

UPSC CURRENT AFFAIRS NOTES 19-11-2023

LEONID METEOR SHOWER

The Leonid meteor shower, an annual cosmic event originating from the debris of Comet Tempel-Tuttle, is set to dazzle the skies from November 3 to December 2, with the peak activity expected on the evening of November 17-18.

About the Leonid Meteor Shower



Comet's Debris Trail: Comet Tempel-Tuttle's passage near the sun leaves behind a trail of dust and gas, forming a dense cloud of debris. As Earth crosses this debris trail annually in mid-November, it leads to the Leonid meteor shower. The Leonid meteor shower is named after the constellation Leo.

Meteor Appearance: The fast-moving dust particles from the comet's trail enter Earth's atmosphere at high speeds, creating bright streaks of light known as meteors or shooting stars.

When and Where to Watch in India



Shower Duration: The Leonid meteor shower spans from November 3 to December 2, with the peak expected on the night of November 17-18.

Visibility Across India: The meteor shower will be visible throughout India, offering a chance to witness up to 15 meteors per hour originating from the Leo constellation.

Historical Significance

Historical Meteor Storms: The Leonid meteor shower has historically produced some of the most impressive meteor storms, notably the storms in 1833 and 1966, with rates exceeding thousands of meteors per hour.

Scientific Observations: These historic events prompted significant scientific interest and advancements in the understanding of meteor showers and their origins.

Other Meteor Showers in 2023

Geminids:

Activity Period: Active from December 4-20, peaking from December 14-15.

Unique Traits: Originating from the Gemini constellation, the Geminids are distinct due to their association with the asteroid 3200 Phaethon, setting them apart

Ursids:

Activity Period: Active from December 17-26, peaking from December 22-23.

Source: The Ursids Meteor Shower occurs as Earth encounters debris from Comet 8P/Tuttle, often producing faint meteors with short tails, requiring patience for observation.

What Are Meteor Showers?

Meteor showers are periodic celestial events characterized by an increased number of meteors or "shooting stars" visible in the Earth's night sky.

Causes of Meteor Showers:

Comet Debris:



Most meteor showers originate from debris trails of comets as they orbit the Sun. When Earth crosses these trails, debris particles enter the atmosphere, causing meteor showers.

Asteroid Trails: Some showers, like the Geminids, originate from asteroid debris. The Geminids are unique as they arise from the debris of asteroid 3200 Phaethon.

Types of Meteor Showers:

Regular Annual Showers: These occur predictably each year as Earth crosses the same debris trails, producing showers like the Perseids, Leonids, and Quadrantids.

Variable Showers: Occasional meteor showers, such as meteor storms, showcase significantly higher meteor rates than usual, sometimes reaching hundreds or even thousands of meteors per hour.

Notable Meteor Showers:

Perseids: Active in mid-August, the Perseids are among the most popular meteor showers, originating from the debris of Comet Swift-Tuttle.

Geminids: Occurring in mid-December, the Geminids stand out due to their association with asteroid 3200 Phaethon.

Leonids: Visible in mid-November, the Leonids are linked to Comet Tempel-Tuttle and have historically produced impressive meteor storms.

Quadrantids: Active in early January, the Quadrantids exhibit a short and intense peak.

Medical Assessment and Rating Board (MARB): Proper Biometric Attendance System must for Increasing Seats in Medical Colleges

The Medical Assessment and Rating Board (MARB) under the National Medical Commission (NMC) underlined the importance of the new Aadhaar Enabled Biometric Attendance System (AEBAS).



The AEBAS will be significant for the assessment of new medical colleges or colleges that are looking to increase the number of seats in the upcoming academic year.

The NMC is the country's apex medical education regulator, which has been constituted by an act of Parliament known as National Medical Commission Act 2019.

It replaced the Medical Council of India on 25 September 2020.

The aims of the NMC are to -

Improve access to quality and affordable medical education,

Ensure availability of adequate and high-quality medical professionals in all parts of the country;

Promote equitable and universal healthcare that encourages community health perspective and makes services of medical professionals accessible to all the citizens;

Encourages medical professionals to adopt latest medical research in their work and to contribute to research;

Objectively assess medical institutions periodically in a transparent manner;

Maintain a medical register for India;

Enforce high ethical standards in all aspects of medical services;

Have an effective grievance redressal mechanism.

What is the Medical Assessment and Rating Board (MARB)?

The Government of India has established the MARB (in 2023) under the NMC Act 2019 for assessing and rating of medical institutions (Government and Private) for their compliance with standards laid down by the NMC.

Functions of the MARB:

Grant permission for establishment of a new medical institution, or to start any postgraduate course or to increase the number of seats.

Carry out inspections of medical institutions for assessing and rating such institutions.



Conduct, or where it deems necessary, empanel independent rating agencies to conduct, assess and rate all medical institutions.

Make available on its website or in public domain the assessment and ratings of medical institutions at regular intervals.

Take such measures, including issuing warning, imposition of monetary penalty, reducing intake or stoppage of admissions, etc.

How will the Medical Colleges be Inspected?

For colleges looking to increase seats, a physical inspection will be carried out only if they have adequate faculty members with an attendance of at least 75% for the three prior months.

For new medical colleges, the AEBAS registration of all faculty members should be completed and attendance for at least 10 working days should be available at the time of inspection.

Government medical colleges that have been running MBBS programmes for at least five years will be exempted from physical inspection for increasing PG seats.

Private medical colleges and government medical colleges starting PG courses will still be physically inspected.

What is the Importance of the New AEBAS?

To increase transparency and ensure that medical colleges have adequate faculty and patients throughout the year, the NMC introduced ways of monitoring the colleges remotely throughout the year.

Along with the AEBAS, medical colleges are required to share their Health Management Information System (HMIS) data that captures how many patients are treated at the hospital.

The move is essential seeing the increase in the number of medical colleges in the country, making it difficult to conduct physical inspection all the time.

The pipeline dream would be to have no need for physical inspections at all, but this will supplement the physical assessments for now.



New Pamban Bridge

The new Pamban Bridge is likely to be inaugurated by the Prime Minister in a few months.

About the New Pamban Bridge:

It is India's first vertical-lift railway sea bridge.

It connects Rameswaram on Pamban Island to Mandapam on the mainland in Tamil Nadu.

Bridge Length:

The total length of the bridge is 078 km.

It will have 99 spans with 18.3-meter-long girders. The navigational span will be 63 metres.

It will replace the iconic Pamban Bridge, India's first sea bridge, which opened in 1914.

The new bridge is being built parallel to the old Pamban Bridge by Rail Vikas Nigam Limited.

Features:

The most unique feature of the new Pamban Bridge is its vertical lift facility. It will help boats pass under the bridge smoothly.

While the old bridge has the 'Scherzer' rolling lift technology, in which the bridge opens up horizontally to let ships pass through, the new bridge will lift vertically upwards, remaining parallel to the deck. It will be done using sensors at each end.

The vertical lift span will have electromechanical control interlocked with the train control system.

To allow for shipping traffic to pass under the vertical lift section of the bridge, rail traffic would be stopped. The navigational span would move up vertically to create enough height for boats to pass.

It will allow a full horizontal length of 72.5 metres for navigation.

While the new Pamban Bridge is 3 metres higher than the old bridge, it also has a navigational air clearance of 22 metres above mean sea level.

It has been designed for a double railway line and future electrification as well.

Global Talent Competitiveness Index (GTCI), 2023

The Global Talent Competitiveness Index has seen India fall sharply from rank 83 ten years ago to rank 103 in its latest report out recently.



About Global Talent Competitiveness Index (GTCI):

It measures how countries grow, attract, and retain talent.

It is an annual benchmarking report published by the prestigious chain of business schools, INSEAD.

It provides a unique resource for decision-makers to understand the global talent competitiveness picture and develop strategies to boost their economies.

The index uses two sub-indices: input and output.

The input measures regulatory and business environments, as well as steps being taken to foster talent and retain it.

The output side evaluates the quality of talent.

Highlights of GTCI 2023:

The 10th edition of the report covers 134 countries around the world across all income groups.

Singapore, Switzerland, and the United States are among the top three countries on the index.

Denmark, the Netherlands, Finland, Norway, Australia, Sweden, and the United Kingdom make up the rest of the Top 10.

India is ranked 103, the worst among that of the BRICS countries. China remains at the top of the BRICS group of countries at rank 40, Russia at 52, South Africa at 68 and Brazil at 69.

Other countries ranking better than India are Rwanda, Paraguay, Tunisia, Namibia, Bolivia, Ghana, El Salvador, Gambia, Kenya, Morocco, and Eswatini.

As per the report, other emerging countries have shown improvements on this index, with China, Indonesia, and Mexico being cited for special mention.

Sea buckthorn

Sea buckthorn fruit from Ladakh has been recently awarded a GI tag.

About Sea Buckthorn:



Sea buckthorn (*Hippophae rhamnoides*) is a plant found throughout Europe and Asia.

In India, it is found above the tree line in the Himalayan region, generally in dry areas such as the cold deserts of Ladakh and Spiti.

It is naturally distributed over 11,500 hectares in the Ladakh region.

It produces small orange or yellow-coloured berries that are sour in taste but rich in vitamins, especially vitamin C.



The shrub can withstand extreme temperatures ranging from minus 43 degrees Celsius to 40 degrees Celsius and is considered drought-resistant. These two characteristics make the shrub an ideal plant species to establish in cold deserts.

Sea Buckthorn berries have the unique characteristic of remaining intact on the shrub throughout the winter months despite the subzero temperature.

Uses:

It has been used traditionally for a variety of purposes.

Every part of the plant—fruit, leaf, twig, root, and thorns—has been traditionally used as medicine, nutritional supplement, fuel, and fence.

Many bird species feed on the berries when other sources of food are limited in the region.

The leaves serve as protein-rich fodder for cold desert animals like sheep, goats, donkeys, cattle, and double-humped camels.

Therefore, it is popularly known as the ‘Wonder Plant’, ‘Ladakh Gold’, ‘Golden Bush’, or ‘Gold Mine’ of cold deserts.

What is a Geographical Indication Tag?

It is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin.

This is typically used for agricultural products, foodstuffs, wine and spirit drinks, handicrafts, and industrial products.

A geographical indication right enables those who have the right to use the indication to prevent its use by a third party whose product does not conform to the applicable standards.

Geographical indications are covered as a component of intellectual property rights (IPRs) under the Paris Convention for the Protection of Industrial Property.

At the international level, GI is governed by the World Trade Organisation’s (WTO’s) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

In India, Geographical Indications registration is administered by the Geographical Indications of Goods (Registration and Protection) Act, 1999.

This GI tag is valid for 10 years, following which it can be renewed.

The first product in India to be accorded the GI tag was Darjeeling tea in the year 2004-05.

Partnership for Global Infrastructure and Investment (PGII)

Recently, the Union Minister for Commerce and Industry participated in the Investor Forum of the Partnership for Global Infrastructure and Investment (PGII) & Indo-Pacific Economic Framework for Prosperity (IPEF).

About the Partnership for Global Infrastructure and Investment (PGII):

It is a developmental initiative aimed at narrowing the infrastructure gap in developing countries as well as helping to accelerate progress on SDGs globally.



The infrastructure plan was first announced in June 2021 during the G7 Summit in the UK.

Funding: It aims to build projects through grants and investments.

The emphasis of the PGII is on building human infrastructure in the developing world and improving the quality of education and health care facilities.



Key Facts about G7 Group

It is an intergovernmental organisation of leading industrialised nations formed in 1975.

Member countries: Canada, France, Germany, Italy, Japan, the United Kingdom and the United States.

It meets annually to discuss issues such as global economic governance, international security, and energy policy.

The host of the G7 summit, also known as the presidency, rotates annually among member countries.

It was formerly referred to as the G-8 until Russia was suspended from the group in 2014 after annexing Crimea.

ARGOLAND

A chunk of land that broke off from Australia 155 million years ago seemed to have vanished.

Seven years of research helped scientists trace the landmass back to Southeast Asia.

About

It was a long-lost continent that split from northwestern Australia 155 million years ago.

The enigmatic 3,106-mile span was once a component of the supercontinent Gondwana.

It crumbled when tectonic pressures stretched it out and drove it away from the rest of the continent, spreading it over Southeast Asia.

It had first moved northwest, where several Southeast Asian islands now exist.

However, unlike India, which separated from the ancient supercontinent Gondwana 120 million years ago and remains a single landmass today, Argoland fragmented into fragments.



Because these fragments arrived at their destinations at the same time, they produced an archipelago rather than a cohesive landmass.

Argoland, which is currently distributed as an archipelago divided by ocean basins, helped to construct various Southeast Asian islands.

Key Facts about Gondwana:

From around 550 million years ago until approximately 180 million years ago, Gondwana coexisted with Laurasia as a supercontinent.

Africa, South America, Australia, Antarctica, the Indian Subcontinent, and the Arabian Peninsula finally separated from the continent.

News Summary

The continent of Argoland, which seemingly vanished after splitting from Australia 155 million years ago, has finally been discovered.

Continental splits usually leave traces in ancient fossils, rocks, and mountain ranges. But up until now, scientists had been unable to find where Argoland had ended up.

Now researchers at Utrecht University in the Netherlands think they have uncovered the mysterious landmass, hidden under the eastern islands of Southeast Asia.

The discovery could help explain something known as the Wallace line, which is an imaginary boundary that separates Southeast Asian and Australian fauna.

It took some careful detective work to find where Argoland had gone after breaking off from what would become Australia. Scientists had found bits of "ribbon continents" around South East Asia, but could not piece them back together.

Wallace Line: A barrier that divides marsupials and tigers in Southeast Asia.

Details About Tectonic Plates

Plate tectonics is a scientific theory that explains how major landforms are created as a result of Earth's subterranean movements.



The theory, which solidified in the 1960s, transformed the earth sciences by explaining many phenomena, including mountain-building events, volcanoes, and earthquakes.

In plate tectonics, Earth's outermost layer, or lithosphere made up of the crust and upper mantle is broken into large rocky plates.

These plates lie on top of a partially molten layer of rock called the asthenosphere.

Due to the convection of the asthenosphere and lithosphere, the plates move relative to each other at different rates, from two to 15 centimeters (one to six inches) per year.

This interaction of tectonic plates is responsible for many different geological formations such as the Himalayan Mountain range in Asia, the East African Rift, and the San Andreas Fault in California, United States.

Continental Drift Theory

The idea that continents moved over time had been proposed before the 20th century.

However, a German scientist named Alfred Wegener changed the scientific debate.

Wegener published two articles about a concept called continental drift in 1912.

He suggested that 200 million years ago, a supercontinent he called Pangaea began to break into pieces, its parts moving away from one another.

The continents we see today are fragments of that supercontinent.

To support his theory, Wegener pointed to matching rock formations and similar fossils in Brazil and West Africa.

In addition, South America and Africa looked like they could fit together like puzzle pieces.

Types of Plates



There are primarily seven major tectonic plates: the African Plate, Antarctic Plate, Eurasian Plate, North American Plate, South American Plate, Pacific Plate, and Indo-Australian Plate. Additionally, there are several minor plates and microplates.

Plate Boundaries

Tectonic plate boundaries are the regions where these plates interact, leading to various geological phenomena. There are four main types of plate boundaries:

Divergent boundaries, where plates move away from each other.

Convergent boundaries, where plates move toward each other and collide.

Transform boundaries, where plates slide horizontally past each other.

Plate boundary zones, where multiple interactions occur, leading to complex geological processes.

Geological Phenomena

Tectonic plate movements give rise to several geological phenomena, including:

Earthquakes: Sudden release of energy along plate boundaries or faults.

Volcanic activity: Eruptions at subduction zones and divergent boundaries.

Mountain formation: Collision of plates leads to the uplift of mountain ranges.

Rift valleys: Divergent boundaries create rifts and rift valleys.

Driving Mechanisms

Plate tectonics is primarily driven by two mechanisms:

Ridge push: The force generated by the elevated mid-ocean ridges that push plates apart.

Slab pull: The gravitational force that pulls a subducting plate into the mantle.