

## Letters to the Editor

551-578 (548)

### LOCALISED VERY HEAVY RAIN IN NELLORE DISTRICT ON 11 AND 12 NOVEMBER 1961

1. Newspapers reported very heavy rain at Gudur in Nellore District on 11 and 12 November 1961. During the 48 hrs ending on 0830 IST of 12th, the station recorded 30.6 cm of rain. The only meteorological observatory which reported heavy rain was Nellore, recording 7.4 cm on 11th. With a view to find out whether the heavy rain was an isolated one, the state raingauge data from Nellore, Chittoor and Cuddapah districts of Andhra Pradesh were collected. The present note gives the spatial distribution of very heavy rain, the prevailing synoptic situation and information about cells recorded on Madras storm detection radar from and near the region of very heavy rainfall. Orographic features of the region have also been brought out.

2. Figs. 1 and 2 show the rainfall amounts recorded at the state raingauge stations during 24 hrs ending on 11 and 12 November 1961 respectively and the areas of very heavy rainfall. These also give orography of the region covering Nellore, Cuddapah and Chittoor districts. It may be seen that the Velikonda range runs practically north-south and west of stations Rapur, Venkatagiri and Kalahasti. On 11th morning, very heavy rain was recorded at Venkatagiri, Gudur, Kovur and Rapur, all in Nellore district and at Kalahasti in Chittoor district, the highest rainfall recorded being

14.5 cm at Venkatagiri. On 12th morning, heavy rain was recorded at Gudur, Kovur, Rapur and Tada, all in Nellore district, the highest rainfall recorded being 18.9 cm at Gudur. It can thus be seen that very heavy rain was confined almost entirely to Nellore district. The area of very heavy rainfall on both the days was nearly 1350 sq. miles. The nearest meteorological observatories surrounding this area of very heavy rain are Nellore, Cuddapah, Arogyavaram and Madras. The area enclosed by these observatories is about 7600 sq. miles. This is roughly six times the area over which very heavy rain has fallen.

3. The radar at Madras showed a number of active cells on 10th and 11th between 50—90 miles in the direction 320°—020° which includes the area of very heavy rain. Earlier, on 9th, fewer cells were present over the area. The radar height of the clouds over the area extended from 18,000—25,000 ft on the days of very heavy rain.

4. On 10th morning, a trough-line was observed at 1.5 km a.s.l. running roughly along longitude 83°E. While this became unimportant by evening, a trough-line appeared at 900 m a.s.l. running along 82°E, the trough being apparently confined to south of Lat. 15°N. These troughs became insignificant on 11th, but a trough on the sea-level chart made its appearance off Coromandel coast, the trough-line running along Long. 82°E. This sea-level trough was confined to south of Lat. 15°N. On both the days, there was a marked difference in the cloud conditions along the east coast south of 15°N and north of 15°N, the

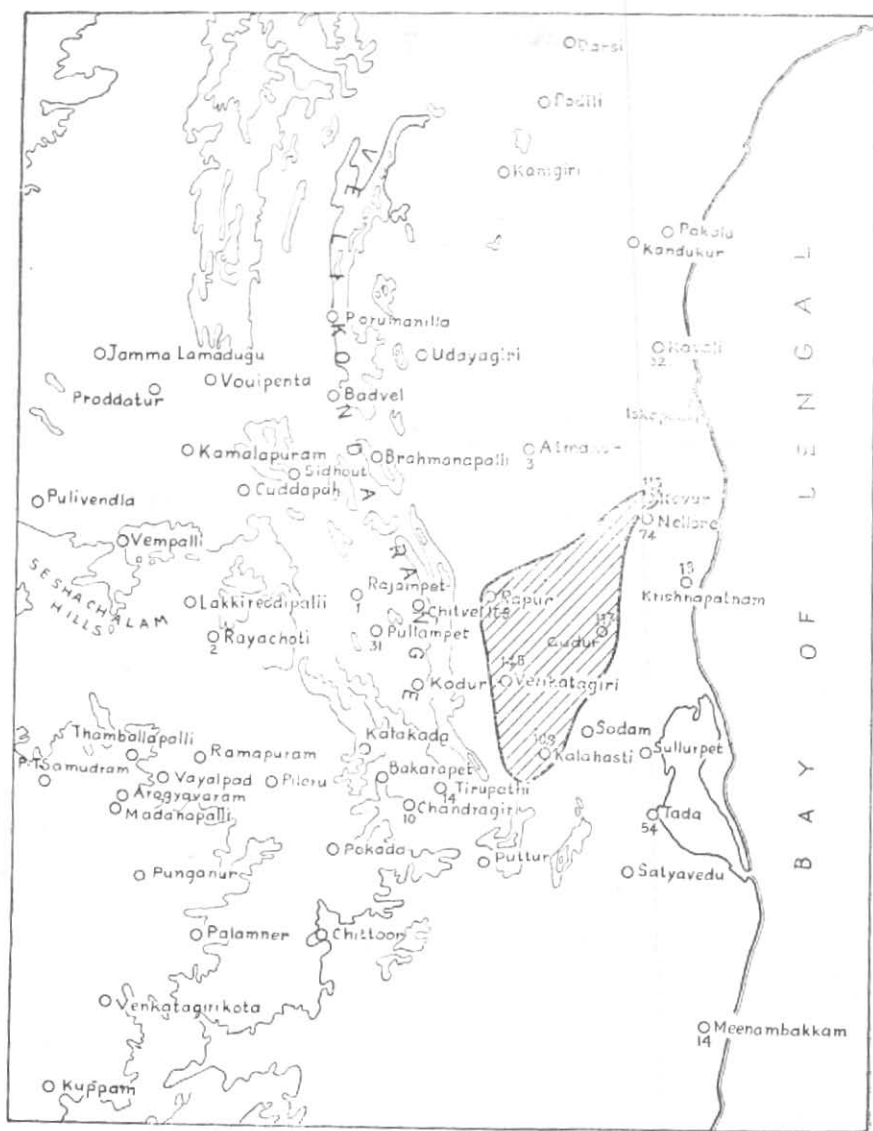


Fig. 1. Rainfall recorded at stations in Nellore, Cuddapah and Chittoor districts during 24 hours ending at 0830 IST of 11 November 1961

Rainfall in millimetres is indicated by figures below the station circles. Shaded area represents the region of rainfall more than 100 mm. Rainfall data of Sullurpet not received. The outermost contour is for 300 m and subsequent inner contours are for 600 and 900 m

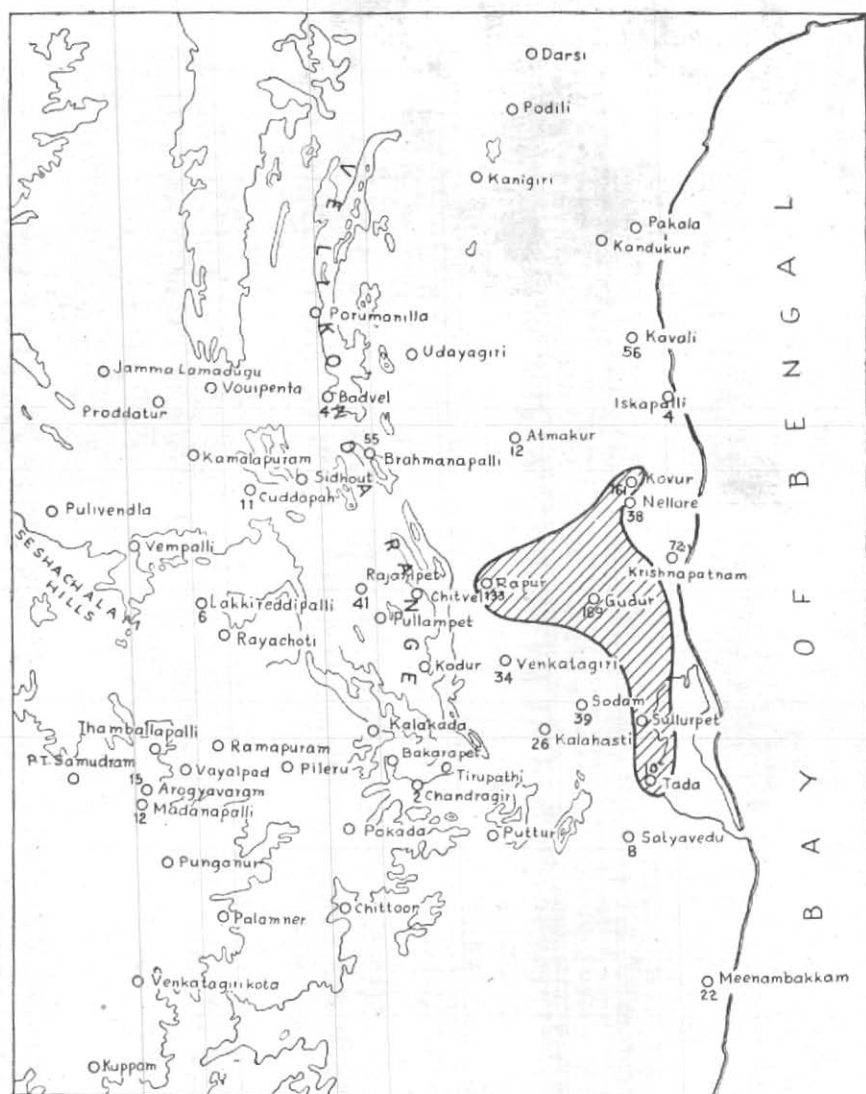


Fig. 2. Rainfall recorded at stations in Nellore, Cuddapah and Chittoor districts during 24 hours ending at 0830 IST of 12 November 1961

Rainfall in millimetres is indicated by figures below the station circles. Shaded area represents the region of rainfall more than 100 mm. Rainfall data of Sullurpet not received. The outermost contour is for 300 m and subsequent inner contours are for 600 and 900 m

skies being overcast with low clouds over the former area and lightly covered with high clouds over the latter area. In the higher levels above 4.5 km a.s.l. the portion of the Peninsula south of  $15^{\circ}\text{N}$  was already covered by an anticyclonic cell and this feature persisted for some time. It is felt that the low level convergence associated with the troughs along and off Coromandel coast below the prevailing upper level divergence might possibly be the main cause for the heavy rain. The low level convergence was perhaps accentuated but confined to the narrow coastal belt by the Velikondai range, in view of the fact that there was very little rain to the west of this range.

5. However, it is not understood how the associated heavy rain could be confined to such a small area. This instance highlights the difficulties in forecasting for small areas, considering the fact that the heavy rain over the area occurred consecutively for two days.

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