

Hello Space Lover!

It is issue #3 for Astro Newsletter and we have a lot to offer this month. Scientists are talking about water ice found on Ceres while Japan has plans to clean up space junk. Sad news is that the first American to orbit the Earth, John Glenn, has passed away. Check out the news section for more.

In this issue we wanted to share with you some of the articles written by Hisar School's Galaxy News Team. They have an awesome newsletter and it is our pleasure to share some of their magic with you guys. You can find the articles on page 4.

We wish you all a **HAPPY NEW YEAR!**

SPACE NEWS IN A FLASH

- John Glenn Passes Away at 95
- Number of Known Black Holes Expected to Double
- Water Ice Found On Dwarf Planet Ceres
- NASA's Next Mars Orbiter Is Being Planned for 2022
- Space Junk Solution from Japan
- 'Mars Ice House': An Off-Earth House Design
- NASA to Test New Tech to Return Stuff from Space

*Earth is the cradle of humanity,
but one cannot live in a cradle
forever.*

- Konstantin Tsiolkovsky

John Glenn Passes Away at 95

John Glenn, the first American to orbit the Earth who, decades later, got to fly into space again on the shuttle as a senator, died Dec. 8 at the age of 95.

Glenn, a U.S. Marine Corps pilot who served in World War II and the Korean War, is best known for his February 1962 flight on Friendship 7, making him the first American to orbit the Earth after suborbital flights in 1961 by Alan Shepard and Gus Grissom. Glenn made three orbits of the Earth in that Mercury capsule before splashing down in the Atlantic Ocean.

Glenn was selected by NASA in 1959 as part of the original astronaut class, known as the Mercury 7. Glenn had been the last surviving member of the Mercury 7.



John Glenn climbs into his Friendship 7 Mercury capsule prior to launch

Glenn left NASA in 1964 and entered politics, making two unsuccessful runs for the U.S. Senate in Ohio before winning election in 1974. In January 1998, NASA announced that Glenn, who had already decided not to run for re-election in 1998, would fly on the space shuttle. Glenn was added to the crew of STS-95, a nine-day mission flown by the shuttle Discovery in October and November of 1998, participating in several experiments that examined the effects of spaceflight on the elderly.

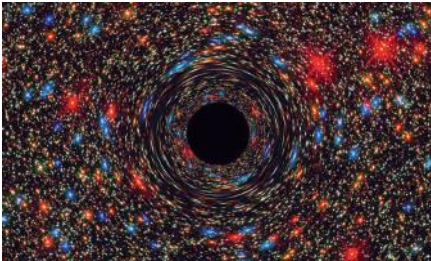
(<http://spacenews.com>)

Number of Known Black Holes Expected to Double

Researchers from the University of Waterloo have developed a method that will detect roughly 10 black holes per year, doubling the number currently known within two years, and it will likely unlock the history of black holes in a little more than a decade.

Black holes absorb all light and matter and emit zero radiation, making them impossible to image, let alone detect against the black background of space.

(<http://www.phys.org/>)



Water Ice Found On Dwarf Planet Ceres

Just like the moon and Mercury, the largest asteroid in Earth's solar system, Ceres, has cold pockets of perpetual darkness on its surface where researchers have now detected ice, a new study finds.

It remains a mystery, however, why only small amounts of ice were detected in these shadowy crater floors, the authors of the new research say.

(<http://www.livescience.com>)

Space Junk Solution from Japan

The Japanese space agency will soon be testing a new technology that would use a roughly half-mile-long tether to grab large pieces of space debris and dispose of them.

Space debris, or "space junk," is becoming an increasingly large problem for space agencies and private companies. Even small pieces of space debris, when moving fast enough, can tear through satellites and human habitats such as the International Space Station; a collision with space debris may have been responsible for the loss of a Japanese science satellite earlier this year.

In 2013, more than 500,000 pieces of space junk were being tracked by space agencies, according to NASA. That includes more than 21,000 pieces of space trash larger than 10 centimeters in size, and half a million bits of junk between 1 cm and 10 cm.

Agencies aren't just worried about space debris colliding with working satellites — collisions among large pieces of debris can create showers of smaller pieces, which are more difficult to track.

(<http://www.livescience.com>)

'Mars Ice House': An Off-Earth House Design

The first pioneers on Mars may build their homes using the ice beneath their feet. In November, a University of Texas research team reported that Mars' Utopia Planitia region contains about as much water, in the form of buried ice, as Lake Superior does here on Earth.

This ice layer, which spans a greater area than the state of New Mexico, lies in Mars' mid-northern latitudes and is covered by just 1 to 10 meters of soil, the scientists determined.



"Ice Home is more than just a habitat, since what we really need is a new home on Mars," said Ice Home principal investigator Kevin Kempton, of NASA's Langley Research Center.

(<http://www.marsicehouse.com>)

NASA's Next Mars Orbiter Is Being Planned for 2022

NASA is planning on sending a new orbiter to Mars. It'll be a chance to replace some aging hardware and also to get some more amazing science images and data from the Red Planet, in anticipation of more robotic missions to Mars and a possible human mission in the 2030s.



While the full funding hasn't yet been approved for the new mission, the 2022 orbiter — referred to as the Next Mars Orbiter or "NeMO" — early conceptual work has been carried out.

(<http://www.space.com>)

NASA to Test New Tech to Return Stuff from Space

NASA's "Exo-Brake" will demonstrate a critical technology leading to the potential return of science payloads to Earth from the International Space Station through the deployment of small spacecraft in early 2017.

An Exo-Brake is a tension-based, flexible braking device resembling a cross-parachute that deploys from the rear of a satellite to increase the drag. It is a de-orbit device that replaces the more complicated rocket-based systems that would normally be employed during the de-orbit phase of re-entry.

In addition to the goal of returning samples from the space station, the project seeks to develop "building blocks" for larger scale systems that might enable future small or nanosatellite missions to reach the surface of Mars and other planetary bodies in the solar system.

Two additional technologies will be demonstrated on TechEdSat-5.

(<http://www.nasa.gov>)

SCHOOLS IN ACTION



ITK Büyükçi li, Izmir

Fantastic job with the Peg Top project. A fresh and unique idea that got us all excited. You deserve nothing but DOUBLE THUMBS UP!



ODTÜ, Ankara
Yane Sandanski, Plovdiv

Our Partner Schools presenting their Mission Patch designs to each other. Always nice to see different patches that focus on joint missions from two different countries. Cheers!



Çayyolu Final, Ankara

The first videoconference we had with Çayyolu Final this year went smooth. Nice to see them in the Future Explorers Program once again.



Ekin College, Izmir

Students of Ekin College demonstrating their game which involves "throwing" and "balls". One of the most versatile games we have seen so far. Bravo!



TED College, Malatya

Here, we got a detailed explanation of a "Dart game" that can be played in Space. Kudos guys and gals!



TAKEV, Izmir
Velzys Gymnasium, Panevezys

Both schools were able to present their Mission Patch designs and Toys in Space projects during the same videoconference. Let's call this Global Friendship Through Space Education :)



Çekmeköy Final, Istanbul

Toys in Space presentations are always fun and this one was no different :)



Hisar School, Istanbul

A brilliant modification to one of our favorite toys; The Jump Rope. This one doesn't only focus on the rope, but also on the shoes you wear while jumping. It always pays to think broadly. A very sweet presentation as well. On the right, you can see Hisar Schools' Galaxy News Team posing with their FEP T-shirts :) #ThisIsHowItsDone



Fly Me to the Moon

Have you ever heard of the song, "Fly Me to the Moon"?

Originally titled "In Other Words" is written by Bart Howard and first recorded by Kaye Ballard. When Frank Sinatra recorded it, the song became popular, so the editors wanted to change the name to "Fly Me to the Moon" and they did. During Apollo 10's lunar mission, a recording of current songs was played in Space, on the lunar surface. Sinatra's recording of "Fly Me to the Moon" song was included along with others such as "Going Back to Houston" and "Moonlight Serenade." Therefore this song was one of the first songs to be played in outer space. Even though sound can't be heard in space, astronauts provided sound by using their headphones attached to their space suits. It's the first song played at moon and in every gala or official meetings NASA still plays the song in honor of Neil Armstrong the first man walked on the moon.

By Ceren DOLU and Dalya K NS ZER (Hisar School)

Source: "Fly me to the moon" 2008 NASA (Web), 14.11.2016

Pumpkin Stars

Do you know what a Pumpkin Star is?

Pumpkin Stars are the stars, having the shape of pumpkins, because of spinning so fast. Now you're gonna ask, how fast do they spin? Can you believe that they spin 4 times faster than the Sun? An extreme star, K-type orange giant dubbed KSw 71, is 10 times larger than the sun. Also, it is redder than the Sun and compared to the Sun's 25 days, takes only 5.5 days to complete a rotation. The star called KSw 71 produces 4,000 times the Sun's peak X-rays emission. KSw 71 is my favorite star. I think this because it is the most extreme star, and I believe that there are better and bigger stars in space.

By Melis ALSAN (Hisar School)

Source: Goenka, Himanshu. "Pumpkin Stars? NASA Missions Find Rare Stellar Bodies With Intense X-Ray Emissions" 2016 NASA (Web), 11.11.2016

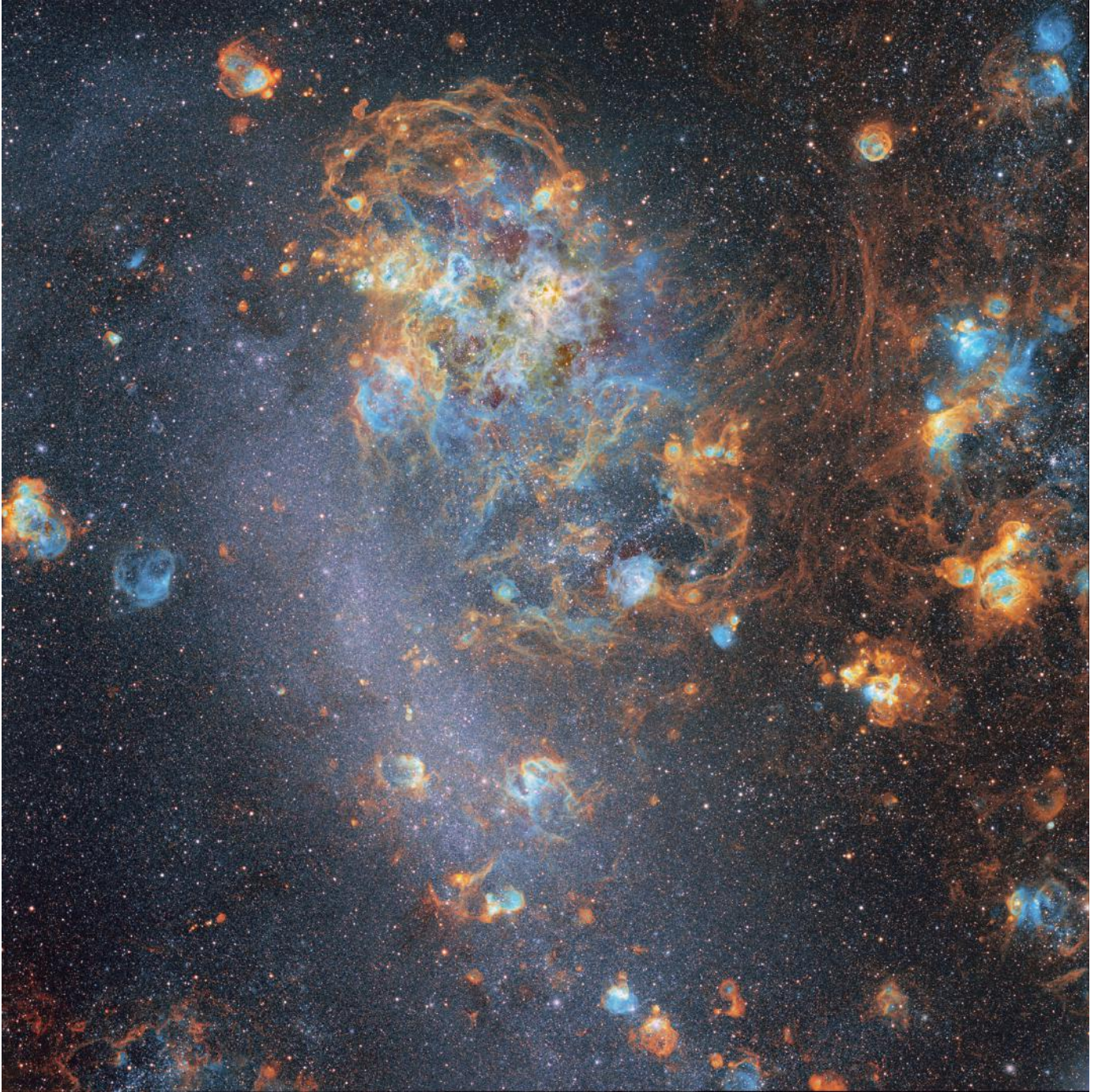
New Horizons Spacecraft

New Horizons is an unmanned aerospace mission carried out by NASA. It is planned to be the first spacecraft planned to fly to Pluto and its satellites. It was launched successfully on January 19, 2006. Before leaving New Horizons in solar system on February 28, 2007 at 5:43, Jupiter is expected to pass through the nearest point to Pluto in July 2015 to study the planet's structure and atmosphere. There was also a part of Pluto's ashes, Clyde Tombaugh, in the spacecraft. New Horizons woke up from standby mode on December 6, 2014 and sent a signal to earth. By April 2015, New Horizons continues to send low-resolution images of Pluto's satellites. As well as being able to review full-time on NASA's official site. The images he has transmitted to Pluto from a distance of 12500 km have been watched from the National Geographic Channel on July 14, 2015.

By Serra ÇEL K (Hisar School)

Source: Jonathan Amos, 14 July 2015, "New Horizons: Nasa spacecraft speeds past Pluto", BBC (Web), 12.11.2016

Astronomy Picture of the Day



Shell Game in the LMC

Image Credit & Copyright: John Gleason

Explanation: An alluring sight in southern skies, the Large Magellanic Cloud (LMC) is seen here through narrowband filters. The filters are designed to transmit only light emitted by ionized sulfur, hydrogen, and oxygen atoms. Ionized by energetic starlight, the atoms emit their characteristic light as electrons are recaptured and the atom transitions to a lower energy state. As a result, this false color image of the LMC seems covered with shell-shaped clouds of ionized gas surrounding massive, young stars. Sculpted by the strong stellar winds and ultraviolet radiation, the glowing clouds, dominated by emission from hydrogen, are known as H II (ionized hydrogen) regions. Itself composed of many overlapping shells, the Tarantula Nebula is the large star forming region at top center. A satellite of our Milky Way Galaxy, the LMC is about 15,000 light-years across and lies a mere 180,000 light-years away in the constellation Dorado.