



# The Pegasus

*January-February 2007*

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## President's Message

The beginning of a New Year always seems to make us reflect on the year that has just passed. BCAAS members involved in club activities experienced both ends of the spectrum in '06. From too many rained out star public star watches to a weekend at the Museum where 1,500 people learned about our club. From the MANY top speakers at our monthly meetings (thanks to Gene Salvatore, our program chairman and Keith Minnich, a most generous and education-oriented member), to my presentation in October where I gave the winter weather forecast, which, so far, is as WRONG as is humanly possible.

Our future is bright, but decisions will have to be made concerning WHERE our business will take place. We meet at the Museum now, but recent demands for contributions may make us find a new meeting place. Several ideas have come forth, so I'm sure we will find a solution.

2007 is looking exciting for me, personally. After juggling a full time job, family, and caring for our farm, I have resigned from my job of 16 years, effective April 15. This will free up a great deal of time for me to pursue many other interests as well as being able to enjoy amateur astronomy more and serve the club better. (Now if I could only get rid of my family....)

I urge you to come out to enjoy our meetings (wherever they are) and join us for more club star watches and group plans coming up this year. Looking forward to enjoying your company!

Dave Brown

### 2007 Slate of Officers

Prez-Dave Brown

Veep-Bret Cadmus

Treasurer-Linda SenSenig

Secretary/Night Sky Network-

Barb Geigle

Webmaster-Mike Bashore

Hotline-Paul Becker

PR-Barry Shupp

She Who Must Be Obeyed -

Melody



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# Night Sky Network Update

## By Barb Geigle

*Message from Marni Berendsen, Administrator of the Night Sky Network: "We have had another successful year of outreach, reaching the 400,000th person in November. Thank you all for doing such outstanding work passing the excitement on to so many. We are looking forward to another wonder-filled year ahead, starting off on February 1st with a teleconference by Dr. Mark Showalter, an expert on rings and moons in the Solar System, working with the Cassini Mission. Be sure to mark your calendar and we will keep you updated as it gets closer."*

I would personally like to thank everyone who helped our efforts to reach the public this year. I would like to see more people get involved in 2007. The toolkits we receive have everything you need, including a training DVD. An event does not have to be a large formal gathering. It can just be a couple of family members or friends – anywhere you use something from a toolkit. So please don't hesitate to get involved. I would be glad to help anyone!

Sky Publishing has decided to stop producing *Night Sky*, its bimonthly magazine for beginning amateur astronomers. The next issue, appearing in February and dated March/April 2007, will be the last. More information about the disposition of existing subscriptions will be available shortly.

Clubs who have held and logged **10 or more events** using NSN resources during 2006 will receive a bonus gift, the limited edition poster "8 Planets: The New Cosmic Order" recently released by National Geographic. Beautifully illustrated with scaled sizes of the eight planets, along with dwarf planets Ceres, Pluto, and Eris, the poster also shows the orbits of these bodies and current missions to explore them. A valuable tool in answering the question "How many planets are there?" BCAAS has logged 15 events this year!

I am wishing everyone a happy and healthy 2007, hopefully with more clear nights than 2006!

Barb Geigle



## Staggering Distance

By Dr. Tony Phillips

Tonight, when the sun sets and the twilight fades to black, go outside and look southwest. There's mighty Jupiter, gleaming brightly. It looks so nearby, yet Jupiter is 830 million km away. Light from the sun takes 43 minutes to reach the giant planet, and for Earth's fastest spaceship, New Horizons, it's a trip of 13 months.

That's nothing.

Not far to the left of Jupiter is Pluto. Oh, you won't be able to see it. Tiny Pluto is almost 5 billion km away. Sunlight takes more than 4 hours to get there, and New Horizons 9 years. From Pluto, the sun is merely the brightest star in a cold, jet-black sky.

That's nothing.

A smidgen to the right of Pluto, among the stars of the constellation Ophiuchus, is Voyager 1. Launched from Florida 29 years ago, the spacecraft is a staggering 15 billion km away. It has traveled beyond all the known planets, beyond the warmth of the sun, almost beyond the edge of the solar system itself.

Now that's something.

"On August 15, 2006, Voyager 1 reached the 100 AU mark—in other words, it is 100 times farther from the Sun than Earth," says Ed Stone, Voyager project scientist and the former director of NASA's Jet Propulsion Laboratory. "This is an important milestone in our exploration of the Solar System. No other spacecraft has gone so far."

At 100 AU (astronomical units), Voyager 1 is in a strange realm called "the heliosheath."

As Stone explains, our entire solar system—planets and all—sits inside a giant bubble of gas called the heliosphere. The sun is responsible; it blows the bubble by means of the solar wind. Voyager 1 has traveled all the way from the bubble's heart to its outer edge, a gassy membrane dividing the solar system from interstellar space. This "membrane" is the heliosheath.

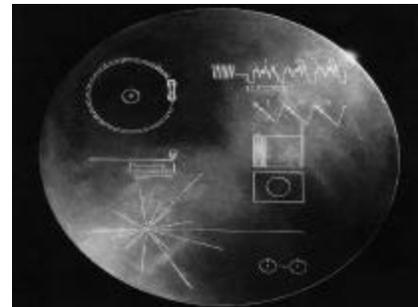
Before Voyager 1 reached its present location, researchers had calculated what the heliosheath might be like. "Many of our predictions were wrong," says Stone. In situ, Voyager 1 has encountered unexpected magnetic anomalies and a surprising increase in low-energy cosmic rays, among other things. It's all very strange—"and we're not even out of the Solar System yet."

To report new developments, Voyager radios Earth almost every day. At the speed of light, the messages take 14 hours to arrive. Says Stone, "it's worth the wait."

Keep up with the Voyager mission at [voyager.jpl.nasa.gov](http://voyager.jpl.nasa.gov). To learn the language of Voyager's messages, kids (of all ages) can check out [spaceplace.nasa.gov/en/kids/vgr\\_fact1.shtml](http://spaceplace.nasa.gov/en/kids/vgr_fact1.shtml).

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

*In case it is ever found by intelligent beings elsewhere in the galaxy, Voyager carries a recording of images and sounds of Earth and its inhabitants. The diagrams on the cover of the recording symbolize Earth's location in the galaxy and how to play the record.*





## TREASURER'S CORNER by Linda Sensenig

### **DUES ARE DUE**

If you receive a paper Pegasus, you will find that brightly colored dues reminder attached. If you receive an electronic Pegasus, your brightly colored dues reminder will be mailed. The dues remain \$20.00 for an individual and \$25.00 for a family membership. If you joined during the year 2006, your dues have been pro-rated, which will bring them to the end of 2007. It is important that you pay in the month of January, as there is that nasty little \$2.50 late fee attached if you do not.

If you receive a dues reminder and have already paid, please let me know. You can either pay me at the January meeting or mail me a check payable to BCAAS. My address is 345 Douglass Street, Wyomissing PA 19610.

### **SYMPATHY CARDS**

If a BCAAS member is in the hospital or has lost a loved one, the club does send get well and sympathy cards. However, this is only if Linda knows about it. So if you know a member is in the hospital or has lost a loved one, please let her know and she will send a card on behalf of the club.

### **SEARCHING FOR OLD RECORDS**

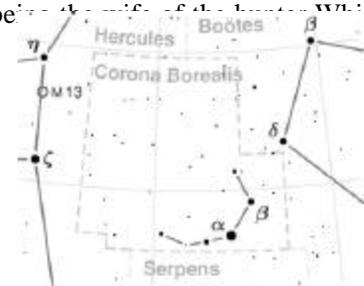
Many years ago, Joanne Capone was going to write a history of BCAAS, so Linda LOANED her all her old issues of Pegasus. After the Capone's dropped out of the club, she gave these newsletters to someone (unfortunately she did not give them back to the person who gave them to her!) If you happen to have all these old issues of Pegasus, Linda would really like to get them back again

### **MYTHOLOGY OF THE NIGHT SKY - CORONA BOREALIS**

King Minos of Crete had a daughter Ariadne. When she married Theseus, he gave her a crown. You would think that was the beginning of a beautiful love affair. After all, it isn't every woman who receives a crown as a wedding gift from her husband. Alas, this was not to be. There was no happy ever after for this couple for Theseus eventually deserted her and she married Liber Bacchus. But what happened to the crown Theseus had given her? It was transferred to the night sky, of course, as the constellation Corona Borealis.

This constellation was named by numerous other ancient cultures, many of whom also saw a crown in these stars. The old Celtic story behind the Corona is that it represented the crown of the House of Arianrod, the sister of Gwydion and Don, the Fairy King. This crown has also been called the crown that Ahasuerus placed on Esther's head (from the Biblical book of Esther), or the Crown of Thorns. The Chinese, however, called it Kwan Soo, a cord. And the Shawnee Indians knew it as the Celestial Sisters, fairest of them be-  
White Hawk.

In May of 1866, in this small constellation, a new star suddenly blazed into life. It flared to 2nd magnitude, then declining to 10th magnitude but rising again to 8th magnitude where it remains to this day as the star T Corona. This was the first variable star to be studied universally by using a spectroscope.





# Cool Astronomy Info

## Marshmallows? Cotton candy?

*Comets are beautiful, mysterious objects only rarely seen in our night skies. A comet often appears as a fuzzy ball with a long, white tail--sometimes with a second blue tail visible. But what are they? What's at the heart of a comet? That's what the Deep Impact space mission set out to learn by crashing its "smart impactor" into the nucleus of Comet Tempel 1 on July 4, 2005. Deep Impact's camera and many other orbiting and ground-based telescopes observed and studied the material that was blasted out of the resulting crater. Now scientists all over the world have had time to look at the data and gain a better understanding of these icy visitors from the outer solar system. Visit The Space Place at <http://spaceplace.nasa.gov/en/kids/deepimpact>, and see what they have found out.*



## Space Weather for Air Travelers

By Dr. Tony Phillips

At a time when much of the airline industry is struggling, one type of air travel is doing remarkably well: polar flights. In 1999, United Airlines made just twelve trips over the Arctic. By 2005, the number of flights had grown to 1,402. Other airlines report similar growth.

The reason for the increase is commerce. Business is booming along Asia's Pacific Rim, and business travel is booming with it. On our spherical Earth, the shortest distance from Chicago to Beijing or New York to Tokyo is over the North Pole. Suddenly, business travelers are spending a lot of time in the Arctic.

With these new routes, however, comes a new concern: space weather.

"Solar storms have a big effect on polar regions of our planet," explains Steve Hill of NOAA's Space Weather Prediction Center in Boulder, Colorado. Everyone knows about the Northern Lights, but there's more to it than that: "When airplanes fly over the poles during solar storms, they can experience radio blackouts, navigation errors and computer reboots—all caused by space radiation."

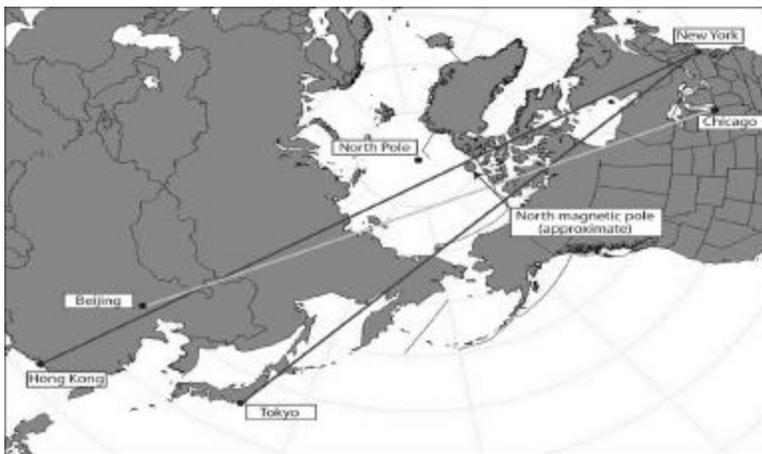
In 2005, United Airlines reported dozens of flights diverted from polar routes by nasty space weather. Delays ranged from 8 minutes to nearly 4 hours, and each unplanned detour burned expensive fuel. Money isn't the only concern: Pilots and flight attendants who fly too often over the poles could absorb more radiation than is healthy. "This is an area of active research—figuring out how much exposure is safe for flight crews," says Hill. "Clearly, less is better."

To help airlines avoid bad space weather, NOAA has begun equipping its GOES weather satellites with improved instruments to monitor the Sun. Recent additions to the fleet, GOES 12 and 13, carry X-ray telescopes that take spectacular pictures of sunspots, solar flares, and coronal holes spewing streams of solar wind in our direction. Other GOES sensors detect solar protons swarming around our planet, raising alarms when radiation levels become dangerous.

"Our next-generation satellite will be even better," says Hill. Slated for launch in 2014, GOES-R will be able to photograph the Sun through several different X-ray and ultra-violet filters. Each filter reveals a somewhat different layer of the Sun's explosive atmosphere—a boon to forecasters. Also, advanced sensors will alert ground controllers to a variety of dangerous particles near Earth, including solar protons, heavy ions and galactic cosmic rays.

"GOES-R should substantially improve our space weather forecasts," says Hill. That means friendlier skies on your future trips to Tokyo.

For the latest space weather report, visit the website of the Space Weather Prediction Center at <http://www.sec.noaa.gov/>. For more about the GOES-R series spacecraft, see [http://goespoes.gsfc.nasa.gov/goes/spacecraft/r\\_spacecraft.html](http://goespoes.gsfc.nasa.gov/goes/spacecraft/r_spacecraft.html). For help in explaining geostationary orbits to kids—or anyone else—visit The Space Place at [http://spaceplace.nasa.gov/en/kids/goes/goes\\_poes\\_orbits.shtml](http://spaceplace.nasa.gov/en/kids/goes/goes_poes_orbits.shtml).



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

*The shortest airline routes from the Eastern U.S. to popular destinations in Asia go very near the magnetic North Pole, where space weather is of greatest concern.*



## NASA's Astronomy Photo of the Day—January 1, 2007



### **NGC 6960: The Witch's Broom Nebula**

**Credit & Copyright:** T. A. Rector (U. Alaska), WIYN, NOAO, AURA, NSF

**Explanation:** Ten thousand years ago, before the dawn of recorded human history, a new light must suddenly have appeared in the night sky and faded after a few weeks. Today we know this light was an exploding star and record the colorful expanding cloud as the Veil Nebula. Pictured above is the west end of the Veil Nebula known technically as NGC 6960 but less formally as the Witch's Broom Nebula. The rampaging gas gains its colors by impacting and exciting existing nearby gas. The supernova remnant lies about 1400 light-years away towards the constellation of Cygnus. This Witch's Broom actually spans over three times the angular size of the full Moon. The bright star 52 Cygnus is visible with the unaided eye from a dark location but unrelated to the ancient supernova.

