

(Continued from page 1)

I don't think we'll find a better fit at a better price than Del Tech, but I'll wait until I hear back from Lyle who is checking on the Mallard Lodge for us before I make a final decision.

I would like to thank Lyle Jones, Don Surles and Tony Codella for their hard work and effort in finding the facilities.

Don't forget get out and observe, try some of the challenges and report what you view to Tony Codella.

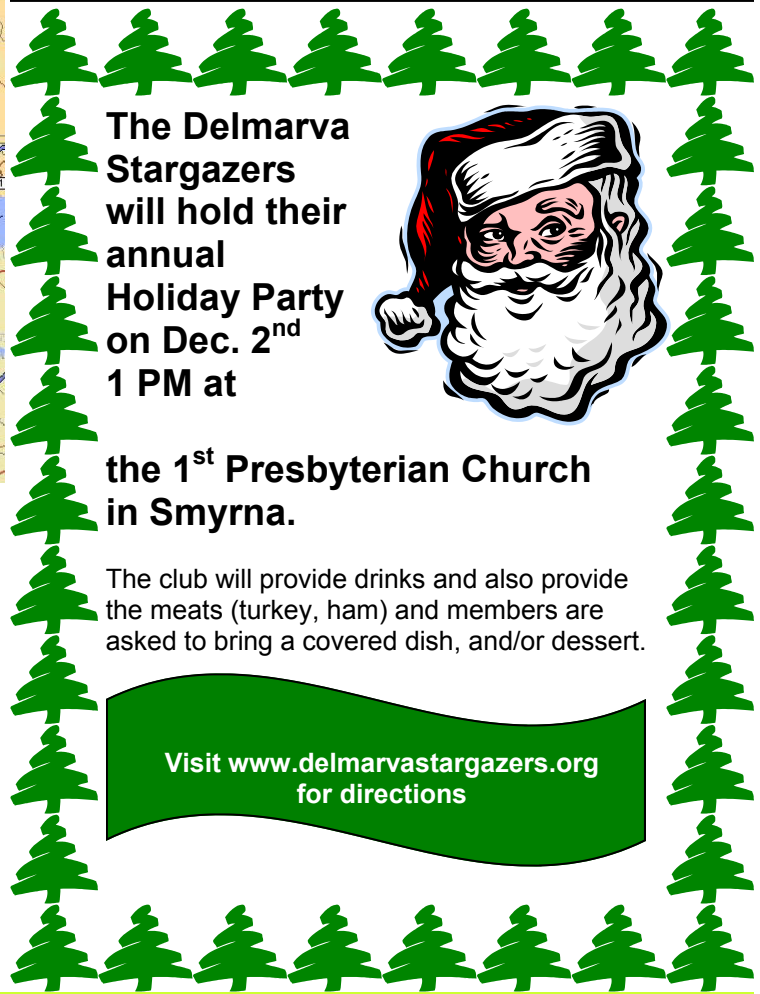
I couldn't end without asking you to submit something to our news editor. Pj needs your input to help continue this great newsletter.

The Dec. 5th meeting of the Delmarva Stargazers will meet at 7PM at Mt. Cuba Observatory, Near Wilmington DE. Visit <http://mountcuba.org/> for more details

The Solar System in Decembrrr

Pj Riley

This month, we have the shortest days, which means we have the LONGEST NIGHTS ! The solstice is at 7:22PM EST on the 21st. The night of Dec. 21st will be 14h 40m long ! Imagine what you can see in that amount of time. Luna ☾ rises near Saturn ♄ on the evening of the 9th. The following morning of the 10th, Mercury ☿, Mars ♂, and Jupiter ♃ make a nice grouping in the early morning before Sol ☉ rises! Venus ♀ sets early in the beginning of the month, but sets about 1 1/2 hrs after Sol ☉ by the end of the month. Saturn ♄ show up near Regulus all month, but the rings will be a minimum tilt this month before opening back up. Neptune ♆ is in Capricornus and will be near the crescent Luna ☾ on the night of the 23rd. Uranus ♅ is in Aquarius. The ex-planet Pluto ♇ is in conjunction with Sol ☉, So no viewing this former planet this month.



The Delmarva Stargazers will hold their annual Holiday Party on Dec. 2nd 1 PM at



the 1st Presbyterian Church in Smyrna.

The club will provide drinks and also provide the meats (turkey, ham) and members are asked to bring a covered dish, and/or dessert.

Visit www.delmarvastargazers.org for directions

How to Join the Delmarva Stargazers: Anyone with an interest in any aspect of astronomy is welcome

NAME _____

ADDRESS _____

CITY, STATE & ZIP _____

E-MAIL ADDRESS (If any) _____

Do you need the newsletter snail mailed to you (Y/N)? _____

Please attach a check for \$15 made payable to Delmarva Stargazers and mail to Kathy Sheldon, 20985 Fleatown Rd, Lincoln, DE 19960. Call club President Jerry Truitt at 410-885-3327 for more information.



Sun and Sunspot 922 \ Date Created: Thursday, November 09, 2006 \ Filename: RN_20061109_0179.CR2 \ By Rocky \

Solar photograph by Rocky Nelson

NASA Update from the November 2006 meeting

Jerry Truitt

Iraq

We have all heard about the Iraq civilian, military and our military casualties.
 What you might not have heard about is the number of Iraq scientist being intentionally killed.
 The number killed in 2005 was more then 2003 and 2004 together.
 More then 200 are known dead
 Nearly 85% of Iraq's universities have been severely damaged or destroyed.
 Book burnings is another common event making any education process difficult.
 Iraq has lost the atmosphere necessary for the advancement of science.
 This leads to the dominance of superstition and abuse of religion as the educated people who would speak out continue to dwindle in Iraq.

HUBBLE

NASA has committed to a Hubble service mission. The mission will be launched in the spring of 2008. In will cost \$900 million and will require 5 space walks. The Hubble was built to have the ability to be upgraded in space, it is a much more power instrument now

then when it was launched in 1990. It will be even more powerful after this servicing mission.

Cosmic Origins Spectrograph (COS)
 COS will measure the structure and composition of the ordinary matter concentrated in the "cosmic web," long, narrow filaments of galaxies and intergalactic gas separated by huge voids.

COS will use faint distant quasars as "cosmic flashlights," whose beams of light pass through the cosmic web.

Absorption of this light by "stuff" in the web reveals characteristics of that material. This allows scientists to determine its composition and its specific location in space.

Wide Field Camera 3 (WFC3)

The WFC3 will extend Hubble's capability to see deep into the universe, with the power to observe in multiple wavelengths (colors) of light infrared visible ultraviolet light

STEREO

NASA's twin Solar Terrestrial Relations Observatories mission, known as STEREO, successfully launched Wednesday night October 25 from Cape Canaveral Air Force Station, Fla.

Coronagraphs:

COR1 and COR2 observe the inner (1.4-4. R_{sun}) and outer (2-15 R_{sun}) corona with greater frequency and polarization precision than ever before. COR1 will be the first space borne instrument to explore the inner corona in white light and pB down to 1.4 R_{sun}. COR2 will image the corona with five times the spatial resolution and three times the temporal resolution of LASCO/C3.

Extreme Ultraviolet Imager (EUVI):

EUVI provides full Sun coverage with twice the spatial resolution and dramatically improved cadence over EIT. EUVI observes the photospheric magnetic field, chromosphere, and innermost corona underlying the same portions of the corona and the heliosphere observed by COR1, COR2, and HI.

Guide Telescope:

The Guide Telescope acts as a fine sun sensor for the EUVI and provides the error signal for the EUVI fine pointing system.

Heliospheric Imager (HI):

The most novel instrument, HI extends the concept of traditional externally occulted coronagraphs to a new regime, the heliosphere from the Sun to the Earth (12-318 R_{sun}). HI will obtain the first direct imaging observations of coronal mass ejections in interplanetary space.

Your 2006-2007 Officers

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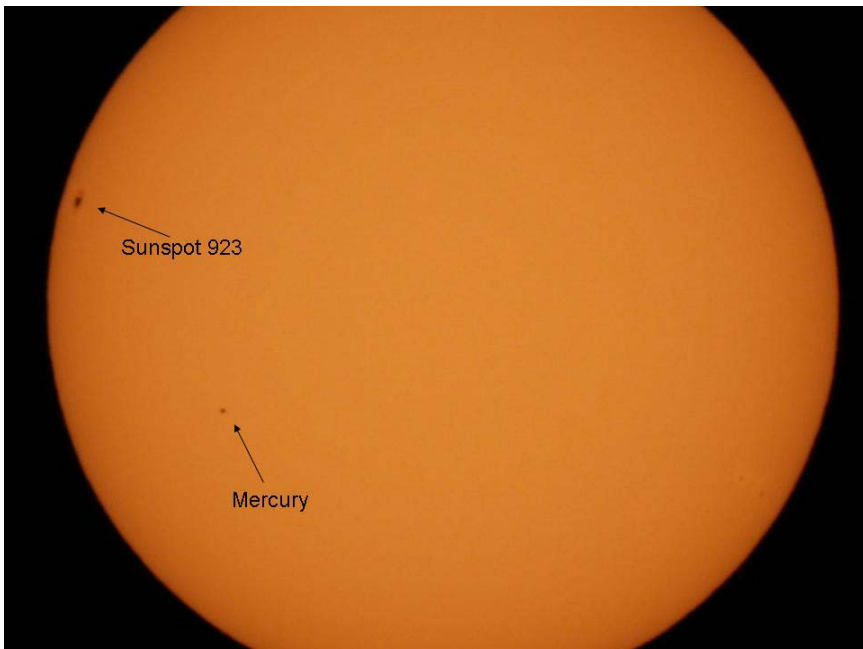
Mercury Transit Of November 8, 2006

Kent Blackwell

November 8, 2006 marked the first transit of the planet Mercury since May 2003, and it'll be 10 more years before the next one. I'd been looking forward to the 2006 transit for quite some time.

Many years prior to the 2003 transit I drove my 1960's Mustang to the oceanfront at Virginia Beach and watched the transit through a 8" f/7 Newtonian. Where has the time gone, I remember it well, yet that was over 40 years ago?

Clouds and heavy rains occurred the day and evening before the November 8, 2006 transit. I was hopeful the skies would clear by the next day. Unfortunately, that wasn't in the projected forecast. All I could do was cross my fingers and hope for the best.



Looking at the weather maps it appeared the further south one traveled the better the chances of finding a few holes in the clouds. Coinjock, NC was my choice. Dr. Robert Hitt and Ted Forte accompanied me to the lovely area of Waterlilly, NC about six miles from Hampton Lodge Camping Resort. As we drove to the area only one other car was parked along the roadside, but that person hadn't come to see Mercury. Rather, the fisherman was hoping to have luck catching fresh water bass in brackish waters along the canal bank. I found out later that Norfolk Astronomical Society member Glendon Howell was also observing transit less than 1/2-mile from my vantage point.

Ted Forte began setting up a Celestron C-8. Robert Hitt mounted his special naked eye solar viewer atop a tripod while I grabbed all kinks of optical aids out of the trunk of my little Acura. First out of the car was a pair of 70-year

old 20x120 battleship binoculars fitted with glass solar filters; next was a 80mm f/7.5 refractor fitted with a Canon 20D digital single lens reflex camera. And lastly was my new 66mm f/5.9 William refractor. Now, we were all ready to go. Bring on the transit!

As fate would have it the moment of 1st and 2nd contact low and behold the clouds parted. Wow! I've now seen Mercury transit three times in my lifetime. I was enamored how small it was, and how razor sharp the 10-arc second disk appeared. It was the best I've ever seen it!

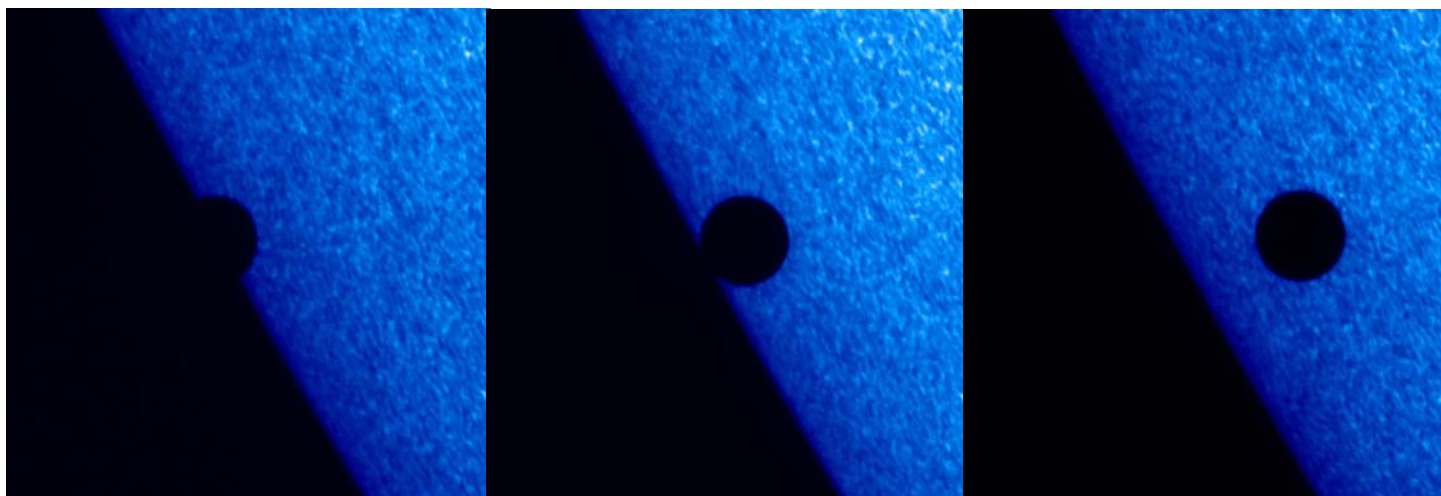
The small planet would transverse nearly halfway across the solar surface in a two-hour period before clouds once again began covering the sky.

To exacerbate the situation further a thick layer of fog eerily crept in from the ocean. Soon the sky was washed in a gray hue as the temperature dropped nearly 10 degrees. It was obvious we would not watch the transit until sunset. That's too bad because I had planned the composition of my photograph to include a lovely spindly tree in the foreground of the setting sun.

Despite the clouds hampering some of the viewing time we were more than satisfied to have seen what we did. I'll be ready ten years from now when once again the small and insignificant planet Mercury will take center stage as it transits across the face of the sun.

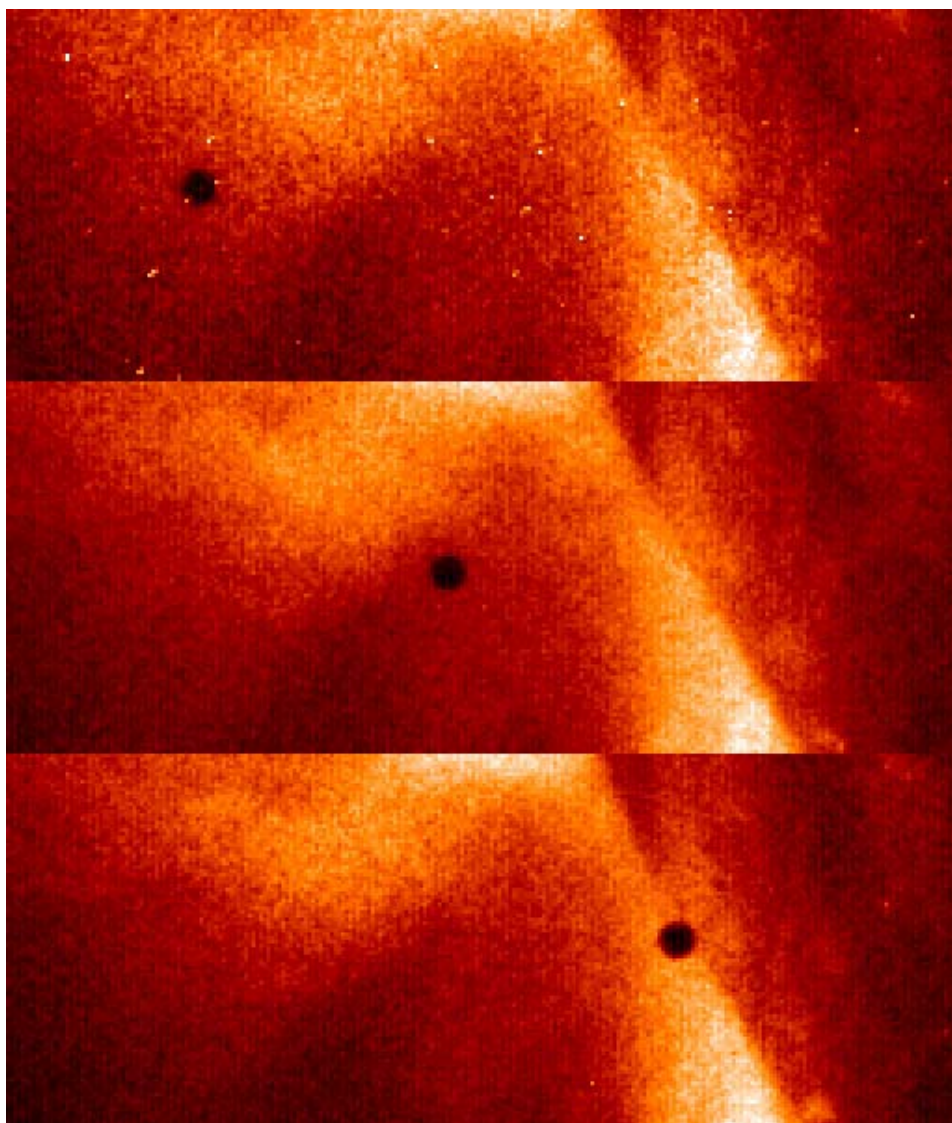


The Transit of Mercury—a Different Perspective (images are false colored)



Above: Mercury transit observed with Hinode Solar Optical Telescope (SOT) where Mercury is clearly discernible as a dark disk with its diameter approximately 10 seconds of arc. Provided by Japan Aerospace Exploration Agency (JAXA).

Left: Observation with Hinode X-Ray Telescope (XRT), showing transit of Mercury across the background X-ray corona of the Sun. Provided by Japan Aerospace Exploration Agency (JAXA).



The Delmarva Stargazers Announces a Writing Contest.

The DMSG will raffle away astronomy gifts to members who submit articles to the Star Gazer News.

How to enter:

- 1 Open to DMSG members.
- 2 Members may submit original articles at least 500 words (1/2 page) for publication in the Star Gazer News.
- 3 Articles **must** be authored by the member.
- 4 Pictures can be included, but they do not count towards word count (1 picture \neq 1000 words).
- 5 Must be astronomy related.

Each article = one chance in the raffle.

The drawing will be made at the star parties based on the previous 6 issues – need not attend to win (but it would be nice to see you there). *The editor of the Star Gazer News qualifies articles submitted.*

Magazine Subscriptions

As a paid member of DMSG, you can sign up -or- renew your S&T or Astronomy magazines through the club for a discount over private rate. S&T, reg. \$42.95, is \$32.95 thru DMSG, Astronomy, reg. \$44, is \$34 thru DMSG. See Tony Codella for details.

Martian Devils

Dr. Tony Phillips

NASA Spaceplace

Admit it. Whenever you see a new picture of Mars beamed back by Spirit or Opportunity, you scan the rocks to check for things peeking out of the shadows. A pair of quivering green antennas, perhaps, or a little furry creature crouched on five legs...? Looking for Martians is such a guilty pleasure.

Well, you can imagine the thrill in 2004 when scientists were checking some of those pictures and they did see something leap out. It skittered across the rocky floor of Gusev Crater and quickly disappeared. But it wasn't a Martian; Spirit had photographed a dust devil!

Dust devils are tornadoes of dust. On a planet like Mars which is literally covered with dust, and where it never rains, dust devils are an important form of weather. Some Martian dust devils grow almost as tall as Mt. Everest, and researchers suspect they're crackling with static electricity—a form of “Martian lightning.”

NASA is keen to learn more. How strong are the winds? Do dust devils carry a charge? When does “devil season” begin—and end? Astronauts are going to want to know the answers before they set foot on the red planet.

The problem is, these dusty twisters can be devilishly difficult to catch. Most images of Martian dust devils have been taken by accident, while the rovers were looking for other things. This catch-as-catch-can approach limits what researchers can learn.

No more! The two rovers have just gotten a boost of artificial intelligence to help them recognize and photograph dust devils. It comes in the form of new software, uploaded in July and activated in September 2006.

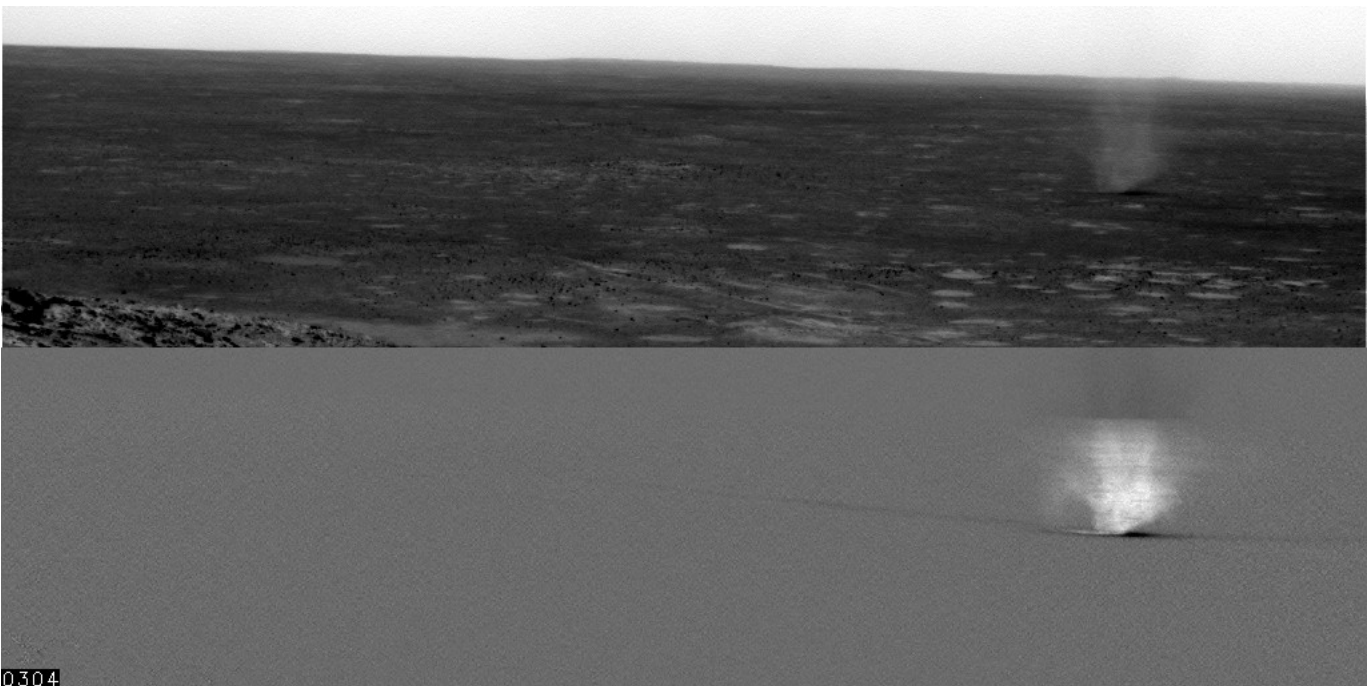
“This software is based on techniques developed and tested as part of the NASA New Millennium Program's Space Technology 6 project. Testing was done in Earth orbit onboard the EO-1 (Earth Observing-1) satellite,” says Steve Chien, supervisor of JPL's Artificial Intelligence Group. Scientists using EO-1 data were especially interested in dynamic events such as volcanoes erupting or sea ice breaking apart. So Chien and colleagues programmed the satellite to notice change. It worked beautifully: “We measured a 100-fold increase in science results for transient events.”

Now that the techniques have been tested in Earth orbit, they are ready to help Spirit and Opportunity catch dust devils—or anything else that moves—on Mars.

“If we saw Martians, that would be great,” laughs Chien. Even scientists have their guilty pleasures.

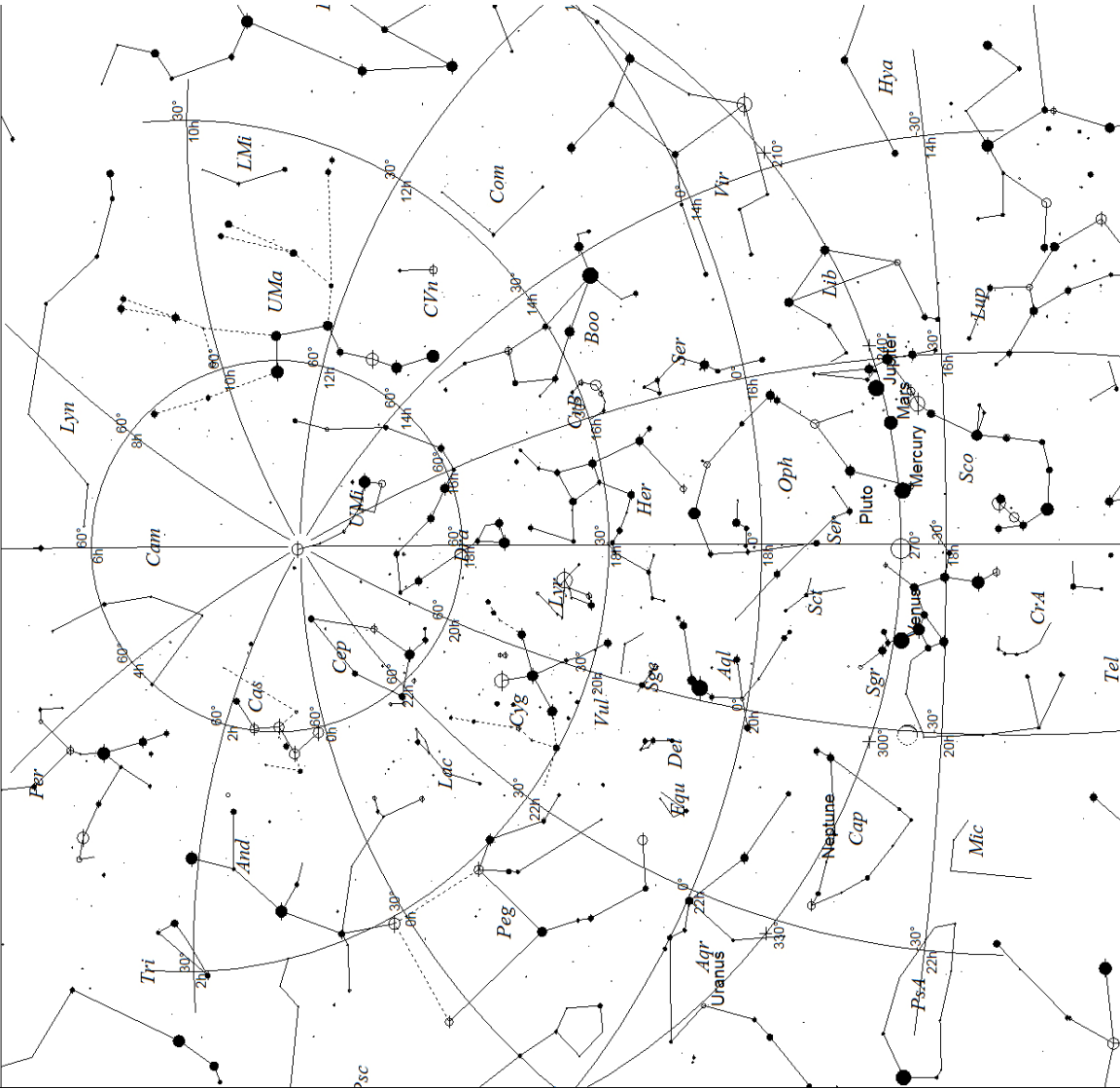
Find out more about the Space Technology 6 “Autonomous Sciencecraft” technology experiment at nmp.nasa.gov/st6/TECHNOLOGY/sciencecraft_tech.html, and the use of the technology on the Mars Rovers at nmp.nasa.gov/TECHNOLOGY/infusion.html. Kids can visit spaceplace.nasa.gov/en/kids/nmp_action.shtml and do a New Millennium Program-like test at home to see if a familiar material would work well in space.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



The top half of this image is part of a series of images of a passing dust devil on Mars caught by Spirit. In the bottom half, the image has been filtered to remove everything that did not change from one image to the other. Notice the faint track left by the dust devil. Credit NASA/JPL/Mark T. Lemmon, Univ. of Arizona Lunar and Planetary Laboratory.

Skymap 22 Dec 2006 10PM



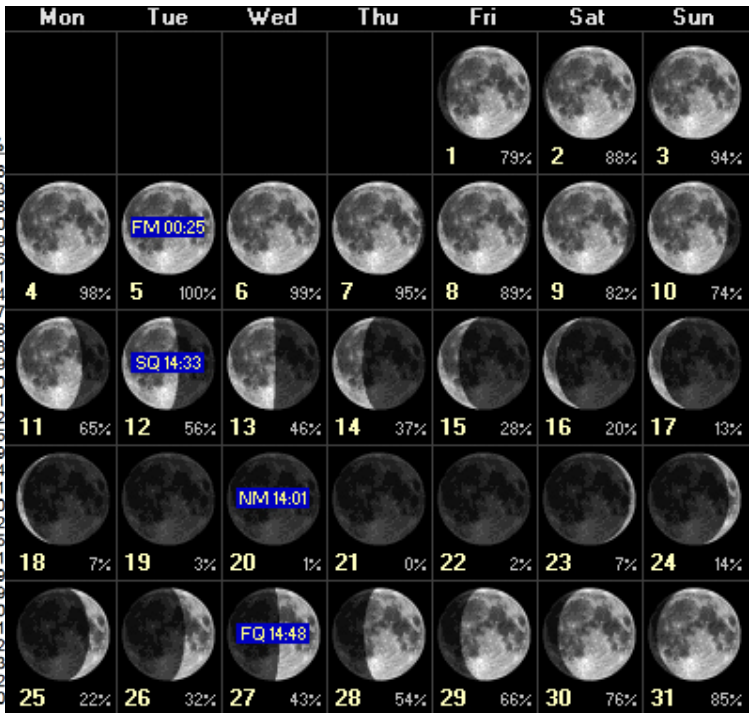
Tuckahoe State Park, MD

- STARS**
- <1
 - 1.5
 - 2
 - 2.5
 - 3
 - 3.5
 - 4
 - 4.5
 - >5
- SYMBOLS**
- Multiple star
 - Variable star
 - Comet
 - Galaxy
 - Bright nebula
 - Dark nebula
 - Globular cluster
 - Open cluster
 - Planetary nebula
 - Quasar
 - △ Radio source
 - × X-ray source
 - Other object

Local Time: 22:00:53 22-Dec-2006
 Sidereal Time: 18:01:35
 Location: 38° 58' 0" N 75° 56' 0" W
 RA: 18h01m36s Dec: +38° 57' Field: 182.0°
 UTC: 17:00:53 22-Dec-2006
 Julian Day: 2454092.2099

Sun and Moon Data for December 2006
 Tuckahoe MD
 38.97°N 75.93°W 5hrW
 Standard Time Civil Twilight

Date	Twilight	Rise	Sun Transit	Set	Twilight	Rise	Moon Transit	Set	%
12/1/2006	6:34a	7:03a	11:53a	4:42p	5:11p	2:14p	9:09p	3:03a	86
12/2/2006	6:35a	7:04a	11:53a	4:42p	5:11p	2:45p	10:04p	4:18a	93
12/3/2006	6:36a	7:05a	11:54a	4:42p	5:11p	3:22p	11:02p	5:36a	98
12/4/2006	6:37a	7:06a	11:54a	4:41p	5:11p	4:07p	****	6:52a	100
12/5/2006	6:38a	7:07a	11:54a	4:41p	5:11p	5:02p	12:03a	8:04a	99
12/6/2006	6:38a	7:08a	11:55a	4:41p	5:11p	6:05p	1:04a	9:06a	96
12/7/2006	6:39a	7:09a	11:55a	4:41p	5:11p	7:13p	2:04a	9:57a	91
12/8/2006	6:40a	7:10a	11:56a	4:41p	5:11p	8:20p	2:59a	10:37a	84
12/9/2006	6:41a	7:11a	11:56a	4:41p	5:11p	9:26p	3:50a	11:09a	77
12/10/2006	6:42a	7:12a	11:57a	4:41p	5:11p	10:28p	4:36a	11:35a	68
12/11/2006	6:42a	7:12a	11:57a	4:42p	5:11p	11:28p	5:18a	11:58a	58
12/12/2006	6:43a	7:13a	11:57a	4:42p	5:12p	****	5:58a	12:18p	49
12/13/2006	6:44a	7:14a	11:58a	4:42p	5:12p	12:27a	6:37a	12:38p	40
12/14/2006	6:45a	7:15a	11:58a	4:42p	5:12p	1:25a	7:16a	12:58p	31
12/15/2006	6:45a	7:15a	11:59a	4:42p	5:12p	2:24a	7:56a	1:20p	22
12/16/2006	6:46a	7:16a	11:59a	4:43p	5:13p	3:26a	8:39a	1:45p	15
12/17/2006	6:47a	7:17a	12:00p	4:43p	5:13p	4:29a	9:26a	2:15p	9
12/18/2006	6:47a	7:17a	12:00p	4:43p	5:13p	5:35a	10:16a	2:52p	4
12/19/2006	6:48a	7:18a	12:01p	4:44p	5:14p	6:40a	11:11a	3:38p	1
12/20/2006	6:48a	7:18a	12:01p	4:44p	5:14p	7:42a	12:08p	4:35p	0
12/21/2006	6:49a	7:19a	12:02p	4:45p	5:15p	8:37a	1:07p	5:40p	2
12/22/2006	6:49a	7:19a	12:02p	4:45p	5:15p	9:23a	2:05p	6:52p	5
12/23/2006	6:50a	7:20a	12:03p	4:46p	5:16p	10:01a	2:59p	8:06p	11
12/24/2006	6:50a	7:20a	12:03p	4:46p	5:16p	10:33a	3:51p	9:19p	19
12/25/2006	6:51a	7:21a	12:04p	4:47p	5:17p	11:00a	4:40p	10:30p	29
12/26/2006	6:51a	7:21a	12:04p	4:48p	5:18p	11:25a	5:27p	11:41p	40
12/27/2006	6:51a	7:21a	12:05p	4:48p	5:18p	11:50a	6:15p	****	51
12/28/2006	6:52a	7:22a	12:05p	4:49p	5:19p	12:16p	7:04p	12:52a	62
12/29/2006	6:52a	7:22a	12:06p	4:50p	5:20p	12:44p	7:55p	2:05a	73
12/30/2006	6:52a	7:22a	12:06p	4:50p	5:20p	1:18p	8:50p	3:19a	82
12/31/2006	6:53a	7:22a	12:07p	4:51p	5:21p	1:58p	9:48p	4:33a	90



Moondark for December:

Pluto Hullabaloo

Doug Miller

In 1930, [Clyde Tombough](#) discovered what everyone agreed was a planet, the ninth of the Solar System. Even though it was soon recognized that [Pluto](#) was too dim, small and in the wrong orbit to be the much sought after "Planet X," for the next 76 years, everyone learned our Solar System as: [MVEMJSUNP](#), P standing for Pluto. In 1992, another dim object was found that was nearly as large as Pluto. The list has continued to grow, and by 2003, at least one [Kuiper Belt Object](#) was clearly larger than Pluto. Is that Planet 10? And how many more planets are there?

In fact, the [number of planets has never been fixed](#): ancient astronomers knew of five, and European astronomers added to this count incrementally. And then there are tens of thousands of [asteroids, comets or other minor planets](#). [What defines a planet](#): size, orbit, composition or some combinations thereof? How can we [discover distant planets](#) when we can't agree on what defines our own planetary neighborhood?

Labels matter. And unless you were on Pluto, [you probably heard that in August](#), the [IAU](#) attempted to settle the matter with a [tripartite definition](#). They specified that: a planet must orbit the Sun, be spherical (resembling a [tomato](#) rather than a [potato](#)) and have cleared its orbit of other bodies. Eight planets meet these criteria. The third criterion disqualifies Pluto since many so-called "[plutinos](#)" have similar orbits. Pluto, along with asteroid [1 Ceres](#) (discovered in 1801) and [Eris](#) (formerly Xena) are henceforth "[dwarf planets](#)."

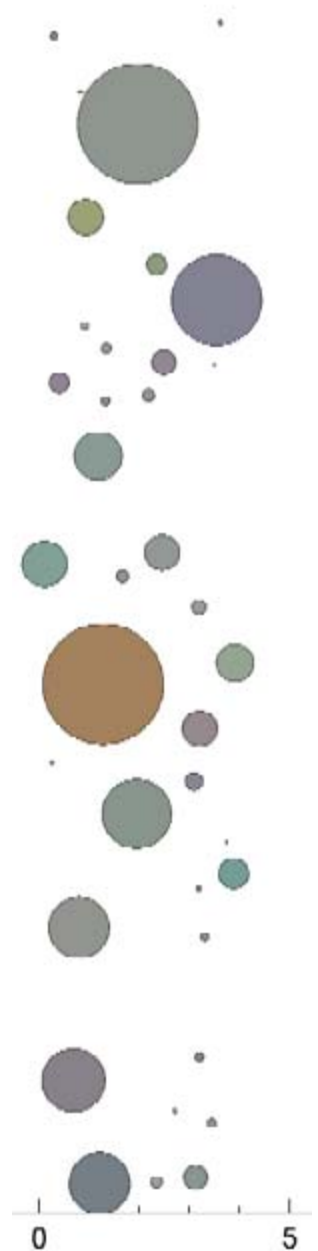
[Roundness](#) is a gravitational necessity of any object of reasonable size, so there is [some agreement there](#). Clearing the orbit is less precise, but quantitative arguments can be made concerning the relative masses. [But why not just define the "Big-8" as planets?](#) For my part, I think the requirement that a planet orbit the [Sun remains problematic](#): what are we to call large, round and massive objects found orbiting other stars? Aren't they planets as well?

Alas: Pluto was no longer a planet, and many considered this a demotion an insult. While reasonable people can disagree, they were few in number at the [General Assembly](#), and there is today no clear consensus among amateurs, professional or planet lovers. So it seem the [matter is far from settled](#), and the IAU will have a "do-over" in about three years. What [Pluto](#) or [Clyde Tombaugh](#) thought of all this hubbub is not known.

But ideas matter much more than labels, especially when they challenge us. I believe that January's launch of [New Horizons](#) was a far more significant event. This space probe is well on its way: the gravity assist from Jupiter will occur just three months from now. The [mission objectives](#) are to map Pluto and its moons [Charon, Nix and Hydra](#) and to characterize their temperature, composition and atmospheres. Then and for the next five years, New Horizons will explore icy Kuiper Belt Objects, the likely source of comets and representing materials of the primordial solar system as far away as 50 AU. Rather than debatable definitions, [New Horizons will stream us new data and images](#) and [inspire novel concepts](#) to discuss. The true meaning and utility of the label "planet" are sure to become much better resolved.

We have [walked on the Moon](#) and [visited each of the other eight "true" planets](#), even [6-wheeled around Mars](#), and [encountered many comets and asteroids](#). Yet, for now, [Pluto remains unexplored](#). In 2015, [New Horizons with Clyde Tombaugh aboard](#), will arrive and explore Pluto, whatever you call it.

Moondark is written by Doug Miller, published at the [Moondark web site](#), and printed in the [Delmarva Star Gazers' Star Gazer News](#). This document was last revised on 26 November 2006. Text and images copyright © 2006 by Douglas C. Miller, All Rights Reserved. This material may not be reproduced in any form without prior permission.



Can you find Pluto?

This graphic depicts 37 "dwarf planets," [Trans Neptunian Objects](#) and Centaurs [with well-known diameters](#). Thousands more small, icy and distant objects [are known](#). The scale is in units of 1000 km