



# The Prairie Astronomer

The Official Newsletter Of The Prairie Astronomy Club, Inc.

December 2001

Volume 42 Issue #12

## Internet Addresses:

PAC Web Page: [www.prairieastronomyclub.org](http://www.prairieastronomyclub.org)  
 PAC E-Mail: [pac@4w.com](mailto:pac@4w.com)  
 NSP Web Page: [www.nebraskastarparty.org](http://www.nebraskastarparty.org)  
 NSP E-Mail: [nsp@4w.com](mailto:nsp@4w.com)  
 OAS Web Page: [www.OmahaAstro.com](http://www.OmahaAstro.com)  
 Astronomy in NE: [www.blackstarpress.com/ar/n/](http://www.blackstarpress.com/ar/n/)  
 Hyde Observatory [www.blackstarpress.com/ar/n/hyde/](http://www.blackstarpress.com/ar/n/hyde/)  
 NEB-STAR [www.neb-star.org/](http://www.neb-star.org/)

## DECEMBER'S PROGRAM:

**Larry Stepp**, Manager of AURA (Association of Universities for Research in Astronomy)

**PAC-LIST:** If you have an e-mail address and are not on the PAC List, you may subscribe by submitting an e-mail to [list@4w.com](mailto:list@4w.com). Write "Subscribe PAC-List" in the body of the e-mail.

**DECEMBER'S PAC MEETING TIME CHANGE:** Due to Christmas falling on our normal PAC meeting date, our December monthly meeting has changed to Wednesday, December 26<sup>th</sup>.

**January's program is "New Scope Owners Night".** The public is invited to bring their new Christmas present telescopes out, to get some good pointers from club members on getting the most out of their new telescopes.

**The Mahoney Star Party** dates have been selected:  
 May 17<sup>th</sup>, 5 days after new moon  
 June 14<sup>th</sup>, 4 days after new moon  
 July 12<sup>th</sup>, 2 days after new moon  
 September 27<sup>th</sup>, 2 days before 3rd quarter.

## CLUB EVENTS

**PAC MEETING**  
**Wednesday, December 26, 2001, 7:30 PM**  
 at Hyde Memorial Observatory

**CLUB STAR PARTY**  
**Friday, January 11, 2002**  
 Olive Creek S.R.A.

**UNL STUDENT OBSERVATORY PUBLIC NIGHT**  
**Friday, January 25, 2002**  
 UNL Student Observatory

**PAC MEETING**  
**Tuesday, January 29, 2002, 7:30 PM**  
 at Hyde Memorial Observatory

**NSP PLANNING MEETING**  
**Thursday, January 10, 2002**  
 Mahoney State Park

## CONTENTS:

Secretary's Report - By Lee Taylor	Page	2
Hyde Schedule	Page	2
January Sky Map	Page	3
Leonids from Southeastern Nebraska By Knisely/Campbell	Page	4
Comet LINEAR C/2000WM1 By Dave Knisely	Page	5
NASA's Global Surveyor Sees Possible Climate Change.	Page	6
PAC Calendar	Page	7
Newsletter Update	Page	7
Club Viewing Site Directions and List of Club Officers	Page	8

The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc. Membership expiration date is listed on the mailing label. Membership dues are: **Regular \$20/yr, Family \$22/yr.** Address all new memberships and renewals to: **The Prairie Astronomy Club, Inc., PO Box 5585, Lincoln, NE 68505-0585.** For other club information, please contact one of the club officers listed on the last page of this newsletter. Newsletter comments and articles should be submitted to: **Mark Dahmke, PO Box 80266, Lincoln, NE 68501 or [mdahmke@4w.com](mailto:mdahmke@4w.com)**, no less than ten days prior to the club meeting. The Prairie Astronomy Club meets the last Tuesday of each month at Hyde Memorial Observatory in Lincoln, NE.

# Secretary's Report

By: Lee Taylor

Prairie Astronomy Club Meeting Minutes for 11/27/01

Brian Sivill opened the meeting in the absence of the President and VP.

Visitors were introduced with Lynda Beck being a new visitor to the meeting.

We had several reports from members of the Leonid meteor shower from the seventeenth. Transcripts have been posted on the PAC website online newsletter.

It's a great time to view both Jupiter and Saturn, and don't forget the occultation of Saturn by the moon on Nov. 30.

On Dec. 13, the Geminid meteors peak and on the 14, we get a partial solar eclipse!!

Don't forget, the December meeting of the Prairie Astronomy Club will be on WEDNESDAY DECEMBER 26, 2001. Our guest will be, as usual, Larry Stepp of the Gemini project.

Observing News: Dave and Joey Churilla now qualify for the full 110-object Messier award. Congratulations, Dave and Joey!

Don't forget, January's program is 'Scopes Premiere Night. The public is invited to bring their new Christmas present telescopes out and get some good pointers from club members on getting the most out of their new telescopes.

As always, Brian Sivill is constantly looking for new PAC program material. If you have a project you've been working on, we'd love to hear about it!

Hyde news, due to some reported neglect, etc. Hyde's 12.5-inch telescope is out of commission. Not sure when it will be repaired.

We have a new online newsletter editor, Mark Dahmke. Congratulations, Mark. And thanks to Jeff King for filling the Role for the past year or so.

For those who may still be confused (and I'm sure there are some of you out there) If you wish to receive the newsletter online and NOT by mail, get in touch with any of the club officers and we'll get word to Mark.

For a preview, Mark led us through some of the features of the new online newsletter (including some I hadn't seen yet). Great Job Mark!

Yours Truly moved to adjourn to the program and Eric Hubl seconded it.

We then watched Jack Dunn's DVD "Wonders of the Universe."

Respectfully submitted by:  
Lee Taylor

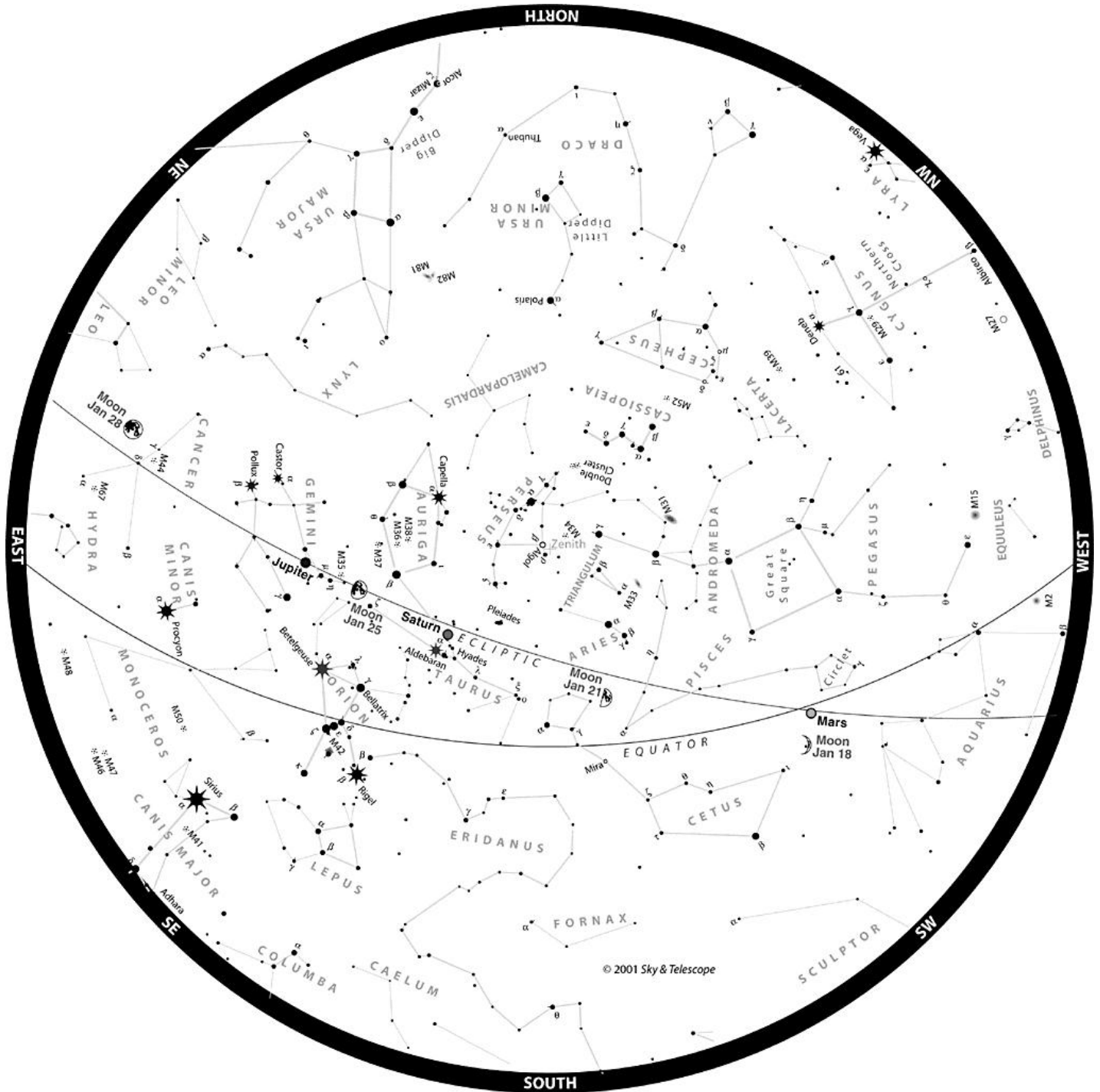
## Hyde January Schedule

<u>December</u>	<u>Team Leader</u>	<u>Telescope Operators</u>		<u>Supervisor</u>
1/5/02	Brian Sivill	AJ Benker	Joey Churilla	Dave C
1/12/02	Bill Wells	Justin Devries	Bob Leavitt	
1/19/02	Jeff King	Jeff Campbell	Steve Lloyd	
1/26/02	Dave Hamilton	Jared Delzell	Dan Delzell	

# January Sky Map

**Mercury** is at its greatest elongation on the 11th. For about 10 days before and after, you can spot Mercury very low in the west-southwest about 45 minutes after sunset.

On January 14th, see if you can spot a breathtakingly slender crescent Moon beneath Mercury. Start looking as early as 20 or 30 minutes after sundown; binoculars will help. The next evening the crescent will be higher and easier to see at Mercury's upper left. On the 18th a much thicker Moon hangs to the lower left of Mars.



# **LEONIDS FROM SOUTHEAST NEBRASKA**

By David Knisely and Jeff Campbell

The 2001 Leonid meteor shower was more of a game of meteorological "cloud tag" than the hoped-for pleasant observation of what turned out to be a pretty intense meteor shower. Early on Saturday, November 17th, the sky was clear during the day, but clouds continued to increase and the weather forecasts did not look promising. Still a dedicated "band" of PAC observers did gather at Olive Creek State Recreation Area that evening in hopes of seeing something. Del Motycka (a veteran of the spectacular 1998 display) arrived in his van-like camper, joined later by Dave and Joey Churilla, Brian Sivill, Jeff Campbell, and Joe Babcock. They sat under clouds and some stiff southerly breezes for quite a while, but then, about 4 a.m. on the 18th, a 'miracle' happened. From Jeff Campbell's account:

"Around 4:15, the hole we were waiting for opened. Now, almost everyone is familiar with Dave Churilla and clouds, so some of us got a kick out of the fact that the hole opened up just as Dave and Joey were packing up to leave. Man, they rushed quickly to pull those chairs back out. We all moved our chairs back a bit to provide us with more sky over Del's trailer. Almost immediately we started seeing meteors. I continually took note of the time as the five of us watched the sky. Between the five of us, we counted 108 meteors in exactly 30 minutes. Almost all of them could be confirmed by another person witnessing them as well. There were several instances where two of us were looking at different points in the sky and would call out the next number within a second of each other. We never had a hole big enough to see the entire sky, so we know we missed quite a few. At most, we had maybe a 60 degree field of open sky, but most of the time we had hardly 45 degrees of view. When the first hole came, it was clear enough that Brian said he could see several Messier objects naked eye. Most of what we saw ranged from 1st mag. up to -3rd mag. There were a few that were as dim as 2nd or 3rd mag., but very few. At about 4:30-4:35, Joe Babcock arrived. As we were calling out to turn the lights of, we were trying to keep count as well. There was also a regular pattern of clouds going through, so after about 4:25, we would see the bottom half of Orion dim on us, then brighten again as clouds rolled in. At 4:45, it closed up for good, and we didn't see any more holes that were as good as the first. We would see small ones, with maybe two or three stars, but they quickly closed up too. After 4:45, we saw several more bright meteors through the clouds. One caught everyone's eyes, as it produced the brightest flash we saw that night, burst and produced stripes across the sky. This was a result of several bands of thin clouds, and was the highlight of the mornings "Cloudy Fireballs". The time of this one was 5:26:55, give or take 5 seconds."

Meanwhile, Dr. Martin Gaskell of UNL was driving around through several counties in looking for at least a small hole, which he eventually found as he was driving between Lincoln and Beatrice. He noted one point near 4:25 a.m. when he was seeing about one meteor every 5 seconds (he also noted that he ended up putting over 200 miles on his car's odometer!).

Down south in Beatrice, PAC President Dave Knisely was greeted as he got home from work at 11:25 p.m. with clouds, clouds and \*more\* clouds! He sat sadly glued to his computer screen watching the radar and satellite images and listening to the light rain begin outside. As luck would have it, around 2:15 a.m., the rain stopped and a few breaks in the clouds began to appear. The infrared satellite image showed a possible hole to his south moving north, so he quickly drove out to Rockford Lake southeast of Beatrice and got an eyeful under skies, which ranged from clear to almost completely overcast. Rates began to climb rapidly from one to three meteors per minute at 3 a.m. to nearly 10 per minute only 30 minutes later. Most were fairly bright, including many brilliant ones, which left long, but brief trails. One particularly bright fireball lit up the ground and left a trail, which was visible for over 10 minutes as upper-level winds bent it into the shape of a question mark. There were several instances where anywhere from 3 to as many as 6 meteors appeared together within the space of only one or two \*seconds\*! These spectacular bursts of activity were, of course interspersed with the famous "meteor droughts" where only one or two per minute were seen. Some of these meteors were faintly greenish, while others were bluish-white or white in color. A huge surge began just after 4 a.m., when in one minute, Dave counted 17 meteors (equivalent to an hourly rate of over 1000 per hour), although the actual rate changed rapidly from minute to minute. Dave recorded a whopping 135 meteors in the space of only 15 minutes between 4:00 a.m. and 4:15 a.m. Rates continued in the 10 to 15 per minute range until around 4:17, when a large band of clouds began to obscure much of the sky. He continued to follow the shower by listening to FM radio signals being bounced off the ionized meteor trails, and rates there continued near storm levels. A clearing developed low in the south, and meteors almost seemed to be "raining" down from the south edge of the cloud deck. The sky was completely cloudy by 5 a.m., so Dave called it quits, but still felt that the shower was definitely better than even the spectacular show in 1998. All in all, Dave recorded 264 meteors between 3 a.m. and 4 a.m., and 342 meteors between 4 and 5 a.m.

The next major meteor shower is the Geminids, which should peak very early in the evening of December 13th. Hopefully, it won't be too terribly cold to get out and watch what hopefully will be a nice "relaxing" shower.

# Comet *LINEAR C/2000WM1* (and a few other things)

by Dave Knisely

Well, after being sick last week, at least tonight (Dec. 6th at 0200 UT, or Dec. 5th at 8 pm. CST) I got out for a brief look at a few things before moonrise. I drove out to Rockford Lake southeast of Beatrice, Nebr. taking my ten inch f/5.6 Newtonian, my 80mm f/5 refractor, my "portable library", and my new Toshiba laptop with me. I had wanted to see how MEGASTAR works in the field (temp. 29F) with the laptop, and it worked just fine, except that even in the night-vision mode, the off-axis glow from the screen was just barely intense enough to show that I will need to fit the laptop with some red transparent covering if I want to minimize the impact on my dark adaptation. Otherwise, it was fun to have the huge database and the wide selection of field and zoom options at my disposal (I left all my atlases in the carry-on luggage container).

Comet Linear C/2000WM1 was visible to the unaided eye (ZLM 6.7) as a tiny fuzzy star about magnitude 5.2 with just the faintest hint of a very short tail to my eye's averted vision. In my 10x50 binoculars, the tail was obvious, with it being traceable for nearly 2 degrees to near the stars Phi-3 and Phi-4 Ceti. In the 80mm f/5, the comet showed a slightly cone-shaped tail 2 degrees in length and a large coma about 20' arc across with a small stellar condensation at the center. The tail seemed to curve just a tad, but generally flowed to the northeast of the nucleus. The inner 1-degree of tail was fairly bright, but the outer portions were rather diffuse, and it was this outer part, which gave the impression of slight tail curvature. In the ten inch, the comet was a glorious sight, with a very faint "spine" extending from near the nucleus down near the northern side of the inner tail for perhaps 15 to 20 arc minutes. The rest of the tail seemed to be "flowing" out away from the southern side of this spine, giving the whole thing a slightly curved look. Averted vision sometimes gave hints of other detail both in the tail and in the coma. The coma seemed to have a very faint forward jet or "spike", but it was near the limit of vision. The nuclear condensation remained stellar even at 288x, but the immediate area around it was slightly elongated. I hope it stays clear for a few days so some of you can get out to see it, because this comet is heading south fast, so won't soon be visible to northern hemisphere observers.

After recording my observations, I did a little "sight-seeing". Since the comet was pretty close to it anyway, I took a quick look at the planetary nebula NGC 246. This big object is fairly faint (4.1' across, about mag. 10.9), but was seen immediately at 59x as a diffuse hazy circular patch involved with about 5 stars. However, once I put in the OIII filter, the object became a lot easier, becoming much better defined. In fact, at 70x with the OIII, several dark spots were noted in the interior, which, along with the stars, gives the object the name "the Skull Nebula".

I started playing with Megastar in Sculptor and saw NGC 613 sitting all by its lonesome on the screen, so I went after it in the 10 inch. It is a fairly easy small barred spiral, and boy, tonight you could \*really\* see that bar! It dominates the entire galaxy, making it look almost like a near edge-on spiral at low power, with higher power (101x, 141x) revealing the true nature of the object. Faint patches were noted off the ends, and the whole bar was enveloped in a very faint haze. 178x did show a star-like nucleus near the middle of the bar.

I left the 5-8mm Speers-Waler in (178x) and moved the 10 inch up to NGC 253, the Great Sculptor spiral. When I looked in, all I could say was WOW!! The galaxy spanned the entire 27.5 arc minute field (and beyond) of the S.W. and was absolutely littered with faint light and dark detail. It almost seemed to "glisten" as I looked at it. Several star clouds and a long portion of the spiral arm along the galaxy's southeastern side were clearly visible with averted vision, along with irregular dark lane-like structures along the northwestern side. Man, do I love this object (and my 5-8mm Speers-Waler)!

It was getting late, so with moon rise about an hour or so away; I looked at M33 and M31. M33 was fairly easy to see with the unaided eye, and it was a pure joy in the ten-inch. Most of the 59' arc field of my 24mm Koenig was filled with a faint irregular glow covered with numerous faint patches and arcs scattered all over. The two main irregular spiral arms were visible snaking off from the oval diffuse glow of the core, but a few other patches well away from the core were also fairly easy to see. I used 101x, and picked out quite a number of patches including a large irregular spiral arm fragment southwest of the core region. In comparison to these patches, the large emission nebula near the end of the northeastern arm NGC 604 looked almost brilliant. It appeared as a small fuzzy oval with just a hint of interior detail. M31 was also spectacular, with 101x showing the two main dark lanes and their irregularity easily. All in all, it was a pretty good "quick" observing session (now if I can just find some dark red plastic or glass to cover that darn computer screen!).

## NASA's Global Surveyor Sees Possible Climate Change on Mars

The planet Mars we know today is a cold, dry, desert world, but suppose the martian climate is changing even now, year to year and decade to decade?

New observations by NASA's Mars Global Surveyor spacecraft are expanding our understanding of the martian climate and may indicate the climate is changing significantly even today. This suggests even larger climate changes have occurred during the planet's recent history and may again in its future. The observations were made during a full martian year, 687 Earth days.

If this is so, Mars might someday become warmer and wetter, as some scientists suggest it was during its early history. Papers detailing these observations are published in the Dec. 7, 2001, issue of Science magazine.

"If the environment of Mars has really changed by as much and over as short a time-scale as our observation implies, there should be attributes of Mars reflecting these changes that may be measurable by landers," said Dr. Michael Malin, principal investigator for Global Surveyor's camera system at Malin Space Science Systems, San Diego. "If Mars had a higher atmospheric pressure in the not-too-distant past, it is more likely that water was present as a liquid near the surface."

Liquid water is required to support known forms of life, and the presence of liquid water on Mars would make it more likely life may once have existed there.

"Detecting evidence of climate change and variability on Mars using Mars Global Surveyor data is an important aspect of telling us where to go on the surface this decade," said Dr. James Garvin, lead scientist for Mars exploration, NASA Headquarters, Washington, D.C. "Clearly, the polar regions are a good place where we would like to look for hydrothermal vents to see if they exist on Mars."

Images from Global Surveyor's camera system show that pits -- often referred to as the "Swiss cheese" terrain -- at the southern polar ice cap of Mars have dramatically increased in diameter, indicating the material has evaporated rapidly compared to last year.

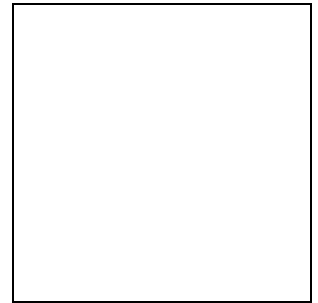
"The amount of change is much larger than any previous change we've seen on Mars, and it is much larger than can be explained by the evaporation of water ice. We have calculated the only material that could have changed this much is carbon dioxide ice, what we know as dry ice," said Malin. "This means the Mars environment we see today may not be what it was a few hundred years ago, and may not be what will exist a few hundred years in the future."

A separate observation is providing more detail about the behavior of carbon dioxide in the martian atmosphere. Carbon dioxide is a "greenhouse gas" believed to warm climates when its atmospheric concentration increases. The spacecraft's laser altimeter and radio tracking system have made precise measurements of the amount and density of carbon dioxide snow in both polar regions. This information gives scientists the first global measurement of the seasonal exchange of carbon dioxide between the atmosphere and surface.

Due to the tilt of the planet, Mars has seasons just like Earth. Scientists have long known the most important seasonal change on Mars is the autumn and winter "freezing out" of carbon dioxide from the atmosphere in the form of dry-ice frost and snow. The evaporation of the surface frost in spring and summer returns carbon dioxide to the atmosphere. Over the course of a martian year, as much as a quarter of the atmosphere freezes out, but until now scientists didn't know precisely where and how much dry-ice frost and snow would pile up on the surface.

"We have measured how deep the dry-ice snow got on Mars over the course of a year. We have also measured the corresponding tiny change in the gravity field due to carbon dioxide being transported from one pole to the other with the seasons," said Dr. Maria Zuber, deputy principal investigator of the laser altimeter, at the Massachusetts Institute of Technology, Cambridge, and NASA's Goddard Space Flight Center, Greenbelt, Md.

"Snow on Mars is denser than snow on Earth and is really more like ice than snow. Understanding the present carbon dioxide cycle is an essential step towards understanding past martian climates," Zuber said



South polar pits in layer of frozen carbon dioxide

# THE PRAIRIE ASTRONOMY CLUB CALENDAR

January 2002						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
		Sun: 07:50 - 17:09	Sun: 07:50 - 17:10	Sun: 07:50 - 17:11	Sun: 07:51 - 17:12	Sun: 07:50 - 17:13 Hyde Observatory open to the public 7-10 p.m.
6	7	8	9	10	11	12
Sun: 07:50 - 17:14	Sun: 07:50 - 17:15	Sun: 07:50 - 17:16	Sun: 07:50 - 17:17	Sun: 07:50 - 17:18	Sun: 07:50 - 17:19 Mercury at greatest elongation Club Star Party	Sun: 07:49 - 17:20 Hyde Observatory open to the public 7-10 p.m.
13	14	15	16	17	18	19
Sun: 07:49 - 17:21	Sun: 07:49 - 17:22	Sun: 07:48 - 17:23	Sun: 07:48 - 17:24	Sun: 07:47 - 17:25	Sun: 07:47 - 17:27	Sun: 07:46 - 17:28 Hyde Observatory open to the public 7-10 p.m.
20	21	22	23	24	25	26
Sun: 07:46 - 17:29	Sun: 07:45 - 17:30	Sun: 07:44 - 17:31	Sun: 07:44 - 17:33	Sun: 07:43 - 17:34	Sun: 07:42 - 17:35 UNL Student Observatory Open House	Sun: 07:42 - 17:36 Hyde Observatory open to the public 7-10 p.m.
27	28	29	30	31		
Sun: 07:41 - 17:37	Sun: 07:40 - 17:39	Sun: 07:39 - 17:40 PAC Meeting 7:30pm Hyde Observatory	Sun: 07:38 - 17:41	Sun: 07:37 - 17:42		

### NEWSLETTER UPDATE

The newsletter for the month of November will be delivered via USPS mail to every club member. Those that wish to help with publishing costs by receiving only the on-line version of the newsletter should contact the newsletter editor and request a sign-on and password for access. You may receive both the mailed version and the on-line version if you wish. Those members that would like to continue to receive the mailed version need to do nothing. Those that wish to access the on-line version need to contact the editor. We are starting over, so if you have already contacted the newsletter editor requesting only the on-line version, you must do so again.

**Directions to Olive Creek  
Observing Site**

Shorter:

Take Hwy 77 South out of Lincoln until you get to the Crete corner (junction Hwy 77 and Hwy 33). Go West on Hwy 33 (toward Crete) until you get to SW 72 St. Turn Left (South) on SW 72 St. and go about 5 miles until you get to SW Panama Rd. Turn right (West) until you get to SW 100 St. (SW 100 St does NOT go through to Hwy 33). Turn Left (South) on SW 100 St and go about 1 to 1 1/2 miles until you see the sign and entrance to Olive Creek (this is the West side of the Park). It's on your left (East) side of the road.

More Black Top:

Take Hwy 77 South out of Lincoln until you get to the Crete corner (junction Hwy 77 and Hwy 33). Go West on Hwy 33 (toward Crete) until you get to about SW 114 St. - the first intersection after SW 100 St. (forgot to look at this street sign, sorry - you'll see a sign for Olive Creek though at this road- but don't count on anymore signs after that, I didn't see any). Turn Left (South) on SW 114 St and go about 5 miles or so until you get to SW Panama Rd (you'll see a church and small school on your right). Turn Left (East) and go about a mile to SW 100 St, then turn Right (South) and go 1 to 1 1/2 miles until you see the Olive Creek entrance and sign (on your left hand side of the road).

**OFFICERS  
OF THE PRAIRIE ASTRONOMY CLUB**

**PRESIDENT:** Dave Knisely  
(402) 223-3968  
KA0CZC@navix.net

**VICE PRESIDENT:** Dave Brokofsky  
(402) 486-3441  
dbrokof@msn.com

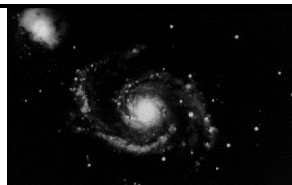
**2nd VICE PRESIDENT  
(PROGRAM CHAIR):** Brian Sivill  
(402) 420-1227  
nanoamps@aol.com

**SECRETARY:** Lee Taylor  
(402) 327-0804  
otaylor89@hotmail.com

**TREASURER:** Liz Bergstrom  
(402) 464-2038

*Club Observing Chair:* Bill Wells  
477-1346

*Hyde Volunteer Coordinator:* Dave Churilla  
(402) 467-1514  
weber2@inebraska.com



**The Prairie Astronomer  
C/o The Prairie Astronomy Club, Inc.  
P.O. Box 5585  
Lincoln, NE 68505-0585**

---

First Class Mail

---

**Next PAC Meeting  
December 26, 2001  
7:30 PM  
Hyde Observatory**