



Desert Sky Observer

Volume 33

Antelope Valley Astronomy Club Newsletter

April 2013

Up-Coming Events

- April 6: Messier Marathon @ [Saddle Back Butte](#)
- April 12: Club Meeting*
- April 19: Space Day @ [Riverside CA](#)
- April 20-21: Poppy Festival @ [Lancaster City Park](#)

* Monthly meetings are held at the S.A.G.E. Planetarium on the Cactus School campus in Palmdale, the second Friday of each month. 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*



President

Don Bryden

Happy Spring! I'm writing this on March 20th, the Vernal Equinox. Isn't that the 21st you say? Well due to the wobbling of the Earth's axis (precession of the equinoxes or lunisolar precession) and the nutation caused by torque generated by the sun and moon on our equatorial bulge... actually that has nothing to do with it!

The simple answer is that since we add a day to our calendar each leap year we "push" the timing of the equinox up. Since the time it takes for the earth to go around the sun, or a tropical year, is slightly longer than our calendar year (365.242 days as opposed to 365) we add an extra day (called leap day) every four years (called leap year). Since that extra day is a bit too much (.25 of a day each year rather than the .242 day of the Tropical year) we also suppress leap year in any millennial year not divisible by 400. So back in 2000 we still had a leap day added but in 2100 we will not. So just hang on and after the next century we'll be back to equinoxes on the 21st or 22nd!

Well however you figure it, warmer weather is here and just in time. Hopefully you'll be reading this before the 6th of April because I want to remind everyone to come on out for our annual Messier Marathon! The club will provide a bar-b-cue of burgers and dogs, chips and drinks. Feel free to bring a side dish or desert, too, but if not, don't worry, we usually have much more than we can eat anyway!

We'll have observing lists for those wishing to do the marathon. If Messier objects are not your cup of tea, don't worry, there will be plenty of opportunity for observing from Comet Pan-STARRS to Saturn. I hope to see everyone there.

Don't worry though if you can't make it for we have plenty of dark sky opportunities coming up. Check out Rose's column below and read about the Poppy Festival. In addition there are Prime Desert Moonwalks, outreach star parties and of course our monthly dark sky star parties to enjoy. So whether you have a dob, a GEM, a fork mounted CAT or a pair of binoculars – or nothing at all! – come on out and see what's up in the night sky.



Vice President

Frank Moore

Well folks it's happened again. You think you have your ducks in a row and then you get an email from your planned speaker informing you that his employer is sending him to a conference the weekend of the scheduled meeting.

That's what happened this past week when my planned speaker, Randall Clague from XCOR Aerospace told me that he had to attend the Space Access Society's conference in Phoenix on April 11-13. In light of the fact that his boss, XCOR founder Jeff Greason is a presenter at the event, I guess he'd better go.

I never even knew the Space Access Society existed till I got the email from Randall. Now I find them intriguing. They are the dreamers, the entrepreneurs, those who are working on, "the latest on the technology, business, politics, and opportunities of Radically Cheaper Access To Space" and they've been having this annual conference for twenty years.

I'm still trying to find a substitute speaker but it is tough. I've tried the NASA Speaker's Bureau, via which we got Dr. Michael Malaska, but due to budget cuts, NASA has sent out an internal memo advising, "Effective immediately, all education and public outreach activities should be suspended, pending further review. In terms of scope, this includes all public engagement and outreach events, programs, activities, and products developed and implemented by Headquarters, Mission Directorates, and Centers across the Agency, including all education and public outreach efforts conducted by programs and projects."

Further information can be found here: <http://www.universetoday.com/100949/sequester-cancels-nasa-outreach/>

In any event, we will still have a program. Don and I are discussing having a bit of a "show and tell" with various types of telescopes and perhaps even a bona fide beginner's class if we can coordinate it with Jeremy. We'll let you know as soon as we finalize our plans.

Next month, on May 10, 2013, our speaker will be Mike Simmons, President and CEO of Astronomers Without Borders. Astronomers Without Borders has so much going on right now that I'm sure Mike will have dynamic presentation that will get your stargazing blood flowing. Don't miss it. While you're at it, you may want to jump over to the Astronomers Without Borders website to see all that is going on during Global Astronomy Month in April. This is the biggest worldwide celebration of astronomy since the International Year of Astronomy in 2009 and there are many opportunities for participation

Finally, the last two sky condition logging sessions for Globe At Night will run from March 31 - April 9, 2013, and April 29 - May 8, 2013. If you haven't done so already. Get out there and send in your measurements of your local conditions. If you've already logged you conditions from home, go to another site and log the conditions there. More data points means a better map of light pollution awareness.



Director of Community Development

Rose Moore

Welcome Spring!

We have lots of events coming up and we need your support!! We need to see some new faces at some of these events supporting our club! If you don't have a telescope, you can come to give the handouts, or talk to the public about your love of astronomy! But please come out to support your club!!

On Saturday, April 6th is our Messier Marathon, see Don's note above. Come out to spend a few hours, or the night, and look for some of the Messier objects, or other celestial gems!

Don't forget our regular club meeting on Friday, April 12th at 7pm!

Possibly on Saturday, April 13th will be a Star Party for kids and adults either at the Antelope Valley Indian Museum or Saddleback. More info to follow, this is all tentative at this time, as we're trying to work out some of the logistics.

Friday, April 19th is Space Day at Riverside, sponsored by Lockheed Martin. For those who want more info, please contact Don. Don will be going down to this event with a small group the night before. The event usually runs from 8am to 1pm.

The weekend of April 20th and 21st is a big event for AVAC: the Poppy Festival!! We will have a large booth again, with tables and chairs. Our telescopes will be set up on the side of the tent, same as last year. Please come out to help in the booth, by talking to the public, giving handouts or posters, or showing other astronomy items of interest. You may help for a couple of hours or the whole day! Dress in layers as it's cool in the morning, but tends to get warm in the afternoon sun. We appreciate your participation!

Early in May we have 2 events coming up. First on Friday, May 2nd is a Star Party and public outreach at the College of the Canyons. This will start at approximately 6pm, further info to follow. We will need members with telescopes to support this event!

On Saturday May 4th at 8:30 pm is a Prime Desert Moonwalk at the PDW Preserve. Come on out to support Jeremy and our club at this event. Bring your telescope, or come out for the Moonwalk with Jeremy.

See you there!

Space Place

Your Daily Dose of Astonishment

By Diane K. Fisher

As a person vitally interested in astronomy, you probably have the Astronomy Picture of the Day website at apod.nasa.gov set as favorite link. APOD has been around since practically the beginning of the web. The first APOD appeared unannounced on June 16, 1995. It got 15 hits. The next picture appeared June 20, 1995, and the site has not taken a day off since. Now daily traffic is more like one million hits.

Obviously, someone is responsible for picking, posting, and writing the detailed descriptions for these images. Is it a whole team of people? No. Surprisingly, it is only two men, the same ones who started it and have been doing it ever since.

Robert Nemiroff and Jerry Bonnell shared an office at NASA's Goddard Space Flight Center in the early-90s, when the term "World Wide Web" was unknown, but a software program called Mosaic could connect to and display specially coded content on other computers. The office mates thought "we should do something with this."

Thus was conceived the Astronomy Picture of the Day. Now, in addition to the wildly popular English version, over 25 mirror websites in other languages are maintained independently by volunteers. (See http://apod.nasa.gov/apod/lib/about_apod.html for links). An archive of every APOD ever published is at <http://apod.nasa.gov/apod/archivepix.html>. Dr. Nemiroff also maintains a discussion website at <http://asterisk.apod.com/>.



The January 20, 2013, Astronomy Picture of the Day is one that might fall into the "quirky" category. The object was found at the bottom of the sea aboard a Greek ship that sank in 80 BCE. It is an Antikythera mechanism, a mechanical computer of an accuracy thought impossible for that era. Its wheels and gears create a portable orrery of the sky that predicts star and planet locations as well as lunar and solar eclipses.

independent astronomers and astro-photographers. The good doctors receive ten images for every one they publish on APOD. But, as Dr. Nemiroff emphasizes, being picked or not picked is no reflection on the value of the image. Some of the selections are picked for their quirkiness. Some are videos instead of images. Some have nothing to do with astronomy at all, like the astonishing August 21, 2012, video of a replicating DNA molecule.

Among the many mobile apps taking advantage of the APOD feed is Space Place Prime, a NASA magazine that updates daily with the best of NASA. It's available free (in iOS only at this time) at the Apple Store.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

But how does it get done? Do these guys even have day jobs?

Dr. Nemiroff has since moved to Michigan Technological University in Houghton, Michigan, where he is professor of astrophysics, both teaching and doing research. Dr. Bonnell is still with NASA, an astrophysicist with the Compton Gamma Ray Observatory Science Support Center at Goddard. APOD is only a very small part of their responsibilities. They do not collaborate, but rather divide up the calendar, and each picks the image, writes the description, and includes the links for the days on his own list. The files are queued up for posting by a "robot" each day.

They use the same tools they used at the beginning: Raw HTML code written using the vi text editor in Linux. This simple format has now become such a part of the brand that they would upset all the people and websites and mobile apps that link to their feed if they were to change anything at this point.

Where do they find the images? Candidates are volunteered from large and small observatories, space telescopes (like the Hubble and Spitzer), and

Astrophoto of The Month

IC 443 - The Jellyfish Nebula in Gemini
By Don Bryden

180 minutes luminance/H-alpha

45 minutes each RGB

Scope: Stellarvue SV-105 f/6.3 apo

Cam: SBIG ST10-XME

Taken at Two Goats Observatory from Feb. 1st through March 7th, 2013

April Sky Data

**Best time for deep sky observing this month:
April 1 through April 12**

Mercury, reached greatest western elongation (when it is furthest from the Sun in angle) on the 31st of March. However this is not a good apparition as the ecliptic at dawn makes a very shallow angle to the horizon at this time of year. As a result, Mercury will be very low above the horizon in the east-southeast as dawn breaks and binoculars will be needed to spot it during the early part of April.

Venus reached superior conjunction on March 28th and so, on the far side of the Sun, will not be visible for most of the month. It might just be seen, very low in the west-northwest, about 20 minutes after sunset at the end of the month but binoculars will be needed to spot it even though its magnitude will be -3.9.

Mars passes behind the Sun on April 18th and will not be visible for several months until it appears in the pre-dawn sky.

Jupiter, in the constellation of Taurus, the Bull, will still be visible in the west after sunset moving eastwards across the sky. Shining at magnitude -2.1, it starts April lying just 5.5 degrees above the star Aldebaran, the eye of the Bull. During the month its angular diameter drops slightly from 35.8 to 33.6 arc seconds so even a small telescope will still show plenty of detail with the bright zones and darker bands crossing the disk and up to four Galilean moons visible as they weave their way around the giant planet.

Saturn rises about half an hour after nightfall as April begins and so will transit before dawn at an elevation of 25 degrees at 02:00. It reaches opposition on the 28th April so will then be visible. Its magnitude brightens during the month, from +0.3 to +0.1 magnitudes, while its angular size increases from 18.6 to 18.9 arc seconds. The good news is that the rings have now opened out to ~18 degrees from the line of sight and will be at their best for 6 years! With a small scope one should now be able to spot Cassini's Division within the rings if the "seeing" is good along with Saturn's largest Moon, Titan.

Last Qtr Apr 2 New Apr 10 First Qtr Apr 18 Full Apr 25



Sun and Moon Rise and Set

Date	Moonrise	Moonset	Sunrise	Sunset
4/1/2013	00:15	10:40	06:38	19:13
4/5/2013	03:32	14:55	06:32	19:16
4/10/2013	06:26	19:58	06:25	19:20
4/15/2013	09:57	-----	06:19	19:24
4/20/2013	14:29	02:52	06:13	19:28
4/25/2013	19:48	05:54	06:07	19:32
4/30/2013	00:00	10:38	06:02	19:36

Planet Data

	Apr 1			
	Rise	Transit	Set	Mag
Mercury	05:29	11:16	17:02	0.3
Venus	06:41	13:01	19:20	-3.9
Mars	06:44	13:09	19:33	1.2
Jupiter	09:36	16:52	00:04	-2.1
Saturn	21:10	02:42	08:14	0.2

	Apr 15			
	Rise	Transit	Set	Mag
Mercury	05:24	11:30	17:33	-0.1
Venus	06:31	13:10	19:49	-3.9
Mars	06:17	12:54	19:29	1.2
Jupiter	08:51	16:07	23:20	-2.1
Saturn	20:10	01:43	07:16	0.2

	Apr 31			
	Rise	Transit	Set	Mag
Mercury	05:30	12:03	18:39	-1.0
Venus	06:25	13:23	20:21	-3.9
Mars	05:49	12:37	19:24	1.3
Jupiter	08:03	15:21	22:35	-2.0
Saturn	19:06	00:40	06:14	0.1

Planet, Sun, and Moon data calculated for local time at Lancaster,

Suggested Observing List

The list below contains objects that will be visible on the night of the AVAC Star Party. Since this month is our Messier Marathon the list is the observing order for the night. You can download the order in Excel format at http://www.avastronomyclub.org/docs/marathon_order.xls or Adobe PDF at http://www.avastronomyclub.org/docs/marathon_order.pdf

Order	Time	M #	NGC	Con	R.A.	Dec	Mag	Type	Comments
1		M 77	1068	CET	2h 43m	0° 1'	8.8	SG	
2		M 74	628	PSC	1h 37m	15° 47'	9.2	S	
3		M 33	598	TRI	1h 34m	30° 39'	5.7	SG	Pinwheel galaxy
4		M 31	224	AND	0h 43m	41° 16'	3.4	SG	Andromeda galaxy
5		M 32	221	AND	0h 43m	40° 52'	8.2	EG	
6		M 110	205	AND	0h 40m	41° 41'	8.0	EG	
7		M 52	7654	CAS	23h 24m	61° 35'	6.9	OC	
8		M 103	581	CAS	1h 33m	60° 42'	7.4	OC	
9		M 76	650	PER	1h 42m	51° 34'	11.5	PN	The Little Dumbell
11		M 34	1039	PER	2h 42m	42° 47'	5.2	OC	
11		M 45		TAU	3h 47m	24° 7'	1.2	OC	Pleiades
12		M 79	1904	LEP	5h 24m	-24° 33'	8.0	GC	
13		M 42	1976	ORI	5h 35m	-5° 27'	4.0	DN	Great Orion nebula
14		M 43	1982	ORI	5h 35m	-5° 16'	9.0	DN	
15		M 78	2068	ORI	5h 47m	0° 3'	8.0	DN	
16		M 1	1952	TAU	5h 34m	22° 1'	8.4	PN	Crab nebula
17		M 35	2168	GEM	6h 09m	24° 20'	5.1	OC	
18		M 37	2099	AUR	5h 52m	32° 33'	5.6	OC	
19		M 36	1960	AUR	5h 36m	34° 8'	6.0	OC	
20		M 38	1912	AUR	5h 29m	35° 50'	6.4	OC	
21		M 41	2287	CMA	6h 47m	-20° 44'	4.5	OC	
22		M 93	2447	PUP	7h 45m	-23° 52'	6.2	OC	
23		M 47	2422	PUP	7h 37m	-14° 30'	4.4	OC	
24		M 46	2437	PUP	7h 42m	-14° 49'	6.1	OC	
25		M 50	2323	MON	7h 03m	-8° 20'	5.9	OC	
26		M 48	2548	HYA	8h 14m	-5° 48'	5.8	OC	
27		M 44	2632	CNC	8h 40m	19° 59'	3.1	OC	Beehive Cluster
28		M 67	2682	CNC	8h 50m	11° 49'	6.9	OC	
29		M 95	3351	LEO	10h 44m	11° 42'	9.7	SG	
30		M 96	3368	LEO	10h 47m	11° 49'	9.2	SG	
31		M 105	3379	LEO	10h 48m	12° 35'	9.3	EG	
32		M 65	3623	LEO	11h 19m	13° 5'	9.3	SG	Leo's triplet
33		M 66	3627	LEO	11h 20m	12° 59'	9.0	SG	Leo's triplet
34		M 81	3031	UMA	9h 56m	69° 4'	6.8	SG	Bodes Galaxy
35		M 82	3034	UMA	9h 56m	69° 41'	8.4	IG	Cigar Galaxy
36		M 97	3587	UMA	11h 15m	55° 1'	11.2	PN	Owl Nebula
37		M 108	3556	UMA	11h 12m	55° 40'	10.0	SG	

Order	Time	M #	NGC	Con	R.A.	Dec	Mag	Type	Comments
38		M 109	3992	UMA	11h 58m	53° 23'	9.8	SG	
39		M 40		UMA	12h 22m	58° 5'	8.0	dbl	
40		M 106	4258	CVN	12h 19m	47° 18'	8.3	SG	
41		M 94	4736	CVN	12h 51m	41° 7'	8.1	SG	
42		M 63	5055	CVN	13h 16m	42° 2'	8.6	SG	Sunflower galaxy
43		M 51	5194	CVN	13h 30m	47° 12'	8.1	SG	Whirlpool galaxy
44		M 101	5457	UMA	14h 03m	54° 21'	7.7	SG	
45		M 102	5457	UMA	14h 03m	54° 21'	7.7	SG	Duplicate of M101
46		M 53	5024	COM	13h 13m	18° 10'	7.7	GC	
47		M 64	4826	COM	12h 57m	21° 41'	8.5	SG	Black eye galaxy
48		M 3	5272	CVN	13h 42m	28° 23'	6.4	GC	
49		M 98	4192	COM	12h 14m	14° 54'	10.1	SG	
50		M 85	4382	COM	12h 25m	18° 11'	9.2	EG	
51		M 99	4254	COM	12h 19m	14° 25'	9.8	SG	Pin Wheel nebula
52		M 100	4321	COM	12h 23m	15° 49'	9.4	SG	
53		M 84	4374	VIR	12h 25m	12° 53'	9.3	EG	
54		M 86	4406	VIR	12h 26m	12° 57'	9.2	EG	
55		M 87	4486	VIR	12h 31m	12° 24'	8.6	EG	
56		M 89	4552	VIR	12h 36m	12° 33'	9.8	EG	
57		M 90	4569	VIR	12h 37m	13° 10'	9.5	SG	
58		M 88	4501	COM	12h 32m	14° 25'	9.5	SG	
59		M 91	4548	COM	12h 35m	14° 30'	10.2	SG	
60		M 58	4579	VIR	12h 38m	11° 49'	9.8	SG	
61		M 59	4621	VIR	12h 42m	11° 39'	9.8	EG	
62		M 60	4649	VIR	12h 44m	11° 33'	8.8	EG	
63		M 49	4472	VIR	12h 30m	8° 0'	8.4	EG	
64		M 61	4303	VIR	12h 22m	4° 28'	9.7	SG	
65		M 104	4594	VIR	12h 40m	-11° 37'	8.3	SG	Sombrero galaxy
66		M 68	4590	HYA	12h 40m	-26° 45'	8.2	GC	
67		M 83	5236	HYA	13h 38m	-29° 52'	7.6	SG	Southern Pinwheel
68		M 5	5904	SER	15h 18m	2° 5'	5.8	GC	
69		M 13	6205	HER	16h 42m	36° 28'	5.9	GC	Hercules Cluster
70		M 92	6341	HER	17h 17m	43° 8'	6.5	GC	
71		M 57	6720	LYR	18h 54m	33° 2'	9.0	PN	Ring nebula
72		M 56	6779	LYR	19h 17m	30° 11'	8.2	GC	
73		M 29	6913	CYG	20h 23m	38° 32'	6.6	OC	
74		M 39	7092	CYG	21h 32m	48° 26'	4.6	OC	
75		M 27	6853	VUL	20h 00m	22° 43'	8.1	PN	Dumbbell nebula
76		M 71	6838	SGE	19h 54m	18° 47'	8.3	GC	
77		M 107	6171	OPH	16h 33m	-13° 3'	8.1	GC	
78		M 10	6254	OPH	16h 57m	-4° 6'	6.6	GC	
79		M 12	6218	OPH	16h 47m	-1° 57'	6.6	GC	
80		M 14	6402	OPH	17h 38m	-3° 15'	7.6	GC	
81		M 9	6333	OPH	17h 19m	-18° 31'	7.9	GC	
82		M 4	6121	SCO	16h 23m	-26° 32'	5.9	GC	

Order	Time	M #	NGC	Con	R.A.	Dec	Mag	Type	Comments
83		M 80	6093	SCO	16h 17m	-22° 59'	7.2	GC	
84		M 19	6273	OPH	17h 03m	-26° 16'	7.2	GC	
85		M 62	6266	OPH	17h 01m	-30° 7'	6.6	GC	
86		M 6	6405	SCO	17h 40m	-32° 13'	4.2	OC	Butterfly cluster
87		M 7	6475	SCO	17h 54m	-34° 49'	3.3	OC	Ptolemy's Cluster
88		M 11	6705	SCT	18h 51m	-6° 16'	5.8	OC	Wild Duck cluster
89		M 26	6694	SGR	18h 45m	-9° 24'	8.0	OC	
90		M 16	6611	SER	18h 19m	-13° 47'	6.0	DN	Eagle nebula
91		M 17	6618	SGR	18h 21m	-16° 11'	7.0	DN	Swan nebula
92		M 18	6613	SGR	18h 20m	-17° 8'	6.9	OC	
93		M 24	6603	SGR	18h 16m	-18° 29'	4.5	OC	
94		M 25		SGR	18h 32m	-19° 15'	4.6	OC	
95		M 23	6494	SGR	17h 57m	-19° 1'	5.5	OC	
96		M 21	6531	SGR	18h 05m	-22° 30'	5.9	OC	
97		M 20	6514	SGR	18h 02m	-23° 2'	8.5	DN	Trifid nebula
98		M 8	6523	SGR	18h 03m	-24° 23'	5.8	DN	Lagoon nebula
99		M 28	6626	SGR	18h 25m	-24° 52'	6.9	GC	
100		M 22	6656	SGR	18h 36m	-23° 54'	5.1	GC	
101		M 69	6637	SGR	18h 31m	-32° 21'	7.7	GC	
102		M 70	6681	SGR	18h 43m	-32° 18'	8.1	GC	
103		M 54	6715	SGR	18h 55m	-30° 29'	7.7	GC	
104		M 55	6809	SGR	19h 40m	-30° 58'	7.0	GC	
105		M 75	6864	SGR	20h 06m	-21° 55'	8.6	GC	
106		M 15	7078	PEG	21h 30m	12° 10'	6.4	GC	
107		M 2	7089	AQR	21h 33m	0° -49'	6.5	GC	
108		M 72	6981	AQR	20h 54m	-12° 32'	9.4	GC	
109		M 73	6994	AQR	20h 58m	-12° 38'		ast	
110		M 30	7099	CAP	21h 40m	-23° 11'	7.5	GC	

A.V.A.C. Information

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...

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

AVAC

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

The Antelope Valley Astronomy Club, Inc. is a 501(c)(3) Non-Profit Corporation.

The A.V.A.C. is a Sustaining Member of The Astronomical League and the International Dark-Sky Association.

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