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Declining Rainfall in Cherrapunji

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Why in News

A recent study that looked at the **rainfall pattern in the past 119 years** found a **decreasing trend at Cherrapunji (Meghalaya) and nearby areas.**

- The village of **Mawsynram in East Khasi Hills district of Meghalaya** has beaten Cherrapunji to become the **wettest place in the world**. Mawsynram receives over 10,000 millimetres of rain in a year.
- Mawsynram is located around **81 km by road from Cherrapunji** however the straight line distance between the two is **15.2 km**.



Key Points

- **Reduction in Rainfall:**

The annual mean rainfall for the period 1973–2019 showed **decreasing trends** of about **0.42 mm per decade**.

It was statistically significant along seven stations (**Agartala, Cherrapunji, Guwahati, Kailashahar, Pasighat, Shillong and Silchar**).

- **Reasons:**

- **Rising Temperature:**

The **changes in the Indian Ocean temperature** have a **huge effect** on the rainfall in the region.

Increasing sea surface temperatures in the tropical Indian Ocean region was pointed out by the **first climate change assessment report** published by the Union Ministry of Earth Sciences in June 2020.

- **Increased Human Activities:**

The satellite data showed that there was a **reduction in the vegetation area** in northeast India in the past two decades, implying that human influence also plays an important role in the changing rainfall patterns.

- The traditional way of cultivation known as **Jhum cultivation or shifting cultivation** is now decreased and being replaced by other methods.
 - There is sizable **deforestation** in the region. The study saw the **decrease in vegetation cover and increase in the areas of cropland** mainly from the year 2006 onwards.
 - The analysis showed **reductions in vegetation** with **104.5 sqkm lost per year**.
 - On the other hand, there were **significant increases in cropland** (182.1 sqkm per year) and **urban and built-up lands** (0.3 sqkm per year) during the period 2001–2018.

- **Significance of Studying the North-East Region:**

- Since north-east India is mostly hilly and is an extension of the Indo-Gangetic Plains, the **region is highly sensitive to changes** in regional and global climate.
 - It has to be noted that the **first signs of the effect of climate change** will be evident for the extreme cases such as the rainfall at Cherrapunji.
 - North-east India has the **highest vegetation cover** in India and includes **18 biodiversity hotspots of the world**, indicating the importance of the region in terms of its greenery and **climate-change sensitivity**.

Reason for High Rainfall in Cherrapunji and Mawsynram

- Cherrapunji (elevation 1313 m) and Mawsynram (elevation 1401.5 m) are located on the southern slopes of the east Khasi Hills in Meghalaya.
 - Meghalaya is a mountainous state with **numerous valleys and highland plateaus**.
 - **Elevation** in the plateau region ranges between **150 m to 1,961 m**, with the central part comprising the Khasi Hills with the highest elevations.
- The rainfall in Cherrapunji-Mawsynram is **caused by the orography favouring a monsoon wind regime**.
- The northward moving moist winds from the Bay of Bengal passing over the plains of Bangladesh are **forced to converge in the narrow valleys of the Khasi Hills** with orography providing forced ascent that causes condensation, formation of clouds resulting in rain on the windward side of the slope.

Shifting Cultivation

- Shifting cultivation, locally called 'Jhum', is a widely practiced system of crop cultivation among the indigenous communities of North-east India. The practice, also known as **slash-and-burn agriculture**, is when farmers clear land by slashing vegetation and burning forests and woodlands to create clear land for agricultural purposes.
- This provides a **very easy and very fast method** of the preparation of the land for agriculture.
- The bush and the weeds can be removed easily. The **burning of waste materials provides needed nutrients for the cultivation**.
- It **gives** a family its **food, fodder, fuel, livelihood** and is closely linked to their identity.
- Because of cutting of forests and trees, this practice **leads to soil erosion and may also affect the course of rivers**.

Source:TH