

*Santa Monica Amateur
Astronomy Club*

Feb, 2018

The Observer

Upcoming club meeting:
Friday, February 9, 7:00 pm



Credit: Hubble, Subaru, Composition & Copyright: R. Gendler

“Water and Oceans Beyond Earth: Oases for Life?”

*Speaker:
Dr. Kevin Baines, JPL*



EUROPA

DISCOVER LIFE UNDER THE ICE

ALL OCEAN VIEWS!!!

INSIDE THIS ISSUE

Falcon Heavy: Space
X spectacle

Beta Pic b: Search for
moons

OUR MEETING SITE

Wildwood School
11811 Olympic Blvd.
Los Angeles, CA 90064
Free parking:
Garage, SE corner of
Mississippi & Westgate.

PICTURE AT LEFT:
Maybe...someday???

"Water and Oceans Beyond Earth: Oases for Life?"



You've heard about the discovery of liquid water on Mars. But did you know that Enceladus, a small moon of Saturn, has geysers that spout liquid water into space contributing to the formation of one of Saturn's rings? That the condensation and freezing of water powers major storms on Saturn and Jupiter that each can thrust vertically over 100 miles in altitude and cover a surface area that is the size of Earth? That Titan, Saturn's largest moon, has both lakes of methane/ethane and an ocean of water deep below its surface? That NASA's forthcoming Europa mission will probe that icy moon's sub-surface water ocean for signs of primitive life?

In this talk, Dr Kevin Baines, "follows the water" to describe what planetary scientists are learning about the role of water in the atmospheres and ocean worlds of our solar system.

Dr. Kevin Baines received a BA in Physics and Astronomy from Amherst College in 1976. He obtained a PhD from Washington University in St. Louis, Missouri in 1982 in Physics, developing and publishing the most sophisticated models of the planet Uranus then in existence, based on telescopic observations. Since 1982, he has been a planetary scientist at the Jet Propulsion Laboratory in Pasadena, CA.

Dr. Baines' studies have specialized in the nature of planetary atmospheres, including their formation and evolution, composition, and dynamics, especially the nature of powerful storm systems on the outer planets. He has been involved with the Galileo Mission to Jupiter, the European Venus Express Mission to Venus, and the Cassini Mission to Saturn.

THANKS to Mona for arranging this month's speaker. —ed

Space X Spectacle: The Falcon Heavy Launches...and Lands



It wasn't flawless...but it sure was impressive! The center section didn't join the boosters, but the two boosters came down simultaneously, on 'pillars of fire'. Quite the spectacle!

The Falcon Heavy was launched from the same pad as the Apollo missions at the Kennedy Space Center—and some said it brought back the same kind of emotions in the crowd.

Can you guess what the payload was? (See next page, if you don't already know.)



Of course! It was a Tesla!

The ‘passenger’ was a dummy, but Space X’s Elon Musk is no lightweight when it comes to publicity. This was a car driven by Musk himself—on the Earth—but maybe, someday, he’ll be able to ‘drive’ it to Mars. (Opinions vary!)

The Falcon Heavy can put 32 metric tons of payload into Low Earth Orbit. The rocket, about 70 meters tall, is the most powerful since the Saturn V took us to the moon.

The Delta IV Heavy has been our heaviest booster lately, putting around 16 metric tons of payload into Low Earth Orbit. The Delta IV is run by the United Launch Alliance.

The Space Launch System, NASA’s great new project, will be around 100 meters tall, and more powerful still. This one is planned for around 2020—and, of course, we have a club member working on that one! (Jim can amend this little blurb!)

The New Glenn is Blue Origin’s entry into heavy lift vehicles, and the Vulcan is the United Launch Alliance’s planned future heavy lift.

If Musk can drop the cost to Low Earth Orbit from \$10,000 a pound to \$1,000 a pound—and opinions vary on his stated cost figures—it really will influence future space mission planners. Either way, it looks as if the big rockets are returning.

Looking for Moons and Rings Around Beta Pictoris B



Beta Pictoris is a star 63 light years away, and it's young—estimated at only 24 million years of age. This star became famous in 1984, when astronomers observed a disk of gas and dust around it. This was over a decade before the discovery of exoplanets, and it was an exciting precursor. Even more intriguing, the disk was warped, and had gaps—the sign that a planet might be orbiting within it. Only in 2009 did researchers detect the faint glow of a hot giant planet, about 10 times the mass of Jupiter in a 20 year orbit. The planet may have transited its star in 1981, when a brief dip in light was seen. In the past few months, it was expected to have a near miss—no transit of the planet itself, but that could be a prime time to look for light dips caused by moons or rings accompanying the planet, Beta Pictoris b. No big announcements yet—but stay tuned on this one!



www.MrEclipse.com

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Did you see the lunar eclipse?

A lot of club members and Wildwood students did...we'd like to hear about it!

Do check the UCLA meteorite gallery for information on a talk, Feb. 11. Also, go to JPL public lectures for their February program. We'll have updates about the postponed Kip Thorne talk at UCLA, too. Stay tuned!



Join us for our talk on water and the possibilities of life “out there”.