

Sonoma Skies

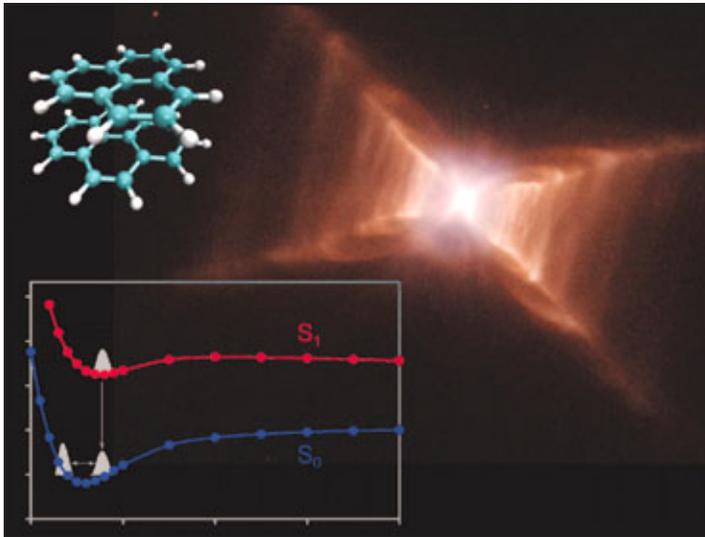
Newsletter of the Sonoma County Astronomical Society
A nonprofit scientific and educational organization

www.sonomaskies.org



May 2007

Volume XXX No. 5



NASA Finds Evidence for New Molecular Structure in Space

MOFFETT FIELD: NASA scientists have discovered evidence that a mysterious red glow, seen throughout the Milky Way and other galaxies but never on Earth, radiates from extremely fine dust clusters that cause the glow by combining molecular forces that oppose each other.

Researchers theorize that the red glow, called the Extended Red Emission (ERE), is due to a very unusual form of charged molecular clusters. Measured in billionths of a meter (billionths of a yard), these tiny clusters are made of carbon-rich molecules called polycyclic aromatic hydrocarbons (PAHs) that are chicken-wire shaped. Astronomers have been unable to explain the red glow for more than 30 years, even though PAHs were implicated. The highly luminescent source material requires very harsh ultraviolet radiation, a radiation field so strong that most known polyatomic interstellar molecules would be destroyed. NASA Ames Research Center has been a leader in the study of PAHs under the direction of Ames' Astrochemistry Laboratory led by Dr. Louis Allamandola.

"We have been studying polycyclic aromatic hydrocarbon molecules (PAHs) in the laboratory at NASA Ames Research Center for a

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Globular Clusters

SCAS May 9 Meeting, Proctor Terrace School

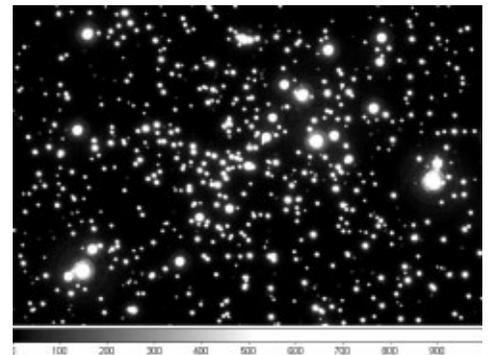
Many of you have met Dr. Adrienne Cool and her friends, and students up at the Robert Ferguson Observatory. On May 9 she will be at the SCAS meeting to give us an overview of globular clusters: what they are, and some of what can be learned from studying them. Then, she will focus on globular cluster dynamics in particular, and the role that binary stars play in cluster dynamical evolution.

Finally, she will present some recent results of searches for binary stars and related objects in globular clusters using the Advanced Camera for Surveys on Hubble Space Telescope.

Dr. Cool is a native of New York City, and received her undergraduate degree in physics at Yale University. She spent a few years after college working on medical imaging techniques, and then went to Columbia University, where she earned a Master's degree in electrical engineering.

During that time she happened on some popular astronomy books and decided that astronomy was for her. Like many of us, she started with a pair of binoculars, and learned the constellations from her rooftop in Brooklyn. Unlike most of us, she then went off to earn a Ph.D in astronomy from Harvard University. In 1993 she came to the San Francisco Bay Area for a post-doctorate at UC Berkeley, and has recently become pretty much adjusted to having the ocean on the wrong side of the sunrise. She is now a professor at SFSU, where she and her students have been studying ordinary and extraordinary stars in globular clusters for the past 10 years. As mentioned above, she brings her students and friends to the RFO several times a year for some "hands-on" observing.

Join us for this very special evening with Dr. Cool. As always, the public is welcome.



Young Astronomers See page 6

Sonoma County Astronomical Society (SCAS)

Membership Information

Meetings: 7:30 PM on the second Wednesday of each month, in the Multipurpose Room of Proctor Terrace Elementary School, 1711 Bryden Lane at Fourth Street, Santa Rosa, unless otherwise announced in this publication. The public is invited.

Dues: \$25, renewable June 1 of each year. New members joining between December 1 and May 31 pay partial-year dues of \$12.50.

Star Parties: See the Events section for dates and times.

Rental Telescope: Members are eligible to borrow the club's 80mm refractor with tripod. Contact any Board member listed below.

Egroup URL: Connect with other members about going observing, observing reports and chat about astronomy and news items from AANC and *Sky & Telescope*. Hosted by Robert Leyland at r.leyland@verizon.net. Any SCAS member is welcome to join. Visit <http://groups.yahoo.com/group/scas> and click the "Join" button, or send an email to scas-subscribe@yahoogroups.com

Discount Subscriptions: For *Sky & Telescope*, new subscribers may send a check for \$32.95 payable to "SCAS", with your complete mailing address, directly to: Larry McCune, 544 Thyme Place, San Rafael, CA 94903. For renewals, send him your check with the completed renewal card and return envelope. Discount subscriptions to *Astronomy* Magazine occur annually in October. Check *Sonoma Skies* for details.

Library: SCAS Librarian Joan Thornton hosts a library of astronomy books that may be checked out by members at SCAS meetings, to be returned at the next meeting. Videotaped lectures on astronomy may be rented for \$3 per month.

Sonoma Skies is the monthly newsletter of the Sonoma County Astronomical Society (SCAS). Subscription is included as part of membership. Articles and member announcements are welcome and are published on a first come, first served basis, space permitting, and may be edited. **The deadline for submissions is 10 days prior to the end of each month.** Mail to: Editor, SCAS, P.O. Box 183, Santa Rosa, CA 95402, or email publications@sonomaskies.org

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Visit us on the web at:
www.sonomaskies.org

SCAS VP Position Filled!

It is with great pleasure that we can announce that we officially have a new Vice President! None other than that steadfast champion of SCAS, Len Nelson, agreed to accept the nomination at our last board meeting. Then at our last meeting we held an official election when the club unanimously accepted Len by show of hands.

He has always given so much of himself for the good of the club, and the public; yet despite wanting to "retire" from some of his duties for a well-deserved respite, felt someone should step up to this job. Let's all show our appreciation for him when you see him, and help support him in his duties by offering suggestions for upcoming programs, etc.

Thank you Len!

Astronomy Picture of the Day April 4

Spewed from a volcano, a complex plume rises over 300 kilometers above the horizon of Jupiter's moon Io in this image from cameras onboard the New Horizons spacecraft. The volcano, Tvashtar, is marked by the bright glow (about 1 o'clock) at the moon's edge, beyond the terminator or night/day shadow line. The shadow of Io cuts across the plume itself.

Also capturing stunning details on the dayside surface, the high resolution image was recorded when the spacecraft was 2.3 million kilometers from Io. Later it was combined with lower resolution color data by astro-imager Sean Walker to produce this sharp portrait of the solar system's most active moon.



Outward bound at almost 23 kilometers per second, the New Horizons spacecraft should cross the orbit of Saturn in June next year, and is ultimately destined to encounter Pluto in 2015. See other astronomy pictures of the day at <http://antwrp.gsfc.nasa.gov/apod/>

Credit: NASA, JHU/APL, SwRI - Additional Processing: Sean Walker

Great Links

Astronomy podcast: <http://www.astronomycast.com/>

Cassini Update with Exploratorium Senior Scientist Dr. Paul Doherty on May 12 at 1PM: www.exploratorium.edu/saturn

Photoshop tools & techniques podcasts: <http://johnreuter.libsyn.com/> Look for more tutorials under "Podcasts" and then "Photoshop" in the iTunes store. Most are free! Whether you use an iPod or not, check out this wonderful resource.

Spectacular astrophotography with processing notes:
<http://www.astrodude.com/photos.html>

May Observing Notes

- 5/2 Full Moon at 3:10 a.m.
- 5/9 Last Quarter Moon at 9:27 p.m.
Venus 1.7° north of M35 in Gemini
- 5/16 New Moon at 12:28 p.m.
- 5/19 Venus ¾° south of the Moon at 7:30 p.m.
- 5/23 First Quarter Moon at 2:02 p.m.
- 5/30 Vesta at opposition (magnitude 5.4)
- 5/31 Full Moon at 6:04 p.m.

Observing Treats

Notes from the RASC Observer's Handbook 2007:

Mercury reaches superior conjunction on May 3 and remains poorly placed until it appears in the evening twilight low in the west-northwest late in the month for observer near latitudes 30°S or 45°N. At the more favored latitude of 30°N it may become visible by about May 18. The May–June evening apparition is moderately favorable for northern observers. Mercury is brighter in late May than in early June when at the same altitude, so May is the better part of this apparition for finding the planet.

Venus is well up in the evening twilight sky for both hemispheres as its elongation from the Sun increases to 45° by May 31. It then sets about 1 h 45 min after the end of astronomical twilight at latitudes of 30°S and 30°N, and one hour after at latitude 45°N. Twilight's other ornament, the three-day-old crescent Moon with earthshine, is paired with Venus on the evening of May 19.

Mars begins May in Aquarius, moves into Pisces on May 9, slips into Cetus on May 24, and finally returns to Pisces on May 29. At morning astronomical twilight on May 15, it stands at 35° altitude in the east-northeast at latitude 30°S and at 13° in the east at 30° N, but at 45° N it does not rise until shortly after astronomical twilight.

Vesta is magnitude 5.4 at opposition on May 30, making it an easy naked-eye target. On May 2 and June 30, it is mag. 6.0, so it is a naked-eye asteroid from a dark location for two months.

Jupiter rises in mid-evening on May 15 at mid-northern latitudes and before 7 p.m. at latitude 30°S. It transits near 1:30 a.m.

Saturn is at quadrature in the second week of May. This is when the planet's shadow on the rings is most prominent, and Saturn looks most three-dimensional. On May 15, when it becomes observable near the end of civil twilight, it is at 67° altitude in the west-southwest as seen from latitude 30°N, and 51° high in the southwest at latitude 45°N. It sets in the west-northwest during the hour after local midnight. Mid-southern observers see it transit at 44° altitude near 6 p.m. and set in the west-northwest in late evening.

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by
Herb
Larsen



*Hey, Mom, replay the Tivo.
I want to see that Meteor
again!*

SOCIAL AMENITIES

Thanks to Len Nelson for providing coffee and refreshments at the April meeting.

You can sign up to provide refreshments at a meeting, too. It's easy! Just contact any Board member and choose a month.

WELCOME NEW MEMBER!

Welcome aboard to Richard Kropp of Petaluma.

SILENT AUCTION

Bring any astronomy-related items you wish to sell to the April meeting. Another member might be looking for that very thing!

Scope City

New Member Bonus!

- Scope City at 350 Bay Street, San Francisco, is offering a
- **\$25 merchandise discount to new members.**
- Manager Sam Sweiss has supported SCAS and Striking
- Sparks and offers a huge selection of telescopes, accessories
- and more. Obtain a receipt from Walt Bodley, Membership
- Director, showing you have paid the \$25 SCAS membership
- dues. To arrange for your merchandise discount, contact
- Sam at 415/421-8800 or at sanfrancisco@scopecity.com

Events

ROBERT H. FERGUSON OBSERVATORY

Public Viewing: Saturdays, May 19

Solar Viewing: 12:00 AM - 4:00 PM

Night Viewing begins 9:00 PM

The Observatory: Three scopes are operating: The 14-inch SCT with CCD camera in the East wing, the 8-inch refractor under the dome and the 24-inch Dobsonian in the West wing. No admission fee for the solar viewing, but donations are appreciated. The Park charges \$6 per vehicle for entry. A \$3 donation is requested from adults 18 and over for admission to the observatory during night viewing sessions. SCAS members may set up telescopes in the observatory parking lot to assist with public viewing. Auto access closes at dusk; late arrivals must carry equipment from the horse stable parking area.

Classes, Labs

Night Sky Summer Series #1, June 5, 7:30 PM

Each class includes a lecture on the constellations of the season, their history and mythology, and how to find objects within them. Learn the bright stars, deep-sky objects, and visiting planets of the spring skies. After each presentation (sky conditions permitting), enjoy a review of the constellations in the actual night sky and learn how to find them for yourself. Viewing through telescopes follows.

Fees: \$75 for the series of six presentations. (Single session fee is \$23). Classes are held at the Observatory. Space is available. (707) 833-6979, <http://www.rfo.org> or nightsky@rfo.org

UC BERKELEY ASTROPHYSICS CLUB

Institute for Particle Astrophysics Journal Club Seminars

May 11: “Double Chooz”—Steven Dazeley (LLNL)

May 18: “Supernovae”—Eddie Baron (University of Oklahoma)

Lectures: 12:00 Noon. Location: Bldg. 50, room 5026, Lawrence Berkeley National Laboratory, 1 Cyclotron Rd., Berkeley. Contact Vitaliy Fadeyev VAFadeyev@lbl.gov. Information: <http://stokstad.lbl.gov/INPA/journalclub.html#aboutjclub>

DAY UNDER THE OAKS MAY 6

Plan to come to the Santa Rosa Junior College’s “Day Under the Oaks” which will be held on Sunday, May 6. There are a multitude of activities that day, but the SCAS supports Ed Megill’s planetarium operations. While Ed will be doing planetarium shows for the public, outside the SCAS will be showing the public what their nearest star looks like, encouraging them to visit the RFO, describing the benefits of joining the SCAS or getting their children to come to the SCAS’s Young Astronomer meetings and things of that nature. If you’d like to help, please contact me, Len Nelson, at lennelsn@comcast.net for details.

SRJC PLANETARIUM

“Our Summer Vacation Sky” Through May 20

There are reasons we may favor observing the summer sky: the nights are warm and skies are clear and it is our traditional time for vacation travel. In this show we’ll learn the reason for the seasons. Then we’ll tour our summer sky and Milky Way with its bright stars, constellations, nebulae, and distant galaxies.



Shows are held at Santa Rosa Campus, Lark Hall, Room 2001, on Fridays and Saturdays at 7:00 PM and 8:30 PM, Sundays at 1:30 PM and 3:00 PM during the Fall and Spring semesters. Admission is \$5 General; \$3 Students and Seniors (60+). Tickets are sold at the door

only, beginning 30 minutes before show time. A parking permit is required and is included in the Planetarium admission price. Pick it up at the planetarium when you pay admission. Please arrive early enough to place your permit on your vehicle’s dashboard before the show starts. Info: 527-4372, <http://www.santarosa.edu/planetarium/>

SONOMA STATE UNIVERSITY SERIES “WHAT PHYSICISTS DO”

Mondays at 4:00 PM

Darwin Hall Room 103 (Coffee at 3:30 PM)

May 7—From Zero to One Billion Electron Volts in 3.3 Centimeters. Dr. Wim Leemans of the Lawrence Berkeley National Laboratory will describe a new laser-driven accelerator which may open the way to very compact high-energy experiments and superbright free-electron lasers.

Contact <http://phys-astro.sonoma.edu/wpd/>

SSU OBSERVATORY PUBLIC VIEWING

May 11, 9-11 PM: Venus, Saturn, The Whale Galaxy (and friends)

Observatory located inside the stadium area at the SE corner of campus (E. Cotati Ave. and Petaluma Hill Rd., two miles east of US 101). Follow signs to campus. Parking Lot F is most convenient. Call 707/664-2267 if it appears weather may force cancellation. <http://www.phys-astro.sonoma.edu/observatory/pvn.html>

AANC CONFERENCE

Mark your calendars for Saturday, Sept. 29 at the College of San Mateo, featuring the brand new Science Center and Planetarium (see photos here: <http://www.collegeofsanmateo.edu/astronomy/newplanetarium.html>).

Updates on the conference will appear in *Sonoma Skies* and at <http://aanc-astronomy.org/Conferences/ConfAANC2007/index.html>

Events

SCAS COMMUNITY OUTREACH

Even though daylight-savings time, coupled with later and later sunsets have put a crimp in school star parties, this does not mean that SCAS Community Activities have gone on hiatus.

Have you ever wondered how much would be bid for you at one of those fund raising auctions? Well, one of the items being offered at the Summerfield-Waldorf School's "Farm to Feast" fund raising auction will be a night with one or more of our SCAS volunteers. Go to <http://www.cmarket.com/catalog/landingPage.do?vhost=farmtofeast> for the on-line auction. My understanding is that this will be one of the "Premium" items, coupled with a catered dinner, to be auctioned off, "Live", at the already sold-out Farm-to-Feast dinner in mid-May. The date for this star party will be arranged between the winning bidder and myself.

On Thursday, July 19, we have been asked to provide a PowerPoint presentation and telescopes for viewing for the elementary students participating in the Sonoma Valley CommonBond Foundation's English camp and Spanish Camp at El Verano Elementary School. More information on this activity as the date gets closer.

—Lynn Anderson, astroman@sonic.net

MT. TAMALPAIS ASTRONOMY

May 19, 8:30PM: "Samples Returned to Earth from Comet 81P/Wild 2 by the Stardust Spacecraft"—Dr. Scott Sandford - NASA-Ames Research Center. An overview of the Stardust mission, and what has been learned from the comet sample it returned to Earth from Comet 81P/Wild 2.

Sponsored by the Mt Tamalpais State Park and coordinated by volunteers of the Mt Tam Interpretive Association. FREE and open to the public. Families and students encouraged to come.

Presentations held in the Mountain Theatre. Viewing afterwards in Rock Springs Parking Area, provided by San Francisco Amateur Astronomers. Dress warmly and car pool if possible. Bring a flashlight! Info: 415/455-5370; <http://www.mttam.net/>

LICK OBSERVATORY SUMMER PROGRAMS 2007

Summer events at Lick Observatory are now posted on the Web. All events include looking through the old 36" refracting telescope!

For information about the summer visitor program go to: <http://www.ucolick.org/public/sumvispro.html> There are 200 tickets available for each night by lottery, so order now!

For information on the concert series go to: <http://www.ucolick.org/public/music.html> The concert tickets will start to be sold May 8.

YOSEMITE SIGN-UPS CONTINUE

We had one more member sign on at the April SCAS meeting. Phil Marshall will be joining Larry McCune, John Whitehouse, Dickson Yeager, David Simons, Dan Gunyan, Bill Romo, Terry Dye, and Walt Bodley, along with their friends and families. The current count is 25 total individuals, bringing 12 telescopes for the SCAS at Yosemite weekend, August 3-4, 2007.

There is room for more participants, so don't be shy about signing up. SCAS will cover the cost for any necessary, additional campsites beyond the five sites provided by the Park Service.

John Whitehouse will have the sign-up sheet at the May SCAS meeting, as I will be in Texas, celebrating my granddaughter's first birthday on the meeting day. If you don't make it to the May 9 meeting, you can email me at astroman@sonic.net to get your name on the master list.

Do keep in mind that August 4, is an RFO Public Viewing Night. Hopefully, there will be enough of us who stay in Sonoma County to volunteer at the RFO.

—Lynn Anderson

MORRISON PLANETARIUM DEAN LECTURE SERIES

May 7, 7:30 PM: "The Day the Sun Blew Up"—Dr. Sten Odenwald, NASA Goddard Space Flight Center

In 1859, the biggest solar storm in recorded history rocked the Sun, causing major worldwide disruptions of telegraph service and reports of fires in every major city on Earth. What will happen when such a 'superstorm' comes again? This talk will explore the possible human and technology impacts of the next solar superstorm.

Location: Kanbar Hall, Jewish Community Center, 3200 California Street (at Presidio). Parking in the UCSF Laurel Heights campus parking lot is \$1.25/night. Parking in the JCC garage is \$1.25 per half-hour. Tickets \$4 at the door or by email. Contact: 415/321-8000, <http://www.calacademy.org/planetarium/dean.cfm>

PULITZER PRIZE-WINNING SCIENCE WRITER NATALIE ANGIER

Wednesday, May 23—Reception at 5:30, Program at 6PM at The Commonwealth Club of California, 595 Market Street, San Francisco.

At this special event, Ms. Angier discusses her new book, *The Canon: A Whirligig Tour of the Beautiful Basics of Science*. With characteristic wit and enthusiasm, *The Canon* sweeps readers through physics, chemistry, biology, geology, and astronomy toward a greater understanding of the scientific issues of our time. She has been a *New York Times* science writer since 1990.

For more information and to purchase tickets, please go to www.commonwealthclub.org. Co-Sponsored by the Exploratorium, <http://www.exploratorium.edu/pr/documents/07-5Natalie.html>

Young Astronomers



YOUNG ASTRONOMERS FINAL MEETING OF THE SCHOOL YEAR

The Young Astronomers ended their 2006 – 2007 school season with a field trip to the Santa Rosa Junior College planetarium, where they attended the public showing of “Sixteen Years of Hubble.” This fascinating show covered the history of the Hubble Space Telescope, many of its key discoveries, and featured some of the most beautiful images captured by this remarkable “astronomical workhorse.” Thanks to the kindness of an anonymous donor, YA members and their families were able to attend the Saturday, April 14th showing for half the regular admission price. Many thanks for the generous contribution of our donor!

Although this was the last YA meeting for this season, YA members are encouraged to attend the general SCAS meetings, particularly the annual Star-B-Que. Read your monthly issue of *Sonoma Skies* for more information about these meetings.

The Young Astronomers will resume their monthly meetings in September, once the new school year begins. We’ll send an e-mail announcement in late August to let you know about our first meeting. Meanwhile, keep using those telescopes to observe the night sky this summer. Happy viewing!

EXCEL Classes for Youth

This summer marks the twenty-fifth year of Sonoma State University’s EXCEL program for students in grades 4-9. There are two one-week sessions, June 25-29, and July 23-27. From July 9-20 there is a two-week session. One of the morning (9:00-Noon) classes being held during the two-week session is BACKYARD ASTRONOMY for children in the 6th-9th grades. This class will be taught by our own Lynn Anderson.

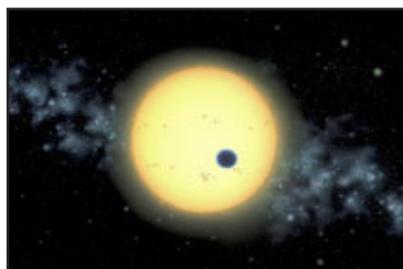
Lynn plans to use lots of hands-on activities gleaned from the ASP’s Project Astro, and Night Sky Network toolkits. Students will be encouraged to go to the Public Viewing Night at the RFO on Saturday, July 14.

If you know a young person (Lynn would encourage an enthusiastic, mature young person going into 5th or 6th grade to also sign up) who would like to learn more about astronomy to sign up, information can be obtained from www.sonoma.edu/exed/excel

Water Found in Atmosphere of Extrasolar Planet

In 1999, astronomers witnessed for the first time an extrasolar planet passing in front of its star. (An extrasolar planet is a planet orbiting a star other than our sun.) The passage of a planet between a star and the Earth is called a “transit.” If such a dimming is detected at regular intervals and lasts a fixed length of time, then it is very probable that a planet is orbiting the star and passing in front of it once every orbital period.

Now, for the first time, water has been identified in the atmosphere of an extrasolar planet. Through a combination of previously published Hubble Space Telescope measurements and new theoretical models, Lowell Observatory astronomer Travis Barman has found strong evidence for water absorption in the atmosphere of transiting planet HD209458b. (Please see the adjacent Artist’s Rendering of Transit of HD209458. *Credit: Lynette Cook.*)



“We now know that water vapor exists in the atmosphere of one extrasolar planet, and there is good reason to believe that other extrasolar planets contain water vapor,” said Barman.

Water vapor (or steam) has been expected to be present in the atmospheres of nearly all of the known extrasolar planets, even those that orbit closer to their parent star than Mercury is to our Sun. For the majority of extrasolar planets, their close proximity to their parent star has made detecting water and other compounds difficult. As seen from Earth, HD209458b passes directly in front of its star every three and half days, and when it does, its atmosphere blocks a different amount of the starlight at different wavelengths. Absorption by water in the atmosphere of a giant planet makes the planet appear larger across a specific part of the infrared spectrum compared to wavelengths in the visible spectrum.

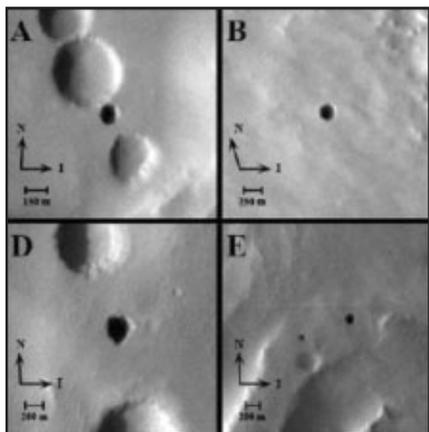
An analysis of visible and infrared Hubble data carried out last year by Harvard student Heather Knutson made possible a direct comparison to new theoretical models developed by Barman at Lowell Observatory. This ultimately led to the identification of water absorption in a planet 150 light years from Earth.

“It is encouraging that theoretical predictions of water in extrasolar planets seem to agree reasonably well with observations,” said Barman. Astronomers are now planning to observe other transiting extrasolar planets to search for water in their atmospheres, with the hope of one day searching for evidence of organic compounds as well.

—From a press release by Lowell Observatory, April 10, 2007

Caves Found on Mars?

Mars is a world full of geological features. Robotic orbiters and rovers have already discovered hills, craters, and dry riverbeds on the Red Planet. Now, some new images show that some parts of the Martian landscape might also be dotted with caves. If confirmed, these caves “could be among the only places on Mars to find evidence of past or present microbial life,” says Glen Cushing of the U.S. Geological Survey in Flagstaff, Ariz.



As you can see in the accompanying photographs, Cushing and his colleagues saw evidence of the caves in pictures taken by a camera on the Mars Odyssey spacecraft, which is currently orbiting Mars. The entrances are dark, circular structures, measuring between 100 meters (330 feet) and 250 meters (820

feet) across. All seven openings sit on the sides of a volcano called Arsia Mons. Scientists can't tell how deep the caves are. The data do show, though, that temperatures within these cave-like structures are constant and different from temperatures of the surrounding land. That suggests that they are indeed cave openings.

Cushing's team believes caves would be an excellent place to search for life on Mars. Such covered spaces would protect living organisms from the sun's ultraviolet rays and from the constant bombardment by micrometeorites, which shower down on Mars like a continual rain. Also, the caves' more constant temperatures could protect organisms from the wide temperature extremes on the Martian surface. Cushing's team is now searching the rest of the Red Planet for more evidence of caves. Ultimately, they hope to find caves containing liquid water, which would be even better candidates for harboring life.

—Adapted from an article by Emily Sohn in “Science News”

YA INFORMATION

Meetings: 7:30 PM the second Friday of each month of the school year, at Apple Blossom School, 700 Water Trough Road, Sebastopol, in the Multipurpose Hall. Open to all Sonoma County students. **Telescope viewing** is held in the upper parking lot after the meeting. **Directions:** From Hwy. 116 in Sebastopol, go west onto Bodega Ave. Continue almost two miles to Water Trough Rd. Turn left and go about 1/3 mile to the school, on your right.

YA ELECTED OFFICERS

PRESIDENT: Melissa Downey 632-5661

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RECORDER: Open

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“Extended Red Emission” (from Page 1)

long time, and although I had results that strongly supported the idea that PAHs had something to do with the ERE, the experimental results made it clear that if PAHs were involved, they were present in some as-yet unknown exotic form,” said Murthy Gudipati of the University of Maryland and NASA Ames, who recently joined NASA's Jet Propulsion Laboratory after many years of close collaboration with Allamandola.

“These types of highly reactive species are simply not readily accessible for laboratory study, but need very special conditions,” added Gudipati. Through a combined effort of laboratory and theoretical chemistry calculations, the current advance in knowledge was made.

Using advanced computational methods, scientists found that the red glow is indeed carried by unusual clusters of polycyclic aromatic hydrocarbon molecules. Highly developed tests confirm the presence of opposing properties within each cluster; they are charged and highly reactive, yet simultaneously, they have a stable, closed-shell electron configuration as does any stable molecule on Earth.

Recent advances in theoretical techniques made it possible to tackle this problem computationally. “Significant difficulties involved in the modeling of charge transfer within large molecular systems required an entirely new approach,” said Dr. Timothy Lee, astrochemist and chief of the Space Science and Astrobiology Division at NASA Ames.

“Once we convinced ourselves that our new approach could handle these strange particles, I was able to simulate the detailed emission process on molecular systems much larger than any that had been done before,” said Young Min Rhee, postdoctoral fellow at the University of California, Berkeley, and the lead author of the paper published last month in the Proceedings of the National Academy of Sciences. “Our simulation shows that this type of charged PAH cluster can account for the ERE while satisfying the physical requirements necessary to survive the harsh interstellar conditions” continued Rhee.

According to scientists, this research has important implications in other areas as well, including combustion processes and exotic nano-materials. For instance, the formation of soot particles produced by diesel and jet engine combustion is not well understood. Self-forming PAH clusters may be the key step to understanding this process. Evidence suggests there is closed-shell charged PAH ions in flames, and the highly robust yet unusual closed-shell PAH clusters described here may be the soot nucleation sites in flames, a result that has been long anticipated.

For more information, please visit:

<http://spacescience.arc.nasa.gov/redglow/>

SHINGLETOWN STAR PARTY 2007

The sixth annual Shingletown Star Party will be held at the Shingletown airport, about 30 miles east of Redding during the week of July 9–16. Registration is \$40 for members of astronomy clubs through June 30. See <http://www.shingletownstarparty.net> for all the details.

Sonoma County Astronomical Society Membership Application/Renewal

The \$25.00 Annual Membership fee for 2007-2008 is due June 1.

Please complete this form and give it to Walt Bodley with your check, payable to "SCAS," at the next meeting, or mail them to: **SCAS, P.O. Box 183, Santa Rosa, CA 95402**

New **Renewal** (If renewing, provide name only, plus any information that has changed).

Name: _____

Address: _____

City/State/Zip: _____

Telephone: _____ Email: _____

Check here if you are willing to receive the newsletter via **email only**. Save a tree, keep your dues low!

Your renewal dues include membership in the Astronomical League, our monthly newsletter *Sonoma Skies*, discounted subscriptions for *Sky and Telescope* and *Astronomy* magazines, great guest speakers at our monthly meetings, and opportunities to meet new and interesting people who share your interest in many aspects of astronomy and science.

**Sonoma County
Astronomical Society**

P.O. Box 183
Santa Rosa, CA 95402



Sonoma Skies

May 2007

MAY 9

**Dr. Adrienne Cool
Globular Clusters**