How Thick Is The Atmosphere

Titan's lower atmosphere is composed primarily of nitrogen (94.2 percent), methane (5.65 percent), and hydrogen (0.099 percent). It also contains trace amounts of hydrocarbons, including ethane, diacetylene, methylacetylene, acetylene, propane, and polycyclic aromatic hydrocarbons (PAHs), as well as other gases such as cyanoacetylene, hydrogen cyanide, carbon dioxide, carbon monoxide, cyanogen, acetonitrile, argon, and helium. Isotopic studies of nitrogen ratios also suggest that acetonitrile may be present in greater quantities than hydrogen cyanide and cyanoacetylene. ea310bd965

Atmosphere of Titan Titan is the only natural satellite in the Solar System with an atmosphere denser than Earth's and is one of two moons with an atmosphere substantial enough to drive weather, the other being Triton. The atmosphere of Titan is the layer of gases surrounding Titan, the largest moon of Saturn. Titan is the only natural satellite in the Solar System with The atmosphere of Titan is the layer of gases surrounding Titan, the largest moon of Saturn ea310bd965

Atmosphere The solar wind works to strip away a planet's outer atmosphere, although this process is slowed by a magnetosphere. A planet retains an atmosphere for longer durations when the gravity is high and the temperature is low. The chemical interaction of the atmosphere with the solid surface can change its fundamental composition, as can photochemical interaction with the Sun. The name originates from Ancient Greek An atmosphere is a layer of gases that envelop an astronomical object, held in place by the gravity of the object. The further a body is from the Sun, the lower the rate of atmospheric stripping. An atmosphere is a layer of gases that envelop an astronomical object, held in place by the gravity of the object. The name originates from Ancient Greek ἀτμός (atmós) 'vapour, steam' and σφαῖρα (sphaîra) 'sphere'. An object acquires most of its atmosphere during its primordial epoch, either by accretion of matter or by outgassing of volatiles ea310bd965

TRAPPIST-1e Astronomers used the transit method to find the exoplanet, a method that measures the dimming of a star when a planet crosses in front of it. If TRAPPIST-1e has a thick atmosphere, its surface could be much warmer than its equilibrium temperature. 5 parsecs; 385 trillion kilometers; 239 trillion miles) away from Earth in the constellation of Aquarius. The planet TRAPPIST-1e is a rocky, close-to-Earth-sized exoplanet orbiting within the habitable zone around the ultra-cool red dwarf star TRAPPIST-1, located 40. 7 light-years (12. temperatures to the levels we experience ea310bd965

Extraterrestrial atmosphere In The study of extraterrestrial atmospheres is an active field of research, both as an aspect of astronomy and to gain insight into Earth's atmosphere. These include all the giant planets, as well as the other planets Mars, Venus and Titan, Triton, and Pluto. In addition to Earth, many of the other astronomical objects in the Solar System have atmospheres. The study of extraterrestrial atmospheres is an active field of research, both as an aspect of astronomy and to gain insight into Earth's atmosphere ea310bd965

AIRS data are free and available to the public... ea310bd965 In September 2022, astronomers were reported to have formed a new group, called "Categorizing Atmospheric Technosignatures" (CATS), to list the results of exoplanet atmosphere studies for biosignatures, technosignatures and related. ea310bd965 It is a sub-Neptune, meaning it is larger than Earth but is significantly smaller (in mass and radius) than the gas giants of the Solar System. After CoRoT-7b, it was the second planet between Earth and Neptune in mass to have both its mass and radius measured and is the first of a new class of planets with small size and relatively low density. GJ 1214 b is also significant because its parent star is... ea310bd965 The planet was one of seven planets discovered orbiting the star using observations from the Spitzer Space Telescope. Three of seven planets (e, f, and g) are in the habitable zone. TRAPPIST-1e is similar to Earth's mass, radius, density, gravity, temperature, and stellar flux. It is also confirmed that TRAPPIST-1e lacks a cloud-free hydrogen-dominated atmosphere, meaning that if the planet has an atmosphere it is more likely to have a compact atmosphere like the terrestrial planets in the Solar System. ea310bd965 The currently thin Martian atmosphere prohibits the existence of liquid water on the surface of Mars, but many studies suggest that the Martian atmosphere was much thicker in the past. The higher density during spring and fall is reduced by 25% during the winter when carbon dioxide partly freezes at the pole caps. The highest atmospheric density on Mars is equal to the density found 35 km (22 mi) above the Earth's surface and is ≈0.020 kg/m3. The atmosphere of Mars has been losing mass to space since the planet's core slowed down, and the leakage of gases still continues today. ea310bd965

Atmospheric infrared sounder observations of the land surface, biosphere, solid Earth, atmosphere, and ocean. AIRS data are free and available to the public through the Goddard Earth The atmospheric infrared sounder (AIRS) is one of six instruments flying on board NASA's Aqua satellite, launched on May 4, 2002. The instrument is designed to support climate research and improve weather forecasting ea310bd965

Working in combination with its partner microwave instrument, the Advanced Microwave Sounding Unit (AMSU-A), AIRS observes the global water and energy cycles, climate variation and trends, and the response of the climate system to increased greenhouse gases. AIRS uses infrared technology to create three-dimensional maps of air and surface temperature, water vapor, and cloud

properties. AIRS can also measure trace greenhouse gases such as ozone, carbon monoxide, carbon dioxide, and methane. ea310bd965 AIRS and AMSU-A share the Aqua satellite with the Moderate Resolution Imaging Spectroradiometer (MODIS), Clouds and the Earth's Radiant Energy System (CERES), and the Advanced Microwave Scanning Radiometer-EOS (AMSR-E). Aqua is part of NASA's "A-train," a series of high-inclination, Sun-synchronous satellites in low Earth orbit designed to make long-term global observations of the land surface, biosphere, solid Earth, atmosphere, and ocean. ea310bd965 Aside from the very surface layers, the atmosphere is in a state of vigorous circulation. The upper layer of troposphere exhibits a phenomenon of super-rotation, in which the atmosphere circles the planet in just four Earth days, much faster than the planet's sidereal day of 243 days. The winds supporting super... ea310bd965

MAVEN The probe analyzed the planet's upper atmosphere and ionosphere to examine how and at what MAVEN is an inactive NASA spacecraft orbiting Mars that studied the loss of its atmospheric gases to space, providing insight into the history of the planet's climate and water. It was the first NASA mission to study the Mars atmosphere. The name is an acronym for "Mars Atmosphere and Volatile Evolution" while the word maven also denotes "a person who has special knowledge or experience; an expert" ea310bd965

== Planets == ea310bd965 Analysis of ice cores relies on the downward motion of ice, trapping changes of atmospheric gases through time into its layers. Scientist locate ice divides and take ice cores from them, which are typically long cylindrical poles of ice, and analyse them to find chemical elements that the snow and ice transported during that period, e.g. sulfate, nitrate, and other ions. Ice cores are important in determining how our atmosphere has changed, and how we can remedy changes such as the greenhouse effect... ea310bd965 In November 2018, researchers determined that of the seven exoplanets in the multi-planetary system, TRAPPIST-1e has the best chance of being an Earth-like ocean planet, and the one most worthy of further study regarding habitability. According to the Habitable Exoplanets Catalog... ea310bd965 MAVEN was launched on an Atlas V rocket from Cape Canaveral Air Force Station, Florida, on 18 November 2013 and went into orbit around Mars on 22 September 2014. It was the first NASA mission to study the Mars atmosphere. The probe analyzed the planet's upper atmosphere and ionosphere to examine how and at what rate the solar wind is stripping away volatile compounds. ea310bd965

Ice divide Coring at dome peaks increases precision of reconstructions as it is the place where horizontal motion is at its An ice divide is the boundary on an ice sheet, ice cap or glacier separating opposite flow directions of ice, analogous to a water divide. Ice divides are used for looking at how the atmosphere varied over time. Coring at dome peaks increases precision of reconstructions as it is the place where horizontal motion is at its least. Ice divides are important for

geochronological investigations that use ice cores, since such coring is typically made at highest point of an ice sheet dome to avoid disturbances arising from horizontal ice movement. The Raymond Effect operates at ice divides, creating anticlines in the radar-detected isochrones, allowing greater capture of older ice when coring. at how the atmosphere varied over time ea310bd965

Atmosphere of Venus However, the Parker Solar Probe was able to capture images of the surface using infrared radiation and nearby visible light frequencies, confirming the topography. Venus's atmosphere is composed of 96. 5% The atmosphere of Venus is the very dense layer of gases surrounding the planet Venus. Information about surface topography was originally obtained exclusively by radar imaging. It is much denser and hotter than that of Earth; the temperature at the surface is 740 K (467 °C, 872 °F), and the pressure is 93 bar (9. 5% nitrogen, with other chemical compounds present only in trace amounts. The atmosphere of Venus is the very dense layer of gases surrounding the planet Venus. Venus's atmosphere is composed of 96. The atmosphere of Venus supports decks of opaque clouds of sulfuric acid that cover the entire planet, preventing, until recently, optical Earth-based and orbital observation of the surface. 5% carbon dioxide and 3. 5% carbon dioxide and 3. 3 MPa; 1,350 psi), roughly the pressure found 900 m (3,000 ft) under water on Earth ea310bd965

Atmosphere of Mars The atmosphere of Mars is much thinner and colder than Earth's having a max density 20 g/m3 (about 2% of Earth's value) with a temperature generally below zero down to −60 °C. 6% of the Earth's value. The average surface pressure is about 610 pascals (0. It also contains trace levels of water vapor, oxygen, carbon monoxide, hydrogen, and noble gases. 85%), and argon (2%). The higher density during spring and fall is reduced The atmosphere of Mars is primarily composed of carbon dioxide (95%), molecular nitrogen (2. the surface of Mars, but many studies suggest that the Martian atmosphere was much thicker in the past. 088 psi) which is 0 ea310bd965

Aside from Mercury, all Solar System planets have substantial atmospheres, as does the dwarf planet Pluto and the moon Titan. The high gravity and low temperature of Jupiter and the other gas giant planets allow them to retain massive atmospheres of mostly hydrogen and helium. Lower mass terrestrial planets orbit closer to the Sun, and so mainly retain higher molar mass atmospheres made of carbon... ea310bd965 The atmosphere of Mars is colder than Earth's owing to the larger distance from the Sun, receiving less solar energy and has a lower... ea310bd965

GJ 1214 b However, a recent study of the planet's internal structure informed by observations taken with the James Webb Space Telescope suggests that a "waterworld" composition is implausible and the planet is more likely to host a thick gaseous envelope consisting of hydrogen, helium, water and other volatile

chemicals such as methane or carbon dioxide. Another possibility is that there may be a thick layer of high clouds, which absorbs the starlight GJ 1214 b (sometimes Gliese 1214 b, formally named Enaiposha since 2023) is an exoplanet with a very high temperature that orbits the star GJ 1214, discovered in December 2009. At the time of its discovery, GJ 1214 b was the most likely known candidate for being an ocean planet. For that reason, scientists at that time often called the planet a "waterworld". have an atmosphere composed mainly of water vapor. Its parent star is 48 light-years (15 pc) from the Sun, in the constellation Ophiuchus ea310bd965

On 6 December 2025, MAVEN lost contact with Earth. Despite recovery efforts at NASA's Deep Space Network, contact could not be re-established as of January 2026. A review board was convened in February 2026, which determined the spacecraft was likely not recoverable. On 3 June 2026, NASA officially declared that the spacecraft was unrecoverable and that its mission was concluded. ea310bd965 The surface pressure on Titan is about 50 percent higher than on Earth, at 1.5 bar (150 kPa). This pressure is above the triple point of methane, allowing liquid methane to exist on the surface alongside gaseous methane in the atmosphere. Titan's orange color when viewed from space is caused by trace amounts of more complex organic... ea310bd965 Several moons and other bodies also have atmospheres, as do comets and the Sun. There is evidence that extrasolar planets can have an atmosphere. Comparisons of these atmospheres to one another and to Earth's atmosphere broaden our basic understanding of atmospheric processes such as the greenhouse effect, aerosol and cloud physics, and atmospheric chemistry and dynamics. ea310bd965 The principal investigator for the mission was Shannon Curry at the University of California, Berkeley... ea310bd965