SPACE CAMP TURKEY
An ESBAŞ Enterprise
Global Friendship Through Space Education

ASTRO NEWSLETTER

Volume 11, Issue 9 April 16, 2018

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Public Invited to Come Aboard NASA's First Mission to Touch the Sun

Want to get the hottest ticket this summer without standing in line?

NASA is inviting people around the world to submit their names online to be placed on a microchip aboard NASA's historic Parker Solar Probe mission launching in summer 2018. The mission will travel through the Sun's atmosphere, facing brutal heat and radiation conditions — and your name will go along for the ride.

Understanding the Sun has always been a top priority for space scientists. Studying how the Sun affects space and the space environment of planets is the field known as heliophysics. The field is not only vital to understanding Earth's most important and life-sustaining star, it supports exploration in the solar system and beyond.

Submissions will be accepted until April 27, 2018. *www.parkersolarprobe.jhuapl.edu*

NASA's Parker Solar Probe will be the first-ever mission to "touch" the Sun. Launch is slated for summer 2018.

Parker Solar Probe: Humanity's First Visit to a Star

NASA's historic Parker Solar Probe mission will revolutionize our understanding of the Sun, where changing conditions can propagate out into the solar system, affecting Earth and other worlds. Parker Solar Probe will travel through the Sun's atmosphere, closer to the surface than any spacecraft before it, facing brutal heat and radiation conditions — and ultimately providing humanity with the closest-ever observations of a star.

Journey to the Sun

In order to unlock the mysteries of the Sun's atmosphere, Parker Solar Probe will use Venus' gravity during seven flybys over nearly seven years to gradually bring its orbit closer to the Sun. The spacecraft will fly through the Sun's atmosphere as close as 3.8 million miles to our star's surface, well within the orbit of Mercury and more than seven times closer than any spacecraft has come before. (Earth's average distance to the Sun is 93 million miles.) Flying into the outermost part of the Sun's atmosphere, known as the corona, for the first time, Parker Solar Probe will employ a combination of in situ measurements and imaging to revolutionize our understanding of the corona and expand our knowledge of the origin and evolution of the solar wind. It will also make critical contributions to our ability to forecast changes in Earth's space environment that affect life and technology on Earth.

Extreme Exploration

Parker Solar Probe will perform its scientific investigations in a hazardous region of intense heat and solar radiation. The spacecraft will fly close enough to the Sun to watch the solar wind speed up from subsonic to supersonic, and it will fly though the birthplace of the highest-energy solar particles. To perform these unprecedented investigations, the spacecraft and instruments will be protected from the Sun's heat by a 4.5-inch-thick (11.43 cm) carbon-composite shield, which will need to withstand temperatures outside the spacecraft that reach nearly 2,500 F (1,377 C).

www.nasa.gov

Mars Reconnaissance Orbiter Views Strange Formations

This image from NASA's Mars Reconnaissance Orbiter is a close-up of a trough, along with channels draining into the depression. Some HiRISE images show strange-looking formations. Sometimes it helps to look at Context Camera images to understand the circumstances of a scene — like this cutout from CTX 033783_1509 — which here shows an impact crater with a central peak, and a collapse depression with concentric troughs just north of that peak.

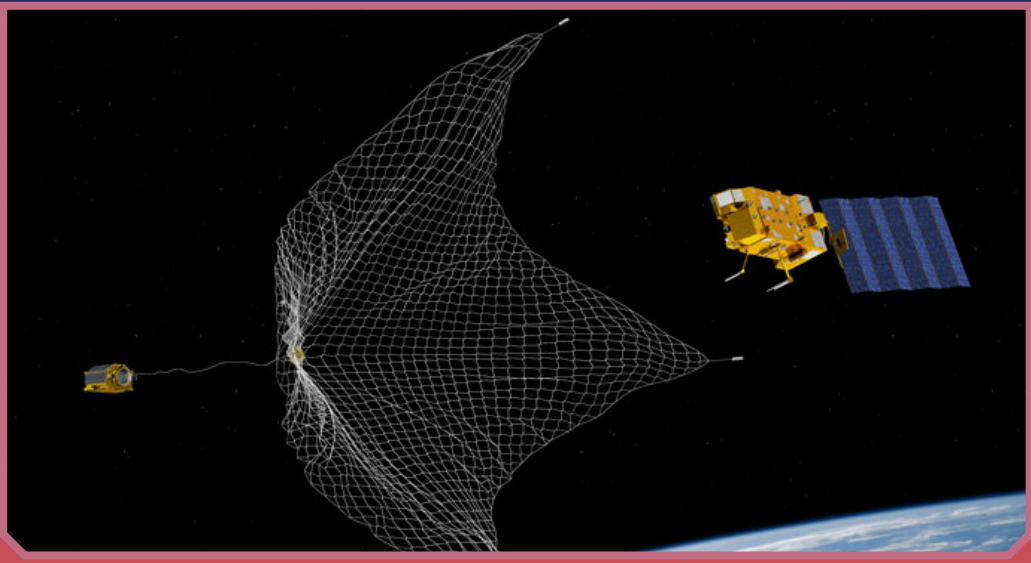
On the floor of the trough is some grooved material that we typically see in middle latitude regions where there has been glacial flow. These depressions with concentric troughs exist elsewhere on Mars, and their origins remain a matter of debate.

NB: The Context Camera is another instrument onboard MRO, and it has a larger viewing angle than HiRISE, but less resolution capability than our camera.

The map is projected here at a scale of 50 centimeters (19.7 inches) per pixel. [The original image scale is 51.3 centimeters (20.2 inches) per pixel (with 2 x 2 binning); objects on the order of 154 centimeters (60.6 inches) across are resolved.] North is up.

The University of Arizona, Tucson, operates HiRISE, which was built by Ball Aerospace & Technologies Corp., Boulder, Colorado. NASA's Jet Propulsion Laboratory, a division of Caltech in Pasadena, California, manages the Mars Reconnaissance Orbiter Project for NASA's Science Mission Directorate, Washington.

scitechdaily.com



Eliminating Space Junk

European engineers who developed a small satellite hitching a ride to the International Space Station aboard a SpaceX supply ship Monday are gearing up for a first-of-a-kind experiment to examine ways to snare a chunk of space junk and tug it back to Earth. Developed in a public-private partnership, the RemoveDebris mission will test the utility of nets and harpoons to capture tumbling objects in orbit, repurposing devices commonly used in fishing to pluck debris out of orbit and bring them into Earth's atmosphere to burn up. Guglielmo Aglietti, principal investigator for the RemoveDebris mission, calls the project a "proof-of-concept." They crux of the mission, Aglietti said in an interview, is to prove that cleaning up space junk can be relatively inexpensive — something that could be affordable by commercial companies, or governments operating under budget limitations.

"We want to learn as much as possible," said Aglietti, who is also director of the Surrey Space Center, a research institute affiliated with the University of Surrey and Surrey Satellite Technology Ltd., a British manufacturer of small satellites. "Even if some experiment doesn't go exactly as planned, provided we get all the data, it's still a positive outcome."

The RemoveDebris satellite will launch in a container inside a SpaceX Dragon cargo craft set for launch from Cape Canaveral. The commercial supply ship is carrying more than 5,800 pounds (2.6 metric tons) of food, provisions and experiments to the space station's six-person crew. RemoveDebris accounts around 220 pounds, or 100 kilograms, of the Dragon's cargo load.

But the small spacecraft, developed by SSTL in the United Kingdom, punches above its weight. The RemoveDebris mothership contains two CubeSats, a net and a harpoon, a laser ranging instrument, and a "dragsail" designed to unfurl behind the main satellite and hasten its fall back into Earth's atmosphere using aerodynamic resistance. Aglietti said RemoveDebris is currently slated for deployment from the space station in late May, but the schedule is not yet confirmed.

"The mission will really start once we are deployed out of the space station, hopefully at the end of May or the beginning of June," he said.

RemoveDebris will be the biggest satellite launched from the space station. That has placed the mission under extra scrutiny from NASA managers, who want to ensure the satellite poses no hazard to the orbiting outpost or its crew. The launch of RemoveDebris was supposed to happen last year, but officials bumped it to a later SpaceX cargo flight.

"Basically, it has a net, a harpoon and a dragsail on-board," said Jason Forshaw, the RemoveDebris mission's project manager at SSTL. "The concept is it's going to go up there, and it's going to eject small little satellites that will be used as artificial space junk."

spaceflightnow.com

Virgin Galactic Completes 1st Powered Test Flight

Virgin Galactic made a triumphant return to powered flight today (April 5) with a successful test of the company's SpaceShipTwo VSS Unity suborbital vehicle. It was the company's first powered flight in nearly 3.5 years, following the tragic loss of SpaceShipTwo VSS Enterprise on Oct 31, 2014. VSS Unity was dropped from its WhiteKnightTwo mothership from about 50,000 feet (15,000 meters) over the mountains about 20 miles (32 kilometers) north of the Mojave Air and Space Port in California. Pilots David Mackay and Mark "Forger" Stucky fired Unity's hybrid engine for 30 seconds, boosting the vehicle to a top speed of Mach 1.87 and a maximum altitude of 84,271 feet (25,686 m) before gliding back to the runway at the spaceport, Virgin Galactic representatives said. During the descent, the crew deployed SpaceShipTwo's feather system, which reconfigures the ship into a high-drag shuttlecock by moving its twin tail booms. The feather will be used to soften the vehicle's re-entry into the Earth's atmosphere during spaceflight.

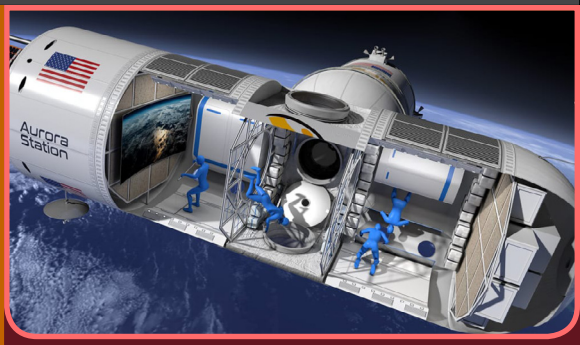
Virgin Galactic representatives have said they will conduct a series of powered flights throughout 2018 with increasingly longer engine firings. They expect the spaceship to get at least 50 miles (80 km) up later this year, the altitude defined as the beginning of space by a number of entities, including the U.S. Air Force.

Eventually, the test program will move down to Spaceport America in New Mexico, where Virgin Galactic is the anchor tenant. The company hopes to start commercial service from Spaceport America later this year. Branson plans to be on that first commercial flight of Unity, which seats six passengers and two pilots. Other SpaceShipTwo vehicles are under construction.

Today's flight was the 12th overall for Unity, a total that includes four captive-carry tests. It was the 246th flight of the WhiteKnightTwo mothership, VMS Eve. Enterprise had successfully completed 30 glide flights and three powered tests before it was lost.

Today's flight was a major milestone in another important way. While Enterprise was built and flight-tested by the company Scaled Composites, Unity was produced by The Spaceship Co., which is also owned by the Virgin Group.

www.space.com



'Luxury Space Hotel' to Launch in 2021

Well-heeled space tourists will have a new orbital destination four years from now, if one company's plans come to fruition.

That startup, called Orion Span, aims to loft its "Aurora Station" in late 2021 and begin accommodating guests in 2022. "Affordable" is a relative term: A 12-day stay aboard Aurora Station will start at $9.5 million. Still, that's quite a bit less than orbital tourists have paid in the past. From 2001 through 2009, seven private citizens took a total of eight trips to the International Space Station (ISS), paying an estimated $20 million to $40 million each time. (These private missions were brokered by the Virginia-based company Space Adventures and employed Russian Soyuz spacecraft and rockets.

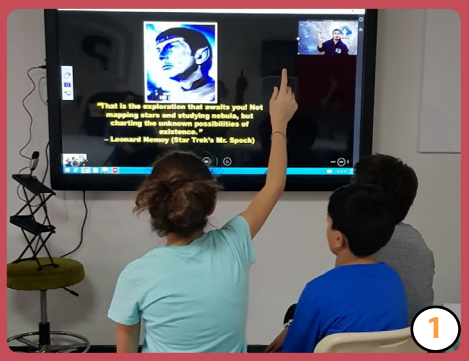
"There's been innovation around the architecture to make it more modular and more simple to use and have more automation, so we don't have to have EVAs [extravehicular activities] or spacewalks," Bunger said of Aurora Station.

Aurora Station will be about the size of a large private jet's cabin. It'll measure 43.5 feet long by 14.1 feet wide (13.3 by 4.3 meters) and feature a pressurized volume of 5,650 cubic feet (160 cubic m), Orion Span representatives said. For comparison, the ISS is 357 feet (109 m) long and has an internal pressurized volume of 32,333 cubic feet (916 cubic m). If you've got $80,000 to spare, you can put a (fully refundable) deposit down on an Aurora Station stay beginning today. Folks who fly up will undergo a three-month training program, the last portion of which will occur aboard the space hotel itself, Bunger said. To learn more, go to www.orionspan.com.

www.space.com

SCHOOLS IN ACTION

Education is the rocket which will propel you towards success. All the students are aware of that and they will do whatever it takes to get a lift-off. These past two weeks, they created some amazing projects. They are so excited to share their projects with their friends at Space Camp Turkey during the summer!

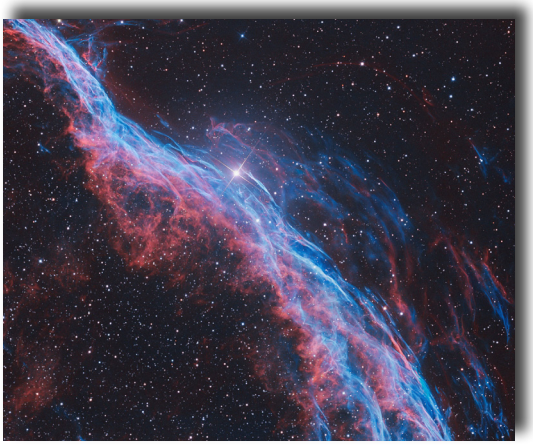


1- Yönder Maltepe Schools, ISTANBUL 2- Yönder Bornova Schools, IZMIR 3- Final Schools, SAMSUN
4- Istek Mavisehir Schools, IZMIR 5- Ivan Hadzhienov Gymnasium, BULGARIA 6- Ismail Kaymak Schools, ÇANAKKALE

Astronomy Picture of the Day

NGC 6960: The Witch's Broom Nebula

Ten thousand years ago, before the dawn of recorded human history, a new light would have suddenly have appeared in the night sky and faded after a few weeks. Today we know this light was from a supernova, or exploding star, and record the expanding debris cloud as the Veil Nebula, a supernova remnant. This sharp telescopic view is centered on a western segment of the Veil Nebula cataloged as NGC 6960 but less formally known as the Witch's Broom Nebula. Blasted out in the cataclysmic explosion, the interstellar shock wave plows through space sweeping up and exciting interstellar material. Imaged with narrow band filters, the glowing filaments are like long ripples in a sheet seen almost edge on, remarkably well separated into atomic hydrogen (red) and oxygen (blue-green) gas. The complete supernova remnant lies about 1400 light-years away towards the constellation Cygnus. This Witch's Broom actually spans about 35 light-years. The bright star in the frame is 52 Cygni, visible with the unaided eye from a dark location but unrelated to the ancient supernova remnant.



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