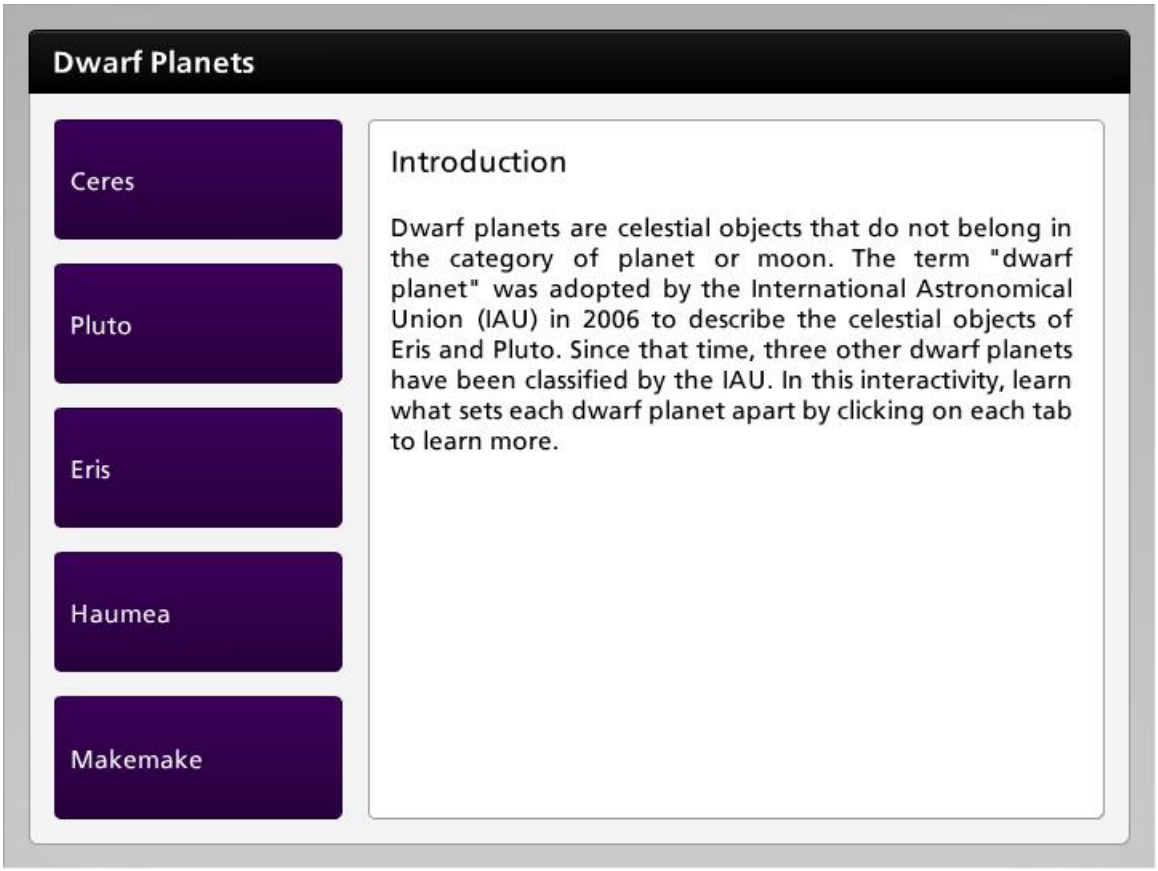
Module 9: The Solar System
Topic 4 Content: Dwarf Planets Notes

Introduction



Dwarf planets are celestial objects that do not belong in the category of planet or moon. The term "dwarf planet" was adopted by the International Astronomical Union (IAU) in 2006 to describe the celestial objects of Eris and Pluto. Since that time, three other dwarf planets have been classified by the IAU. In this interactivity, learn what sets each dwarf planet apart by clicking on each tab to learn more.

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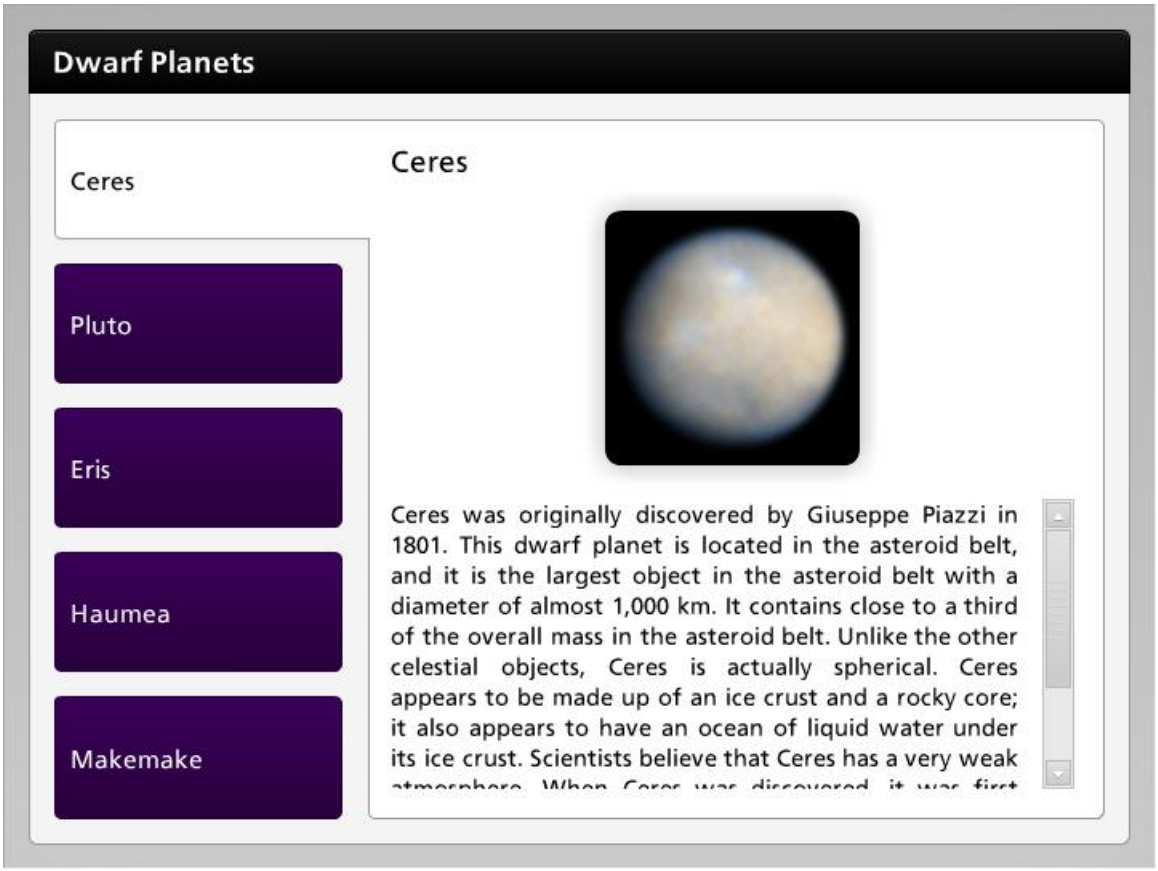
Ceres



Ceres was originally discovered by Giuseppe Piazzi in 1801. This dwarf planet is located in the asteroid belt, and it is the largest object in the asteroid belt with a diameter of almost 1,000 km. It contains close to a third of the overall mass in the asteroid belt. Unlike the other celestial objects, Ceres is actually spherical. Ceres appears to be made up of an ice crust and a rocky core; it also appears to have an ocean of liquid water under its ice crust. Scientists believe that Ceres has a very weak atmosphere. When Ceres was discovered, it was first classified as a comet, then as an asteroid, and now it is a dwarf planet.

Image courtesy of NASA

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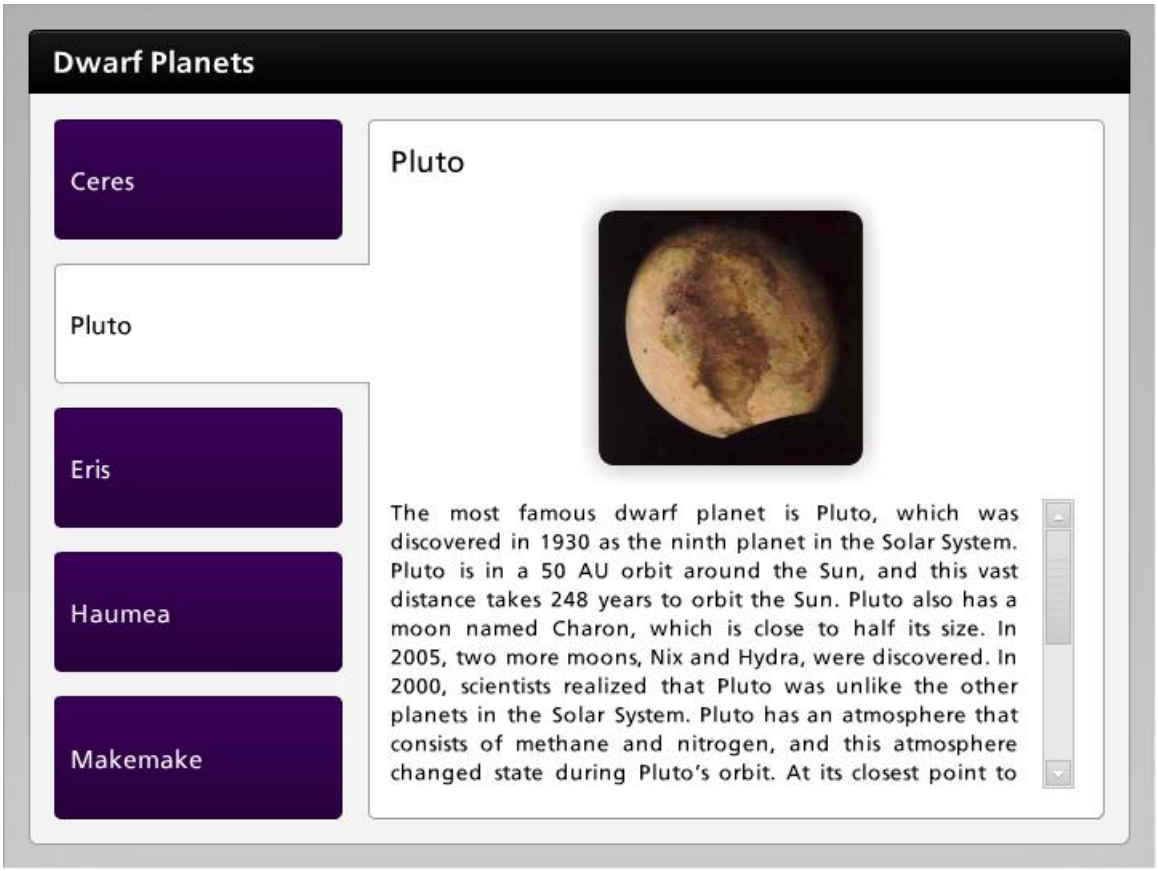
Pluto



The most famous dwarf planet is Pluto, which was discovered in 1930 as the ninth planet in the Solar System. Pluto is in a 50 AU orbit around the Sun, and this vast distance takes 248 years to orbit the Sun. Pluto also has a moon named Charon, which is close to half its size. In 2005, two more moons, Nix and Hydra, were discovered. In 2000, scientists realized that Pluto was unlike the other planets in the Solar System. Pluto has an atmosphere that consists of methane and nitrogen, and this atmosphere changed state during Pluto's orbit. At its closest point to the Sun, the atmosphere is a liquid, but as it moves farther from the Sun, the atmosphere freezes and the gases fall down to the planet's surface. In 2006, Pluto was reclassified as a dwarf planet, mainly because it has a very eccentric orbit around the Sun. Also, Pluto is not able to clear its path as it orbits the Sun. Lastly, Charon is close to half the size of Pluto, whereas the other planets are much larger than their moon or many moons.

Image courtesy of NASA

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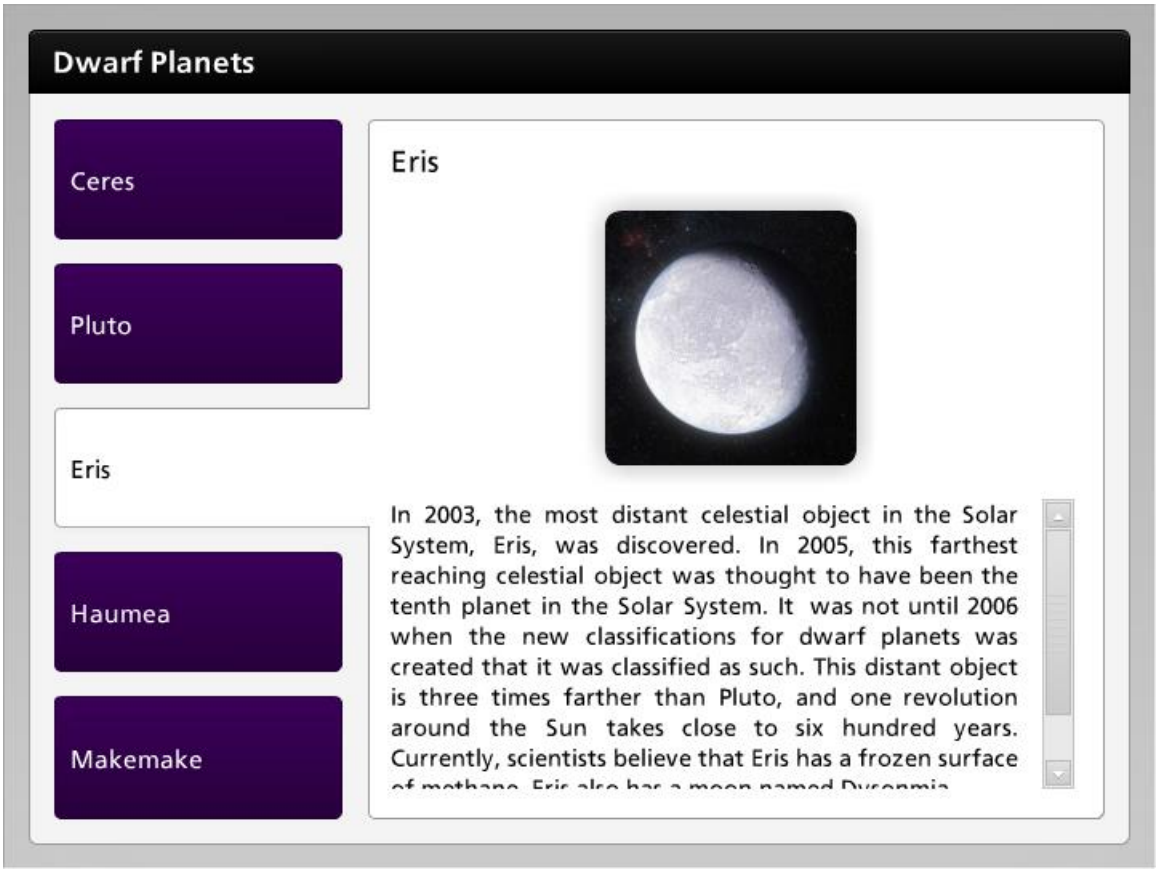
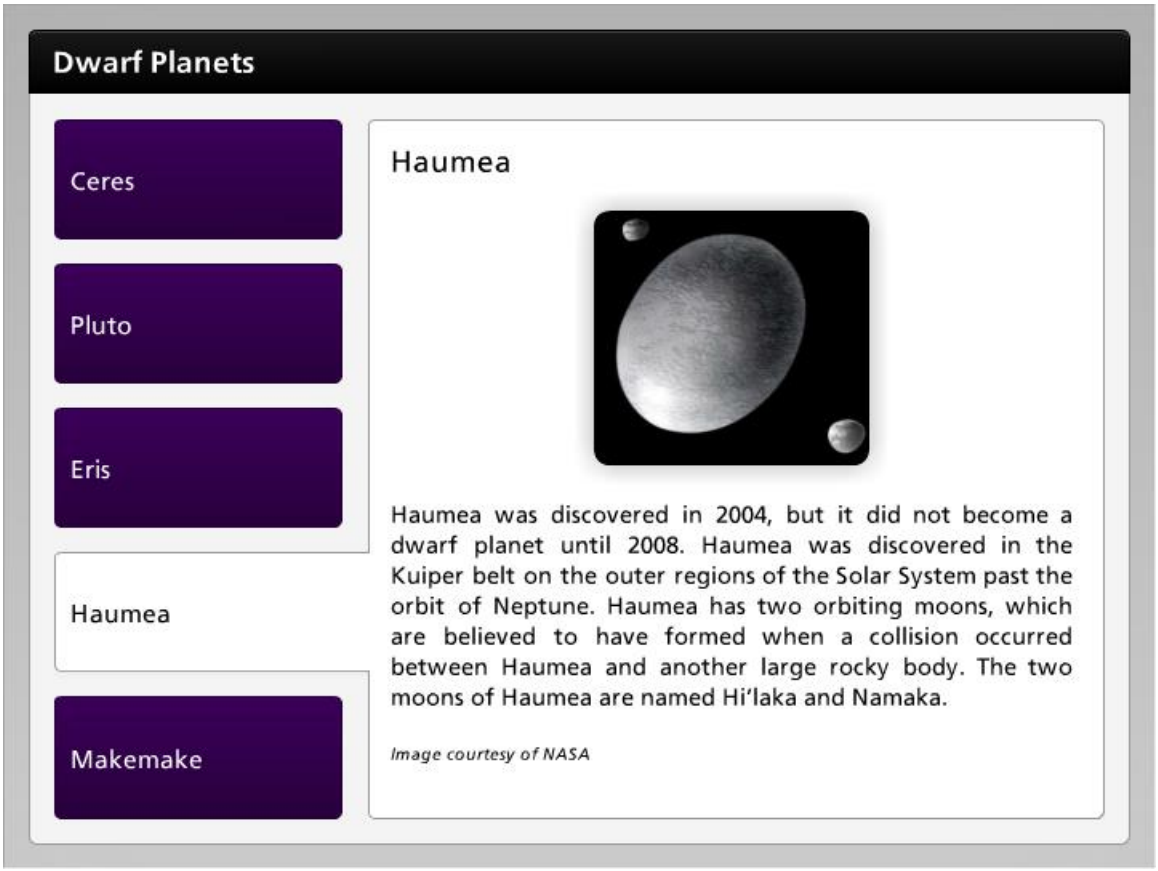
Eris



In 2003, the most distant celestial object in the Solar System, Eris, was discovered. In 2005, this farthest reaching celestial object was thought to have been the tenth planet in the Solar System. It was not until 2006 when the new classifications for dwarf planets was created that it was classified as such. This distant object is three times farther than Pluto, and one revolution around the Sun takes close to six hundred years. Currently, scientists believe that Eris has a frozen surface of methane. Eris also has a moon named Dysonmia.

Image courtesy of NASA

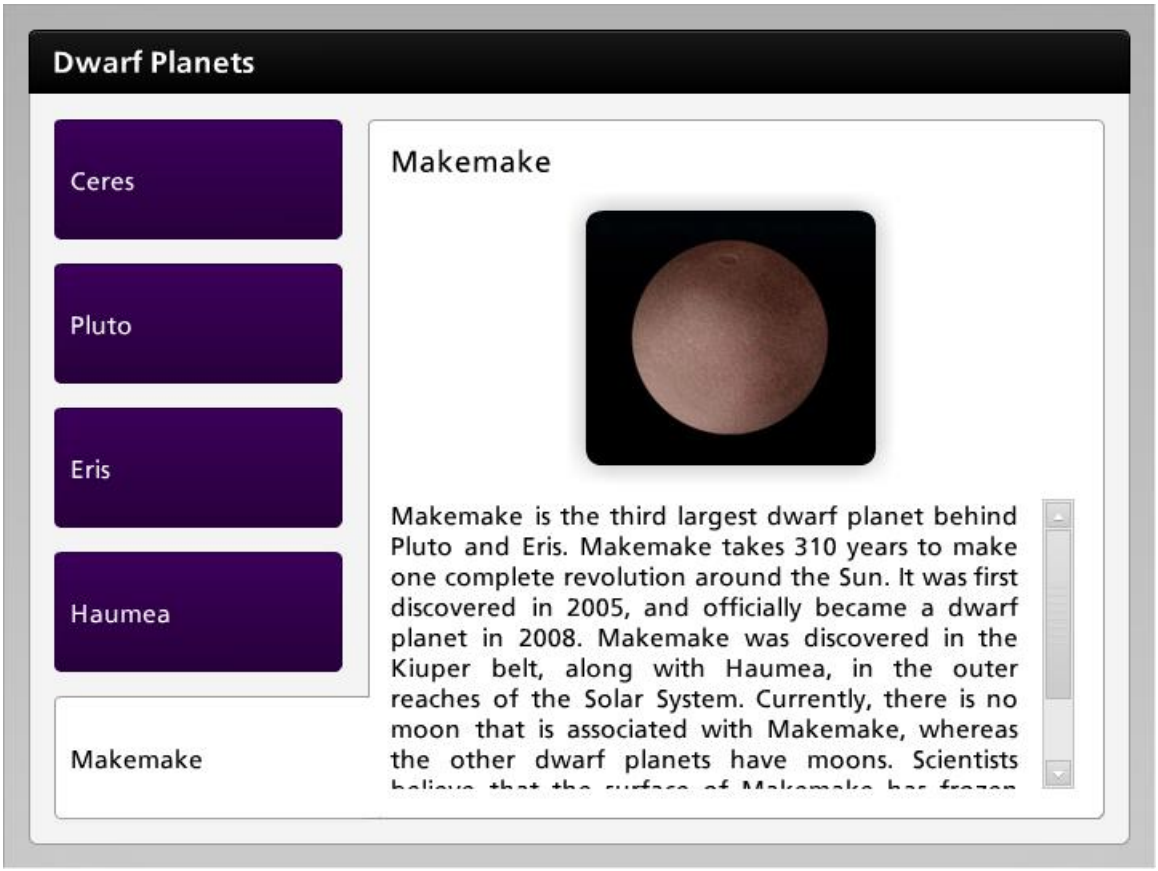
Haumea



Haumea was discovered in 2004, but it did not become a dwarf planet until 2008. Haumea was discovered in the Kuiper belt on the outer regions of the Solar System past the orbit of Neptune. Haumea has two orbiting moons, which are believed to have formed when a collision occurred between Haumea and another large rocky body. The two moons of Haumea are named Hi'laka and Namaka.

Image courtesy of NASA

Makemake



Makemake is the third largest dwarf planet behind Pluto and Eris. Makemake takes 310 years to make one complete revolution around the Sun. It was first discovered in 2005, and officially became a dwarf planet in 2008. Makemake was discovered in the Kiuper belt, along with Haumea, in the outer reaches of the Solar System. Currently, there is no moon that is associated with Makemake, whereas the other dwarf planets have moons. Scientists believe that the surface of Makemake has frozen gasses such as methane, ethane, and nitrogen.

Image courtesy of NASA