India to Receive Normal Monsoon: IMD

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Why in News

Recently, the **India Meteorological Department (IMD)** has observed that India will likely have a **normal monsoon,** with a **chance of above normal rain** in August and September, 2020.

Key Points

- **Every year,** the **IMD issues a two-stage forecast.**
  The **first one in April** and the **second one in the last week of May,** which is a **more detailed forecast** and also illustrates how the monsoon will spread over the country.
- **Forecast**
  - The **June-September rainfall** accounts for **75% of the country's annual rainfall.**
    - Quantitatively, the monsoon seasonal rainfall is likely to be 100% of the **Long Period Average** (LPA) with a model error of ± 5%.
    - The LPA of the season rainfall over the country as a whole for the period 1961-2010 is 88 cm. IMD has **officially redefined the definition of 'normal' rainfall and reduced it by 1 cm to 88 cms.**
  - The **Indian Ocean Dipole,** a temperature anomaly in the ocean that can increase monsoon rain, is also **expected to be in a "neutral" state** during the monsoon.
  - According to the statistical model, there is a **41% forecast probability of a normal monsoon.**
- The expectation of excess rain comes from a forecast by the **dynamical model,** according to which, there is a **high probability (70%)** for the **rainfall** to be **above normal to excess.**

- **Comparison to 2019 Forecast**
  - In April, 2019, the IMD said that the monsoon would be **near normal** or a **slightly below normal.**
  - However, **India ended up with excess rainfall,** or the **maximum rainfall in a quarter century,** largely owing to torrential rain in August and September from the unusual warming in the Indian Ocean.

Models for Forecasting

- **Dynamical Model:** It is also called the **Monsoon Mission Coupled Forecast System.** It relies on the **supercomputers, mathematically simulating the physics of the ocean and the atmosphere.**
  > This model is better at forecasting the state of the weather a week or two in advance and is not yet considered reliable by meteorologists in forecasting the monsoon.
- **Statistical Model:** It takes into **consideration the global weather models** pointing to **negligible chances of El Nino,** a warming of the central equatorial Pacific which is associated with the drying up of monsoon rain. The **IMD relies on this model.**
  > In **any given year,** there is a **33% chance of a normal monsoon** that's why there is **high confidence that the monsoon in 2020 would be normal.**

El Niño

- Under **normal conditions,** the **west tropical Pacific is warmer than its eastern basin.** The warmer area of the ocean is also a **source for convection** and is associated with **cloudiness and rainfall.**
- During El Nino years, the **warmth shifts to Central and East Tropical Pacific** and along with it, cloudiness and rainfall.
- El Nino has been **found to impact almost half the world triggering droughts in Australia, India, southern Africa and floods in Peru, Ecuador, the United States, the Gulf of Mexico, and the Colorado River basin.**
- However, there has been **no direct correlation between the ENSO** (El Nino Southern Oscillation) events and the monsoon established yet.

- **Other acronyms related to El Nino:**
  - **Southern Oscillation Index**
    - It gives an **indication of the development and intensity of El Nino or La Nina.**
    - The SOI is **calculated on the basis of the atmospheric pressure differences** between the **South Pacific Ocean** and **Australia**.
    - Sustained **positive SOI values** are indicative of **La Nina** conditions while **negative values** suggest **El Nino** conditions.
  - **El Nino Southern Oscillation**
    - It refers to the **oscillation between the El Nino and the La Nina.**
    - ENSO **shifts irregularly back and forth between El Nino and La Niña every two to seven years.**
    - Each phase triggers predictable disruptions of temperature, precipitation and winds disrupting large-scale air movements in the tropics, triggering a cascade of global side effects.

Source: TH