



# Clear Skies

Volume 12, Issue 4

August 2007

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## Greetings!

Welcome to the Cowichan Valley Starfinders Astronomy club's "Clear Skies" monthly newsletter.

I would like to begin by acknowledging and welcoming all the new members from the Island Star Party (ISP). This is the first year that the club has included the membership as part of the entrance fee to the ISP. What a good deal for everyone!

Here's a few pointers for viewing the newsletter online:

- 1) navigation – click on any of the links on left hand side to quickly navigate to the category which perks your interest. Click on "back" at the end of each category to return to the links.
- 2) a set of "quick links" have been added to provide quick access to club information. Which can also be found on the CVSF website.
- 3) To quickly send your newsletter submissions and/or suggestions to the editor just clicking on the "Newsletter Submissions and Suggestions" link in the Quick Link section.

### Memberships Are Due

For members who did not attend the ISP you need to fill out the membership form located on the website [CVSF Membership](#) and arrange to pay your membership dues and receive your membership card. Directions for payment are on the form.

Also, for members who did not receive their membership number and would like to know what it is; use the "Newsletter Submissions and Suggestions" link in the Quick Link section to let me know and I will email your membership number back to you.

Well I don't know about you but it sure seems like it's been a wacky summer so far (at least on Vancouver Island that is). We have definitely felt the extremes from "sweltering hot" to "days of pouring rain" and everything in between. My plants are loving it, I tell you it's a jungle out there!

But as far as the night skies goes, we've had some good nights for observing. Have you got a calendar? Circle this date: Sunday, August 12<sup>th</sup> and next to the circle write "all night" and "Meteors!" Attach the above to your refrigerator in plain view so you won't miss the 2007 Perseid meteor shower. See "The Sky This Month" section of the newsletter for more information.

Many thanks to this month's contributors:

Moe Raven, Norm Willey, Bryon Thompson, Ed Maxfield, Andrew Whitworth, Gail Robertson and Ed Nicholas.

*Freda Eckstein*

"Shoot for the moon. Even if you miss, you'll land among the stars". ~Les Brown

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## Meeting Highlights

Our final planning meeting for the Island Star Party on June 26<sup>th</sup> went extremely well. Attendance was great and ideas and suggestions were flowing. Thanks to everyone who came to support the club and help to plan.

Norm printed off the ISP posters that Bryon designed and they were handed out to everyone to put up in their local areas

Moe made the mistake of showing us this years CVSF tee-shirts that Shauna designed and embroidered as gifts for the lecturers. It was all a blur...but as I recall by the time the dust settled three tee-shirts were already scooped up by enthusiastic members. Moe did manage to save a few for the lecturers. Shauna is a wonderful designer ; the shirts are just georgeous and we are fortunate to have her contributions. Thank you Shauna.



### The 12th Annual CVSF Island Star Party

The numbers are in from the Star Party thanks Norm for doing the bookwork ☺. Here's the high level breakdown:

Number attending = 95, Number of memberships = 49

Income from ISP = \$1,935, Costs for ISP = \$1,427.42 Net = +\$507.58

Considering Saturday was a bit of a wash out we did well. I heard lots of comments on how well organized the party was and Bruno really put it all into perspective by saying something to the fact that "his favourite star party memories are the ones that got rained out because astronomers observe all the time but it's the social aspect of mingling with like minded folks that really counts".

It is so important to acknowledge the folks who make the event so special:

- First and foremost the lecturers that come out on their own time to share their enthusiasm about astronomy.
  - And of course our many contributors who graciously donate items for the door prize draws during the weekend.
  - Then last but not least all the volunteers for making the ISP a fun event for all.
- To all these folks we send a "huge" thank you.

NOTE: **there are no club meetings during the month of July and August.** Our meetings will resume on the first Tuesday of each month starting September 4<sup>th</sup> and will be held at our new location (CMHA Office). More details and a map will follow in our September issue of Clear Skies.

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## Upcoming Events

### Star Parties

Just in case you haven't got star partying out of your system. Here's a listing of some other upcoming star parties.

#### **Saskatchewan Summer Star Party August 9th to August 12th, 2007.**

Presented by the Saskatchewan Centres of the RASC held at the CYPRESS HILLS INTERPROVINCIAL PARK. For more info see [Saskatchewan Summer Star Party](#)

Our past president (Frank Ogonoski) has promised to give us a recap of the event, so stayed tuned for this in next months newsletter.

Looking for a less crowded place to watch the Perseid Meteor Shower and still be with fellow astronomers? Try the **24<sup>th</sup> Annual Mt. Kobau Star Party August 11-19**

Located in South Central British Columbia on the summit of 6,045-foot Mt. Kobau, bordering the Okanagan Valley in BC's southern interior. For more info see [Mt. Kobau Star Party](#)

We are so fortunate on the island to have not one but two star parties to enjoy! So

if you missed the CVSF Island star party or would like another chance to see the stars and mingle with astronomers then mark your calendars for **3**



### **The Seventh Annual RASCALS Star Party - August 24-26**

To be held at the Victoria Fish and Game club (at the top of the Malahat). For more information on the RASCALS Star Party check out the website: [Victoria.rasc.ca](http://Victoria.rasc.ca).

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## Web News

For those of you lucky enough to get John Nemy's CD as a door prize you're in for a wonderful musical journey of the senses. For the rest of us go to <http://www.nemy.com/music.html> to read more and see other CD's John has done.

Here's another neat musical treat submitted by our president. [Norm Walker: Prairie Pagan Music](#). Here's a sample of the lyrics for his "Interstellar Cowboy" [Interstellar Cowboy lyrics](#). If you're interested in hearing a clip go to [Listen to Norm Walker](#). Walker must know quite a bit of science to have written this, tho' my favourite is "Ohm's Law".

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## Cool Pics

Want to show off your latest pics? Well here's your chance; email the editor at [My Cool Pics](#) and we will try to post them in the next edition of "Clear Skies"

Gail Robertson our Island Star Party Photographer took these great shots of the Friday and Saturday night prize winners and of course our two grand prize winners. Ed Nicholas took the last candid shot of folks just hanging out. Stay tuned for more ISP pictures to be posted to the website.







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## Featured Articles

### Articles

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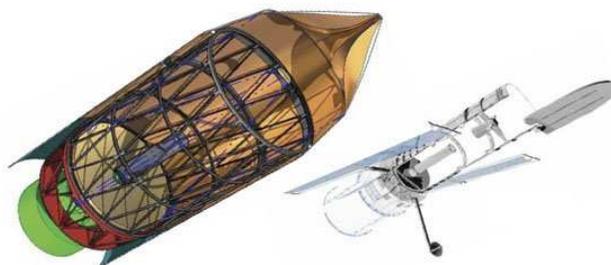
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**Thinking Big about Space Telescopes** - June 25/07 Credit Science@NASA

NASA's next moon rocket is still on the drawing board, but already scientists are dreaming up big new things to do with it.

"The Ares V rocket will be able to launch missions whose volume or mass or both can be handled no other way," says Philip Stahl, an internationally respected optical engineer now at NASA's Marshall Space Flight Center. Maybe, he says, we should use it "to launch big space telescopes."

How big? Consider the following: Ares V will be able to place almost 130,000 kg (284,000 lbs; 8% more than the Saturn V rocket of the 1960s) into low Earth orbit. Designed to deliver cargo to the Moon, the rocket would be large enough to carry primary mirrors 8+ meters wide. For comparison, Hubble's mirror measures 2.4 m.



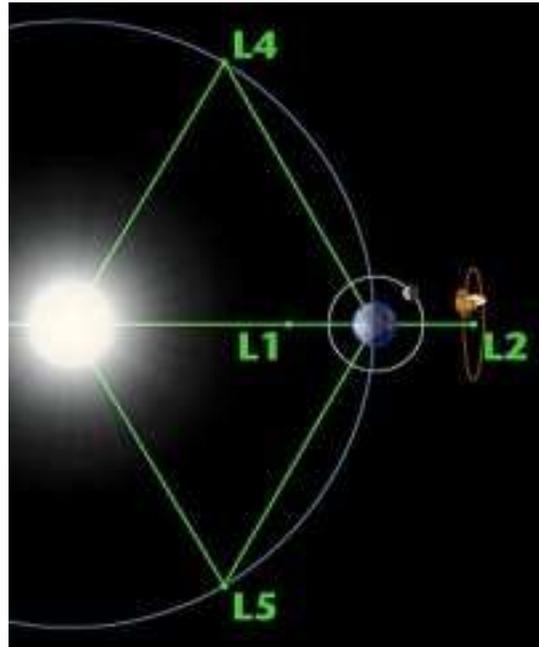
A 6- to 8-meter space telescope would dwarf the Hubble Space Telescope. Key missions would include searching for and exploring earthlike planets in deep space. (NASA)

"How does a typical astrophysicist work?" Stahl asks. "He builds a giant telescope on top of a mountain and uses it for decades, and every few months or years he swaps out instruments or does other upgrades to keep it going." The Hubble Space Telescope operates in this fashion, with the space shuttle doing the servicing and Earth-orbit playing the role of mountain peak.

But Stahl wants to go beyond Earth orbit, far beyond, to the L2 Sun-Earth Lagrange point.

A Lagrange point is, basically, a parking spot in space. If you put a spacecraft at a Sun-Earth Lagrange point, it remains in a fixed position relative to the Sun and Earth. 18th-century mathematician Josef Lagrange showed that there are five such points, illustrated in the diagram below.

L1, located 1.5 million km sunward of Earth, is a good place for solar observatories. The Solar and Heliospheric Observatory (SOHO), for example, is there now and enjoys a 24/7 view of the sun.



L2 lies in the opposite direction, 1.5 million km above the nightside of Earth. A key advantage of L2 is that the Sun, Earth and Moon are concentrated in one small part of the sky, giving any telescope located there a wide and unobstructed view of deep space. The Wilkinson Microwave Anisotropy Probe (WMAP) is stationed at L2 and others will eventually join it.

Right: Earth-Sun Lagrange points. Click on the image to view all five, L1-L5. [More]

"L2 is a place in space where we want to place a lot of telescopes," Stahl continues. So "why don't we treat it as a mountaintop?" with the telescope's satellite bus providing all the services of a real mountaintop facility.

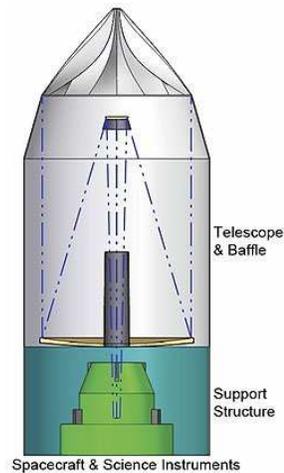
Thus, Stahl, Marc Postman of the Space Telescope Science Institute and others within the space science community are thinking big.

Wish-list missions for the Ares V range from a 150-meter-wide (492 ft) radio telescope dish to detect whispers from deep space to a 5-meter cube of super-pure water encased in light detectors to assay cosmic rays by their light flashes as they crash through the water. An optical telescope with a primary mirror up to 8 m (26 ft.) in diameter could search star populations in the Milky Way and nearby galaxies for the "fossil record" of their evolution. It could also hunt for "Earthshine spectra," faint signs of life in the light reflected by exoplanets.

The resolution of the telescope's images would be more than three times sharper than those of Hubble. More important, the mirror would see about 11 times fainter than Hubble because the area of the mirror would be 11 times greater.

Below: A cutaway diagram of the large monolithic space telescope shows that most of it is empty space, leaving designers plenty of margin in equipping the systems and instrument modules. (NASA)

Until now, such a mirror was too big to consider. The next-generation James Webb Space Telescope -- also headed for L2 -- was regarded as the path for future large space telescopes. Its 6.5-m primary mirror will consist of carefully folded segments that precisely align once on station. But future Ares V payload shrouds up to 12 m (39.4 ft) have been envisioned by NASA planners. That allows Stahl to consider an off-the-shelf mirror, like the single-piece, 8-m (26.2 ft) primaries in the ground-based Gemini telescopes.



While increasing size, the Ares V would decrease risk. "The constraints of current launch vehicles place risks on technical performance, cost, and schedule to get a lot out of a small package," Stahl explains. The generous size and mass afforded by the Ares V all but eliminates those constraints for most payloads.

He also sees servicing as a key element.

"Why design for 10 to 15 years?" Stahl asks. "Let's design so you can swap the instruments periodically and go for 50 years." The bus section -- controls and instruments -- will be small enough that replacements could be sent by smaller launch vehicles and equipped to replace all the serviceable components and start a new scientific observing campaign.

In Postman's words, that would "make L2 the ultimate astronomical summit."

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**New view of doomed star** June 26, 2007 Provided by Chandra X-ray Center

As Eta Carinae nears a state of unstable equilibrium, the massive star draws closer to its inevitable demise.

Eta Carinae is located about 7,500 light-years from Earth. In the 1840s, Eta Carinae



survived a massive eruption, briefly becoming the second brightest star in the sky. The latest composite image from NASA's Chandra X-ray Observatory and the Hubble Space Telescope shows remnants of that titanic event, hinting that the star may be nearing its final, massive explosion. X-ray: NASA/CXC/GSFC/M. Corcoran et al; Optical: NASA/STScI

Eta Carinae is a mysterious, extremely bright, and unstable star located a mere stone's throw — astronomically speaking — from Earth at a distance of about 7,500 light-years. The star is thought to be consuming its nuclear fuel at an incredible rate, quickly drawing closer to its ultimate explosive demise.

When Eta Carinae does explode, it will be a spectacular fireworks display seen from Earth, perhaps rivaling the Moon in brilliance. Its fate has been foreshadowed by the recent discovery of SN2006gy, a supernova in a nearby galaxy that was the brightest stellar explosion ever seen. The erratic behavior of the star that later exploded as SN2006gy suggests Eta Carinae may explode at any time.

Eta Carinae, a star between 100 and 150 times more massive than the Sun, is near a point of unstable equilibrium, where the star's gravity is almost balanced by outward pressure of intense radiation generated in the nuclear furnace. This means slight perturbations of the star might cause enormous ejections of matter from its surface. In the 1840s, Eta Carinae had a massive eruption, ejecting more than 10 times the mass of the Sun, and briefly became the second brightest star in the sky. This explosion would have torn most other stars to pieces, but somehow Eta Carinae survived.

The latest Eta Carinae composite image shows the remnants of that titanic event

with new data from NASA's Chandra X-ray Observatory and the Hubble Space Telescope. The blue regions show the cool optical emission, detected by Hubble, from the dust and gas thrown from the star. This debris forms a bipolar shell around the star, which lies near the brightest point of the optical emission. The bipolar shell is surrounded by a ragged cloud of fainter material. An unusual jet points from the star to the upper left.



Chandra's data, depicted in orange and yellow, show the X-ray emission produced as material thrown from Eta Carinae rams into nearby gas and dust, heating gas to temperatures in excess of a million degrees. This hot shroud extends far beyond the cooler optical nebula and represents the outer edge of the interaction region. The X-ray observations show that the ejected outer material is enriched by complex atoms, especially nitrogen, cooked inside the star's nuclear furnace and dredged up onto the stellar surface.

The Chandra observations also show that the inner optical nebula glows faintly due to X-ray reflection. The X-rays reflected by the optical nebula originate very close to the star; these X-rays are generated by the high-speed collision of wind flowing from Eta Carinae's surface (moving at about 1 million mph) with the wind of the companion star (about five times faster).

The companion is not directly visible in these images, but variability in X-rays in the regions close to the star signals the star's presence. Astronomers don't know exactly what role the companion has played in the evolution of Eta Carinae, or what role it will play in its future.

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### Saturn moon looks like a sponge 5 July 2007 Agence France-Presse

Astronomers looking at Hyperion, a large Saturn moon, say the spud-shaped rock has a "sponge-like appearance" unlike anything ever seen.

As much as 40% of Hyperion could be porous, according to research led by Dr Peter Thomas of the Center for Radiophysics and Space Research at Cornell University published today in the journal Nature.

The US space probe Cassini sent back high-resolution images of Hyperion to Earth in four flybys in 2005 and 2006.

In its closest pass, it swooped to within 618 kilometers of its surface, getting picture resolution as fine as a few kilometers across.

"The most striking visual aspect of Hyperion is its sponge-like appearance, which is unlike any other object imaged to date," they report.

Hyperion is peppered with craters, most of which are 2-10 kilometers across, and are well preserved.



The apparent reason for this is that the surface is so porous that an impacting space rock causes little ejecta, material blasted out of the collision site and is scattered all around.

The moon has a mean diameter of 270 kilometers, but its shape is so irregular that this can be 190-364 kilometers.

It is the eighth-largest satellite and the largest irregularly-shaped satellite of the 48 named Saturnian moons.

Hyperion's strange shape may have been caused by bombardment by meteors, which blew away part of its surface, some experts believe.

In a companion paper, Dr Dale Cruikshank of NASA's Ames Research Center and colleagues report that Hyperion's surface is quite reflective but the bottoms of the craters are quite dark, similar to those found on the Saturnian moons Phoebe and Iapetus.

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### **The Adventures of ASTRO and NextSat** - July 6, 2007 Credit Science@NASA

Picture this: Two robots hang suspended in space, nose to nose. One reaches out a crooked silver arm and begins to minister to the needs of the other. Fuel is exchanged, a battery is replaced; servicing complete, the two silently drift apart.

These robots, named ASTRO and NextSat, are real and they are in Earth orbit now.

On March 8, 2007, an Atlas V rocket boosted the pair into space. Their mission: to demonstrate autonomous on-orbit satellite servicing, a technology crucial to future space exploration. The Defense Advanced Research Projects Agency (DARPA) manages the project, which is called Orbital Express.

ASTRO and NextSat look more like ordinary satellites than high-tech robots, but they are far from ordinary. ASTRO, in particular, seems to have a mind of its own. It can approach NextSat and dock with it. ASTRO has its own arm for reaching, grappling and servicing—tasks once reserved for the hands of living astronauts. NextSat plays a less glamorous but no less essential role as it races around Earth offering itself to ASTRO for whatever tests ground controllers command.

This is all new, and indeed ground controllers are proceeding cautiously to see what ASTRO can actually do.

The first on-orbit test took place in April. The two satellites remained safely docked together as ASTRO's mechanical arm grappled NextSat, moving it into a variety of positions and attitudes to calibrate rendezvous and capture sensors. ASTRO also transferred fuel and a battery to NextSat. Score: A+.

The next big test occurred on May 5th. ASTRO and NextSat completely undocked and flew perfectly in formation for about 90 minutes. The distance between the two during this maneuver was about 10 meters. ASTRO then approached and rejoined NextSat, conducting the first autonomous rendezvous and docking in the history of the American space program! This test also included an autonomous fuel transfer.

The milestone was made possible by ASTRO's Advanced Video Guidance Sensor—AVGS for short—developed at the Marshall Space Flight Center. It is one of the key technologies that gives ASTRO "a mind of its own."

ASTRO needed all the intelligence it could muster in mid-May when something unexpected happened. An ASTRO flight computer glitch caused a docking test to abort at 10 meters, before the vehicles re-mated. Over the next few days, ASTRO and NextSat drifted more than 6 kilometers (almost 4 miles!) apart. On May 19th, at about 150 meters—greater than any distance ground tested for Orbital Express—AVGS locked on and began to track NextSat. Disaster averted.

"AVGS was very helpful in getting the two spacecraft back together," commented Fred Kennedy, the program manager at DARPA. "Our mission operations team spent long days diagnosing sensor and navigation anomalies, and was finally able to manually reposition ASTRO within a kilometer of NextSat. It was then a matter of returning guidance control to ASTRO, which performed a series of autonomous maneuvers to get us within AVGS's fully operational range so the two spacecraft could re-mate."

This unplanned test may have been the most valuable of all, showing that ASTRO and NextSat can deal with the unexpected, and perform beyond their theoretical boundaries.

The mission is now drawing to a close after establishing several firsts in US space history. In addition to the first US autonomous rendezvous and docking, ASTRO and NextSat also demonstrated the first fully autonomous fly-around and docking, plus an exciting free-flyer capture of NextSat using ASTRO's robotic arm.

It all goes to show that automated rendezvous and servicing may be a realistic option for future space missions. Indeed, technologies proven by Orbital Express could revolutionize the way space is explored, making it possible within the next decade to refuel and repair space vehicles without the touch of a human hand. This, in turn, frees humans for jobs that only humans can do.

It's a partnership: ASTRO and NextSat, humans and machines, into the void together.

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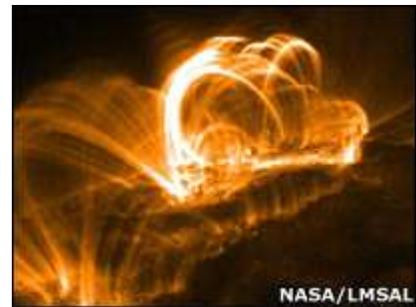
**'No Sun link' to climate change** July 10, 2007 Richard Black BBC Environment Correspondent

A new scientific study concludes that changes in the Sun's output cannot be causing modern-day climate change.

It shows that for the last 20 years, the Sun's output has declined, yet temperatures on Earth have risen.

It also shows that modern temperatures are not determined by the Sun's effect on cosmic rays, as has been claimed.

Writing in the Royal Society's journal Proceedings A, the researchers say cosmic rays may have affected climate in the past, but not the present.



"This should settle the debate," said Mike Lockwood, from the UK's Rutherford-Appleton Laboratory, who carried out the new analysis together with Claus Froehlich from the World Radiation Center in Switzerland.

This paper re-enforces the fact that the warming in the last 20 to 40 years can't have been caused by solar activity - Dr Piers Forster

Dr Lockwood initiated the study partially in response to the TV documentary The Great Global Warming Swindle, broadcast on Britain's Channel Four earlier this year, which featured the cosmic ray hypothesis.

"All the graphs they showed stopped in about 1980, and I knew why, because things diverged after that," he told the BBC News website.

"You can't just ignore bits of data that you don't like," he said.

### **Warming trend**

The scientists' main approach on this new analysis was simple: to look at solar output and cosmic ray intensity over the last 30-40 years, and compare those trends with the graph for global average surface temperature, which has risen by about 0.4C over the period.

The Sun varies on a cycle of about 11 years between periods of high and low activity.

But that cycle comes on top of longer-term trends; and most of the 20th Century saw a slight but steady increase in solar output.

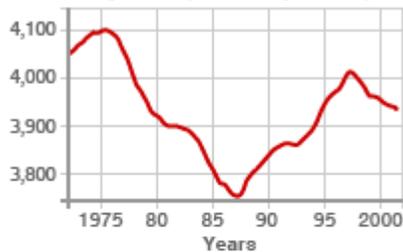
However, in about 1985, that trend appears to have reversed, with solar output declining.

Yet this period has seen temperatures rise as fast as - if not faster than - any time during the previous 100 years.

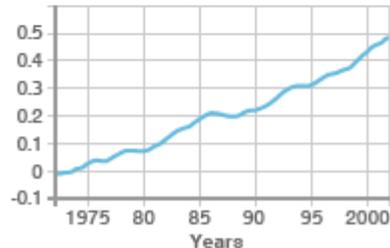
"This paper reinforces the fact that the warming in the last 20 to 40 years can't have been caused by solar activity," said Dr Piers Forster from Leeds University, a leading contributor to this year's Intergovernmental Panel on Climate Change (IPCC) assessment of climate science.

#### COSMIC CONNECTION?

Cosmic ray count (neutrons per hour)



Global mean surface air temperature (cf 1951-1980 average)



SOURCE: Royal Society Proceedings A

#### Cosmic relief

The IPCC's February summary report concluded that greenhouse gases were about 13 times more responsible than solar changes for rising global temperatures.

But the organisation was criticized in some quarters for not taking into account the cosmic ray hypothesis, developed by, among others, Henrik Svensmark and Egil Friis-Christensen of the Danish National Space Center.

Their theory holds that cosmic rays help clouds to form by providing tiny particles around which water vapour can condense. Overall, clouds cool the Earth.

During periods of active solar activity, cosmic rays are partially blocked by the Sun's more intense magnetic field. Cloud formation diminishes, and the Earth warms.

Mike Lockwood's analysis appears to have put a large, probably fatal nail in this intriguing and elegant hypothesis.

He said: "I do think there is a cosmic ray effect on cloud cover. It works in clean maritime air where there isn't much else for water vapour to condense around.

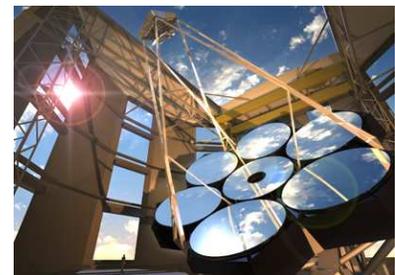
"It might even have had a significant effect on pre-industrial climate; but you cannot apply it to what we're seeing now, because we're in a completely different ball game."

Drs Svensmark and Friis-Christensen could not be reached for comment.

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**Gran Telescopio Canarias** - July 10, 2007 [dailygalaxy.com](http://dailygalaxy.com)

The world's largest and most advanced telescope in the world, the Gran Telescopio Canarias (GTC), is being readied for its first peek into the universe this week in Spain's Canary Islands.



Even after a century of impressive findings, astronomers say we understand no more than about 5 percent of what makes up the universe. Right now we have many more questions than answers when it comes to understanding the universe.

The GTC may help answer some of the following questions, such as: how do planets form? Are there planets similar to Earth? How do galaxies form? What processes lead to the aggregation of mass that produces galaxies as big as the Milky Way? What are the constituents of dark matter and dark (unknown) energy?

Prince Felipe, heir to the Spanish throne (oh yeah, Spain has a monarchy) will be involved in Friday's test run where he will train the telescope on Polaris, the North Star, during a ceremonial observation to be attended by about a few hundred people in the Canary Islands.

The high-performance 10.4m telescope is expected to begin producing scientific data of unprecedented detail by the end of the year.

The GTC is expected to become an important addition to the newest generation of astronomical tools that will yield some of the greatest discoveries of the 21st century.

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## Galaxy Zoo: World Astronomers Ask Your Help to Classify Galaxies

– July 13, 2007 Posted by Rebecca Sato

Would you like to be the very first person on Earth to lay eyes on a new galaxy?

Done. There's no scarcity of new galaxies: there are more than 140 billion galaxies in the visible universe! Our Milky Way is an average-sized spiral galaxy containing a few hundred billion stars.

A new project known as the Galaxy Zoo needs about 30,000 people to log on to its website and help classify one million galaxies. The project is expected to reveal whether or not our existing models of the Universe are correct.

Dr Chris Lintott, a member of the Oxford team conducting the study, says that not only will you be furthering science but, he adds, "you get to see parts of space that have never been seen before. These images were taken by a robotic telescope and processed automatically, so the odds are that when you log on, that first galaxy you see will be one that no human has seen before."

All computer users have to do is undergo a three-minute online tutorial. They are then allocated a series of images and asked to decide whether each one shows a spiral or an elliptical galaxy. If it's a spiral galaxy, they're asked to decide which way it appears to be rotating. That's it. It's not rocket science, but the information gleaned will be invaluable.

The images come from the Sloan Digital Sky Survey telescope in New Mexico, US. Astrophysicist Kevin Schawinski, one of the team who devised the project says they can't rely on a computer program to do it because, "the human brain is actually better than a computer at pattern recognition tasks like this. Whether you spend five minutes, 15 minutes or five hours using the site, your contribution will be invaluable."

"I classified about 50,000 galaxies myself in a week," he says. But there is so much work to do and they can't do it alone. The hope is to have 20,000-30,000 people take part and to have some results in a matter of months.

Cosmologist Kate Land, another member of the team, is expecting amateurs to make a better job of it than the experts: "We get hung up on the details. I got stuck myself! I've found that members of public are much better; they just go with it, on first instinct."

"We want people to classify the galaxies according to which way they're rotating and I'll be able to go and see if there's anything bizarre going on. If there are any patterns that we're not expecting, it could really turn up some surprises."

If you want to help out (and be the first to see some new galaxies) every little bit helps. The site isn't officially open until next week, but I was eager to get started so I went to their site and discovered that they are letting early birds get started now. For me it did take a little practice, but I passed the test and started rating galaxies.

The images are beautiful and I love how they include this statement: "If you find something REALLY unusual or strange and it does look like anything in the how to

get started section, then drop us an email with the reference number."

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It kind of makes you wonder if you're going to discover some freakish unprecedented phenomenon, like an alien SOS, or something similarly bizarre. I'll post on it if I find anything incredibly odd.

In the mean time, go search on your own, and help get the word out to anyone else who may be interested in galaxy hunting. It's actually quite fun, and unlike Sudoku or a crossword puzzle—we're using our brainpower in a way that actually benefits mankind. To get started visit [Home | Galaxy Zoo](#)

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## Buy and Sell

Here's your chance to clean out the closet and find a home for your slightly used treasures. Post your buy and sell items by emailing the [Editor](#) with your details.

### Observatory Free To a Good Home

The owners of Frank's home in the Properties have asked that we post Frank's old observatory in the buy and sell as "free to a good home" the only catch is you have to move it. For more information you can call Carrie at 748-8525.

### Newtonian for Sale

Good permanent Newtonian scope (not portable) with 13 1/2 inch mirror, 4" Steel Alt Azimuth mount with concrete counter balance. Includes various eyepieces. More info contact John MacArthur at [jandlmac@shaw.ca](mailto:jandlmac@shaw.ca)

### Single 8" Meade Looking for an Astronomer

Lonely 8" Meade Newtonian with motorized German equatorial steel post mount is looking for a pair of lovely eyes to spend long nights gazing at the stars together. Includes homemade Dobsonian mount, one 40 mm eyepiece and telescope carrying bag. Asking \$750.00 OBO contact Bryon Thompson at [bryonit@shaw.ca](mailto:bryonit@shaw.ca).

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## Ask an Expert

Have you been thumbing through the Astronomy or Sky and Telescope magazine and have some questions on the latest and greatest in astronomy gear? Or maybe you're narrowing down your search for just the right telescope and want to know the difference between Dobsonians, Schmidt-Cassegrains, Reflector and Refractors. Well wonder no more, email [Brian Robilliard](#) our resident expert to get the "inside scoop" on what's hot or not in astronomy gear.

Are you seeing double or unable to focus? Chances are you need to collimate your scope. Are you looking for a good eyepiece? Why do you need to know the focal length of your telescope's mirror and how do you determine the focal length? For answers to these and other telescope questions email [Ed Maxfield](#) our expert on telescope tips, hints and suggestions.

Are you new to astronomy? Want to know the how to find objects in the sky? Or just wondering what that bright object in the evening sky is? Well wonder no more; email [Byron Thompson](#) our Public Outreach Officer and master of Astronomy 101 basics.

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## Kids Korner

For the younger astronomers. We want your input on what you would like to see happening at the club. Tell us a bit about yourself and why you love astronomy. Email the [Editor](#) with your submissions.

For the older folks, if you have any ideas that might spark the interest of a young upcoming astronomer, please send your submissions to the editor.

## Featured Astronomer

We are pleased to feature our first young astronomer; Andrew Whitworth. Andrew is a very active club member who never hesitates to ask questions during the lecturer series at the star parties. I caught up with Andrew just recently to have an online interview:

**So Andrew How old are you?** I'm 9 Years Old

**How long have you been an astronomer?** Since I was 5 years old.

**What got you interested in Astronomy?** My Dad  
*Editor note: Andrew's Dad is Darryl Whitworth who has been a CVSF member for 9 years.*

**How often do you go out and observe?** Once a month.

**Do you do most of your observing in your back yard?** Yes

**You've attended a few star parties, what are some of the things you like about star parties?**  
I like the talks, camping, and the door prizes!

**Have you won door prizes over the years? If so what was your favourite prize?**  
Yes. I won a dobsonian telescope. It was my favorite.

**So are you a future astronaut?** Maybe

**Do you think you may one day travel into space?** Maybe

**Live in space?** No

**Work in space?** Maybe

Well Andrew I think you're on the right track to be anything you want to be. Keep up your curiosity. I'm sure there will come a day when we will be saying "we knew you when".



## Projects

Make a Star Finder. Learn your way around the night sky by finding some of the constellations. **Make one for this month and find your favorite constellation.** Go to [Make a Star Finder](#) for maps, instructions and the Star finder game. Click on the "Projects" tab to see other astronomy projects you can do to amaze your friends and family.

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## RASC News

By Ed Maxfield

Royal Astronomical Society of Canada, Victoria Centre

### Meetings

Meetings are held on the second Wednesday of each month except July and August.

### Astronomy Café

The Astronomy Café Meets on Monday evenings at Sir James Douglas School on Fairfield Road. Meetings resume in September. A special meeting was held at the Centre of the Universe to honour the visit by Frank Ogonoski.

### Saturday Night Volunteers

RASC volunteers at the Dominion Astrophysical Observatory are finally getting some **15** decent skies to show and explain the night sky to visitors. Progress has been made towards the RASC observatory located at the DAO. We have ordered the Paramount ME robotic equatorial mount from Software Bisque.

### Star Party

The RASCals Star Party occurs on Aug 24-26, 2007 held at the Victoria Fish and Game Association located on the Malahat

### Annual Picnic

The annual picnic will be held as usual at the Pearson College Observatory - date to be announced.

Check out the web site at <http://victoria.rasc.ca> for further information and to see some really awesome images taken by our very active astrophotographers.

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## The Sky This Month

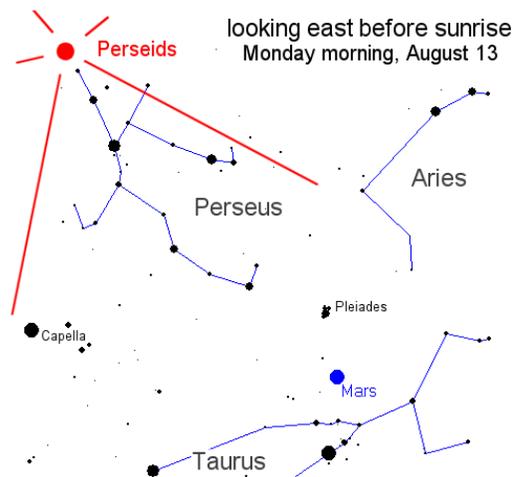
By Bryon Thompson

### Observing Site

Duncan, 48.783°N, 123.700°W

When I first got interested in astronomy I was amazed by so called "Shooting Stars" and my favorite ones were the Perseids. I knew they were not stars but I was captivated by questions of what they really were and how they could be predicted to return every year. Even though I now understand them to be minute pieces of dust and grains of material blown off of comet Swift Tuttle by the sun's solar radiation; they are still my favorite.

Swift Tuttle last orbited the sun 15 years ago. As the earth encounters the dust stream, the collected velocities of the earth's speed and the dust's speed cause



them to encounter the upper atmosphere at speeds of up to 132,000 mph. Start your Perseid hunting early in the evening in hopes to see a Perseid Earthgrazer. As the planet rotates in the same direction it moves into the dust stream on its journey around the sun the earliest meteors skip through the upper atmosphere and are hence slower and longer. They are harder to see because there are so few but they are worth the effort.

The Perseids promise to be good this year because they return near the date of this month's new moon, so dark skies will allow us to see more of the fainter ones. Although the peak should be between 1:00 am and 4:00 am on the 13th (60 to 100 per hour) you may see one or two for a couple of weeks before and after that time.

For a real treat, try lying down with a pair of binoculars on your chest. Set yourself up on a reclining chair or on a blanket on the ground and focus your binoculars on the stars overhead. Then place the binoculars on your chest and wait! When you see the streak of light keep your eyes on that spot in the sky and bring the binoculars to your eyes. If your fast enough and you haven't shifted your vision you may see the smoke trail left over by the ionizing piece of dust. I have even seen some of the brighter ones leave a smoke trail that looks like an explosion of sorts with smaller trails coming off of it.

Remember that Perseids are so named because the radiant is near the head of the

constellation Perseus. If you were to trace all of the shooting star trails you see back **16** so these light trails covered the whole sky, they would all appear to intersect in one point in the constellation Perseus. That intersecting point is called the radiant. This does not mean that that is the place to be looking. The Perseids will appear throughout the dark night sky.

The other big event this month is the blood red moon on the night of the lunar eclipse August 28th. Two times a year the moon travels into earth's shadow. Partial eclipses occur when the moon partially passes into the central portion of the earth's shadow called the umbra. The outer portion called the penumbra produces eclipses so mild they are often not even noticed.

The last eclipse visible from North America tried to show itself to those in the east back on March 3rd; cloudy skies however spoiled most of the show. Looking south west, this full lunar eclipse will be visible to west coast viewers who are willing to stay up late, (with some co-operation from the weather). This full passage should be visible to B.C. night owls at about 3:30 am on the morning of the 29th. The moon will pass just south of the central portion of the umbra. This will result in a moon that will appear redder at the top than at the bottom since the northern portion of the moon is in the darkest part of the shadow.

Here is a quick question. Why does the moon appear "red" on these eclipses? Send your answer into the [editor](#) and we will post them in next month's newsletter.

As for the planets, Jupiter continues to dominate in the southern sky. The four big moons of Jupiter can help you understand three terms used in astronomy. An "occultation" happens when one of the moons passes behind the big planet. A "transit" is when one of the moons passes in front of the Giant. If the angle is right you can sometimes see the shadow of the moon pass along the face of Jupiter's storm tops. Finally you can sometimes see a moon pass into Jupiter's shadow. We know this term from the previous topic, an "eclipse".

Another planet; Neptune, can be seen in the constellation Capricornus 3 degrees north east of its' star "Iota". A telescope with 100X magnification is needed to see the planet as a disc against the background stars. Uranus is also a planet to look for in the early morning skies. Look into the constellation Aquarius for the star "Phi aquarii".

Uranus should be within a degree northeast of that star. (Remember that the full moon's diameter is about a half of a degree). This outer gas giant is moving into position for its "opposition" next month. Opposite from the sun to us and hence will be at its brightest.

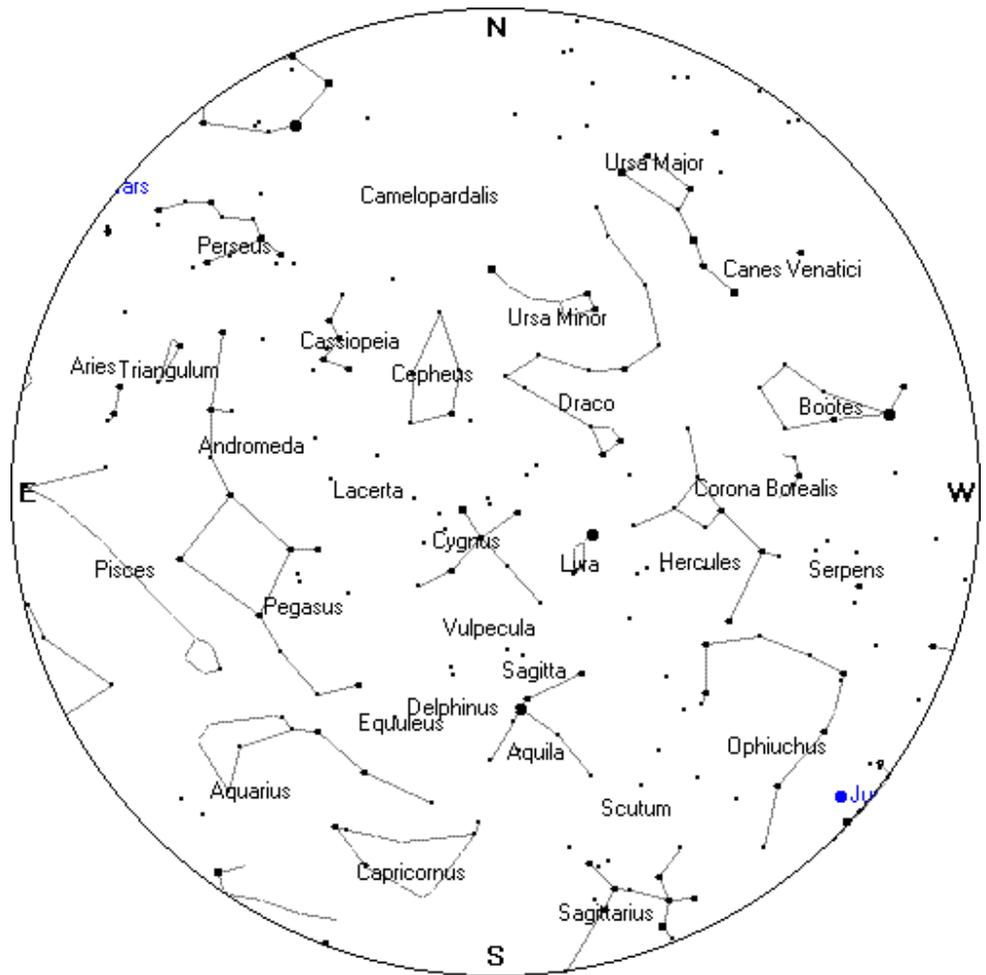
Mars is another planet to see as it rises later on in the evening. It is found in the constellation Taurus, just below Perseus. It appears as a bright red star. It will get brighter as it approaches to its closest position this year in December 2007. A new NASA mission to the red planet (the Phoenix Lander) is planned to launch in the early part of this month. It should reach Mars in the spring of 2008.

03	04:54am	Moon is furthest from the earth this month (Perigee) (229,218 miles)
12	04:04pm	New Moon
13	01:30am	Perseid Meteor shower peaks
18	08:28pm	Moon is closest to Earth this month (Apogee)
23	05:00pm	Mars passes 5 degrees north of Aldebaran
27	02:00am	Moon passes 1.5 degrees south of Neptune
28	03:35am	Total Lunar eclipse
29	02:00am	Moon passes 2 degrees north of Uranus
30	05:12pm	Moon is at Perigee (226,296 miles)

Well that is about all from me this month. I hope you all have fun warm summer-time viewing. Till' next month, take care and stay curious about your dark skies!

**Sky Chart** –Here's your mid-August midnight sky chart. In order to use the sky chart

properly remember the centre of the chart is the sky directly above your head (or the Zenith). Turn the chart so that the direction you are facing is at the bottom of the chart (or pointed toward your toes). The star field directly in front of you will be between the bottom of the chart and the centre. 17



Sky Chart Courtesy of Heavens-Above

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