



International Asteroid Day

Source: TOI

Why in News?

International [Asteroid Day](#) is observed on **30th June** to commemorate the **Tunguska event** in **1908** and aims to raise awareness about the threat of asteroid impacts.

What is the Tunguska Event?

▪ About Event:

- The Tunguska event was caused by an **asteroid explosion in Siberia**, flattened 80 million trees over an area of **830 square miles**.
 - The explosion resulted in minimal human casualties due to the remote location and the shock wave was felt hundreds of miles away.

▪ United Nations Recognition:

- International Asteroid Day was designated by the [United Nations](#) in 2016 to promote global efforts in planetary defence.
- [National Aeronautics and Space Administration \(NASA\)](#) stated that a collision of [Near-Earth Objects \(NEOs\)](#) with Earth is the only natural disaster humanity could completely prevent.

▪ What are Initiatives Related to Monitoring of Near-Earth Objects:

- [Double Asteroid Redirection Test \(DART\) Mission](#)
- [ESA's Hera Mission](#)
- [NETRA Project & Space Junk](#)
- **Apophis Mission:**
 - [Indian Space Research Organisation \(ISRO\)](#) expressed interest in participating in the international mission to study the asteroid Apophis.
 - **Apophis** is a **near-earth object (NEO)** and it is believed that it may hit Earth in 2029, however, NASA recently dispelled such reports.
 - It will pass by Earth at a distance of **38,012 kilometres** on **14th April 2029**
 - This event will be visible to observers in the **Eastern Hemisphere** without any telescopes or binoculars.
 - The Apophis was first **discovered in 2004**. It measures **335 metres in size**.
 - **It will be moving at a speed of 29.98 KM per second.**

Note

- The planet bears evidence of past impacts that had catastrophic results.
 - The **Chicxulub crater in Mexico**, caused by an asteroid impact **65 million years ago, is linked to the extinction of the dinosaurs and 75% of Earth's species**.
 - The Meteor Crater in Arizona and the Chelyabinsk event in Russia in 2013..

What is Asteroids?

▪ About:

- Asteroids, also referred to as **minor planets**, are remnants from the early stages of our solar system's formation approximately **4.6 billion years ago**.
- They predominantly exhibit **irregular shapes**, though some **display nearly spherical forms**.
- Many asteroids are accompanied by **small moons**, with some even having two moons.
- Additionally, binary asteroids consist of **two similar-sized rocky bodies** orbiting each other, and there are also triple asteroid systems.

▪ Categorization of Asteroids:

- **Main Asteroid Belt:** This region, located between [Mars and Jupiter](#), houses the majority of known asteroids.
- **Trojans:** These asteroids share an orbit with a larger planet, residing near stable points called [Lagrangian points \(L4 and L5\)](#), where the gravitational forces of the Sun and the planet are balanced.
 - This configuration prevents collisions with the larger planet.
- **Near-Earth Asteroids (NEAs):** These asteroids have orbits that approach Earth's orbit. Those that **intersect Earth's orbital path** are specifically termed Earth-crossers.

What is a....?

Comet

A comet is a mass of ice, rock, and dust, and often has a tail that is made up of dust and other materials.



Asteroid

An asteroid is made up of metallic or non-metallic rocks, and orbits the sun. They can range in size from a few centimeters wide to almost a thousand kilometers across!



Meteoroid

Meteoroids are usually fragments of asteroids or comets, often smaller than 1 meter wide, that fly through space.



Meteor

A meteor is a meteoroid that enters Earth's atmosphere. It burns up as it travels through the atmosphere, producing a streak of light behind it.



Meteorite

If a meteor doesn't completely burn up in the Earth's atmosphere, the fragment found on Earth is called a meteorite.



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UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. What is the difference between asteroids and comets? (2011)

1. Asteroids are small rocky planetoids, while comets are formed of frozen gases held together by rocky and metallic material.
2. Asteroids are found mostly between the orbits of Jupiter and Mars, while comets are found mostly between Venus and Mercury.
3. Comets show a perceptible glowing tail, while asteroids do not.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 1 and 3 only
- (c) 3 only
- (d) 1, 2 and 3

Ans: (b)

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