

# UPSC CURRENT AFFAIRS NOTES 06-03-2025

## CAVUM CLOUDS



NASA satellite captures ‘odd holes’ in clouds caused by aeroplanes.

These clouds appear as if a large circle or ellipse has been neatly cut from the clouds, leaving feathery wisps in the middle of the hole, often referred to as hole-punch or fallstreak holes.

These atmospheric phenomena, characterized by large, circular openings in the clouds, with delicate, feathery trails within, have sparked imaginations and fueled speculation about their origins, including theories of UFOs and extraterrestrial activity.

### **Cloud holes: The cavum cloud phenomenon**

An impressive example of cavum clouds was observed over the Gulf of Mexico near Florida’s west coast on January 30, 2024.

Captured by the **Moderate Resolution Imaging Spectroradiometer (MODIS)** aboard NASA’s Terra satellite, this image provides a stunning view from above, showcasing the natural beauty and complexity of these cloud formations.

The intrigue surrounding **cavum clouds** has been a topic of scientific discourse since the 1940s, with various hypotheses proposed over the decades. However, it wasn't until a comprehensive study conducted by scientists.

### Science behind the spectacle

These cloud formations are caused by aircraft, dispelling more fantastical theories.

Altostratus clouds are mid-level clouds consisting of **supercooled liquid water droplets**. Supercooling occurs when water droplets remain liquid even at temperatures below water's typical freezing point, due to their purity and absence of particles like dust or pollen that would normally initiate ice formation.

This phenomenon is relatively common in the Earth's atmosphere, particularly within altostratus clouds, which cover approximately 8% of the Earth's surface at any given time and are mostly composed of droplets supercooled to around  $-15^{\circ}\text{C}$ .

### How airplanes influence cloud formations

The formation of cavum clouds is initiated when airplanes disrupt these delicate atmospheric conditions. As aircraft move through these clouds, the air around their wings and propellers undergoes **adiabatic expansion**, cooling the water droplets further, sometimes by more than  $20^{\circ}\text{C}$ .

This cooling can prompt the supercooled droplets to freeze, starting a chain reaction where ice crystals form and grow, eventually becoming heavy enough to fall.

This process leaves behind a void in the cloud layer, with the falling ice crystals creating the wispy trails known as **virga** visible in the center of the cavum.

### Environmental factors that cause cloud holes

The study found that the shape and size of the cavum depend on the angle at which planes intersect the cloud layer — sharp angles produce small, circular cavum, while shallow angles result in elongated "**canal clouds**" adorned with virga trails.

Factors such as the **cloud layer's thickness, air temperature, and the degree of horizontal** wind shear also play roles in creating these cloud holes.



The researchers' analysis indicated that aircraft of various types, from large passenger jets to turboprops, are capable of creating cavum and canal clouds.

## **MODIS**

NASA's Moderate Resolution Imaging **Spectroradiometer, or MODIS**, stands as a pivotal instrument in the realm of Earth observation. Mounted aboard two of NASA's satellites, **Terra and Aqua**, MODIS provides an unparalleled vantage point for monitoring our planet's atmosphere, oceans, and land.

Since its first launch in 1999 on **Terra** and subsequently on **Aqua** in 2002, MODIS has been capturing the Earth's dynamic beauty and the subtle interplays within its ecosystems, offering invaluable data to scientists and researchers around the globe.

### **Science behind MODIS**

MODIS operates with a precision that allows it to capture data in **36 spectral bands**, ranging from visible to thermal infrared wavelengths. This wide spectrum enables the detection of various indicators, such as chlorophyll levels in oceans, atmospheric water vapor, and land cover changes.

By providing comprehensive coverage of the Earth's surface every one to two days, MODIS plays a crucial role in tracking environmental changes over time, aiding in the understanding of **global dynamics and environmental processes**.

### **Contributions to science and humanity**

The impact of MODIS extends far beyond mere observation. Its data has been instrumental in enhancing our understanding of **climate change, detecting and monitoring wildfires**, assessing the health of agricultural lands, and tracking the spread of harmful algal blooms.

Furthermore, MODIS's ability to observe **phytoplankton** in the ocean contributes to our understanding of the oceanic carbon cycle, crucial for assessing the health of marine ecosystems.

## **LEAPS (Logistics Excellence, Advancement, and Performance Shield) Initiative**

LEAPS (Logistics Excellence, Advancement, and Performance Shield)  
Initiative The Department for Promotion of Industry and Internal Trade

(DPIIT), Ministry of Commerce and Industry organised a LEAPS Valedictory Session in New Delhi recently.



About LEAPS (Logistics Excellence, Advancement, and Performance Shield) Initiative

It is a flagship initiative by the logistics division of DPIIT, Ministry of Commerce and Industry, designed to acknowledge and celebrate the best practices and innovations within the logistics industry.

It would celebrate the demonstrated leadership of the logistics sector in transforming the Indian logistics industry and realizing the combined vision of the National Logistics Policy 2022 and PM GatiShakti.

The National Logistics Policy was introduced to create a single-window e-logistics market, focusing on the need for skill development, economic growth, and competitiveness in the logistics sector. It aims to reduce logistics costs, improve India's ranking in the Logistics Performance Index, and establish a data-driven decision support mechanism.

The PM Gati Shakti Programme aims to understand current gaps in logistics connectivity and facilitate the development of logistics infrastructure (creating



connectivity between roadways, rail transport, waterways, and air transport) so as to reduce logistics costs. The programme has an estimated cost of ₹100 trillion.

LEAPS will create a new benchmark globally by not only recognizing players in the logistics sector, but also the MSMEs, Startups, and logistics sector enablers who have been providing innovative solutions across the logistics ecosystem.

From air and sea freight service providers to educational institutions contributing to skill development in logistics, the awards span a broad spectrum of the industry.

## **UDGAM Portal**

Recently, the Reserve Bank of India said 30 banks are facilitating people to search their unclaimed deposits/accounts through UDGAM portal.

### About UDGAM Portal

UDGAM refers to Unclaimed Deposits-Gateway to Access inforMation, which is an online portal developed by the Reserve Bank of India (RBI).

It facilitates the registered users to search unclaimed deposits/accounts across multiple banks at one place in a centralised manner.

There are 30 banks, which are part of UDGAM portal, and they cover around 90% of unclaimed deposits (in value terms) in Depositor Education and Awareness (DEA) Fund of RBI.

All unclaimed deposits/accounts that are part of Depositor Education and Awareness (DEA) Fund of RBI.

This portal provides information related to both individuals and non-individuals category unclaimed deposits

It facilitates only the search of unclaimed deposits/accounts across multiple banks at one place and provides information on claim/settlement process of each bank.

The unclaimed deposits can be claimed only from the respective bank.

After registration on the portal a person will get Unclaimed Deposit Reference Number (UDRN) which is a unique number generated through Core Banking

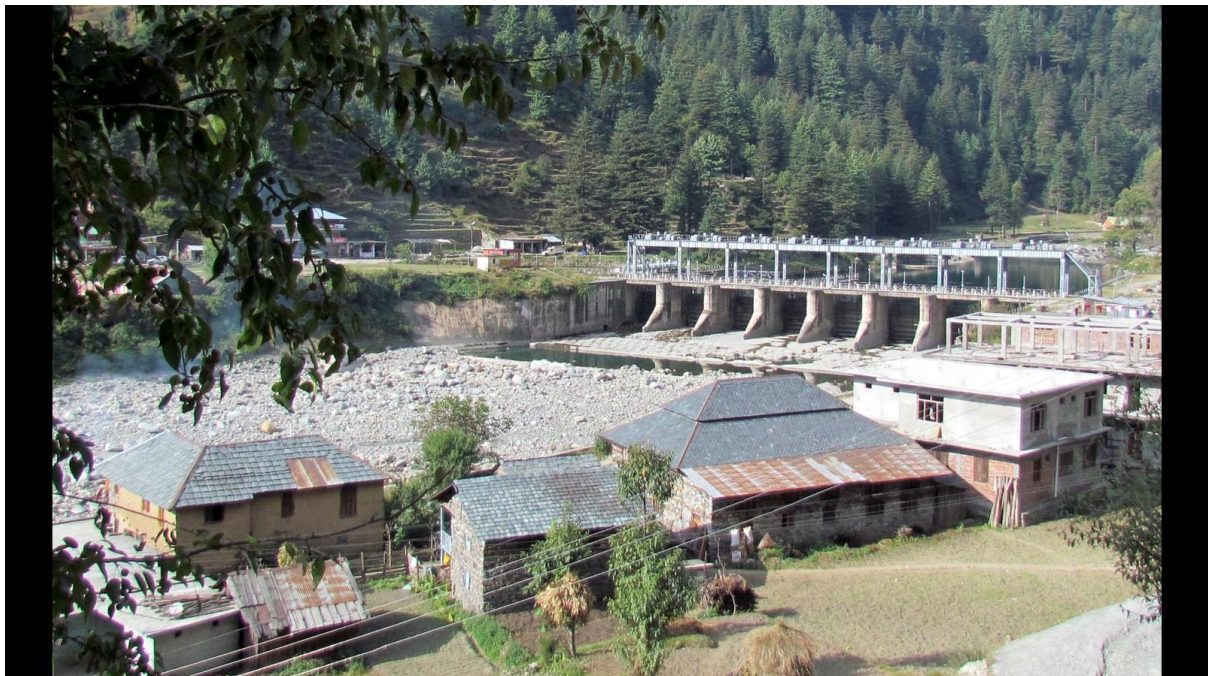
Solution (CBS) by banks and assigned to each Unclaimed account/ deposit transferred to Depositor Education and Awareness (DEA) Fund of RBI.

This number is used so that the account holder or the bank branch where account is maintained, cannot be identified by any third party.

The UDRN enables the bank branches to seamlessly settle claims received from the customers/depositors, who have made successful search in UDGAM portal.

## SHANAN HYDROPOWER PROJECT

The Centre recently ordered that status quo be maintained on the Shanan hydropower project, over which Punjab and Himachal Pradesh have made competing claims. Punjab has moved the Supreme Court over the issue.



### Details

#### Shanan hydropower project

- The Shanan hydropower project (on the Uhl River, a tributary of the Beas River ) is a 110 MW power project located in Mandi district, Himachal Pradesh, India. It was commissioned in 1932.
- It is the first hydroelectric power project of India in megawatt capacity.



### What is the issue?

- The British-era 110-MW hydel project, situated at Jogindernagar in Mandi district, was leased to Punjab in 1925. The lease agreement was signed between the then ruler of Mandi, Raja Joginder Bahadur, and Col BC Batty, a **British representative and Chief Engineer** of Punjab. **The 99-year-old lease came to an end on March 2 2024.**
- In the past few years, Himachal has contended that the project should stay with it once the lease ends.

### What claims does Punjab have over the Shanan project?

- The project used to feed the undivided Punjab and Delhi before Independence. After partition, supply to Lahore was discontinued and its transmission line was stopped at Verka village in Amritsar.
- During the reorganisation of states in 1966, the **hydel project** was given to Punjab, as Himachal Pradesh was then a Union Territory.
- It was allocated to the state by a central notification issued on May 1, 1967 by the Union ministry of irrigation and power.
- This stated that Punjab's legal control over the project was under the provisions of the Punjab Reorganisation Act, 1966 read along with the 1967 notification.
- The Himachal government has alleged that the project is in a poor condition as Punjab is not repairing or maintaining it.

### What did Punjab say in the SC plea?

- In its suit in the SC, Punjab has contended that it is the owner and is in lawful possession of the Shanan Power House Project, with all assets currently under formative control of the state government through the Punjab State Power Corporation Ltd (PSPCL).
- The government has sought a “**permanent Prohibitory Injunction**” restraining the Himachal Pradesh government from disturbing the “**lawful peaceful possession and smooth functioning**” of the project.
- The state has also made the Centre a party.



## What has the Centre done?

- A day before the 99-year-old lease was to come to an end, the Centre ordered status quo on the project as an interim measure to keep the project working.
- The order, issued by the Ministry of Power, Government of India, stated that, “In the exercise of the powers **under Sections 67 and 96 of the Punjab Reorganization Act, 1966** read with Section 21 of the General Clause Act, 1887, it is hereby directed that the State Government of Himachal Pradesh and the State Government of Punjab shall maintain status-quo with regard to the functioning of the 110 MW Shanan Power House, after the expiry of the lease period on 02.03.2024 till a final decision is taken by this ministry

## What do the orders mean?

- The orders have clearly stated that “The issuance of this order is entirely in the nature of the interim measure and shall not be treated as a basis of any claim or interest and parties are expected to proceed further on all matters concerning the settlement of the dispute in such manner as they may deem fit and within such legal framework as may be appropriate.
- Such a measure or a step by way of removal of difficulties would be the maintenance of the status quo obtaining as of today so as not to disrupt, the functioning of 110 MW Shanan Power House, and whereas maintenance of the status quo is in the public interest.

## Total Solar Eclipse

A total solar eclipse will make the Sun disappear in April 8, 2024, as the world will witness a rare celestial event graze through the skies.

### About Total Solar Eclipse

A total solar eclipse is a condition when the Moon passes between the Sun and the Earth and completely blocks the Sun's disk, casting a huge shadow on the surface.

People viewing the eclipse from locations where the Moon's shadow completely covers the Sun—known as the path of totality—will experience a total solar eclipse.



As per NASA, during this timeframe, the sky will darken, resembling the onset of dawn or dusk.

Weather permitting, individuals along the path of totality will have the opportunity to observe the Sun's corona, its outer atmosphere typically obscured by the Sun's bright face.

The Sun's corona, the outermost layer of its atmosphere extending millions of kilometers into space, is exclusively visible during a solar eclipse. Appearing as a faint, pearly-white halo encircling the darkened disk of the Sun, it becomes observable only during this celestial event.

This solar eclipse will be characterised by a phenomenon known as totality - a condition when viewers may be able to see the chromosphere (a region of the solar atmosphere, appearing as the thin circle of pink around the Moon) along with the corona.

The totality will offer a rare view where you can momentarily see the stars during the time as the surroundings go completely dark.

It will also be marked by a dip in air temperatures.

A lunar eclipse occurs when the Sun, Earth, and Moon align so that the Moon passes into Earth's shadow. In a [total lunar eclipse](#), the entire Moon falls within the darkest part of Earth's shadow, called the umbra. When the Moon is within the umbra, it will turn a reddish hue. Lunar eclipses are sometimes called "Blood Moons" because of this phenomenon.

## National Youth Parliament Festival (NYPF)





The Ministry of Youth Affairs and Sports organized the finals of the National Youth Parliament Festival, 2024.

National Youth Parliament Festival (NYPF):

Inspired by the Prime Minister's Mann Ki Baat Address on 31 December 2017.

1st NYPF in 2019 held from 12th January to 27th February at various levels.

Organized by the Ministry of Youth Affairs and Sports, through Nehru Yuva Kendra Sangathan (NYKS) and National Service Scheme (NSS).

Includes District Youth Parliament, State Youth Parliament, and National Youth Parliament.

Aims to strengthen democratic values, promote discipline, tolerance, and familiarize youths with parliamentary practices.

Raises awareness about active citizenship, encourages youth engagement, and develops leadership qualities.

### **Objectives of Organizing the National Youth Parliament Festival:**

Hear the voice of youth aged 18-25 through deliberations at District, State, and National levels.

Encourage youth to engage with public issues, form opinions, and express them articulately.

Develop and enhance decision-making abilities.

Foster respect and tolerance for differing views.

Instill an understanding of the importance of rules in discussions.

Obtain and document youth opinions on the Vision of New India.

Make youth views available to policymakers.

### **2024 Theme:**

Young Voices: Engage and Empower for Nation's Transformation

Criteria for Participation:

Participants must be between 18 to 25 years old as of 1st February 2024.

Encouragement of representation from women and marginalized sections.



**Format:**

District Youth Parliament (DYP) conducted in virtual mode at the district level.

State Youth Parliament (SYP) conducted in virtual mode at the state level.

National Youth Parliament (NYP) held in person in New Delhi.

Topics/subjects provided to participants at each level.

**Language:**

District and State Youth Parliaments: Hindi, English, or Official Language of the State.

National Youth Parliament: Participants can use either Hindi or English.

**Jury:**

District, State, and National levels each have a five-member Jury.

Composed of Members of Parliament/Legislative Assembly, government officials, artists, youth workers, entrepreneurs, journalists, and academicians.

Jury members are selected based on their eminence and relevance to the level of the Youth Parliament.