nightwatch
Newsletter of the Pomona Valley Amateur Astronomers

Together let us explore the stars ... *John F. Kennedy*

CLUB EVENTS ON HOLD UNTIL FURTHER NOTICE

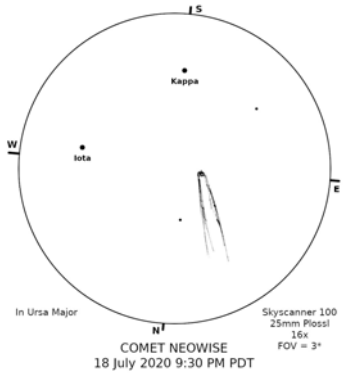
Volume 40 Number 7 ***nightwatch*** **July 2020**

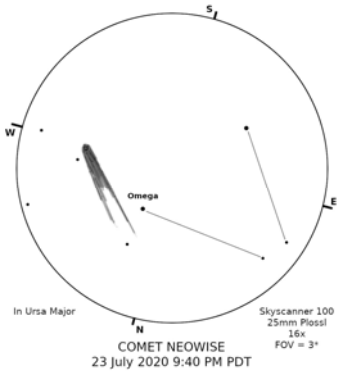
President's Message

Hello, fellow stargazers! I confess, during the pandemic I have struggled to summon the energy to go out and look at the stars. Normally it's not a burden—if anything, it soothes me. But somehow during these months of confinement I lost my way a bit.

Then came Comet NEOWISE, not a harbinger of doom, but coming along in the pandemic's train, reminding us that there is more going on in the universe than the trials of life on our pale blue dot. I got out a few times to observe the comet and sketch it, and it felt great for a lot of reasons. Not least being that NEOWISE has been the best comet I've ever seen. I didn't get into astronomy until the fall of 2007, so I missed Hyakutake, Hale-Bopp, and McNaught. I did get to enjoy Holmes when it suddenly brightened in late 2007, coincidentally just a few weeks after I got my first telescope. Over the years I've seen and sketched 168P/Hergenrother, 2011 L4 PanSTARRS, 2014 Q2 Lovejoy, and 41P/Tuttle-Giacobini-Kresak, but NEOWISE was the first comet for me that looked like a proper comet: a prominent dagger of light extending several degrees across the night sky.

I hope that you got to see the comet while it was at its brightest, and if you haven't, go check it out. It should be an easy catch in binoculars or a scope for at least a bit yet, although I'm sure the moon is knocking it down some by now.





After a long hiatus, we have some (socially distanced or virtual!) club events coming up:

Friday, July 31st, 7:30 PM – An in-person but socially-distanced meeting/swap meet/star party at Cahuilla Park in Claremont. The park is located at the SW corner of Scripps and Indian Hill. Plan to meet in the grassy area just to the West of the parking lot, which you access from Scripps Drive. Bring a chair, observing equipment, a snack and beverage if you'd like, and any swap meet items you'd like to clear from your closet or share with/sell to another member. Please bring a mask and plan to maintain a 6' distance from others. If you bring observing equipment and want to share any views, sanitizer or wipes should be used. This is our first such event so please share if you have any suggestions and be patient as we get used to what works with the Club. It will just be great to see each other again and to catch up on comet sightings as well as life in general.

Friday, August 7th, 7:30 PM – Our first Virtual Meeting using the Zoom app! I will send a meeting invite with a link to join the call and instructions on logging in. If you'd like to download the application in advance, use this link:

https://zoom.us/download

and if you prefer to join by phone, that can be done as well—instructions will be in the email

Saturday, August 15th, Culp Valley Campground at Anza-Borrego Desert State Park. We are hoping to have a usual Star Party at this location, access permitting. We'll just use masks, maintain distance, and enjoy the wonderful desert night skies!

Friday, August 28th, 7:30 PM – Another Virtual General Meeting but we hope to have a speaker this time—keep an eye out for more details.

Stay safe, stay sane, and keep looking up!

Matt Wedel

Citizens Alliance Project

I received this e-mail message from Jet Propulsion Laboratory. NASA is soliciting help from the public with a project to understand the process of planet formation around stars. It is currently focusing on how long it takes for planets to form from disks around red dwarfs and brown dwarfs. It involves examination of images taken by NEOWISE of about 150,000 stars. No prior experience is needed and all the work can be done at home sitting at the computer. I thought that this would be a good project for some of the PVAA members who would like to do something to advance astronomy while they are being isolated at home.

Ken Elchert
PVAA Secretary

'Disk Detective' Needs Your Help Finding Disks Where Planets Form

Members of the public can help scientists learn how planets form by sifting through data from NASA's WISE mission, managed by the agency's Jet Propulsion Laboratory.

About Disk Detective

Disk Detective is a NASA-funded citizen science project that is part of the NASA-sponsored Zooniverse citizen science platform.

Check out the revamped Disk Detective project at:
https://diskdetective.org

Learn more about NASA Citizen Science at:
https://science.nasa.gov/citizenscience

About WISE and NEOWISE

NASA's Jet Propulsion Laboratory in Southern California managed and operated WISE for NASA's Science Mission Directorate from 2009 to 2011. Edward Wright at the University of California, Los Angeles was the principal investigator. The mission was selected competitively under NASA's Explorers Program managed by the agency's Goddard Space Flight Center in Greenbelt, Maryland. In late 2013, the spacecraft was reactivated and renamed NEOWISE.

For more information about NEOWISE, visit:
https://www.nasa.gov/neowise
http://neowise.ipac.caltech.edu/

For more information about WISE, visit:
http://www.nasa.gov/wise
https://www.jpl.nasa.gov/wise/

Star Naming Blog Link

I just happened on this tonight. He has a good account of the history of star naming. I haven't gotten into the other stuff he lists.

http://uncle-rods.blogspot.com/2017/01/issue-528-novice-files-ii-naming-of.html

Ludd Trozpek

from Spaceflight Insider:

NASA's ***New Horizons*** spacecraft, now over 4.3 billion miles (6.9 billion km) from Earth, successfully imaged two nearby stars displaced from the locations in the sky where they are seen from Earth in its April stellar ***parallax*** experiment.

Composed of two frames, this animation blinks back and forth from images of Wolf 359 taken from New Horizons and from Earth. Find it at:
https://www.nasa.gov/feature/nasa-s-new-horizons-conducts-the-first-interstellar-parallax-experiment

Gary Thompson

Our usual Spring election cycle is a bit delayed so we're catching up by asking if there are any members who would like nominate themselves or someone else to run for office to fill any of the seats up for election at this time. All those currently in office have agreed to run again.

The 1-year term open positions are President (currently held by Matt Wedel), Vice-President (Joe Hillberg), Secretary (Ken Elchert), Treasurer (Gary Thompson), and 2-year Board positions currently occupied by Jim Bridgewater and Richard Wismer.

It is time for yearly club dues which remain at $30 per year for adults, $40 per year for families, or $12 for youth under 18.

They should be mailed to:

PVAA
Attention: Treasurer
P.O. Box 162
Upland, CA 91785

PVAA Officers and Board

Officers

President ….....	Mathew Wedel	909-767-9851
Vice President ..	Joe Hillberg	909-949-3650
Secretary	Ken Elchert	626-541-8679
Treasurer	Gary Thompson	909-935-5509
VP Facilities	Jeff Felton	909-622-6726

Board

Jim Bridgewater (2018).....	909-599-7123
Richard Wismer(2018)	
Ron Hoekwater (2019).....	909-706-7453
Jay Zacks (2019) …….	

Directors

Membership / Publicity.... Gary Thompson ..	909-935-5509
Outreach ..... Jeff Schroeder	909-758-1840

Free to a Good (PVAA Member) Owner – Observatory Shed

Free for disassembly and removal. 10 ft wide by 8 ft deep Observatory shed with roll off roof, rails, etc. located in Claremont. Overall good condition. Please contact Ludd Trozpek at **ltrozpek@hotmail.com** as soon as possible if you are interested. Ludd would like to hear from you by July 15th and will work with you to arrange a time for you to take the shed apart and remove it.

Please note: Bob Akers included for scale only, not included in free offer

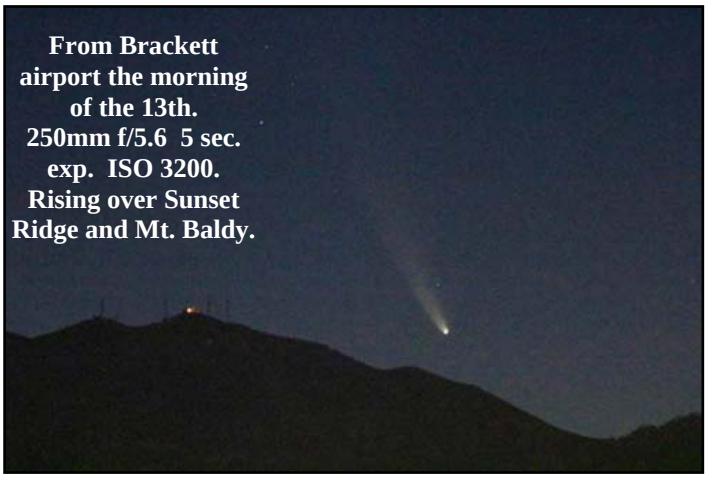
Here are some photos and observations from a group of us having a "Virtual Star Party" who are mostly from Pomona Valley Amateur Astronomers (pvaa.us) in CA or from the Tucson Amateur Astronomy Association (tusconastronomy.org) who connected at the Grand Canyon Star Party during the last 2 years and have been sharing comet observations during the last week.

7/18/20
I managed to commit some astronomy in these shut-in times!

Jeff Schroeder

**Comet over Palmdale and Lancaster.
75mm 15 sec. exp.**

**The naked eye view
from the airport.
75mm f/4 4 sec. exp.**



**From Brackett
airport the morning
of the 13th.
250mm f/5.6 5 sec.
exp. ISO 3200.
Rising over Sunset
Ridge and Mt. Baldy.**

**Comet just clearing a thick
band of clouds over the desert.
400mm f/6.3 10 sec. exp.**

**These are from Ford
observatory in Wrightwood**

**And some fellow observers.
55mm f/4 8 sec. exp.**

Notes from Claremont, CA

July 15 21:30 Robin and I saw it this evening. We spotted it about 2050 right where Mike said it would be. It looked great in 6x42 and 10x50s. Robin was impressed by how long the tail appeared in the 10x50s. It went below our high horizon, in the vicinity of Brown's Flat, at 2107 Very spectacular.

July 16 I initially found it using a pair of Swift 8.5x44s. Right after I found it, I could spot it with the naked eye. But as it got darker, I couldn't see it with the naked eye anymore. I then switched to my 70mm APMs with a pair of 17.5mm Morpheus EPs (27x with a 2.8 degree FOV). SPECTACULAR! The core was very bright and tail extended through the entire FOV. I'll be out there looking at it again tonight.

7/16/20 We had good views of the comet last night and I set up for pictures. 300mm lens, 6 sec f/5.6, ISO 1600, time 2122 local, lightly processed for sharpness and brightness/contrast. Violated the rule of thumb for exposure time (500/fl) by a factor of 3 or 4 and it shows. Will do some more tonight.

7/17/20 Robin and I sat out until the comet set last night. 10 p.m. for us. I've determined our ridge is +9 degrees above the real horizon, so we are giving up around an hour where the comet would be visible elsewhere without the hill.

It got darker than last night and I wanted exposure times around 2 seconds so I bumped the ISO to 6400. There is only the slightest elongation of the stars in this. I think I'd have to stack to get the noise down and I'm not prepared for that. I changed the color balance to "cloudy" from "tungsten" to get some of the navy blue out of the sky. Robin likes the bluer sky better though.

In all, a very enjoyable evening and we are going to do it again tonight.

7/18/20 Last night was probably the best we've had in terms of transparency. I can begin to imagine I see structure in the tail. Also, I found two more settings in my camera to tweak and was able to get the ISO down a bit.

The comet was clearly visible naked eye. We had a small group, nephew and friends, in the back yard and they seemed to enjoy the views.

In the one picture, the bright stars below the comet are kappa Ursa Majoris on the left and iota Ursa Majoris on the right. The other picture, taken after the stars set, shows more of the tail.

It's interesting to me that the comet has set essentially in the same place the past few nights, which means it has little or no motion in declination, almost all in right ascension.

7/19/20 Observation notes Going through last night's photos and thinking about the comet's proper motion I noticed that in the hour or so that I watched and photographed it, the comet moved perceptibly against the star field.

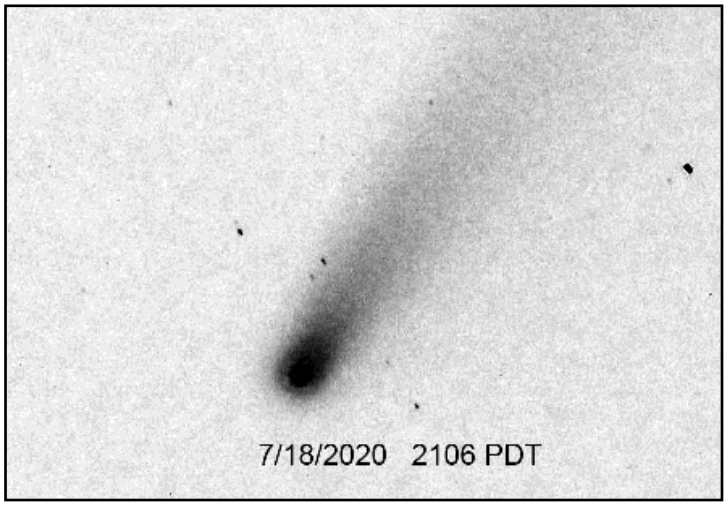
See the first picture taken at 2106 local and compare it to the second one taken at 2157 local.

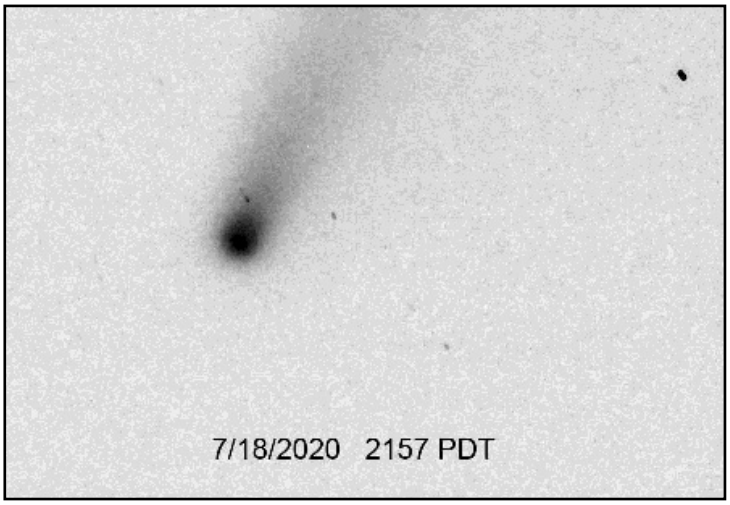
For scale and comparison, the distance between the bright star on the left edge of the photos and the bright star in the right is about 70 arcmin. A crude measurement gave a motion of the comet of about 7.8 arcmin in the 51 minutes between the images. This amounts to about one arcmin every 6.5 minutes in position angle 270. Or, 3.7 arcdeg/day.

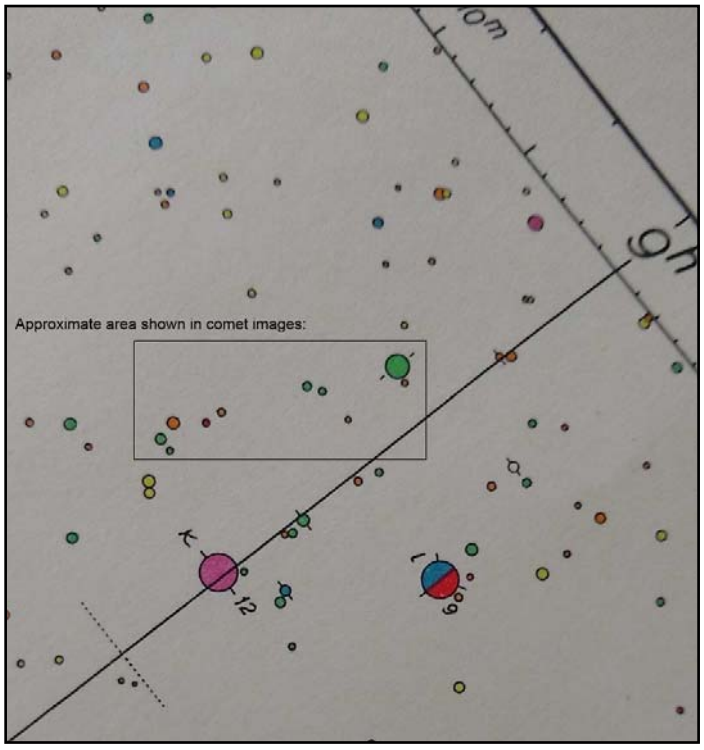
See also the scan from Becvar's Atlas Borealis, Chart V. The aforementioned bright stars are the orange one on the left and the green one on the right inside the drawn box.

So much for Freshman Astrophysics Lab today…

Ludd Trozpek







Photos taken from Tucson area in Arizona

7/14/20 This evening around 830p, looking NW. Tank is 10m dia, 365m distant from camera location (NW corner of my roof).

7/15/20 A nice surprise: with monsoon showers today I'd about counted it out but went out anyway and was rewarded. Comet looked much better from my home tonight than last night, and the clouds added some interest to the show.

Sky to NW was much more transparent, perhaps due to rain taking smoke away, and the comet a little higher and in darker sky helped too.

Naked eye tail extended 2-3 degrees; in my 10x42 binoculars it extended out of the 6 degree true field by another degree or two. From a true dark sky this would be impressive. Even if dimming, this may get better as the geometry improves in coming days.

Ludd, now that you've calibrated the image scale in the photos (same location & 105mm FL tonight as last), how long do you think the photographic tail is?

Also, in the photo I think I see a dust lane on top of the main tail separating it from another thin wisp of luminous tail above that. Can you see this? If so, could this be dust tail 'overlaid' on ion tail, some jetting off the nucleus, or??

It appears from paging thru the exposures like a flip-book that the tail is dynamically evolving in shape with some changing features visible.

Man, it was SO much cooler here this evening compared to last, 75 instead of 95! Really pleasant to be outside with a light breeze.

7/18/20 Here, after an overcast day, the clouds broke up quite a bit after sunset. The sky didn't appear as transparent as 2 nights ago, but I think the comet's increasing altitude dominated, reducing the extinction and putting it against a darker background. It was probably more prominent naked eye last night than any other. Using averted vision, the tail extended maybe 6-8 degrees; in binoculars, maybe a few degrees more. I'll bet Bob's view under the dark Landers sky was terrific!

Ludd made an astute connection between the place where the comet set to its motion being mostly in RA. That didn't occur to me, but thinking about it now, it makes sense. Polaris is to upper right in our photos, and the comet is moving thru the stars to the upper left, at about a 90 degree angle to the line to Polaris, which is RA! I looked back thru the photos I took last night and found an early one and a late one that, when compared, show that motion in relation to two nearby stars.

I am now wondering if the "split" in the tail that I previously mentioned is actually 2 tails. I marked up one photo from last night with my new theory. The straight, thin, blue tail seems to be directly opposite the sun, and the very wide yellow tail smeared sort of along the comet's direction of travel thru the stars. What do you folks think?

7/25/20 A couple photos from last night thru breaks in the monsoon clouds. Atmosphere was a little misty and sky relatively bright with nearly first quarter moon. Wendy and I were able to see it fairly easily naked eye.

Mike Magras

The huge size of the comet and tail combo continues to impress me, even as I think overall brightness in going down a bit night to night. The comet I'm seeing here naked eye is definitely as long as the distance between the two lower Dipper stars Dubhe and Merak (yes, I had to look that up). I agree with Mike's two tail theory and his labeled photo matches up nicely with the slightly better image in this article:

https://www.forbes.com/sites/startswithabang/2020/07/16/why-does-comet-neowise-have-two-tails/#450ea4e62488

Claire Stover

Club Events Calendar

Jul 31 Star party/swap meet/social get together at Cahuilla Park starting at 7:30 pm

Aug 7 Historic first virtual PVAA general meeting starting at 7:30 pm

Aug 15 Star Party -- Culp Valley at Anza Borrego Desert State Park

Aug 19 Virtual Board Meeting 6:15 pm

Aug 28 Virtual General Meeting

Sep 12 Star Party -- Landers GMARS

Sep 16 Virtual Board Meeting

Sep 25 Virtual General Meeting

Oct 10 Star Party -- Cow Canyon Saddle, Mount Baldy

Oct 21 Virtual Board Meeting

Oct 30 Virtual General Meeting

Nov 7 Star Party -- Cottonwood Springs, Joshua Tree National Park

Nov 11 Virtual Board Meeting

Nov 20 Virtual General Meeting

Dec 5 Star Party -- Death Valley National Park

NASA Night Sky Notes July 2020

This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Mars's Latest Visitor: NASA's Perseverance Rover

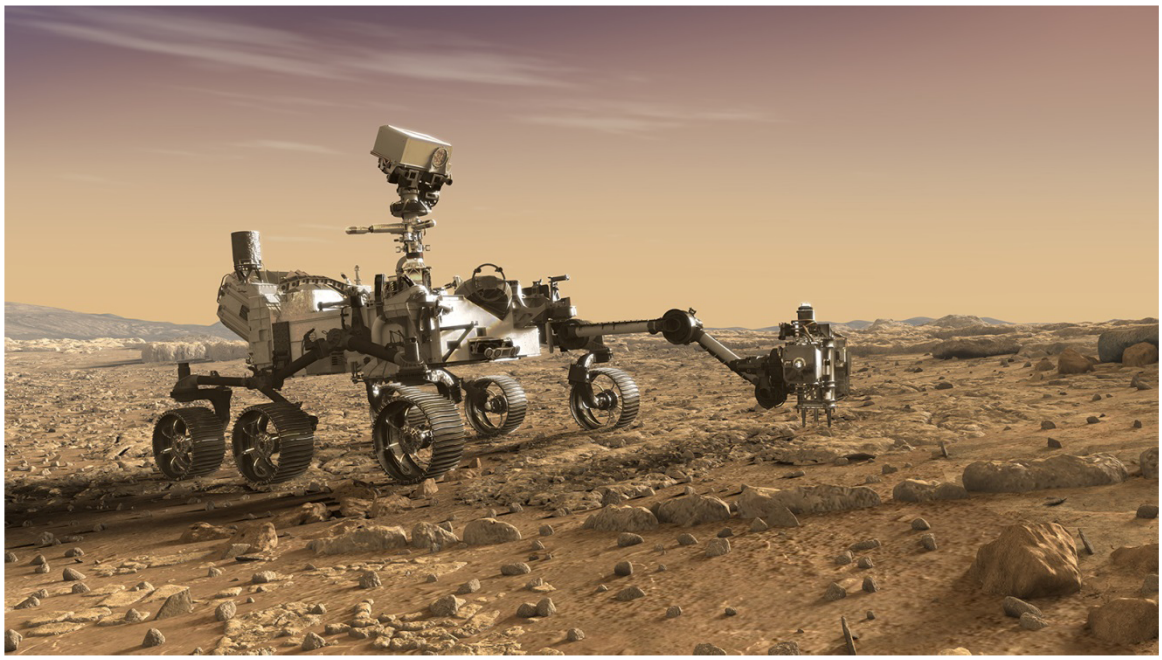
David Prosper

NASA's latest Mars rover, Perseverance, is launching later this month! This amazing robot explorer will scout the surface of Mars for possible signs of ancient life and collect soil samples for return to Earth by future missions. It will even carry the first off-planet helicopter: Integrity. Not coincidentally, Perseverance will be on its way to the red planet just as Mars dramatically increases in brightness and visibility to eager stargazers as our planets race towards their closest approach in October of this year.

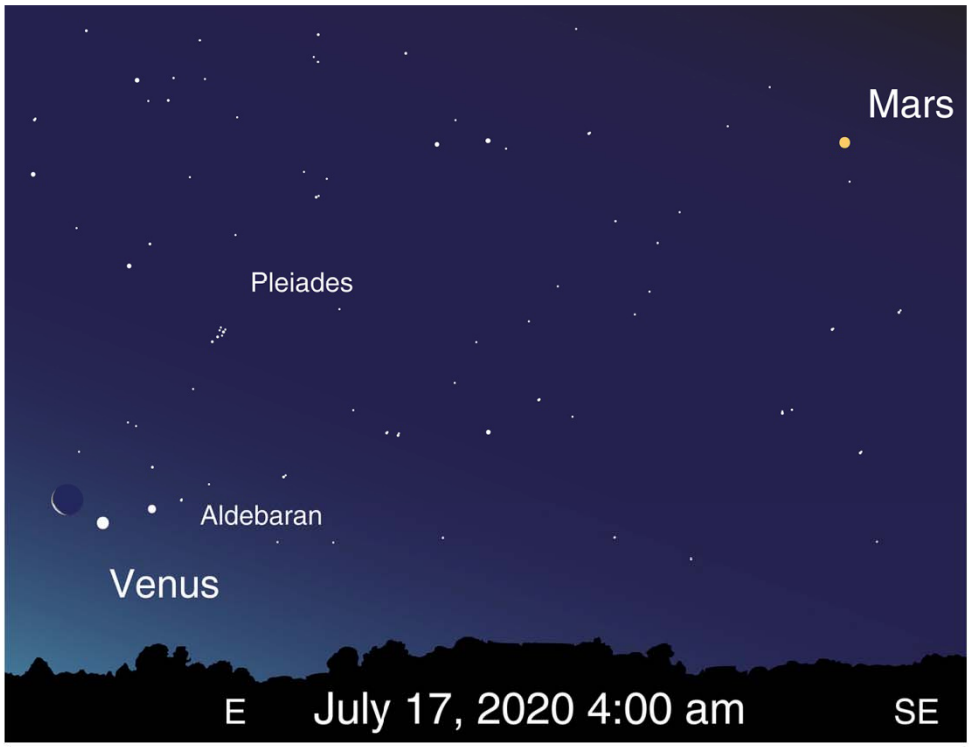
Perseverance's engineers built upon the success of its engineering cousin, Curiosity, and its design features many unique upgrades for a new science mission! In February of 2021, Perseverance will land at the site of an ancient river delta inside of Jezero Crater and ready its suite of seven primary scientific instruments. The rover will search for traces of past life, including possible Martian fossils, with WATSON and SHERLOC, two advanced cameras capable of seeing tiny details. The rover also carries an amazing instrument, SuperCam, to blast rocks and soil outside of the rover's reach with lasers to determine their chemical makeup with its onboard suite of cameras and spectrometers. Perseverance will also take core samples of some of the most promising rocks and soil, storing them for later study with its unique caching system. Future missions will retrieve these samples from the rover and return them for detailed study by scientists on Earth. Perseverance also carries two microphones so we can hear the sounds of Mars and the noises of its instruments at work. It will even launch a small helicopter - Ingenuity - into the Martian atmosphere as a trial for future aerial exploration!

Would you like to contribute to Mars mission science? You can help NASA's rover drivers safely navigate the Martian surface by contributing to the AI4Mars project! Use this tool to label terrain features on photos taken of the Martian surface by NASA missions to help train an artificial intelligence algorithm to better read their surrounding landscape: bit.ly/AI4Mars

The launch of Mars Perseverance is, as of this writing, scheduled for July 20, 2020 at 9:15am EDT. More details, updates, and livestreams of the event are available on NASA's official launch page: bit.ly/Mars2020Launch . Dig deep into the science of the Mars 2020 mission and the Perseverance rover at: mars.nasa.gov/mars2020/ . Find out even more about past, present, and future Mars missions at nasa.gov.



Perseverance inspects a cluster of interesting Martian rocks with its instruments in this artist rendering by NASA JPL/Caltech



Observe Mars yourself over the next few months! Mars can be found in early morning skies throughout July, and by the end of the month will rise before midnight. Mars gradually brightens every night until the close approach of Mars in October. The pre-dawn skies of July 17 present an especially nice view, as the waning crescent Moon will appear near Venus and Aldebaran.