NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

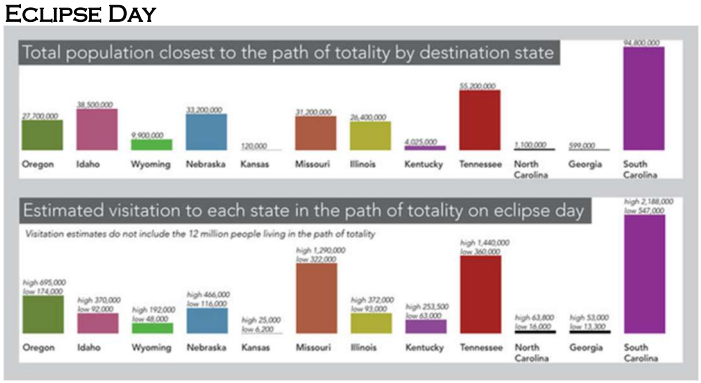
AUGUST 2017

PRESIDENT'S NOTES

I'm tempted to repeat the articles I wrote in Augusts past. For the most part the same constellations and planets are up and unfortunately, due to the weather, there is about the same low probability of seeing them. However, things do change. Not necessarily our precipitation mind you, but sometimes our perceptions. Moreover, the differing rhythms of objects within our solar system reposition in remarkable ways.

Two years ago a little space probe, New Horizon had just flown, no, blown past Pluto at 31,317.11 mph while at the same time swiveling and shooting hundreds of images. Launched on January 19, 2006, in space for almost a decade the spacecraft passed the Pluto system on July 14, 2015. A short time later the as the images began streaming in, our vision and perception of Pluto forever changed. The returning images of the dwarf planet changed from the dim dot in space we had known to a wondrous alien world with its own complex satellite system. Do I still try to find Pluto while I'm looking in its region of the night sky? No, not so much anymore. Will I try to image Pluto and its now known moons in the future? Good question, I don't know.

POPULATION ACCESS AND ESTIMATED VISITATION ON ECLIPSE DAY



Source: https://www.greatamericaneclipse.com/statistics/

Last year I wrote a little about a total solar eclipse zooming across the US on August 21, 2017, on a path that brings it to an estimated 12 million people who live within the path of totality. The number of people within just one-day's drive of the totality zone is around 200 million. Wow! I'm still getting my head around those numbers. Others are as well; the folks at Great American Eclipse.com have done some estimating based on population centers, drive time, and come up with estimates for the number of people traveling to the centerline state by state. The estimates are crude and wide ranging still; it looks like a lot of people are going to try to see this totality and you can bet the eclipse will change a lot of peoples' perception.

Clear skies, everybody!

WELCOME OUR NEW MEMBERS

Tina Allen of Aurora Colorado joined the club in July. Tina is also a member of the Denver Astronomical Society and plans to be in Casper WY for the eclipse.

AT THE AUGUST MEETING

August 11 in the Student Union *"Prospects for unseen planets in the distant Solar System"*

An unknown, unseen "planetary mass object" may lurk in the outer reaches of our solar system, according to new research on the orbits of minor planets. This object would be different from -- and much closer than -- the so-called Planet Nine, a planet whose existence yet awaits confirmation.

Renu Malhotra is Louise Foucar Marshall Science Research Professor and Regents' Professor of Planetary Sciences at The University of Arizona in Tucson, where she directed the Theoretical Astrophysics Program during 2011-2016. She was born in New Delhi and grew up in Hyderabad, India. She earned her M.S. in Physics from the Indian Institute of Technology in Delhi in 1983, and her Ph.D. in Physics from Cornell University in 1988. She did post-doctoral research at Cornell and at Caltech, and worked as a staff scientist at the

Lunar and Planetary Institute in Houston. Her work in planetary dynamics has spanned a wide variety of topics, including extra-solar planets and debris disks around nearby stars, the formation and evolution of the Kuiper belt and the asteroid belt, the orbital resonances amongst the moons of the giant planets, and the meteoritic bombardment history of the planets. She has revolutionized our understanding of the history of the solar system by using the orbital resonance between Pluto and Neptune to infer large-scale orbital migration of the giant planets and to predict the existence of the "Plutinos" and other small planets in resonance with Neptune. She is an elected member of the National Academy of Sciences and of the American Academy of Arts and Sciences, and has been the recipient of honors and awards from the American Astronomical Society, the International Astronomical Union, The University of Arizona, and the IIT-Delhi.

We will be treating Renu to dinner at Olive Garden before the meeting. Please RSVP to Ted Forte (tedforte511 at gmail dot com) if you would like to join us for dinner.

Board of Directors: Nominations and Vacant Seats

Vice President Chris Ubing has departed the area leaving a vacancy in that position. Rick Burke resigned as club secretary and left the board. At the HAC BOD meeting of July 22, Bert Kelher was appointed to the Secretary position and Howard Day was appointed to fill Bert's vacated Member at Large seat. The VP position is still vacant and a suitable volunteer is needed to fill the seat until November. When a vacancy occurs, the remaining board members are authorized to appoint a replacement to serve the remainder of the one-year term.

Nominations are invited for candidates for the November election of HAC officers and board Member at Large seats. HAC is managed by a board of directors consisting of four elected officers and four elected Members at Large with the most recent past president also serving. Members interested in serving on the board should declare their intentions to Bert Kelher to be placed on the November ballot.

Board terms are for one year. HAC President David Roemer, HAC Secretary Bert Kelher, and HAC Treasurer Ted Forte are candidates for re-election. The current batch of Members at Large, Gary Grue, Ken Duncan, Ken Kirchner and Howard Day have also indicated a willingness to continue to serve and are candidates for their currently held seats. The Vice President seat is vacant and no candidate has been identified.

When board seats are uncontested, they are elected by affirmation at the November meeting. Seats having more than one nominee will be decided by majority vote, a majority being 1 more than half the votes cast. Absentee ballots are permitted and will be counted if received before votes are cast at the November meeting. The term of office is from 1 December to 1 December. Sitting board members serve until relieved.

The club constitution and by-laws are available on the website www.hacastronomy.org in the Club Info pull down menu. Please review these documents for a description of the board's duties and requirements.

Kartchner Caverns State Park's Dark Sky Park Designation

Almost there. Dr. John Barrentine, IDA's program manager reported to Bob Gent that at its regularly-scheduled meeting on July 27, the IDA Dark Sky Places Committee gave its unconditional endorsement to Kartchner's nomination to become an IDA International Dark Sky Park. The hardest part of the formal review process is now complete. It next goes to the IDA Board of Directors, which essentially always approves nominations that receive the Committee's recommendation. Dr. Barrentine sent the endorsed nomination to the Board on Friday, July 28. A ten-day waiting period will expire on 7 August at which time we can expect a result to be announced. Assuming, a good result, HAC will participate in a special celebratory event at Kartchner in early September.

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Space Place Article July 2017

Twenty Years Ago on Mars...

By Linda Hermans-Killiam

On July 4, 1997, NASA's Mars Pathfinder landed on the surface of Mars. It landed in an ancient flood plain that is now dry and covered with rocks. Pathfinder's mission was to study the Martian climate, atmosphere and geology. At the same time, the mission was also testing lots of new technologies.

For example, the Pathfinder mission tried a brand-new way of landing on Mars. After speeding into the Martian atmosphere, Pathfinder used a parachute to slow down and drift toward the surface of the Red Planet. Before landing, Pathfinder inflated huge airbags around itself. The spacecraft released its parachute and dropped to the ground, bouncing on its airbags about 15 times. After Pathfinder came to a stop, the airbags deflated.

Before Pathfinder, spacecraft had to use lots of fuel to slow down for a safe landing on another planet. Pathfinder's airbags allowed engineers to use and store less fuel for the landing. This made the mission less expensive. After seeing the successful Pathfinder landing, future missions used this airbag technique, too!

Pathfinder had two parts: a lander that stayed in one place, and a wheeled rover that could move around. The Pathfinder lander had special instruments to study Martian weather. These instruments measured air temperature,

pressure and winds. The measurements helped us better understand the climate of Mars.

The lander also had a camera for taking images of the Martian landscape. The lander sent back more than 16,000 pictures of Mars. Its last signal was sent to Earth on Sept. 27, 1997. The Pathfinder lander was renamed the Carl Sagan Memorial Station. Carl Sagan was a well-known astronomer and science educator.

Pathfinder also carried the very first rover to Mars. This remotely-controlled rover was about the size of a microwave oven and was called Sojourner. It was named to honor Sojourner Truth, who fought for African-American and women's rights. Two days after Pathfinder landed, Sojourner rolled onto the surface of Mars. Sojourner gathered data on Martian rocks and soil. The rover also carried cameras. In the three months that Sojourner operated on Mars, the rover took more than 550 photos!

Pathfinder helped us learn how to better design missions to Mars. It gave us valuable new information on the Martian climate and surface. Together, these things helped lay the groundwork for future missions to Mars.

Learn more about the Sojourner rover at the NASA Space Place: https://spaceplace.nasa.gov/mars-sojourner

Caption: The Mars Pathfinder lander took this photo of its small rover, called Sojourner. Here, Sojourner is investigating a rock on Mars. Image credit: NASA/JPL-Caltech

Want Ads

For sale: Meade EXT60AT never used before, includes tri-pod.

Asking $200.00 B/O
Contact Keith Mullen at 266-4230

For sale: Meade 10" LX200 classic telescope

In very good condition, with tripod, 120v AC and 12v DC power converters with 25' power cords, dew shield, 8x50 finder scope, electric focuser, piggy back bracket, and soft sided carrying case.Also includes a set of Meade CCD color filters, Meade CCD 3.3 focal reducer and CCD variable T-adapter. Plus some other equipment. Asking $ 1,800.

Contact Bob Stroxtile at strox@ssvecnet.com or call 520-249-0875

Pictures from HAC Members

IC 4996, Crescent nebula By Max Mirot

The Soap Bubble By Max Mirot

For Sale: Pier Tech electric telescoping pier with Lati-wedge made for the latitude of Sierra Vista

All the hardware, bolts, nuts, washers and plates are with the pier. Pier Tech can make new legs for it to make it correct for anywhere in the world. The pier and wedge have never been used and the only time the pier was out of the box was to take the photos. New today, the pier and wedge are $3,400. Asking $2,800.

Contact Bob Stroxtile at strox@ssvecnet.com or call 520-249-0875.

FOR SALE: Meade Starfinder 8" Reflector Telescope

Will Sell at a very reasonable price. Included are a Telrad Finder, Filters, and additional Lenses.

Contact Mr. Jim Moses at (520) 803-0913 or by email jjmoses2@gmail.com

For Sale: Planewave CDK14 corrected Dall-Kirkham telescope.

Includes the OTA, new November 2014, optional truss rod shroud and optional upper dovetail and the accessories that were included with the telescope (primary to secondary spacing tool). There is NO FOCUSER (they do not come with one, you need to add one) but the adapter for an Optec TCFS3i (which is the focuser I used) is included. I also have the factory wooden shipping crate. The telescope has been in use every clear night in the observatory in Sonoita. This is an outstanding instrument and a great imaging scope.

FOR SALE: Celestron Celestar 8 inch S/C Deluxe - $1200.

Will also sell pieces individually

Contact Rhonda and Terry Taylor at (520) 366-2378 or by email at twrl2@yahoo.com. Or See Craigslist at http://sierravista.craigslist.org/bar/4523742100.html

FOR SALE: Older Optical Guidance Systems 12.5" f/9 Ritchey-Chretian telescope.

Very good Paul Jones ceramic optics, Robofocus secondary focuser, will include Takahashi collimating telescope. Some of the images through the scope are at Mshadephotography.com.

Contact Mike J. Shade at mshade@q.com

FOR SALE: 8" Celestron Nex Star

Good condition with all original accessories.

Contact Mae Childs at maechilds2014@aol.com

Club Officers and Contacts

President: David Roemer
Vice President: Chris Ubing
Secretary: Rick Burke
Treasurer: Ted Forte
Past President: Bob Gent

Board Members-at-Large

Gary Grue | Ken Kirchner | Bert Kelher | Ken Duncan

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Farpoint Astronomy	http://www.farpointastro.com/
Starizona	http://starizona.com/

HAC Aug/Sept Calendar of Events

SU	MO	TU	WE	TH	FR	SA
30 11:23am Delta Aquariid Meteors	**31** Delta Aquariid Meteors	**1 Aug**	**2**	**3** Saturn 3° S. of Moon	**4**	**5**
6	**7** 2:11pm	**8**	**9**	**10**	**11** HAC Meeting Student Union Perseid Meteors	**12** Perseid Meteors
13 Perseid Meteors	**14** 9:15 pm Perseid Meteors	**15**	**16** Aldebaran .4° S, of moon	**17**	**18**	**19**
20	**21** 2:30pm **Total solar eclipse**	**22**	**23**	**24**	**25** Jupiter 3° S. of Moon Saturn Stationary	**26**
27	**28**	**29** 4:13am	**30** Saturn 4° S. of Moon	**31**	**1 Sep**	**2**
3	**4** 	**5** Neptune at Opposition	**6** 3:03am	**7** Patterson Public Night 7pm	**8** HAC Meeting Student Union	**9**
10	**11**	**12**	**13** 2:25 am	**14**	**15**	**16** Member Star party
17 Venus .5° N of moon	**18** Mars .1° S of Moon Merciry .03° N of Moon	**19**	**20** 1:30 am	**21**	**22** Jupiter 4° S of Moon	**23**
24	**25**	**26** Cub Scouts at Patterson 6 pm Saturn 3° S of Moon	**27** 10:54 pm	**28**	**29**	**30** ***Dine Under the Stars***
Oct 1	**2**	**3**	**4**	**5**	**6**	

All event times MST. Join Haclist to keep up to date with all of the Huachuca Astronomy Club events
Send an email to: haclist-subscribe@yahoogroups.com