CACHE VALLEY ASTRONOMICAL SOCIETY

Cache Valley Clear Skies

The Journal of the Cache Valley Astronomical Society

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Total Solar Eclipse Countdown:
117 days (as of April 26th)

Total Solar Eclipse Image courtesy NASA

Meeting Announcement

This month we will be meeting on **Wednesday, April 26th at 7pm in room 824 of the main BATC campus**. Enter on the east side of the building located at 1301 North 600 West. Room 824 is also where we met last month.

This month former club President Tom Westre will be speaking to us on the topic of The Search for Exoplanets and Earth 2.0. Tom is always an interesting speaker and this is an especially timely topic given the recent Trappist 1 exoplanets and Kepler mission discoveries.

The President's Corner
By Dell Vance, CVAS President

March was a good month for the CVAS. We had a fun meeting on March 22, where several presenters provided information on popular constellations and asterisms. I want to thank all the presenters, they did a great job. I especially like the diversity in the material presented. We have a lot of talent in the group. We even made the Harold Journal.

The skies are clearing for star-gazing, the temperature is pleasant, and we are getting into one of the best times of the year for astronomy here in the Cache Valley. I have an app named Weather Underground that has a feature you can set up with parameters to flag you when the best astronomy weather is predicted for your area. It comes in handy with the storms coming through. It shows what hours are likely to be clear enough for setting up my equipment and doing observations. Amazing what technology is available to us.

We have an opportunity to provide information to the community at the Dream Rocket Project at the Willow Park Zoo on "Earth Day", April 22, 2017. We hope to have a booth set up and a Solar Telescope for folks to get information about Astronomy. It should be a fun event. Let us know if you would like to help staff the booth.

Also, this month our meeting on April 26 will cover the topic of Exoplanets. Is there life out there? Come find out what NASA / Astronomers and amateur Astronomers are doing to collect this information and what they are finding. Tom Westre is the presenter and always does a great job of helping us understand these interesting concepts. It will be held at the BATC (Bridgerland Applied Technology College) at 7:00 PM. Be sure to be there and bring your friends.

It is a great time to watch the stars, so get out there and have some experiences.

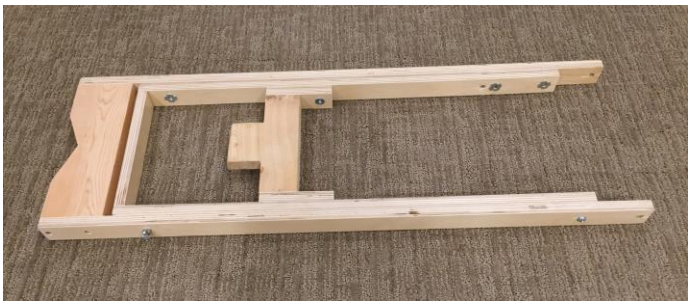
Clear Skies!

Binocular Supports

The club now has available a number of mostly completed binocular supports. These supports are being sold to club members at cost. These supports just need the binocular attachment – which is tailored to the type of binocular being mounted.

Please contact Ned Miller or Dell Vance if you are interested in purchasing a binocular support. The images below show what they look like with binoculars attached as well as an image showing them folded for storage.

Completed Binocular Support (with binos attached) - Courtesy Ned Miller



Binocular support (folded for storage) - Courtesy Ned Miller

CVAS Loaner Telescope

CVAS provides a 10 inch Dobsonian telescope to club members. Contact Brad Kropp to make arrangements to use this telescope.

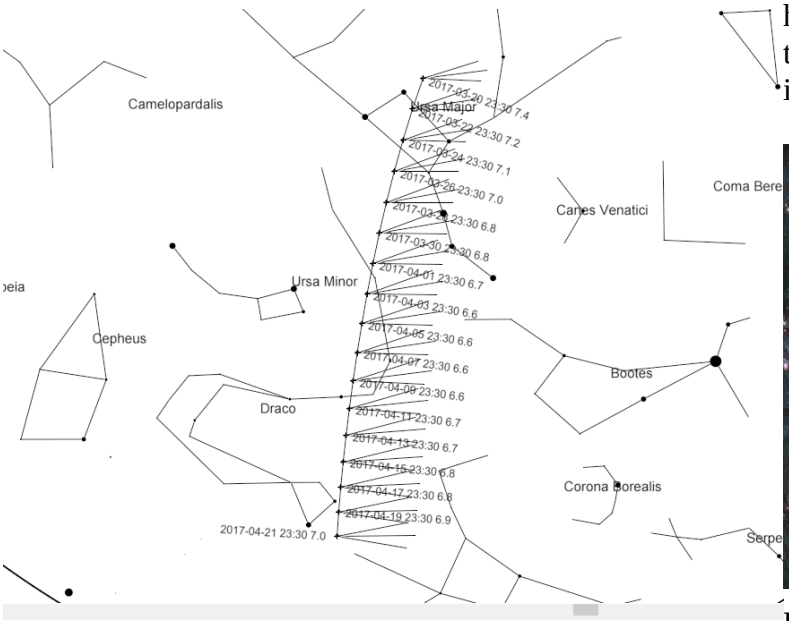
Brad can be contacted by email at brad.kropp@usu.edu.

Don't Miss Comet 41P in Draco

By Tom Westre

April 2017 is a great time to view Comet 41P/Tuttle-Giacobini-Kresak. First discovered in 1858 the comet has an orbital period of 5.5 years. On April 1, 2017 is was 13.7 million miles (22 million km) from earth, its closest approach.

41P is well placed from early to mid-April as it passes through Draco. 41P is not very bright. As of late March it was rated at magnitude 7.5. It should be easy to spot in most telescopes from sunset to sunrise. Reports show the surface brightness is low but the comet has a history of suddenly brightening, so it deserves being watched over the next two weeks as it passes through Draco. There is a chance of it undergoing sudden brightening. Hopefully it could reach magnitude 6.



Comet 41P Finder Chart

Above is a Comet 41P finder chart for the next month, March 20 (top) to April 19 (bottom). It is expected to be brightest at magnitude 6.6 in early April. Comet positions and orientation in the northeast are for 11:30 p.m. on the date specified or 3:30 UT on the next date. The chart was created using Cartes du Ciel (Sky Charts). Map provided by Bill Mohler's Ephemeris Blog.

Below is the ephemeris for the next seven days. If you get a chance to view the comet send your observations to me at twestre45@aol.com. I will post our observations. Good comet hunting and clear skies.

Date	Mag	R.A.	Dec	Const
Apr 02	8.69	13h45m39s	+64°50'20"	Draco
Apr 03	8.68	14h04m24s	+64°57'05"	Draco
Apr 04	8.66	14h23m05s	+64°54'03"	Draco
Apr 05	8.66	14h41m26s	+64°41'35"	Draco
Apr 06	8.65	14h59m11s	+64°20'08"	Draco
Apr 07	8.65	15h16m08s	+63°50'30"	Draco
Apr 08	8.65	15h32m11s	+63°13'28"	Draco

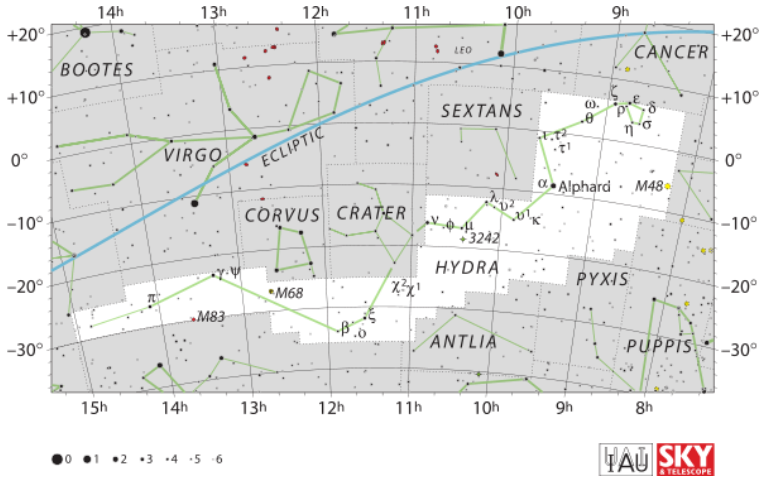
Spotlight on Hydra, the Water Snake

By Dale Hooper

The constellation Hydra, the Water Snake is the largest and longest of the 88 modern constellations. It covers over seven hours in right ascension! It only has one fairly bright star, second magnitude Alphard, the orange heart of the snake. However, the six stars in its head form a recognizable asterism.

Hubble Space Telescope Image of Messier 83 (The Southern Pinwheel Galaxy) – Image courtesy NASA

Hydra contains a good variety of objects including a good number of galaxies, some planetary nebulae, a couple globular clusters and fairly nice open cluster. Three of the objects are Messier objects including M83 (the Southern Pinwheel galaxy), M48 (open cluster) and M68 (globular cluster). The planetary nebula NGC 3242 (Ghost of Jupiter) is also a very noteworthy object to observe.



IAU and Sky & Tel - Roger Sinnott & Rick Fienberg

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Objects which rank at least three stars in *The Night Sky Observer's Guide* (Hydra is in Volume 2) have been included. As usual, the table is organized according to increasing Right Ascension values.

Object	**R.A.**	**Dec.**
Messier 48 (Open cluster)	08h13.8m	-05°48'
NGC 2610 (PNeb mag 12.8)	08h33.4m	-16°09'
NGC 2713 (Galaxy mag 11.8)	08h57.3m	+02°55'
NGC 2716 (Galaxy mag 11.8)	08h57.6m	+03°05'
NGC 2781 (Galaxy mag 11.6)	09h11.5m	-14°49'
NGC 2784 (Galaxy mag 10.0)	09h12.3m	-24°10'
NGC 2811 (Galaxy mag 11.3)	09h16.2m	-16°19'
NGC 2815 (Galaxy mag 11.8)	09h16.3m	-23°38'
NGC 2835 (Galaxy mag 10.4)	09h17.9m	-22°21'
NGC 2848 (Galaxy mag 11.8)	09h20.2m	-16°32'
NGC 2855 (Galaxy mag 11.7)	09h20.2m	-16°32'
NGC 2889 (Galaxy mag 11.7)	09h27.2m	-11°38'
NGC 2935 (Galaxy mag 11.1)	09h36.7m	-21°08'
Abell 33 (PNeb mag 12.4)	09h39.1m	-02°48'
NGC 2962 (Galaxy mag 11.9)	09h40.9m	+05°10'
NGC 2983 (Galaxy mag 11.8)	09h43.7m	-20°29'
NGC 2986 (Galaxy mag 10.6)	09h44.3m	-21°17'
NGC 3078 (Galaxy mag 11.0)	09h58.4m	-26°56'
NGC 3091 (Galaxy mag 11.0)	10h00.2m	-19°38'
NGC 3109 (Galaxy mag 9.8)	10h03.1m	-26°09'
NGC 3203 (Galaxy mag 12.2)	10h19.6m	-26°42'
NGC 3242 (PNeb mag 7.8)	10h24.8m	-18°38'
NGC 3309 (Galaxy mag 11.0)	10h36.6m	-27°31'
NGC 3311 (Galaxy mag 10.9)	10h36.7m	-27°32'
NGC 3312 (Galaxy mag 11.8)	10h37.0m	-27°34'
U Hydrae (Var mag 4.7 to 6.2)	10h37.6m	-13°23'
NGC 3390 (Galaxy mag 12.4)	10h48.1m	-31°32'
NGC 3585 (Galaxy mag 9.7)	11h13.3m	-26°45'
NGC 3621 (Galaxy mag 8.9)	11h18.3m	-32°49'
NGC 3717 (Galaxy mag 11.4)	11h31.5m	-30°19'
N Hydrae (Double star)	11h32.3m	-29°16'
NGC 3904 (Galaxy mag 10.8)	11h49.2m	-29°17'
NGC 4105 (Galaxy mag 10.4)	12h06.7m	-29°46'
NGC 4106 (Galaxy mag 10.6)	12h06.8m	-29°46'
NGC 4304 (Galaxy mag 11.7)	12h22.2m	-33°29'
M68 (Glob Cluster mag 7.7)	12h39.5m	-26°45'
NGC 5061 (Galaxy mag 10.2)	13h18.1m	-26°50'
NGC 5078 (Galaxy mag 10.6)	13h19.8m	-27°24'
NGC 5101 (Galaxy mag 10.4)	13h21.8m	-27°26'
R Hydrae (Var mag 3 to 11)	13h29.7m	-23°17'
Messier 83 (Galaxy mag 7.6)	13h37.0m	-29°52'
NGC 5328 (Galaxy mag 11.7)	13h52.9m	-28°29'
IC 4351 (Galaxy mag 11.8)	13h57.9m	-29°19'
54 Hydrae (Double star)	14h46.0m	-25°27'

CVAS Minutes – March 2017

The meeting was held on March 22nd in room 824 in the Main Campus building of BATC. Dale Hooper discussed current sky events. There were approximately 25 people in attendance.

The time was then turned over members of the club to present information about the various constellations. The presentations included information about where the constellation is located, when it can be observed, mythology related to the constellation and noteworthy objects located in the constellation.

Byron Ray discussed Ursa Major, Ursa Minor and Bootes. Blaine Dickey then spoke about Lyra the Lyre. Alannah Darrington then spoke with us about the constellation Orion.

Following Alannah, Janice Bradshaw shared with us information about Sagittarius. Lyle Johnson then spoke to us about Taurus the Bull and explained how to use the sky map. Ned Miller then spoke to us about Andromeda and Cassiopeia. Dale Hooper then discussed Ophiuchus and lastly, Dell Vance shared with us information about Scorpius and Cygnus.

We finished up by giving out some great door prizes.

Please note that an article concerning the March 2017 meeting appeared in The Herald Journal newspaper on March 23, 2017 (pages A3 and A9). The article included a picture of CVAS member Lyle Johnson making his presentation.

Upcoming Star Parties

There are currently no CVAS star parties planned for April 2017.

Upcoming Events

01 Apr	Mercury at greatest eastern elongation (19°) and most favorable positioning of Mercury for northern hemisphere observers for 2017
02 Apr	First photograph of Sun (1845)
03 Apr	First Quarter Moon Luna 10, first spacecraft to orbit the Moon (1966)
07 Apr	Regulus 0.7° north of Moon **Jupiter at opposition** Compton Gamma Ray observatory deployed (1991)
11 Apr	Passover begins Full Moon
12 Apr	Yuri Gagarin, first man to orbit the Earth (1961) First space shuttle launch (Columbia, 1981)
14 Apr	Christiaan Huygens born (1629)
15 Apr	Moon at apogee
16 Apr	Easter Saturn 3° south of Moon
18 Apr	Passover ends
19 Apr	Last Quarter Moon
20 Apr	Mercury at inferior conjunction
21 Apr	Lyrid Meteors Mars 3.5° south-southeast of Pleiades
22 Apr	Earth Day Lyrid Meteors Neptune 0.2° north of Moon
23 Apr	Lyrid Meteors Venus 5° north of Moon
24 Apr	Asteroid Pallas 0.8° south of Moon
25 Apr	Hubble Space Telescope deployed (1990)
26 Apr	New Moon CVAS club meeting (7pm), Room 824 main BATC campus
27 Apr	Moon at perigee
28 Apr	Aldebaran 0.5° south of Moon
29 Apr	Venus at greatest brilliancy, magnitude -4.5

NASA's Cassini Mission Prepares for 'Grand Finale' at Saturn

This illustration shows Cassini above Saturn's northern hemisphere prior to one of its 22 Grand Finale dives. Credit: NASA/JPL-Caltech

NASA's Cassini spacecraft, in orbit around Saturn since 2004, is about to begin the final chapter of its remarkable story. On Wednesday, April 26, the spacecraft will make the first in a series of dives through the 1,500-mile-wide (2,400-kilometer) gap between Saturn and its rings as part of the mission's grand finale.

"No spacecraft has ever gone through the unique region that we'll attempt to boldly cross 22 times," said Thomas Zurbuchen, associate administrator for the Science Mission Directorate at NASA Headquarters in Washington. "What we learn from Cassini's daring final orbits will further our understanding of how giant planets, and planetary systems everywhere, form and evolve. This is truly discovery in action to the very end."

During its time at Saturn, Cassini has made numerous dramatic discoveries, including a global ocean that showed indications of hydrothermal activity within the icy moon Enceladus, and liquid methane seas on its moon Titan.

Now 20 years since launching from Earth, and after 13 years orbiting the ringed planet, Cassini is running low on fuel. In 2010, NASA decided to end the mission with a purposeful plunge into Saturn

this year in order to protect and preserve the planet's moons for future exploration -- especially the potentially habitable Enceladus.

But the beginning of the end for Cassini is, in many ways, like a whole new mission. Using expertise gained over the mission's many years, Cassini engineers designed a flight plan that will maximize the scientific value of sending the spacecraft toward its fateful plunge into the planet on Sept. 15. As it ticks off its terminal orbits during the next five months, the mission will rack up an impressive list of scientific achievements.

"This planned conclusion for Cassini's journey was far and away the preferred choice for the mission's scientists," said Linda Spilker, Cassini project scientist at NASA's Jet Propulsion Laboratory in Pasadena, California. "Cassini will make some of its most extraordinary observations at the end of its long life."

The mission team hopes to gain powerful insights into the planet's internal structure and the origins of the rings, obtain the first-ever sampling of Saturn's atmosphere and particles coming from the main rings, and capture the closest-ever views of Saturn's clouds and inner rings. The team currently is making final checks on the list of commands the robotic probe will follow to carry out its science observations, called a sequence, as it begins the finale. That sequence is scheduled to be uploaded to the spacecraft on Tuesday, April 11.

Cassini will transition to its grand finale orbits, with a last close flyby of Saturn's giant moon Titan, on Saturday, April 22. As it has many times over the course of the mission, Titan's gravity will bend Cassini's flight path. Cassini's orbit then will shrink so that instead of making its closest approach to Saturn just outside the rings, it will begin passing between the planet and the inner edge of its rings.

"Based on our best models, we expect the gap to be clear of particles large enough to damage the spacecraft. But we're also being cautious by using our large antenna as a shield on the first pass, as we determine whether it's safe to expose the science instruments to that environment on future passes," said Earl Maize, Cassini project manager at JPL. "Certainly there are some unknowns, but that's one of the reasons we're doing this kind of daring exploration at the end of the mission."

In mid-September, following a distant encounter with Titan, the spacecraft's path will be bent so that it dives into the planet. When Cassini makes its final plunge into Saturn's atmosphere on Sept. 15, it will send data from several instruments - most notably, data on the atmosphere's composition -- until its signal is lost.

"Cassini's grand finale is so much more than a final plunge," said Spilker. "It's a thrilling final chapter for our intrepid spacecraft, and so scientifically rich that it was the clear and obvious choice for how to end the mission."

Resources on Cassini's grand finale, including images and video, are available at:

http://saturn.jpl.nasa.gov/grandfinale

An animated video about Cassini's Grand Finale is available at:

https://youtu.be/xrGAQCq9BMU

The Cassini-Huygens mission is a cooperative project of NASA, ESA (European Space Agency) and the Italian Space Agency. JPL manages the mission for NASA's Science Mission Directorate. JPL designed, developed and assembled the Cassini orbiter.

More information about Cassini is at:

http://www.nasa.gov/cassini
http://saturn.jpl.nasa.gov

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CACHE VALLEY ASTRONOMICAL SOCIETY
MEMBERSHIP APPLICATION FORM

Member # _____

NAME:_____ _____ _____
First Middle Initial Last

Address:_____ _____ _____ _____
Street City State Zip Code

Home Phone: _____ **Cell Phone:**_____

Work Phone : _____ **Occupation** :_____

Email Address: _____

How did you learn about CVAS

_____Website ____Star Party ____CVAS Member ____Other _____

Membership: $20 a year

Tell us about yourself: Do you have a special interest in astronomy? Do you have special skills? Are you willing to volunteer on CVAS projects or attend public outreach star parties? Astro equipment owned.

_____

_____

By signing this application, I acknowledge I have access to the CVAS website, cvas-utahskies.org , and the CVAS Constitution. I agree to abide by the constitution.

Signature: _____ Date:_____

Bring this form to the meeting or Mail Application to:

Ned Miller, CVAS Treasurer
480 N 400 E
Providence, Utah 84332

For any questions contact our Treasurer at nedmiller2008@gmail.com or our Secretary Dale Hooper at dchooper5@gmail.com .