

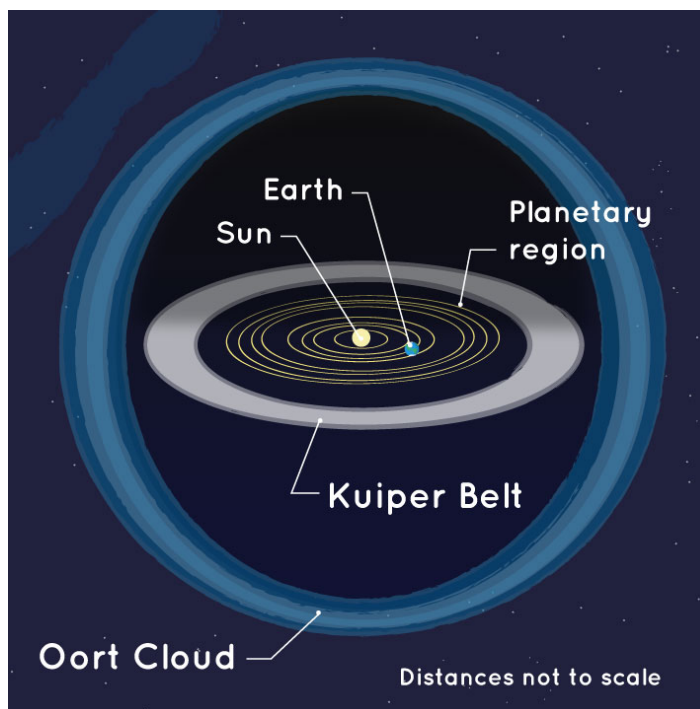
# Green comet near Earth after 50,000 years

## In News

Recently discovered, Green Comet can be witnessed after nearly 50 thousand years and next expected to be seen after the same number of years.

## Introduction

- Appearing near Earth after nearly 50,000 years, and next estimated to come close to us after as many years,
- The comet came closest to Earth around February 2. Termed the **C/2022 E3 (ZTF)**, the comet was named to refer to those who first spotted it – astronomers using the wide-field survey camera at the Zwicky Transient Facility (ZTF) in the US, in March 2022.
- NASA has said the comet could be visible with telescopes and binoculars, and might even be visible to the naked eye under a clear night sky. Here's what you need to know.



## But why is it green in colour?

- Comets are frozen rocky or gas-filled objects that are remnants of the formation of the solar system. Due to their composition, characteristics and the path they move in, they tend to leave a light “behind them”. Here, the comet itself is green (called the head of the comet) and emits a whitish light behind it (often called the tail of the comet).

- The green glow is thought to arise from the presence of diatomic carbon – pairs of carbon atoms that are bound together – in the head of the comet. The molecule emits green light when

excited by the ultraviolet rays in solar radiation.

## How far from our Earth?

- The green comet could be at a distance of 2.5 light minutes from Earth, meaning a “mere” 27 million miles.

## Is it visible to naked eyes ?

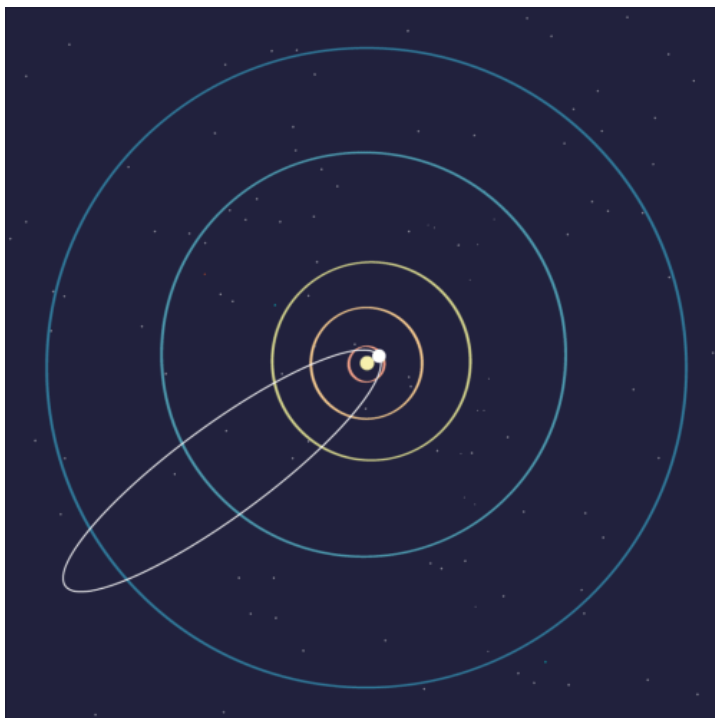
- Comets could be visible with telescopes and binoculars, and might even be visible to the naked eye under a clear night sky.
- Northern Hemisphere: Comet will be seen in the morning sky, as it moves swiftly toward the northwest during January 2023.
- Southern Hemisphere: It'll become visible in the Southern Hemisphere in early February 2023.
- Specifically in India: In Indian skies, it can be spotted at  $16^\circ$  above the horizon in the Bootes constellation, when looking in the northwest direction.

### **Do Comets have gravity?**

- Just like other bodies in space, comets also have orbits.

### **Where do comets come from?**

- Comets are mostly found way out in the solar system. Some exist in a wide disk beyond the orbit of Neptune called the Kuiper Belt. We call these short-period comets. They take less than 200 years to orbit the Sun.
- Other comets live in the Oort Cloud, the sphere-shaped, outer edge of the solar system that is about 50 times farther away from the Sun than the Kuiper Belt. These are called long-period comets because they take much longer to orbit the Sun. The comet with the longest known orbit takes more than 250,000 years to make just one trip around the Sun!
- It comes under the category of long-period comets, which take more than 200 years to orbit the Sun; the green comet is not easily spotted.
- With a highly elliptical orbit, the comet will head back to the Oort cloud and make its next appearance roughly 50,000 years later.



### **What brings comets near Earth so we can see them?**

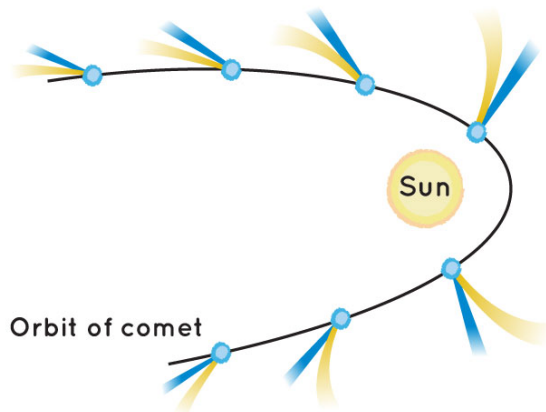
- The gravity of a planet or star can pull comets from their homes in the Kuiper Belt or Oort Cloud. This tug can redirect a comet toward the Sun. The paths of these redirected comets look like long, stretched ovals.

- As the comet is pulled faster and faster toward the Sun, it swings around behind the Sun, then heads back toward where it came from. Some comets dive right into the Sun, never to be seen again. When

the comet is in the inner solar system, either coming or going, that's when we may see it in our skies.

### Why do comets have tails?

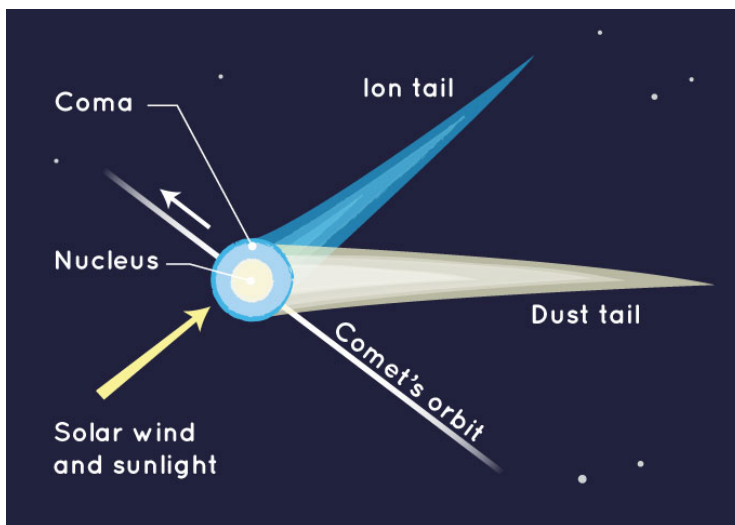
- As dust and gases stream away from the nucleus, sunlight and particles coming from the Sun push them into a bright tail that stretches behind the comet for millions of miles.



- When astronomers look closely, they find that comets actually have two separate tails. One looks white and is made of dust. This dust tail traces a broad, gently curving path behind the comet. The other tail is bluish and is made up of electrically charged gas molecules, or ions. The ion tail always points directly away from the Sun.

### What are the parts of a comet?

- At the heart of every comet is a solid, frozen core called the nucleus. This ball of dust and ice is usually less than 10 miles (16 kilometers) across – about the size of a small town. When comets are out in the Kuiper Belt or Oort Cloud, scientists believe that's pretty much all there is to them – just frozen nuclei.



cloud around the nucleus called the coma.

- But when a comet gets close to the Sun, it starts heating up. Eventually, the ice begins to turn to gas. This can also cause jets of gas to burst out of the comet, bringing dust with it. The gas and dust create a huge, fuzzy