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**THE MORRIS MUSEUM  
ASTRONOMICAL SOCIETY**

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 Vice President - John Malley  
 Secretary - Bill Eberly  
 Treasurer - Krishnadas Kootale  
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The *Heavenly Herald* is produced quarterly for the membership of the Morris Museum Astronomical Society

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Member of



## MESSAGE FROM THE PRESIDENT

*Ron Russo, President*

**O**ur December party was very well attended by new and old members alike. We had plenty of food and good conversation, as well as the opportunity to meet some of the members' families.

We introduced the MMAS officers, including our new treasurer Krishnadas (Kris) Kootale. Kris has been a member of MMAS for a few years, and will continue in his post of Secretary to the United Astronomy Clubs of New Jersey. We also gave our thanks and gratitude to Mike Sargent for the wonderful job he did as treasurer for the past three years. The Morris Museum Astronomical Society Officers for the year 2011 are:

President	Ronald Russo
Vice President	John Malley
Secretary	Bill Eberly
Treasurer	Krishnadas Kootale

There will be no MMAS meetings in January or February, 2011, as attendance has been historically low for these months due to bad weather.

We will be having a board meeting on January 14, 2011 to start making plans for Astronomy Day. The meeting will be held at 6 DeForest Avenue at 7:00 PM. If anyone is interested in helping please contact Ronald Russo at 973-386-1848. Astronomy Day will be held on March 19, 2011, at the Morris Museum, 6 Normandy Heights Road in Morristown.

Anyone interested in helping with the outreach program, please let me know. We have been doing about 5 to 7 a year, and if you have done any, you know they are a lot of fun. You do not have to have any equipment to participate. Please call Ronald Russo at 973-386-1848 for more information.

## CLUB MEETINGS

**Jan. & Feb. - NO MEETINGS**

**March 10 - Rob Teeter will speak about "Teeter and his Telescopes: 8 Years, 72 Scopes and A Thousand Stories."**

**Monthly Meetings are the second Thursday of each month at 7:30 p.m. During Jan., Feb., Jul., & Aug. check the web site for specific information.**

# VOYAGER 1 REACHES OUTSKIRTS OF THE SOLAR SYSTEM



As NASA's robotic space probe Voyager 1 prepared for launch in August 1977 on a mission to locate and study the boundaries of our solar system, researchers could only imagine the scope of the project's success.

Since its launch on September 5, 1977, Voyager 1 has traveled more than 10.8 billion miles, photographing some of the most spectacular and iconic images of our solar system's planets and moons, and returning stunning pictures of our very own home planet.

Here, the Voyager 1 spacecraft, encapsulated in a Centaur Standard Shroud, is hoisted up the gantry to be mated with its Titan-Centaur launch vehicle at Space Launch Complex 41 at Cape Canaveral Air Force Station.

Moving at a speed of 10.5 miles per second, the equivalent of more than 38,000 miles per hour, Voyager 1 is now the most distant man-made object from Earth, and last week, after a 33-year journey, it



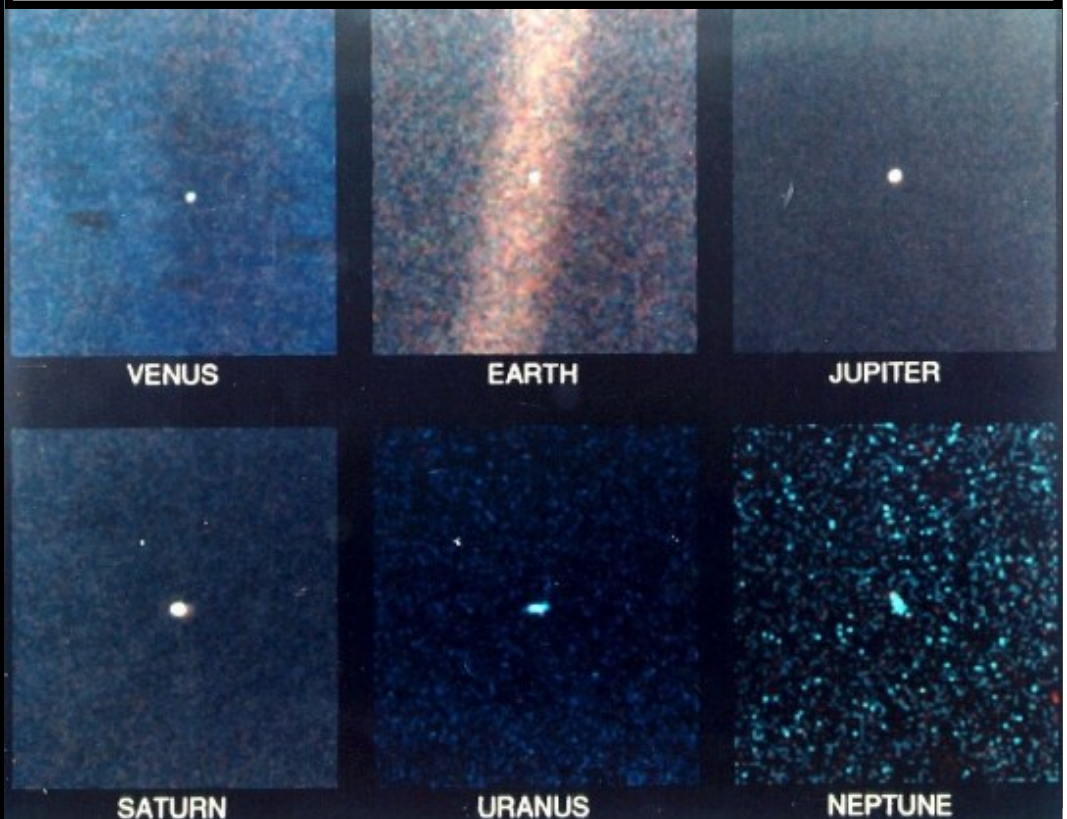
For years, Voyager 1 has sent back stunning imagery from the distant corners of our solar system, transmitting information via NASA's Deep Space Network, an international network of large antennas and communication facilities that support interplanetary spacecraft missions.

Voyager 1 captured this iconic image of a crescent-shaped Earth and moon on September 18, 1977.

This was the first time Earth and its moon were photographed together in a single image, captured by Voyager 1 when it was 7.25 million miles from Earth.

By February 1990, when these images were taken, Voyager 1 was farther from the sun than Pluto, and approximately 4 billion miles from Earth.

These pictures were the first ever taken of our solar system's planets from beyond their orbit.



# ESA MAKES THE SUN AVAILABLE TO EVERYONE

(PhysOrg.com)

**N**ew software developed by ESA makes available online to everyone, everywhere at anytime, the entire library of images from the SOHO solar and heliospheric observatory. Just download the viewer and begin exploring the Sun.

JHelioviewer is new visualisation software that enables everyone to explore the Sun. Developed as part of the ESA/NASA Helioviewer Project, it provides a desktop program that enables users to call up images of the Sun from the past 15 years.

More than a million images from SOHO can already be accessed, and new images from NASA's Solar Dynamics Observatory are being added every day. The downloadable JHelioviewer is complemented by the website Helioviewer.org, a web-based image browser.

Using this new software, users can create their own movies of the Sun, colour the images as they wish, and image-process the movies in real time. They can export their finished movies in various formats, and track features on the Sun by compensating for solar rotation.

"We wanted to make it easy to view solar images from different observatories and instruments, and to make it easy to make movies," says Daniel Müller,

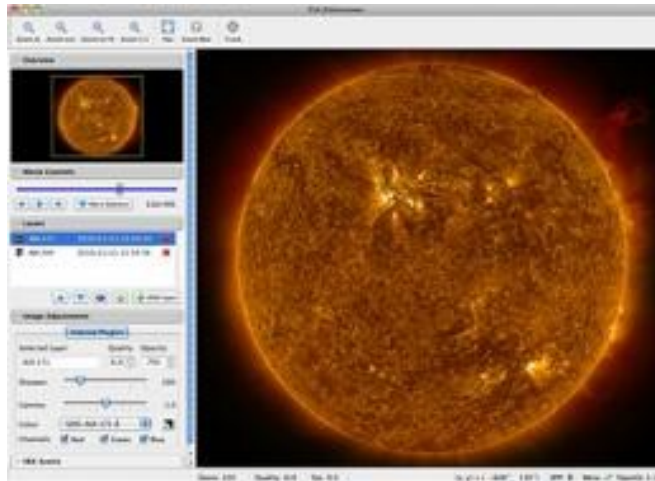
Article submissions for future issues please send to: [anthonypisano@hotmail.com](mailto:anthonypisano@hotmail.com)

ESA SOHO Deputy Project Scientist. "Before, it took hours to combine images from different telescopes to make a movie of the Sun for a given period. With JHelioviewer, everyone can do this in minutes. This is an interactive visual archive of the entire SOHO mission."

JHelioviewer is written in the Java programming language, hence the 'J' at the beginning of its name. It is open-source software, meaning that all its components are freely available so others can help to improve the program.

The code can even be reused for other purposes; it is already being used for Mars data and in medical research. This is because JHelioviewer does not need to download entire datasets, which can often be huge – it can just choose enough data to stream smoothly over the Internet.

It also allows data to be annotated, say, solar flares of a particular magnitude to be marked or diseased tissues in medical images to be highlighted.

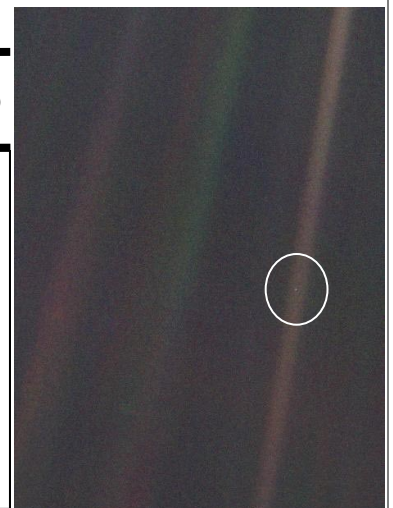


"The goal of JHelioviewer, and the Helioviewer Project as a whole, is to offer intuitive interfaces to large datasets from many different sources. In effect, it is a virtual observatory," says Müller.

## VOYAGER'S LATEST PHOTO

From Voyager's great distance, more than 4 billion miles from Earth, our planet is a mere point of light.

Look closely for the tiny white speck in the right-most strip of color: **that's us.**



# Night Sky Network

Astronomy Clubs bringing the wonders of the universe to the public







## THE MOON

### JAN. 2011

	New moon	4
	First quarter	12
	Full moon	19
	Last quarter	26

### FEB. 2011

	New moon	2
	First quarter	11
	Full moon	28
	Last quarter	24

### MAR. 2011

	New moon	4
	First quarter	12
	Full moon	19
	Last quarter	26

## LINKS

[www.badastronomy.com](http://www.badastronomy.com)

[www.heavens-above.com](http://www.heavens-above.com)

[www.nasa.gov/audience/for\\_kids/kidsclub/flash/index.html](http://www.nasa.gov/audience/for_kids/kidsclub/flash/index.html)

[www.space.com](http://www.space.com)

[www.astronomycafe.net](http://www.astronomycafe.net)

[www.amsky.com](http://www.amsky.com)

[www.skyandtelescope.com](http://www.skyandtelescope.com)

[www.scopereviews.com](http://www.scopereviews.com)

## THE WIND IS NO LONGER AT VOYAGER'S BACK

**V**oyager 1 is one of the most successful space missions of all time. Launched in 1977, it visited Jupiter and then Saturn, providing better close-ups of the two planets than had ever been seen before.



But it sailed on, crossing the orbits of both Uranus and Neptune (a sister craft, Voyager 2, actually flew by the two planets). Over all those years, there has been one constant in the Voyager flight: the solar wind blowing past it. This stream of subatomic particles leaves the Sun at hundreds of kilometers per second, much faster than Voyager. But now, after 33 years, that has changed: at 17 *billion* kilometers (10.6 billion miles) from the Sun, the spacecraft has reached the point where the solar wind has slowed to a stop. Literally, the wind is no longer at Voyager's back.

There is gas between the stars, which astronomers call the interstellar medium. The solar wind blows out into it, slowing. There is a region, over a billion kilometers thick, where the solar wind plows to a halt, creating a roughly spherical shell around the solar system. That's called the heliosheath, and it looks like Voyager 1 is now solidly inside it. In fact, it's been there for four months or so; the scientists measuring the solar wind speed noticed it dropped to 0 back in June, but it took a while to make sure this wasn't just some local eddy in the flow. It's not. Voyager 1 now has calm seas ahead.

But the probe is still moving outward at 60,000 kph (38,000 mph). In a few more years it'll leave the heliosheath behind, and when that happens it will truly be in interstellar space, the vast and nearly empty region between the stars. At that moment it will be the first human device ever to truly leave the solar system and enter the great stretches of the galaxy beyond.

Imagine! It was launched before personal computers were everywhere, before cell phones, before the internet! But it was given a powerful boost by its rocket, and another by the two largest planets in the solar system as it swung by them. And now, in just a few more years, it will have left our nest forever.