

Kepler find a big step

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KEPLER 186F might not sound like the most romantic of cosmic addresses.

In fact, it might sound more like an airplane seat than the outermost of five planets orbiting an M dwarf star 500 light years from Earth, in the constellation Cygnus (the Swan) is well known to even the casual stargazer as containing the famous constellation known as the Northern Cross.

And as of this past April, Kepler 186F is one of the most significant discoveries in NASA's Kepler Space Telescope's search for exo solar planets.

Although 3,600 planet candidates, many of which have been verified as habitable worlds, have been discovered since Kepler launched in 2009, Kepler 186F is the first Earth-sized planet discovered in its parent star's Goldilocks zone.

Just like in the children's story of the golden haired little girl is searching for the perfect porridge that is not too hot and not too cold," planets that are in the Goldilocks or habitable zone are close enough to their parent star for water to remain liquid but not too far away that the planet isn't scorched by temperatures that are inhospitable to life. At least life as we know it.



COSMIC NEIGHBOURHOOD

This is understandably a tremendously exciting development for scientists and ultimately, the human race. The harsh reality is that we may one day be forced to seek another home so it doesn't hurt to check out the cosmic real estate now.

And now that we know where Kepler 186F is located, let's take a look at what it might be like to live there. Despite being of similar size to Earth, there are some differences that might require some adjustment on the part of future human inhabitants.

The NASA Science April 17 newsletter tells us that the red dwarf star that 186F orbits is cooler and less bright than our parent star, the sun.

On the planet's surface, the article tells us, the "sun" at high noon would only be as bright as our sun at an hour or so before sunset. And it would presumably produce less energy and heat, which would also affect

the type of plant life on the surface. An April 18 article in the Globe and Mail explains that, because Kepler 186 F's star produces energy predominantly in the infrared (just beyond the visible spectrum of light) spectrum, its plants would require a different type of photosynthesis to survive.

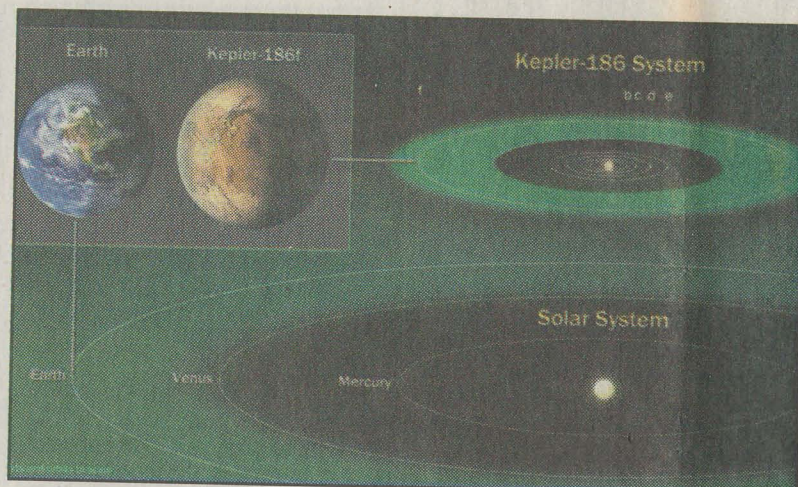
So the Grade 5 science curriculum of 186F's future inhabitants would definitely require a re-think.

And if you are one of those people who wonders where the time has gone when you turn the calendar on a new year, prepare to have it whizz by almost three times as quickly. Kepler 186F orbits its parent star once every 130 days.

It has been a mere two decades since we discovered the existence of planets outside of our solar system and we now know that it is possible, if not likely, that every star in our galaxy (and beyond) hosts a planetary system.

Scientists quoted in the NASA Science article note that M dwarf stars are the most common in the Galaxy and as Elisa Quintana, research scientist at NASA's Ames Research Center observes, "The first signs of life in the galaxy may well come from planets orbiting an M dwarf."

We must remember that life could



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This NASA diagram compares the planets of our inner solar system to Kepler-186, a five-planet star system about 500 light years from Earth in the constellation Cygnus.

be anything from bacteria to civilizations as advanced or hopefully, more advanced than our own. The planet hunters will be busy for years to come as they sort out data from Kepler and new, more targeted missions that are currently being planned for the future.

Kepler 186F has captured our imagination for the moment but I suspect that it is the tip of the proverbial iceberg. In the meantime, I have decided to put my mind to coming up with a name for our "cousin" in the Cygnus constellation as the number system is rather cold and clinical.

Because the planets in our own system are named mostly for charac-

ters in Greek and Roman mythology, I decided to borrow from my late mother's Irish culture. She was fond of the legend of Tir Na Nog — a land of everlasting beauty, youth and abundance. But I had to look up the spelling, wasn't sure of the pronunciation and nothing sounds as charming without her Irish brogue anyway.

So maybe I will hold off submitting it to NASA for now and Kepler 186F will just have to wait a little longer to be more than just a number.

Maureen Arges Nadin is a freelance writer and space enthusiast whose column appears monthly.