



Newsletter of the Pomona Valley Amateur Astronomers

If we all did the things we are capable of,
 we would astound ourselves.
 Thomas Edison

Volume 38 Number 01

nightwatch

January 2018

Club Events Calendar

January 5 General Meeting – Dave Kary

January 13 Star Party

January 24 Board Meeting

February 2 General Meeting

February 10 Star Party

February 21 Board Meeting

March 2 General Meeting

March 10 Star Party

April 14 Star Party

April 18 Board Meeting

April 27 General Meeting

May 16 Board Meeting

May 24 – 28 RTMC

June 1 General Meeting

Speaker Announcement

On Friday, January 5th, our speaker will be Dave Kary, Professor of Astronomy at Citrus College. He will speak to us about "A Visitor from the Stars: I1/2017 U1 'Oumuamua."

PVAA Officers and Board

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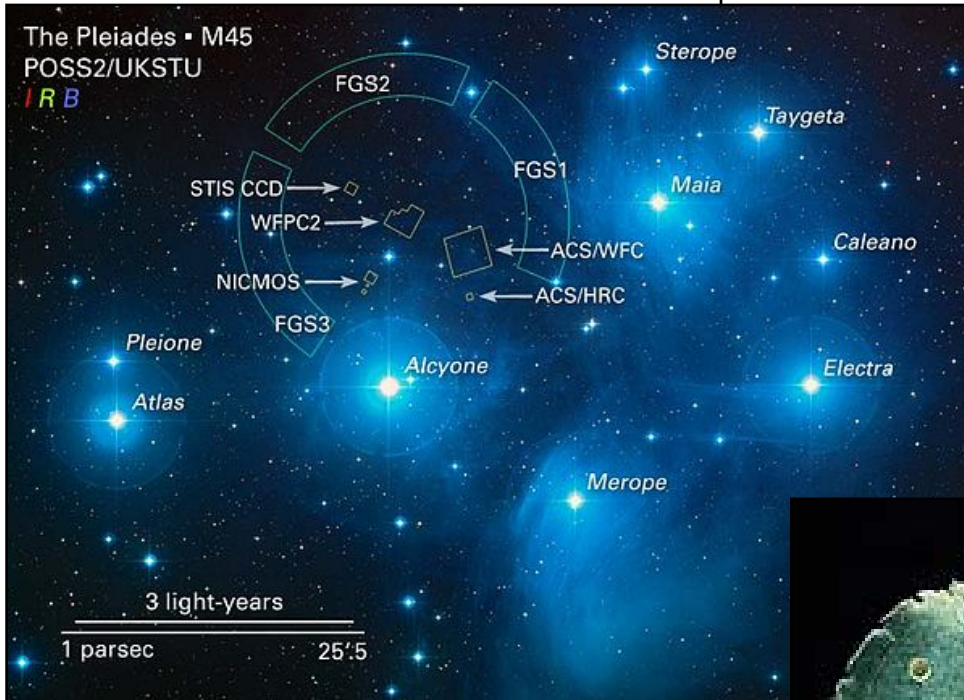
What's Up? - Pleiades or Seven Sisters

The Pleiades is known as Seven Sisters and is classified as Messier 45 (M45) as well as Melotte 22. It's also called the Maia Nebula after its bright star Maia, one of the sisters. It has many names and is the first known depiction of a star cluster, on a greenish German bronze age artifact called the Nebra sky disk

The name Pleiades probably comes from the Ancient Greek *plein* meaning "to sail" since the season of navigation is associated with its appearance. But in mythology Pleiades refers to the seven divine sisters, daughters of Pleione and Atlas. Greek legend recounts sisters that called for help from Zeus who

turned them into doves and made them stars. It is the only cluster in which nine (the sisters and their two parents) individual stars are named. Alcyone is the brightest followed by Maia. Then there's Asterope I and II (a double star also called Sterope), Taygete, Celaeno, Merope and Electra. The stars become sisters in several cultures. In a Native American tale they loose their way and remain in the sky unable to return home.

Star clusters are groups of stars formed together out of gas and dust around the same time so they are all comparatively young. Pleiades was



dating from 1600 BC. This ancient disk also shows the Sun and crescent Moon. The Pleiades is famous among lots of ancient and modern cultures. It's brightly located in Taurus the Bull along with the Hyades, a closer more open star cluster. The Pleiades is the only one striking enough to have once been classified a constellation in itself. It's mentioned in Homer's Iliad and Odyssey and many ancient writings as well as being listed three times in the Bible and named in the Islamic Quran. Modern long exposure photographs show a reflection nebulosity surrounding the young hot blue stars creating an object that will certainly exist for another 250 million years before slowly drifting apart.

Galileo was the first astronomer to study it in a telescope. He saw that in addition to seven brighter stars there were many more. He sketched 36 telescopic stars. In 1755 a map of 64 was published but the total is a least a thousand, including many brown dwarf stars. The Japanese call the cluster Subaru (to be united) and named a car company after it. The cluster is displayed on every auto with a familiar logo.

formed about 100 million years ago and its stars distance from Earth averages about 400 light years.

Lee Collins



This article is provided by NASA Space Place.

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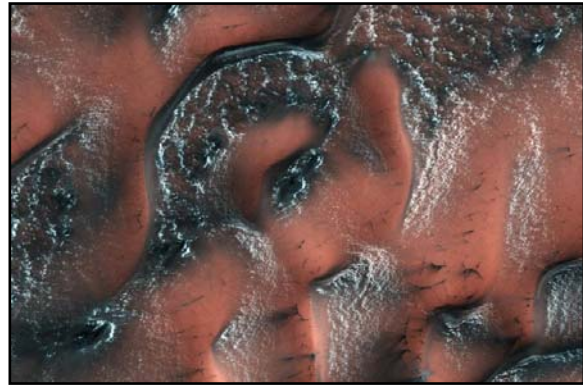
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Snowy Worlds Beyond Earth

There are many places on Earth where it snows, but did you know it snows on other worlds, too? Here are just a few of the places where you might find snow beyond Earth:

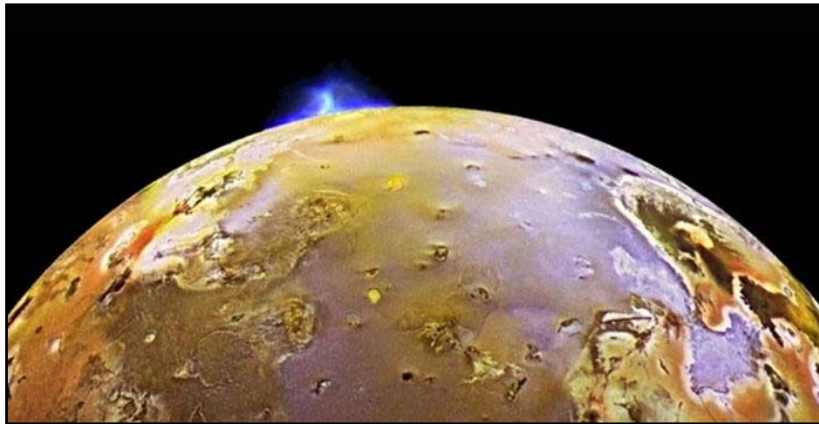
Mars

The north pole and south pole of Mars have ice caps that grow and shrink with the seasons. These ice caps are made mainly of water ice—the same kind of ice you'd find on Earth. However, the snow that falls there is made of carbon dioxide—the same ingredient used to make dry ice here on Earth. Carbon dioxide is in the Martian atmosphere and it freezes and falls to the surface of the planet as snow. In 2017, NASA's Mars Reconnaissance Orbiter took photos of the sand dunes around Mars' north pole. The slopes of these dunes were covered with carbon dioxide snow and ice.



NASA's Mars Reconnaissance Orbiter captured this image of carbon dioxide snow covering dunes on Mars. Credit: NASA/JPL/University of Arizona

A volcano shooting molten sulfur out from the surface of Io. Credit: NASA/JPL-Caltech

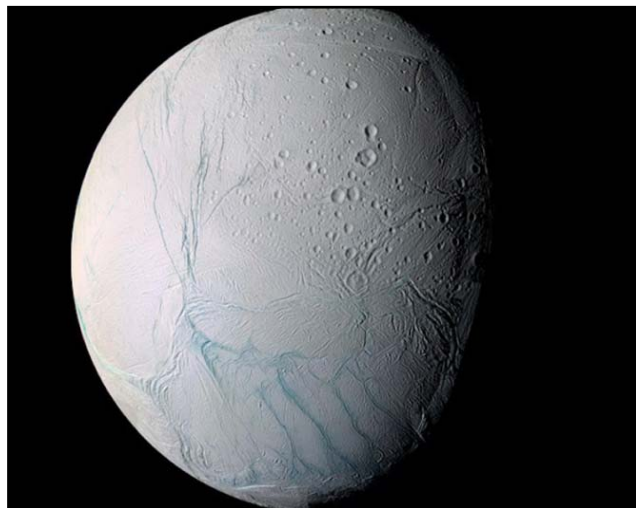


A Moon of Jupiter: Io

There are dozens of moons that orbit Jupiter and one of them, called Io, has snowflakes made out of sulfur. In 2001, NASA's Galileo spacecraft detected these sulfur snowflakes just above Io's south pole. The sulfur shoots into space from a volcano on Io's surface. In space, the sulfur quickly freezes to form snowflakes that fall back down to the surface.

A Moon of Saturn: Enceladus

Saturn's moon, Enceladus, has geysers that shoot water vapor out into space. There it freezes and falls back to the surface as snow. Some of the ice also escapes Enceladus to become part of Saturn's rings. The water vapor comes from a heated ocean which lies beneath the moon's icy surface. (Jupiter's moon Europa is also an icy world with a liquid ocean below the frozen surface.) All of this ice and snow make Enceladus one of the brightest objects in our solar system.



Enceladus as viewed from NASA's Cassini spacecraft. Credit: NASA

The Voyager 2 mission captured this image of Triton. The black streaks are created by nitrogen geysers. Credit: NASA/JPL/USGS

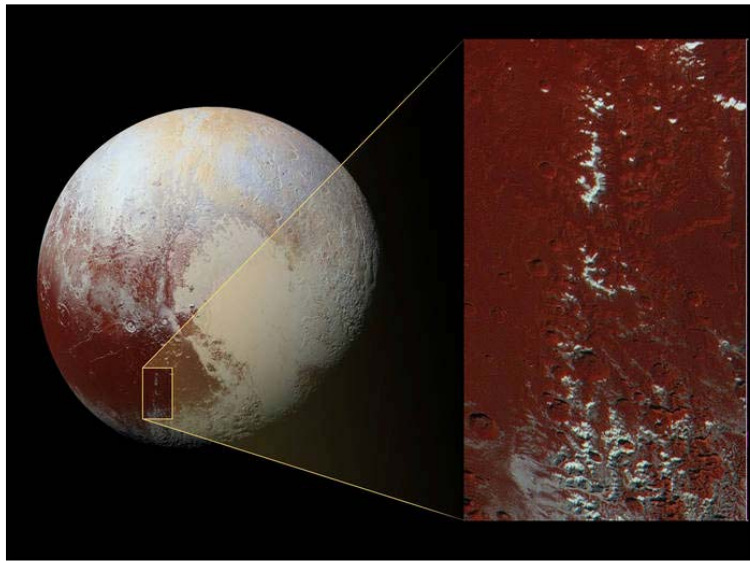


A Moon of Neptune: Triton

Neptune's largest moon is Triton. It has the coldest surface known in our solar system. Triton's atmosphere is made up mainly of nitrogen. This nitrogen freezes onto its surface covering Triton with ice made of frozen nitrogen. Triton also has geysers like Enceladus, though they are smaller and made of nitrogen rather than water.

Pluto

Farther out in our solar system lies the dwarf planet Pluto. In 2016, scientists on the New Horizons mission discovered a mountain chain on Pluto where the mountains were capped with methane snow and ice.



The snowy Cthulhu (pronounced kah-THU-lu) mountain range on Pluto. Credits: NASA/JHUAPL/SwRI

This is an artist's illustration of what Kepler-13Ab might look like. Credit: NASA/ESA/G. Bacon (STScI)



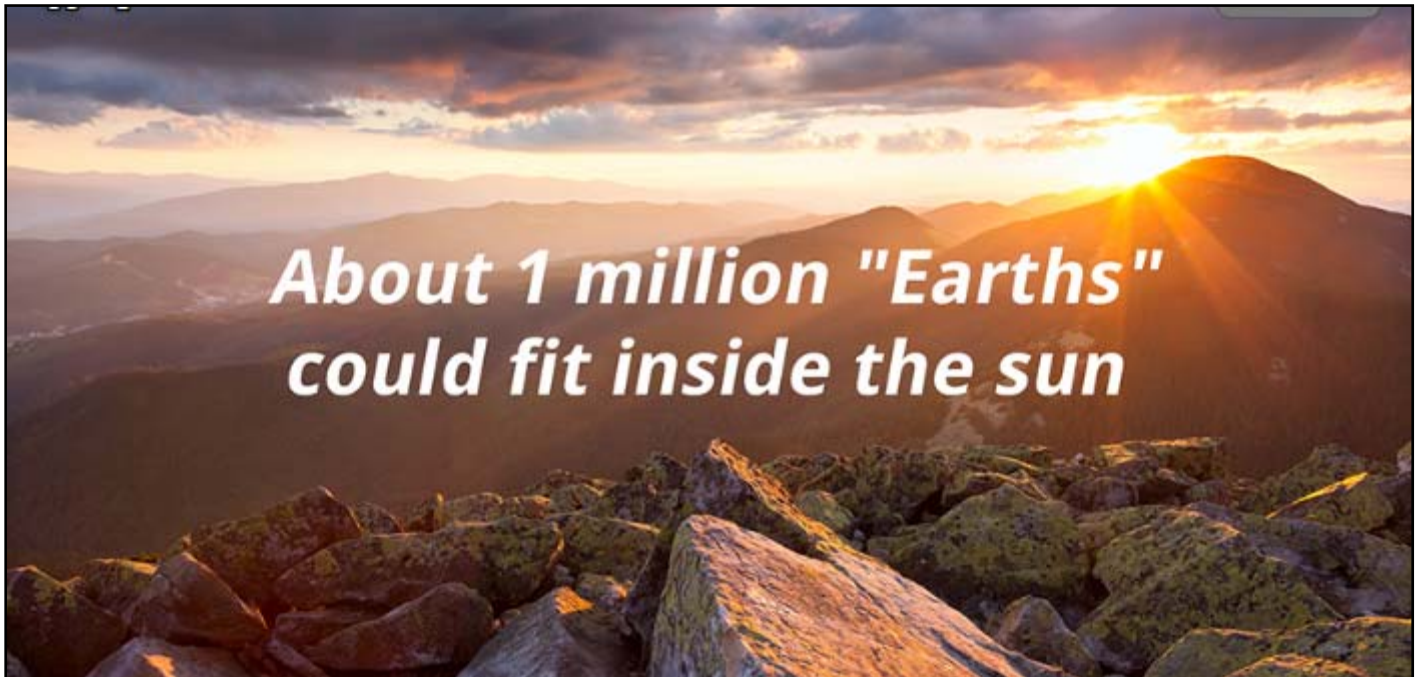
Beyond Our Solar System

There might even be snow far outside our solar system! Kepler-13Ab is a hot, giant planet 1,730 light years from Earth. It's nine times more massive than Jupiter and it orbits very close to its star. The Hubble Space Telescope detected evidence of titanium oxide—the mineral used in sunscreen—in this planet's upper atmosphere. On the cooler side of Kepler-13Ab that faces away from its host star, the planet's strong gravity might cause the titanium oxide to fall down as "snow."

Linda Hermans-Killiam

Want to learn more about weather on other planets?
Check out NASA Space Place:
<https://spaceplace.nasa.gov/planet-weather>

Amazing Facts



While the Sun is only an average sized star, it still makes up well over 99% of the mass in our solar system and its diameter is over a hundred times larger than the Earth's diameter. If the Earth were liquefied and poured into a vat the size of the Sun, about 1.3 million Earths would fit. If the Earth keeps its round shape, then around 960,000 Earths can fit into the Sun.

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