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## Our solar system in order

You have photographed a beautiful sunset. But the image is overshadowed by strange spots. And you... A) Edit them. B) Step in 21st Century. Fortunately The Jet Propulsion Laboratory supports a convenient solar system simulator online. Installing parameters to view the entire solar system with 2 degrees view from above gave me this simulation of our current position. Then, imitating the view of the Sun from Earth, see what hangs beyond the horizon. Although I've never seen Venus and Mars, the camera did. This is the first solar-planetary compound ever captured. Why live in the past, considering everything from the Stone Age, in the center of the Earth's point of view? With these celestial points, we can now navigate the plane of the solar system for a landscape worthy of the space age. Wouldn't it be better to know where you are? This site is not available in your country Earth was once the only world known to have volcanoes, but they are all over the place, beating lava and ice plumes. Marina KorenMarch 12, the 2020 Galileo spacecraft caught a volcano erupting on Jupiter's moon Io in 1997.NASARosaly Lopez spent five years carefully inspecting the churning landscape where molten rock spilled forward like an arc fountain jet. Using data from the orbiting probe, it chose eruptions across the fiery surface, eventually noticing 71 active volcanoes that no one had ever detected before. People joked with me: Oh, you found another active volcano! Lopez told me. You'll be in the Guinness Book of Records - until one day, one of those hand-picked comments made its way to someone who actually worked in the Guinness Book of Records. Lopez found himself in a 2006 edition recognized for discovering the most active volcanoes anywhere. However, none of the volcanoes was on Earth. They were a few hundred million miles away on the moon of Jupiter called Io.Today, Io known as the most volcanically active place in the solar system. Other volcanic spots are scattered across our neighboring planets and moons, too, and probably countless others in other solar systems throughout the universe. NASA recently announced that it would fund proposals for four new robotic missions, all of which are headed for a closer look at these kinds of worlds - Io, Venus and Triton, the moon of Neptune.Not long ago, Earth was the most volcanic spot in the solar system. As a rule, volcanic activity indicates the cooling of the world. Once planets and satellites form an extreme and fiery process, they can spend billions of years spewing heat from their interiors through cracks on the surface. Small bodies, like our moon, must cool down faster than others, and jerks on the surface can reveal the invisible contours of the world deep inside. Volcanism is like a window into the inner part of the planet, said Sue Smrekar, an astronomer at NASA's Jet Propulsion Laboratory, which is leading one of the proposed missions. In the Voyager Voyager mission space planets, scientists predicted that the spacecraft would find the moon as our own. The moons around Jupiter, for example, are the size of our moon or smaller, so it would be a reason that they too will be cold, still, and spotted with craters. Instead, Voyager found the first surprising evidence of volcanic activity somewhere other than our planet. It was very difficult for people to recognize that a small moon like Io could still have active volcanism because to had to cool down long ago, Lopez said. In the 40 years since, planetary scientists have moved from monitoring eruptions on Earth to finding them sprinkled across the solar system. Soon, perhaps, they will get a closer look at what exactly makes these extraterrestrial explosions tick. The team, which is targeting Io, is aware of a phenomenon that Voyager scientists didn't know, called tidal heating. The Io rotates between Jupiter and the planet's two other moons, Europe and Ganime, and this configuration means that Io is exposed to the gravitational forces of all three. Constant tugging heats the interior of Io, melting rock into lava. When the moon stretches and shrinks during a busy 42-hour orbit, cracks appear on its surface and lava slips away. It changes the shape of the entire planet, says Alfred McEwan, a planetary geologist at the University of Arizona who leads the concept of the mission to Io. Lava, sticking out of the depths, flows like muddy water during flooding and fills craters, regularly smoothing the terrain of the moon. Many of the exoplanets that astronomers have discovered so far orbit close enough to their stars to experience the same tidal heating, making Io a particularly suitable analogue for understanding worlds beyond our area, The Macehuen says. Closer to home, there is Venus, where the surface of a mosaic of volcanic features, from peaks to plains, is formed from eons of bubbling activity. We see huge fields of small volcanoes in places on Venus that remind us of the little guys we see in Iceland, said James Garvin, chief scientist at NASA's Goddard Space Flight Center and lead on one of Venus' missions. Volcanoes of the planet, numbering in the hundreds, are thought to have frozen long ago, but scientists have found evidence that some activity may be under way. A few years ago, an infrared camera on a European spacecraft peered into the planet's dense atmosphere and detected spots on the surface, suddenly heating up and cooling again. Smrekar's mission to Venus will send the spacecraft into the orbit of the planet, confuse its topography and determine if there are any more churnings. Another mission, led by Garvin, would drop the probe through Venus' atmosphere into a potentially volcanic area, moving down as if we were going down by helicopter ourselves, he says. The probe will be able to analyze atmospheric gases and select signatures of recent eruptions. Further, on lava plumes are made of ice. In 1989, the Voyager mission showed that the world resurfaced like a cantaloupe, with bumps and ridges, and so cold that nitrogen exists as a brilliant frost on the surface. In pretty luck, the spacecraft, as it flew past, caught geysers of particles erupting from the surface and drifting down the wind in the thin atmosphere of the moon. The spacecraft has not returned since, and scientists are keen to explore Triton more deeply, especially the intriguing possibility that plumes can and does come from a hidden, underground ocean. In a body of water, even as far from solar heat, there may be some of the main components that can lead to life in the same way as the Earth's dark sea fluores. Triton is five times farther than Saturn. Understanding even the worlds that are far away in the solar system may still have some of the ingredients of the habitable world will basically revolutionize our understanding of what it means to be a habitable world, says Louise Prockter, director of the Lunar and Planetary Institute in Houston and head of the proposed Triton mission. NASA doled out \$3 million for each team to develop its mission concepts. Next year, the agency will choose one or two of them to move forward to building spaceflight. Missions on Venus will achieve their goal in the 2020s, while the Io mission will not arrive until 2031, and the Trident mission until 2038, when scientists will be almost half a century old. By then, it is possible that astronomers, using the most powerful telescopes, would have detected volcanic plumes pulled from the worlds deep in space, around other suns. Findings in our solar system have shown that the cosmos trembles from the rumble of churning worlds. Someone will have to discover all these volcanoes - Lopez's record won't stand forever. Welcome to the Solar System! Here you will find the Sun, the planets and the only home of mankind in the Milky Way galaxy. It contains planets, moons, comets, asteroids, one star and worlds with ring systems. Although astronomers and skygazers have observed other objects of the solar system in the sky since the beginning of human history, it is only in the last half century that they have been able to explore them more directly with spacecraft. Long before astronomers could use telescopes to observe objects in the sky, people thought planets were just wandering with stars. They had no idea of an organized system of worlds orbiting the Sun. All they knew was that some objects followed the usual paths against the background of the stars. At first they thought these things were gods or some other supernatural beings. They then decided that these movements had some impact on people's lives. With the advent of scientific observations of the sky, these ideas disappeared. The first astronomer to look at another planet with a telescope was Galileo Galilei. His observations humanity's view of our place in space. Soon many other men and women studied planets, their satellites, asteroids and comets with scientific interest. Today this continues and there are currently spacecraft doing a lot of research on the solar system. So, what else have astronomers and planetary scientists learned about the solar system? Traveling through the solar system introduces us to the Sun, which is our nearest star. It contains an amazing 99.8 percent of the mass of the solar system. Jupiter is the next most massive object, and it is two and a half times the mass of all the other planets combined. Four inner planets - a tiny, crate-riddled Mercury, shrouded in clouds Venus (sometimes called the Gemini of the Earth), a moderate and water Earth (our home) and a reddish Mars - are called earthy or rocky planets. Gas giants are Jupiter, ringed Saturn, mysterious blue Uranus and distant Neptune. Uranus and Neptune are so cold and contain a lot of ice material, and they are often called ice giants. The solar system has five known dwarf planets. They are called Pluto, Ceres, Haumea, Makemake and Eris. The New Horizons mission explored Pluto on July 14, 2015, and is on its way to visit a small object called 2014 MU69. At least one and possibly two other dwarf planets exist within the outer limits of the solar system, although we do not have detailed images of them. There are probably at least 200 more dwarf planets in the solar system region called the Kuiper Belt (pronounced KYE-under the belt.) the Kuiper Belt extends from the orbit of Neptune and is the kingdom of the most distant worlds that are known to exist in the solar system. It's very far away and its objects are probably icy and frozen. The outer region of the solar system is called the Oort cloud. It probably doesn't have big worlds, but contains chunks of ice that become comets when they rotate very close to the Sun. The Asteroid Belt is an area of space that lies between Mars and Jupiter. It is inhabited by pieces of rocks ranging from small boulders to the size of a large city. These asteroids remain from the formation of planets. There are moons all over the solar system. The only planets that don't have the moons are Mercury and Venus. Earth has one, Mars has two, Jupiter has dozens, like Saturn, Uranus and Neptune. Some of the moons of the outer solar system are frozen worlds with water oceans under the ice on their surfaces. The only planets with rings we know of are Jupiter, Saturn, Uranus and Neptune. However, at least one asteroid called Chariklo also has a ring and planetary scientists recently discovered a faint ring around the dwarf planet Haumea. Everything astronomers learn about the bodies of the solar system helps them understand the origin and evolution of the Sun and planets. We know that they were formed about 4.5 billion years ago. Their homeland cloud of gas and dust, which slowly contracted to make the sun, and then then Comets and asteroids are often considered remnants of the birth of planets. What astronomers know about the Sun tells us that it won't last forever. In about five billion years, it will expand to cover some planets. Eventually, it will shrink downwards, leaving behind a very changed solar system from what we know today. Today.