

The Objective View

Newsletter of the Northern Colorado Astronomical Society

December 2009

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Next Meeting: December 3 7:30 pm

**Remote Imaging on Two Hemispheres,
by Dr. Jack Harvey**

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

Jan 7 Greg Halac Night Sky Network; Elections
Chad Moore

NCAS Public Starwatch at Fossil Creek Reservoir

Jan 22 6:30 to 10 pm

Feb 19 6:30 to 10 pm

Mar 19 6:30 to 10 pm

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

City of Fort Collins Natural Area Program at Sunset

Bobcat Ridge: Dec 27

Dark Site Observing Dates

Dec 18, 19 Keota site, ask FRAC

Other Events

Little Thompson Observatory, Berthoud 7 pm Dec 18
Program TBA <http://www.starkids.org>

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 day of Dec 5 plus
7 pm Dec 17 and 19 <http://www.angelsabove.org/>

Cheyenne Astronomical Society 7 pm Dec 18
<http://home.bresnan.net/~curranm/>

Chamberlin Observatory Open House, 7 to 10 pm
Dec 21 303 871 5172

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

Longmont Astronomical Society 7 pm Dec 17 TBA
<http://www.longmontastro.org/>

November 5 Program: NCAS Members Show and Tell

The night started with astrophotos and reminiscing about the 1979 total solar eclipse. Jon Caldwell went from Billings to Lewistown MT to capture images with a 6 inch f/6 aerial photo lens. He also captured Comet Bennett and Comet West. He brought a Schmidt Camera photo by Dave Stoltzman.

Dave Chamness brought promo material from the LCROSS mission, "Lets kick up some Moon dust!" Mary Powell recommended the book by Robert Felix, "Not by Fire but by Ice." Tim Antonsen has been assisting the German author of the observing software, "Eye and Telescope." Tim has contributed hours toward English translation and the support files. The program accepts information about the user's site, and generates an object list appropriate to the user's equipment. The concept of *contrast above threshold* is the heart of the program. It can produce an object list which is sequenced for optimum slews. Thousands of objects are in its catalogs. There are numerous fine images, and the observing notes of observing guru Steve Gottlieb are included.

Cambridge University Press is distributing the program in the US soon. Roger Appeldorn brought his homeground 8 inch Newtonian on a german equatorial mount he machined himself. Instead of a spider, the secondary support is an optical window. Window glass used to be ground instead of float production. It was not too difficult for Roger to find a good section to polish from office buildings constructed in the 1950s and 1960s. He also made a camera with a 6 inch f/ 2.5 lens. He brought astrophotos made with his Meade 12" SCT at f/10, f/6.3 and F/3.3, and Starlight Express camera. He designed a field spreadsheet for his SCT which uses the camera chip size and calculates the appropriate focal reducer and spacer. Members then got a glimpse of Jupiter and the Moon from the courtyard with Roger's telescope.

November 5 Club Business

Vice President Dan Laszlo called the meeting to order. Events were reviewed. David Auder had a good chat with the Waverly residents. They would be interested in future support from NCAS for a community event. Treasurer John Caldwell reported on the club account. Next outreach events are for Eaton High School at a private farm and the public starwatch at Fossil Creek Reservoir.

LCROSS: Impact Plume Reveals Significant Water

"We are ecstatic," said Anthony Colaprete, LCROSS project scientist and principal investigator at NASA's Ames Research Center. On Oct. 9th, the LCROSS spacecraft and a companion rocket stage made twin impacts in crater Cabeus near the Moon's south pole. A plume of debris traveled at a high angle beyond the rim of Cabeus and into sunlight, while an additional curtain of debris was ejected more laterally. "Multiple lines of evidence show water was present in both the high angle vapor plume and the ejecta curtain created by the LCROSS Centaur impact," says Colaprete. "The concentration and distribution of water and other substances requires further analysis, but it is safe to say Cabeus holds water." Since the impacts, the LCROSS science team has been analyzing the huge amount of data the spacecraft collected. The team concentrated on data from the satellite's spectrometers, which provide the most definitive information about the presence of water. A spectrometer helps identify the composition of materials by examining light they emit or absorb. The team took the known near-infrared spectral signatures of water and other materials and compared them to the impact spectra the LCROSS near-infrared spectrometer collected. We were able to match the spectra from LCROSS data only when we inserted the spectra for water," Colaprete said. "No other reasonable combination of other compounds that we tried matched the observations. The possibility of contamination from the Centaur also was ruled out." Additional confirmation came from an emission in the ultraviolet spectrum that was attributed to hydroxyl (OH), one product from the break-up of water (H₂O) by sunlight.

Data from the other LCROSS instruments are being analyzed for additional clues about the state and distribution of the material at the impact site. The LCROSS science team and colleagues are poring over the data to understand the entire impact event, from flash to crater. The goal is to understand the distribution of all materials within the soil at the impact site. "The full understanding of the LCROSS data may take some time. The data is that rich," Colaprete said. "Along with the water in Cabeus, there are hints of other intriguing substances. The permanently shadowed regions of the Moon are truly cold traps, collecting and preserving material over billions of years."

http://www.nasa.gov/mission_pages/LCROSS/main/prelim_water_results.html

From Andrea Schweitzer: 'COSMIC SLOT MACHINE' MATCHES GALAXY COLLISIONS

<http://mergers.galaxyzoo.org>

24 November 2009

A new website will give everyone the chance to contribute to science by playing a cosmic slot machine and compare images of colliding galaxies with millions of simulated images of galactic pile-ups.

<http://beamartian.jpl.nasa.gov>

NASA AND MICROSOFT ALLOW EARTHLINGS TO BECOME MARTIANS

NASA and Microsoft Corp. of Redmond, Wash., have collaborated to create a Web site where Internet users can have fun while advancing their knowledge of Mars.

Drawing on observations from NASA's Mars missions, the "Be a Martian" Web site will enable the public to participate as citizen scientists to improve Martian maps, take part in research tasks, and assist Mars science teams studying data about the Red Planet.

Participants will be able to explore details of the solar system's grandest canyon, which resides on Mars. Users can call up images in the Valles Marineris canyon before moving on to chart the entire Red Planet. The collaboration of thousands of participants could assist scientists in producing far better maps, smoother zoom-in views, and make for easier interpretation of Martian surface changes.

By counting craters, the public also may help scientists determine the relative ages of small regions on Mars. In the past, counting Martian craters has posed a challenge because of the vast numbers involved. By contributing, Web site users will win game points assigned to a robotic animal avatar they select.

NASA Image of Colorado's October Snow

<http://earthobservatory.nasa.gov/IOTD/view.php?id=40977>

The first big snowstorm of the season hit Colorado in the last week of October 2009. Hundreds of flights were canceled at Denver International Airport, and interstate highways leading from Denver to Kansas, Nebraska, and Wyoming were closed due to blizzard conditions. Some locations in Colorado, Utah, and Wyoming received several feet of snow.

Sunny skies on October 31, 2009, allowed the Moderate Resolution Imaging Spectroradiometer (MODIS) on NASA's Aqua satellite to capture this view of the whitened landscape. Snow highlights the rugged mountains as well as the urban

and agricultural landscapes of the plains. The top image is a regional view and the bottom image is a close-up of the snow contouring the South Platte River in northeastern Colorado.

Observing Reports: Estes Park and the DAS Ed's Place Site

Anyone who made it out to enjoy the dark skies last night sure had a treat. The air was still and the observing fabulous. However, it gave yet another reason to never truly believe the weather people. We hardy souls were at the DAS site last night and the mercury plunged in direct proportion to the speed of the setting sun. One of the faithful remarked that the low was supposed to be in the low 20's and our thermometers already were showing 18 at around 5:30 pm. Joe kept us informed as we ice-skated on the viewing pads..... down to 9, 8, then, when I finally packed it in..... 7 degrees and the ice on the corrector plate provided the proof. Very fortunate not to have had wind.

A few of us were caught off guard garment wise and if it isn't fun and the toes have lost their feeling it is time to pack it in.

Awesome galaxy viewing. the Peg I cluster was a fairly easy catch in my 10". The finderscope had Kemble's Cascade, And the lovely blue sisters were even showing nebulosity (although it might have simply been the fog on my eyepiece from breathing on it..... we all called it nebulosity... majority rules!) We also had a very nice view of the Veil with no need for OIII filters. M 92 and M 15 were the star jewels, and a few folks drove in later in the night to take in the meteor showers. Am anxious to see how Joe's NA Nebula pictures turned out.

Anywho, after the feeling returned to my extremities while driving home, I had to admit that the unexpected cold didn't dampen a great night of observing. Hope the last one there last night made sure no one was frozen to their eyepieces.

Hope everyone's upcoming holiday week is restful and uneventful!!

Jon DeJong, DAS

I was also out observing last night (11/16/09) from my backyard in Estes Park. I used my TEC 140 APO refractor to peruse the objects in Sue French's observing articles for October and November. It was really really cold (around 10 deg. F), but quite still with no wind, and I was able to observe from 9:00 PM until 1:00 AM before the frost on the scope, eyepieces, etc. got the best of me. The transparency was only so-so (there was some light foggy/frosty haze and quite a bit of moisture in the air) and the seeing was only average (Clear Sky Chart had predicted excellent seeing), but there have not been many clear moonless nights for the past couple

of months, so I made the best of it. Best objects were: Pegasus 1 cluster (observed 5 of the galaxies in the refractor), IC 10 (local group galaxy in Cassiopeia), Van den Berg 1 (reflection nebula in Cassiopeia), several doubles in Pisces, Pleiades (nice views of the Merope nebula), easy view of B33 (Horsehead N. in Orion) using my new 2" Lumicon H-Beta filter. This filter also showed amazing structure in the California Nebula using a 24 mm Panoptic in the refractor. I could get the whole California nebula into the FOV using a 41 mm Panoptic! Great views of M31 and M33 along with the Auriga clusters. Of course, M42 is always a treat. Capped the night off with views of Mars, but the seeing was not too great. Got some glimpses of the N. Polar cap, but Mars will have to wait for a better night of seeing. I'm glad you all had a good night on the Prairie!
Clear Skies to all... and to all a good night!
- Mike Prochoda (Estes Park)

Leonids 2009 for Colorado

For those who didn't brave the cold this morning, or want to relive the experience, I've posted a composite image of all the Leonids caught by my allsky camera at <http://www.cloudbait.com/science/leonid2009.html> . There are also some nice fireball videos shown.

Chris

Chris L Peterson
Cloudbait Observatory
<http://www.cloudbait.com>

Geminid Meteor Peak December 13-14

Best Looks

Moon By Mars Dec 6; by Saturn Dec 10
By Mercury Dec 18; by Jupiter Dec 21
By Pleiades Dec 29
Mercury Second week, low in SW
Venus Hidden in glare
Mars High in S, middle of night
Jupiter In S in dusk
Saturn In ESE predawn
Uranus In SSE in Pisces
Neptune By Jupiter all month in Capricornus

International Space Station Passes for Loveland – Fort Collins

December 2009

Date	Mag	Starts			Max. altitude			Ends		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
6 Dec	0.0	06:06:13	10	S	06:08:13	16	SE	06:10:01	10	E
7 Dec	-2.7	06:27:37	10	SW	06:30:23	56	SE	06:33:10	10	ENE
8 Dec	-0.3	05:16:10	10	S	05:18:00	16	SE	05:19:50	10	E
9 Dec	-2.7	05:38:53	25	SSW	05:40:13	53	SE	05:42:59	10	ENE
10 Dec	-3.0	06:01:31	27	W	06:02:37	44	NNW	06:05:21	10	NE
11 Dec	-0.1	04:52:24	12	ENE	04:52:24	12	ENE	04:52:43	10	ENE
11 Dec	-1.8	06:23:47	14	WNW	06:25:12	20	NNW	06:27:22	10	NNE
12 Dec	-0.7	05:14:25	15	NE	05:14:25	15	NE	05:15:03	10	NE
12 Dec	-1.1	06:46:42	10	NW	06:47:56	12	NNW	06:49:09	10	NNE
13 Dec	-1.0	05:36:15	15	NNE	05:36:15	15	NNE	05:37:02	10	NNE
14 Dec	-0.9	05:57:55	12	N	05:57:55	12	N	05:58:48	10	NNE
19 Dec	-0.8	06:13:47	10	NNW	06:15:08	13	NNE	06:16:28	10	NE
20 Dec	-1.4	06:35:24	10	NNW	06:37:39	21	NNE	06:39:55	10	ENE
21 Dec	-0.5	05:25:04	12	NNE	05:25:04	12	NNE	05:25:41	10	NE
21 Dec	-2.8	06:57:13	10	NW	06:59:59	49	NNE	07:02:44	10	ESE
22 Dec	-1.3	05:46:24	19	N	05:46:53	20	NNE	05:49:05	10	ENE
23 Dec	-2.7	06:07:45	23	NNW	06:09:10	46	NNE	06:11:54	10	ESE
24 Dec	0.0	04:57:48	12	ENE	04:57:48	12	ENE	04:58:10	10	ENE
24 Dec	-3.0	06:29:08	15	WNW	06:31:14	50	SW	06:33:58	10	SE
25 Dec	-1.5	05:19:13	30	E	05:19:13	30	E	05:20:59	10	ESE
25 Dec	-1.2	06:51:18	10	W	06:53:04	15	SW	06:54:50	10	S
26 Dec	-2.8	05:40:41	48	S	05:40:41	48	S	05:43:03	10	SE
27 Dec	-1.4	06:02:13	16	SW	06:02:13	16	SW	06:03:57	10	S

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>