



# OSFS Statement<sup>413</sup>

Newsletter of the **Ottawa Science Fiction Society, September 2013,**  
**Issue 413, Volume 37, Number 9.** Founded Feb 1977, Incorporated Jan 16, 1979

## Dinner-Gatherings

Sept 30 6:30 p.m. at the Emerald Buffet. The entrance is from the Eastview Mall; Montreal Road just east of the Rideau River. Please check the OSFS web site at [www.ottawasfs.ca](http://www.ottawasfs.ca) and RSVP to <http://www.meetup.com/ottawasfs-ca/events/94895822/> to give us an estimate of the number to expect. Note that we are now communicating primarily by web site and Meetup.

Monarch butterflies fluttered above dozens of children at the Assiniboine Park Zoo's day camp on Friday, August 30. The zoo released 40 of the colourful, winged insects from its Shirley Richardson Butterfly Garden in an event held in partnership with Monarch Watch and the Monarch Teachers Network.

"This is the third year we've done the tag and release," curator Janice Martin said in a news release. "It helps facilitate the monarch migration, and it's a wonderful opportunity for us to educate the young people here today and our visitors about monarch butterflies."

Monarch butterflies will now fly to Mexico for the winter. The end of August is the peak migration period for monarch butterflies in the Winnipeg region. *The white sticker on the wing is the identification tag. Ed.*



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<b>Membership information</b> Mail Dues to: Ottawa Science Fiction Society, 1568 Merivale 304, Ottawa, ON K2G 5Y7 website <a href="http://www.ottawasfs.ca">www.ottawasfs.ca</a> executive <a href="mailto:exec@ottawasfs.ca">exec@ottawasfs.ca</a>  Rates Regular \$18 Family \$24 Extraordinary & Senior \$12	<b>Board of Directors</b> President Diane Bruce Vice-President Grant Duff Secretary Grant Duff <b>Appointed Officers</b> Archivist Grant Duff Auditor Constitution Advisor David Hurst Editor Grant Duff Programming Alex Binkley Treasurer Sheila Brown Webmaster Sheila Brown	<b>Contents</b> Coming Events 5 LOC 17 Astrophysics Astronomy 21 Obituaries 11 Viking I 25 Movies coming 5 OSFS Logo Bruce Wright Cover art © NASA Pub by: Ottawa Science Fiction Society, Creators of Maplecon
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# Editor's Blather:

What is there to say except “It's Back in School Days” and fall activities are starting.

There will be a showing of Agents of SHIELD at the Fox and Feathers Pub & Grill, Tuesday Sept 24 .at 7:00 p.m. at 283 Elgin St. south of Somerset.

For full details check our blog.

# FOR YOUR VIEWING PLEASURE

Venus and Saturn lie low in the west after sunset. Jupiter rises about 2am and Mars about 4am. The Moon will reach First Quarter on the 12th.

Ken Tapping

## Coming Movies

Our favourite movies from the spring and summer theatre releases are about to be released on DVD.

Sep 10 - STAR TREK INTO DARKNESS

Sep 17 - WORLD WAR Z

Sep 24 - IRONMAN 3

Nov 12 - MAN OF STEEL

Happy viewing :-)

J.K. Rowling's world of wizardry is coming back to the big screen – but without Harry Potter.

Studio Warner Bros. announced Thursday that Rowling will write the screenplay for a movie based on Fantastic Beasts and Where to Find Them, her textbook about the

magical universe she created in the Potter stories. This is her first time writing a screenplay, despite being heavily involved in the production of the Potter films.

The story will focus on the book's fictitious author, Newt Scamander, and is anticipated to be the first in a series.

Rowling said in a statement the movie "is neither a prequel nor a sequel to the Harry Potter series, but an extension of the wizarding world." She said the story would begin in New York 70 years before the start of Harry Potter's tale, and fans can expect some characters and creatures familiar to them to appear.

Warner Bros. was behind eight Harry Potter movies released between 2001 and 2011.

Sandi Marie

## Coming Events

List submitted by Lloyd Penney

September 13-15 - **Science Fiction: The Interdisciplinary Genre** - An Academic Conference at McMaster University, Hamilton, ON. Guests include Robert J. Sawyer. - [serruys@mcmaster.ca](mailto:serruys@mcmaster.ca).

September 14-15 - **Field Marshal Gaming Convention**, 420 Wing RCAF Association, 1000 Stevenson Rd., Oshawa. - [www.fmgcon.com](http://www.fmgcon.com).

September 20-22 - **RocCon 2013**, Main Street Armory, Rochester, NY. Anime/comics/media SF convention. Guests: Christopher Doohan, Noel Gugliemi, Cary Hiroyuki, Tagawa, Daniel Kash, Vic Mignogna, Ray Olubowale, Uncle Yo, Bella Hudson, J.G. Hertzler, Anne Serling, Joe Jusko, more. - [www.rochesterseconfanimecon.com](http://www.rochesterseconfanimecon.com).

September 21 & 22 - **Toronto Mini Maker Faire**, Artscape Wychwood Barns, Toronto. Technology faire. - [www.makerfairetoronto.com](http://www.makerfairetoronto.com).

- September 21 & 22 – **Ottawa Lapsmith Gem and Mineral Show**, Nepean Sportsplex (Curling Arena), Nepean. - <http://www.olmc.ca>
- September 24 – **Agents of SHIELD**, kickoff on big-screen TV, Fox and Feathers Pub, Ottawa [www.ottawasfs.ca](http://www.ottawasfs.ca)
- September 28 – **CapCon**, Ottawa, ON. IPMS Model competition, **Nepean Sportsplex** . - [www.ipmsottawa.com/capcon/index.htm](http://www.ipmsottawa.com/capcon/index.htm).
- September 28-29 - **Phantasm 23**, Peterborough Public Library, Peterborough. Gaming convention. - [phantasm.pfga.ca](http://phantasm.pfga.ca).
- September 30 – **OSFS dinner** at Emerald Buffet, Montreal Road, Ottawa [www.ottawasfs.ca](http://www.ottawasfs.ca)
- October 4-6 - **Can-Con 2013**, Minto Suite Hotel, Ottawa. Literary SF convention, 2013 CanVention. Guests: Robert J. Sawyer, Hayden Trenholm, more TBA. - [www.can-con.org](http://www.can-con.org), Twitter @canconsf, page on Facebook.
- October 4-6 - **Genrecon 2013**, Delta Hotel, Guelph. Geek culture convention. - [www.genrecon.com](http://www.genrecon.com), Twitter @genrecon, page on Facebook. October 11-13 - Conclave 37, DoubleTree by Hilton Detroit-Dearborn, Dearborn, MI. SF literary convention. Guest: Allen Steele. - [www.conclavesf.org](http://www.conclavesf.org).
- October 11-13 – **Salute to Supernatural**, Toronto. - [www.creationent.com/cal/supernatural\\_toronto.htm](http://www.creationent.com/cal/supernatural_toronto.htm).
- October 18-20 - **CastleCon 2013**, Best Western Plus Durham Hotel & Conference Centre, Oshawa. Gaming convention. - [www.castlecon.net](http://www.castlecon.net).
- October 26-27 - **Unplugged Expo 2**, Daniels Spectrum Centre, Toronto. Geek culture convention. Guests: Kurt Lehner, Susan Roman, Stephanie Morgenstern, Mai-Sheri, more. - [www.unpluggedexpo.com](http://www.unpluggedexpo.com).
- October 31 - November 3 - **Youmacon 2013**, Cobo Center, Detroit Marriott at the Renaissance Centre, Detroit, MI. Anime, comics and steampunk convention. Guests: Todd Haberkorn, Kyle Hebert, John Patrick Lowrie, Steam Powered Giraffe. - [www.youmacon.com](http://www.youmacon.com).
- November 1-3 - **Reversed Polarity**, Sheraton Parkway Toronto North, Richmond Hill. Doctor Who 50th Anniversary convention. Guest: Peter Davison. - [www.tcon.ca/reversedpolarity](http://www.tcon.ca/reversedpolarity), Twitter @reversedpolarity, page on Facebook.
- November 1-3 - **HammerCon V**, Plaza Hotel, Hamilton, ON. Gaming convention. - [www.hammercon.ca](http://www.hammercon.ca).
- November 1-3 - **N2U**, Travelodge Hotel, Ottawa. Anime & gaming convention. - [www.n2u.ca](http://www.n2u.ca).
- November 3 - **Canadian Toycon** Toronto, Sheraton Airport Hotel & Conference Centre, Toronto, ON. - [www.toycon.ca](http://www.toycon.ca).
- November 15-17 - **Astronomicon 12**, Radisson Hotel Rochester Riverside, Rochester, NY. Literary SF convention. Guests: David Gerrold, Liana K, Ed the Sock, Dr. David Stephenson, Tom Rockwell, Peter David, Vincent

DiFate, more. - [www.astronomicon.info](http://www.astronomicon.info), page on Facebook.

November 29 - December 1 - **SFContario 4**, Ramada Plaza Hotel, Toronto. Guests: Seanan McGuire, Dave Kyle, Chandler Davis. - [www.sfcontario.ca](http://www.sfcontario.ca).

December 6-8 - **Smofcon 31**, Royal York Hotel, Toronto, ON. Convention runners' convention. - [www.smofcon31.org](http://www.smofcon31.org).

December 14 - **Frostcon 2**, St. Lawrence Centre for the Arts, Toronto. Cosplay/geek convention. Guests: Twinfools, VadorWolf, Faxen Cosplay, Toronto Batman, That Joker Guy, Erin Cossar. - [ontariocosplaycommunity@hotmail.ca](mailto:ontariocosplaycommunity@hotmail.ca), page on Facebook.

January 17-19, 2014 - **Legendary ConFusion**, Dearborn DoubleTree Hotel, Dearborn, MI. SF literary convention. Guests: Mike Carey, Rich Morris, Ian Tregillis, Mark Bernstein. - [www.confusion.stilyagi.org](http://www.confusion.stilyagi.org).

March 7-9, 2014 - **Furnal Equinox 2014**: Circus, Sheraton Toronto Airport Hotel & Conference Centre, Toronto. Furry convention. Guests: Sabretoothed Ermine, Sandy Schreiber. - [www.furnalequinox.com](http://www.furnalequinox.com).

April 4-6 - **Ad Astra 2014**, Holiday Inn Markham. Guests: David Weber, Anne Groell, Patricia Briggs, Steven Erikson. - [www.ad-astra.org](http://www.ad-astra.org), Twitter @adastrasociety, page on Facebook.

April 6, 2014 - **GTA Comic-Con**, Oakville Conference Centre, Oakville. - [www.gtacomicon.com](http://www.gtacomicon.com).

April 25-27, 2014 - **FilKONtario 24**, Delta Airport West, Mississauga. Guests: S. J. Tucker, with the Heather Dale Band; Gary Ehrlich, Piers Cawley. - [www.filkontario.ca](http://www.filkontario.ca).

April 25-28, 2014 - **Costume Con 32**, Sheraton Airport Hotel, Toronto. - [www.costumecon32.com](http://www.costumecon32.com).

June 6-8, 2014 - **Bloody Words XIII**, Hotel TBA, Toronto, ON. Mystery convention. Guests: Vicky Delany, more. - [www.bloodywords.com](http://www.bloodywords.com).

# OBITUARIES

## Gilbert Taylor 12 April 1914; 23 August 2013

Taylor entered the British film industry as a teenager against the wishes of his father, who warned him that the movie business was full of ne'er-do-wells, according to a 2006 biographical sketch posted to the American Society of Cinematographers' website.

Taylor caught his break while working for John and Roy Boulting, including "Seven Hours to Noon," a thriller whose atomic age paranoia would prefigure his work on Stanley Kubrick's "Dr. Strangelove, or: How I Learned to Stop Worrying and Love the Bomb."

In a comment Taylor said he was "most happy to be remembered as the man who set the look for Star Wars."

That wasn't easy. "I wanted to give it a unique visual style that would distinguish it from other films in the science-fiction genre," he was quoted as saying. "I wanted 'Star Wars' to have clarity because I don't think space is out of focus."

## ANN CRISPIN, 1950-2013

Expanded Universe Writer for Star Wars, Star Trek and More.

Crispin's best known work is perhaps her Han Solo Trilogy, but she's also written novels that expand upon

the settings of the Star Trek, Alien, and Pirates of the Caribbean franchises, writing the first Star Trek novel to make it to the New York Times Bestseller List that wasn't a novelization of a film, Yesterday's Son.

Crispin served as both the Eastern Regional Director and later VP of SFWA, in which capacity she founded the SFWA's Committee on Writing Scams. The Committee eventually culminated in the creation of Writer Beware, a website, blog, database, and free research service dedicated to informing on and exposing the fraudulent players in the business of scamming aspiring authors.

Creating heartfelt expansions of character biographies isn't something Crispin just did with Star Trek, though. Her trilogy of Star Wars novels shows us exactly what Han Solo was up to prior to the events of Star Wars: A New Hope rendering him possibly at his most sensitive and conflicted. Based on her successes as a genre author, Crispin was commissioned to create a back-story for none other than Captain Jack Sparrow of Pirates of the Caribbean. Think you can't take a novel about young Captain Jack Sparrow seriously? Think again.

She gave us the gift of tie-in novels with real emotional stakes. Yesterday's Son, and its sequel, Time for Yesterday, aren't cynical pieces of writing done to capitalize on how much people love Star Trek. They are thoughtful, moving pieces of science fiction.

**Frederik Pohl** 26 Nov. 1919; 2 Sept. 2013

During a career lasting more than 60 years, Pohl was among the most celebrated and popular authors of his era. His novel *The Space Merchants* (1953), written in collaboration with CM Kornbluth, was the first modern satire of American consumerism.

In 2008 he completed and published a novel, *The Last Theorem*, which had been begun by Arthur C Clarke before his death.

He continued writing until the last years of his life: his most recent novel, *All the Lives He Led*, came out in 2011.

He also published more than 20 collections of short stories and one of the best and most revealing autobiographies by any of the writers of his period: *The Way the Future Was* (1978).

Throughout most of the 1960s Pohl was editor in chief, and for the magazines concerned it was a successful period. One of them, *Worlds of If*, won the Hugo award three years in succession. Pohl later became an editor at Bantam Books where, among many other titles, he published Samuel R Delany's *Dhalgren* (1975) and Joanna Russ's *The Female Man* (1975), both snapped up by Pohl after several other publishers had nervously turned them down and both now recognised as lasting classics of serious speculative fiction.

In 1960, the British author Sir Kingsley Amis called him the most consistently able writer of modern science fiction.

Paying tribute to Pohl on his website, British author Neil Gaiman called him "the last of the Golden Age greats, the first generation of Science Fiction Writers who created the genre".

In 2009, Pohl launched "The Way the Future Blogs," in which he wrote about his life, the science-fiction community, science and championed progressive politics.

**Ray Dolby** 1933 - 12 September 2013 dies aged 80

His name became synonymous with home sound systems and cinema, and his work won many awards.

Kevin Yeaman, president of Dolby Laboratories, described Ray Dolby as a "true visionary".

Mr Dolby was born in Portland, Oregon, and grew up in the San Francisco area.

He began his career in the Ampex Corporation, helping to develop early videotape recording systems while he was still a student.

He then went on to complete his PhD at Cambridge University in England and in 1965 founded Dolby Laboratories in London.

“Ray Dolby made the inventors the heroes of the company,” Kevin Yeaman, the chief executive of Dolby Laboratories, said.

To honor Dr. Dolby in 2012, the company secured the rights for 20 years to name the auditorium that is home to the Academy Awards the Dolby Theater.

[Dolby Laboratories](#) is continuing to explore new ways to experience entertainment; one project is focused on investing small devices with cinema-quality sound. Already Dolby audio is a feature of Amazon’s Kindle Fire HD tablets as well as some Android phones and tablets.

**Michael George Ansara** (April 15, 1922 – July 31, 2013)

was a Syrian-born American stage, screen, and voice actor best known for his portrayal of Cochise in the American television series Broken Arrow, Kane in the 1979–1981 series Buck Rogers in the 25th Century, Commander Kang on three different Star Trek television series, Deputy U.S. Marshal Sam Buckhart on the NBC series, Law of the Plainsman, and providing the voice for Mr. Freeze in Batman: The Animated Series and several of its spin-offs.

**Ray Harryhausen** 1920 – 2013

Special effects master on fantasy films including Jason and the Argonauts and Clash of the Titans

Ray Harryhausen's army of skeletons attack in Jason of the Argonauts, 1963

In 1933, the 13-year-old Ray Harryhausen saw King Kong at the cinema and was hooked – not only by Kong, who was clearly not just a man in a gorilla suit, but also by the dinosaurs. He came out of the theatre "stunned and haunted. They looked absolutely lifelike ... I wanted to know how it was done."

The Seventh Voyage of Sinbad was Harryhausen's first foray into colour. It involved front and rear projection, and Sinbad's swordfight with a skeleton was considered too frightening for children by the British censor.



**LOC**

Dear OSFen:

Thank you for Statement 411...does this mean there's all kinds of information within this e-zine? Let's crack the front cover on this .pdf, and find out for sure.

Great nebula on the front cover...great colour picture, too. We sure couldn't do that on the old goldenrod covers... *Gestetnered on goldenrod (yellow) paper.*

*For sure! Or Mimeo either, not that we didn't try. I can remember doing two and three colour drawings in Hectograph; and remember the dismal results although they seemed marvelous at the time. Ed.*

Based on the event calendar, Otakuthon just happened in Montréal. Anyone get to that event, and anyone want to write up a quick report on what happened there? I know it's expensive to travel (that's why we haven't been up in Ottawa in years), but someone's got to be going to Montréal for fannish conventions. As for us, we'd like to get to the Toronto Mini Maker Faire, and then to SFContario. I'd like nothing better than to get to the CanVention at Can-Con this year, but we simply can't afford to travel right now.

We are setting our schedule for this coming fall, and it is in flux...I have our dealer's table at SFContario in November, and the little dealer convention I mentioned, Art-O-Con in Burlington, in the spring.

Shorter than I wanted, but this is what I've got. The never-ending job hunt resumes in the morning, and I have some good leads. I wish there was some way to meet up with everyone. Hope you're all having a great summer, please vote in the Aurora Awards, with the voting deadline on September 13.

Yours, Lloyd Penney.

Dear OSFen:

Thank you for Statement 412. I hope Frank Drake is correct in his prediction of many civilizations out there. Nothing would make us happier and more interested than finding out that some science fiction is becoming science fact.

I find obituaries, too, and in this case, it's very well-known names, like Frederik Pohl and Ann Crispin. There were so many big names I remember when I first started reading science fiction, and I have to wonder if all those big names are now gone. It's depressing, and an indication of our own age. Let's add to this Michael Ansara...a true warrior for all Klingon fans. And Karen Black was in more SF movies than I knew.

I hope the list I provide has been useful...I should send my latest list along for the next issue. For those who wondered, the Anne Serling listed on RocCon's guest

list is indeed the daughter of the late Rod Serling. She recently wrote a biography of her father. We did have plans to go to the Toronto Mini Maker Faire, but admission is a little expensive, and there are other shows we'd like to go to that with smaller admission prices.

Chris Garcia, the fan who works for the Computer History Museum in Mountain View, California, knew Doug Engelbart fairly well. Chris might be able to give you a fairly good article about Englebart and his career.

I seem to recall that there is something strange that Voyager 1 is encountering as it crosses into interstellar space. Some scientists think that as it was described in the various Star Trek episodes over the decades, there might be some kind of energy barrier at the edge of the solar system. I'm not sure of this, but it needs some follow-up to see what is really happening.

Had a job interview this morning, and may have one at the end of the week. At least this is looking up, so hope springs anew. I wish I could come up to see you at CanCon, but that just can't happen. Maybe in a future year. See you next issue.

Yours, Lloyd Penney.

# Astronomy

**A RADIO EYE** Ken Tapping, 10th September, 2013  
The human eye is an amazing thing. Its basic design, which we share with most of the animal kingdom, took Mother Nature many millions of years to evolve. It's not surprising therefore that it has taken us time and effort to develop a technological equivalent, even though we knew what we were trying to emulate. A major project at our observatory is to develop a radio eye, to image radio waves in the same way our eyes image light.

Our eyes comprise two main components: a lens to collect light and to project an image, and an array of sensors to convert that image into data our brains can assimilate. Because each sensor element measures the brightness and colour of one point in the image, the more sensors there are, the more detailed the image we can see.

Our first attempt to copy nature was the photographic camera. The lens projected an image on a sheet of plastic or glass that was coated with silver compounds sensitive to light. Each grain of chemical was affected by the light and recorded the brightness of the light at that point in the image. One problem was that before the image could be seen, the film had to be processed. This was nothing like real-time imaging.

The invention of the digital camera changed that. In these the image is projected on an array of electronic

sensors, which can be read out, processed and displayed immediately, and recorded as computer data files. The bit of image measured by one sensor is called a "picture element", or pixel, and the more of them we have, the more detail we see in the image. Modern digital cameras have sensor arrays with more than 12 million pixels, that is 12 megapixels. This number will continue to rise. Even though radio waves are the same sort of thing as light waves, just longer, it has taken a long time to develop a radio equivalent of the digital camera, or human eye. However, we are now doing exactly that, as part of Canada's contribution to a large, international radio telescope project, called the Square Kilometer Array, or SKA.

Because radio waves are much longer than light waves, they require much larger devices to form the images. Lenses get too big and heavy, and since they have to be transparent, they can only be supported round the edges. Fortunately, we can use concave mirrors instead. These have a disadvantage in that they form an image in front of the mirror, so the sensor array blocks part of the light reaching it. However, because the light or radio waves do not have to go through the mirror, it can be well supported from behind. This is why dish-shaped antennas are standard tools in radio astronomy; we can make them big.

The sensor array being developed at our observatory consists of many small antennas, which can be used over

a wide range of radio frequencies and crowded closely together. Achieving this was a challenge. However, from the front the antenna array looks simple, like a lot of open-ended box-shaped tubes jammed together. When you look at it from the side, the sheer complexity of the device becomes clear. Because it would be impractical to run hundreds of cables down from the antenna, the signals have to be processed at the antenna. The result is a slab of complex signal processing electronics, including computers, mounted on the back of the antenna array. We are building the device for radio astronomical observations, but it will be useful for lots of other things, such as radar, remote sensing and interference rejection. It is an excellent example of how research sciences produce technologically useful spinoff.

Ken Tapping, Astronomer, National Research Council,  
Dominion Radio Astrophysical Observatory

## NASA NEWS

After months of dithering one way or the other, NASA has finally put its support behind the new findings and announced that Voyager 1 has indeed crossed into interstellar space.

More symbolic than anything practical, I suppose, but I still think it's pretty neat and I'm pleased I've lived to see it.

[http://www.nasa.gov/mission\\_pages/voyager/voyager20130912.html#.UjJENNhfbDg](http://www.nasa.gov/mission_pages/voyager/voyager20130912.html#.UjJENNhfbDg)

Starwolf

**Voyager 1**; the latest controversy.

*Its déjà vu all over again. Ed.*

What Exactly Did NASA Announce This Week About Its Journey?

The Voyager 1 probe has reached interstellar space and become the first human-made object to leave the solar system, NASA announced with great fanfare Thursday.

But in a quieter voice, through the probe's Twitter account, the U.S. space agency said that the 36-year-old space probe hadn't really made its exit from the solar system, at least not yet. Huh?

In fact, Voyager 1's departure from the solar system has been announced several times over the past year by various scientists, as other scientists insisted — and

some continue to insist — that it hasn't yet reached the edge of the solar system.

Why all the confusion and debate? And more importantly, has Voyager really left our solar system?

To clear that up, here are the answers to some questions you might have.

### About Voyager 1?

\*Voyager 1 is an unmanned space probe launched from Earth on Sept. 5, 1977.

\*It was designed to fly close by the giant planets of the outer solar system, collecting data and images.

\*It made its closest approach to Jupiter on March 5, 1979

\*Its closest approach to Saturn on Nov. 12, 1980

\*Each year, it has been covering a distance roughly 3.6 times the distance between the Earth and the sun.

Where is Voyager 1 right now relative to the sun?

According to NASA, Voyager 1 is about 19 billion kilometres from our sun. That is four times further from the sun than Neptune, the most distant planet in our solar system. Three times further from the sun than Pluto, the most distant ~~planet~~ (*fair sized object Ed*), 127 times further from the sun than the Earth.

What exactly did NASA announce this week about its journey?

NASA announced in a news release and at a news conference on Sept. 12 that Voyager 1 was “officially”

the first human-made object to reach interstellar space, and that the spacecraft had crossed the boundary into interstellar space in August 2012.

The announcement accompanied the publication of a paper in the journal *Science* providing details of the data backing up the announcement. The lead author of the paper was University of Iowa scientist Don Gurnett and it was co-authored by scientists at the NASA/Goddard Space Flight Centre and the Catholic University of America.

The paper said Voyager 1 data provided “strong evidence” that the space probe had crossed the heliopause. The heliopause is the boundary where the sun’s solar wind — the stream of charged particles emitted by the sun — is no longer strong enough to push back the “interstellar medium” that makes up interstellar space. The researchers wrote that the plasma wave measurements made by Voyager during that were consistent with what they would expect in interstellar space. According to NASA, the heliopause is often considered to be the outer border of the solar system. However, in its news release, NASA did not say that the Voyager 1 had left the solar system.

In fact, NASA’s @NASAVoyager Twitter account tweeted: "I'm in #interstellar space, but I haven't left the solar system. The regions overlap."

Later, though, NASA Science News posted an article with the headline “Voyager 1 has left the solar system.”

Why does NASA seem confused about whether Voyager 1 has left the solar system?

NASA says that since the 1960s, most scientists have considered our solar system to extend well beyond the heliopause to the edge of the Oort Cloud, where the sun’s gravity loses influence relative to the gravity of other stars. (Meanwhile, interstellar space begins at the edge of the heliopause). NASA estimates it will take 300 years for Voyager to reach the inner edge of the Oort Cloud and possibly 30,000 years to fly beyond the Oort Cloud.

The space agency acknowledges that “informally, of course” solar system means the “planetary neighbourhood around our sun.” But it says the two different definitions make the term “solar system” ambiguous.

Heard that 'Voyager has now left the solar system' announcement before, possibly several times?

This is the first time NASA has essentially agreed that Voyager 1 has left the solar system.

In June 2013, NASA implied that Voyager might be exiting the solar system. But in July, it said the evidence it had detected had been a false alarm.

On March 20, 2013, a paper published in the journal *Geophysical Research Letters* by Bill Weber, professor emeritus of astronomy at New Mexico State University, announced that Voyager had exited the heliosphere in August 2012 — the same date that NASA now agrees

was Voyager's exit date — and travelled beyond the influence of the sun, based on cosmic ray data from the space probe.

That prompted a rebuttal from NASA, which issued a statement from Voyager project scientist Edward Stone saying, "It is the consensus of the Voyager science team that Voyager 1 has not yet left the solar system or reached interstellar space." He added that NASA scientists expected a change in the magnetic field when the spacecraft crossed into interstellar space, and in the meantime they thought Voyager 1 was in a previously unknown region called a "magnetic highway" between the heliosphere and interstellar space.

On Aug. 16, 2013, a team led by University of Maryland physicist Marc Swisdak, published a paper in *Astrophysical Journal Letters* containing a scientific model that suggested scientists are wrong to expect a change in the magnetic field direction at the edge of the solar system. He and his colleagues said they therefore agreed that Voyager had left the solar system in the summer of 2012. NASA issued a statement saying that the Swisdak's scientific model was "new and different from other models used so far" and that the other models suggest Voyager 1 was still inside the heliosphere.

Is Voyager 1's exit from the solar system still controversial?

Yes. While Stone and his team say they are now

convinced by the plasma wave measurements, other scientists say they want to see more evidence before reaching a conclusion.

Lennard Fisk, a space science professor at the University of Michigan and former NASA associate administrator told The Associated Press that he is still bothered by the lack of a change in the direction of the magnetic field. Harvard University astrophysicist Jonathan McDowell told AP he is "not going to believe it for another year or two."

This is a controversial topic because Voyager 1 has been sending back data that Stone calls "unexpected" and hard to explain scientifically.

"No one has been to interstellar space before, and it's like travelling with guidebooks that are incomplete," he said in a statement. "Still uncertainty is part of exploration. We wouldn't go exploring if we knew exactly what we'd find."

*Way out there, where you would be counting atoms per cubic centimetre, it would be hard to define an edge. All the more so if you have, at best, only a fuzzy idea of what you are looking for. Interesting, and as Starwolf says, a historic moment of no great practical importance.*

*Although, as van Allen said when asked what the belts named after him were worth, replied "Well, I've made a fair reputation off of them.". Ed..*