

Chapter-3

Mean Rainfall Distribution

In this chapter, various features of mean rainfall during the NE monsoon are discussed.

3.1. Mean Rainfall over Met Sub-divisions

The mean monthly rainfall in the various meteorological sub-divisions in the south peninsula during the period October to December is given in Table 3.1. These mean values are calculated using the rainfall data of 1971-2020.

TABLE 3.1

Mean monthly, seasonal and annual rainfall (cm)

Based on the IMD sub-divisional data for the period 1971-2020

| Subdivision name | OCT | NOV | DEC | Season's total | ANNUAL |
|--|------------|------------|------------|-----------------------|---------------|
| COASTAL ANDHRA PRADESH & YANAM | | | | | |
| Rainfall(cm) | 18 | 11 | 3 | 32 | 104 |
| Rainfall as % of seasonal total | 56 | 34 | 9 | | |
| Season's total as % of annual total | | | | 31 | |
| RAYALSEEMA | | | | | |
| Rainfall(cm) | 13 | 8 | 3 | 24 | 73 |
| Rainfall as % of seasonal total | 54 | 33 | 13 | | |
| Season's total as % of annual total | | | | 33 | |
| TAMIL NADU, PUDUCHERRY & KARIAKAL | | | | | |
| Rainfall(cm) | 17 | 18 | 9 | 44 | 92 |
| Rainfall as % of seasonal total | 39 | 41 | 20 | | |
| Season's total as % of annual total | | | | 48 | |

| | | | | | |
|-------------------------------------|----|----|---|----|-----|
| SOUTH INTERIOR KARNATAKA | | | | | |
| Rainfall(cm) | 14 | 5 | 1 | 20 | 103 |
| Rainfall as % of seasonal total | 70 | 25 | 5 | | |
| Season's total as % of annual total | | | | 19 | |
| KERALA & MAHE | | | | | |
| Rainfall(cm) | 31 | 15 | 3 | 49 | 289 |
| Rainfall as % of seasonal total | 63 | 31 | 6 | | |
| Season's total as % of annual total | | | | 17 | |

Table 3.1 shows that for the South Peninsula as a whole, October is the rainiest month. However, in Tamil Nadu, November gets as much as rains in October. By December, the rainy season is practically confined over extreme south Peninsula including Tamil Nadu. The south peninsula receives rainfall, when the seasonal east-west convergence zone (ITCZ) and associated weather systems are present over the region. During December when the ITCZ moves further south, rainfall over the south peninsula sharply reduces. When the east-west trough is present, synoptic systems like lows and depressions form over this trough zone and move towards the south peninsula contributing to widespread rainfall activity.

Coastal Andhra Pradesh (CAP) gets rainfall during both the southwest and northeast monsoon seasons. During the NE Monsoon season, CAP receives about 32 cm of seasonal rainfall, with October contributing 56% of seasonal rainfall. About 34% of seasonal rainfall occurs during November. The NE monsoon season contributes about 31% of annual rainfall. Over Rayalaseema, the NE monsoon season contributes about 24 cm, which is 33% of the annual total. October is the rainiest month during the season and rainfall activity sharply reduces in November and December.

Tamil Nadu receives more rainfall during the NE monsoon season (October-December) compared to that during the Southwest monsoon season. There is a

considerable increase in rainfall activity from September to October and November. In December, rainfall activity is confined only to the coastal districts. The seasonal rainfall during the NE monsoon season is around 44 cm contributing to 48% of its annual rainfall. Over South-interior Karnataka (SIK) seasonal rainfall is around 20 cm, which is about 19% of the annual total. Over SIK, October contributes maximum rainfall during the season, while December hardly contributes to the seasonal total.

Over Kerala, the NE monsoon season contributes about 49 cm, which is about 17% of the annual total. During the NE monsoon season, Kerala receives maximum rainfall, even slightly more than Tamil Nadu. October contributes maximum rainfall over Kerala, which reduces in November and December.

3.2. Mean Spatial Distribution of Rainfall

Fig. 3.1 a, b and c show the monthly rainfall climatology during the months of October, November and December. The mean values are calculated using the IMD gridded data (0.25 X 0.25 degree) from 1972-2021. During October, maximum rainfall exceeding 200 mm is observed over the coastal Andhra Pradesh, coastal Tamil Nadu and Kerala. Over central parts of Kerala, monthly rainfall exceeds 300 mm. However, rainfall reduces sharply towards the interior parts of south peninsula, where monthly rainfall is less than 150 mm. During November, monthly rainfall sharply increases over the northern parts of coastal Tamil Nadu and southern parts of coastal Andhra Pradesh, where monthly rainfall is more than 300 mm. Over Tamil Nadu, monthly rainfall sharply reduces towards the interior parts. Southern parts of Kerala experiences monthly rainfall exceeding 200 mm. Over the rest of Tamil Nadu and Kerala, rainfall is between 100 and 150 mm. Over the South interior Karnataka and Rayalaseema, monthly rainfall is less than 100 mm. During December, rainfall sharply reduces everywhere in the south peninsula. Maximum rainfall exceeding 200 mm is observed over coastal Tamil Nadu and reduces sharply towards interior parts. Over the rest of the south peninsula, monthly rainfall is less than 75 mm.