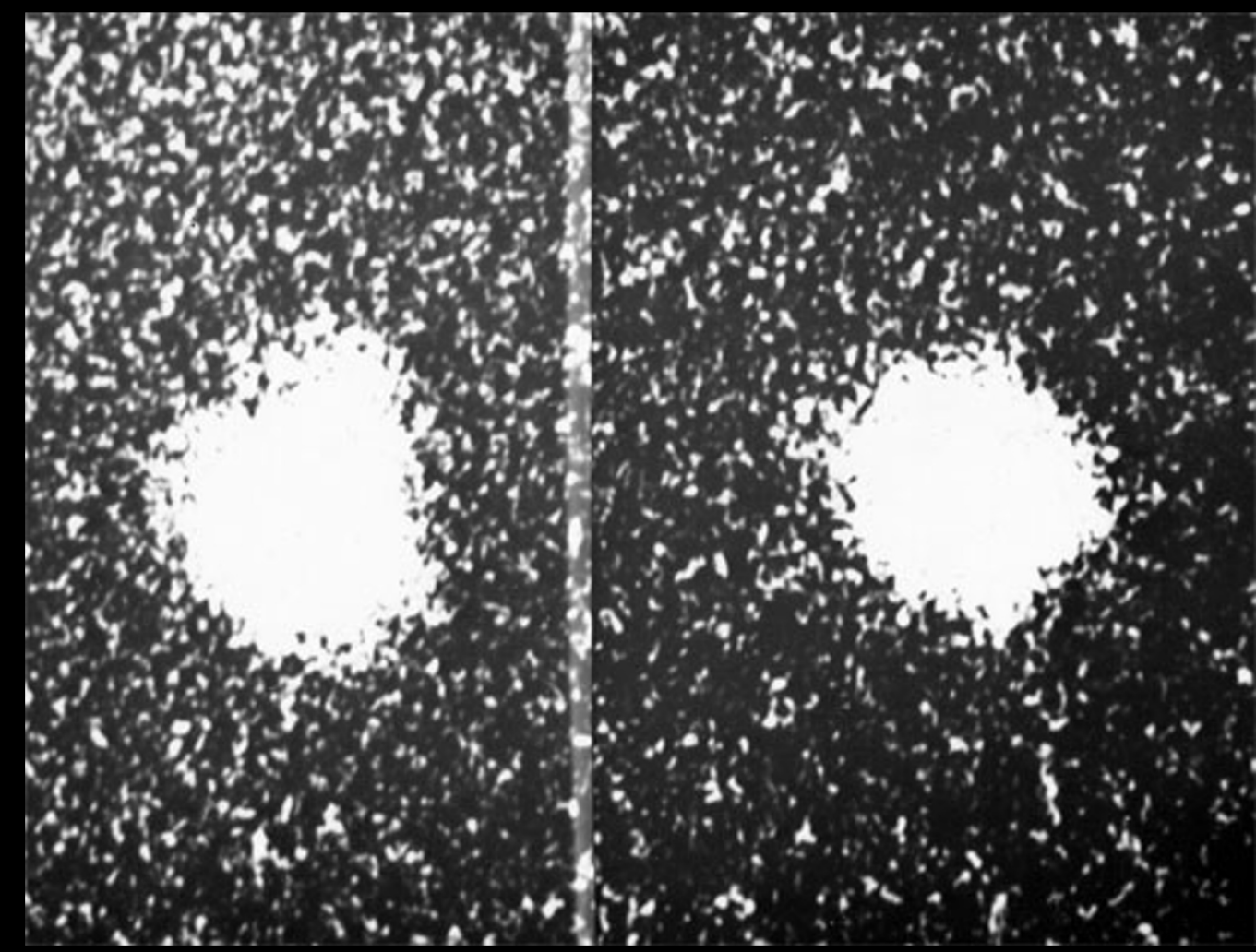


Pluto and Its Moons



1990

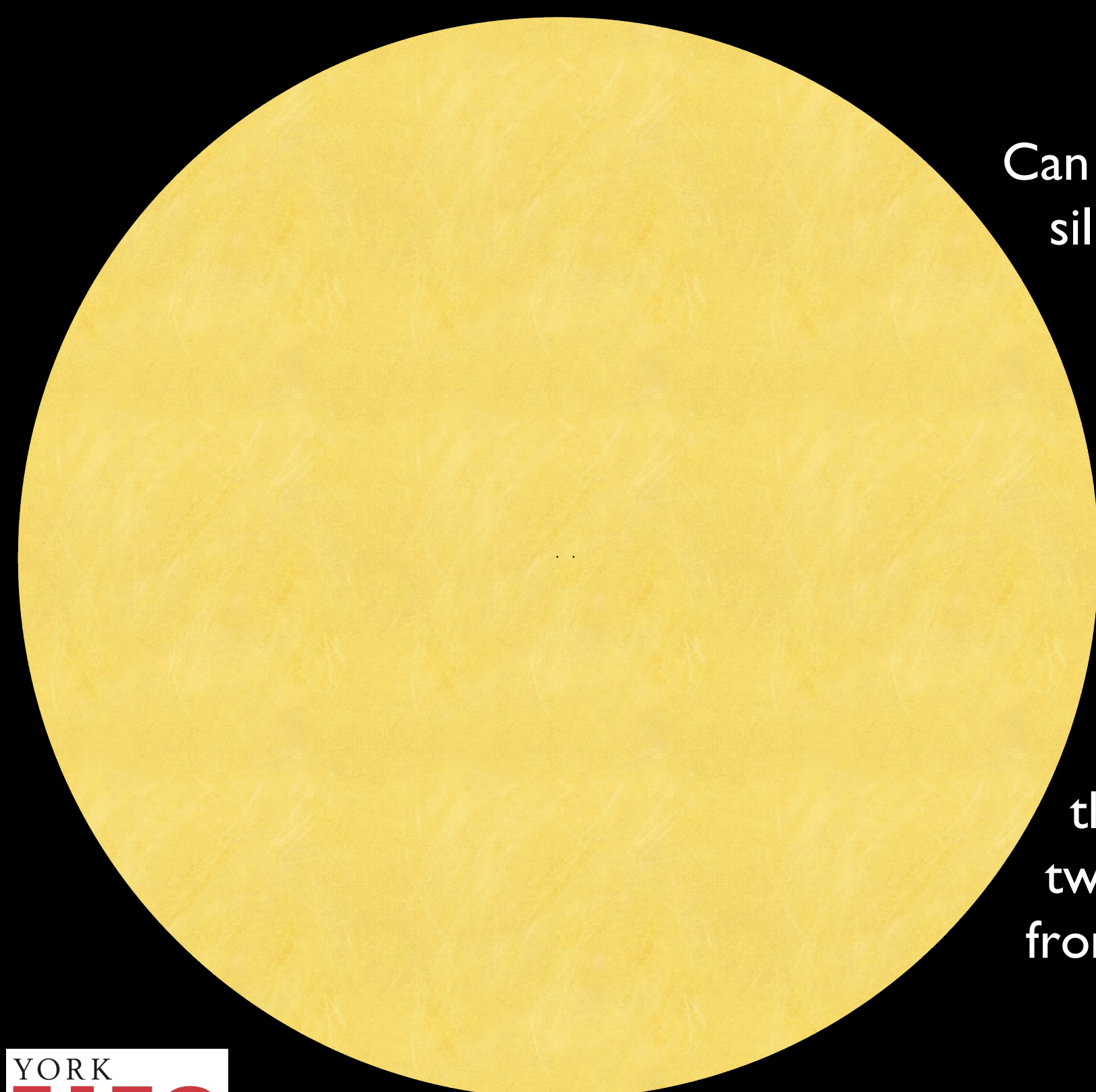


2008

2015

Pluto is a dwarf planet in the **Kuiper Belt**, a region of icy celestial objects beyond Neptune. Pluto's orbit around the Sun is highly **elliptical and tilted**, causing it to vary in distance above and below the plane of the Solar System. Because of this elongated orbit, Pluto is sometimes closer to the Sun than Neptune.

1 Day on Pluto (Plutonian day) is **6.39 Earth days!**
1 Year on Pluto (Plutonian year) is **248 Earth Years!**



Can you spot Pluto and Charon silhouetted against the Sun? Their correct sizes and separation in this scale model are shown in the center at left. Nix, Hydra, Kerberos, and Styx are too small to see at this scale, but they orbit between about two and three times farther from Pluto than Charon does.

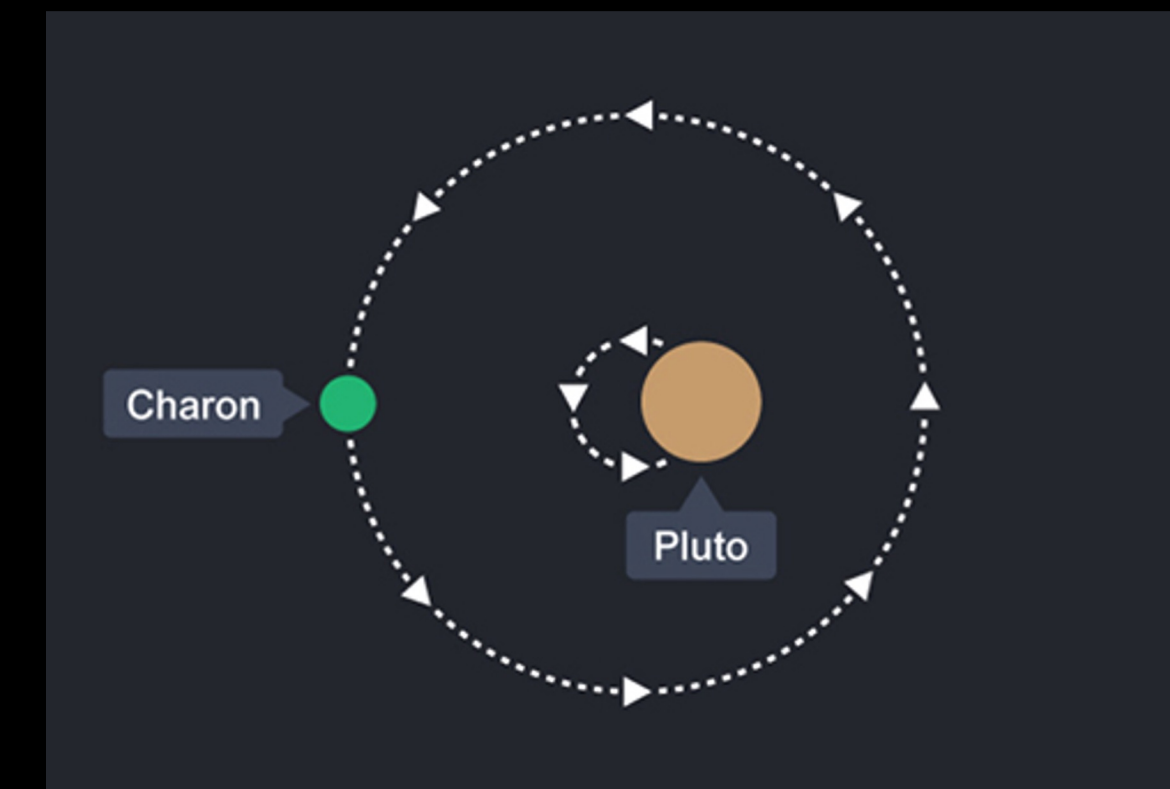


Moon and System Dynamics

Pluto has five known moons: Charon, Nix, Hydra, Kerberos, and Styx.

Charon is unusually large compared to Pluto. For comparison, Earth is **four times the diameter and 81 times the mass** of the moon, while Pluto is **only about twice the diameter and 10 times the mass** of Charon.

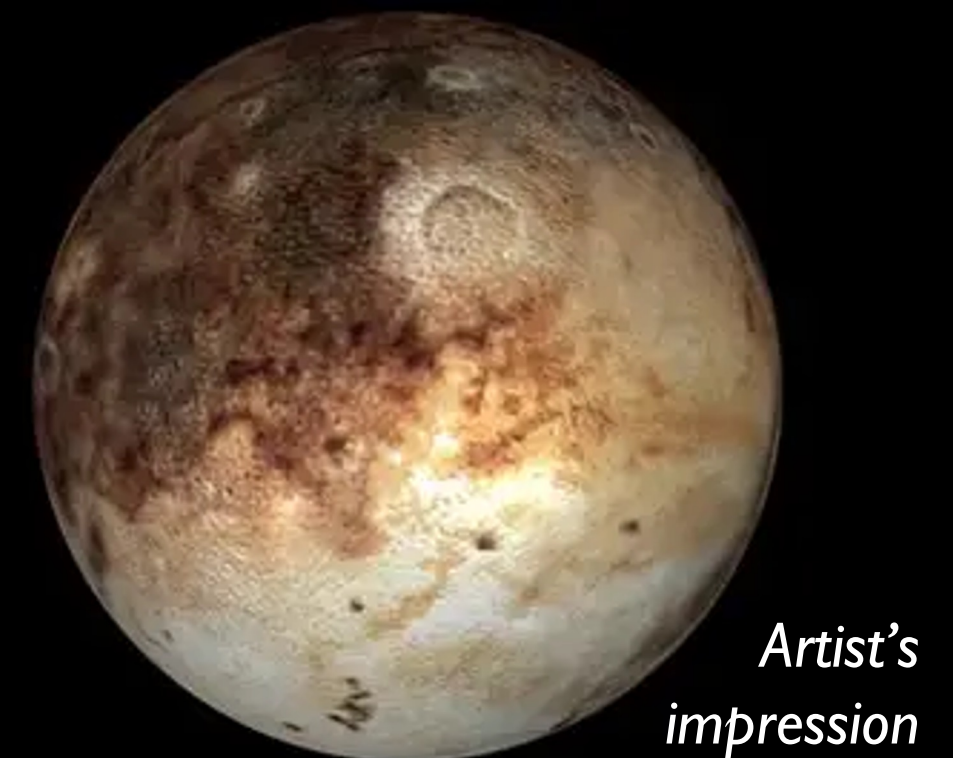
Charon and the Small Moons of Pluto



Because of this, Pluto and Charon orbit a **shared center of mass (barycenter)** located outside Pluto itself. For this reason, the system is sometimes described as a **near-binary system** (a double dwarf planet).

Discovery and Exploration

- **Pluto** was discovered in **1930** by Clyde Tombaugh.
- **Charon** was discovered in **1978** by James W. Christy
- Early observation could not separate the two due to **limited resolution**
- Major advances came from the **Hubble space telescope** and from NASA'S New Horizons Flyby (2015)



Artist's impression

New Horizons Flyby (2015)

This spacecraft provided the first high resolution images and data from the Pluto system, revealing vast **nitrogen-ice plains**, water-ice **mountains**, and recent geologic resurfacing. These observations revolutionized our understanding of Pluto's geology and complexity.

