



First Light

The Newsletter of the Cape Cod Astronomical Society



September, 2007

Vol. 18 No. 6

Thoughts on First Light

Thanks to many of you for your enthusiastic reception of last month's issue of First Light. I hope future issues continue to bring value.

This issue continues the content "sections" introduced last month. In particular, we are happy to bring you a Member Profile on Mike Hunter, Director of the Schmidt Observatory and VP of CCAS. If you would like to be profiled in First Light, please let me know; otherwise I will just ask you! I have worked up a form to help prompt for information.

Once again: This is YOUR newsletter. It should reflect YOUR heartbeat, not just mine. It can be interesting and vital if there is strong and continuous input from all members. We especially welcome short contributions describing favorite techniques or special observing experiences you have had.

Thanks this month especially to Mike for his inputs both to the profile and "From the Dome" and Chris Cook for the wonderful photo of "The Propeller Nebula". Please send new input to me at info@ccas.ws

CCAS Events

The Society's next formal meeting is Thursday, September 6th, beginning promptly at 7:30pm in the Dennis-Yarmouth Regional High School library. Peter Kurtz will present "Observing the Autumn Skies."

Dues for members are late after July 31: usually \$30 for full year members, \$15 from students in two year colleges, \$0 for students K-12. Just a few of our currently active members have "forgotten." Please contact Kelvin Parkinson to make payment.

Jon Greenberg's fall course OBSERVATIONAL

ASTRONOMY FOR BEGINNERS, mentioned in some detail in last month's First Light, has now been announced in the Nauset Community Education's fall course bulletin mailed to many Cape residents. If you have not seen this mailing and have an interest in the course, please contact Jon or Nauset Community Education (508-255-4300).

Executive Corner

The Executive Committee of CCAS met on August 13. Highlights of our deliberation include the following:

- The EC approved a resolution to concur with the CCAS Foundation's going forward with plans to purchase equipment to motorize the process for opening the lower shutter in the Observatory Dome.
- The EC approved the following policy: in the interest of promoting safety, members should not work at the Schmidt Observatory at night without a companion; Mike Hunter, the Director, is excepted from the policy.
- Jon Greenberg suggested that the EC consider the purchase of a Stellacam3 cooled video camera for bringing the complete spectrum of targets from planets and moon (variable exposure times) to deep sky objects (long exposure times) to either a TV monitor or, after recording, to a monitor from an extended VCR tape.

The EC agreed that a study should be made to confirm the expectation that Stellacam3 is much improved over earlier editions, StellacamII and -X.

- The EC approved Jon's proposal to purchase a laser pointer for about \$50 for use by presenters at CCAS meetings.
- Now that we have the 18" Obsession Dob at the Observatory, the EC approved a policy to make our 14" Dob scope available for loan to Society members for periods of two months (or longer if no waiting list.) The first loan was made to Russ Dusseault at the 8/15 star party. Picture: next page.
- The EC discussed and adopted the premise initiated by Jon Greenberg that as society policy we should minimize interruptions during formal presentations at CCAS meetings and ask questions at the end of talks. Consensus was achieved that the many interruptions

with questions or comments made during the presentation by a visiting professor at the August 2nd meeting were distracting. Prior to formal presentations, the President or other president at CCAS meetings should make a brief announcement of our policy to hold or limit questions/ comments until the end of the talk. In cases where the presenter invites dialog, comments/questions should still be kept to a minimum until the end of the meeting.



First Loan of 14" Dob to Russ Dessault

- Programs: . The program for our October meeting will be "So You Want to Buy a Telescope" with brief presentations by members who choose to bring their binoculars/scopes to the session or comment on preferred equipment.
- The next EC meeting is scheduled for September 17th.

From the Dome

Summer is drawing to a close and with it the weekly star parties. You might think that The Schmidt will go into hibernation for the winter. Don't! There are now four observatory staff members who can open and run the observatory. What are you waiting for, an engraved invitation?

So you have an obsession to spend an evening observing open clusters and Milky Way star fields? Come to The Schmidt and be treated to an evening with the 18" Obsession Dobsonian and the assistance of a an observing assistant.

If small, dim fuzzies are your desire, try the 16" at 450x. It's GOTO's are tack on the spot. For those who would like to learn how to use a GOTO scope, the 8" NextStar is just the scope for you.

The Schmidt has it all. Drop me a line at mamhunter@yahoo.com. I will set up a time when you can stroll down your favorite star path.

.....Mike Hunter, Director Werner Schmidt Observatory

Foundation News

... when we have news from the Board of Directors of the CCAF.

Astro Trivia

The "question of the month" is:

What is a Pasadena Mount?

...to be discussed at the September meeting...

Member Profiles

This month we are pleased to report a member profile on Mike Hunter, present Director of the Werner Schmidt Observatory and Vice President of our Society. Mike's profile appears as our first "Feature Story" later in this issue. We hope to provide a member profile on Werner Schmidt in next month's First Light.

Mooncusser's Almanac and Monthly Alert¹

By Peter Kurtz

Suggestions for Improvement are welcome.

Full Moon Tuesday, August 28 at 9:35am EDT

Last QTR Monday, Sept 3 at 10:32pm EDT

New Moon Tuesday, Sept 11 at 8:44am EDT*

First QTR Wednesday Sept. 19 at 12:48pm EDT

Full Moon Wednesday, Sept. 26 at 3:45pm EDT

*A partial eclipse of sun will be visible only in southern hemisphere.

Object	Sep. 01 (EDT)	Sep.15 (EDT)	Sep. 30 (EDT)
Sun	R: 06:06 S: 19:14	06:20 18:51	06:36 18:25
Moon	R: 21:02 S: 11:20	10:34 20:14	20:16 11:38
Mercury (evening)	R: 07:23 S: 19:51	08:19 19:36	08:55 19:11
Venus (morning)	R: 04:36 S: 17:41	03:36 16:55	03:07 16:27
Mars (morning)	R: 23:29 S: 14:25	23:03 14:07	22:33 13:42
Jupiter (evening)	R: 13:54 S: 23:17	13:06 22:27	12:16 21:35
Saturn (morning)	R: 05:18 S: 18:58	04:32 18:07	03:42 17:12
Uranus (evening)	R: 19:29 S: 06:54	18:33 05:56	17:32 04:54
Neptune (evening)	R: 18:20 S: 04:37	17:24 03:40	16:24 02:40

September Observing Events

“Close Approaches” with moon:

August 28	Uranus 2° south of (full) Moon
Sept. 6	Mars 6° south of (last qtr) Moon
Sept. 9	Venus 9° south of (nearly new) moon.
Sept. 9	Saturn only 0.8° north of moon.
Sept. 19	Jupiter, the (1 st qtr) moon, Vesta and Antares within 8° of one another.

More on September Observing

The Autumnal Equinox occurs at 5:51AM on 9/23. From now to the winter solstice, the ecliptic continues to move higher in altitude vs. the horizon and farther and farther north of the celestial equator. In general this means the planets and the moon get higher in the sky at the meridian at midnight as the season progresses. The altitude of the sun at noon correspondingly gets lower and lower until late December.

Mercury (mag 0.0) is near conjunction (about 30') with Spica (mag 1.0) at sunset (about 6:30EDT) on September 22. But for us in the north, at sunset they are only about 8° altitude above the dusky horizon. Probably a tough see with the naked eye but likely a rewarding view and photo with a spectrum of telescopes. At maximum 26° eastern elongation on 9/29, Mercury has good altitude above the western horizon only for southern observers because of the tilt of the ecliptic at this time of year.

Venus (mean mag -4.2 during September) was an “evening star” for much of the summer but in September it becomes a “morning star”: On 9/1 it rises 1.3 hours (about 17°) before the sun; by 9/30, it rises 3.5 hours (about 38°) before the sun. It appears “stationary” in the celestial dome on September 7th when its motion changes from westward (retrograde) to eastward (direct). Venus is at greatest brilliancy on September 25. During September it is a 20% sunlit waxing crescent with angular diameter near 42”.

Mars: By month’s end, Mars is rising about an hour before midnight, has angular diameter of 10”, and achieves magnitude 0.

Jupiter (av. Magnitude, -2.7) and its moons still put on a show above Antares through September but it is gradually lower in the sky each night being only 26° above the horizon at sunset on 1 September and setting at 9:30PM for us at month’s end. Working with a good telescope on Jupiter at 9:20 EDT on September 8th could be especially rewarding: **Europa, Jupiter’s #2 moon, will transit** the planet east to west (right to left in most scopes) from 9:20 until midnight.

Vesta (mag. 7.3) the 530km diameter asteroid, continues to put on a show with **Jupiter** above Antares most of

September. On 9/1 it is practically on top of Jupiter (only 35' angular separation.) Vesta then migrates eastward of the giant planet during September reaching angular separation of 8° to the east by 9/30.

Saturn (mean mag 1.25 during September) has recently been hiding behind the sun; it was in superior conjunction on August 21. At the beginning of September it rises only a bit ahead of the sun in the dawn hours (about 8° altitude at sunrise.) But by month’s end, it is rising 3 hours ahead of the sun (about 31° altitude at sunrise) at magnitude 0.7.

Photo-op: At 30 minutes before sunrise on September 9th, Saturn, Venus, the waning thin crescent moon, and Regulus are all within a circle of about 15°. As mentioned at left, Saturn and Regulus are nearly at conjunction. The grouping will be even tighter in October.

September continues to be a good time to look for **Neptune and Uranus**. Neptune, magnitude 7.8, is still near opposition and some 3° northeast of ι-Capricorni. Try about 9pm when it is highest.

To the east, Uranus, easier to see at mag 5.5, and rising a bit later, is at its highest about 11pm. Look about a degree west of φ-Aquarii, when the latter is easily visible. Uranus is at opposition on September 9. While in the neighborhood, look for PALLAS (mag 8.8). Pallas is our third largest asteroid (after Vesta and Ceres (#1)) is about the same size as Vesta but less dense and, since farther from earth, a little less bright. Look for Pallas about 8° east of α-Aquarii on September 1 moving westerly night to night to a much closer 1.5° SE of the star by September 30th

Deep Sky Observing- September:

For the first time in a while, M31, the Andromeda Galaxy, is enough above the horizon for easy early evening viewing in the NE sky.

M13, the best globular cluster in the northern skies is still a good look overhead in Hercules.

Try the famous double double ε-Lyrae also overhead. Finally, wonderful with low power or binoculars, look at the Coathanger, Brochi’s cluster, a pretty asterism just a bit west of the centerpoint between α-sagittae and α-vulpecula. The Coathanger forms a triangle with α-Vul, near albireo, and 1-Vul, the star about 4° toward the horizon from α-Vul. Follow a line from in the direction of the swan’s backbone beyond albireo toward the horizon about 7° to 1-Vul and then move to the south (left) about 3° toward sagitta. While at the swan, look at two beads of gold in 61 Cygni. While in Vulpecula try M27, the dumbbell nebula, a most spectacular planetary nebula when the seeing is good. M27 is 3° NE of the easternmost arrowhead star in Sagitta, the arrow. 900ly away, M27 is a magnitude 7.3, dimensions about 8’x6’.

Other easy targets in September are the double cluster (good in binoculars) between the head of Perseus and Cassiopeia, and M51, the Whirlpool below the big dipper. M57, the Ring Nebula, between β and in γ Lyra, is a tougher target. But easy for our GoTo 16" scope in the Dome.

production is a personal account of the filmmaker's own lifelong love of the stars, how amateur stargazers do and love their hobby as well as the contributions they make to the study and understanding of the cosmos. The film airs on PBS on September 19th in prime time.

A companion website will be live at the same time:
<http://www.pbs.org/seeinginthedark> (from the September issue of *Astronomy Magazine*).

Special Alert:

Finally, an author and filmmaker named Tim Ferris has created a documentary, *Seeing in the Dark*, which is a film portrait of how and why people do and enjoy stargazing. With input from many people, this million-dollar HD video

Make a printout of the preceding sections and use it to help plan your next personal or group Observing Session!

FEATURE STORIES FOR SEPTEMBER

Member Profile: Mike Hunter

This month we are pleased to present a member profile on Mike Hunter, present Director of the Werner Schmidt Observatory and Vice President of our Society.

Biographical:

Mike was born in Muskegon, MI in 1941. He holds a Bachelor of Art Education with concentrations in math, science and geography from the University of Michigan, 1963. After a stint with the Air Force's Aeronautical Chart and Information Center working on navigational and bombing charts, he spent four years at UM at Ann Arbor culminating in a PhD in Educational Psychology (specialties: research design and statistics; achievement/motivation theory). Following two years at a research lab in Tucson, Mike's career moved to the Michigan Department of Education: nine years in statewide educational program evaluation with special attention to research on the cost effectiveness of reading programs. Mike then served some eighteen years with the Ann Arbor Public School system as Director of Research and Evaluation, Director of Facilities and Systems, and finally Director of Capital Planning. On retirement in 1998, Mike and his wife Marilyn moved to Dennis. Mike's hobbies other than astronomy include boating, fishing, and woodworking. Mike and Marilyn enjoy traveling in New England, the Midwest, and regular trips to Australia where they have a daughter and her family.

Mike's Life in Astronomy:

Mike participated in one lecture and two lab courses undergraduate in astronomy at UM prior to switching from an astronomy major to math education. As he put it, "an astro major consisted of 45 semester hours of math, 30 of physics, and 18 of astro. I wanted to look through telescopes not integrate over fields!" Mike cites 12 years of active reading and "building" in astronomy and has been an observer since his teens: "I got started in 1956 as a result of the early space program. My first scope was a 3" Newtonian reflector on a GEM made of concrete and steel pipe. The primary and secondary mirrors, two lenses for an eyepiece, and a fiber tube were purchased from an optical supply house with the remainder coming from hardware stores and junk yards." Mike remembers M42 and M51 as early highlights observed with that home-made 3" scope.

Mike continued to be an equipment builder: "In 1959 I worked with a small group of local amateurs to form the Port City Amateur Astronomers, now the Muskegon Astronomical Society. That year also brought a new scope, a 6" Newtonian on a GEM with babbit metal bearings on a wooden tripod. The mirrors, focuser, and eyepiece were purchased from an optical supply house with the remainder being scrounged and bought here and there." Mike also designed and assisted in the construction of a planetarium dome and observatory for that club in the early 60's.

Mike's Life with CCAS:

Mike has given special service and leadership to the Society in recent years serving two years as President and most recently as Vice President and Director of the Observatory.

He joined the Society in the summer of 2000. At that time, Ed Swiniarski, with whom Mike worked, had been nominated for President. To quote Mike: “Ed said that if he was going to be president, Mike had to join the Society!” So he joined. Shortly thereafter, Ed and Mike and Jim Carlson initiated working the summer star parties as well as resurrecting the club’s 14” Dobsonian from Jim’s barn. Yes, that is the same Dob now being loaned out to members.

From that beginning, Mike has made many important contributions to the Society including the following:

- Implemented regular Executive Committee meetings with participants taking on regular assigned duties and tasks that went beyond those of any particular office. Jim Carlson was brought onto the EC as an at-large member to bring his skills and knowledge to deliberations as well as to form a stronger link between the Society and the CCA Foundation.
- Working with the EC, Mike caused two important goals for the Society to be accomplished: having an organized program for each monthly meeting of the Society and increasing the number of members involved in accomplishing tasks which promote the mission of the Society and its value to all members. Mike’s pursuit of the concept of broad active participation by Society members has resulted in the present involvement and continuing contribution of many of our current officers and EC members, my involvement in First Light, broader participation of our membership in making presentations or arranging for same and in broadening the involvement of the membership in managing/operating the Observatory and making it actively available as a resource for all our members and the public.
- Two years ago, Mike initiated editorship of First Light in its present incarnation as a newsletter created and distributed in digital form. As he put it, “My goal was to bring a Society presence to each member and former members that went beyond the monthly meetings.”
- Perhaps Mike’s most important contribution is what he has done since assuming the Directorship of the Observatory. In his own words:

“As Director of the Observatory, my primary goals have been to bring the members of the society to The Schmidt and to expand the membership. I knew that I could not do this alone; burnout was a certainty if I had tried. Thus, I implemented the training of Society members as observatory staff. It should be noted that such training had been an ongoing request of various Society members.”

“I dropped out of astronomy as a major in college because I saw that there was little chance to look through telescopes as a professional astronomer. I wanted to look at nebulae, planets, stars, etc through a telescope. As the new Director, I felt that the members of the Society and the public in general wanted to first and foremost look through telescopes. Just as my

primary activity at the observatory has been training staff, my primary direction has been to visual observation. Real time imaging, taking “pretty pictures”, and astronomical research will follow. Walk first, then run. That is why the ccd camera has been replaced by that wonderful 9mm Nagler eyepiece. What a view!”

Mike enjoys observing using the variety of equipment at our Werner Schmidt Observatory. As he put it, as a result of having access to the Schmidt, “My own 8” Schmidt-Newtonian, GOTO and all, sits lonely in its micro-observatory.”

When asked to comment on his most memorable observing experiences, Mike replied:

“Returning from dinner down a dirt road to an inn in Australia’s Hunter Valley, I was startled by two very large, bright objects in the sky. The night was crystal clear and, as there was no exterior lighting visible for at least a mile, extremely dark. The two objects in the sky were the Greater

and Lesser Magellanic Clouds.”



Mike Hunter: “Welcome to The Schmidt”

It seems clear that fostering opportunities to see beautiful things through good equipment is what drives Mike in his hobby and in his contributions to our Society. Thanks to Mike for serving as our “test run” personality for Member Profiles in First Light.

...other Feature Stories:

“Sky” now in Google Earth : “Google Turns PC into Virtual Telescope”

We don't normally feature reviews on new technology in First Light. But provocative press releases made available on August 22 and 23 describing a distinctively new and widely capable online tool for astronomers must at least be touched on here.

Until now, GoogleEarth was only a broadly capable online tool for viewing maps and aerial satellite images of terrestrial features. Google has announced and made available a downloadable new version of its software which, when linked up to its online databases, provides a wonderfully flexible capability for virtual movement around and deep into the sky.

The tool provides information about various celestial bodies, from stars to planets, and includes deep sky imagery from the Hubble Space Telescope and other sources. It also allows users to take virtual tours through galaxies, including the Milky Way, from any point on Earth they choose.

I have downloaded the software and exercised some of the capabilities suggested by the following extract of menus: Constellations/ Intro to Backyard Astronomy/ Messier Catalog/ NGC catalog/ Hubble Showcase (including Black Holes and Quasars, Multiple classes of galaxies, Gravitational Lenses, Planetary and other Nebulae, Supernovae and exotic stars, and star clusters)/ the moon (including an animation of how it moves in the sky and changes phases from hour to hour or day to day)/ the planets (with similar animations)/Users' Guide to Galaxies (including ellipticals, lenticulars, spirals, barred spirals, irregulars, and the Milky Way)/ and finally “Life of a Star”.

Three features of Google “Sky” make it deserving of our attention:

- It is comprehensive and broad in its coverage; a wonderful teaching and learning tool.
- it provides an amazing breadth of imaging data with the capability to seamlessly move from macro (e.g. a sky picture of a constellation) to “micro” (zoom your “spacecraft” into the constellation down into the heart of the Ring Nebula!)
- For now at least, both the software and the online databases are available free of charge; you can explore the capabilities yourself after a quick download onto your PC or Mac computer.

Anyone interested in astronomy should at least look at this new sky capability in GoogleEarth. For now, it costs nothing to look! “Accuracy” may always be an issue. For example, if one zooms in on Albireo, you find a blue star on top of a gold star, rather than the true horizontal pairing we see from earth. But, like with Wikipedia, with Google “Sky” it is so easy to browse and so easy to learn at least elementary information about such a breadth of sky material that both inexperienced and experienced amateur astronomers should take a look at the program and associated online resources.

I have printed one press release on Google's “Sky” capability and a pertinent hyperlink as a supplemental page to this issue of First Light.

Followup on August issue stories on NASA missions to/on Mars:

As we left Opportunity at the end of August on the edge of Duck Bay of the Victoria crater on Mars, movement of the rover into the crater was suspended because the long raging heavy dust storms on Mars were making generation of power impossible. There was much concern that loss of power over time could result in freezeup which not only would jeopardize entry into the crater but end Opportunity's life permanently.

NASA's worst fears have not materialized. The fierce dust storms on Mars began to gradually abate in early August. In a report dated August 8th, we learn that slight clearing of the still-dusty Martian skies had improved the energy situation for both Opportunity and its companion rover, Spirit, allowing controllers to recommence the rovers' science work. Both had been forced into inactivity for more than 20 days by the dust storms. As of 8/8, increased output from solar panels had allowed Opportunity to fully charge its batteries and warm its core electronics modules. [NASA/JPL/Caltech/Cornell <http://marsrovers.nasa.gov/newsroom/pressreleases/20070807a.html>]

In a later press release, August 23, we learn that Opportunity is healthy and remains perched near the rim of "Victoria Crater." The rover was on a low-power schedule but controllers are exercising the rover's capabilities and keeping it warm. We look forward to learning soon that Opportunity is “Go” to “jump off” into Victoria crater. [http://marsrovers.jpl.nasa.gov/mission/status_opportunityAll.html]

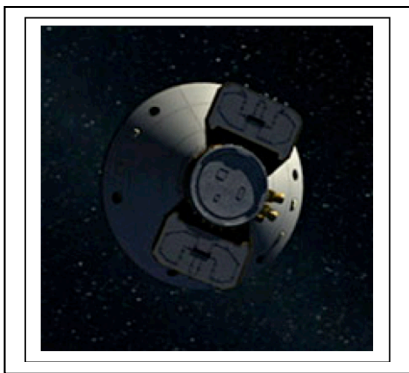
We also reported last month on plans for Phoenix, a new



The Delta II Rocket that carried Phoenix into space awaiting its launch on the pad
(Photo credit: Pat Wolda)

lander to be launched in August to study water on Mars. Phoenix was indeed launched successfully on August 4 from Cape Canaveral. It is targeted to land on May 25 of next year on the northern plains of the red planet.

A subsequent press release on August 10 reports that the first and largest of six course corrections planned during the spacecraft's flight from Earth to Mars have been accomplished. As of that date, Phoenix was traveling at about 33,180 meters per second (74,200 miles per hour) in relation to the sun.



Artist's concept of Phoenix in space

We should view the approach of its landing time with some apprehension. The predecessor of Phoenix, the Mars Polar

Lander/Deep Space 2 was lost on landing on Mars in December of 1999. As had been planned for the MPL, when it arrives safely, Phoenix will robotically dig into ground and/or ice and run laboratory tests assessing whether the site could ever have been hospitable to microbial life.

[<http://www.jpl.nasa.gov/news/news.cfm?release=2007-088>]

The Phoenix Mars Mission is the first in NASA's "Scout Program." Scouts are designed to be highly innovative and relatively low-cost complements to major missions being planned as part of the agency's Mars Exploration Program.

Phoenix is bound for a challenging touchdown at a site farther north than any previous Mars landing. We will watch

APOD

CHRIS COOK PHOTO 8/5-6/2007:



THE PROPELLER NEBULA: emission nebula region in Cygnus.
[DWB 111]

Subject: DWB111 'The Propeller Nebula' in Hydrogen Alpha light

Exposure: 20 x 15 minutes = 5 hours

Processing: MaxIm DL 4.11 & Adobe Photoshop CS2

Telescope: Stellarvue SV80S - 80mm f/6 triplet refractor @ f/4.8

Mount: Losmandy G11

Guiding: SBIG ST-4 via Mini Borg 50 refractor

Camera: SBIG ST-8E NABG

Camera Temp: -15C

Filter: Baader 7nm H-Alpha

Location: Cape Cod Imaging Station - Dennis, Massachusetts

Date: two clear nights, August 5 & 6, 2007

Cape Cod Astronomical Society

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Cape Cod Astronomical Foundation

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Secretary		
Treasurer	Pio Petrocchi	508-362-1213
Observatory Director	Michael Hunter	508-385-9846
Observatory		508-398-4765

The **Cape Cod Astronomical Society** meets at 7:30 pm on the first Thursday of every month in the library of the Dennis-Yarmouth Regional High School in Yarmouth, Massachusetts. Meetings are open to the public. Membership dues are \$30 for adults, \$15 for students in two year colleges, no charge for students in K-12 schools.



Reference Information:

Information for The Mooncussers Almanac and Monthly Observing Alerts was extracted from Sky Events, Astronomy Magazine Online (Astronomy.com), Stargazing.net's Planet Rise/Transit/Set calculator

(<http://www.stargazing.net/mas/planet2.htm>),

and *Astronomy Magazine*, *Sky & Telescope Magazine*, *Sky and Telescope Skywatch 2007*, and other sources.

SUPPLEMENT TO SEPTEMBER 2007 FIRST LIGHT: PRESS RELEASE AND URL FOR GOOGLE'S "SKY" SYSTEM

Press Release: "Sky" now in Google Earth : "Google Turns PC into Virtual Telescope"

Aug 22, 4:45 PM (ET), by Dan Nephin

PITTSBURGH (AP) - The heavens are only a few mouse clicks away with Google Inc. latest free tool.

A new feature in Google Earth, the company's satellite imagery-based mapping software, allows users to view the sky from their computers.

The tool provides information about various celestial bodies, from stars to planets, and includes imagery from the Hubble Space Telescope and other sources. It also allows users to take virtual tours through galaxies, including the Milky Way, from any point on Earth they choose.

"By working with some of the industry's leading experts, we've been able to transform Google Earth into a virtual telescope," Lior Ron, a Google product manager, said in a statement. "You can now explore the universe from the comfort of your chair. Zoom in to distant galaxies hundreds of millions of light years away, explore the constellations, see the planets in motion, witness a supernova explosion; it's like having a giant, virtual telescope at your command -- your own personal planetarium!"

The new software also promises users the ability to see planets in motion and witness a supernova.

There are other programs that provide information and pictures of the universe, but Google Sky blends it seamlessly, said Andrew Connolly, a University of Washington associate professor of astronomy and part of Google's visiting faculty program.

"What's unique about this is you have all of the imaging data over the whole of the sky actually streaming. So I can look at something that covers most of the sky, say our Milky Way galaxy, and I can zoom right into a tiny galaxy that's in the formation cycle," he said.

Google engineers stitched together "terabytes and terabytes" of images and other data, Connolly said. A terabyte can hold the text of roughly 1 million books.

Google has updated the Google Earth Gallery with astronomical images that detail the motion of our solar system, exoplanets, and Hubble Space Telescope pictures. The gallery includes links to KMZ files that open in the Google Earth software.

Sky in Google Earth includes several data layers that highlight specific celestial bodies including the moon, the planets, and the life of a star.

While Google Local ads can be seen on Google Maps and on Google Earth, the sky remains ad-free, at least for the time being.

In September 2005, Google and NASA announced that they'd signed a memorandum of understanding to cooperate in the development of large-scale data management and distributed computing technologies. At the time, CEO Eric Schmidt cited making images from the Apollo space mission more accessible to Internet users as one possible benefit of the arrangement.

"Sky in Google Earth will foster and initiate new understanding of the universe by bringing it to everyone's home computer," said Dr. Carol Christian of the Space Telescope Science Institute.

Google Sky was developed at the company's Pittsburgh engineering office.

One can download the latest version (runs the "Sky" capability) of GoogleEarth from: <http://earth.google.com/products.html>
Only the latest version can access the full sky capabilities online. The software works on computers running Microsoft Corp. (MSFT)'s Windows, Apple Inc. (AAPL)'s Mac OS X and Linux operating systems. The software is basically a subbrowser that communicates in special ways with GoogleEarth on the web.