

wind in gusts has reached 38 km/hr or more in at least two consecutive clock hours in a day, have been noted by examining the daily anemograms for the years 1957 to 1961. A day has been termed as a day of strong winds, in case the surface winds in gusts have reached 38 km/hr or more in at least two consecutive clock hours in the day. The predominant direction of the strong winds, the maximum speed reached in the day, the duration of strong winds in full clock hours have also been noted. Since the purpose of this study is to study strong gusty surface winds and not squalls normally associated with thunderstorms (which had been studied earlier—Saxena and Natarajan 1966), occasions of squalls associated with thunderstorms have been neglected unless the surface wind has already been strong irrespective of the squall or surface wind became strong and remained strong in at least two clock hours, in association with squall. Results of the analysis of the data so collected are summarised and discussed below.

Results and discussions

Monthly frequency of strong surface winds—It is seen that the number of days of strong winds increase as the year advances from January to June—reaching a peak of 20 days in June—and again it starts falling reaching a minimum value of 1 day in October, which is a month of light variable winds. During November and December the frequency of strong wind days shows a slight increase again compared to October. On an average 76 days in the year are days of strong surface winds.

Direction and maximum speed—During the months of January, November and December strong gusty winds prevail predominantly from E/NE direction. During February to April strong gusty winds prevail from E/NE direction and also from N/NW direction. During the months of May to September strong gusty winds are predominantly from a SW-ly direction. October is the month of light variable winds. The maximum speed reached in gusts is generally below 58 km/hr. Only on 4 per cent of the total days of strong winds, the speed goes beyond 58 km/hr. The frequency of strong winds of 58 km/hr and above is maximum in the month of June. On most occasions the strong winds of 58 km/hr or more are associated with steep pressure gradient around Ahmedabad in association with some nearby low pressure systems.

Time of occurrence of strong winds—Table 1 gives the number of occasions when the surface winds were 38 km/hr or more during specified time intervals of the day during the years 1957 to 1961. Taking the year as a whole, the surface winds are

551·553·6 (543)

STRONG SURFACE WINDS AT AHMEDABAD AIRFIELD

A study of strong winds of speed 38 km/hr or more has been made from the autographic records of the observatory at Ahmedabad airport and their statistical features discussed here. Statistical analysis of monthly frequency, period of occurrence, maximum speed reached and direction has been made based on the data for years 1957 to 1961.

Data—For the purpose of this study, surface winds gusting to 38 km/hr or more have been termed as 'strong'. The day has been considered to be divided into 24 clock hours (*e.g.*, 0000-0100, 0101-0200 and so on), and the days on which surface

TABLE 1
Frequencies of surface wind speed 38 km/hr or more during specified time intervals

	Time intervals (IST)					
	0200	0600	1000	1400	1800	2200
	to 0600	to 1000	to 1400	to 1800	to 2200	to 0200
Jan	1	8	12	2	1	—
Feb	1	5	9	5	—	—
Mar	—	8	18	15	2	—
Apr	2	6	19	15	8	5
May	7	10	21	37	44	19
Jun	2	9	40	57	66	18
Jul	5	14	33	38	34	12
Aug	—	2	11	12	4	3
Sep	1	2	7	7	4	2
Oct	—	2	6	3	—	—
Nov	—	2	6	1	1	—
Dec	—	3	6	1	—	—
Total	19	71	188	193	164	59

TABLE 2

	Number of days when surface winds were strong from a	
	E/NE direction N/NW direction	
	E/NE direction	N/NW direction
Jan	12	0
Feb	7	6
Mar	5	16
Apr	6	13
Nov	8	1
Dec	7	1
Total	45	37

mostly strong between 1000 and 2200 IST but no time interval of the day can be said to be completely free from strong winds.

Table 2 gives the number of days (during the five-year period 1957 to 1961) when the surface winds are strong (38 km/hr or more) from E/NE direction and W/NW direction for the months of January to April and November to December.

On an examination of the times of start and cessation of these strong winds, it is noticed that strong E/NE winds start early in the day and cease early whereas W/NW strong winds start comparatively late in the day and cease late in the evening. Out of 45 days of strong E/NE winds, on 40 days they started between 0900 and 1100 IST whereas

out of 37 days of strong W/NW winds, on 26 days, they started after 1200 IST. Similarly N/NE winds became weak (less than 38 km/hr) by 1300 IST on 35 out of 45 days, whereas N/NW winds became weak only by 1800 IST on 31 out of 37 days. During the months May to September, the strong winds are predominantly from a SW-ly direction and occur mostly between 1000 and 2200 IST. October is the month of light variable winds.

Strong surface winds and upper winds at 0.3 and 0.6 km—Since 1130 IST upper wind data in respect of Ahmedabad for the period of study are not available, 0530 and 1730 IST upper wind data at 0.3 km and 0.6 km were examined for the strong wind days, but no dependence of strong surface winds on the strength of upper winds at low levels could be established.

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REFERENCE

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