



Wright Mons Mountain: Pluto

For Prelims: Pluto, Wright Mons Mountain, NASA, Icy lava, Dwarf planet, International Astronomical Union, Mauna Loa, Cryovolcanism.

For Mains: Space Technology, Pluto, Findings of New Horizons probe.

Why in News?

Recently, new findings about Pluto have been reported by the [National Aeronautics and Space Administration's](#) (NASA) [New Horizons probe](#).


- The probe reported that **icy lava flows** have recently (no more than a billion years ago) covered substantial tracts of its surface.
- The findings drew particular attention to a **mountainous feature named Wright Mons**.
- The **only spacecraft to visit Pluto is NASA's New Horizons**, which passed close by in July 2015.

What is Wright Mons?

- A **mountainous feature named Wright Mons** was found on Pluto, which rises 4-5km above its surroundings. It is about 150km across its base and has a central depression (a hole) 40-50km wide, with a floor at least as low as the surrounding terrain.
 - Wright Mons, was informally **named by the New Horizons team in honour of the Wright brothers**.
- Scientists claim that **Wright Mons is a volcano**, and cite the lack of impact craters as evidence that it is not likely to be older than 1-2 billion years.
 - An impact crater is formed when an object like an asteroid or meteorite crashes into the surface of a larger solid object like a planet or a moon.
- Its **volume exceeds 20 thousand cubic kilometres**. Although considerably **less than the volume of Mars's biggest volcanoes**, this is similar to the **total volume of Hawaii's Mauna Loa**, and much greater than the volume of its above sea-level portion.
- The **slopes of Wright Mons and much of its surroundings are seen to be crowded with hummocks** up to 1km high and mostly 6-12km across.
- Scientists conclude that **these hummocks are made primarily of water-ice**, rather than nitrogen- or methane-ice that covers some other young regions on Pluto.
 - They argue that this is **consistent with the material strength necessary to form and preserve these domes**, but they do recognise small patches of much weaker nitrogen-ice, mainly in the central depression.
- The hummocks were likely created by some sort of ice volcanism, known by the technical term **"cryovolcanism"** - erupting icy water rather than molten rock.
- Pluto's bulk density shows that it **must have rock in its interior**, but its **outer regions are a mixture of ices (water, methane, nitrogen and probably ammonia and carbon monoxide, too, all of which are less than a third as dense as rock)** in the same way that the crust of the Earth and other rocky planets is a mixture of several silicate minerals.

- Many **other areas of Pluto have been around long enough to accumulate large numbers of impact craters** – no recent icy lava flows have covered them.

What are some Key Facts about Pluto?

- Pluto was categorised as a **dwarf planet**. In 2006, Pluto was categorised with three other objects in the solar system that are about the same small size as Pluto: Ceres, Makemake and Eris. 
- Pluto was embraced as the solar system's ninth planet upon **discovery by Clyde Tombaugh in 1930**.
- The crucial part of the definition of planet adopted by the **International Astronomical Union (IAU)** in 2006 is that a planet should have **"cleared the neighbourhood of its own orbit"**.
- Pluto clearly does not comply with this definition – **it has rivals of comparable mass in addition to being overshadowed by the vastly more massive Neptune**.
- These **objects, along with Pluto, are much smaller than the "other" planets**.
- Pluto – which is **smaller than Earth's Moon** – has a heart-shaped glacier that's the size of Texas and Oklahoma. It has blue skies, spinning moons, mountains as high as the Rockies, and **it snows – but the snow is red**.
- Pluto is about 1,400 miles wide. That's about **half the width of the United States, or 2/3 the width of Earth's moon**.
- Pluto orbits the Sun about 3.6 billion miles away on average, about **40 times as far as Earth**, in a region called the **Kuiper Belt**.
- A **year on Pluto is 248 Earth years**. A day on Pluto lasts 153 hours, or about 6 Earth days.
- Pluto has a **thin atmosphere of nitrogen, methane and carbon monoxide**. The atmosphere has a blue tint and distinct layers of haze.
- Pluto has **5 moons**. The **largest, Charon**, is so big that Pluto and Charon orbit each other like a double planet.
- Pluto's surface is far **too cold, -228 to -238°C**, to sustain life as we know it.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Q. Which one of the following planets has largest number of natural satellites or moons? (2009)

- (a) Jupiter
- (b) Mars
- (c) Saturn
- (d) Venus

Ans: (a)

Exp:

- **Jupiter has 79 moons** which include Ganymede, the biggest moon in our solar system.
- Mars has two moons – Phobos and Deimos.
- Saturn has 82 moons, which makes it the planet with the largest number of moons.
- **Note:** However, when the question was asked Jupiter had the largest number of moons.

Q. Which one of the following is a spacecraft? (2008)

- (a) Apophis
- (b) Cassini
- (c) Spitzer
- (d) TechSar

Ans: (b)

Exp:

- The [Cassini-Huygens](#) space research mission commonly called Cassini, involved a collaboration among NASA, the European Space Agency (ESA), and the Italian Space Agency (ASI) to send a probe to study the planet Saturn and its system, including its rings and natural satellites.

Source: [DTE](#)

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