



## An Out of This World Discovery – A Blog Post

By *Julia Odendaal*

Around the world right now there are so many things happening, with COVID-19 and the US presidential election. Not many people are focusing on the up-and-comers of scientific discoveries. 2020 has been a crazy year, not a great one but for the Canadian Space Agency 2020 has come with the findings of a possible second solar system, and a new leader.

There are so many amazing women doing incredible things in today's world. Including Lisa Campbell, she is the first female President of the Canadian Space Agency. She stepped into this huge role with hard work and dedication. Using her leadership skills, she guided the agency to new heights. Campbell previously served as the Associate Deputy Minister with Veterans Affairs Canada. She also acquired a Bachelor's of Arts in Political Science from McGill University and a Legum Baccalaureus of Law from Dalhousie Law School, creating a strong educational background that's great asset in this position. She has worked in both the private and public sectors in employment, constitutional and criminal law.

Her long-standing history with the Government of Canada includes Assistant Deputy Minister, Defense and Marine Procurement, Public Services and Procurement, where she provided military and marine procurement solutions, as well as Senior Deputy Commissioner for Canada's competition authority, responsible for reviewing business conduct across the board. All of this experience makes her the perfect person to lead the Canadian Space Agency through the multitude of funding opportunities coming their way over the next several years.

Many of us have heard of the mythical hybrid between human and horse, the centaur, but I'm sure you wouldn't believe what I'm about to tell you!

The ATLAS telescope located in Hawaii captured images of what appears to be a second solar system. They're calling this centaur (a hybrid between a comet and an asteroid) orbiting object the P/2019 LD2. Because of its composition and its overall potential to move rapidly across the solar system, some astronomers believe that centaurs are a so-called missing link between small icy masses in the Kuiper Belt which is beyond Neptune and comets that regularly visit the inner solar system (SN: 11/19/94)

Sciencenews.org calls these icy masses, short-period comets. They are expected to orbit around the sun once per decade. Sometimes will even come close enough to be seen from earth. Other longer period comets including Halley's Comet, which only visits our solar system once in a century. These comets most likely originated from further beyond the sun.

Oftentimes, we (as amateurs) think of asteroids and comets as pretty much the same thing. Astronomers are now teaching us the differences, and also about the increasing number of “crossovers” or hybrids, just like the mythical centaur. The hybrids first appear to act as a standard asteroid and then later begin to morph and develop new activity (such as tails) specific to comets. Astronomers and scientists have yet to tell us how or why this may be happening within the walls of our solar system.

What's the difference between a comet and an asteroid? Tim Childers from Live Science tells us that comets are known as a *dirty space snowball*, made of mostly ice and dust. As comets tend to have a more stable orbit. Whereas asteroids are known as the *rocky and airless leftovers from the formation of planets in our solar system*. Asteroids mostly orbit around the sun in the asteroid belt between Mars and Jupiter. <sup>1</sup>

While the ATLAS telescope has discovered more than 40 comets, this particular discovery of the 2019 LD2 is quite interesting because of the way that it orbits. This begs the question; Why is the orbit of this object extraordinary? Writers at NASA answered; *The early indication that it was an asteroid near Jupiter's orbit has now been confirmed through precise measurements from many different observations*. This hybrid orbits in the same area that Jupiter does, implying that it may be part of the Jupiter's trojans; a group of asteroids that share the same orbit as Jupiter. This was initially proven to be false by Sam Deen and Tony Dunn on the Minor planet Mailing List on May 21st, 2020. But after further observation it's been determined that 2019 LD2 is part of Jupiter's Trojans, it just exhibits different behaviors never seen before because it spewing out dust and gas which are characteristics of a comet.

As new observations are being conducted to try to figure out what actually happened. The only thing I am certain of is that the universe is full of big surprises. Even explorations to warn us of possible dangerous asteroids leaves us with many unexpected treasures that are harmless but incredibly fascinating objects that teach us more about the history of our solar system.

1. Childers, T. (2019, September 04). *What's the Difference Between Asteroids, Comets and Meteors?* Retrieved October/November, 2020, from <https://www.livescience.com/difference-between-asteroids-comets-and-meteors.html>