

The Objective View

Newsletter of the Northern Colorado Astronomical Society

April 2010

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add ncastro.org to complete email address

Next Meeting: April 1 7:30 pm

Amateur Telescope Making

Jon Caldwell, NCAS

Club Business at 7:15 pm

**Fort Collins Museum, 200 Mathews St
Fort Collins**

<http://www.fcgov.com/museum/>

Club Brochure: http://www.ncastro.org/Contrib/2009_Brochure.pdf

NCAS Programs

May 6 Estes Park Memorial Observatory

June 3 TBA

July 1 Chip Kobulnicky Wyoming Infrared Observatory

NCAS Public Starwatch at Fossil Creek Reservoir

Apr 16 7 pm

May 21 8 pm

June 19 8:30 pm

July 17 8:30 pm

Aug 20 8 pm

http://www.co.larimer.co.us/naturalresources/fossil_creek.htm

City of Fort Collins Natural Area Program at Sunset

Bobcat Ridge: Apr 8, May 13, Jun 10

<http://www.fcgov.com/naturalareas/finder/bobcat>

Dark Site Observing Dates

April 16, 17 Keota site, ask FRAC

Other Events

Chamberlin Observatory Open House, 7 to 10 pm

Apr 24, May 22, Jun 19, Jul 17, Aug 14 303 871 5172

<http://www.du.edu/~rstencil/Chamberlin/>

Cheyenne Astronomical Society 7 pm Apr 16 MJ Schutz,

Spring Constellations Cheyenne Botanic Gardens

<http://home.bresnan.net/~curranm/>

CSU Madison Macdonald Observatory Public Nights

On East Drive, north of Pitkin Street

Tuesdays after dusk if clear, when class is in session

Estes Park Memorial Observatory. 7 pm. Apr 22

<http://www.angelsabove.org/>

Little Thompson Observatory, Berthoud open 7 pm Apr 16

<http://www.starkids.org>

Longmont Astronomical Society 7 pm Apr 15 at IHOP, 2040

Ken Pratt Blvd. Dr. Robert Stencil, Epsilon Aurigae

<http://www.longmontastro.org/>

March 4 Program: Cloudsat, by Dr. Matt Rogers

Matt grew up in Aurora, Colorado, received his undergrad degree at CU Boulder and his Ph.D. at CSU in Fort Collins. He is studying the energy budget of Earth by analyzing its clouds. How much energy is reflected? How much gets absorbed? There are three general effects of clouds. Thin, cold ice clouds reflect less sun than denser clouds. And they can keep infrared from freely radiating into space, so they can have a net warming effect. Very thick cumulus clouds reflect solar energy and tend to cool the planet. Ramanathan noted this as an offset to the CO2 effect. Their blackbody emission is like the ground. Rising CO2 levels might increase cirrus, contributing to warming. One thunderstorm holds several thousand metric tons of water. 1 kg of water releases 2,260 kJoules of latent heat energy. The power in 1 thunderstorm matches the electric power used for the Los Angeles region in 11 seconds. How much rain and snow do clouds produce? How does pollution affect clouds? How much sunlight is reflected to space? How is the greenhouse effect affected by clouds? Cloudsat is a giant flying microwave. It emits milliwatt energy at 94 GHz. It alternates pulses with listening. It can reveal the amount of water in clouds. Its perspective on water in large cloud masses is unique. It orbits at 705 km, about twice the Space Shuttle altitude. It has 500 meter resolution. Its sun-synchronous polar orbit gives a pass at 1 pm local time. It completes a scan of earth every 16 days. It images day and night. Ball Aerospace constructed the SUV-sized craft. It shared a ride on April 28, 2006 with CALIPSO which scans clouds with a green LIDAR. They had a night launch from Vandenberg AFB. There were 4 days of launch delays. Six spacecraft form the Afternoon "A-Train:" Aura,

PARASOL, CALIPSO, Cloudsat, Aqua, and may include the Orbiting Carbon Observatory. They provide coordinated science observations. Matt showed an example of a cold front structure dissected by Cloudsat. They are not able to aim at pursue targets, but hurricanes are common enough to sample by chance. Arctic cloudcover has been monitored and between 50 and 82N, the amount of cloud has markedly decreased. This is likely to contribute to shrinking of the N polar ice cap. We can look forward to improved forecasts based on better predictions of cloud location and formation. This will play a key role in making climate models as accurate as possible.

For more information:

http://www.nasa.gov/mission_pages/cloudsat/main/index.html
<http://reef.atmos.colostate.edu/rogers/>

March 4 Club Business

President Bob Michael called the meeting to order. GLOBE at Night star counts are scheduled for March. Tom Teters found dark skies at Ft. Union National Monument in New Mexico.

National Astronomy Day is coming up April 25. Events were reviewed. The club account stands at \$892.56 + \$100 petty cash per email from Jon Caldwell. Next outreach events in 2010 were at Bethke Elementary and the Waverly Community Starwatch. Next is the public starwatch at Fossil Creek Reservoir March 19.

From Andrea Schweitzer: Hubble Movie in Simulated 3-D

Take an exhilarating ride through the Orion Nebula, a vast star-making factory 1,500 light-years away. Swoop through Orion's giant canyon of gas and dust. Fly past behemoth stars whose brilliant light illuminates and energizes the entire cloudy region. Zoom by dusty tadpole-shaped objects that are fledgling solar systems.

This virtual space journey isn't the latest video game but one of several groundbreaking astronomy visualizations created by specialists at the Space Telescope Science Institute (STScI) in Baltimore, the science operations center for NASA's Hubble Space Telescope. The cinematic space odysseys are part of the new Imax film "Hubble 3D," which opens today at select Imax theaters worldwide.

The 43-minute movie chronicles the 20-year life of Hubble and includes highlights from the May 2009 servicing mission to the Earth-orbiting observatory, with footage taken by the astronauts.

The giant-screen film showcases some of Hubble's breathtaking iconic pictures, such as the Eagle Nebula's "Pillars of Creation," as well as stunning views taken by the newly installed Wide Field Camera 3.

While Hubble pictures of celestial objects are awe-inspiring,

they are flat 2-D photographs. For this film, those 2-D images have been converted into 3-D environments, giving the audience the impression they are space travelers taking a tour of Hubble's most popular targets.

Images and more information:

- * <http://hubblesite.org/news/2010/12>
- * <http://www.nasa.gov/hubble>

From Greg Halac: Software for Optical Systems Spells the End of Blur

See:

<http://spectrum.ieee.org/aerospace/astrophysics/software-for-optical-systems-spells-the-end-of-blur/0>

... What started out as NASA's greatest embarrassment set in motion a new wave of optics research with broad implications for astronomy and vision science. It took NASA three years, a space shuttle launch, and US \$700 million to fix Hubble. We're hoping to eliminate all that trouble for future telescopes by measuring and analyzing blur in real time, using just the data in an image. . .

From Michael Prochoda: Observing Report 3-17-10

Astronomers:

Last night (Wednesday 3/17/10) after working until about 11:00 PM, I setup my "grab-and-go" 140mm apo refractor to take a peek at Saturn and Mars before bedtime. I was treated to probably the best seeing ever from my backyard in Estes Park. I rated it as between Pickering 8 and 9 on the 1-10 Pickering scale. There were nice tight Airy discs around stars with only minimal shimmering of the 2nd and 3rd Airy rings. Mars was spectacular! At 300x the N. polar cap was obvious as well as several surface features, and the gibbous phase of this planet. The limb of Mars was rock-steady and sharp as a razor's edge. Swinging to Saturn, the almost edge-on rings were also razor sharp. Intermittently I could make out the Cassini division in the outer 1/3 of the rings during moments of particularly good seeing, despite the acute angle of the rings. Several bands were visible on the planet, as well as the sharp thin line of the ring shadow on the globe. I was able to crank the magnification up to 350x with no noticeable breakdown in the image (max. power that I have available using a 3 mm Radian eyepiece). Gorgeous view! The best I have ever seen of Saturn with my refractor. If the rings had been wide open, I probably could have seen the Encke division. Because the sky was so steady, I decided to forgo my warm bed and study some double stars. I observed all of the doubles described by Dr. Richard Jaworski's article "Double Stars in and around Leo" on page 73 of the March 2010 issue of Sky & Telescope. I even easily split Iota Leonis (1.9" very unequal pair) which Dr. Jaworski was not able to observe in his article, until he moved up to a 16" telescope! I then tried some real "toughies" including 38 Lyncis (2.7" very

unequal pair), Zeta Cancri (0.9" equal pair), and even Zeta Bootis. Zeta is a 0.8" equal pair that appeared elongated in the correct position angle at 350x! Another toughie was Otto Struve 215 in Leo (1.2" 7th mag. equal pair) which was clearly and easily split at 350x. Rounding out the night was Porrima (at about 1") and Epsilon Bootis (easy unequal pair). I also observed some favorites like Castor, Alpha Herc., Alpha CnV, etc. all of which looked fantastic with beautiful Airy discs. I also observed M3 and M13, both showing beautiful pinpoint stars, and both were well-resolved in only a 140mm scope! By 2:00 AM, the skies began to become somewhat more turbulent (about Pickering 7), so I decided to call it a night. Today I'm dog-tired at work, but with a big smile on my face whenever I think about the gorgeous views of last night. Here's hoping for some good Spring skies (on a weekend for a change).

- Mike Prochoda (Estes Park)

From Rob Grover: Another Observing Report 3-17-10 Keota

Well, last night out on the prairie was a real mixed bag. I arrived around 5:45 and took my time setting up the old 13.1 Coulter, table and camper. Was sitting & relaxing for a few minutes and then Stan arrived. He got his scope & stuff set up and by then it was getting dark. The sky was about a 50/50 a mix of clear and high cirrus before sunset and didn't appear to change much after sundown. In fact things got considerably worse for a few hours. At times, even Ursa Major and Orion were not visible naked eye.

I started out observing the Trapezium in M42, trying to finally see at least the "E" & "F" stars. Got a quick glimpse at "E" and was going for "F" when the sky went milky. It happened fast enough that I thought my eyepieces had all fogged over!

So, Stan & I sat around talking & looking up, waiting for things to improve. There were short, fleeting moments when things cleared up a bit. After some good conversation, we decided to nap a bit and try later. Around 11:30, I got back out and things looked a little better, but still not great. Stan wanted to hunt some dimmer galaxies and anything below mag 9 was invisible. I couldn't see the eyes in the Owl Nebula and I've had better views of the Leo Triplet from my driveway in the middle of Ft. Collins.

Stan decided to pack up and head home around midnight. Just about the time he finished packing, the sky started to improve. Still a little milky but rapidly improving. I returned to my scope and observed M97, 108, 109, 81, 82. M97 (The Owl) finally started to show its eyes at this point. All were finally much better views than from my home. M81 & 82 made a beautiful pairing @ 68x. Could see the dark areas in M82 with little effort. Ursa Major was about the only area that had cleared up really well by that point, so I decided to take another short nap and wait for the continued improvement in conditions.

About 1:45, I went back out and the sky had really improved down to about 30 degrees above the horizon. I moved over to Leo and began a galaxy quest. The Leo Triplet was much more impressive than it had been earlier in the evening, with even NGC 3628 showing more fuzziness than I've ever seen before.

Next, it was time to begin learning my way around in the Virgo / Coma region. I didn't have my Pocket Star Atlas handy (just being lazy, I didn't feel like leaving the scope to go get it from the camper). Slowly moving upwards from Porrima, I would slew a bit and just look for galaxies. This was my first time under dark skies looking at this area. I 5 galaxies in Virgo & probably missed several others.

As I reached the Virgo / Coma border, I was treated to a galactic feast. Seemed like I couldn't move the scope without spotting something. Wow, what a treat. I slowly worked my way back & forth, continuing upwards and recognized when I reached M87, M89 & M90. Again, much more to see than I was used to from my driveway. I also recognized when I hit Markarian's Chain. Again, just amazing views. I could have continued in that area all night, but I wanted to do some more sightseeing. I'll spend lots more time in the future learning about navigating that region.

I hopped up to M64 and could easily see the reason it is called the Black Eye Galaxy. Pushed the power to 187x and sat there nudging the scope in awe. Then I hopped down to M104 and the Sombrero was really bright with the dust lane quite prominent. The sky had cleared even more at lower elevations. The light domes from Sterling and Ft. Morgan pretty much disappeared by now and the glow from the Front Range cities diminished significantly. The sky was also much darker.

While in the area, I focused in on Saturn for a few minutes.

What a treat! I have not really done much planetary observing - mainly quick looks to judge the seeing or as the sky clouds over. Anyway, I agree with Michael's report from Estes Park. It was really steady. Even in the old Coulter, with the power pushed to 375x, I managed to get a pretty decent view. The huge diffraction spike from that lawnmower blade spider didn't help but I could discern that the rings are no longer edge on - I could see some black space between the planet disc and the rings. I also saw some cloud bands. Not a huge difference in contrast on those, but noticeable. Not bad for a 26 year old mirror of Coulter's variable quality. Looks like I got a decent one in my Craigslist purchase last fall.

Well, the sightseeing continued. I hopped back to Ursa Major and M51. WOW - I could see visually why this is the Whirlpool! I've looked at M51 from a dark site in my 8" newt before, but could only see fuzzy discs with bright cores. This time I could see some structure. I spent a long time gazing here, trying to see if I could glimpse the connecting structure between the galaxies. I may have with averted vision, but it may have actually been averted imagination. M101 skunked

me. I'm still learning how to star hop so it can take me a while to find things while others seem to elude me - even when they should be relatively easy to spot. I was also starting to feel a bit spent from all the incredible things I saw up to this point, so I didn't spend much time hunting.

The final two targets for my night were M3 & M13.

Definitely saved the best for last. M3 was a mass of stars & I could get well into the core @ 187x. Incredible. Then on to M13 and what a view. Almost a religious experience. In my 8 inch, it is a pretty object, but using the 13.1, I could see the central propeller structure! Also easily spotted the companion galaxy with no effort at all. I'd only seen that in photos before.

By this point, it was nearing 4AM and my eyes were getting worn out. I took my time packing up and spent about 15 minutes just sitting, looking up at the beautiful sky unaided (except for my glasses). Finished packing up, buttoned down the camper and headed for home. Had the truck unloaded and headed for a few hours of sleep by 6AM.

After Stan left, I was out alone under the stars - with only the irregular thumping of the large compressor to the south and the occasional coyote call to keep me company. Funny - I didn't notice the thumping at all when either star hopping or when wrapped up in a particular nice view. It was well worth the drive out and I really want to thank Stan for leaving so the sky would clear up for me. Seriously, it was great to meet and get to know Stan. Looking forward to more nights under the stars with him and all the other great folks I have met and will meet in this hobby!

Robert

A Prescription for Omega Centauri From Dan Laszlo

I'm embarrassed to admit to no good looks at this object until this weekend. I packed an 18" Dob along for a trip for tennis in Palm Desert CA. The trip was good for Zodiacal Light outshining the Milky Way by Ft Union NM. The sliver crescent Moon at Anza Borrego State Park in S Calif. But the scope had to wait until Mar 18. Tim Antonsen wrote about great looks from the dark skies of City of Rocks St Park by Deming NM. Clouds were predicted there, so I decided to try around Safford AZ. I learned that the Large Binocular Telescope is on neighboring Mt Graham, in spite of Bortle 3 conditons, blue on the sky quality map. The State Park nearby was busy so we followed a tip to look in the Coronado National Forest on State Rd 266 to Bonita. Just west of

Milepost 116 is Forest Rd 199 which offers a mix of open spots among big Junipers. There is a picnic table sign at the turn. Some wind was predicted so I passed on BLM sites in the area among cactus at lower elevation. A couple of Rockies fans on the way to Tucson pulled in after I set up, but they were all.

Even after moonset, the site was decent but not overwhelming. The margin of M81 with its spiral arms could be barely seen. Good looks were had at the brighter Messier clusters and galaxies. An O III filter made the Rosette Nebula and Medusa Nebula pop nicely. When was Omega going to rise? The road cuts between the main peak and a shoulder to the south so some suspense remained. Sometime around the middle of the night I started to binocular sweep down to the ridge and

Geeez! Omega was partially visible already, slowly clearing a little peak in the horizon. The scope showed this massive starry mothership clearing the distant trees. Not a blobular haze on the horizon for once, but a swarm of pinpoint stars. About like M13 surrounded by a ring of M13 cores. 40mm, 13mm, 30mm binoview looks, it was all super. I also "discovered" NGC 5128 in the sweeps and got another start, so large and what an unearthly looking dust lane. The night wrapped with M5, still best to me for its rings of stars.

You can add AZ state rd 266 to Bonita to your list of National Forest sites for good observing. There is another forest rd a bit East that also might work. Will have to visit the LBT observatory too when the tours are on.

cheers,
Dan Laszlo

Lyrid Meteor Shower April 22 Predawn

Best Looks

Moon By Antares Apr 7; By Jupiter Apr 11;
By Mercury Apr 15; Above Venus Mar 16
By Pleiades; by Mars Apr 21; by Saturn Apr 24
Mercury By Venus April 1 to 8
Venus On horizon in W at sunset
Mars High in S late evening.
Jupiter In E at dawn
Saturn In S middle of night

International Space Station Passes for Loveland – Fort Collins
 Watch for STS launch April 5th, boost is likely during mission

April 2010

Date	Mag	Starts			Max. altitude			Ends		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
06 Apr	-1.6	06:01:43	10	SSW	06:04:19	30	SE	06:06:54	10	ENE
08 Apr	-1.9	05:16:18	19	S	05:17:49	31	SE	05:20:26	10	ENE
09 Apr	-3.3	05:39:50	16	WSW	05:41:57	70	NW	05:44:53	10	NE
10 Apr	-1.6	04:31:46	28	ESE	04:31:46	28	ESE	04:33:47	10	ENE
11 Apr	-3.3	04:55:02	65	WNW	04:55:12	68	NW	04:58:07	10	NE
12 Apr	0.2	03:46:45	11	ENE	03:46:45	11	ENE	03:46:58	10	ENE
12 Apr	-1.7	05:18:12	18	WNW	05:19:30	25	NNW	05:22:00	10	NNE
13 Apr	-1.0	04:09:49	25	NE	04:09:49	25	NE	04:11:12	10	NE
13 Apr	-0.8	05:42:16	10	NW	05:43:56	14	NNW	05:45:37	10	NNE
14 Apr	-1.5	04:32:48	24	NNW	04:32:48	24	NNW	04:34:59	10	NNE
15 Apr	-0.7	04:55:41	12	NW	04:56:51	14	NNW	04:58:30	10	NNE
16 Apr	-0.1	03:47:05	15	NNE	03:47:05	15	NNE	03:47:48	10	NNE
16 Apr	-0.2	05:20:54	10	NNW	05:21:18	10	N	05:21:43	10	N
17 Apr	-0.5	04:09:51	14	N	04:09:51	14	N	04:11:14	10	NNE
18 Apr	-0.1	04:33:36	10	NNW	04:33:58	10	N	04:34:21	10	N
20 Apr	-0.0	03:46:28	10	N	03:46:28	10	N	03:46:49	10	N
20 Apr	-0.2	05:21:14	10	NNW	05:22:38	13	NNE	05:24:04	10	NE
21 Apr	-0.8	05:44:27	10	NNW	05:46:46	21	NNE	05:49:05	10	ENE
22 Apr	-0.1	04:33:33	10	NNW	04:34:57	13	NNE	04:36:24	10	NE
23 Apr	-0.7	04:56:41	10	NNW	04:59:00	21	NNE	05:01:19	10	ENE
24 Apr	-0.0	03:45:47	10	NNW	03:47:07	13	NNE	03:48:34	10	NE
24 Apr	-2.4	05:19:58	10	NW	05:22:45	50	NNE	05:25:38	10	ESE
25 Apr	-0.7	04:08:45	10	NNW	04:11:04	21	NNE	04:13:24	10	ENE
26 Apr	0.4	03:00:31	10	NE	03:00:31	10	NE	03:00:33	10	NE
26 Apr	-2.5	04:31:59	10	NW	04:34:44	50	NNE	04:37:37	10	ESE
27 Apr	-0.3	03:24:17	16	ENE	03:24:17	16	ENE	03:25:18	10	ENE
27 Apr	-3.1	04:55:48	12	WNW	04:58:12	44	SW	05:01:01	10	SSE
27 Apr	-1.6	21:20:54	10	SSW	21:22:05	21	SSW	21:22:05	21	SSW
28 Apr	-0.6	03:48:50	15	ESE	03:48:50	15	ESE	03:49:26	10	ESE
28 Apr	-1.4	05:20:24	12	WSW	05:21:25	14	SW	05:22:59	10	SSW
28 Apr	-2.8	21:44:07	10	WSW	21:46:55	58	NW	21:47:20	52	N
29 Apr	-2.8	20:32:34	10	SSW	20:35:17	38	SE	20:38:00	10	ENE
29 Apr	-0.9	22:08:05	10	W	22:10:29	23	NNW	22:11:40	18	N
30 Apr	-2.7	20:55:42	10	WSW	20:58:33	58	NW	21:01:25	10	NE
30 Apr	0.0	22:32:37	10	NW	22:34:09	13	NNW	22:35:11	12	N

ISS predictions from:

<http://www.heavens-above.com/main.aspx?lat=40.4997&lng=-105.05736&loc=Fort+Collins+CO+USA&alt=0&tz=MST>

