardela Springs | Wicomico | 25 | 11 | 36.9 | +0.7 | 68 | 20 | 16 | 4 | 32 | 2.76 | -0.45 | 0.79 | 1.5 | 15 | 10 | 7 | 14 | nw. |
| Pocomoke City | Worcester | 37 | 5 | 43.0 | ..... | 69 | 20 | 17 | 2 | 29 | 1.24 | ..... | 0.46 | T. | 9 | 13 | 8 | 10 | nw. |
| Port Deposit | Cecil | ..... | 1 | 34.0 | ..... | 58 | 8 | 12 | 2 | 29 | 3.45 | ..... | 0.90 | 12.0 | 12 | 14 | 1 | 16 | ne. |
| Princess Anne | Somerset | 20 | 24 | 37.8 | -0.3 | 68 | 20 | 17 | 4 | 30 | 2.09 | ..... | 0.66 | 1.0 | 13 | 9 | 12 | 10 | nw. |
| Average | | | | 37.5 | +1.1 | | | | | | 2.47 | -0.40 | | 3.1 | 12 | 12 | 7 | 12 | nw. |
| DELAWARE. | | | | | | | | | | | | | | | | | | | |
| Dover | Kent | 40 | 22 | 35.9 | +1.8 | 60 | 13 | 15 | 30 | 25 | 3.83 | +0.59 | 1.09 | ..... | 11 | 11 | 6 | 14 | nw. |
| Kirkwood 2 | Newcastle | 60 | 2 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Milford | Kent | 20 | 19 | 30.5 | +3.3 | 66 | 13 | 18 | 2 | 30 | 2.85 | -0.37 | 0.72 | ..... | 12 | 15 | 3 | 13 | nw. |
| Millsboro | Sussex | 23 | 6 | 37.4 | +5.6 | 65 | 14 | 15 | 2 | 32 | 2.05 | -0.68 | 0.77 | 0 | 10 | 14 | 5 | 12 | n. |
| Newark (Delaware Coll.) | Newcastle | 136 | 5 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Seaford | Sussex | 40 | 8 | 37.8 | +5.2 | 65 | 13 | 16 | 2 | 26 | 3.37 | -0.23 | 1.02 | 1.5 | 12 | 13 | 0 | 18 | nw. |
| Average | | | | 37.6 | +4.0 | | | | | | 3.18 | -0.17 | | 0.8 | 11 | 13 | 4 | 14 | nw. |
| General average | | | | 35.5 | +4.2 | | | | | | 3.57 | +0.38 | | 4.3 | 11 | 11 | 8 | 13 | nw. |

NOTE.—All records are used in determining State or district means, but State and district departures are determined by comparison of current data of only such stations as have normals.

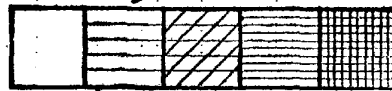
² Mean of 8 a. m. + 8 p. m. + 2.

³ Mean of 7 a. m. + 2 p. m. + 2.

TOTAL PRECIPITATION, JANUARY, 1898.



Scale of Shades.



0 to 2' 2 to 4' 4 to 6' 6 to 8' Over 8'

Daily precipitation for Maryland and Delaware, January, 1898.

| Stations. | Day of month. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Total. | | | | | | |
|------------------------------------|---------------|-----|-----|----|----|-----|-----|-----|------|-----|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|-----|------|------|-----|------|-----|-----|-----|-----|-----|--------|------|------|------|------|------|------|
| | 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. | | | | | | | |
| WESTERN MARYLAND. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Boethcherville..... | | | | | | † | | | .80 | .20 | | | | | .70 | | | | | | .30 | | 1.00 | | .20 | .05 | | | | | | .15 | 3.77 | | | | | |
| Cumberland..... | | | | | | .05 | | | .92 | | | .05 | | | .74 | | | | .41 | | | | 1.30 | | .05 | .95 | | | | | | .15 | 4.57 | | | | | |
| Deer Park..... | .70 | | | | | .33 | | | 1.00 | .12 | | .16 | | | 1.01 | .08 | | | | | .53 | | .75 | .34 | | .45 | .42 | | .20 | .40 | | 1.20 | 7.69 | | | | | |
| Flintstone..... | | | | | | | | | | .82 | | | | | | .75 | | | | | | .75 | | .62 | | .93 | | | | | | | .25 | 3.99 | | | | |
| Grantsville..... | 1.00 | | | | | .05 | | | .30 | | | | | | .90 | .10 | .05 | | | | .56 | | 1.03 | .04 | | .65 | .10 | | | | | .40 | 6.53 | | | | | |
| Green Spring Furnace..... | | | | | | .14 | | | | .72 | .02 | .10 | | | .96 | | | | | | .33 | | .57 | | | .49 | | | | | | .30 | .09 | 3.44 | | | | |
| Hagerstown..... | | | | | | .19 | | | | .75 | | | | | 1.00 | | | | | | .35 | | .85 | | | .55 | | | | | | | .30 | 3.99 | | | | |
| Sharpsburg..... | | | | | | .09 | | | | .76 | | | | | 1.06 | | | | | | .17 | | .43 | .19 | | .49 | | | | | | † | | .17 | 3.40 | | | |
| Smithsburg..... | | | | | | .15 | | | | .70 | | | | | .99 | | | | | | .27 | | .80 | | | .30 | | | | | | .08 | | † | .20 | 3.52 | | |
| Sunnyside..... | .80 | .10 | .18 | | | .14 | | | | † | .85 | .51 | † | | .42 | † | 1.27 | .58 | † | | | .57 | | 1.04 | .46 | .39 | .05 | .48 | .01 | | | .60 | † | .50 | 8.95 | | | |
| Westernport..... | | | | | | | | | | .88 | | | | .06 | | .76 | .06 | | | | | .34 | | 1.31 | | .85 | | | | | | .07 | | .15 | | 4.73 | | |
| NORTHERN-CENTRAL MARYLAND. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bachman's Valley..... | | | | | | .15 | .18 | | | .44 | | | † | .36 | | | .60 | .46 | | | † | .71 | | | | 1.54 | | | | | | | | .30 | 3.74 | | | |
| Baltimore..... | | | | | | † | .08 | | | .21 | .24 | .02 | .06 | | | 1.04 | † | | | | † | .22 | | .26 | .04 | | .60 | .02 | | | | | † | | .26 | 2.99 | | |
| Darlington Academy..... | | | | | | | .12 | | | .55 | | | | .15 | | .88 | | | | | | .38 | | .58 | | .52 | | | | | | | | | .26 | 3.54 | | |
| Fallston School..... | | | | | | † | .09 | | | .60 | † | .06 | † | | .90 | | | | | | .36 | | .18 | .25 | | .41 | .18 | † | | | | | | | .37 | 3.40 | | |
| Frederick..... | | | | | | .15 | | | | .73 | | .13 | | | 1.26 | | | | | | | | .31 | .30 | | .52 | | | | | | | .05 | | .29 | 4.05 | | |
| Great Falls..... | | | | | | .06 | | | | .90 | | .17 | .06 | .49 | | .49 | | | | | | .15 | .06 | .31 | | | .56 | | | | | | | | .16 | 2.92 | | |
| Johns Hopkins Hospital..... | | | | | | | | | | .44 | .03 | .09 | .04 | | .49 | .44 | | | | | | .15 | .16 | | .20 | .04 | | .74 | | | | | | | .40 | 3.13 | | |
| McDonogh School..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | .40 | 3.13 | |
| Mt. St. Mary's College..... | | | | | | | .14 | | | .62 | | .06 | .04 | | 1.09 | | | | | | | .25 | | | .69 | | .47 | .02 | | | | | .10 | | .30 | 3.78 | | |
| New Market..... | | | | | | | | | .33 | .72 | .04 | .14 | | | | .34 | | | | | † | | | .28 | .35 | | .53 | .08 | | | | | .05 | | .28 | 3.14 | | |
| St. Charles College..... | | | | | | | .04 | | | .05 | .66 | | | | 1.11 | | | | | | | .26 | | .22 | .12 | | .41 | .12 | | | | | | | .30 | 3.29 | | |
| Taneytown..... | | | | | | † | | | | .15 | .69 | | | | 1.31 | | | | | | | .39 | | .80 | | .61 | | | | | | | .06 | | .23 | 4.29 | | |
| Van Bibber..... | | | | | | | | | | .23 | | | .55 | .05 | .20 | | | | | | | .15 | .20 | | .44 | | .65 | | | | | | .20 | | .23 | 2.90 | | |
| Western Maryland College..... | | | | | | | .18 | | | .67 | | | | | 1.04 | | | | | | | .47 | | .59 | | .56 | | | | | | | .05 | .20 | | .30 | 4.06 | |
| Woodstock College..... | | | | | | | .06 | | | .48 | | | .03 | .06 | | .68 | | | | | | | .21 | | .24 | | .33 | | | | | | † | | .19 | 2.28 | | |
| SOUTHERN MARYLAND. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Annapolis..... | | | | | | † | | | | | .31 | .12 | .05 | | | .52 | † | | | † | .20 | | | .06 | | .71 | | | | | | | | .40 | 2.37 | | | |
| Charlotte Hall School..... | | | | | | | | | | .36 | .60 | .40 | † | | .76 | | | | | | | .16 | | | | .62 | | | | | | | | | .40 | 3.30 | | |
| Cherryfields..... | | | | | | .03 | .04 | | | .20 | .03 | .04 | | | .58 | .03 | | | † | † | | | .14 | | .09 | | .12 | | | | | | | | .28 | 1.62 | | |
| Distributing Reservoir, D. C..... | | | | | | | | | | .86 | | | .10 | .10 | | .41 | .66 | | | | | | .16 | .16 | | .15 | | .55 | | | | | | | .16 | 3.31 | | |
| Jewell..... | | | | | | | | | | .20 | | | .25 | | | .80 | | | | | | | .27 | | .15 | | .55 | | | | | | | | | .25 | 2.47 | |
| Laurel..... | | | | | | | | | | | .90 | | | | | .95 | .30 | | | | | | .15 | | | .70 | | | | | | | | | | .30 | 3.30 | |
| Maryland Agricultural College..... | | | | | | | .12 | | | .93 | † | .22 | | | 1.23 | | | | | | | | .33 | .14 | | .55 | .10 | | | | | | | | | .25 | 3.87 | |
| Receiving Reservoir, D. C..... | | | | | | | .13 | | | .88 | | .08 | .11 | | .52 | .61 | | | | | | .16 | .17 | | .18 | | .64 | | | | | | | | .17 | 3.70 | | |
| Solomon's..... | | | | | | | .05 | | | .06 | .70 | .03 | .07 | | .66 | .04 | | | | | | .02 | .18 | | .06 | .14 | | .23 | | | | | | | | .30 | 2.54 | |
| Washington, D. C..... | | | | | | | .02 | .08 | | .38 | .43 | .02 | † | † | 1.02 | .01 | | | | | | .01 | .34 | | .13 | .03 | | .55 | .02 | | | | | † | | .39 | 3.54 | |
| EASTERN MARYLAND. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chestertown..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Denton..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Easton..... | | | | | | | .32 | | | .68 | | | | | | 1.15 | | | | | | | .16 | | | .22 | | | | | | | | | | .30 | 2.83 | |
| Mardela Springs..... | | | | | | | .22 | | | .75 | | .09 | .02 | | | .79 | .11 | | | | | | .15 | | | .18 | | .20 | | | | | | | | | .25 | 2.76 |
| Pocomoke City..... | | | | | | | .18 | .09 | | .25 | | .06 | | | .46 | | | | | | | | .13 | | .01 | | † | .06 | | | | | | | | † | 1.24 | |
| Port Deposit..... | | | | | | | | | | .20 | .25 | .10 | .10 | | .05 | .90 | | | | | | | .20 | .15 | .20 | | .30 | .40 | | | | | | | .60 | | 3.45 | |
| Princess Anne..... | | | | | | | .19 | | | .10 | .42 | .03 | .02 | | | .60 | .09 | | | | | † | .12 | | .01 | .08 | | .10 | .05 | | | | | † | | .28 | 2.09 | |
| DELAWARE. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dover..... | | | | | | | .13 | | | .81 | .08 | | | | | 1.09 | | | | | | | .18 | | | .86 | | | | | | | | | | .32 | 3.83 | |
| Milford..... | | | | | | | .07 | | | .72 | | .23 | | | | 1.17 | | | | | | | .22 | | | .17 | | | | | | | | | | | .27 | 2.85 |
| Millsboro..... | | | | | | | .22 | | | .66 | .12 | | | | | .77 | | | | | | † | .33 | | .03 | | .46 | .06 | | | | | | | | | .26 | 2.65 |
| Newark (Delaware College)..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Seaford..... | | | | | | | | | | .38 | | | | .31 | | 1.02 | | | | | | | | .19 | | .14 | | .45 | | | | | | † | | .38 | 3.37 | |

† Trace, when precipitation is less than 0.01 inch.