Eta Aquariid Meteor Shower

Source: IE

Why in News?

The **Eta Aquariid meteor shower,** associated with **Halley's** Comet**,** occurred on the 5th and 6th of May 2024, offering a celestial spectacle for skywatchers worldwide.

What is the Eta Aquariid Meteor Shower?

- The Eta Aquariid meteor shower occurs annually during early May. This event is characterised by its rapid meteors, **originating from the** debris **left behind by Comet Halley,** resulting in long-lasting, glowing tails.
- Approximately 30 to 40 Eta Aquarid meteors can be seen per hour during the peak, particularly visible from the **Southern Hemisphere.**
- The Southern Hemisphere offers a more favourable viewing experience due to the **higher position of the constellation Aquarius**, the radiant of the meteor shower.
    - In the Northern Hemisphere, observers may witness **"Earthgrazers,"** long meteors skimming the horizon.
- The radiant of the Eta Aquarids is in the **constellation Aquarius**, and the meteors appear to come from the area around the **star Eta Aquarii.**
    - This star and the constellation give the shower its name: **Eta Aquarids.**

The Comet 1P/Halley

- Comet Halley (1P/Halley), discovered by **Edmund Halley in 1705,** orbits the Sun approximately every 76 years. The **only naked-eye comet** that can appear twice in a human lifetime.
    - Its dusty trail produces the **Eta Aquariids** in May and the **Orionids in October** when Earth passes through these debris fields.
- Notably, Halley's last appearance visible to casual observers was in 1986, and it won't return until 2061.
- Comet Halley's is one of the **least reflective, objects** in the solar system, with an albedo of 0.03.

What are Comets?

- **About:**
    - Comets are frozen remnants from the early days of the solar system, composed of dust, rock, and ice. They orbit the Sun in highly elliptical paths.
    - Comets emit gas and dust when heated by the Sun, forming a glowing head and a tail.
    - According to NASA, a billions of comets orbiting the Sun beyond Neptune, in the **Kuiper Belt** and distant **Oort cloud.**
- **Meteor Showers Relation to Comets:**
    - **Meteors originate from remnants of comets** and broken asteroids. They are tiny grains of dust or rock that burn up as they enter Earth's atmosphere, creating brief tails of

light.

Key Terms

- **Meteoroid and Meteorite:**
  - Meteoroids are space rocks that range in size from dust grains to small asteroids.
    - This term only applies when these rocks are still in space.
  - When **meteoroids enter Earth's atmosphere** at high speed and burn up, they're called **meteors.**
    - If a **meteoroid doesn't burn up completely in Earth's atmosphere** and reaches the ground, it is **called a meteorite.**
- **Constellation:**
  - It is a group of stars that form a **recognizable pattern** in the night sky.
    - It have been used for centuries by different cultures for navigation, storytelling, and keeping track of time.
- **Kuiper Belt:**
  - It is a region of the **solar system beyond Neptune's orbit**. It is a vast, icy realm that is home to thousands of icy objects, including dwarf planets like Pluto, comets, and **Kuiper Belt Objects (KBOs).**
- **Oort Cloud:**
  - It is a giant, spherical cloud of icy objects that surrounds the **solar system at a much greater distance than the Kuiper Belt.**
    - The Oort Cloud is thought to be the source of long-period comets, which are comets that take thousands or even millions of years to orbit the Sun.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

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)