



NORFOLK SKIES



The Official Newsletter of the new Norfolk Astronomical Society

Glendon L. Howell, Editor

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December 2001

Meetings And Events For December 2001

Date	Activity
Sat., Dec. 1	<u>Telescope Buying Tips</u> seminar, 5 to 7 PM at MRO Computers & Astronomy. A Powerpoint presentation is planned as well as telescopes set up for public viewing of Saturn, the near Full Moon, and potentially Jupiter if we stay later.
Tues., Dec. 4	<u>Seven Warning Sign Of Voodoo Science</u> , free Sigma Series lecture given by Dr. Robert L. Park, 7:30 PM at the Virginia Air & Space Center, Hampton.
Thu., Dec. 13-14	<u>Geminid Meteor Shower/NAS Observing Session</u> at Gates Co. Site
Mon., Dec. 17	<u>Regular Meeting/Dinner</u> , 6:30 PM at the Duck Inn, located at the Lesner Bridge in Virginia Beach. RSVP by calling Glen Howell at 485-4242 by Dec. 16.

Dues And Magazine Subscriptions

NAS membership dues for 2002 will remain at \$12.00, the vast majority of which is designated toward production and distribution of this newsletter. A little over \$3.00 of each membership also goes toward membership in the Astronomical League, and you are thus encouraged to take advantage of their observing programs and other benefits, as well as enjoy receipt of their quarterly Reflector newsletter. Please try to pay dues by December 15, or make arrangements for an extension on payment if you can justify hardship.

I am once again opening up a new interval for subscription acceptance for both Sky & Telescope and Astronomy magazines, with a tentative **deadline of December 15**. I will then work up the paperwork and submit them (both renewals and new subscriptions) before December 31 when the rates could potentially change, though I have not heard yet that they will for 2002 for Sky & Telescope.

PLEASE BE PROMPT in getting your money in as it causes a lot of unnecessary paperwork to resubmit. Individuals can not send their money directly to the magazine and receive the discount as it must come for a group check or money order. The following rates apply for subscriptions received in 2001, where members can only renew for one year at a time:

- Sky & Tel --- \$29.95 per year (save \$10.00 off full subscription price)
- Astronomy --- \$29.00 per year (save \$10.95 off full subscription price)

I have received info already from Astronomy for 2002 and I have some exciting news about changes! The offering of a new 2 year discount subscription is worth consideration. I would not be surprised to see Sky & Telescope follow suit either this year or next.:

- Astronomy --- \$29.00 for 1 year (save \$10.95 off full subscription price)
- Astronomy --- \$55.00 for 2 year (save \$19.00 off full subscription price)

Send check for full amount (dues and magazines) payable to **Glendon L. Howell** as NAS currently has no bank account. Please indicate if your subscription is a NEW or RENEWAL of an existing subscription. Provide account # to me if you haven't given it to me in the past and have never been on the discount plan, otherwise I may have it already. I will deposit all checks and get money orders to send to each magazine. Mail checks to:

Glendon L. Howell
2808 Flag Road
Chesapeake, VA 23323-2102

Geminids Peak Near New Moon

The annual Geminid Meteor Shower is expected to peak at 11:30 PM **Thursday night, December 13**, with the radiant fairly high in the sky. The radiant, the region of the sky where the meteors appear to emanate from, reaches its highest point at 2 AM, only a few hours later. The peak falls within a day of New Moon, so the Moon will not be a problem. If you are interested in observing this shower under the dark rural skies of Gates County, NC, contact Glen Howell at 485-4242.

December 14 Sunset Eclipse

An annular solar eclipse occurs Friday, December 14. The path of annularity begins in the Pacific far out from China, and sweeps westward, crossing Central America before ending in the Caribbean Sea. A very brief portion of the partial phases of this eclipse will be visible here in Hampton Roads just prior to sunset. Locally, the eclipse begins at 4:15 PM with Sun set occurring at 4:50 PM.

Comet C/2000WM1 Linear Brightens To Naked-Eye

As December opens, observers should find Comet Linear at the threshold of naked-eye visibility in the constellation Pisces. The comet is rapidly moving southwestward, so rapidly in fact that it will exit our skies altogether by month's end to become strictly a Southern Hemisphere object. The comet is expected to be magnitude +5.6 at New Moon and lie in Sculptor near NGC 7793, a +9.1 magnitude galaxy that itself looks like a comet. A finder chart appears on page 7 of this issue.

Tidewater Regional IDA Meeting Rescheduled

The third annual Tidewater Regional IDA Meeting & Outdoor Lighting Workshop will be rescheduled for sometime next April. Conflicts and short notice prevented many speakers from being able to support a November event. Speakers are likely to include Phil Ianna the Chairman of Va-IDA, Chris Luginbuhl of the US Naval Observatory in Flagstaff, local marine biologist Johnny Noles, and representatives from CPTED (Crime Prevention Through Environmental Design) and Scenic Virginia.

Local Planetarium Shows

THE CHRISTMAS STAR will be shown **Thursdays, December 6, 13, and 20**, from 8 to 9 PM at the Chesapeake Planetarium, 300 Cedar Road. The program explores the story and presents possible explanations for the Christmas Star. Telescope outing immediately after the show, weather permitting. Admission free. For reservations call 547-0153.

SEASON OF LIGHT will be shown Tuesdays from 7 to 8 PM at the Virginia Beach City Public Schools Planetarium, located at Plaza Middle School, 3080 S. Lynnhaven Road in Virginia Beach. This presentation includes multicultural contributions to our commonly observed winter holidays.

STAR OF WONDER (Nov. 17 – Jan. 6) will be shown Monday through Friday at 3:30 PM, Saturdays at 11:00 AM, 1:30 and 3:30 PM, and Sundays at 1:30 and 3:30 PM, at the Virginia Living Museum Planetarium, 524 N. J.Clyde Morris Blvd, in Newport News. The program seeks to answer the mystery of the Star Of Bethlehem. Admission \$3.00. For information call 595-1900.

Samuel Heinrich Schwabe (1789-1875)

By William N "Chuckwagon" Gray

Sunspots were observed and recorded by the Chinese several centuries before Galileo turned his small telescope toward the sky. The Chinese, of course, saw them with the naked-eye --- and they can be seen the same way today if conditions are right.

The best time to look for them is at sunset when the sun is down near the horizon and is shining through a slight haze. Strangely enough, they are hardly ever seen at sunrise, although I don't know of any particular reason why this is so.

Sir William Herschel made an extensive study of these objects and suggested that they were actually holes in the Sun through which the dark interior could be seen. But he, like so many other scientists of that time believed that very little could be learned by observing the Sun. And so, few of them did until about the year 1825 when a young man in Dessau, Germany began what proved to be a long career of observing these spots.

His name was Samuel Heinrich Schwabe, a pharmacist by trade and for over 40 years he made almost daily observations of the Sun, weather permitting, of course. It was said that he made his observations each day at noon, in the yard behind his shop, where he had set up a small telescope. Year after year, Schwabe observed these spots, recording their number and size, and their movements across the face of the Sun.

Then, in the year 1843, some 18 years after he had begun this task, he began to notice that they seemed to follow a certain pattern. His records seemed to indicate that the spots seemed to come and go in a cycle of about 11 years. During the first 2 to 4 years of this cycle, the spots are more numerous and larger than on the average. This is now known as the "maximum" part of the cycle. Then the spots begin to diminish until some 6 or 7 years later when the "minimum" occurs. At this time, 6 months or more may go by without any spots being seen. However, this period, from one "maximum" to another, seems to indicate a cycle of about 11 years.

As this is close to the time of revolution of the planet Jupiter, there was at first thought to be some connection between the two. But this was soon disproved, as there is some 6 months or more difference in the revolution of the planet and the sunspot cycle.

Schwabe's discovery of this periodicity, and his many years of observing the Sun went un-noticed until about 1851 when the famous scientist and naturalist Humboldt drew attention to it. And so in 1857, in recognition of his work in this field, the Royal Astronomical Society in London, England awarded him its Gold Medal.

Schwabe continued his daily observations of the Sun up until his death in 1875, at the ripe old age of 86. And in his Will, he left all of his many records and reports to the Royal Astronomical Society, some 31 large volumes. Quite an inheritance for the scientific world.



The November 5 aurora borealis as seen from Monrovia, MD

This Observer's Experience of the Aurora of November 5, 2001

by Ron Robisch

I made a point of going outside several times during the evening of November 5 to see if anything was happening. Nothing. Early that morning, I had received the S&T AstroAlert e-mail warning of potential auroral activity that night, but so far not so good. Around 9:40 my wife, Andrea, and I decided to turn off the TV and call it a night. Just before getting into bed I went into the kitchen to get a drink of water. We have a sliding glass window next to the refrigerator, and I happened to glance out, not really expecting anything...And the sky was all red!

"Holy #@?% !" I immediately stepped outside and onto the deck. My jaw dropped. The northern sky, practically up to zenith, was doused in red; a lovely, strong, deep red. I ran back inside and got my wife out of bed and grabbed my cell phone. As I got back out onto the deck, at 9:52pm (I checked my cell phone's calling log to get the time), I was already calling my brother, Gary, in Chicago. Then something occurred to me -- I was standing outside in my underwear! Another trip inside and I was properly attired from head to toe in fleece. After confirming that they were seeing the same display in Chicago that I was seeing in Maryland, I made more calls. Over the next 20 minutes or so I stood outside and one-by-one called all the phone numbers that I had programmed into my cell phone. I called my other brother, Vince, my mom and dad, my friends Al in southern Maryland, Brad outside of New York City, and Kent in Virginia Beach. (My chiropractor and Domino's Pizza both sounded a bit startled at the calls, though!)

From my deck I have a terrible view of the horizon, so all I could see from there was red. There was usually one or two diffuse areas of significantly deeper color, which every now and then organized themselves into sharply defined linear streaks and, on a couple of occasions, slightly whitish streaks. I eventually moved to my front yard where I could see more. Pretty much 1/2 of the sky was busy with auroral activity, and the other 1/2 provided a beautiful contrast to the red of the aurora. I had gotten my camera out and was finished making phone calls, so I started thinking about photographing this baby. Even from the front yard I have poor horizons, so I tossed some stuff in my Metro and got mobile.

I pulled over on Graystone Rd. just a couple of blocks away. Here, I was on a hill and there were basically no trees in the area. The aurora was awesome to behold! Forget the reds for a minute. What I saw before me along the horizon from northwest to northeast was an awesome, huge but somewhat squashed dome of pale green! It immediately reminded me of Assembly Hall on the campus of the University of Illinois. Assembly Hall is where the Fighting Illini play basketball, and when telling people how to find it we used to say, "Go down along South Farms and it'll be the first UFO on the right. You can't miss it." That's what it looks like, a flying saucer. Well, now the mother ship had landed in Monrovia, Maryland!!!



Part of the Green Arch above the horizon

Looking more closely, it would be more appropriate to describe the auroral green as a squashed arch rather than a squashed dome, because below the arch a thin slice of dark sky could clearly be seen above the landscape. Vertical streaks or curtains could be seen faintly along the length of the arch. Interestingly, the green part of the aurora seemed very steady, unlike the red areas, which were still shifting every now and then and becoming concentrated in the northeast. The arch didn't seem to change a bit during the whole time that I was on Graystone.

I set up my camera on a tripod and began to take a few pictures. The photos were taken with my Yashica FX-D SLR camera opened up to f/1.4, using ASA 400 color film from Kodak. This became a somewhat frustrating activity because after just a couple of shots the batteries were drained, and I had

managed to waste a few frames of film. Unfortunately, my camera's batteries are used to keep the shutter open, so they don't last long for astrophotography. (I'm thinking about maybe getting a newer, simpler camera for this purpose. If anyone has any recommendations, please let me know.) After about 20 minutes or so, I headed back home. I remained outside for a while longer, until about midnight, before hitting the sack. The auroral intensity seemed to have abated significantly by that time, but what a show it had been!

The Great Leonid Meteor Shower of 2001

By Kent Blackwell

November 17 2001, a day marked on many amateur calendars throughout the world. On this day it was hoped one would witness the great Leonid meteor storm. Last year, and the year before the storm failed to match the incredible display of 1966. Still, in 1999 many people saw a great number of Leonids, including marvelous fireballs. Due to clouds in the area, I wasn't fortunate enough to be among those. The year 2000 was a disappointment completely, but many experts predicted 2001 would prove a good year for the Leonids. Their predictions were completely accurate.

Saturday, November 17 started a beautiful day in Coinjock, NC. I had my site picked out, cameras ready, and reclining lounge chair in place; in short, I was prepared to view and photograph the event. But then something unpredictable happened, clouds rolled in from off shore. Hoping they were only temporary I waited it out. By nightfall the clouds still remained. At 7:00 pm Glen Howell called from his observing site in Gates County, NC, indicating the sky was clear. Rather than take a chance I packed up my equipment and headed westward to Gates County.

Driving through Elizabeth City and then Suffolk the clouds lingered. It was not until approaching the western portion of Suffolk that it began to clear. Upon reaching Gates County there wasn't a sign of a single cloud in the sky. Thank goodness I had escaped the clouds. Incidentally, I learned it eventually cleared in Coinjock, and in fact all of the Tidewater, VA area. Friends on the Outer Banks of North Carolina reported the skies remained cloudy until 3:00 am.

After arriving at Glen's site Wesley Jacocks and Dr. Richard Harmon joined me. Each of us unloaded our vehicles, set up tents and laid out lounge chairs to prepare for an evening of meteor watching. I must admit my prediction of the event was a bit less optimistic than many. Last year's Leonids was a disappointment, and though 1999 was good, the number of meteors fell far short of predictions.

By 10:00 pm we began seeing occasional Leonids. Mixed in were a few sporadic meteors, as well as a number of Taurids. How interesting it was to see the Leonids flying across the sky in one direction and the Taurids in the other. Several amateurs have since nicknamed these Taurids, "anti-Leonids".

I purposely did not take a telescope, knowing full well had I done so I'd be peering through the eyepiece and miss every single meteor. I did, however take along a pair of 10x30 Canon stabilized binoculars. It was a treat to lay back and look at the Milky Way with these. An added treat was viewing Comet C/2000 WM Linear in the binoculars, as well as in Glen's 8" f/6 Newtonian and Wesley's new 5" Maksutov-Cassegrain telescope. Ever so often I'd get up from my comfortable chair to peer through one of the telescopes at such delights as the *Veil Nebula*, the *North American Nebula*, and of course the *Great Orion Nebula*. It was the best I've ever seen it.

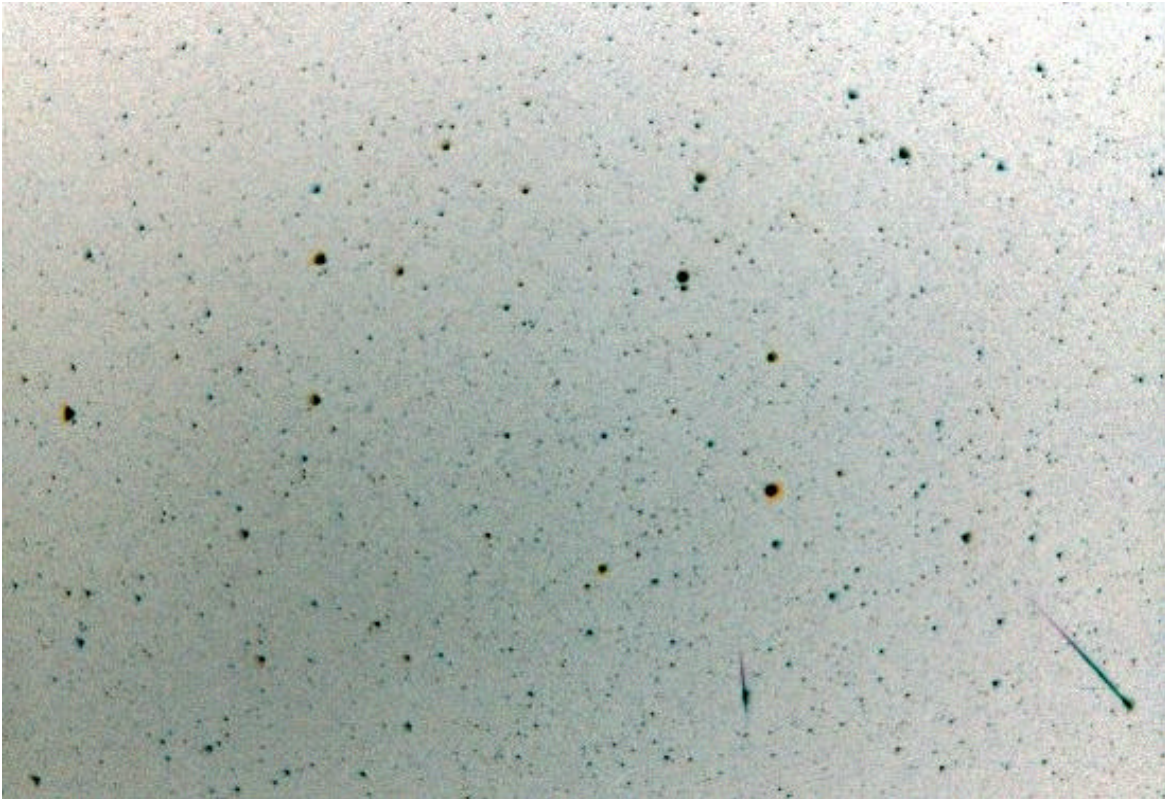
Midnight came, then 1:00 am. Pretty soon the 3:00 am hour was approaching and we were seeing more and more brilliant Leonids sail across the sky in every direction. At 4:00 am I called Chesapeake Planetarium director Dr. Robert Hitt to advise him to go outside and look at this fantastic meteor display. I later learned even from his city observing location in Virginia Beach he was able to see about 15 meteors per minute. I also learned his 93-year old mother laid out on a recliner from 4:30 am until sunrise. She surely has to be one of the oldest persons to have witness the event.

At our remote site in North Carolina we lost count of the meteors, but estimated an average of 1 per second, or about 3600/hr. I've just never seen anything comparable to it. How can anyone who saw the Leonid display of 2001 be impressed with an average meteor shower again?

By 4:30 am Glen's daughter and mother joined us. His father made it out of the house but I never saw him. I surely hope a Leonid didn't strike him on his way to the observing field. All of us were in awe at the vast number of meteors as dawn approached. Even as the sun rose we could still see vapor trails.

As the sun brought the event to a close I envied those in Australia who would have their opportunity to see the meteor storm at 1:00 pm, our time. Unfortunately, some of the people with whom I have communicated in Australia have said clouds prevented any observational programs. So, it appears the east coast proved to be one of the best areas in the country, maybe even the world. Much of the western portions of Virginia and Maryland were hampered by fog an hour before dawn, so those missed out on the peak of the storm. We were very lucky in the immediate Tidewater, VA area to have such exemplary weather.

Those who know me know I usually miss every meteor in the sky, simply because I can't take my eye away from the eyepiece of a telescope. I'll have to say thank you to my friends who insisted I not listen to my own instincts of predictions for this shower. To those friends I am indebted, for I have witnessed the greatest meteor shower in a lifetime.



The Leonid Storm of November 18, 2001. Glendon Howell captured these 2 meteors in just a couple of minutes exposure pointed at the radiant on Fujicolor Super G 800 Plus film and a 30-70mm zoom at its 30mm setting. The original uncropped image has a total of 5 meteors recorded! To save toner and make the meteors more visible, the image has been printed here as a negative scan.

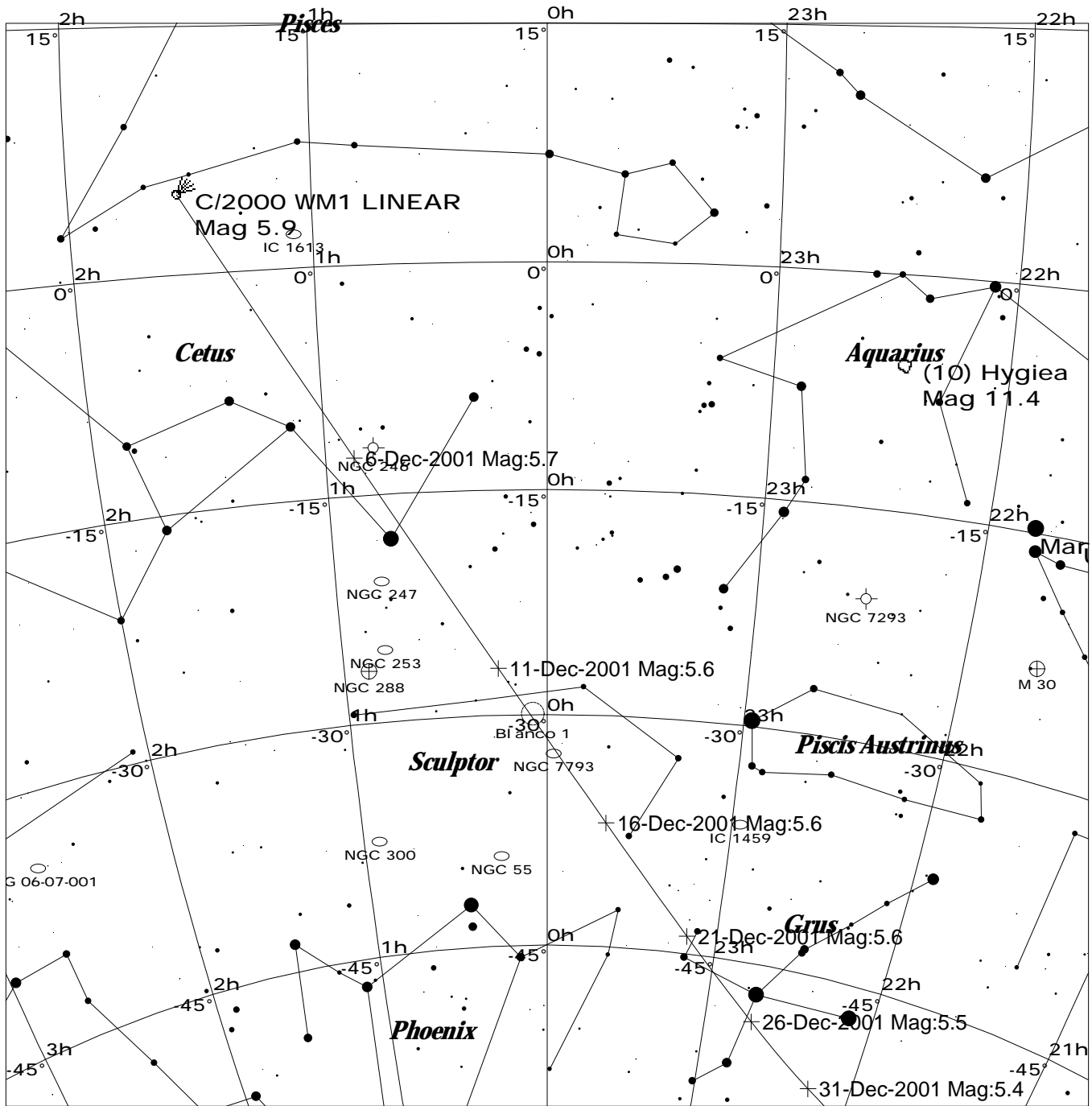
Look for other great Leonid photos by the following great astrophotographers on their websites:

Tony Hallas	http://www.astrophoto.com/meteor.htm
Tom Polakis	http://www.psiiaz.com/polakis/leonids2001/leonids2001.html
Jerry Lodriguss	http://www.astropix.com/HTML/SHOWCASE/LEONID3.HTM

Norfolk Skies is published monthly by a national award winning Editor Glendon L. Howell (Astronomical League Mabel Sterns Award for 2000). Annual dues are only \$12.00 and fund primarily production and distribution of this newsletter. Members are entitled to reduced rates on *Astronomy* and *Sky & Telescope* magazines among other benefits. For more information, visit our web site at

<http://groups.hamptonroads.com/NAS/>

Comet C/2000WM1 Linear in December



STARS

- <2 • 4.5
- 2.5 • 5
- 3 • 5.5
- 3.5 • >6
- 4

SYMBOLS

- ☄ Comet
- ♁ Asteroid
- ☉ Galaxy
- Open Cluster
- Bright Nebula
- ⊕ Globular Cluster
- ⊕ Planetary Nebula
- ⊕ Quasar
- Other Object

Comet C/2000WM1 Linear becomes a naked eye comet in December, continuing on its trek to the southwest. December finds the comet moving out of Pisces through Cetus, Sculptor, and finally Grus as it departs our skies for the southern hemisphere. Chart prepared by Glendon Howell using SkyMap 3.0.

Local Time: 00:00:00 1-Dec-2001

UTC: 00:00:00 1-Dec-2001

Sidereal Time: 04:29:35

Location: 53° 27' 0" N 2° 31' 0" W RA: 0h00m00s Dec: -20° 00' Field: 70.0°

Julian Day: 2452244.5000

Norfolk Astronomical Society Astronomical Calendar

November 2001	December 2001	January 2002
S M T W T F S	S M T W T F S	S M T W T F S
1 2 3	1	1 2 3 4 5
4 5 6 7 8 9 10	2 3 4 5 6 7 8	6 7 8 9 10 11 12
11 12 13 14 15 16 17	9 10 11 12 13 14 15	13 14 15 16 17 18 19
18 19 20 21 22 23 24	16 17 18 19 20 21 22	20 21 22 23 24 25 26
25 26 27 28 29 30	23 24 25 26 27 28 29	27 28 29 30 31
	30 31	

All times are EST

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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
25	26	27	28	29	30	1
						5:00 PM Telescope Buying Tips Seminar at MRO
2	3	4	5	6	7	8
	9:00 AM Saturn opposition	7:30 PM "Seven Warning Signs Of Voodoo Science" lecture		6:00 PM Moon Perigee	2:52 PM Last Quarter Moon	3:50 AM Moon occults SAO 119030 (+7.1)
9	10	11	12	13	14	15
4:36 AM Moon occults SAO 138889 (+7.2)				11:00 PM Geminid Meteor shower peak	4:00 PM New Moon; Eclipse visible in Tidewater at Sunset.	
16	17	18	19	20	21	22
6:11 PM Moon occults SAO 188101 (+5.0)	6:30 PM NAS Dinner Meeting at Duck-Inn	2:00 AM Neptune 4 degrees N of Moon	6:20 PM Moon occults SAO 164803 (+7.9)	3:00 PM Mars 4 degrees N of Moon	2:21 PM Solstice; Winter begins	7:00 AM Ursid Meteor peak 3:56 PM First Qtr Moon
23	24	25	26	27	28	29
	10:15 PM Moon occults SAO 110166 (+7.7)				3:59 AM Saturn occultation	7:50 PM Moon occults SAO 78176 (+6.2)
30	31	1	2	3	4	5
5:40 AM Full Moon 9:00 AM Jupiter 1.2 degrees S of Moon						