The Objective View June 2002

Newsletter of the Northern Colorado Astronomical Society

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Meetings first Thursday of each month

Next Meeting: June 6 7:30 PM
Aurora Forecasting, by Brian Rachford

Meeting directions
Discovery Center Science Museum
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
June 7, 8
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, tomt@jymis.com,** with questions about star party status or dates, 482-5702 or 482-0807.

July 13 NCAS Star Party, near Red Feather Lakes
Greetings Astro-friends,
If you weren't at the meeting last night you didn't hear about Roger Appledorns' offer to hold a star party at his observatory/home at Red Feather Lakes this summer. If you haven't viewed the stars from that area, it is QUITE dark and quite close. The vote was for Sat 13th. The New Moon is the 10th. If you would like to make this happening, please let us know what night is best for you soon, so Roger can make plans. A map with directions will be published on the web site and a link will be sent out on this list-serve when things are solidified.
Tom Teters

Longmont Astronomical Society 1st Quarter Moon Public Viewing Nights, Flanders Park
June 15, July 13, August 17, September 14, October 12, November 9, December 7

Other Events

Little Thompson Observatory Star Night, Berthoud
June 21 7 PM Tom Melscheimer, "It's About Time"
http://www.starkids.org

Cheyenne Astronomical Society
June 14 9 PM
http://users.sisna.com/mcurran

Open House, Chamberlain Observatory, dusk to 10 PM
June 15 July 20 Aug 17 303 871 5172
http://www.du.edu/~rstencel/Chamberlin/

Longmont Astronomical Society
June 20
http://laps.fsl.noaa.gov/cgi/las.cgi

Rocky Mountain National Park Starwatching
Dates for Summer 2002 are June 14, 28; July 19; August 2, 16 and 30. Contact Dan Laszlo if you can volunteer, **djlaszlo@aol.com**, or 498-9226

Carter Lake Knolls Starparties
Dates for Summer 2002 are: June 14, July 26, Aug 16, Sept 13
Contact Tom Teters if you can volunteer, 482-5702
tomt@jymis.com

Colorado Springs Astronomical Society
Rocky Mountain Star Stare, June 6-9
http://www.rmss.org/rmss2002/rmss2002.htm

CAS Weekend Under the Stars, August 8-10, Foxpark WY
http://users.sisna.com/mcurran/wuts.html

NCAS Webpage Revised
From the NCAS Webmaster:
Greetings All,
I've just made some changes to the http://ncastro.org/ please give me some feedback if something doesn't work. I only checked it in Netscape so far. Oh, do you like them??
Tom T

May 2 Program
Space Astronomy Programs for the Early 21st Century
By Jon A. Morse
Associate Director of the Center for Astrophysics & Space Astronomy, University of Colorado
John opened with a thanks to the astronauts of the first Hubble Space Telescope repair mission. Their success allowed him to

proceed with his postdoc at the Space Telescope Science Institute from 1992 to 1995, and launched his career in Space Astronomy. The new camera installed on HST has improved it tenfold, with improved resolution and blue sensitivity. It will be used for his research in about a year, to image the Eta Carinae nebula. One of the most massive stars in our galaxy ejected one solar mass of material, which is expanding at 1 km/second. This odd object is one of many targets for Space Astronomy. There are four major goals proposed for space-based astronomy. First is the Astronomical Search for Origins. This has four science goals, directed at early galaxy formation, star and planetary system formation, finding habitable planets around stars, and the origin and evolution of life. Morse showed flow charts with several alternative plans for spacecraft deployment, progressing from current technology to extremely challenging systems. The Next Generation Space Telescope will target earliest stages of galaxy formation by imaging in the near IR, finding extremely red-shifted galaxies. The Terrestrial Planet Finder will have a range of about 30 parsecs. It will image and gather spectra, hunt for water and ozone. It will have a 3 arcsecond field. The Space UV-Optical Observatory is a true HST replacement. The concept was developed in 1998, designed to surpass HST by 100 fold. It is to have a much larger aperture, and better detectors. HST can image a 3 arcminute field, and SUVO would see 30 arcmin. The Life Finder is Dan Golden's dream, capable of imageing clouds on distant planets. A set of 40 meter aperture telescopes separated by hundreds of kilometers would orbit near Jupiter's distance, 5 AU from the Sun. This is a visionary concept, which steers development of missions in the near future. Such an instrument needs its targets established. The recent Hubble upgrade allows it to remain productive. The ACS imager has a far better quantum efficiency and more pixels, 16 million. The array is 4000x4000, compared to 1600x1600, minus a quarter for the old chip. Its image of the Tadpole Galaxy has 6000 other galaxies. The image took about 1/20 the time for the Hubble Deep Field, and it shows star-forming galaxies better. Blue galaxies are redshifted from UV. The Wide Field Camera 3 is in the next upgrade mission, and will improve blue and UV sensitivity over WFPC. The Cosmic Origins Spectrograph is a UV spectrograph that will increase the HST sensitivity by tenfold. Planetary systems will be hunted with the Kepler spacecraft. It will detect planets by looking for microlensing events. The Terrestrial Planet Finder will use Kepler data to select its targets. It is a $10 billion set of 5 optical telescopes, 8 meter class, linked interferometrically. To find a system like our own, we may need to find other Jupiters first. Talk of space stations at the L1 and L2 Lagrangian points may not come to fruition, since scientific justification may not be sufficient. A lunar base for a radio telescope is a possibility, allowing a 240,000 mile baseline for interferometery. Optical observing on the Moon is hampered by dust. The lunar dust levitates to about 200 meters during the lunar daytime. An alternative roadmap for space Astronomy divides objectives into 3 quests and 6 campaigns. The quests are, 1) explain the structure of the universe and forecast cosmic destiny. 2) Explore cycles of matter and energy. 3) Examine limits of gravity and energy in the Universe (black holes, in other words). The campaigns are, 1) identify dark matter and learn how it shapes galaxies and systems of galaxies. 2) Explore where and when chemical elements are made. 3) Understand cycles in which matter, energy, and magnetic fields are exchanged between stars. 4) Discover how gas flows in disks, and how cosmic disks are formed. 5) Identify the sources for gamma ray bursts and high energy cosmic rays. 6) Learn how gravity operates near black holes. The craft proposed for these missions are MAP and GLAST from 2002 to 2007, ACCESS, FIRST, PLANCK, CON-X, LISA HIS from 2008 to 2013. Between 2014 and 2020 come SPIRIT 10 and MAXIM, a mission to view black hole event horizons. ARISE is a space gamma ray observatory, and OWL observes gamma ray dissociatinon in the atmosphere. We are living in historic times, since we can look at all wavelengths simultaneously. For more, see: http://casa.colorado.edu/~morsey/index.html

From Archer Sully:
Thought y'all might find this interesting...

---------- Forwarded Message ----------

Subject: [CalAstro] Ice oceans found on Mars
Date: Sun, 26 May 2002 08:22:37 -0700
From: "Richard Crisp" <rdcrisp@earthlink.net>
To: <calastro@pairlist.net>

from
http://news.bbc.co.uk/hi/english/sci/tech/newsid_2009000/2009318.stm

Ice oceans found on Mars
Sunday, 26 May, 2002, 14:08 GMT 15:08 UK
By Dr David Whitehouse
BBC News Online science editor

Water-ice has been found in vast quantities just below the surface across great swathes of the planet Mars.

The finding by the American space agency NASA is undoubtedly one of the most important made about the Red Planet.

It solves one of its deepest mysteries, points the way for manned exploration and reignites the question of whether life may exist on Mars.

Insiders suggest that partly as a result of this finding, NASA may commit itself to a manned landing within 20 years.

Where the water went

The US space agency will make the dramatic announcement next Thursday just prior to a full disclosure of the findings in a major scientific journal.

The discovery was made by the Mars Odyssey spacecraft, which has been gathering data since late last year.

It confirms early observations that pointed to enormous reservoirs of ice.

This finding will answer a question that has puzzled Mars researchers for decades: Many lines of evidence suggest that the Red Planet was water-rich in the past, so where did all that water go?

The answer appears to be that it is in the regolith - the layer of loose rock and dust on the surface.

Mars Odyssey has been returning high-quality data about Mars' surface composition.

The spacecraft contains an instrument called a gamma-ray spectrometer that looks for gamma-rays (high-energy light) with a specific signature showing that they come from hydrogen less than one metre (three feet) beneath the Martian surface.

Astronomers believe that the hydrogen is locked up in crystals of ice.

Moon discovery

The same design of instrument was used on the Lunar Prospector spacecraft that discovered ice in the shadowed regions of the Moon's poles in 1998.

Also onboard Mars Odyssey is a neutron spectrometer that registers evidence for underground ice in the same regions of the planet.

Researchers were amazed at the strength of the signal of the ice. They had expected to take a year to gather enough evidence but managed to do so in just a few weeks.

They announced preliminary findings in March but now have good data confirming large amounts of the water-ice beneath the surface.

The ice is just beneath the surface south of 60 degrees latitude.

Researchers suspect the same to be true of the northern hemisphere but cannot make the appropriate observations until later this year due to the Martian winter in the north.

They were scheduled to hold a major news conference on Thursday when they would say that their earlier findings had been confirmed and extended.

But that may be brought forward after a British newspaper leaked the news.

Look for life

The dramatic discovery may also guide the selection of future landing and exploration sites on Mars, and may suggest areas to look for evidence of past life.

The presence of such a vast amount of ice - if it were to melt it could cover the planet in an ocean at least 500 metres deep (1640 feet) - will change profoundly the direction of future exploration.

Although landing probes are planned - the European Beagle 2 and Nasa's twin Mars rovers next year - neither are targeted at the region where the ice may exist.

The Mars Polar Lander was to touch down in exactly the right spot in 1999 and would have undoubtedly detected the ice had it not malfunctioned on the way down.

Having water just below the surface will be an enormous boon to astronauts on Mars.

Water is essential for life, so the discovery enhances the belief that Mars could have had life in the past and perhaps in the present as well.

Because of that, bringing a sample of the ice and rock back to Earth by an unmanned sample return probe is becoming a top priority.

CalAstro mailing list
CalAstro@pairlist.net
http://www.pairlist.net/mailman/listinfo/calastro

From Tom Teters on Comet Ikeya-Zhang June 1
Greetings star buddies,
Well I'm relegated to doing some Cactus Flats north astro-fotoing this weekend. Looks like Thursday night is going to be the best night for that, Friday looks iffy, weather-wise and less cost intensive. Did get a final CCD pic of the comet if anybody wants to look, go to
http://starmon.com/ikeyazhang.html

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 Mars, Jupiter 6/12; by Venus 6/13
Venus and Jupiter within 3 degrees, first week

Mercury	low in SW predawn, last half of month
Mars	low in WNW. By Jupiter end of month
Saturn	in solar glare
Uranus	in Capricornus predawn
Neptune	in Capricornus predawn

A Sunset with a Partial Solar Eclipse June 10
Start at 6:21 pm, mideclipse at 7:15 pm, end at 8:06 pm. About 1/2 of the Sun's diameter will be obscured. Sunset is at 8:28 pm. The Sun will remain brilliant throughout the event and should not be viewed directly. A safe solar filter should be used over telescope or binocular objectives, if a view through the instrument is planned for the sharpest, most contrasty image of the solar disk. If no filter is available, the Sun's image can be safely projected from a telescope or binoculars on a card for group viewing. Always supervise equipment and cap finderscopes to prevent eye injury. A card with a pinhole can project a tiny image on another paper. Any small aperture can make a recognizable solar image, so look for little solar crescents in tree shadows, formed by gaps in the leaves.

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

Steve,

I have resurrected my old FRAC Images webpage as
http://hometown.aol.com/ddlar/astro-images.html

I thought it would be good have a page where the best recent photos of local astrophotographers could be displayed together.

Regards,
Dave L.

TO:

Sky Images Wanted for Online Magazine
The new www.coloradomagazineonline.com
is interested in publishing amateur star pics in an ongoing column, "What's New In The Universe." Contact me if you are interested in submitting pics - with brief descriptive captions that describe the shot and telescopes used.
Mel Fenson, Editor tiger@indra.com

The Space Shuttle Endeavour should be launched this week. See this link for predictions:
http://www.heavens-above.com/main.asp?lat=40.5003&lng=-105.0570&alt=0&loc=Fort+Collins++CO&TZ=MST

International Space Station **Changes are anticipated after the Shuttle docks!**

Date	Mag	Starts			Max. Altitude			Ends		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
04 Jun	2.7	21:53:14	10	NNW	21:54:17	11	N	21:55:21	10	NNE
04 Jun	1.7	23:28:44	10	NNW	23:31:17	22	NNE	23:31:27	22	NNE
05 Jun	2.7	20:54:40	10	NNW	20:55:48	11	N	20:56:55	10	NNE
05 Jun	2.2	22:30:55	10	NNW	22:32:54	15	NNE	22:34:53	10	NE
06 Jun	2.0	00:06:21	10	NW	00:07:28	20	NW	00:07:28	20	NW
06 Jun	2.5	21:33:01	10	NNW	21:34:24	12	N	21:35:48	10	NE
06 Jun	0.9	23:08:21	10	NW	23:11:13	32	NNE	23:11:14	32	NNE
07 Jun	1.7	22:10:23	10	NNW	22:12:49	20	NNE	22:14:58	11	ENE
07 Jun	1.7	23:46:01	10	WNW	23:47:13	21	WNW	23:47:13	21	WNW
08 Jun	2.1	21:12:24	10	NNW	21:14:15	14	NNE	21:16:06	10	NE
08 Jun	-0.1	22:47:46	10	NW	22:50:52	53	NNE	22:50:56	53	NE
09 Jun	1.0	21:49:38	10	NW	21:52:26	28	NNE	21:54:39	14	E
09 Jun	1.6	23:25:37	10	WNW	23:26:54	20	W	23:26:54	20	W
10 Jun	-0.7	22:27:03	10	NW	22:30:11	82	SW	22:30:36	65	SE
11 Jun	0.1	21:28:41	10	NW	21:31:44	45	NNE	21:34:17	13	ESE
11 Jun	1.8	23:05:19	10	W	23:06:32	16	WSW	23:06:32	16	WSW
12 Jun	0.1	22:06:15	10	WNW	22:09:14	41	SW	22:10:13	30	S
13 Jun	-0.6	21:07:35	10	NW	21:10:46	82	NE	21:13:53	10	SE
14 Jun	1.2	21:45:27	10	W	21:47:58	22	SW	21:49:50	14	S
16 Jun	2.1	21:25:05	10	WSW	21:26:24	12	SW	21:27:43	10	SSW

Iridium Flares for Lemay and Trilby Rd, Fort Collins. From the Heavens-Above website

Date	LocalTime	Mag	Alt.	Azimuth	Distance to flare centre	Mag at flare center	Satellite
04 Jun	23:02:04	-7	20°	43° (NE)	1.4 km (W)	-7	Iridium 59
04 Jun	23:09:34	-6	21°	46° (NE)	10.9 km (E)	-7	Iridium 94
07 Jun	02:44:42	-7	28°	295° (WNW)	5.9 km (E)	-7	Iridium 8
07 Jun	21:18:55	-8	59°	70° (ENE)	0.9 km (E)	-8	Iridium 49
07 Jun	22:53:36	-7	26°	47° (NE)	7.3 km (W)	-7	Iridium 58
08 Jun	04:15:58	-5	58°	267° (W)	7.7 km (E)	-8	Iridium 16
10 Jun	02:35:14	-6	23°	300° (WNW)	14.5 km (W)	-7	Iridium 7