NORMAL DAILY TEMPERATURES FOR AURORA BY COMPARISON WITH CHICAGO

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The normal daily temperatures at Aurora have been much desired as a matter of popular interest including use by the local newspaper which would like to report a comparison each day with the current mean. Since the use to be made of these normals is general rather than technical or scientific, it did not seem justifiable at this time to undertake the rather laborous Fourier series method or even one of the elaborate arithmetical smoothing methods which have sometimes been used.

The method here employed was suggested to the writer by Mr. C. F. Jespersen of the Chicago downtown station of the U. S. Weather Bureau. It consists of comparing the Aurora monthly normal temperatures with the Chicago monthly normals and applying this variation to the Chicago daily normals to obtain Aurora daily normals. The city of Aurora is located 36 miles from downtown Chicago, in a direction west and slightly south. The figures used for the Aurora monthly normals were those published in the 1940 year issue of *Climatological Data* and represent a record covering 61 years ending with 1940. The Chicago figures, both monthly and daily, were those appearing in the *Annual Meteorological Summary*, 1940, for Chicago, published by the U. S. Weather Bureau at that city. This record represents a period of 69 years.

The twelve departures of the Aurora from the Chicago monthly normals were plotted on calendar coordinate paper and a smooth curve drawn among the points. From this curve a departure was read off for each day of the year. These departures were then applied to the published Chicago daily normals to obtain Aurora daily normals as shown in the accompanying table. Certain values were adjusted slightly by interpolation to fit more consistently with the data just before and after. In no case was the adjustment more than 1 degree. In case of departure ending in .5 the choice of whether to use the next whole number higher or lower was determined by examining the adjacent data.

The summer maximum at Aurora is higher than that at Chicago while the minimum in winter is lower. Yearly curves for the two localities are quite similar in shape but the Aurora curve is in general ahead in phase by about 5 days. These and other phenomena which developed in making the comparisons, deserve farther study but are considered aside from the main objective of this paper. It is believed that the Aurora

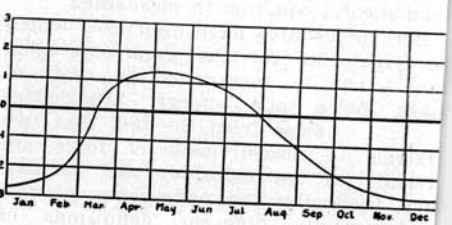

Fig. 1.—Departure of Aurora normal monthly mean temperatures from similar data for Chicago.

daily normals here formulated are of sufficient accuracy to be of practical value until such time as more elaborate methods might become necessary. Acknowledgment is made to Mr. Jespersen not only for suggesting the method, but for his kindly interest and his offer of library facilities. Mr. F. J. Thomas of the Chicago station also made suggestions which proved to be of much value.

AURORA DAILY NORMAL MEAN TEMPERATURES

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1	22	22	29	42	53	64	72	73	68	58	45	31
2	22	22	29	43	54	64	72	73	68	58	43	30
3	22	22	30	43	54	65	72	73	68	58	43	30
4	21	22	30	44	55	65	72	73	67	57	42	29
5	21	22	30	44	55	65	72	73	67	57	42	29
6	21	22	31	44	55	66	72	73	67	56	41	29
7	21	22	31	45	55	66	72	73	67	56	41	28
8	21	22	32	45	56	66	72	73	66	56	40	28
9	21	23	32	46	56	67	72	72	66	55	40	28
10	21	23	33	46	57	67	72	72	66	55	39	27
11	21	23	33	46	57	67	72	72	65	54	39	27
12	21	24	34	47	57	67	72	72	65	54	39	27
13	21	24	34	47	57	68	72	71	65	53	38	26
14	20	24	34	47	58	68	73	71	64	53	38	26
15	20	24	35	48	58	68	73	71	64	53	37	26
16	20	24	35	48	59	69	73	71	63	52	37	26
17	20	25	36	49	59	69	73	71	63	52	36	25
18	20	25	36	49	59	69	73	71	63	51	36	25
19	20	25	37	49	59	69	73	70	62	51	35	25
20	20	25	37	50	60	70	73	70	62	50	35	24
21	20	26	38	50	60	70	73	70	62	50	35	24
22	21	26	38	50	61	70	73	70	61	49	34	24
23	21	26	39	51	61	70	73	70	61	49	34	24
24	21	27	39	51	61	71	73	70	61	48	33	23
25	21	27	40	51	62	71	73	69	60	48	33	23
26	21	28	40	52	62	71	73	69	60	48	33	23
27	21	28	41	52	62	71	73	69	60	47	32	23
28	22	29	41	52	63	71	73	69	59	47	32	23
29	22	29	41	53	63	72	73	69	59	46	31	23
30	22	------	42	53	63	72	73	69	59	46	31	22
31	22	------	42	------	64	------	73	68	------	45	------	22