CHAPTER 34

RAINFALL

Rain in Indian Tradition

In ancient India, it was believed that the sun causes rainfall (Adityat Jayate Vrishti) and that good rainfall in the rainy season is the key to bountiful agriculture and food for the people. Kautilya's Arthashastra contains records of scientific measurements of rainfall and its application to the country's revenue and relief work. Kalidasa in his epic, 'Meghdootam' has written around the seventh century, and even mentioned the date of onset of the monsoon over central India and traces the path of the monsoon clouds. Indian Classical music system celebrates monsoon with several ragas.

Measuring Rain

In modern time, to measure rainfall, a rain gauge container like a bottle is used. It is placed on rain gauge stations. It fills up with rain water, and the meteorologists then measures how much rain has fallen. It is placed where eddies of air will not interfere with the normal fall of the raindrops. Rain gauge gives relatively accurate point measurement of rainfall but observations are not available over most remote land areas and over oceanic areas. Land rain gauge observations gives sampling error if the network is not adequately dense.

Rainfall data are used for a variety of purposes and are required at a range of time scales. Real time rainfall data are required for flood forecasting and hydropower and reservoir operation. Summaries of storm rainfall event data are required for assessment of the severity of events at weekly or monthly time scales. Rainfall bulletins for agricultural and irrigation operations are needed at different time scales. The frequency of occurrence of rainfall of various magnitudes is also important in the application of mathematical models for synthesizing hydrological data.

When the rainfall for the monsoon season of June to September for the country as a whole is within 10% of its long period average, it is categorized as a “Normal” monsoon. It is categorized as “Excess” monsoon, if it is above 110 % of long period average and “Deficient”, if it is below 90% of long period average. The performance of monsoon rainfall over smaller areas of the country is monitored by evaluating the departures from the normal for each meteorological sub-division and district. The rainfall is classified as excess, normal deficient or scanty as per the following criteria. Excess +20% of normal or more, ‘Normal: + 19% to -19% of normal, Deficient -20% to -59% of normal, Scanty: -60 % of normal or less

Highlights

- In India, more than 75 % of annual rainfall is received during the south-west monsoon season.
- In 2010, as per the definition of deficient (-20% to -59% of normal) the metrological substations, which had deficient rainfall are Gangetic West Bengal, Jharkhand, Bihar, Uttar Pradesh East, Punjab and Madhya Pradesh East.
- During 2010, the metrological substations ,which had excess rainfall (+20% of normal or more) are Rajasthan West, Saurasthra Kuch and Diu,Konkan and Goa, Marathwada,Vidarbha,Coastal Andhra Pradesh, Telangana, Rayalseena, Tamilnadu, South Interior Karnataka

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