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Incidence of fog and low stratus clouds over Begumpet airport during winter months

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1. The incidence of fog and low stratus clouds at some of the aerodromes has been discussed by various workers (Sreenivasaiah 1944, Elsworth 1945, George 1948, Chakravortty 1948, Rangarajan 1952 and Basu 1952). A similar study of occurrence of fog at Begumpet airfield has been undertaken by the author.

2. Fig. 1 shows the topography around the airport. The special feature is a large lake (Hussain Sagar) to the southsoutheast of the airport. The general orography in the vicinity of the airport is a gentle rise from southeast to northwest except for a row of hills right to the southsouthwest of the airport. Experience has shown that on many occasions low stratus has been observed to the southeast of the airfield approaching the station.

It is probable that low stratus first forms over the lake and then drifts towards the airfield as fog.

3. Table 1 gives the number of days of fog occurring in different winter months of the years 1950–1956. It will be seen that the maximum number of fog days occurred in January, with December coming next.

4. Table 2 gives (a) the total number of days of low stratus clouds either in association with fog or occurring independently, and (b) the number of days of low stratus clouds occurring independently and not in association with fog. Only those days with low cloud amounts 4/8 or more and base less than 1000 ft have been taken into account. January has the maximum number of days of low stratus clouds occurring independently and not in association with fog.

5. Table 3 gives the time of commencement of fog and Table 4 gives the duration of fog. Fog commenced between 0600 and 0700 IST on most of the days and the duration was 1-2 hours generally. The maximum duration of fog so far occurred was 3 hours on 25 November 1955.

6. Table 5 gives the time of occurrence of low clouds occurring independently and not in association with fog (total amount 4/8 or more and base less than 1000 ft). Time of occurrence on most of the days was between 0600 and 0700 IST. It will be interesting to note that there was not a single occasion when the low stratus clouds occurred before 0500 or after 1000 IST.

7. A study of temperature chart for days of fog showed that the minimum temperatures were above normal over Hyderabad State and the upper air streamlines suggested that relatively moist air from the Bay of Bengal was being advected over the place. The predominant wind direction in the lower levels at Hyderabad in winter months is easterly. On most occasions this easterly wind is the Continental air forming part of the anticyclonic circulation over the central parts of the country and is consequently dry.

But on occasions when low pressure waves move westwards across the South Peninsula or western disturbances move across North India at relatively low latitudes the winds over Hyderabad can be traced back to the Bay of Bengal. Such conditions are

TABLE 1

No. of days of fog occurring in winter months (1950-1956)

Year	Nov	Dec	Jan	Feb
1950	0	3	0	0
1951	0	0	0	0
1952	0	2	1	2
1953	0	1	0	0
1954	0	0	2	0
1955	2	0	2	0
1956	0	0	3	0
Total	2	6	8	2

TABLE 2

No. of days of low stratus clouds (a) total and (b) independent of fog

Year		Nov	Dec	Jan	Feb
1950	(a)	2	3	0	0
	(b)	2	1	0	0
1951	(a)	2	2	6	0
	(b)	2	2	6	0
1952	(a)	0	2	4	3
	(b)	0	2	3	1
1953	(a)	1	1	5	0
	(b)	1	0	5	0
1954	(a)	1	1	4	1
	(b)	1	1	2	1
1955	(a)	5	2	9	1
	(b)	3	2	7	1
1956	(a)	0	0	5	3
	(b)	0	0	2	3
Total	(a)	11	11	33	8
	(b)	9	8	25	6

TABLE 3

No. of occasions of fog commencing at different periods

Hours (IST)	Occasions of fog
05—06	1
06—07	11
07—08	5
08—09	1
Total	18

TABLE 4

No. of occasions of fog of different durations

Duration (hr)	Occasions of fog
$<\frac{1}{2}$	4
$\frac{1}{2}$—1	4
1—2	7
2—3	3
Total	18

TABLE 5

Time of occurrence of low stratus clouds occurring independently and not in association with fog

Hours (IST)	No. of occasions
05—06	3
06—07	17
07—08	14
08—09	13
09—10	1
Total	48

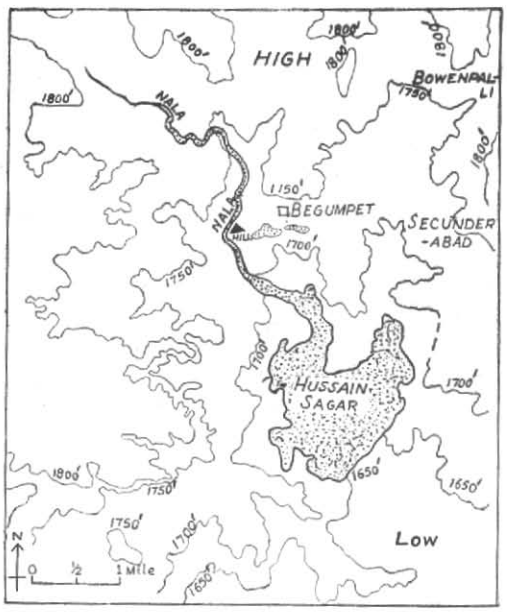

Fig. 1. Topographical map in the neighbourhood of Begumpet airport

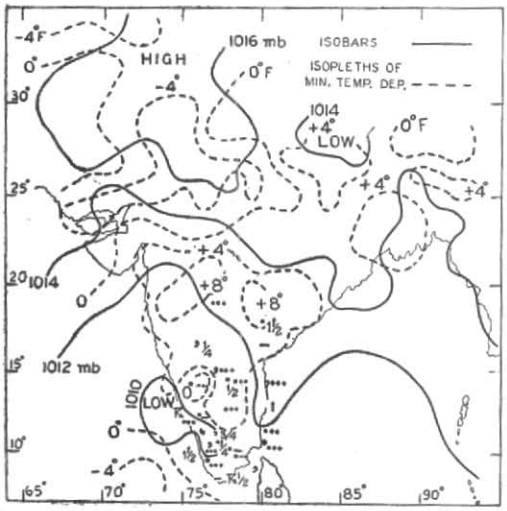

Fig. 2. Surface isobar (1730 IST), minimum temperature departure and hydrometeors (0830 IST) on 24 November 1955

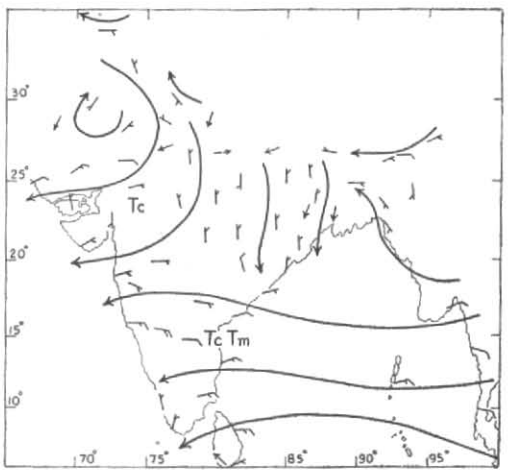

Fig. 3. Upper winds and streamlines at 3000 ft a.s.l. at 1430 IST on 24 November 1955

favourable for fog if the other factors are also conducive.

8. Synoptic situation associated with a particular case of fog is described below. Thick fog set in over Begumpet airfield at 0545 IST on 25 November 1955 and lasted till 0845 IST. Low stratus clouds developed at 0800 IST and remained till 1000 IST on that day.

Fig. 2 shows the surface isobars of 1730 IST on 24 November 1955, minimum temperature departures and hydrometeors based on the 0830 IST chart of the same day. An easterly wave was moving across south Bay of Bengal. A low was lying over Malabar-Kanara coasts and adjoining area of south-east Arabian Sea. Rainfall had occurred locally in Rayalaseema, Tamilnad, Malabar, south Kanara and Travancore-Cochin and at a few stations in the south Konkan, south Deccan Desh, south Hyderabad, Mysore and coastal Andhra Desa. It will be noticed that the minimum temperature departures are highly positive, of the order of $+4°$ to $+10°$F over Hyderabad State and neighbourhood.

Fig. 3 shows the upper winds and streamlines at 3000 ft above sea level at 1430 IST on 24 November 1955. It will be observed that the advection of moisture associated with the low pressure wave was taking place over Hyderabad and adjoining areas.

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