

## Planetary News: Pluto (2006)

### *Pluto Gets the Boot - Solar System Shrinks to 8 Planets* *Bye Bye Pluto*

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Pluto got the boot today when 2,500 astronomers from 75 countries at the International Astronomical Union (IAU) annual meeting in Prague voted on a resolution that aims to define exactly what a planet is.

What this means is that [Pluto](#) has been ejected from the planetary brotherhood. It is no longer considered a planet, but a dwarf planet. As a result, the solar system shrunk today by 1 planet, meaning that the solar system now consists of 8 recognized "planets" Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

In short, a "planet" is now defined as a celestial body that (a) is in orbit around the Sun, (b) has sufficient mass for its self-gravity to overcome rigid body forces so that it assumes a hydrostatic equilibrium (nearly round) shape, and (c) has cleared the neighborhood around its orbit.

This marks the first time the IAU has put forth scientific criteria for a planet and voted on it. A new distinct class of objects called "dwarf planets" was also defined as the astronomers agreed that "planets" and "dwarf planets" are two distinct classes of objects.

A dwarf planet, according to the new definition, is a celestial body that (a) is in orbit around the Sun, (b) has sufficient mass for its self-gravity to overcome rigid body forces so that it assumes a hydrostatic equilibrium (nearly round) shape, (c) has not cleared the neighborhood around its orbit, and (d) is not a satellite.

All other objects orbiting the Sun will now referred to collectively as "Small Solar System Bodies."

The first members of the "dwarf planet" category are Ceres, [Pluto](#), and 2003 UB313 (aka Xena). More "dwarf planets" are expected to be announced by the IAU in the coming months and years. Currently, about a dozen candidate "dwarf planets" are listed on IAU's "dwarf planet" watchlist, which keeps changing as new objects are found and the physics of the existing candidates becomes better known.

For [Pluto supporters](#), not all is lost. The "dwarf planet" [Pluto](#) is being recognized, according to the IAU, as "an important proto-type of a new class of trans-Neptunian objects." The IAU will set up a process to name these objects.

"The classification doesn't matter," said Louis Friedman, executive director of The Planetary Society. "Pluto -- and all solar system objects -- are mysterious and exciting new worlds that need to be explored and better understood. Anytime we visit a new world -- planet, moon, asteroid, comet, whatever -- we make exciting and surprising new discoveries about the evolution of our solar system and about our own planet."

"Being The Planetary Society, however, we do appreciate the intense interest in the question -- what is a planet -- by both professionals and the general public, and we want to hear from them," Friedman added. The Society is conducting a public poll on the web at

<http://planetary.org/explore/topics/pluto/poll.html>. In addition, the organization is also inviting people from around the world to submit photos for a time capsule to be opened when the New Horizons spacecraft reaches Pluto in 2015 as a way of connecting the long term pursuit of space exploration with the rapid pace of change here on Earth.

As it turns out, the proposed resolution that made so much notice when it was presented to the public last week -- and which would have expanded the solar system to 12 planets -- passed, but it was a different draft of the document in that it added the third criteria of a planet having to clear its neighborhood around its orbit. Pluto's orbit crosses that of Neptune, which is much larger, so the former 9th planet didn't meet all the criteria.

A specially selected committee spent 2 years, under the auspices of the IAU, working on the [proposal](#) to define what, exactly, should be deemed a planet, as well as a way to better describe the difference between planets and smaller solar system bodies, such as comets and asteroids.

By that [committee's original draft of the resolution](#), Ceres, the largest asteroid, would have become known as a "dwarf planet," while Pluto, Charon, and 2003 UB313/Xena would form a new class of objects called "plutons," and the term "minor planet" would have faded from astronomy's lexicon. Objects not classified as planets would be referred to as "small solar system bodies." Under that [draft definition](#), [Pluto](#), as a pluton, though distinct from the solar system's 8 "classical planets," would still have been a planet.

When the committee released the proposed resolution last week, the "early returns," according to panel member Richard Binzel, professor of planetary science at the Massachusetts Institute of Technology (MIT), were looking good. But as the week progressed, the debates got more and more heated, and the resolution was defeated in a straw poll of planetary scientists during the first major debate on the plan last Friday. That sent rumors flying around the world that the resolution would go down in defeat. Another vote, just among planetary scientists on Tuesday, ended in a draw.

Geologists were criticizing the panel for failing to consider the traditional use of the word "pluton" as the name of an igneous rock. "The committee was aware of the geological term, but felt 'pluton' could be shared by the two communities, with qualifiers used in cases where there might be confusion -- such as 'planetary pluton' and 'igneous 'pluton,'" panel member Dava Sobel, author and historian, told The Planetary Society.

Meanwhile, various planetary scientists had numerous notions and so the original draft of the proposed resolution was modified a couple of times, before it was voted on today.

For as many who are satisfied, there are others who are disappointed. Even before the vote, Sobel expressed "surprise" at "the reluctance of some people to accept 12 planets or more," noting that she "embrace(d) the possibility of a wider solar system, especially since the solar system seems to hold more than anyone ever imagined."

As it turns out, in the big picture, the new definition may mean little since the IAU notes that it will only apply to planets in our solar system. That leaves a universe of spherical objects out there for astronomers to ponder.