

The Custer Comment

★ For The Curious ★

January, 2006

Volume XXXVI, Issue 1

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Winter Sky Spectacular!



Image, courtesy Steve Orlando

The stunning and ethereal beauty of the Milky Way's bigger sister in the Local Group of Galaxies, Messier 31 or the Great Galaxy in Andromeda, was captured by Custer member Steve Orlando. Located high overhead before midnight during Winter months, this all-time favorite is well placed for observation and photography. All objects in this image with the exception of M31 and its 2 companion galaxies are stars in our own galaxy! For image details, please see inside.

Highlights for January, 2006

- Winter course: Special Topics in Astronomy; January 21st, 2006 through February 18th; details and registration application inside;
- Extraordinary meeting of the membership to be held on January 14th that will discuss amending Custer's Constitution; additional details inside.

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Cover Image Details

Instrument: Stellarvue AT1010 Refractor (80 mm f/6 achromatic refractor);
Camera: Canon EOS Digital Rebel 300D;
Filters: Baader UV/IR cut filter and a Baader Contrast Boosting filter;
Film: ISO400;
Exposure: 5, 5 min exposures;
Guiding: C8 at F6.3 with SBIG ST7-USB/AO7 combination;

Editor's Column

Tom Madigan, Editor

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Cutoff for submissions is the 15th of the month preceding publication

Visit the new Custer Website at
<http://www.custerobservatory.org>
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"I have loved the stars too fondly to be fearful of the night."

Sarah Williams

This is our first month of the Custer Comment being distributed by solely electronic means. For those who don't have a personal computer or Internet access, a condensed version will be mailed via standard US mail. There have been some minor format changes that are commensurate with this change that include: 1) a one-page, condensed highlights page that will be the page that's mailed out to Custer members who don't have electronic delivery and 2) an expanded 'commercial interests' page on the back cover. Since we no longer need to format that page for mailing, the space can now be used to host additional blocks of advertising. If you're interested, please contact Custer's treasurer, Barbara Lebkuecher, for details and instructions.

An added benefit of this change is that we no longer have issue-size constraints. In the months to come and even beginning with this issue, I'll be taking advantage this new benefit. Previously, an issue larger than 14 pages was prohibitively time consuming to mail, especially if the requirement exceeded 100 copies. An issue no larger than 10 pages (5 physical sheets, double-sided) required standard, first-class postage (37c). An issue that exceeded 12 pages (6 physical sheets, double-sided) was not only more expensive and time-consuming to print and bind, but required a 60c stamp. Fortunately, we haven't mailed 100 physical copies in over a year, as the majority of Custer's members have converted to electronic delivery.

This editor, Custer's Board of Directors and officers wish to extend to the membership their very best wishes for a safe, healthy and prosperous New Year.

Best,
Tom

Tom Madigan, Editor

"To the youngsters of today, *I say believe in the future*, the world is getting better; there still is plenty of opportunity. Why, would you believe it, when I was a kid I thought it was already too late for me to make good at anything."

Walt Disney

AstroBytes

By Tom Madigan

Redshift (v 5.0)



In past installments of this column, I've alluded to Redshift, the PC Planetarium software produced by Maris Technologies (<http://www.maris.com>), published by various publishers including National Geographic, Viva Media and Piranha Interactive Publishing and offered through various vendors from Amazon to Sky Publishing Corporation. I've compared version 3.0 (published by Piranha) unfavorably to Cartes du Ciel in the November, 2005 issue of The Custer Comment. When version 1 was released and featured as a 'must get' in Sky and Telescope back in 1994, I ordered my copy, waiting with baited breath for the package to be delivered. It wasn't what I had expected. The navigation interface was cumbersome and the instructions unclear with certain basic activities, like changing the time, viewing location and place of observation (ex: surface of the Earth) difficult to execute, as those functions were linked to the clunky navigation toolbar whose default location is atop the viewing panel! Subsequently, Maris has released 4 more versions with the fifth and last version being released in mid 2004. I had purchased version 3 from a local retailer back in 2000 and much to my disappointment, the clunky interface that was used in version 1 was still there. While acceptable in a first release and in a program that was published during the transitional days between the old, pre Windows 95 days of Windows 3.11 and Microsoft's 'new era' of computing, featuring the almost-completely-32-bit operating environment of Windows 95, a bad design should have been dispensed with by version 2. Version 3 ran on the prevailing Microsoft platform of the day, Windows 98 and, to its credit, still runs on the prevailing Microsoft platform of today, Windows XP Professional, SP2. Fast forward to 2004 and the release of version 5. While conducting my research, I discovered that version 5 was initially published by Viva Media (<http://www.viva-media.com>), then National Geographic (<http://shop.nationalgeographic.com>) and now neither of these publishers list Redshift as an offering in their catalog. Although obtaining a copy of this, the latest (and probably the last) version of Redshift, is still relatively easy, it's apparently no longer published. Sky Publishing (<http://www.shopatsky.com/index.asp?PageAction=VIEWPROD&ProdID=250>) offers it for \$49.95, Amazon, new and used for between \$11.29 to \$30.99, Red Orbit (<http://shopping.redorbit.com/catalog/Redshift-5-p-3082566.html>) for \$89.95 with the official Redshift web site (<http://www.redshift.de>), in their comparison to Starry Night Pro (<http://www.redshift.de/us/h/rs5vsstn.htm>), listing it for the ridiculous price of \$99. The updates page lists major patches and enhancements to version 5 that include improvements to the Sky view and user interface. Those 'enhancements' should have been included in the original version 5 program but I guess *better late than never* is the appropriate response. It's too bad that it has taken 4 versions to correct what should have been corrected in version 2. In addition to the updates page on the official site and the Redshift page on Maris' site, additional addins for some of the more recently launched satellites can be downloaded along with additional data for some extra star clusters, nebulae and extragalactic objects such as Quasars and additional galaxies. At first glance, this may seem like quite an extra, but all the Open Source Freeware, like Cartes du Ciel, sport the same features. In addition, Redshift does not include a configurable PC – Telescope interface, as does Cartes du Ciel and some others.

In order to conduct this review or any review for that matter, it is necessary to become familiar with the product being reviewed. I must confess, I didn't actually install version 5 on my PC. I downloaded the 75 Mb, full-featured demo and have based this review on that demo. The demo was sufficient to show me that this latest version is simply a re-packaged version 3 in a glossy box with some more multi-media from the Hubble Space Telescope (which can be obtained for free from the official Hubble Public Web site [<http://hubblesite.org>]). Granted, version 5 sports an upgraded star database that's derived from Hipparcos and Tycho-2 data with the sky charts based on data from the Tycho-2 and Hubble 2 catalogs, those are all included free with Cartes du Ciel.

It has become apparent that, just like the new version of Windows that's released every 2 or 3 years with the corresponding price tag of \$199, the producers of Redshift have learned from Bill Gates that producing something on a CD-ROM and packaging it in a slick, colorful box they can make, in this case, upwards of \$100 per copy for something that can be obtained for free (Linux [<http://wwwnew.mandriva.com>] is better than Windows, it's available for free download [<http://wwwnew.mandriva.com/en/community/users/download>] and is based on Unix, an operating system that was developed by Bell Labs 45 years ago - http://vertigo.hsrl.rutgers.edu/ug/unix_history.html).

While Redshift has improved over the years since version 1 was released, you can get the same functionality and a better sky view with other software and Internet resources that don't set you back \$49 or \$89. However, for the sake of diversity and completeness and if you have an extra \$49 to spare, then go ahead and add Redshift to your suite of Astronomical software for the PC.

Coming Next Month

Light Pollution Update

The January, 2006, issue of Prevention Magazine (The Light-Cancer Connection - <http://www.prevention.com/article/0,5778,s1-1-55-179-6199-1-P,00.html>) reports on findings showing a strong link between certain types of cancer and artificial, night-time lighting and/or poorly designed fixtures. We'll explore this in depth as well as other developments on this front. Expect a rather comprehensive article, as it has been a long time coming and there's much to report.

Custer New Year's Eve Party

A message from Donna McCormick and Jeff Katz, Ph.D

Jeff and I would just like to thank [those who did so much] to make Custer's first New Year's Eve party such a wonderful event--from braving the weather and roads to be there, to contributing all the great food and party favors (special thanks to Carmella Cohn, Anita Massey, Ann Verticchio, and Sue Rose), to just being your wonderful selves!

A very special thanks to Ahmad and Henry for making the evening even more special by sharing their music with us! You're part of the family now! And to those who could only be with us in their good wishes--Jimmy Kay for sending over that fabulous, decadent cake (the remains of which I believe will ensure peak efficiency in the JFK tower from the crew's sugar buzz), and to Tom for helping to get the word (and Comment) out!

You all certainly got our new year off to a happy start and we look forward to another 12 months of knowing you and working together to help Custer be all that it can be!

Thanks!
Donna & Jeff

Gift Corner & Classifieds

**We Have
Meteorites!**

**Great sets
mounted in
beautiful
display cases.
Perfect for
gifts.**

**Custer
coffee mugs,
only \$4.
Do you have
yours yet?**

An Evening With John Dobson

VHS or DVD format, \$15.00, \$3.75 S & H

On September 17, 2005, noted sidewalk astronomer and cosmologist, John Dobson, visited Custer. He presented his classic cosmic slide show, packed with information and delivered with inimitable wit; he shared stories about his life as a monk, secretly grinding mirrors, making telescopes and introducing the public to the wonders of the night sky. Board member, Rich Huber, filmed this memorable event and has made copies on VHS and DVD. Running time is approx. 90 minutes. The cost: \$15 with 25% of the proceeds going to John Dobson's San Francisco Sidewalk Astronomers Association and a nominal \$3.75 for shipping and handling. You can pay for your tape using Paypal by sending \$18.75 to CusterPaypal@yahoo.com or by sending a check or money order (made payable to **Custer Institute**) to: Dobson at Custer, P.O. Box 1204, Southold, New York 11971. Please specify whether you would like VHS or DVD. If you have any questions, please contact Donna McCormick at mccormick@scientific-consultants.com.

Custer T-Shirts



Image, courtesy Tom Madigan

The editor's daughter, Kaitlin, sporting a Custer T-Shirt at Horton Point Lighthouse on Jamboree '05 night! The shirts are 100% heavy-weight cotton, machine-washable, and are available in adult sizes S-M-L-XL-XXL. The cost is \$15 plus \$3.75 S & H and the shirts are available only while supplies last. Custer would also like to **thank the East End Shirt Company** in Port Jefferson for their generosity and for having done an excellent job in producing such fine quality shirts on such short notice.

We have Susan Harder's patented & dark sky friendly **PARSHIELD®**

Outdoor Floodlight Shields

for PAR 38 type bulbs. Controls glare, reduces light trespass & allows you to direct the light where you need it. Two shields per box in your choice of Off White or Bronze finish. \$20.00, tax incl.

ASTRONOMY FOR ALL AGES

By
*Phil Harrington
&
Ed Pascuzzi*

The Gift Shop still has a number of copies of this latest volume by Phil Harrington with co-author Ed Pascuzzi. Get your copy while supplies last. At just \$20, this is a real bargain! As an added bonus, copies are signed by Ed.

PARALLAX

By
Alan W. Hirshfeld

We also have a limited number of copies of this excellent volume by 2003-Jamboree guest speaker Alan Hirshfeld. Quantities are limited so hurry and add this well-written and informative volume to your collection while supplies last.

Heavenly Events To Watch For In January, 2006

“ The winter night is cold, the snow is deep and bare;
Nothing breathes or moves under Orion’s stare. “

- Margaret R. Gould

For the planets, January is a month of change. Early in the month MERCURY disappears from the dawn sky on its way toward superior conjunction (behind the Sun) on the 26th. Meanwhile, VENUS plunges out of sight in the evening sky before her inferior conjunction (in front of the Sun) on the 13th, then reappears in the dawn sky by month’s end. She’ll be there until October. MARS is

due south soon after nightfall and sets in the early morning hours. During the month Mars fades from -0.6 to +0.2 magnitude. At midmonth JUPITER, in Libra, rises in the east around 2 AM and is approaching due south as it fades from view in the gathering light of dawn. On the 27th SATURN, in Cancer, reaches opposition and is in the sky all night, peaking at -0.2 magnitude.

- 1 On January 1, 1986, 20 years ago today, Comet Halley passed within the Earth’s orbital distance from the Sun. It could be seen with binocular help low in the west after dark, very close to the Water Jar of Aquarius.
- 1 The slim crescents of Moon and Venus set together low in the southwest. Check them out by telescope by 6 PM. Which crescent is slimmer?
- 3 This morning’s Quadrantid meteors fan out of the northeast sky, undimmed by moonlight. It may be a cold shower, but it’s usually a good one.
- 4 The Earth is at perihelion today, only 91.4 million miles from the Sun. Because the Sun’s gravitational pull makes the Earth speed up when we’re closer to the Sun, for us in the northern hemisphere autumn and winter combined are about one week shorter than spring and summer combined, believe it or not. Work it out and you’ll see.
- 5 Latest sunrise comes around this date, at about 7:20 AM.
- 5 The brightest asteroid (4) Vesta is at opposition tonight. You can find 6.3 magnitude Vesta in Gemini about 1° to the east of the star 44 Geminorum, also 6th magnitude. From there Vesta will move in a northwest direction during the winter months. Follow it along from night to night. Binoculars will be needed.
- 5 Algol, β Persei, is in mid-eclipse at 11:53 PM, again at 8:43 PM on the 8th, and at 5:32 PM on the 11th.
- 8 The waxing gibbous Moon chases Mars into the western sky this evening.
- 9 This year the Moon will cross in front of the Pleiades of Taurus each month, occulting some of its stars. Around 10:05 PM tonight the 3.8 magnitude star Atlas (27 Tauri) will suddenly disappear behind the dark upper-left edge of the waxing gibbous Moon.
- 12 About 4:21 AM this morning the 4.5 magnitude star 136 Tauri will disappear behind the dark bottom edge of the waxing gibbous Moon. (This timing could vary by several minutes, depending on your location.)
- 14 Full Wolf Moon in the early morning sky sets shortly after sunrise.
- 15 Saturn chases the Moon into the west in the early morning sky.
- 23 The fat waning crescent Moon joins Jupiter in the morning sky.
- 24 On January 24, 1986, 20 years ago, the Voyager 2 spacecraft swung past Uranus, sending us data and images of this previously unvisited planet and of its rings and satellites.
- 27 To the lower right of Venus, which is now low over the southeast horizon in the hour before sunrise, is a thin waning crescent Moon. Use binoculars.
- 27 Saturn is at opposition, about 755 million miles out beyond us. Its equatorial diameter is nearly 20½ arcseconds, and its rings are inclined about 19° to our line of sight. Beautiful in any telescope!
- 28 Algol is in mid-eclipse at 10:28 PM, and again at 7:17 PM on the 31st.
- 30 The Moon is at perigee, less than a day after New Moon. Beware of high tides in the event of foul weather as the Moon and Sun combine their pull on the Earth’s waters.

Prepared by Robert Chapin

Highlights for January, 2006

Winter 2006 Class: Special Topics In Astronomy

Custer Board and Staff members will teach this five-week course. Each week a different instructor will present a topic of special interest. You can register for as many of the sessions as you like (a discount is available to those who register for all five). After class, students are invited to remain at Custer for the evening, participate in any other events that are scheduled, and enjoy refreshments while Custer staff show you around the night sky. Classes will be held Saturdays from 6:00 P.M. to 7:30 P.M., Jan. 21, 28, Feb. 4, 11, and 18.

January 21st; Comets and Other Small Bodies in Our Solar System

Custer member and Tupper Planetarium Director, David Cohn, will present an illustrated lecture on comets, meteors, asteroids, and objects of the Kuiper Belt and Oort Cloud. The findings of recent NASA missions investigating such objects will also be covered.

January 28th; Stellar Evolution: The Life Cycle of Stars

Custer Comment Editor and former Vanderbilt Planetarium Associate staff Astronomer, Tom Madigan, will present an illustrated lecture on the evolution of stars, from birth to death. Coverage will include the relationship between spectral class luminosity, the Main Sequence, Red Dwarfs, stellar collapse, supernovae and more. I'll be discussing the topic of my upcoming Master's thesis: *Why don't we observe any Population I Red Dwarf Stars?* We should, as Red Dwarfs are the coolest, most stable and long-lived stars in the H-R diagram.

February 4th; Telescopes and Binoculars

Custer Board Member and AOS Observatory Director, Rich Huber, will present this hands-on class on observing equipment and the basics of getting started in amateur astronomy. The discussion will include optics, the designs of various types of telescopes, binoculars, and accessories, as well as advice on purchasing equipment to fit every budget. This class is also ideal for those who already have equipment and want to know how best to use it.

February 11th; An Introduction to Astrophotography

Board Member, Kurt Massey, will take students through step-by-step instruction on how to get started photographing the night sky and deep space objects. Students will learn how to select and use the necessary equipment, as well as process and polish the resultant photos. There will be demonstrations and illustrations of the wondrous objects that can only be seen through the camera's eye.

February 18th; Cosmology, Science, and Science Fiction: What is Really Possible?

Board member, Jeffrey Owen Katz, Ph.D., will present an illustrated lecture on the universe as seen through the eyes of science fiction writers and modern physicists. If you've ever wondered about worm holes, cosmic strings, black holes, faster-than-light communication and space travel, ET, or if Scotty could ever really beam anyone up, this is the class for you.

Pre-registration is **required**. Cost for Custer members: \$35 for all 5 weeks or \$10 per session; Non-members: \$50 for all 5 weeks or \$13 per session. We accept Paypal (to the account of CusterPaypal@yahoo.com), checks or money orders (made out to Custer Institute). Please send the form below to: Custer Winter Class, P.O. Box 1204, Southold, NY 11971. For further information contact Donna McCormick (mccormick@scientific-consultants.com or 631-696-3333).

Custer Class and Membership Application

Name _____ Email _____

StreetAddress _____

City _____ State _____ Zip _____ Phone _____

I am a Custer Member: ___ All 5 classes at \$35, or the following sessions at \$10 each: ___ 1/21, ___ 1/28, ___ 2/4, ___ 2/11, ___ 2/18;

I am not a Member: ___ All 5 classes at \$50, or the following sessions at \$13 each: ___ 1/21, ___ 1/28, ___ 2/4, ___ 2/11, ___ 2/18;

I would like to become a Custer Member: ___ \$45 Individual; ___ \$60 Family; ___ \$25 Senior (65+); ___ \$25 Junior (12-18).

_____ I have made payment via Paypal or _____ enclosed my check/mo (payable to Custer Inst.) for \$_____. Confirmation of registration **will only be sent by email**.

Please mail your form to: Custer Institute
P.O. Box 1204
Southold, New York 11971.

Custer Clean-Up

The Observatory Staff is in the process of doing an inventory of Custer's equipment and other resources. During the course of this project, a major clean-up will be undertaken; the basement is the main target. If you have any personal items stored at Custer, and you would prefer not to see them thrown into the dumpster, absorbed into Custer's collection, or sold, please contact Jeff Katz (katz@scientific-consultants.com or call 631-696-3333) as soon as possible. If you would care to assist in the clean-up project, let him know because we could sure use the help!

Skilled Labor Wanted

The renovation of the dome is underway. The Observatory Staff is going to need assistance to complete this project and other related ones. If you have any skill with carpentry, electrical work, painting, etc., and could volunteer a few hours of your time, please contact Jeff Katz (katz@scientific-consultants.com or call 631-696-3333) as soon as possible.

Observatory & Other Staff Wanted

Custer is in the process of improving its facilities and expanding the services it offers to the public. The Observatory Committee is looking for individuals who are interested in volunteering just a few hours a month. People are needed for all kinds of jobs-from helping to give the public a tour of Custer and the night sky on Saturday nights, to assisting with events, research, fund raising, secretarial work, and even providing refreshments to our guests. If you are able to lend a hand on a regular basis or would just like to volunteer to help with a specific project, please contact Donna McCormick (mccormick@scientific-consultants.com or call 631-696-3333).

Events for January, 2006

Aside from the winter course schedule published in this issue and in last month's issue, the following are events of note. Mark your calendar and make plans to attend!

Special Meeting of the Membership

A special meeting of the membership has been called to address certain election procedures that are codified in Custer's Constitution and which pertain to the election of the Board of Directors. As it stands now, these procedures may not be in compliance with New York State regulations that govern Not-for-Profit entities. It is crucial that the membership be adequately represented at this meeting and that as many members attend as possible, as the objective will be to amend the constitution. A separate notice with a full explanation has already been mailed by Donna McCormick and this notice serves as a reminder. Please refer to that notice for additional details and the full explanation of the issues to be addressed. If you haven't received a copy of the notice, please contact Donna McCormick (mccormick@scientific-consultants.com) or call 631-696-3333) or this editor. As always, my contact information is located on page 3.

At this extraordinary meeting of the membership, the Board of Directors will be appointing a Chairperson and members of the Nominating Committee for 2006. Anyone interested in being considered for the Committee should contact Donna McCormick (custerdonna@yahoo.com) or Chuck Cardona (cac@adzoneresearch.com) as soon as possible. The Board will also be appointing an Auditor from among the general membership. The duties are to audit Custer's books and report to the membership at the Annual Meeting. Please contact Donna or Chuck if you are interested in serving.

When: Saturday, January 14, 2006, 6:00 PM;

Where: Custer Institute, Main Bayview Road, Southold;

As always refreshments will be served with observing to follow, weather permitting.

Classical Music Concert

Violinist, Ann Verticchio, daughter of Custer Board Members, Rico and Anna Verticchio, will be performing Beethoven's Violin Concerto in D-major, Op. 61, with full orchestral accompaniment. Seating is limited and reservations are required. If you plan on attending, please email Donna McCormick (CusterDonna@yahoo.com) or call Barbara Lebkuecher (631-722-3850).

As always, refreshments will be served with observing to follow, weather permitting.

When: Saturday, February 18th, 2006; 8:00 PM;

Where: Custer Institute, Main Bayview Road, Southold

Suggested donation: \$8 Custer members, \$12 non-member

News and Noteworthy for January, 2006

NASA Poised to Launch New Horizons Mission to Pluto



The only planet that hasn't been visited by a craft of Terrestrial origin is the enigmatic and lonely Pluto whose status as a planet has been recently challenged. Well, if all goes according to plan, Pluto's designation as a planet or asteroid

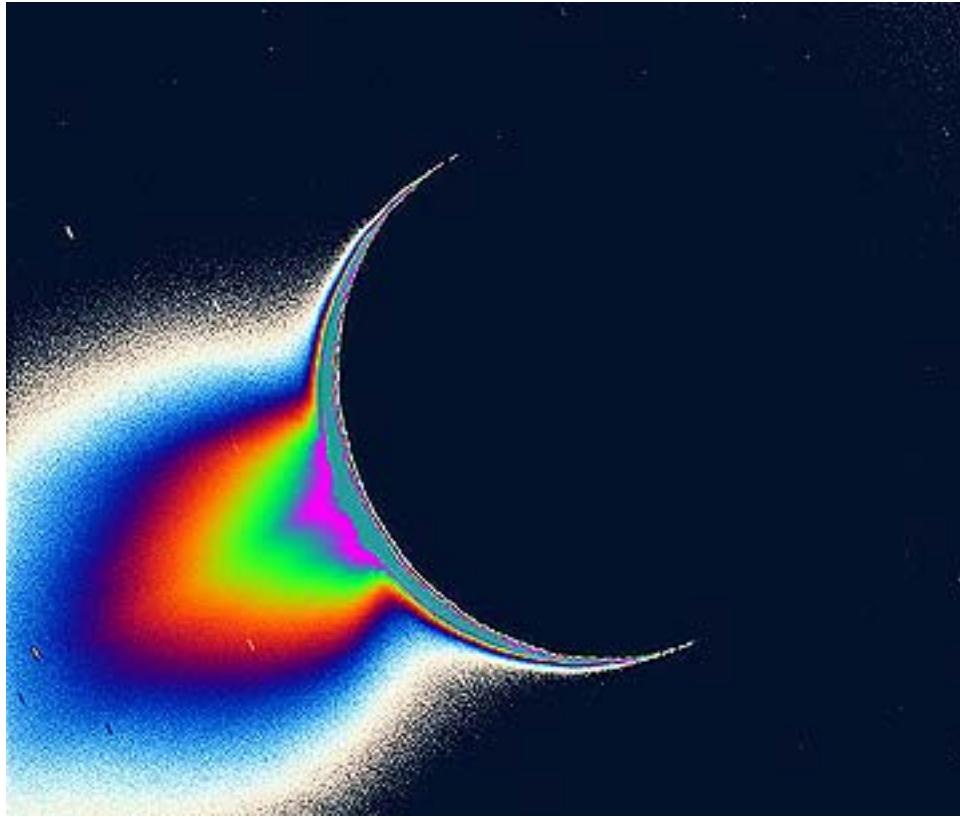
will be decided unequivocally with the help of the torrent of data that will be returned from the New Horizons spacecraft during its scheduled 3-5 month flyby of Pluto and Charon during July of 2015. In addition to the first high-resolution images of Pluto and Charon ever obtained, many other questions that include Pluto's geology, environment, gravity and temperature will be answered. As with any voyage of discovery, there are many unknowns with every answer spawning 10 new questions.

The New Horizons primary launch window opens January 17th, 2006 and closes February 14th, 2006. Hopefully, the weather will cooperate with all technical and engineering issues addressed and all problems solved. If successful, a launch during this window will allow NASA engineers to put New Horizons on a 'gravity assist' trajectory that will use the tremendous gravity of Jupiter in what is called a 'slingshot' flyby, a maneuver that will accelerate the craft to speeds exceeding **21 kilometers per second**, or almost 50,000 miles per hour, faster than any spacecraft ever launched! Launching during this window will shave approximately **5 years** off the flight time to the Pluto / Charon system compared to a launch during the secondary launch window, February 2nd through 15th, 2007. A launch during this window will not afford New Horizons of the Jovian gravity assist and will result in a 'direct flight' to Pluto / Charon with an arrival date sometime between 2019 and 2020. The greatest benefit to a 'primary window' launch is, therefore, the shortest possible travel time to the Pluto / Charon system with a corresponding tangential mission to Jupiter being a consequence of the 'slingshot' trajectory. If all goes according to plan, an extended mission into the Kuiper belt is planned subsequent to the flyby of Pluto / Charon.

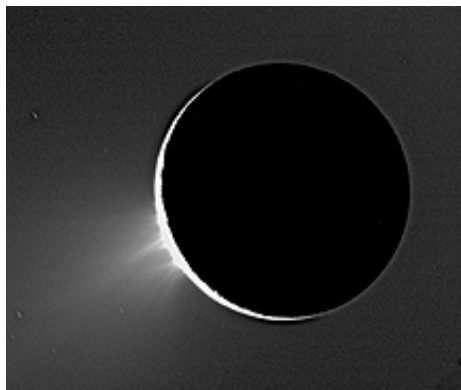
How fitting and perhaps ironic that Clyde Tombaugh's 100th birthday, February 6, 2006, falls during the primary launch window of the New Horizons spacecraft, a vehicle of discovery on a one-way journey to this frozen and remote system. Like the Pioneer and Voyager spacecraft before it, New Horizons is, indeed, an emissary of man, destined to travel forever among the stars as his silent spokesman; an eternal testament to his insatiable desire to learn and discover the universe around him. New Horizons is the fruit of this: Clyde Tombaugh's desire to understand; his love of astronomy and his pursuit of discovery and knowledge, a quest, albeit, conducted at the eyepiece of a telescope.

I intend to follow this mission as I did the Cassini-Huygens mission to Saturn and Titan, so please watch for updates in future issues. For updates, images, and detailed information concerning this exciting mission, please navigate to the John's Hopkins University - New Horizons web site at <http://pluto.jhuapl.edu>. NASA maintains a sister site at http://www.nasa.gov/mission_pages/newhorizons/main/index.html.

Cassini Reveals Spectacular Ice Fountains Towering over Enceladus



The image above was taken looking more or less broadside at the "tiger stripe" fractures observed in earlier Enceladus images. It shows discrete plumes of a variety of apparent sizes above the limb of the moon. The greatly enhanced and colorized image shows the enormous extent of the fainter, larger-scale component of the plume. Notice the "star trails" caused by the motion of the Cassini spacecraft and the relatively long exposure necessary to produce this image.

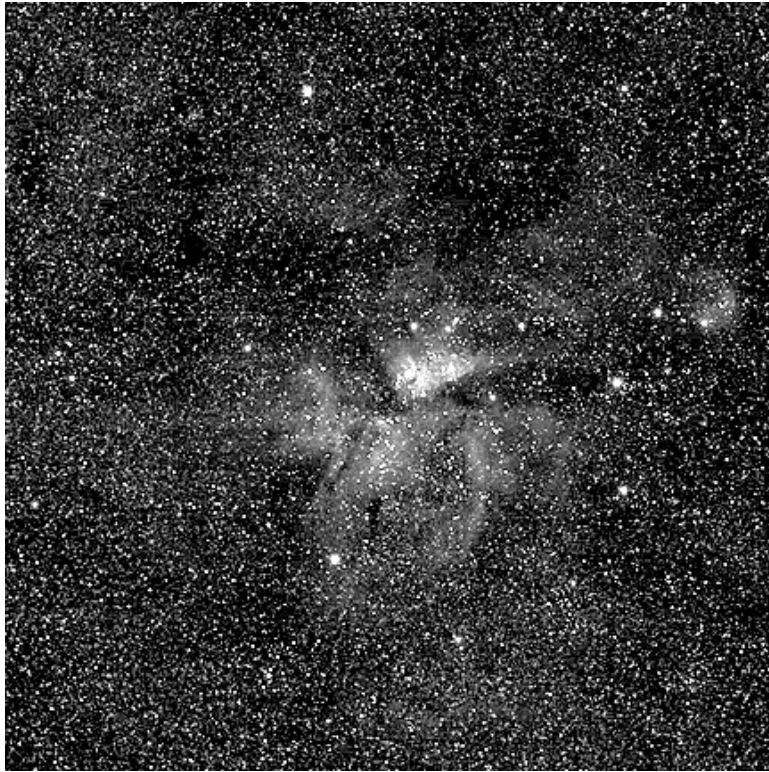


Recent Cassini images of Saturn's moon Enceladus, such as this one to the left, backlit by the sun show the fountain-like sources of the fine spray of material that towers over the south polar region. This image was taken looking more or less broadside at the "tiger stripe" fractures observed in earlier Enceladus images. It shows discrete plumes of a variety of apparent sizes above the limb of the moon.

Please visit <http://saturn.jpl.nasa.gov> , NASA's official web site for the Cassini-Huygens mission and <http://ciclops.org> , the Cassini Imaging and Central Laboratory for Operations, the first stop for all raw images on downlink from the DNS (Deep Space Network - <http://deepspace.jpl.nasa.gov/dsn>).

Editor: All images on this page courtesy NASA / JPL / Space Science Institute

Cassini Turns Gaze to Deep Space



Image, courtesy NASA / JPL / Space Science Institute
The image was taken using the Cassini spacecraft wide-angle camera on May 14, 2005. The view is a 68-second, clear filter exposure

Every now and again, the Cassini-Huygens spacecraft turns its gaze away from Saturn and its every-growing family of satellites towards other objects whose distances are measured in light years not millions of kilometers or miles. In this example, Cassini's cameras captured the ethereal beauty of the Carina Nebula, 8,000 light years distant, from a *vantage point 1 billion kilometers from Earth!* This nebula and others like it are known as H2 (HII) regions, the nomenclature being derived from the ionization state of the gas. In these regions, the interstellar hydrogen exists in an ionized state rather than a neutral state due to the prodigious amounts of ultraviolet radiation pouring into them from proximate OB (hot / blue) stars. Although Cassini-Huygens primary mission is the study of Saturn, its rings, Titan and the rest of Saturn's natural satellites, images such as this are always a pleasant surprise even if they're used for calibration purposes.

Mars Rovers Continue to Amaze as Opportunity celebrates One Martian Year!

For 2 rovers that were only 'under warrantee' for three months, Spirit and Opportunity continue to produce great science to the delight of thrilled mission controllers and an enthralled public here on earth; after **2 Earth years of sustained activity** on Mars! After returning in excess of 58,000 images and clocking over 4 miles on her odometer, Opportunity is performing better than the Eveready Rabbit. To keep abreast of this ongoing NASA success story, please visit the Rovers' home page at <http://marsrovers.jpl.nasa.gov/home/index.html> .

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