



Desert Sky Observer

Volume 34

Antelope Valley Astronomy Club Newsletter

September 2014

Up-Coming Events

- September 05 Celebrate America On the Boulevard
- September 10 AVAC Board Meeting
- September 12 Club Meeting
- September 13 Prime Desert Moon Walk
- September 24 Acton Library Lecture (Harvest Moon)
- September 27 Dark Sky Party (TBA)

* Monthly meetings are held at the S.A.G.E. Planetarium on the Cactus School campus in Palmdale, the second Friday of each month. The meeting location is at the northeast corner of Avenue R and 20th Street East. Meetings start at 7 p.m. and are open to the public. *Please note that food and drink are not allowed in the planetarium*



President
Frank Moore

Our story begins: “It was a dark and stormy night.” Well, not really stormy, but it was Very Dark at the Star Party following our annual “Star-B-Que” picnic on Saturday August 23. The weather couldn’t have been better with a high of 81* at Brite Lake near Tehachapi with a cool breeze and only occasional light gusts of wind.

We had a great group of members show up to feast on burgers, dogs, and everyone’s individual potluck fare, and to bid on an interesting selection of Silent Auction items as well as for their chance at raffle prizes. A hardy “Thank you” to those who donated items for the event and especially to Robert Lynch Jr. who provided a generous selection of items from his eBay store.

At the Star Party following the picnic, we had a wonderful variety of telescopes, stretched from one end of the parking lot to the other with everything from big and small dobsonian reflectors, to big and small Schmidt-Cassegrains, to a few refractors. The sky was exceptionally dark and clear, with the Milky Way stretched out overhead and stars twinkling brightly. We were able to share a diverse catalog of deep space objects as well as some planetary views with the public. We were also able to give them the rare treat of seeing the Comet Jacques as it was clearly visible through most instruments and relatively easy to find.

NASA/JPL Solar System Ambassador Dale Hawkins, who writes an astronomy column in “The Loop” newspaper out of Tehachapi, made a presentation on how to think about the Milky Way Galaxy in “3 dimensions” and, by pointing out its various branches in the sky, how to understand our (the earth’s) position within it. His talk was enlightening and well attended by the visiting public.

Some members left relatively early, some left later, and some spent the night in their RV’s. The hardest and most dedicated astronomers of the bunch were Bill Schebeck and Robert Lynch who camped out in the

open, on cots next to their telescopes, while waiting for late rising objects to come up. Just before I left, at about 3:00 AM, Bill had exclaimed about all of the meteors he was able to see while reclined on his cot. It made me wish I had done the same.

The club meeting on October 10, 2014 will also be our annual Business Meeting and Executive Board Election. This is when we elect our officers and vote on proposed changes to the club's constitution and by-laws (if any). This meeting is traditionally poorly attended and it should not be that way. We need members to come out and vote. We need members to step up and volunteer as Executive Board Officers. We need YOU to take a role in determining the future and direction of YOUR club. If you should decide to serve, you don't have to learn the job "cold turkey" as we have a transition meeting wherein current board members will teach you how to do the job. Some of the board members have served for a very long time with several of them stating that they will not serve another consecutive term. If you would be willing to serve, please let a board member know so we can put you on the slate of candidates. If you would like to nominate someone, please do so and we will determine if they would be willing to serve.



Vice President

Rose Moore

Many thanks to all the members who came out to the picnic and brought various food items, donation items, and helped cook and clean up. We had beautiful clear weather and good seeing. The public certainly enjoyed looking through the telescopes, especially seeing Saturn, M13, and Comet Jacques! For those that purchased items such as buns, drinks, and paper items, please contact a Board member for reimbursement.

Our speaker for September's meeting is Chris Butler with the Topic to be announced. Chris is a wonderful speaker and has been to our club in the past. Also, if you'd like to make a speaker donation, please see Virginia before the meeting or during the break to make your donation. November's speaker will be announced as soon as I have someone confirmed.

October's meeting is our Annual Business Meeting. We need members to attend to give us their ideas and comments on the function of the club. We also need you to come out and vote for the Board for 2015!

Our Christmas Party is scheduled for Saturday, December 6th at 6pm. Further info will be coming as we get into Fall and closer to the date!

Clear Skies,

Rose



Director of Community Development

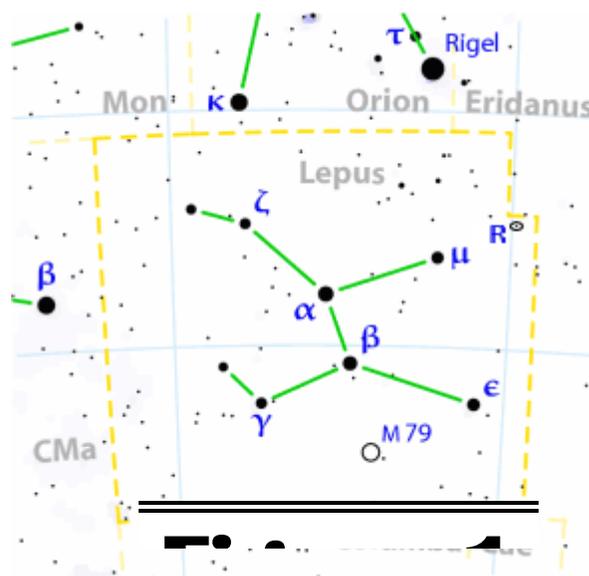
Don Bryden

August 30, 2014

It's nearly autumn and you know what that means, don't you? Time to view the fall constellations. You all know of the Summer Triangle from Vega to Deneb to Altair? The Winter circle is my favorite – Orion, Canis Major & Minor, Gemini, Auriga, Taurus, Eridanus and Lepus.

You can find so many objects by learning to hop from one constellation to the next all around Orion. So what do you think, what with all these constellations with all their objects, is my favorite? The Orion Nebula? The Crab? The Pleiades? Nope, it's a single star. A variable star called "R Leporus". So what, you ask, is so special about a little star in an constellation below Orion? Well, it's also "Hind's Crimson Star". It's a carbon star atmosphere somewhat filters blue light making dark red. It's best when near its minimum brightness (it varies from +5.5 to +11.5 over year and a month), and can really look blood

So many of the objects we look at have no detectable color or maybe just the hint of green mostly just gray. In fact, this makes R Leporus find. When you scan through the scope, most pop into view due to our averted vision but that the sensitivity of our rods which just see shades To activate our cones and see some color the must be fairly bright and you have to be looking This makes finding R Leporus so cool. You really have to star hop to the right location then look at each star until you come across the correct one and, boom!, it pops into view like a drop of blood!



obscure known as whose it appear

about a red.

or red – hard to objects is due to of gray. object right at it.

Well we have several opportunities for you to test your star hopping skills. Beside the dark sky star party that Frank mentioned we have several outreach events this month. First, come out to Lancaster Boulevard on Saturday, September 6th for the second annual "Celebrate America on the Boulevard". We'll most likely be near the library but location on the boulevard will be announced. The following Saturday we'll have another Prime Desert Woodland Moonwalk. Bring your scope or join Jeremy on the walk! And finally, we'll be out at the iLead Lancaster International Charter School (254 E Ave K-4) for a star party for the kids and their parents. See the website or email me (community@avastronomyclub.org) for more info and I hope to see everyone out under the stars!



Secretary

Pam Grove

The Brite Lake Star B Que and Star Party was a success once again! Thanks to Frank & Rose for all the planning. I would also like to thank all of you that brought food items etc. to share and items for the raffle and silent auction. It was greatly appreciated! For those of you that donated items for the silent auction, and need a donation letter to use for deductions please let me know. Under clear skies the Milky Way was awesome, as well as Saturn, the Big Dipper, Scorpius and many Nebulas to name just a few. A Good Time was had by all under the stars!

Pam

Space Place

Spitzer Space Telescope



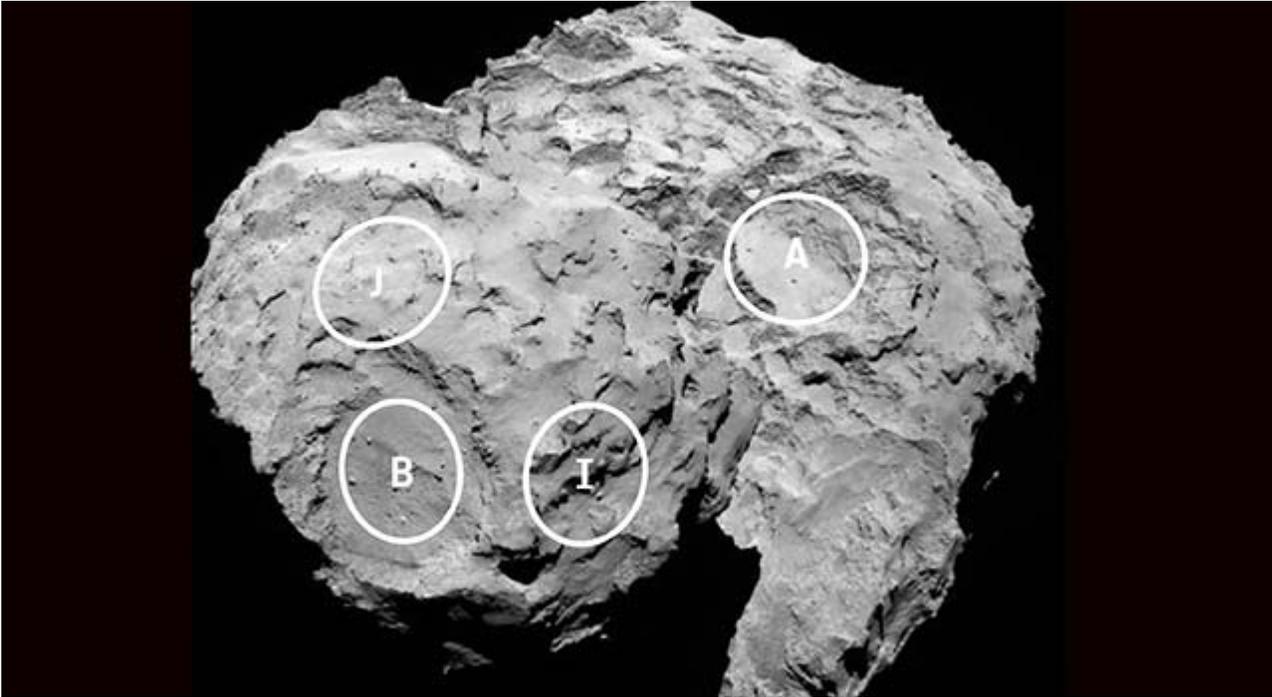
Mission Summary

Considered a cousin of the Hubble Space Telescope, the Spitzer Space Telescope is designed to study the early universe in infrared light. The first telescope to see light from a planet outside our solar system, Spitzer has also made important discoveries about comets, stars, exoplanets and distant galaxies.

In 2009, Spitzer ran out of liquid coolant and began its "warm mission," refocusing its studies on determining how quickly our universe is stretching apart, and characterizing asteroids and the atmospheres of gas-giant planets. Scientific Instrument(s)- Infrared Array Camera (IRAC)- Infrared Spectrograph (IRS) - Multiband Imaging Photometer (MIPS)

News Headlines

Rosetta: Landing Site Search Narrows



August 25, 2014

The European Space Agency's Rosetta mission has chosen five candidate landing sites on comet 67P/Churyumov-Gerasimenko for its Philae lander. Philae's descent to the comet's nucleus, scheduled for this November, will be the first such landing ever attempted. Rosetta is an international mission spearheaded by the European Space Agency with support and instruments provided by NASA.

Choosing the right landing site is a complex process. It must balance the technical needs of the orbiter and lander during all phases of the separation, descent and landing, and during operations on the surface, with the scientific requirements of the 10 instruments on board Philae. A key issue is that uncertainties in navigating the orbiter close to the comet mean that it is possible to specify any given landing zone only in terms of an ellipse - covering about-four-tenths of a square mile (one square kilometer) - within which Philae might land.

"This is the first time landing sites on a comet have been considered," said Stephan Ulamec, Philae Lander Manager at the German Aerospace Center, Cologne, Germany. "The candidate sites that we want to follow up for further analysis are thought to be technically feasible on the basis of a preliminary analysis of flight dynamics and other key issues - for example, they all provide at least six hours of daylight per comet rotation and offer some flat terrain. Of course, every site has the potential for unique scientific discoveries."

For each possible zone, important questions must be asked: Will the lander be able to maintain regular communications with Rosetta? How common are surface hazards such as large boulders, deep crevasses or

steep slopes? Is there sufficient illumination for scientific operations and enough sunlight to recharge the lander's batteries beyond its initial 64-hour lifetime without causing overheating?

The potential landing sites were assigned a letter from an original pre-selection of 10 possible sites, which does not signify any ranking. Three sites (B, I and J) are located on the smaller of the two lobes of the comet and two sites (A and C) are located on the larger lobe.

"The process of selecting a landing site is extremely complex and dynamic; as we get closer to the comet, we will see more and more details, which will influence the final decision on where and when we can land," said Fred Jansen, Rosetta's mission manager from the European Space Agency's Science and Technology Centre in Noordwijk, The Netherlands. "We had to complete our preliminary analysis on candidate sites very quickly after arriving at the comet, and now we have just a few more weeks to determine the primary site. The clock is ticking and we now have to meet the challenge to pick the best possible landing site."

The next step in preparation for landing operations is a comprehensive analysis of each of the candidate sites, to determine possible orbital and operational strategies that could be used for Rosetta to deliver the lander to any of them. At the same time, Rosetta will move to within 31 miles (50 kilometers) of the comet, allowing a more detailed study of the proposed landing sites. By September 14, the five candidate sites will have been assessed and ranked, leading to the selection of a primary landing site. A fully detailed strategy for the landing operations at the selected site will be developed, along with a backup.

The landing of Philae is expected to take place in mid-November when the comet is about 280 million miles (450 million kilometers) from the sun. This will be before activity on the comet reaches levels that might jeopardize the safe and accurate deployment of Philae to the comet's surface, and before surface material is modified by this cometary activity.

Launched in March 2004, Rosetta was reactivated in January 2014 after a record 957 days in hibernation. Composed of an orbiter and lander, Rosetta's objectives since arriving at comet 67P/Churyumov-Gerasimenko earlier this month are to study the celestial object up close in unprecedented detail, prepare for landing a probe on the comet's nucleus in November, and track its changes through 2015, as it sweeps past the sun.

Comets are time capsules containing primitive material left over from the epoch when the sun and its planets formed. Rosetta's lander will obtain the first images taken from a comet's surface and will provide comprehensive analysis of the comet's possible primordial composition by drilling into the surface. Rosetta also will be the first spacecraft to witness at close proximity how a comet changes as it is subjected to the increasing intensity of the sun's radiation. Observations will help scientists learn more about the origin and evolution of our solar system and the role comets may have played in seeding Earth with water, and perhaps even life.

The scientific imaging system, OSIRIS, was built by a consortium led by the Max Planck Institute for Solar System Research (Germany) in collaboration with Center of Studies and Activities for Space, University of Padua (Italy), the Astrophysical Laboratory of Marseille (France), the Institute of Astrophysics of Andalusia, CSIC (Spain), the Scientific Support Office of the European Space Agency (Netherlands), the National Institute for Aerospace Technology (Spain), the Technical University of Madrid (Spain), the Department of Physics and Astronomy of Uppsala University (Sweden) and the Institute of Computer and Network Engineering of the TU Braunschweig (Germany). OSIRIS was financially supported by the

national funding agencies of Germany (DLR), France (CNES), Italy (ASI), Spain, and Sweden and the ESA Technical Directorate.

Rosetta is an ESA mission with contributions from its member states and NASA. Rosetta's Philae lander is provided by a consortium led by the German Aerospace Center, Cologne; Max Planck Institute for Solar System Research, Gottingen; French National Space Agency, Paris; and the Italian Space Agency, Rome. NASA's Jet Propulsion Laboratory in Pasadena, California, a division of the California Institute of Technology, manages the U.S. participation in the Rosetta mission for NASA's Science Mission Directorate in Washington.

For more information on the U.S. instruments aboard Rosetta, visit:

<http://rosetta.jpl.nasa.gov>

More information about Rosetta is available at:

<http://www.esa.int/rosetta>

Astrophoto of The Month



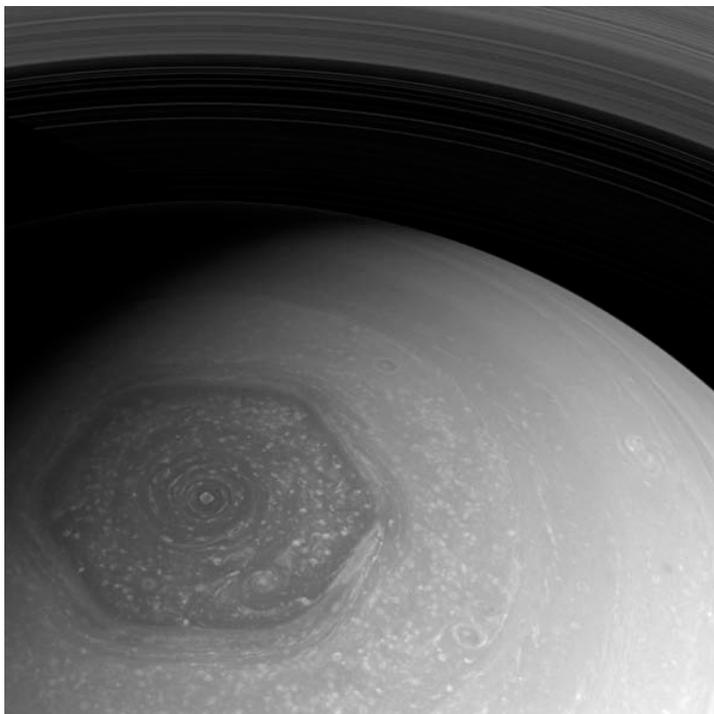
NGC 7000, the North American Nebula Courtesy Don Bryden

Taken at Two Goats Observatory (my driveway). Five hours of Ha, two and two thirds hours each of SII and OIII plus two hours of luminance data. This is a false color image so called because it maps Ha to red, OIII to green and SII to blue even though SII is an even deeper red than Ha. Narrowband (NB) filters enhance contrast of emission objects by accepting only a narrow range of wavelengths around the emission lines of hydrogen (H-a, 656 nm), oxygen (OIII, 501 nm), sulfur (SII, 672nm)

September Sky Data

First Qtr Sep 1 Full Sep 09 Last Qtr Sep 16 New Sep 23

Best time for deep sky observing this month:
September 19 through September 28



Saturn's Polar Jet

Earth's jet stream is a subject of intense interest and concern thanks to its effects on our weather. Saturn's polar jet stream, seen here, causes no such worries for Earthlings, so we can simply marvel at its graceful form.

This atmospheric feature was first observed by Voyager and was dubbed 'the hexagon'.

Sun and Moon Rise and Set

Date	Moonrise	Moonset	Sunrise	Sunset
9/01/2014	12:59	23:40	06:26	19:19
9/05/2014	16:40	02:34	06:29	19:13
9/10/2014	20:16	06:21	06:32	19:06
9/15/2014	01:34	13:26	06:36	18:59
9/20/2014	03:29	16:53	06:39	18:52
9/25/2014	08:01	19:37	06:43	18:45
9/30/2014	13:42	00:12	06:47	18:36

Planet Data

	Sep 1			
	Rise	Transit	Set	Mag
Mercury	08:03	14:07	20:10	-0.6
Venus	05:17	12:00	18:43	-4.3
Mars	12:20	17:26	22:31	1.3
Jupiter	04:06	11:01	17:55	-1.9
Saturn	11:55	17:13	22:32	1.1

	Sep 15			
	Rise	Transit	Set	Mag
Mercury	08:41	14:19	19:57	2.4
Venus	05:45	12:11	18:37	-4.4
Mars	12:10	17:09	22:07	1.3
Jupiter	03:25	10:17	17:09	-1.9
Saturn	11:05	16:22	21:40	1.0

	Sep 30			
	Rise	Transit	Set	Mag
Mercury	08:48	14:07	19:25	0.6
Venus	06:16	12:21	18:27	-4.5
Mars	12:01	16:54	21:46	1.3
Jupiter	02:40	09:29	16:19	-1.9
Saturn	10:12	15:29	20:45	0.9

Planet, Sun, and Moon data calculated for local time at Lancaster, CA

A.V.A.C. Information

Membership in the Antelope Valley Astronomy Club is open to any individual or family.

The Club has three categories of membership.

- Family membership at \$30.00 per year.
- Individual membership at \$25.00 per year.
- Junior membership at \$15.00 per year.

Membership entitles you to...

- Desert Sky Observer—monthly newsletter.
- The Reflector – the publication of the Astronomical League.
- The A.V.A.C. Membership Manual.
- To borrow club equipment, books, videos and other items.

AVAC

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Visit the Antelope Valley Astronomy Club website at www.avastronomyclub.org/

The Antelope Valley Astronomy Club, Inc. is a 501(c)(3) Non-Profit Corporation.

The A.V.A.C. is a Sustaining Member of The Astronomical League and the International Dark-Sky Association.

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