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NUMERICAL PREDICTION OF DAILY MAXIMUM TEMPERATURE OVER OZAR

Forecast of maximum temperature would be of immense help not only to agriculture but also for human comfort. This study will be of some use to HAL factory which is situated in this station. This study will enable India Met. Dep. to predict maximum temperature daily on the basis of past meteorological data so that men at work prone to sunstroke and other physical discomfort may be forewarned.

2. A simple method has been discussed in this note to forecast the maximum temperature at Ozar based on two parameters only, *viz.*, the dry bulb and dew point temperatures at 0830 IST of the day. Pandarinath *et al.* (1981) carried out similar study for Ramagundam. Five different regression equations have been developed depending on the range of dew point temperatures at 0830 IST which provided an accuracy within $\pm$ 1.5 on 80% of the occasions during the months April during 1984-85 and for May 1984.

3. The data for the period of 7 years from 1979 to 1985 has been used in the study. The five regression equations developed are formed from data for the period 1979-83 and the verification was done for 1984 & 1985 for the months April & May.

(1) When dew point TdTd $\geqslant$ is 20° C

$$T_{max} = 1.82\ T + 1.02\ \text{TdTd} - 31.99$$

(2) When dew point TdTd is $\geqslant$ 15° C but $<$ 20° C

$$T_{max} = 0.66\ T + 0.05\ \text{TdTd} + 18.95$$

TABLE 1

The actual and computed daily maximum temperatures of Ozar for April, May 1984 & 1985

Date	April 1984			May 1984			April 1985			May 1985		
	A	C	D	A	C	D	A	C	D	A	C	D
1	39.0	37.4	—1.6	39.0	37.6	—1.4	33.6	34.6	+1.0	35.2	37.3	+2.1
2	39.8	39.0	—0.8	39.5	38.7	—0.8	34.4	32.5	—1.9	34.4	36.0	+1.6
3	39.3	40.3	+1.0	38.7	38.8	+0.1	34.7	36.0	+1.3	34.0	35.6	+1.6
4	38.9	38.0	—0.9	40.1	40.0	—0.1	35.3	35.2	—0.1	35.1	36.6	+1.5
5	37.3	38.5	+1.2	41.2	40.2	—1.0	35.6	34.5	—1.1	36.4	37.2	+0.8
6	37.0	37.9	+0.9	39.8	41.5	+1.7	36.1	35.4	—0.7	38.6	37.1	—1.5
7	34.7	35.6	+0.9	38.7	38.6	—0.1	36.8	37.0	+0.2	39.8	38.5	—1.3
8	34.9	34.9	0.0	39.5	38.7	+0.8	34.9	35.9	+1.0	40.6	38.9	—1.7
9	35.4	36.2	+0.8	38.3	37.7	—0.6	35.5	37.0	+1.5	40.0	38.1	—1.9
10	35.2	37.5	+2.3	38.4	38.9	+0.5	35.8	35.8	0.0	41.0	39.3	—1.7
11	36.3	38.7	+2.4	38.7	38.2	—0.5	37.5	37.1	—0.4	39.0	39.0	0.0
12	36.2	35.8	—0.4	39.3	38.3	—1.0	37.8	37.7	—0.1	40.3	38.5	—1.8
13	37.9	38.6	+0.7	38.9	37.8	—1.1	36.9	37.0	+0.1	40.5	39.3	—1.2
14	40.0	40.0	0.0	37.4	37.9	+0.5	34.9	36.1	+1.2	38.8	38.1	—0.7
15	40.5	40.7	+0.2	36.6	38.5	+1.9	35.6	34.8	—0.8	38.8	39.5	+0.7
16	40.5	39.1	—1.4	37.9	36.8	—1.1	37.9	35.8	—2.1	40.3	39.7	—0.6
17	39.4	38.9	—0.5	40.4	39.6	—0.8	37.5	36.4	—1.1	41.3	40.0	—1.3
18	40.5	38.9	—1.6	40.5	40.5	0.0	38.6	37.6	—1.0	41.3	41.1	—0.2
19	38.3	39.2	+0.9	39.0	39.6	+0.6	38.2	38.6	+0.4	39.7	40.0	+0.3
20	37.9	38.3	+0.4	38.2	37.8	—0.4	38.0	40.4	+2.4	37.1	38.5	+1.4
21	36.3	36.7	+0.4	40.0	38.5	—1.5	39.7	40.0	+0.3	36.7	37.6	+0.9
22	38.9	37.0	—1.9	39.0	38.4	—0.6	40.5	39.9	—0.6	37.7	37.8	+0.1
23	37.1	38.9	+1.8	38.4	37.7	—0.7	37.5	38.3	+0.8	36.5	37.5	+1.0
24	38.4	39.1	+0.7	37.5	38.1	+0.6	37.4	36.9	—0.5	36.0	37.9	+1.9
25	39.5	39.6	+0.1	38.3	38.0	—0.3	37.9	38.5	+0.6	34.6	36.1	+1.5
26	37.7	37.8	+0.1	38.4	37.0	—1.4	38.3	39.0	+0.7	35.6	37.8	+2.2
27	37.5	37.1	—0.4	37.7	37.0	—0.7	38.6	38.6	0.0	36.4	37.5	+1.1
28	36.6	36.7	+0.1	36.3	37.2	+0.9	39.5	39.6	+0.1	37.3	38.1	+0.8
29	35.9	36.5	+0.6	35.0	36.7	+1.7	39.6	39.6	0.0	35.4	38.6	+3.2
30	37.5	37.2	—0.3	35.7	36.7	+1.0	37.6	39.3	+1.7	32.7	38.0	+5.3
31				35.2	37.7	+2.5				34.2	38.2	+4.0

A — Actual ; C — Computed ; D — Difference

TABLE 2

Percentage of accuracy of values for ranges (a) — 0.5 to + 0.5; (b) ±0.6 to ±1.5 & (c) > ± 1.5 for April & May 1984 & 1985

Year	April				May			
	(a)	(b)	(c)	(a)+(b)	(a)	(b)	(c)	(a)+(b)
1984	32	49	19	81	26	61	13	87
1985	40	47	13	87	13	48	39	61

(3) When dew point TdTd is <15° C but ⩾ 10°C
$T_{max} = 0.59\,T - 0.04\,TdTd + 22.44$

(4) When dew point TdTd is < 10° C but ⩾ 05°C
$T_{max} = 0.53\,T + 0.29\,TdTd + 21.84$

(5) When dew point TdTd is < 05° C but ⩾ — 05°C
$T_{max} = 0.36\,T + 0.17\,TdTd + 28.50$

where, T_{max} is the predicted maximum temperature, T is the dry bulb temperature at 0830 IST & TdTd is the dew point temperature at 0830 IST, all in degrees Celsius.

Table 1 gives the actual and computed values for the months April & May 1984 & 1985. Table 2 gives the actual percentage of accuracy for the ranges — 0.5° C to + 0.5° C, ± 1.5° C & > ± 1.5° C for April & May for the period 1984 & 1985. It may be noted that there is a very good agreement of more than 80% except for May 1985 for which the figure is 61%.

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