

DUST-SQUALLS AT MADRAS

Two dust-squalls occurred at Madras during the hot months of 1948 and 1949—the first on 26 April 1948 was from NNE, reaching a speed of 42 knots and was followed by a thundershower; the second on 8 May 1949 was also from NNE and reached a speed of 27 knots but it was not accompanied by a thundershower. The Dines P.T.A. record of the squall on 26 April 1948 is reproduced below as Fig. 1.

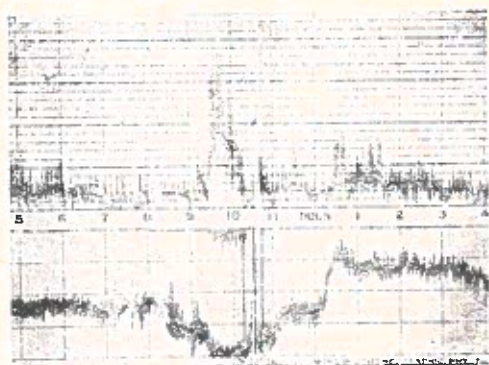


Fig. 1 Anemogram for 26 April 1948

2. In the experience of the author, in Madras only squalls from a N to NE-ly direction raise a wall of dust, as in the present cases, due to topographical peculiarities and the dryness of the land surface during the early parts of the hot season. These squalls are interesting in so far as they are rare at places like Madras. Visibility in both cases was almost zero, and but for the humidity criterion, one may

TABLE 1.

Date	Station	Time of occurrence	Element for 5M
26.4.48	Hyderabad	0545 IST	Thundershowers
	Madras	0945 "	Squall NNE 42 knots
	Trichy	1005 "	Thundershowers
		1545 "	Squall N 30 knots
8.5.49	Hyderabad	0115 IST	Squall NE 30 knots
	Gannavaram	0140 "	Squall NE 30 knots
	Nellore Madras	0222 "	Thundershowers
		1059 "	Squall N 30 knots
		1410 "	Squall NNE 27 knots

not be far wrong in classifying the dust squalls as "Andhi" type. The synoptic situation with which they were associated are described below.

3. Both the squalls occurred in the forenoon or early afternoon and were more or less in sequence with the thunder-squalls that had occurred previously at reporting station to the north of Madras. The time sequences of these squalls, as could be judged from the MMMM reports received are given in Table 1.

These time sequences suggest the movement of a 'Squall front' over Madras from a N to NE-ly to a S to SW-ly direction.

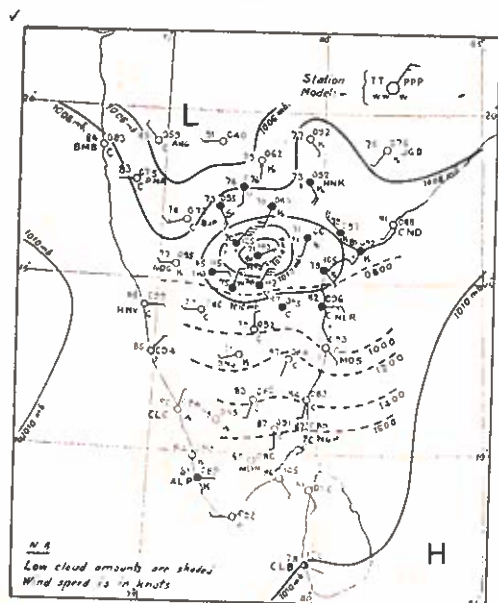


Fig. 2. Surface Chart at 0800 I.S.T. on 26th April, 1948.

4. Fig. 2 shows the surface isobaric chart at 0800 IST on 26 April, 1948 before the occurrence of the squall at Madras. It shows a well-marked, though small-scale, anti-cyclone to the northwest of Madras. This 'High' is really a 'Cold Dome' at and near the surface produced as a result of the cooling of the lower atmosphere by the thunderstorms/showers in that region. Moving southwards, this High acted as a Cold front. This is borne out by the isochrones in Fig. 2 (dotted lines) drawn with the aid of the past weather remarks available on the day's 1700 IST surface chart, on which the high became diffused into a narrow ridge about 150 miles to the west of Madras with its periphery skirting Cuddappah, Vellore, Trichy and Salem. Moreover, the day's maximum temperatures were below normal at all stations north of Lat. 11°N with negative departures increasing to 16° to 18°F . up to Lat. 15°N and they were above normal at stations south of Lat. 11°N . The southerly movement of the cold front was influenced by the warm sector to the south of the high and also by the katabatic effect of the terrain which slopes southwards and eastwards towards coast.

5. To forecast such early summer squalls at Madras and other south peninsular stations, one has, therefore, to look for the occurrence of thunder-squall over the Deccan plateau in these months. The thundery activity over the Deccan is caused by the incursion of moist air from the Bay of Bengal to a height of about 2 km. above which cold and dry continental air prevails.¹ The Bay current is accentuated by the presence of a cyclonic vortex in the upper air over the region. And depending upon

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the time of occurrence and intensity of the thunder-squalls over the Deccan, one can, with sufficient confidence, foresee the N to NE-ly dust-squalls at Madras in the hot season. These dust-squalls may or may not be accompanied by thundershowers depending upon the condition of latent instability of the atmosphere at the place as revealed in these instances by the latest available

radio-sonde observations.

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REFERENCE.

1. Venkiteshwaran, S.P., *I. Met. D. Sci. Notes*, 4, 44 (1932).