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A STUDY OF SQUALLS AT AGARTALA

1. A study of the various features of the surface squalls at Agartala airport has been undertaken in this note. A statistical analysis of the squalls bringing out monthly frequencies, diurnal variation, maximum gust speed and duration, along with the pressure and temperature changes, accompanying the squalls, has been made. The study is based on 13 years data (1959 to 1971) obtained from Monthly Meteorological Register, barograph and thermograph records of Agartala airport. There were in all 158 occasions of squalls during the period of study. Out of these, data were not available for direction, speed, temperature and pressure on 23, 18, 6 and 3 occasions, respectively.

2. Fig. 1 gives the number of squalls recorded during the period 1959-1971. There were only 4 squalls in each of 1960 and 1965, while 21 each in 1959 and 1969, although average number of squalls is about 12 per year. For different months the maximum number of days of squalls, the average number of days of squalls and the average percentage frequencies are worked out. The frequency of squalls is maximum in the month of April, the highest number in the month so far recorded is 8 in 1968. During the period of study 34.3 per cent of squalls recorded in the month of April and 29.7 per cent in the month of May. No squall was recorded in the month of November, December and January.

3. The diurnal variation of squalls has been given in Fig. 2. It indicates that squalls occur at all hours of the day. The highest number of squalls 21 (13.3 per cent) occurs during 1700-1800 IST and the next highest number 19 (12 per cent) between 1600-1700 IST. About 35 per cent of squalls occur during the three hours 1600-1900 IST. There is a secondary peak in the early morning between 0100 and 0300 IST.

4. It is seen that squalls approach Agartala from all the 8 directions of the compass. Northwest and west are the most favoured directions.

5. The speed of about 40 per cent of squalls remained between 30 and 37 kt. In the month of April the speed is generally high and there is no case where speed is less than 30 kt. During the period of study there were only 6 occasions when speed exceeded 60 kt, out of which 5 were in the month of April.

6. Pressure changes in association with the passage of squall show that 52 (33 per cent)

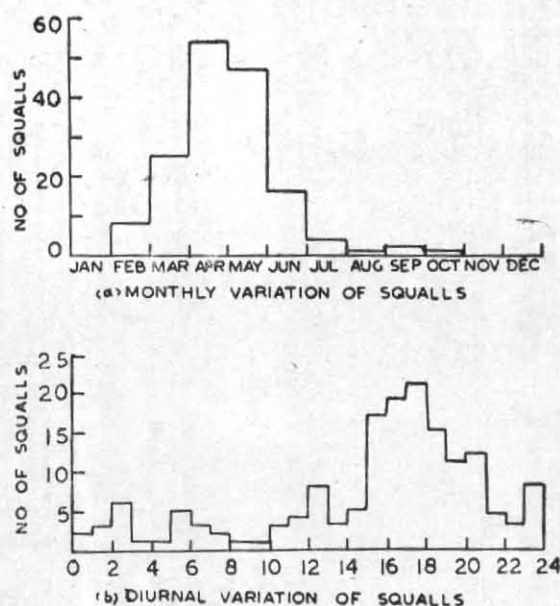


Fig. 1

occasions recorded rise of pressure between 0.1 and 1.0 mb. It may be seen that more than 30 per cent of squalls were associated with the pressure rise between 1.1 and 2.0 mb. Only on 12 (7.6 per cent) occasions the rise of pressure was more than 4.0 mb. The maximum rise was 6.7 mb on 28 April 1969, with squall approaching from 340° with speed 43 kt. During the period of study there was no noticeable change of pressure on 2 occasions, while pressure fall of less than 1.0 mb was noticed on two occasions.

7. It is noticed that during 26 (16.5 per cent) squalls dry bulb temperature fell less than 2.0°C and on 36 (22.7 per cent) occasions fall of temperature was between 2.1 and 4.0°C. On 33 (20.8 per cent) and 29 (18.4 per cent) occasions fall of temperature varied from 4.1 to 6.1°C and from 6.1 to 8.0°C respectively. Only on 11 occasions fall of temperature was more than 10°C and maximum fall recorded was 13.5°C on 23 April 1960. During the period of study no rise of temperature was noticed when squalls occurred. It is observed that the duration of more than 45 per cent of squalls was less than 10 minutes and about 65 per cent cases it was between 5 and 16 minutes. Only 5 squalls continued more than 30 minutes and the maximum duration was 45 minutes.

8. During the period of study there were 16 occasions when squalls were recorded twice on the same day. In 13 of the above cases the direction of both the squalls was almost the same or different by 30°; only one day it differed by 165°. There

was one occasion when squalls occurred thrice on the same day and direction differed by 25° only. On 14 May 1968 squalls approached 4 times and difference of direction between 1st and 2nd, and 3rd and 4th was 135° and 143° respectively,

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but the same between 1st and 3rd was 180° .

9. In most of the cases squalls were accompanied with rain. Severe squalls were always accompanied with both rain and thunderstorm and on a few occasions with hail.

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