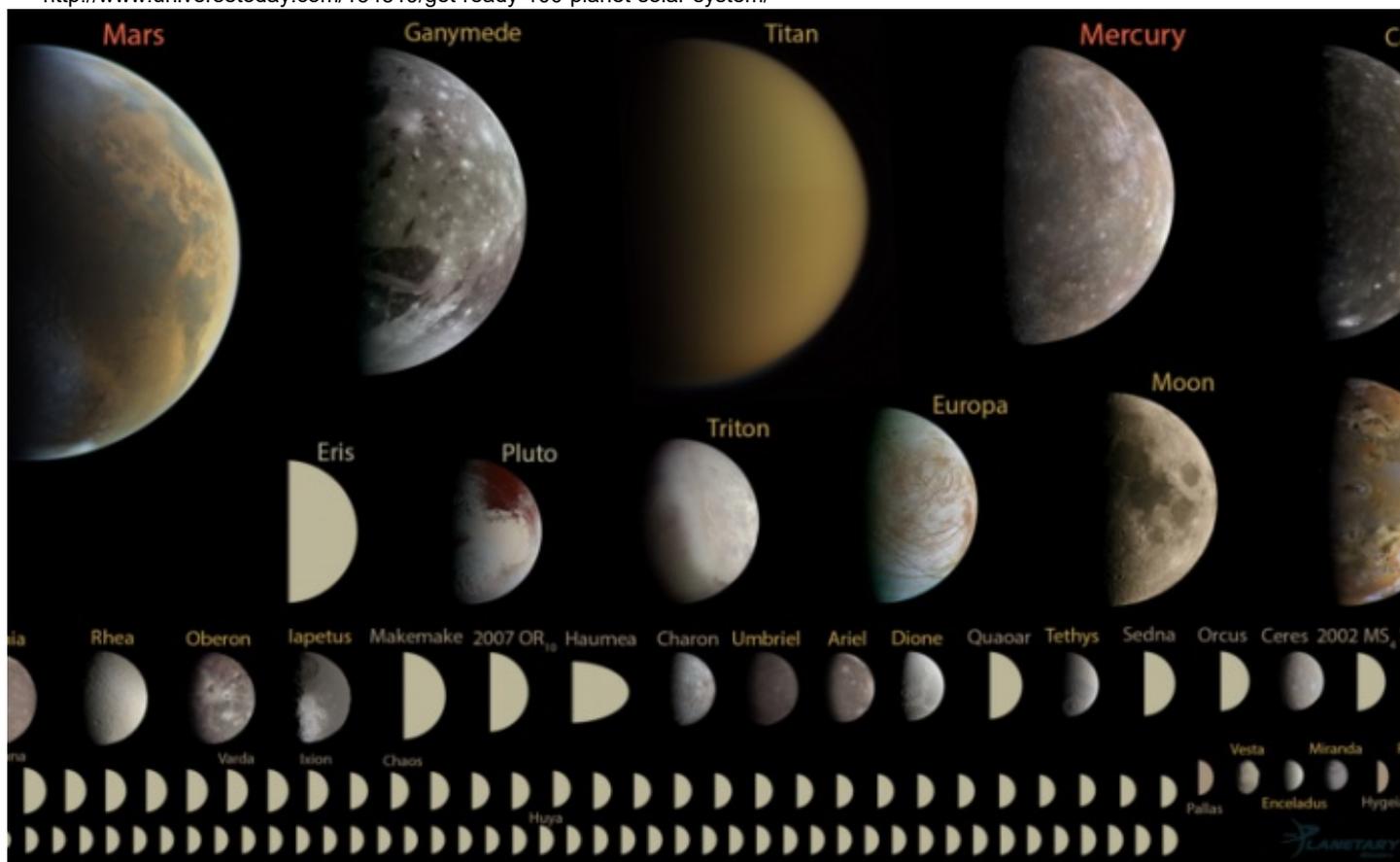


http://www.universetoday.com/134519/get-ready-100-planet-solar-system/



# GET READY FOR THE >100 PLANET SOLAR SYSTEM

Article Updated: 18 Mar , 2017  
by Evan Gough



Pluto's status as a non-planet may be coming to an end. Professor Mike Brown of Caltech ended Pluto's planetary status in 2006. But now, Kirby Runyon, a doctoral student at Johns Hopkins University, thinks it's time to cancel that demotion and restore it as our Solar System's ninth planet.

Pluto's rebirth as a planet is not all about Pluto, though. A newer, more accurate definition of what is and what is not a planet from here on out could be leads are...



This composite of enhanced color images of Pluto (lower right) and Charon (upper left), was taken by NASA's New Horizons spacecraft as it passed through the Pluto system on July 14, 2015. Credits: NASA/JHUAPL/SwRI

In 2006, the [International Astronomical Union \(IAU\)](#) changed the definition of what a planet is. Pluto's demotion stemmed from discoveries in the 1990's showing that it is actually a [Kuiper Belt Object \(KBO\)](#). It was just the first KBO that we discovered. When Pluto was discovered by [Clyde Tombaugh](#) in 1930, and included as the ninth planet in our Solar System, we didn't know much about the Kuiper Belt.

But in 2005, the dwarf planet Eris was discovered. It was like Pluto, but 27% more massive. This begged the question, Why Pluto and not Eris? The IAU struck a committee to look into how planets should be defined.

In 2006, the IAU had a decision to make. Either expand the definition of what is and what is not a planet to include Eris and other bodies like Ceres, or shrink the definition to omit Pluto. Pluto was demoted, and that's the way it's been for a decade. Just enough time to re-write text books.

But a lot has happened since then. The change to the definition of planet was hotly debated, and for some, the change should never have happened. Since the New Horizons mission arrived at Pluto, that debate has been re-opened.

A group of scientists led by Runyon has written a paper to be presented at the upcoming [Lunar and Planetary Science](#)

Conference on March 20th to 24th.

“A planet is a sub-stellar mass body that has never undergone nuclear fusion...” – part of the new planetary definition proposed by Runyon and his team.

The group behind the drive to re-instate Pluto have a broader goal in mind. If the issue of whether Pluto is or is not a planet sounds a little pedantic, it's not. As Runyon's group says on their poster to be displayed at the upcoming conference, “Nomenclature is important as it affects how we compare, think, and communicate about objects in nature.”

Runyon's team proposes a new definition of what is a planet, focused on the geophysics of the object: **“A planet is a sub-stellar mass body that has never undergone nuclear fusion and that has enough gravitation to be round due to hydrostatic equilibrium regardless of its orbital parameters.”**

The poster highlights some key points around their new planetary definition:

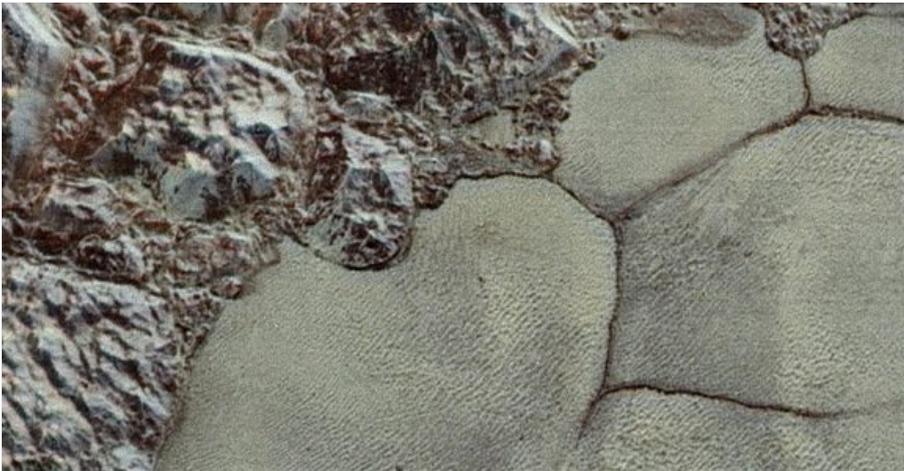
- Emphasizes intrinsic as opposed to extrinsic properties.
- Can be paraphrased for younger students: “Round objects in space that are smaller than stars.”
- The geophysical definition is already in use, taught, and included in planetological glossaries.
- There's no need to memorize all 110 planets. Teach the Solar Systems zones and why different planet types formed at different distances from the Sun.

Their proposal makes a lot of sense, but there will be people opposed to it. 110 planets is quite a change, and the new definition is a real mouthful.

“They want Pluto to be a planet because they want to be flying to a planet.” – Prof. Mike Brown, from a [BBC interview](#), July 2015.

Mike Brown, the scientist behind Pluto's demotion, saw this all coming when New Horizons reached the Pluto system in the Summer of 2015. In an [interview with the BBC](#), he said “The people you hear most talking about reinstatement are those involved in the (New Horizons) mission. It is emotionally difficult for them.”

Saying that the team behind New Horizons find Pluto's status emotionally difficult seems pretty in-scientific. In fact, their proposed new definition seems very scientific.



This image from New Horizons shows the true nature of Pluto. What for a long time was just a blurry, round, blob in space, was revealed as a geologically active planet with a seasonal atmosphere. Image: NASA/JPL/New Horizons

There may be an answer to all of this. The term “classical planets” might be of some use. That term could include our 9 familiar planets, the knowledge of which guided much of our understanding and exploration of the Solar System. But it's a fact of science that as our understanding of something grows more detailed, our language around it has to evolve to accommodate. Look at the term planetary nebula—still in use long after we know they have nothing to do with planets—and how much confusion it causes.

“It is official without IAU approval, partly via usage.” – Runyon and team, on their new definition.

In the end, it may not matter whether the IAU is convinced by Runyon's proposed new definition. As their poster states, "As a geophysical definition, this does not fall under the domain of the IAU, and is an alternate and parallel definition that can be used by different scientists. It is "official" without IAU approval, partly via usage."

It may seem pointless to flip-flop back and forth about Pluto's status as a planet. But there are sound reasons for updating definitions based on our growing knowledge. We'll have to wait and see if the IAU agrees with that, and whether or not they adopt this new definition, and the >100 planet Solar System.

You can view Runyon and team's poster [here](#).

You can view Emily Lakdawalla's image of round objects in our Solar System [here](#).

You can read the IAU's definition of a planet [here](#).

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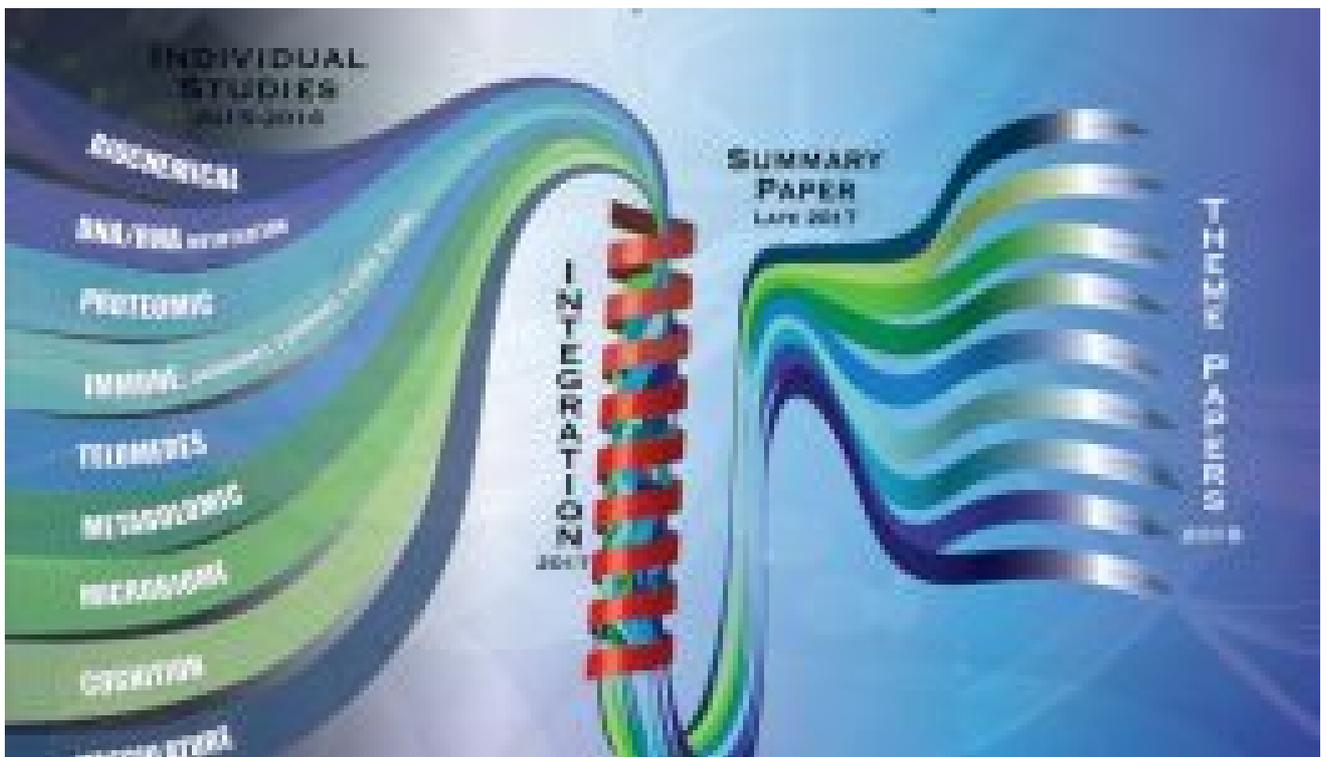
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## 1 RESPONSE



laurele says:

March 18, 2017 at 4:49 PM

Your very first sentence is in error. Pluto is not a “non-planet,” and Mike Brown had absolutely nothing to do with the controversial 2006 IAU decision. First, an object’s status does not change because 424 non-experts take a vote. That is what the IAU decision was. Only four percent of the IAU voted, and most were not planetary scientists but other types of astronomers. Their decision was immediately opposed by an equal number of professional planetary scientists led by Alan Stern. The media did a disservice to the public by treating the IAU decision as some sort of gospel truth as opposed to what it really was—just one view in an ongoing debate. They should never have given the IAU this much power, as science is NOT decided by decree of “authority.”

Furthermore, the media has enabled Mike Brown in his nonsensical and repetitive claim that he “killed” Pluto. Not only is this claim untrue; it is also unprofessional and unscientific. Brown was one of a team of three who discovered

Eris, a small planet beyond Pluto. He is not an IAU member and could not vote at the 2006 General Assembly. He had no influence whatsoever on that vote. He does not study Pluto. The “killing Pluto” idea is nothing more than a way of branding himself to sell books, make money, and become famous. Of the other two discoverers of Eris, one Dr. David Rabinowitz, signed the petition rejecting the IAU decision.

The IAU never had to make a decision. The only reason some people felt they did was because they had a problem with the notion of our solar system having “too many planets.” This has no scientific basis whatsoever. The solar system has whatever number of planets it has. And there is no need to apologize to elementary school students because there is no need for them to memorize a list of names. That is an archaic mode of teaching from the days when we knew little more about the planets than their names. Today, the important thing is teaching the different types of planets and their characteristics. After all, we don’t ask kids to memorize the names of all the elements in the Periodic Table or the names of all the rivers and mountains on Earth.

The best thing for textbooks and teachers is to teach the controversy. And there is no need for the IAU to give the geophysical definition its stamp of approval. No one voted on whether gravity is real or whether the theory of relativity is true or whether the universe has one or billions of galaxies. Let the data do the talking, not wannabe dictators.

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## SOLAR SYSTEM

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Pluto

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