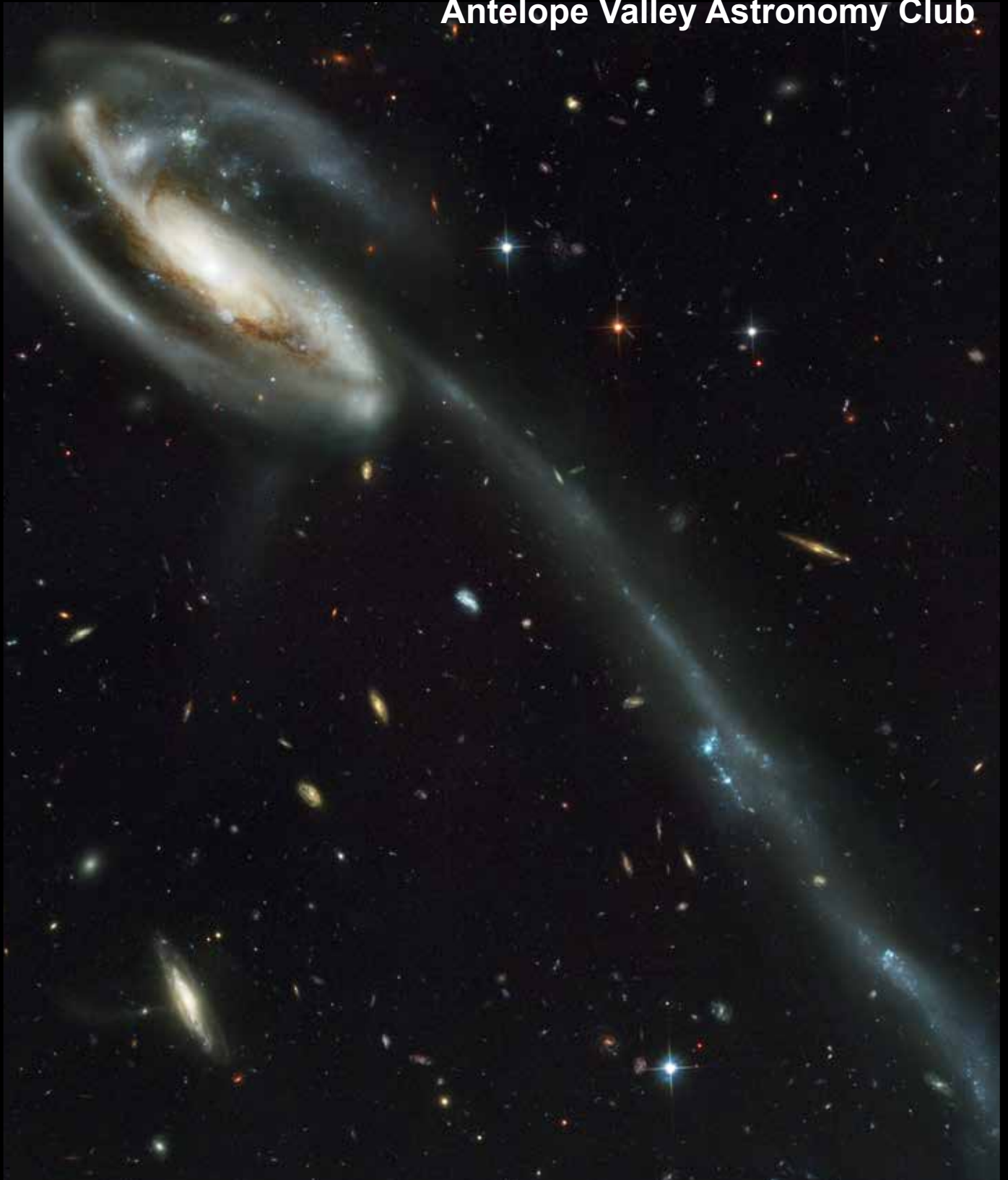


Volume 43.9

September 2023

Desert Sky Observer

Antelope Valley Astronomy Club



Desert Sky Observer

www.avastronomyclub.org

September 2023

Upcoming Events

September 8: Club Meeting
September 9: Moonwalk at PDW @ 7:30 PM
September 16: DSSP @ Chuchupate

Every clear night: Personal Star Party

October 13: Club Business Meeting
October 14: DSSP @ Chuchupate
October 21: Lunar Club 7 PM @ Matt's house
October 27: College of the Canyons- Fall Star party
Maybe? (not official)
October 28: Scarry Science @ 3:30 PM;
Moonwalk at PDW @ 6:30 PM



AVAC Calendar



Board Members

President: Phil Wriedt (661) 917-4874
president@avastronomyclub.org

Vice-President: Navin Arjuna 661-789-7927
vice-president@avastronomyclub.org

Secretary: Rose Moore (661) 972-1953
secretary@avastronomyclub.org

Treasurer: Rod Girard (661) 803-7838
treasurer@avastronomyclub.org

Appointed Positions

Newsletter Editor: Phil Wriedt (661) 917-4874
dso@avastronomyclub.org

Equipment & Library:
John VanEvera 661-754-1819
library@avastronomyclub.org

Club Historian: vacant
history@avastronomyclub.org

Webmaster: Steve Trotta (661) 269-5428
webmaster@avastronomyclub.org

Astronomical League Coordinator:
Phil Wriedt (661) 917-4874
al@avastronomyclub.org



Monthly Meetings

Monthly meetings are held at the **S.A.G.E. Planetarium** in Palmdale, the second Friday of each month except December. 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.*

Membership

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 ...

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

AVAC

PO Box 8545

Lancaster, CA 93539-8545

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



www.avastronomyclub.org

The Antelope Valley Astronomy Club, Inc. is a 26 USC §503(c)(3) California Non-Profit Corporation.

The AVAC is a Sustaining Member of The Astronomical League and the International Dark-Sky Association



President's Message

By Phil Wriedt

Hi There!

We have a Club Meeting on the 8th this month. One of our past VPs Matt Leon will be giving a talk on the Messier Objects. Come enjoy the lecture, Matt is a great speaker.

We have a Moonwalk on the 9th at Prime Desert Woodland. Sunset is at 7:08 pm, so the Moonwalk will start about 8:30 pm, plan to get there by about 6:00 pm to setup in daylight. There were about 128 members of the public, a half dozen members, 3 with telescopes that came last month. This is your chance to impress the public and pass along your knowledge. Come, bring your telescope, binoculars, star chart, and of course enthusiasm. See You There!

On the 16th we have a Dark Sky Star party at Chuchupate, hopefully this month without the hurricane or an earthquake this time.

The Riverside Astronomical Society has invited everyone to Nightfall Star Party in Borrego Springs 11/9 thru 11/12. See more information at nightfallstarparty.com

We have been invited to a Texas Star Party to view the total solar eclipse at the Latham Springs Camp approximately 63 miles SSE of Fort Worth. Totality at this location will be 4 minutes 23.5 seconds. They are offering a event pass for 4/5 thru 4/9/2024. Check out their website Texasstarparty.org for more information.

On October 13th we will have our annual Business Meeting. I know members stay away thinking that they won't be talked into becoming a Club Officer. Every member's most important role is to spread the word about Astronomy. Even more important we need a minimum of 10 voting members at the Business Meeting to vote for a new Board. So, come make your vote count.

Keep Looking Up, Phil

On The Cover

Please note: North is 144.7° left of vertical RA: 16h 6' 11.89" DEC: 55° 25' 51.61" (Draco)

Against a stunning backdrop of thousands of galaxies, this odd-looking galaxy with the long streamer of stars appears to be racing through space, like a runaway pinwheel firework.

This picture of the galaxy UGC 10214 was taken by the Advanced Camera for Surveys (ACS), which was installed aboard the NASA/ESA Hubble Space Telescope in March during Servicing Mission 3B. Dubbed the '**Tadpole**', this spiral galaxy is unlike the textbook images of stately galaxies. Its distorted shape was caused by a small interloper, a very blue, compact, galaxy visible in the upper left corner of the more massive Tadpole. The Tadpole resides about 420 million light-years away in the constellation Draco.

Seen shining through the Tadpole's disc, the tiny intruder is likely a hit and run galaxy that is now leaving the scene of the accident. Strong gravitational forces from the interaction created the long tail of stars and gas stretching out more than 280 000 light-years.

Numerous young blue stars and star clusters, spawned by the galaxy collision, are seen in the spiral arms, as well as in the long 'tidal' tail of stars. Each of these clusters represents the formation of up to about a million stars. Their colour is blue because they contain very massive stars, which are 10 times hotter and 1 million times brighter than our Sun. Once formed, the star clusters become redder with age as the most massive and bluest stars exhaust their fuel and burn out. These clusters will eventually become old globular clusters similar to those found in essentially all halos of galaxies, including our own Milky Way.

Two prominent clumps of young bright blue stars are visible in the tidal tale and separated by a gap. These clumps of stars will likely become dwarf galaxies that orbit in the Tadpole's halo.

From the Secretary

By Rose Moore

Members:

We have a club meeting on Friday September 8th at 7pm. Our speaker will be member Matt Leone, who will be doing a presentation on the Messier Objects. Please come out to enjoy his presentation and support your club!

Also at the next meeting, we will be starting signups for the AVAC Christmas Party. This will be held on Saturday December 9th, from 6pm-9:30pm at Gino's Restaurant in the Lancaster Marketplace. Further info will be available at the meeting, and in an email to come.

On Saturday September 9th at 7:30pm we have a Prime Desert Woodland Moon Walk. We need members with telescopes to help support this event. Weather permitting. There will be no Moon as it will be a waning crescent and will be down by 4:40pm. Sunset is at 7:09pm. Saturn will be up, Mars will set at 8:07pm. Come out with your scope, or come take the walk!

Our dark sky star party is on Saturday September 16th at Chuchupate. Weather permitting. Further info in an email to be sent out prior to the event.

The month of October brings us to our Annual AVAC Business Meeting, on October 13th. Come out and vote for your Board members for 2024! If you would like to run, or know someone who would like to serve, please come out to the meeting and nominate yourself or another member. We need members to participate! This club can not survive without help from its members!

October will also be the College of the Canyons Fall Star Party. As of this writing we do not have a date. As soon as I hear from the coordinator, I'll post it on the calendar and announce it.

Clear skies, Rose

On The Cover ... continued

Behind the galactic carnage and torrent of star birth is another compelling picture: a 'wallpaper pattern' of about 3000 faint galaxies. These galaxies represent twice the number of those found in the legendary Hubble Deep Field, the orbiting observatory's 'deepest' view of the heavens, taken in 1995 by the Wide Field and Planetary Camera 2.

The galaxies in the ACS picture, like those in the Hubble Deep Field, stretch back to nearly the beginning of time. They are a myriad of shapes and represent fossil samples of the Universe's 13-billion-year evolution.

The ACS picture was taken in one-twelfth the time it took to observe the Hubble Deep Field. In blue light, ACS discovered even fainter objects than those in the 'deep field'.

The camera's vision is so sharp that astronomers can identify distant colliding galaxies, the 'building blocks' of galaxies, an exquisite 'Whitman's Sampler' of normal galaxies, and presumably extremely faraway galaxies.

ACS made this observation on 1 and 9 April 2002. The colour image is constructed from three separate images taken in near-infrared, orange, and blue filters.

Credit:

NASA, Holland Ford (JHU), the ACS Science Team and ESA

Looking Beyond the Stars

by Brian Kruse, Astronomy Society of the Pacific, NASA Night Sky Network

Looking up in awe at the night sky, the stars and planets pop out as bright points against a dark background. All of the stars that we see are nearby, within our own Milky Way Galaxy. And while the amount of stars visible from a dark sky location seems immense, the actual number is measurable only in the thousands. But what lies between the stars and why can't we see it? Both the Hubble telescope and the James Webb Space Telescope (Webb) have revealed that what appears as a dark background, even in our backyard telescopes, is populated with as many galaxies as there are stars in the Milky Way.

So, why is the night sky dark and not blazing with the light of all those distant galaxies? Much like looking into a dense forest where every line of sight has a tree, every direction we look in the sky has billions of stars with no vacant spots. Many philosophers and astronomers have considered this paradox. However, it has taken the name of Heinrich Wilhelm Olbers, an early 19th century German astronomer. Basically, Olbers Paradox asks why the night sky is dark if the Universe is infinitely old and static – there should be stars everywhere. The observable phenomenon of a dark sky leads us directly into the debate about the very nature of the Universe – is it eternal and static, or is it dynamic and evolving?

It was not until the 1960s with the discovery of the Cosmic Microwave Background that the debate was finally settled, though various lines of evidence for an evolving universe had built up over the previous half century. The equations of Einstein's General Theory of

Relativity suggested a dynamic universe, not eternal and unchanging as previously thought. Edwin Hubble used the cosmic distance ladder discovered by Henrietta Swan Leavitt to show that distant galaxies are moving away from us – and the greater the distance, the faster they're moving away. Along with other evidence, this led to the recognition of an evolving Universe.

The paradox has since been resolved, now that we understand that the Universe has a finite age and size, with the speed of light having a definite value. Here's what's happening – due to the expansion of the Universe, the light from the oldest, most distant galaxies is shifted towards the longer wavelengths of the electromagnetic spectrum. So the farther an object is from us, the redder it appears. The Webb telescope is designed to detect light from distant objects in infrared light, beyond the visible spectrum. Other telescopes detect light at still longer wavelengths, where it is stretched into the radio and microwave portions of the spectrum. The farther back we look, the more things are shifted out of the visible, past the infrared, and all the way into the microwave wavelengths. If our eyes could see microwaves, we would behold a sky blazing with the light of the hot, young Universe – the Cosmic Microwave Background.

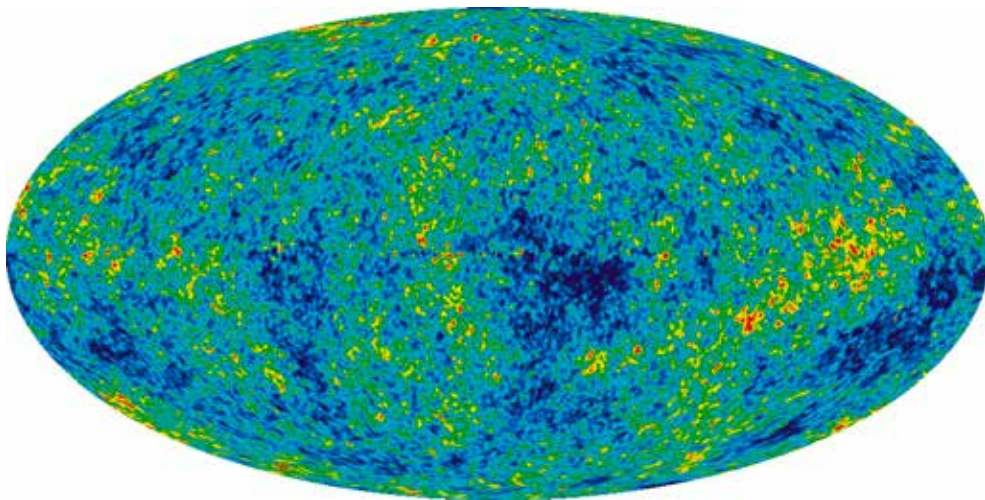
The next time you look up at the stars at night, turn your attention to the darkness between the stars, and ponder how you are seeing the result of a dynamic, evolving Universe.

Additional Skywatching Resources

Plan your skywatching with help from our planner page, featuring daily stargazing tips courtesy EarthSky monthly sky maps, and videos from NASA/JPL. You can even find out how to spot the International Space Station! Both Astronomy and Sky and Telescope magazines offer regular stargazing guides to readers, both in print and online. Want to join a group of folks for a star party? Find clubs and astronomy events near you, and may you have clear skies!



NASA's James Webb Space Telescope has produced the deepest and sharpest infrared image of the distant universe to date. Known as Webb's First Deep Field, this image of galaxy cluster SMACS 0723 is overflowing with detail. This slice of the vast universe is approximately the size of a grain of sand held at arm's length by someone on the ground. (Image Credit: NASA, ESA, CSA, STScI) <https://bit.ly/webbdeep>



The oldest light in the universe, called the cosmic microwave background, as observed by the Planck space telescope is shown in the oval sky map. An artist's concept of Planck is next to the map. The cosmic microwave background was imprinted on the sky when the universe was just 380,000 years old. It shows tiny temperature fluctuations that correspond to regions of slightly different densities, representing the seeds of all future structure: the stars and galaxies of today.

(Image credit: ESA and the Planck Collaboration - D. Ducros) <https://go.nasa.gov/3qC4G5q>

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!

Space News

News from around the Net

NASA's Psyche Mission To A Metal World May Reveal The Mysteries Of Earth's Interior

French novelist Jules Verne delighted 19th-century readers with the tantalizing notion that a journey to the center of the Earth was actually plausible. Since then, scientists have long acknowledged that Verne's literary journey was only science fiction. The extreme temperatures of the Earth's interior – around 10,000 degrees Fahrenheit (5,537 Celsius) at the core – and the accompanying crushing pressure, which is millions of times more than at the surface, prevent people from venturing down very far. Still, there are a few things. . . .(continued at <https://www.astronomy.com/space-exploration/nasas-psyche-mission-to-a-metal-world-may-reveal-the-mysteries-of-earths-interior/>)



After Seventeen Years, A Spacecraft Makes Its First Visit Home

The twin STEREO (Solar TERrestrial RELations Observatory) spacecraft launched on Oct. 25, 2006, from the Cape Canaveral Air Force Station in Florida. STEREO-A (for "Ahead") advanced its lead on Earth as STEREO-B (for "Behind") lagged behind, both charting Earth-like orbits around the Sun. During the first years after launch, the dual-spacecraft mission achieved its landmark goal: providing the first stereoscopic, or multiple-perspective, view of our closest star.(continued at <https://www.sciencedaily.com/releases/2023/08/230810180120.htm>)



Russia's Luna 25 Lander Crashed Into the Moon

On August 10th, 2023, Roscosmos' Luna-25 mission launched from the Vostochny Cosmodrome atop a Soyuz-2 rocket. This mission was the first lunar mission to launch from Russia since the 1970s and would be the first Russian lander to touch down in the South-Pole Aitken basin. This mission was part of Roscosmos' partnership with China to develop an International Lunar Research Station (ILRS) in the region by 2030. Unfortunately, Russia announced on Saturday, August 19th, that the lander spun out of control and crashed into the surface.(continued at <https://www.universetoday.com/162856/russias-luna-25-lander-crashed-into-the-moon/>)



Surf's Up: Waves Might Be Breaking On This Star

They're much too hot and too tenuous to ride a surfboard on, but astronomers believe there are humongous breaking waves on the sloshing surface of a massive star. According to Morgan MacLeod and Abraham Loeb (both at Center for Astrophysics, Harvard & Smithsonian), these waves reach heights of more than 4 million kilometers (2.5 million miles), before crashing back on the blue giant star, releasing incredible amounts of energy in the process. "Amazing to imagine what's happening on the surface of the star," says Ed Guinan (Villanova University), who was not involved in the study. (continued at <https://skyandtelescope.org/astronomy-news/surfs-up-waves-might-be-breaking-on-this-star/>)



Mysterious Neptune Dark Spot Detected From Earth For The First Time

Large spots are common features in the atmospheres of giant planets, the most famous being Jupiter's Great Red Spot. On Neptune, a dark spot was first discovered by NASA's Voyager 2 in 1989, before disappearing a few years later. "Since the first discovery of a dark spot, I've always wondered what these short-lived and elusive dark features are," says Patrick Irwin, Professor at the University of Oxford in the UK and lead investigator of the study published today in Nature Astronomy. Irwin and his team used data from ESO's VLT to rule out the possibility that dark spots are caused by a 'clearing' in the clouds. The new observations indicate instead that dark spots are likely the result of air particles darkening in a layer below the main visible haze layer, as ices and hazes mix in Neptune's atmosphere. . . (continued at <https://www.sciencedaily.com/releases/2023/08/230824111928.htm>)



Space News

News from around the Net

Black Hole May Have Formed By Direct Collapse

Astronomers may have spotted a supermassive black hole in the early universe that formed when a gargantuan gas cloud imploded. The black hole's host galaxy, UHZ1, was spotted in James Webb Space Telescope (JWST) observations of galaxies in the early universe. These distant galaxies' light has been bent and magnified by the intervening galaxy cluster Abell 2744, bringing them into view. Ákos Bogdán (Center for Astrophysics, Harvard & Smithsonian) and others used the Chandra X-ray Observatory to take a second look at 11 of the lensed galaxies. . . . (continued at <https://skyandtelescope.org/astronomy-news/black-hole-may-have-formed-by-direct-collapse/>)



Cyberattack Shuts Major NSF-Funded Telescopes For More Than 2 Weeks

A mysterious "cyber incident" at a National Science Foundation (NSF) center coordinating international astronomy efforts has knocked out of commission major telescopes in Hawaii and Chile since the beginning of August. Officials have halted all operations at 10 telescopes, and at a few others only in-person observations can be conducted. With no clear resolution to the shutdown in sight, research teams are uniting to figure out alternatives as critical observation windows spin out of reach. Given remote control of many telescopes is no longer available, some groups may rush graduate students to Chile to relieve exhausted on-site staff . . . (continued at <https://www.science.org/content/article/cyberattack-shuts-major-nsf-funded-telescopes-more-2-weeks>)



Sydney Astronomers Identify The Coldest Star Yet That Emits Radio Waves

Deepening our knowledge of ultracool brown dwarfs like this one will help us understand the evolution of stars, says lead author and PhD student in the School of Physics Kovi Rose. Astronomers at the University of Sydney have shown that a small, faint star is the coldest on record to produce emission at radio wavelength. The 'ultracool brown dwarf' examined in the study is a ball of gas simmering at about 425 degrees centigrade – cooler than a typical campfire – without burning nuclear fuel. By contrast, the surface temperature of the Sun, a nuclear inferno, is about 5600 degrees. . . . (continued at <https://www.sydney.edu.au/news-opinion/news/2023/07/14/astronomers-identify-coldest-star-yet-emits-radio-waves-ultracool-brown-dwarf.html>)



Longest Time-Lapse Footage Of An Exoplanet To Date Assembled From Real Data

A Northwestern University astrophysicist has created the longest time-lapse video of an exoplanet to date. Constructed from real data, the footage shows Beta Pictoris b—a planet 12 times the mass of Jupiter—sailing around its star in a tilted orbit. The time-lapse video condenses 17 years of footage (collected between 2003 and 2020) into 10 seconds. Within those seconds, viewers can watch the planet make about 75% of one full orbit. "We need another six years of data before we can see one whole orbit," said Northwestern astrophysicist Jason Wang, who led the work. . . (continued at <https://phys.org/news/2023-08-longest-time-lapse-footage-exoplanet-date.html>)



Highly Unusual Wolf-Rayet Star Will Evolve Into Magnetar, Astronomers Say

Using spectropolarimetric data gathered by various telescopes around the globe, astronomers from the University of Amsterdam and elsewhere have identified a powerful magnetic field in the Wolf-Rayet star HD 45166, the exposed helium core of a star that has lost its outer layers of hydrogen. The mass of HD 45166 is high enough that it will produce a neutron star in a supernova, and the field is sufficiently strong to generate a magnetar during core collapse. Neutron stars, the compact remains of a massive star following a supernova explosion, are the densest matter in the Universe. Some neutron stars, known as magnetars, also claim the record for the strongest magnetic fields of any object. . . (continued at <https://www.sci.news/astronomy/magnetic-wolf-rayet-star-12190.html>)



Dark Sky Observing Sites

The Chuchupate parking lot is a half a mile beyond the Mt Pinos ranger station (on some maps The Chuchupate Ranger Sta.), the parking lot is also called Frazier Mountain trailhead.

To get there, take the Frazier Mountain Park RD east about 7 miles from I-5, to Lake Of The Woods, Turn left on Lockwood Valley Rd. (If you see Mike's Pizza on your left you missed the turn) In less than a mile there is a road to the left, go past the ranger station, the parking lot is on the right. The Club gathers in the upper end of the lot. The Elevation is 5430 feet. There is a vault toilet.



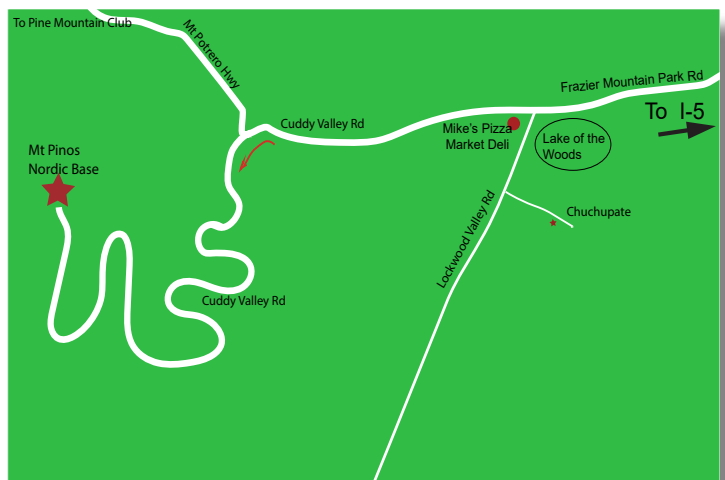
The Red Cliffs Natural Area is part of **Red Rock Canyon State Park** is a day use area and is not for use by the public after dark. The Club gets a special permit for a star party and pays a fee.

To get there: Take the CA-14 north 25 miles past Mojave. You will see giant red cliffs on the right side and a small sign that says “Red Cliffs Natural Area” and a dirt road. (If you see the large sign for the Ricardo campground, you drove a mile too far). Follow the road to the large parking lot (that hasn't been graded in a long time). Elevation is 2410 feet. There is a vault toilet.

Mt Pinos is a parking lot at 8350 feet for the “Mt Pinos Nordic Base.” There is a vault toilet 300 yds to the east in the Chula Vista campground.

To get there: From I-5, get off at Frazier Mountain Park Rd and drive west about 7 miles to Mike's Pizza/Market Deli at Lockwood Valley Rd. Keep on the main roadway (don't turn left to go to Chuchupate). Continue past Mike's Pizza on Cuddy Valley Rd (the road's new name) about 5 miles. Continue straight (do not turn right on to Mil Potrero Hwy) for another 8 1/2 miles to the parking area.

Note: The entire drive from I-5 is uphill.



Solar System Summary

The **Sun** moves from the middle of Leo and lands in mid Virgo at the end of the month.

The Planets

Mercury begins the month too close to the Sun to seen. On the 6th it passes inferior conjunction reappearing in the morning sky about mid-month. It reaches greatest western elongation of just 18° on the 22nd, just one day before it reaches perihelion.

Venus is now receding from Earth becoming even more prominent in the morning sky. Elongation increases from 28° on the 1st to 44° on the 30th. Achieves greatest illumination on the 19th.

Mars now at 2.5au from Earth , Mars is even more difficult to find in the early evening twilight. on the 16th at about 11:30 am the 2.6% waxing Moon just misses Mars by 2.5.°

Jupiter spends the month in southern Aries reaching its first stationary point on the 4th. Thereafter begins a 4 month retrograde period.

Saturn spends the month slowly moving retrograde in central Aquarius at mag 0.5. The 92% waxing Moon passes 3 ½° south on the evening of the 26th.

Uranus begins the month stationary and begins its retrograde motion in eastern Aries at mag 5.7. On the 5th the 65% waning Moon passes 3° north.

Neptune is moving in retrograde in southern Pisces at 7.8. On the 1st the full Moon passes less than 2° to the south.

Dwarf Planets

134340 Pluto spends the month on the eastern edge of Sagittarius in retrograde at mag 14.4 just south of M75.

1 Ceres spends the month in Virgo (mag 8.9), heading southeast ending up on the western edge of Libra.

2 Pallas at mag 9.0 having just moved north across the ecliptic continues east from southern Leo into Virgo at month's end.

3 Juno at mag 10, moves east from southern Cancer, coming to rest in southern Leo at month's end at 10.1. On the 5th Venus passes less than 2° ENE

4 Vesta at mag 8.46, spends the month moving from eastern Taurus through the northern reaches of Orion and brightens to mag 8.2.

Moon Phases



First Qtr
Sept 22

Full
Sept 29

Third Qtr
Sept 6

New
Sept 14

Sun and Moon Rise and Set*

Date	Moonrise	Moonset	Sunrise	Sunset
9/1/2023	20:38	08:13	06:25	19:18
9/5/2023	22:50	12:49	06:28	19:13
9/10/2023	02:15	17:15	06:32	19:06
9/15/2023	07:05	19:31	06:35	18:59
9/20/2023	12:06	21:59	06:39	18:52
9/25/2023	16:52	02:03	06:43	18:44
9/30/2023	19:34	08:09	06:46	18:37

Planet Data*

September 1

	Rise	Transit	Set	Mag	Phase%
Mercury	07:16	13:18	19:22	3.49	4.3
Venus	04:31	11:01	17:31	-4.43	12.2
Mars	08:23	14:23	20:23	1.75	98.4
Jupiter	22:16	05:05	11:50	-2.66	99.1
Saturn	19:03	00:32	06:04	0.42	100.

September 15

	Rise	Transit	Set	Mag	Phase%
Mercury	05:29	11:52	18:15	1.05	20.6
Venus	03:43	10:17	16:52	-4.54	24.8
Mars	08:11	14:01	19:51	1.72	98.9
Jupiter	21:20	04:09	10:54	-2.75	99.4
Saturn	18:06	23:33	05:04	0.47	99.9

September 30

	Rise	Transit	Set	Mag	Phase%
Mercury	05:36	11:52	18:08	-1.04	82.1
Venus	03:22	09:55	16:28	-4.51	36.6
Mars	08:00	13:39	19:18	1.67	99.4
Jupiter	20:19	03:07	09:51	-2.84	99.8
Saturn	17:04	22:30	04:01	0.54	99.9

*All time mentioned are local and approximate.

*Sun, Moon and Planetary date based on Quartz Hill, CA

Sky Chart



Location: Set from geolocation service
Latitude: 34° 39' N, longitude: 118° 10' W
Time: 2023 September 16, 21:00 (UTC -07:00)

Powered by: Heavens-Above.com

Desert Sky Observer

www.avastronomyclub.org

September 2023

Suggested Observing List

The list below contains objects that will be visible on the night of the AVAC Deep Sky Star Party or the Saturday nearest the New Moon, in this case September 16, 2023. The list is sorted by the transit time of the object.

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC5283		Galaxy	Dra	13h 41m 06s	+67° 40.3'	14.0	Circ	13:54	Circ
M3	NGC5272	Globular	CVn	13h 42m 11s	+28° 22.5'	7.0	06:24	13:55	21:26
NGC5286		Globular	Cen	13h 46m 24s	-51° 22.0'	7.6	11:50	13:59	16:08
NGC5292		Galaxy	Cen	13h 47m 40s	-30° 56.4'	14.0	09:35	14:00	18:26
NGC5356		Galaxy	Vir	13h 54m 59s	+05° 20.0'	14.0	07:50	14:07	20:25
NGC5363		Galaxy	Vir	13h 56m 07s	+05° 15.2'	10.2	07:51	14:09	20:26
NGC5447	III-787	Neb	UMa	14h 02m 29s	+54° 16.3'		02:59	14:15	01:31
M101	Pinwheel Galaxy	Galaxy	UMa	14h 03m 13s	+54° 20.9'	8.2	02:56	14:16	01:36
NGC5461	III-788	Neb	UMa	14h 03m 42s	+54° 19.0'		02:58	14:16	01:35
NGC5485		Galaxy	UMa	14h 07m 11s	+55° 00.0'	11.5	Circ	14:20	Circ
NGC5460		Open	Cen	14h 07m 27s	-48° 20.6'	5.6	11:38	14:20	17:02
NGC5500		Galaxy	Boo	14h 10m 15s	+48° 32.7'	14.0	04:50	14:23	23:56
IC991		Galaxy	Vir	14h 17m 48s	-13° 52.3'	13.0	09:07	14:30	19:54
HR5362	HD125383	Dbl	Lup	14h 20m 10s	-43° 03.5'	5.6	11:09	14:33	17:57
IC4406	Retina Nebula	P Neb	Lup	14h 22m 26s	-44° 09.0'	11.0	11:19	14:35	17:51
HR5409	Phi Vir, 105 Vir	Triple	Vir	14h 28m 12s	-02° 13.6'	4.8	08:44	14:41	20:37
NGC5669		Galaxy	Boo	14h 32m 44s	+09° 53.4'	12.0	08:15	14:45	21:16
NGC5689		Galaxy	Boo	14h 35m 30s	+48° 44.5'	11.9	05:13	14:48	00:23
M102	Spindle Galaxy (duplicate of M101?)	Galaxy	Dra	15h 06m 30s	+55° 45.7'	10.8	Circ	15:19	Circ
NGC5875		Galaxy	Boo	15h 09m 13s	+52° 31.6'	13.0	04:53	15:22	01:51
NGC5907	Splinter Galaxy	Galaxy	Dra	15h 15m 54s	+56° 19.7'	11.4	Circ	15:28	Circ
NGC5882		P Neb	Lup	15h 16m 50s	-45° 38.9'	11.0	12:24	15:29	18:35
NGC5897		Globular	Lib	15h 17m 24s	-21° 00.6'	8.6	10:28	15:30	20:31
M5	NGC5904	Globular	Ser	15h 18m 33s	+02° 04.9'	7.0	09:23	15:31	21:40
Barnard228		DkNeb	Lup	15h 44m 00s	-34° 30.0'		11:46	15:57	20:07
IC4593	White Eyed Pea	P Neb	Her	16h 11m 44s	+12° 04.3'	11.0	09:47	16:24	23:01
IC4592	Jabbah	Neb	Sco	16h 11m 59s	-19° 27.4'		11:18	16:24	21:31
M80	NGC6093	Globular	Sco	16h 17m 03s	-22° 58.5'	8.5	11:35	16:30	21:24
IC4601		Neb	Sco	16h 20m 18s	-20° 04.9'		11:28	16:33	21:37
Abell38		P Neb	Sco	16h 23m 17s	-31° 44.9'	11.7	12:14	16:36	20:58
M4	Cat's Eye, NGC6121	Globular	Sco	16h 23m 35s	-26° 31.5'	7.5	11:54	16:36	21:19
IC4603	Rho Ophiuchi [1]	Neb	Oph	16h 25m 24s	-24° 28.0'		11:48	16:38	21:28
IC4604	Rho Ophiuchi [2]	Neb	Oph	16h 25m 33s	-23° 26.5'		11:45	16:38	21:31
NGC6124		Open	Sco	16h 25m 36s	-40° 40.0'	5.8	12:59	16:38	20:17
Abell39		P Neb	Her	16h 27m 33s	+27° 54.5'	12.9	09:11	16:40	00:09
IC4605		Neb	Sco	16h 30m 12s	-25° 06.8'		11:55	16:43	21:30

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ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC6153		P Neb	Sco	16h 31m 31s	-40° 15.2'	12.0	13:03	16:44	20:25
NGC6181		Galaxy	Her	16h 32m 21s	+19° 49.5'	11.9	09:44	16:45	23:46
NGC6171		Globular	Oph	16h 32m 32s	-13° 03.1'	8.1	11:19	16:45	22:11
NGC6178		Open	Sco	16h 35m 47s	-45° 38.6'	7.2	13:43	16:48	19:54
NGC6193		Open	Ara	16h 41m 18s	-48° 46.0'	5.2	14:16	16:54	19:32
M13	Hercules Globular Cluster	Globular	Her	16h 41m 41s	+36° 27.5'	7.0	08:47	16:54	01:01
NGC6210	Turtle Planetary Nebula	P Neb	Her	16h 44m 30s	+23° 48.0'	9.0	09:43	16:57	00:11
Barnard44a		DkNeb	Sco	16h 44m 45s	-40° 20.0'		13:17	16:57	20:38
NGC6204		Open	Ara	16h 46m 09s	-47° 01.0'	8.2	14:04	16:59	19:53
M12	Gumball Globular	Globular	Oph	16h 47m 14s	-01° 56.8'	8.0	11:02	17:00	22:57
NGC6231	Table of Scorpius	Open	Sco	16h 54m 00s	-41° 48.0'	2.6	13:35	17:07	20:38
IC4628	Prawn Nebula	Neb	Sco	16h 56m 58s	-40° 27.3'		13:30	17:09	20:49
NGC6254		Globular	Oph	16h 57m 09s	-04° 05.9'	6.6	11:18	17:10	23:01
Barnard47		DkNeb	Oph	16h 59m 42s	-22° 38.0'		12:16	17:12	22:08
M62	Flickering Globular	Globular	Oph	17h 01m 13s	-30° 06.7'	8.0	12:45	17:14	21:43
M19	NGC6273	Globular	Oph	17h 02m 38s	-26° 16.0'	8.5	12:32	17:15	21:59
Barnard51		DkNeb	Oph	17h 04m 44s	-22° 15.0'		12:20	17:17	22:15
IC4637		P Neb	Sco	17h 05m 10s	-40° 53.1'	14.0	13:40	17:18	20:55
Barnard56		DkNeb	Sco	17h 08m 48s	-32° 05.0'		13:00	17:21	21:42
Barnard59	Pipe Nebula	DkNeb	Oph	17h 11m 23s	-27° 29.0'		12:45	17:24	22:03
NGC6302	Bug Nebula	P Neb	Sco	17h 13m 42s	-37° 06.0'	9.6	13:28	17:26	21:24
Barnard251		DkNeb	Oph	17h 13m 48s	-20° 09.0'		12:22	17:26	22:31
Barnard63		DkNeb	Oph	17h 16m 00s	-21° 28.0'		12:29	17:29	22:28
M92	NGC6341	Globular	Her	17h 17m 07s	+43° 08.1'	7.5	08:43	17:30	02:16
M9	NGC6333	Globular	Oph	17h 19m 12s	-18° 31.0'	9.0	12:22	17:32	22:41
NGC6326		P Neb	Ara	17h 20m 46s	-51° 45.2'	12.0	15:30	17:33	19:37
Barnard256		DkNeb	Oph	17h 22m 12s	-28° 49.0'		13:01	17:35	22:09
Barnard67a		DkNeb	Oph	17h 22m 30s	-21° 53.0'		12:36	17:35	22:34
Barnard71		DkNeb	Oph	17h 23m 02s	-24° 00.0'		12:44	17:36	22:27
NGC6357	Lobster Nebula	Neb	Sco	17h 24m 43s	-34° 12.1'		13:26	17:37	21:49
IC4651		Open	Ara	17h 24m 52s	-49° 56.5'	6.9	15:11	17:37	20:03
Abell41		P Neb	Ser	17h 29m 04s	-15° 13.3'	13.9	12:22	17:42	23:01
Abell42		P Neb	Oph	17h 31m 31s	-08° 19.1'	14.6	12:04	17:44	23:24
NGC6388		Globular	Sco	17h 36m 17s	-44° 44.1'	6.9	14:37	17:49	21:01
M14	NGC6402	Globular	Oph	17h 37m 36s	-03° 14.7'	9.5	11:56	17:50	23:44
Barnard276		DkNeb	Oph	17h 39m 39s	-19° 49.0'		12:47	17:52	22:57
M6	Butterfly Cluster	Open	Sco	17h 40m 20s	-32° 15.2'	4.5	13:33	17:53	22:13
NGC6397	C86	Globular	Ara	17h 40m 42s	-53° 40.0'	5.6	16:21	17:53	19:25
NGC6426		Globular	Oph	17h 44m 55s	+03° 10.1'	11.2	11:46	17:57	00:09

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IC4665		Open	Oph	17h 46m 30s	+05° 39.0'	4.2	11:41	17:59	00:17
NGC6445	Crescent Nebula	P Neb	Sgr	17h 49m 15s	-20° 00.6'	13.0	12:57	18:02	23:06
NGC6503		Galaxy	Dra	17h 49m 27s	+70° 08.6'	10.2	Circ	18:02	Circ
NGC6441		Globular	Sco	17h 50m 13s	-37° 03.0'	7.4	14:05	18:03	22:01
Barnard283		DkNeb	Sco	17h 51m 00s	-33° 52.0'		13:50	18:04	22:17
M7	Ptolemy's Cluster	Open	Sco	17h 53m 51s	-34° 47.6'	3.5	13:57	18:06	22:15
IC4670		Neb	Sgr	17h 55m 07s	-21° 44.6'		13:09	18:08	23:07
NGC6501		Galaxy	Her	17h 56m 04s	+18° 22.3'	12.3	11:12	18:09	01:05
M23	NGC6494	Open	Sgr	17h 57m 04s	-18° 59.1'	6.0	13:02	18:10	23:18
NGC6543	Cat Eye Nebula	P Neb	Dra	17h 58m 36s	+66° 38.0'	8.1	Circ	18:11	Circ
NGC6496		Globular	Sco	17h 59m 04s	-44° 16.0'	9.2	14:56	18:12	21:27
M20	Trifid Nebula	Open+D Neb	Sgr	18h 02m 42s	-22° 58.2'	5.0	13:20	18:15	23:10
M8	Lagoon Nebula	Open+D Neb	Sgr	18h 03m 41s	-24° 22.7'	5.0	13:26	18:16	23:06
Barnard295	B295	DkNeb	Sgr	18h 04m 05s	-31° 09.0'		13:52	18:17	22:41
M21	NGC6531	Open	Sgr	18h 04m 13s	-22° 29.3'	7.0	13:20	18:17	23:13
NGC6530		Open	Sgr	18h 04m 31s	-24° 21.5'	4.6	13:27	18:17	23:07
NGC6528		Globular	Sgr	18h 04m 50s	-30° 03.3'	9.5	13:48	18:17	22:46
IC4684		Neb	Sgr	18h 09m 08s	-23° 26.1'		13:28	18:22	23:15
IC4685		Neb	Sgr	18h 09m 18s	-23° 59.2'		13:30	18:22	23:13
IC1274		Neb	Sgr	18h 09m 51s	-23° 38.8'		13:30	18:22	23:15
IC1275		Neb	Sgr	18h 10m 07s	-23° 45.7'		13:30	18:23	23:15
NGC6572		P Neb	Oph	18h 12m 06s	+06° 51.2'	9.0	12:03	18:25	00:46
NGC6567		P Neb	Sgr	18h 13m 45s	-19° 04.5'	12.0	13:19	18:26	23:34
IC4701		Neb	Sgr	18h 16m 36s	-16° 38.0'		13:14	18:29	23:44
Barnard93	B93	DkNeb	Sgr	18h 16m 53s	-18° 03.0'		13:19	18:29	23:40
IC1284		Neb	Sgr	18h 17m 39s	-19° 40.3'		13:24	18:30	23:36
M24	Small Sagittarius Star Cloud	Open	Sgr	18h 18m 26s	-18° 24.3'	4.5	13:21	18:31	23:41
M16	Eagle Nebula	Open+D Neb	Ser	18h 18m 48s	-13° 48.3'	6.5	13:08	18:31	23:55
M18	Black Swan	Open	Sgr	18h 19m 58s	-17° 06.1'	8.0	13:19	18:32	23:46
M17	Horseshoe Nebula	Open+D Neb	Sgr	18h 20m 47s	-16° 10.3'	7.0	13:17	18:33	23:50
HR6923	HD170073	Mult	Dra	18h 23m 54s	+58° 48.0'	5.0	Circ	18:36	Circ
M28	NGC6626	Globular	Sgr	18h 24m 33s	-24° 52.1'	8.5	13:49	18:37	23:25
Abell44		P Neb	Sgr	18h 30m 11s	-16° 45.4'	12.6	13:28	18:43	23:58
NGC6637		Globular	Sgr	18h 31m 23s	-32° 20.8'	7.7	14:24	18:44	23:04
IC1287		Neb	Sct	18h 31m 26s	-10° 47.7'		13:11	18:44	00:16
M25		Open	Sgr	18h 31m 42s	-19° 07.0'	6.5	13:37	18:44	23:52
IC4725		Open	Sgr	18h 31m 48s	-19° 06.7'	4.6	13:37	18:44	23:52
NGC6642		Globular	Sgr	18h 31m 54s	-23° 28.5'	8.8	13:51	18:44	23:38
NGC6644		P Neb	Sgr	18h 32m 35s	-25° 07.7'	12.0	13:58	18:45	23:33

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NGC6647		Open	Sgr	18h 32m 49s	-17° 13.6'	8.0	13:32	18:45	23:59
IC4732		P Neb	Sgr	18h 33m 55s	-22° 38.6'	13.0	13:50	18:46	23:42
NGC6656	Crackerjack Cluster	Globular	Sgr	18h 36m 24s	-23° 54.2'	5.1	13:57	18:49	23:41
IC4756		Open	Ser	18h 38m 54s	+05° 27.0'	5.0	12:34	18:51	01:09
NGC6681		Globular	Sgr	18h 43m 12s	-32° 17.4'	8.1	14:36	18:56	23:16
NGC6694		Open	Sct	18h 45m 18s	-09° 23.0'	8.0	13:21	18:58	00:34
IC4776		P Neb	Sgr	18h 45m 51s	-33° 20.5'	12.0	14:43	18:58	23:14
Barnard318		DkNeb	Sct	18h 49m 42s	-06° 23.0'		13:17	19:02	00:47
M11	Wild Duck Cluster	Open	Sct	18h 51m 05s	-06° 16.1'	7.0	13:18	19:04	00:49
M57	Ring Nebula	P Neb	Lyr	18h 53m 35s	+33° 01.7'	9.5	11:16	19:06	02:57
Barnard117		DkNeb	Sct	18h 53m 43s	-07° 24.0'		13:24	19:06	00:48
NGC6715		Globular	Sgr	18h 55m 03s	-30° 28.7'	7.7	14:40	19:08	23:35
NGC6717	III-143	Globular	Sgr	18h 55m 06s	-22° 42.0'	9.2	14:12	19:08	00:03
Barnard122		DkNeb	Sct	18h 56m 48s	-04° 45.0'		13:20	19:09	00:59
Barnard123		DkNeb	Sct	18h 57m 39s	-04° 43.0'		13:20	19:10	01:00
NGC6723		Globular	Sgr	18h 59m 33s	-36° 37.9'	7.3	15:12	19:12	23:12
NGC6729		BrNeb	CrA	19h 01m 54s	-36° 57.0'		15:16	19:14	23:13
Barnard326		DkNeb	Aql	19h 03m 00s	-00° 23.0'		13:14	19:16	01:17
NGC6749		Globular	Aql	19h 05m 15s	+01° 54.0'	11.1	13:10	19:18	01:26
Barnard329		DkNeb	Aql	19h 06m 59s	+03° 11.0'		13:08	19:19	01:31
NGC6760		Globular	Aql	19h 11m 12s	+01° 01.8'	9.1	13:18	19:24	01:29
Abell56		P Neb	Aql	19h 13m 07s	+02° 52.8'	12.4	13:15	19:26	01:36
NGC6772		P Neb	Aql	19h 14m 36s	-02° 42.4'	14.0	13:32	19:27	01:22
Barnard138		DkNeb	Aql	19h 16m 00s	+00° 13.0'		13:25	19:29	01:32
M56	NGC6779	Globular	Lyr	19h 16m 36s	+30° 11.0'	9.5	11:51	19:29	03:07
NGC6778		P Neb	Aql	19h 18m 25s	-01° 35.7'	13.0	13:33	19:31	01:29
Abell61		P Neb	Cyg	19h 19m 10s	+46° 14.5'	13.0	10:21	19:32	04:42
NGC6790		P Neb	Aql	19h 22m 57s	+01° 30.8'	10.0	13:29	19:35	01:42

And - Andromeda
Ant - Antlia
Aps - Apus
Aql - Aquila
Aqr - Aquarius
Ara - Ara
Ari - Aries
Aur - Auriga
Boo - Bootes
Cae - Caelum
Cam - Camelopardis
Cap - Capricornus
Car - Carina
Cas - Cassiopeia
Cen - Centaurus

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Cet - Cetus
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CMi - Canis Minor
Cnc - Cancer
Col - Columba
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CrA - Corona Australis
CrB - Corona Borealis
Crt - Crater
Cru - Crux
Crv - Corvus
CVn - Canes Venatici

Cyg - Cygnus
Del - Delphinus
Dor - Dorado
Dra - Draco
Equ - Equuleus
Eri - Eridanus
For - Fornax
Gem - Gemini
Gru - Grus
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Hya - Hydra
Hyi - Hydrus
Ind - Indus
Lac - Lacerta

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Lep - Lepus
Lib - Libra
LMi - Leo Minor
Lup - Lupus
Lyn - Lynx
Lyr - Lyra
Men - Mensa
Mic - Microscopium
Mon - Monoceros
Mus - Musca
Nor - Norma
Oct - Octans
Oph - Ophiuchus
Ori - Orion

Pav - Pavo
Peg - Pegasus
Per - Perseus
Phe - Phoenix
Pic - Pictor
PsA - Pisces Austrinus
Psc - Pisces
Pup - Puppis
Pyx - Pyxis
Ret - Reticulum
Scl - Sculptor
Sco - Scorpius
Sct - Scutum
Ser - Serpens
Sex - Sextans

Sge - Sagitta
Sgr - Sagittarius
Tau - Taurus
Tel - Telescopium
TrA - Triangulum
Australis
Tri - Triangulum
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