Celestial Observer

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CCAS Member Dave Majors: Here's a stack of 9 images of the inner part of M-31 and M-32. What I found intriguing in this one is the subtle hints of the dark lanes extending toward the core. ~Dave Majors

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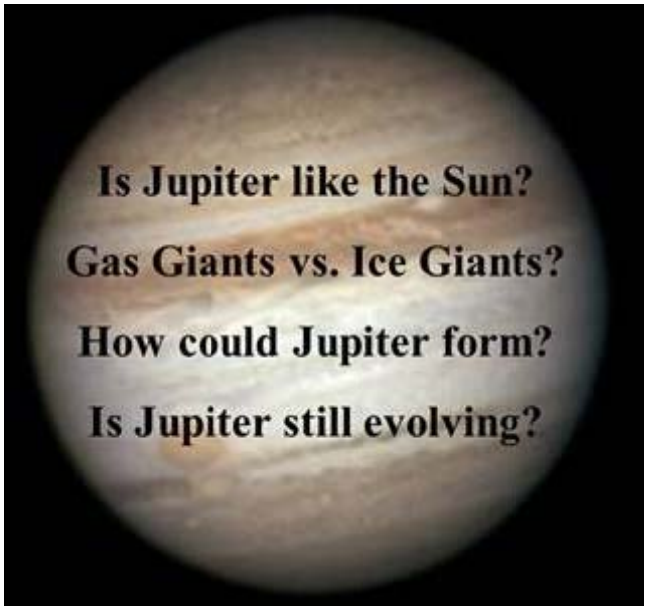
Next Meeting: *Dr. Bob Field, Cal Poly Astrophysics Dept.* will be our Jan 25th speaker at 7pm at SLOUMC speaking about his research work with Jupiter!

Next Star Gazing: Saturday., Feb. 17 at the KOA in Santa Margarita. Wring warm clothes, hot cocoa, and your beautiful self!

Next Club Meeting

January 25, 2018 at 7pm at 1515 Frederick's Street in SLO



Dr. Bob Field will talk about the formation and evolution of Jupiter, focusing on energy flow in its interior and the atmosphere using a mixture of animations and simple computer models.

Jupiter and the Sun are similar in composition and density, but their size difference results in radically different internal structures and processes. Jupiter has more liquid metal than gas in its interior. The interiors of gas giant and ice giant planets are also surprisingly different. Computer simulations have resolved two mysteries: How did Jupiter became massive in the brief time before the Sun expelled the remaining gases from the solar system? Why does Jupiter continue to evolve as it cools and contracts and radiates less energy from its surface.

Bob is currently an adjunct physics professor and research scholar in residence at Cal Poly where he supervises student astrophysical and planetary projects. He is also developing computer models, simulations, and animations and a reference guide to cosmic evolution for his new project website at https://evolution.calpoly.edu .

About the meeting: Arrive early to be sure you get a good seat! We'll also have time for show-and-tell, so if you have any new astronomy equipment you'd like to share with the group, feel free to bring it along.

Next Star Gazing

Jan 13 & Feb. 17 at the KOA in Santa Margarita

Our Sky Star Parties occur once a month, and are free and open to the public, and also weather-permitting.

If you'd like to join us, park at the bottom of the hill and walk up to the telescopes just before sunset. If you're got a large, bulky telescope, please arrive *before* sunset to set up.

We want to welcome all of our members to the year 2018! We have an exciting array of meetings, which, coupled with our star parties, offers an opportunity for all to participate in many interesting events.

Ours is an open club which invites members so send questions and suggestions, and we encourage active involvement.

We hope your new year will fulfill your hopes and dreams.

Sixty Years of Observing Our Earth

By Teagan Wall, NASA Space PLace

Satellites are a part of our everyday life. We use global positioning system (GPS) satellites to help us find directions. Satellite television and telephones bring us entertainment, and they connect people all over the world. Weather satellites help us create forecasts, and if there's a disaster—such as a hurricane or a large fire—they can help track what's happening. Then, communication satellites can help us warn people in harm's way.

There are many different types of satellites. Some are smaller than a shoebox, while others are bigger than a school bus. In all, there are more than 1,000 satellites orbiting Earth. With that many always around, it can be easy to take them for granted. However, we haven't always had these helpful eyes in the sky.

The United States launched its first satellite on Jan. 31, 1958. It was called Explorer 1, and it weighed in at only about 30 pounds. This little satellite carried America's first scientific instruments into space: temperature sensors, a microphone, radiation detectors and more.

Explorer 1 sent back data for four months, but remained in orbit for more than 10 years. This small, relatively simple satellite kicked off the American space age. Now, just 60 years later, we depend on satellites every day. Through these satellites, scientists have learned all sorts of things about our planet.

For example, we can now use satellites to measure the height of the land and sea with instruments called altimeters. Altimeters bounce a microwave or laser pulse off Earth and measure how long it takes to come back. Since the speed of light is known very accurately, scientists can use that measurement to calculate the height of a mountain, for example, or the changing levels of Earth's seas.

Satellites also help us to study Earth's atmosphere. The atmosphere is made up of layers of gases that surround Earth. Before satellites, we had very little information about these layers. However, with satellites' view from space, NASA

scientists can study how the atmosphere's layers interact with light. This tells us which gases are in the air and how much of each gas can be found in the atmosphere. Satellites also help us learn about the clouds and small particles in the atmosphere, too.

When there's an earthquake, we can use radar in satellites to figure out how much Earth has moved during a quake. In fact, satellites allow NASA scientists to observe all kinds of changes in Earth over months, years or even decades.

Satellites have also allowed us—for the first time in civilization—to have pictures of our home planet from space. Earth is big, so to take a picture of the whole thing, you need to be far away. Apollo 17 astronauts took the first photo of the whole Earth in 1972. Today, we're able to capture new pictures of our planet many times every day.

Today, many satellites are buzzing around Earth, and each one plays an important part in how we understand our planet and live life here. These satellite explorers are possible because of what we learned from our first voyage into space with Explorer 1—and the decades of hard work and scientific advances since then.

This photo shows the launch of Explorer 1 from Cape Canaveral, Fla., on Jan. 31, 1958. Explorer 1 is the small section on top of the large Jupiter-C rocket that blasted it into orbit. With the launch of Explorer 1, the United States officially entered the space age.

CCAS Officers

Feel free to connect with us!

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CCAS Contact Information

Founded in 1979, the Central Coast Astronomical Society (CCAS) is an association of people who share a common interest in astronomy and related sciences.

Central Coast Astronomical Society

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