Extreme December rainfall in Tamil Nadu

Why in news?

Tamil Nadu has witnessed heavy rainfall in December 2023.

What is the rainfall pattern in Tamil Nadu?

- **Weather conditions** – The state is *vulnerable to extreme weather conditions*, while coastal districts experience flooding, other areas experience severe droughts.
    - According to IMD, from the *year 1951 to 2013*, Tamil Nadu has received ***47 normal, 8 excess, 6 deficient, and 2 scanty rainfall*** over a period of time.
- **Annual rainfall** – ***About 987mm*** with a range varying from 317.4 mm to 1890.5 mm over the 63 years period (1951-2013).
    - While *Nilgiris receives the maximum* average annual rainfall, *Thoothukkudi and Karur receive the least*.
- **Coefficient of variation in annual rainfall** – It lies in the range of *0.21 to 0.37 (21 to 37%)* across the districts of Tamil Nadu.

- **Rainfall share** – Tamilnadu receives the maximum rainfall (around 443.3mm) during post-monsoon (October, November, and December) mainly due to cyclones formation in Bay of Bengal.

Unlike Tamilnadu, the rest of India receives the maximum rainfall in the months of June, July, August, and September months (monsoon).

What is the rainfall scenario in December 2023?

- Since October 1, Tamil Nadu has *received 450mm of rainfall*.
- **Surplus rainfall** – Many coastal districts have already received their surplus rainfall.
    - The annual rainfall of Kanyakumari is 760mm, whereas the district has already recorded 1050.7mm during October 1 – December 20, 2023.
- **Deficient rainfall** - During the ongoing season (till December 20), ***only 14 districts*** out of total 38 have deficient rainfall.
- **Exceptionally heavy rainfall** – It occurred in *3 districts* of southern Tamil Nadu ***during December 17-19***.
    - IMD stated that these districts had received *about 100 per cent or more surplus* rain during these 3 days over the previous week (December 6 – 13, 2023).
- **24-hour time span exceptional rainfall** – It was reported by *nearly 40 meteorological stations across Thoothukudi (Tuticorin), Thirunelvali and Kanyakumari*

districts.

- For example, in *Kalyanapattinam, it was 950 mm* in December 18th, which is close to the annual rainfall of Lucknow and Ambala (960 mm each) and more than the annual rainfall of Allahabad (918 mm).

What caused the record rainfall over southern TN?

- **Strong northeast monsoon** – It remained vigorous over Tamil Nadu since mid-December, *bringing in steady rain bands*, especially over the south Tamil Nadu and neighbouring Kerala.
- **Movement of cyclonic circulation** – It was developed in the *southwest Bay of Bengal* in December 16, located off the western Sri Lankan coast.
- As this system *moved westwards and reached southern Tamil Nadu*, it gave *impetus to the northeast monsoon winds*, persisted over the southern Tamil Nadu region on December 18 and 19.
- A ***heavy cloud convection*** was observed here, resulting in exceptionally heavy rainfall (more than 200mm in 24 hours) over *Thoothukudi, Tirunelveli and Kanyakumari districts* of Tamil Nadu and *Idukki district* of Kerala.

References

1. The Indian Express| Heaviest December rainfall in Tamil Nadu
2. TNSAPCC| Rainfall pattern in Tamil Nadu

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