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WASHINGTON, D. C., PRECIPITATION OF 1954 AND 1955

By

C. G. ABBOT

Research Associate, Smithsonian Institution

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This is the eleventh year of these papers regarding precipitation on individual days at Washington, D.C.[1] Last year [2] it was stated that the precipitation of 1952 and 1953 departed greatly from the pattern of previous years. This was shown graphically by a figure. But it was pointed out that the great unexpected peak on the eleventh day of the cycle of 27.0074 days, used in these publications, was much lower in 1953 than in 1952. It has disappeared entirely in 1954, as is shown here in figure 1. A moderate unexpected peak, however, appears on the ninth day of the cycle in 1954. This peak is principally caused by the rain of 1.87 inches which fell on May 3, 1954.

In figure 1 the line AA shows average of precipitation in 1954, and the line BB shows the average in the original tabulation of 1924 to 1941. One notes that the days 1, 2, 3, 5, 12, 13, 16, 18, 22, 26, and 27—eleven out of the original thirteen, which had greater than average precipitation in the tabulations for the years 1924 to 1941—had greater than average precipitation in 1954.

The year 1954 was a dry year in Washington, but the drought was by no means so severe as that in the southern and southwestern United States, though the precipitation in February, July, and September of 1954 was far below normal. It now (January 29) appears likely that the month of January 1955, will be drier than any of those months.

Notwithstanding the peculiarities of Washington precipitation in 1952, 1953, and 1954, just referred to, the prediction published last year, based on a cycle of 27.0074 days, was successful in 1954. The average daily precipitation of the 177 selected preferred days was 1.31 times the average daily precipitation of all other days of 1954. The average daily precipitation on preferred days for 18 years prior to

[1] The first, Smithsonian Misc. Coll., vol. 104, No. 3, 1944.
[2] Ibid., vol. 122, No. 13, 1954.

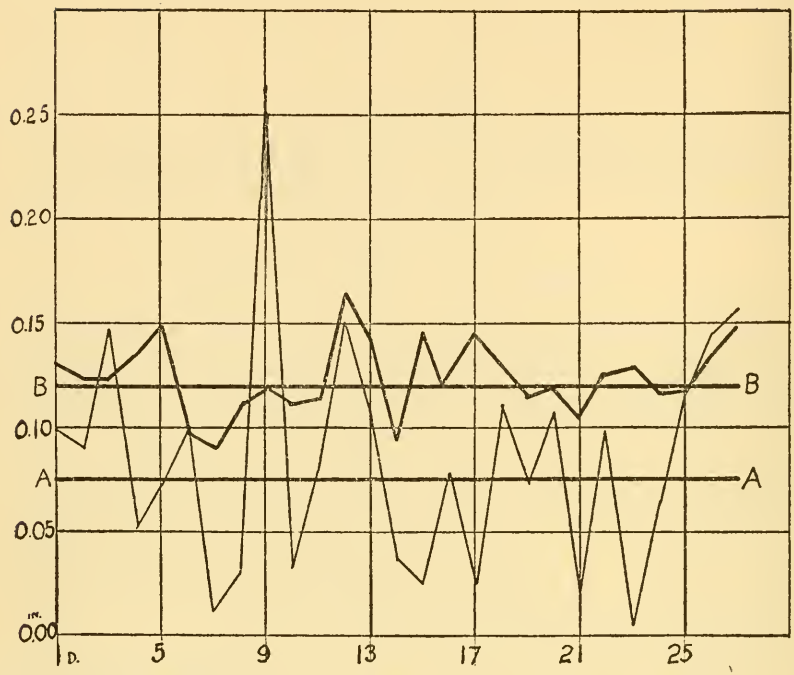

FIG. 1.—Comparison of the 27.0074 cycle of precipitation in 1954 with the basic tabulation of 1924 to 1941.

1952 was 1.46 times the average daily precipitation on all others. The months March, April, July, September, October, November, and December of 1954 were all favorable to the prediction, and January and August but little in the red. Details are given in table 1.

Summary for the year 1954: Total inches, 31.28; percent normal, 77.2; average daily precipitation: preferred days, 0.0975; other days, 0.0746; ratio: 1.31.

TABLE 1.—*Details of precipitation, Washington, D.C., 1954*

Months	Jan.	Feb.	Mar.	Apr.	May	June
Total inches	3.01	0.82	3.84	3.06	3.19	2.29
Average daily, preferred	0.089	0.014	0.175	0.127	0.046	0.001
Average daily, others	0.103	0.044	0.062	0.076	0.144	0.151
Ratio	0.87	0.33	2.82	1.67	0.23	0.01
Months	July	Aug.	Sept.	Oct.	Nov.	Dec.
Total inches	1.66	3.73	0.83	4.24	1.88	2.73
Average daily, preferred	0.071	0.114	0.041	0.246	0.081	0.131
Average daily, others	0.037	0.125	0.016	0.020	0.042	0.052
Ratio	1.92	0.91	2.65	12.30	1.93	2.52

I give in table 2 the 175 dates when higher average precipitation may be expected in 1955 than the average precipitation of all other dates of 1955. The first column, in Roman figures, gives the "preferred" days of the 27.0074-day cycle. The remaining columns give the actual dates in the 12 months of 1955 when these "preferred" cycle dates recur, and when higher than average daily precipitation in Washington may be expected, taking the year as a whole.

The basic tabulation, on which the table rests, began with January 1, 1924, and ended with December 1941. There has been no apparent divergence from this cycle in recent years, except in 1952 and 1953, and it appears to be satisfactory as a basis for 1954, and is used here for 1955. So the decimal 0.0074 seems correct for over 30 years. This cycle corresponds closely with the average period of rotation of the sun, and was suggested by a corresponding period in the Smithsonian measures of the solar constant of radiation. The cycle is more strongly marked in these measures in some years than in others.

TABLE 2.—*Washington precipitation, 1955*

	Jan.	Feb.	Mar.	Apr.	May	Jun.	July	Aug.	Sept.	Oct.	Nov.	Dec.
I	20	16	15	11	8	4	1,28	24	20	17	13	10
II	21	17	16	12	9	5	2,29	25	21	18	14	11
III	22	18	17	13	10	6	3,30	26	22	19	15	12
IV	23	19	18	14	11	7	4,31	27	23	20	16	13
V	24	20	19	15	12	8	5	1,28	24	21	17	14
XII	4,31	27	26	22	19	15	12	8	4	1,28	24	21
XIII	5	1,28	27	23	20	16	13	9	5	2,29	25	22
XV	7	3	2,29	25	22	18	15	11	7	4,31	27	24
XVII	9	5	4,31	27	24	20	17	13	9	6	2,29	26
XVIII	10	6	5	1,28	25	21	18	14	10	7	3,30	27
XXII	14	10	9	5	2,29	25	22	18	14	11	7	4,31
XXVI	18	14	13	9	6	2,29	26	22	18	15	11	8
XXVII	19	15	14	10	7	3,30	27	23	19	16	12	9