

The Objective View September 2002

Newsletter of the Northern Colorado Astronomical Society

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Meetings first Thursday of each month

Next Meeting: September 5 7:30 PM
Close Encounter:
Flyby of Asteroid 2002 NY 40
by Brad Jarvis

Meeting directions

Discovery Science Center
703 East Prospect Rd, Fort Collins
<http://www.dcsm.org/index.html>

In Fort Collins, from the intersection of College Ave and Prospect Rd, head East about 1/2 mile. See the Discovery Center sign to the South. Enter the West Wing at the NE corner. From I-25, take Exit 268, West to Lemay Ave, continue West 1/2 mile, see Discovery Center on the left.

NCAS Star Party Dates

September 6,7, 29, 30

You might find a few amateur astronomers on the plains on these nights. Cactus Flats site is on undeveloped parcel of prairie about 6 miles West of Briggsdale. Take Colo Hwy 14 East from I-25 (Exit 269). Go 19 miles East to Ault. Continue 18 miles East of Ault. At County Rd 65 (Milepost 170), turn North, go one mile. Site is through the wire gate on the right, no road, close gate and set up. Beware of the cactus. Our standard nights are the weekend of the New Moon, sometimes a weekend before and after. The site is now officially wheelchair accessible, but there are no facilities so bring essentials. Call **Tom Teters**, starmon@jymis.com, with questions about star party status or dates, 482-5702 or 482-0807.

Discovery Science Center Starwatching

September 13 6:30 pm
October 11 6:30 pm
November 8 6:30 pm

Longmont Astronomical Society 1st Quarter Moon Public Viewing Nights, Flanders Park

September 14, October 12, November 9, December 7

Other Events

Little Thompson Observatory Star Night, Berthoud
September 20 Star Night 7 – 10 pm
<http://www.starkids.org>

Cheyenne Astronomical Society
September 6, 7 Camp Jack Star Party
September 20 Cheyenne Botanical Garden
<http://users.sisna.com/mcurran>

Open House, Chamberlain Observatory, dusk to 10 PM
Sep 14, Oct 12, Nov 16, Dec 14 303 871 5172
<http://www.du.edu/~rstencel/Chamberlain/>

Longmont Astronomical Society
September 19, Longmont Christian School, 550 Coffman St
<http://laps.fsl.noaa.gov/cgi/las.cgi>

Carter Lake Knolls Starparties

Dates for Summer 2002 are: Sept 13
Contact Tom Teters if you can volunteer, 482-5702
tomt@starmon.com

August 1 Program

University of Arizona's Advanced Teen Astronomy Camp, 2002
Max Moe, NCAS Member

Max enjoyed the experience of a lifetime in the summer of his 16th birthday. He was accepted to join a team of highly motivated high school students at the University of Arizona's facilities by Tucson, Arizona. He visited the Very Large Array by Socorro, NM en route. He had a great look at several of the 27, 82 foot dishes which comprise the array. When most widely dispersed, the dishes are spread along 3 legs, 22 miles long. U of A hosts camps for teens, adults, advanced and beginners, and a teacher camp. 33 students came from 22 states, and one came from Nepal. Applicants needed geometry, algebra II is optional. A recommendation letter is needed from a math or science teacher. A 700-word essay is required on a recommended topic. Max tackled an essay written in the voice of Johannes Kepler's assistant. At camp, students were challenged with Fermi problems. At the 1st atomic bomb test, physicist Enrico Fermi was said to toss a paper in the air as the shock wave passed. The paper flew 7 feet away, and from this Fermi calculated that the blast was equivalent to 10 kilotons of TNT. Weeks later, careful analysis confirmed his estimate. Students were asked to make their best effort to solve such questions as: How many notes are played on the radio in a year? How many piano tuners are there in NYC? What fraction of the US is covered by automobiles? The exercise promoted creative problem solving. 8 excellent clear nights were allowed ample astronomy data gathering, analysis and presentation. The smoke had cleared from the Mount Lemmon fire in time for their first observing session on Friday. The observatory facilities included a pool, game room, a

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wireless Internet connection, and every Astronomical Journal since 1936. Students observed the Sun in white light and H-alpha with a 0.6 angstrom filter. Mt. Lemmon reaches 9157 feet.

Telescopes available for students were a 10 inch homemade Dobsonian, 12" LX200 SCT with a CCD camera, 40", 60", and 61" reflectors. The 61" had 1/24 wavefront optics, and could resolve 0.7 arcsecond with favorable conditions. It was used for lunar mapping for Apollo missions, and now has a 2K x 2K CCD camera. Students debated questions about Mars sample return. Should loose debris or a core sample be obtained? Rocky material or ice? Is a costly sample return necessary, or can the existence of past life be proven without it? Students made a day trip to the Tucson basin, visited the Sonoran Desert Museum and caught saguaro cactus in bloom. An astronomy display there had a large iron meteorite and a moon rock. They trekked to Kitt Peak, home to many scopes including the 4 meter Mayall Telescope. It towers 18 stories and its dome weighs 500 tons. The primary is 15 tons. At the U of A Mirror Lab, they saw the rotating oven pioneered by Roger Angell. Its product was an 8.4 meter mirror destined for the binocular telescope on Mount Graham. After a hot day on the basin, Max was ready for a bucket of liquid nitrogen ice cream. Students exchanged Email before camp, and were prepared to launch projects which they arrived. A team estimated ages of star-forming nebulae, assuming older nebulae contain more stars. Pluto and Charon were near maximum separation, so a team attempted to image them with the 61" telescope. SS433 is a binary with an accretion disk, a target for spectroscopy. Another team targeted the Antennae, interacting galaxies. Other projects were photometry of star HD 209458 during a planet transit, polarized light studies of the Egg Nebula, gravitational lensing, imaging of an RR Lyrae variable, study of dark matter in galactic cores, and using the 12" telescope to image geostationary satellites. Max took part in imaging Andromeda Galaxy globular cluster G1 in IR and VIS wavelengths. He also participated in spectroscopy of SS 433. It is a binary comprised of a star and a neutron star. The neutron star component has an accretion disk, and polar jets are detectable by radio. Tuesday night's session was missed because someone sat on the power button, no time to set up again. Max begged for time on Thursday night and his team was able to snag images then. The binary period is 13.4 days and the spectrum changes day to day. The spectrum shows redshifted and blueshifted emission, expected from opposite sides of the accretion disk. The velocity of disk rotation, and the recession velocity of the system were estimated. On their last day, students fired a liquid N2 cannon to celebrate. Max concluded with a solution to the surface area of the US covered by autos, and brought a copy of his award-winning application essay. The essay developed a life of its own, stretching to 5 times the required length. In all, the camp was a wonderful horizon expander.

NCAS Business, August 1, 2002

President Jan Kok called the meeting to order. Brad Jarvis announced the Mars Society convention, August 8 through 11. Tom Teters and Brad Jarvis noted the upcoming close approach of asteroid 2002 NY40. Corey Radman invited NCAS members

to assist with events including Harvest Moon night on Sept 21, NASA Educator miniconference on October 12.

Asteroid 2002 NY40 Flyby Views

Hi everyone,

I was soooooo lucky to see the asteroid last night!!!! I hope everyone was able to watch the event despite the smoke. Around 9:30, the limiting visual magnitude was around 1 on my driveway, so I knew it would be impossible for me to see it with my 8-inch telescope. About an hour later, the smoke dissipated so I set up the scope in hopes of finding it. It took almost an hour to find even though the coordinates I printed were only 3 arcminutes off; luckily the skies were better with a limiting visual magnitude of 2.5. It was around 11:30 when I saw a "binary □ star" in which the companion got closer to the primary. I didn't imagine it could be going so quickly. It took 4 minutes and 40 seconds to cross my 35 arcminute field of view, so it was traveling at 7.5 arcminutes per minute. I made 4 sketches of the asteroid over a duration of 2 hours. I could see the parallelogram in Lyra before I packed up, so the skies had improved to at least a limiting visual magnitude of 4. I wouldn't mind seeing another near-earth asteroid soon. It was awesome!

Max M

From Ells Dutton:

Yes, was quite a kick to watch the visitor. Turns out that my 10" SCT under the control of a commercial charting program had no trouble picking up NY40 (many times over a 2.5 hour period) although it was misplotted by about 7' perpendicular to the track but dead-on in time along the track using the Harvard elements from the day before. I tried to get a few readings from an astrometric eyepiece but it was moving just too fast to get very accurate. I've seen one report that a net published JPL ephemeris (there's probably more than one) was accurate to a few arc seconds. It had to be one of the more exciting observing sessions I've had in forty years! Clouds got me (west of Niwot) before it was finished. The smoke turned out to be no problem, this one was bright and high, maybe peaked at 9.6(?) while I watched - what, no near-by comparison star? No problem, wait a few minutes...

Ells

From Leroy G:

From the standpoint of an observer, Saturday night was the most satisfying event I've experienced since the Total Solar Eclipse I was privileged to see in Washington state, 1979.

I managed to observe A/2002 NY40 on two of three attempted nights last week. I've already reported on last Wed., but more some details follow at the bottom of this note.

Friday night was the first planned/scheduled public star party of the Aurora (Colorado) Astronomical Association (see link below). The sky was looking promising Friday afternoon, but smoke from the Steamboat Springs wildfire

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quickly covered the metro Denver area, and all we had to show the attendees were an orange Moon (like sunset had been), and a couple of first mag. stars I found via GOTO!

Saturday evening was only a little better. I had checked Weather underground which did not mention "smoke and haze" for the area of the Denver Astronomical Society's Edmund G. Kline Dark Sky Site, 60 miles east of Aurora. I packed my 12" LX200 and all necessary gear into my wife's '91 Honda Civic Hatchback (it was surprisingly accomodating, but I didn't get a picture) because my '99 Caravan was in for extended maintenance.

As I traveled further and further east on I-70, the Moon's yellowish-orange hue did not improve and no stars were appearing in the skies overhead. This had me grumbling. I got my mind off of that situation by mentally calculating whether or not I'd be able to see a "disk" on NY40 with its 800 meters diameter. I concluded that it would be the size of Ceres at Jupiter orbit, so no chance. OK, no waste of high power viewing on it!

I really expected to arrive at the site to be alone, but the gate was already unlocked, and there was a car! Someone else was as nuts as I was, so I didn't feel so bad about driving out to LM 3 skies that are normally 6.5-7.0.

Monique and Sally were there, but had not yet setup their C8. After some discussion, I decided that I came all that way, I might as well try. The alternative was obvious.

After about 30 minutes of checking fields using my 17mm eyepiece, I switched to 22mm. The thinking was that I would need all of the magnification I could get for the most field of view since the haze was soooo bad. I was even prepared to drop to the 31mm had it been needed, but the 22mm caught the target.

I had updated my MegaStar 5 with the latest MPC elements before leaving, and I printed off the ephemerides from MegaStar (purposely since I had been using it all week, I didn't want to change horses midstream). When I found the target, its position (using LX200 High Precision Pointing) did not agree with Megastar, but it was close enough, so I didn't really care to try and evaluate it. My guess: I was two minutes ahead of Megastar, and the rock passed off-center in the eyepiece, 10-15 arc-minutes off track.

I wasn't sure what to expect as far as detectable

sky motion. I had figured that it would be immediately obvious, but the question of how bright it would appear in the eyepiece through the haze was the big question.

It turned out that the asteroid was moving just slow enough in the eyepiece that a casual glance, like do I have that galaxy in the field, would be enough to miss it. But moving just fast enough that if you took long enough to really look, you would see it moving. Awesome!

On 8/18, I first found NY40 at 4:38 UT and in a 22mm eyepiece (82 AFOV), at 3048mm focal length, it was taking about five minutes to cross through the center of the field of view to the opposite side of the eyepiece barrel. I tracked it, moving the scope W and S every two to five minutes for another hour and forty-five minutes, until it got fairly low in the west, where the transparency was starting to degrade (more).

At 5:52 UT, a highly inclined (my visual estimate) earth satellite crossed the field of view just behind the asteroid's path, the former moving much more quickly of course, and north.

At 6:00 UT, it was taking only four-and-a-half minutes to cross the field of the 22mm (139X).

This nearly two-hour star trek had the asteroid weaving in and out of existing asterisms, and creating new ones all the time. The brightest star it passed during the time I had it in the eyepiece was Theta Herculis which it crossed just north of by about a field of view of the 22mm, shortly after I located the asteroid.

This was my first NEO, and certainly not my last. I learned a lot this time through, and will definitely be better prepared to react to any others on much shorter notice.

I purposely did not telescopically observe the Moon (or anything else) because I had wanted NY40 to be my only subject of observation that night. It added to the uniqueness of the experience.

I had already mentioned my observation of A/2002 NY40 Wed. night (8/15 5:29-6:00 UT). I had previously, roughly estimated it was moving at that time at about 5-6 times the sky motion of typical main belt asteroids I've been observing for the AL asteroid club. Since mentioning that, I began considering a way I might better estimate that apparent motion.

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I usually draw the star field using one of two eyepieces, and the drawing I took on 8/15 was close to my 12mm fields (2X Big barlow with 22mm Nagler) and both have the same apparent fields of view. Based upon past drawings of approximately same field scale, and grouping them by nights assuming I was better at getting the same scale on the same night, I determined that NY40 was moving 4.4 to 7 times as fast (on 8/15 UT) as the "regular" asteroids I've been observing lately.

This is just scaling from rough, eyeball drawings, of course.

LeRoy Guatney
Aurora, Colorado
http://a_cubed.tripod.com

Scope for Sale

Coulter 10 inch Dobsonian. Like new. Includes Kellner eyepiece, eyepiece rack, red-dot aiming device, aperture stop, dustcap. \$600. Call Gene, 970-568-0545.

Local Astronomy Internet Group

"Astro-Colorado is a Yahoo Group moderated by NCAS member Dave Larison. The site can be used for announcements, discussion of current observations, equipment questions, and file uploads. Anyone can view contents, but only members may post. See:

<http://groups.yahoo.com/group/astro-colo>

From Archer Sully: Sky Transparency and Seeing Forecast

I've altered the following link for Colorado.

http://cleardarksky.com/csk/prov/Colorado_clocks.shtml

Best Looks

Moon	by Saturn 9/1, by Jupiter 9/4 by Mercury 9/8, by Venus 9/9
Venus	bright in WSW at dusk, by Spica 9/1 to 5
Mercury	low in W eves, first week of month
Jupiter	passes M44 cluster, 1 st half of month
Saturn	High in E predawn
Uranus	in Capricornus late evening
Neptune	in Capricornus late evening

From Jim S: Best Moon Site I've Seen:

<http://www.moon-phases.com/>

Comet Hoenig by Tom T

Saw Hoenig Friday and Sat. at Cactus Flats North. Located about 3* under Thuban, it seems to have brighten since last week and the coma is slightly larger. I took some CCDs and published them at the bottom of the page

<http://starmon.com/hoenig.html>

Lowell's 1895 Mars for sale:

Hello Tom,

I am touching base with you from Grand Junction. I have a copy of Percival Lowell's (1895) book titled; "Mars", which is a (107) year-old, edition, fourth impression printing! This item is "FOR SALE". Would make a terrific "Collectable", and or for the serious amateur astronomer looking for a gift to pass down to grandkids, telling the story of the early exploration of the planet Mars. The book is "complete", including Lowell's famous line-drawings of the so-called "Canals", which prior to the turn of the century, were believed to be evidence of a civilization on the red planet! Serious inquiries - only! I can be reached via this e-mail, or through the Western Colorado Math & Science Center, (970) 243-0028. Thank you., Jim Stryder

The Western Colorado Astronomy Club, based in Grand Junction, is holding its annual star party September 6-8 on the Grand Mesa (elevation 10,500 ft.). We'd like to extend an invitation to all the members of the NCAS to come party with us! Visit our web site at <http://www.wic.net/WCAC/> for a map to the area. There is no registration fee, and a Porta-Pottie will be provided for the convenience of the participants (we will accept donations to help cover costs). There is ample area for camping, but bring lots of warm clothing, adequate shelter, and provisions. It will be cool at night and the altitude can be dehydrating.

Wishing you dark skies and clear nights,

Andy Bartlett
Member, Star Party Committee
Western Colorado Astronomy Club
Grand Junction, Colorado
(970)523-7247
Psychtab55@aol.com

Pawnee Observing by Dave D:

Third time's the charm best describes this past weekends observing attempts. As previously reported Fri. night at RMNP was fun but mediocre conditions at best. Sat. knowing that at least Tom T. was out at the Flats I arrived under mostly cloudy skies with a nice hole opening up overhead. An hour past sunset their was enough open sky to observe without dodging clouds. Steve L. showed up at the same time Tom and I were tracking down Comet Hoenig. A nice though somewhat dim visitor to our neighborhood. By 10:00 the sky had clouded over so we sat discussing the great times of the past year. With the Moon's impending arrival I packed up planning to return the next night.

Saturdays forecast did not match the conditions all day but with reports of it clearing off in the evening and Mondays forecasts calling for clear, why not. It was still hazy at sunset when I arrived at Cactus Flats North. As aside CFN is appx. 1/2 mile north on the trail that you see on the west side of the clearing

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inside the gate. You drive N till you reach a draw. Its low enough that all but one light is visible, along with not having to deal with vehicles driving down CR 65. Also cutting off the bottom 25% of the Denver Neb. makes it seem darker. All future trips to the Flats for me will be to this area. Steve was already set up checking out Venus. The sky cleared off nicely by sunset but with no wind at all the haze began to creep back in around 10:00. Taking a break till a breeze began out of the NW, in a matter of minutes we were treated to the best sky all weekend. With the exception of some low haze to the SW it was clear everywhere else. Out came the chart books and observing lists for some serious hunting, well at least make the best use of our time till Luna pops up again :-). The next 2+ hours went by fast as Steve noticed a brightening about 1:10am on the Eastern horizon. With it only at a 25% phase the sky didn't glow that much so we continued on brighter objects till 1:45am. Conditions never required more than a medium weight jacket and occasionally when the wind would warm that was too much. Unfortunately the seeing would go completely south during those times. It is usually a disappointment out at the "Flats" the first time after being up at Fox Park all summer but the conditions this night were surprisingly good. Being North of the usual observing area does make a difference and may extend the life of Cactus Flats. Looks like there are several options for next weekends New Moon party, some of the troops are talking about Fox Park one more time, Sterling for the DAS gathering, and of course the Flats. Saturday is the only night for me so I'll be somewhere "regional"

From: Dan Laszlo
2001 S Shields St Building H
Fort Collins CO 80526

TO:

International Space Station Passes for Loveland & Fort Collins, September 2002

Date	Mag	Starts			Max. Altitude			Ends		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
04 Sep	1.5	04:55:43	18	SSE	04:57:00	22	SE	04:59:35	10	E
05 Sep	-0.6	05:33:42	18	WSW	05:35:58	82	NW	05:39:13	10	NE
06 Sep	0.3	04:39:11	43	SE	04:39:11	43	SE	04:42:06	10	ENE
07 Sep	2.9	03:44:31	10	E	03:44:31	10	E	03:44:31	10	E
07 Sep	0.1	05:16:52	30	W	05:18:00	43	NNW	05:21:07	10	NE
08 Sep	1.2	04:22:04	34	NE	04:22:04	34	NE	04:24:02	10	NE
08 Sep	1.5	05:54:57	10	WNW	05:57:18	18	NNW	05:59:39	10	NNE
09 Sep	0.9	04:59:30	26	NW	04:59:49	27	NNW	05:02:39	10	NE
10 Sep	2.3	04:04:30	18	NE	04:04:30	18	NE	04:05:31	10	NE
10 Sep	1.9	05:37:15	10	NW	05:39:07	14	NNW	05:41:00	10	NNE
11 Sep	1.6	04:41:43	19	NNW	04:41:43	19	NNW	04:43:51	10	NNE
12 Sep	3.0	03:46:32	11	NE	03:46:32	11	NE	03:46:38	10	NE
12 Sep	2.2	05:19:15	10	NNW	05:20:41	12	N	05:22:08	10	NNE
13 Sep	2.3	04:23:36	14	N	04:23:36	14	N	04:24:46	10	NNE
13 Sep	2.3	05:58:36	10	NNW	05:59:59	12	N	06:01:22	10	NNE
14 Sep	2.4	05:00:48	10	NNW	05:02:00	12	N	05:03:12	10	NNE
15 Sep	2.8	04:05:16	11	NNE	04:05:16	11	NNE	04:05:27	10	NNE
15 Sep	2.3	05:39:20	10	NNW	05:41:07	14	NNE	05:42:55	10	NE
16 Sep	2.4	04:42:12	11	N	04:43:01	12	N	04:44:19	10	NNE
17 Sep	2.1	05:19:41	10	NNW	05:21:56	17	NNE	05:24:10	10	ENE
18 Sep	2.4	04:23:47	13	NNE	04:23:47	13	NNE	04:25:24	10	NE
18 Sep	0.8	05:57:27	10	NW	06:00:30	39	NNE	06:03:32	10	ESE
19 Sep	1.6	05:00:48	16	NNW	05:02:23	23	NNE	05:05:02	10	E
20 Sep	2.8	04:05:34	13	NE	04:05:34	13	NE	04:06:14	10	ENE
20 Sep	-0.3	05:37:54	13	NW	05:40:39	69	NNE	05:43:51	10	ESE
21 Sep	1.1	04:42:47	33	NE	04:42:47	33	NE	04:45:28	10	E
21 Sep	0.6	06:15:45	10	WNW	06:18:30	26	SW	06:21:14	10	SSE
22 Sep	-0.7	05:20:09	57	WSW	05:20:28	62	SW	05:23:37	10	SE
23 Sep	2.6	04:25:20	10	ESE	04:25:20	10	ESE	04:25:25	10	ESE
23 Sep	1.3	05:57:41	14	SW	05:58:00	14	SW	05:59:48	10	SSW
25 Sep	1.8	20:33:36	10	SSW	20:34:13	14	SSW	20:34:13	14	SSW
26 Sep	1.2	19:36:17	10	S	19:38:14	15	SE	19:39:02	14	ESE
26 Sep	2.4	21:10:54	10	WSW	21:11:21	13	WSW	21:11:21	13	WSW
27 Sep	-0.7	20:12:19	10	SW	20:15:28	68	SE	20:15:52	57	E
28 Sep	0.5	19:14:12	10	SSW	19:16:57	28	SE	19:19:43	10	ENE
28 Sep	1.3	20:50:03	10	W	20:52:25	30	NW	20:52:25	30	NW
29 Sep	-0.3	19:51:02	10	WSW	19:54:10	64	NNW	19:56:26	17	NE
29 Sep	3.1	21:28:41	10	NW	21:28:41	10	NW	21:28:41	10	NW
30 Sep	1.6	20:29:06	10	WNW	20:31:38	22	NNW	20:32:30	20	N
01 Oct	0.7	19:29:42	10	W	19:32:40	37	NNW	19:35:38	10	NE
01 Oct	2.7	21:07:49	10	NW	21:08:22	12	NNW	21:08:22	12	NNW
02 Oct	1.9	20:08:00	10	WNW	20:10:09	17	NNW	20:11:51	12	NNE

Bright Iridium Flares for Lemay and Trilby, Fort Collins

		Mag	Alt	Azimuth	Max flare at	Mag	Satellite
06 Sep	21:07:48	-8	50°	102° (ESE)	0.8 km (W)	-8	Iridium 43
11 Sep	04:59:47	-6	14°	15° (NNE)	3.1 km (W)	-6	Iridium 35