



Aridity Anomaly Outlook Index: IMD

For Prelims: IMD, Drought, Kharif Season

For Mains: Aridity Anomaly Outlook Index and its Significance

Why in News?

Recently, [Indian Meteorological Department \(IMD\)](#) has released the **Aridity Anomaly Outlook (AAO) Index** of July 2022, which says at least **85% of districts face arid conditions across India**.

What is the Aridity Anomaly Outlook Index?

- **About:**
 - The index monitors **agricultural drought, a situation when rainfall and soil moisture are inadequate to support healthy crop growth** till maturity, causing crop stress.
 - An anomaly from the normal value signifies **a water shortage in these districts that could directly impact agricultural activity**.
 - It is Developed by the **India Meteorological Department (IMD)**.
- **Characteristics:**
 - A **real-time drought index in which water balance is considered**.
 - The Aridity Index (AI) is computed **for weekly or two-week periods**.
 - For each period, **the actual aridity for the period is compared to the normal aridity for that period**.
 - Negative values indicate a surplus of moisture while positive values indicate moisture stress.
- **Parameters:**
 - **Actual evapotranspiration and calculated potential evapotranspiration**, which require temperature, wind and solar radiation values.
 - **Actual evapotranspiration** is the quantity of water that is actually removed from a surface due to the processes of evaporation and transpiration.
 - **Potential evapotranspiration** is the maximum attainable or achievable evapotranspiration for a given crop due to evaporation and transpiration.
- **Applications:**
 - Impacts of drought in agriculture, especially in the tropics where defined wet and dry seasons are part of the climate regime.
 - Both winter and summer cropping seasons **can be assessed using this method**.

What are the Findings?

- Only 63 of 756 districts are non-arid, while 660 are facing different degrees of aridity — **mild, moderate and severe**.
- Some 196 districts are in the grip of a 'severe' degree of **dryness** and **65 of these are in Uttar Pradesh (highest)**.
 - **Bihar had the second highest number of districts (33) experiencing arid conditions**.

The state also has a high rainfall deficit of 45%.

- Other districts facing '**severe arid' conditions** are Jharkhand, Haryana, Madhya Pradesh, Delhi, Telangana, Maharashtra, Andhra Pradesh, Jammu and Kashmir, Punjab, West Bengal, Rajasthan, Karnataka and Tamil Nadu.
- The SPI on the DEWS platform also **highlights a persisting rainfall deficit in these areas in the last six months.**
- Arid conditions have impacted the ongoing **kharif sowing**, as the area sown under different kharif crops as of July, 2022, was less by **13.26 million hectares compared to the corresponding period in 2021.**

What is the Standardised Precipitation Index (SPI)?

- The SPI is a widely used index to **characterize meteorological drought on a range of timescales.**
- On short timescales, the SPI is closely related to soil moisture, while at longer timescales, the SPI can be related to groundwater and reservoir storage.
- The SPI on the **Drought Early Warning System (DEWS), a real-time drought monitoring platform** managed by the Indian Institute of Technology, Gandhinagar (IIT-G) platform **highlights a persisting rainfall deficit in these areas in the last six months.**
- UP, Jharkhand, Bihar, West Bengal and some parts of the North East are under extreme drought situation and agriculture of these regions might be affected.

What is the India Meteorological Department (IMD)?

- IMD was **established in 1875.**
- It is an agency of the **Ministry of Earth Sciences.**
- It is the principal agency responsible for meteorological observations, weather forecasting and seismology.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. Consider the following pairs: (2014)

Programme/Project Ministry

1. Drought-Prone: Ministry of Area Programme Agriculture
2. Desert Development: Ministry of Programme Environment and Forests
3. National Watershed: Ministry of Rural Development Project Development for Rainfed Areas

Which of the above pairs is/are correctly matched?

- (a) 1 and 2 only
- (b) 3 only
- (c) 1, 2 and 3
- (d) None

Ans: (d)

- The aim of **Drought-Prone Area Programme** is to minimise the adverse effects of drought on production of crops and livestock and productivity of land, water and human resources, ultimately leading to drought proofing of the affected areas. It comes under the Department of Land Resources, Ministry of Rural Development. **Hence, pair 1 is not correctly matched.**
- The objective of the **Desert Development Programme** is to minimise the adverse effect of

drought and control desertification through rejuvenation of the natural resource base of the identified desert areas. It comes under **the Department of Land Resources, Ministry of Rural Development**. Hence, pair 2 is not correctly matched.

- **National Watershed Development Programme for Rain fed Areas (NWDPA)** is a programme for the conservation, development and sustainable management of natural resources and enhancement of agricultural productivity and production in a sustainable manner. It comes under **Department of Agricultural Cooperation and Farmer Welfare (Ministry of Agriculture and Farmers' Welfare)**. Hence, pair 3 is not correctly matched.
- **Therefore, option (d) is the correct answer.**

Mains

Q. In what way micro-watershed development projects help in water conservation in drought-prone and semi-arid regions of India? **(2016)**

Source: DTE

PDF Reference URL: <https://www.drishtias.com/printpdf/aridity-anomaly-outlook-index-imd>

