

SKYNEWS



Black Island Satellite Station in Antarctica

Anthony Powell

IN THIS ISSUE

On the Cover
Presidents Report
December Speaker
Lunar Eclipse in December



DECEMBER MEETING

Wednesday December -14th
7:30pm - A104 Bob Wright Bldg,
University of Victoria, 3800 Finnerty Rd

www.victoria.rasc.ca

On the Cover

Black Island Satellite Station in Antarctica. I have spent 6 winters maintaining this facility. Taken during the 24hr darkness of winter, air temp was about -40. Canon 5D2, 24mm 1.4FL @ f2, 30 seconds, iso2000.

Anthony Powell

Editor's note: Did you notice that on the horizon the sword of Orion is pointing up?

December Meeting

Dr. James Hesser



Affectionate memories of the initial years of the Cerro Tololo InterAmerican Observatory

Abstract: Personal reflections starting with a beer offered

by a senior astronomer to a postdoc shortly before Christmas, 1967 that led to Betty and me arriving in La Serena, Chile in September, 1968 with our three-month old daughter for nine years (1968-1977) of extraordinary adventures in astronomy, distinct cultures, and conflicting economic and political systems. From some 40 years perspective and using our photos, I share some of the challenges of building a truly inter-American observatory during interesting times



(e.g. the Allende and Pinochet governments) under the leadership of visionary astronomer Victor Blanco who passed away in March two days shy of 93.

Presidents Report

by Laurie Roche



I can't believe it has been a whole year since John MacDonald handed the reins over to me at the 2010 RASC Annual Dinner. I guess it really is true that time flies when you are having fun. There have been

lots of good things that have happened over the past twelve months. I couldn't begin to list them all so I will pick out some highlights for me. See if you can pick out a recurring theme here.

We had a spectacular Lunar Eclipse last December and although we had lots of people come to Cattle Point to look through the telescopes many of us were stuffed into our warmest clothing as the wind blew ferociously off the ocean that night.

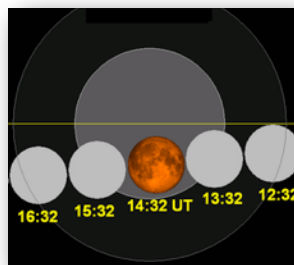
During the year Sid Sidhu and I had many classroom, children's organizations' and seniors' outreach visits that were always fun and kept us on our toes to keep up with all the different programs. Unfortunately, several of our anticipated night sky viewing sessions had to be cancelled because of inclement weather. Thanks to our talented Tech Committee our Victoria Centre Observatory was primed and ready to go. Too bad it took so many months before our active observers had clear enough skies to really use it to its full advantage. (Have you discovered the theme yet?)

And what about our Metchosin Star Party? You guessed it...the weather was practically the main event: wicked winds on Friday evening and all day Saturday and a frontal cloud system that developed right after the talk on Saturday evening sent campers scurrying back into their wind-blown tents. There were great times though, as well. August finally ended up being warm and dry leading to some very good observing and astrophotography sessions on the hill, at Cattle Point, and at Pearson College. Another success story this year was the work done by the Light Pollution Abatement Committee. Under the leadership of Mark Bohlman we were able to complete our Sky Quality Map for the Victoria area, write letters and give presentations to municipal and residential committees and give out our first Firefly Awards for Quality Outdoor Lighting. Other positive aspects included well-attended General meetings with speakers that provided thoughtful presentations and, impressively, a count for public participation in many community activities that reached into the thousands due, almost exclusively, to the untiring efforts of Sid Sidhu. It takes many hands, though, to make an organization run smoothly (no matter what the weather!) and so I would like to take this opportunity to give a huge thank you to all the members who helped in so many ways throughout this past year. To all those on Council, on committees and those who have supported the RASC, thank you for your participation and ongoing leadership. It has been great fun.

Clear Skies,
Lauri Roche

Lunar Eclipse in December

In the early morning hours of December 10th our Moon will enter the shadow of our Earth



and will become eclipsed for about 4 hours. The eclipse starts at 4:30am PST with the moon 40 degrees above the horizon but doesn't come out from the

Earth's shadow until after Moonset for West coast viewers. Totality lasts approximately 51 minutes and should be low in the Southwest sky at mid eclipse and may provide a good setting for photographers as long as the weather is good. Eager eclipse chasers and photographers may want to keep up-to-date on a possible group star party location by joining the Victoria email list.

Malcolm Scrimger

A Star with Spiral Arms

Oct 31, 2011: For more than four hundred years, astronomers have used telescopes to study the great variety of stars in our galaxy. Millions of distant suns have been catalogued. There are dwarf stars, giant stars, dead stars, exploding stars, binary stars; by now, you might suppose that every kind of star in the Milky Way had been seen.

That's why a recent discovery is so surprising. Researchers using the Subaru telescope in Hawaii have found a star with spiral arms. The name of the star is SAO 206462. It's a young star more than four hundred light years from Earth in the constellation Lupus, the wolf. SAO 206462 attracted attention because it has a circumstellar disk--that is, a broad disk of dust and gas surrounding the star. Researchers strongly suspected that new planets might be coalescing inside the disk, which is about twice as wide as the orbit of Pluto.

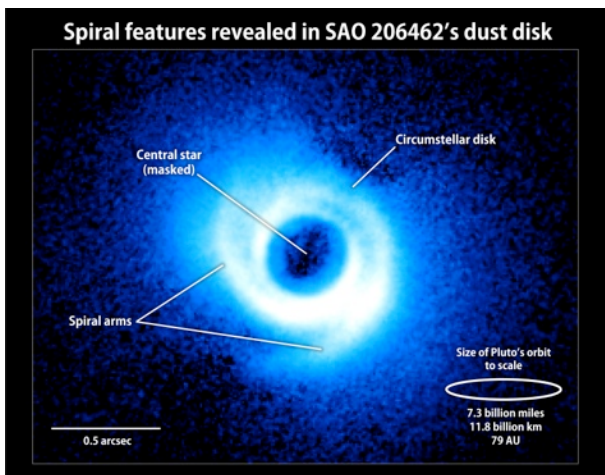
When they took a closer look at SAO 206462 they found not planets, but arms.

Astronomers have seen spiral arms before: they're commonly found in pinwheel galaxies where hundreds of millions of stars spiral together around a common core. Finding a clear case of spiral arms around an *individual* star, however, is unprecedented¹.

The arms might be a sign that planets are forming within the disk.

"Detailed computer simulations have shown us that the gravitational pull of a planet inside a circumstellar disk can perturb gas and dust, creating spiral arms," says Carol Grady, an astronomer with Eureka Scientific, Inc., who is based at NASA's Goddard Space Flight Center. "Now, for the first time, we're seeing these dynamical features."

Grady revealed the image to colleagues on



Two spiral arms emerge from the gas-rich disk around SAO 206462, a young star in the constellation Lupus. This image, acquired by the Subaru Telescope and its HiCIAO instrument, is the first to show spiral arms in a circumstellar disk. The disk itself is some 14 billion miles across, or about twice the size of Pluto's orbit in our own solar system. (Credit: NAOJ/Subaru)

Oct. 19th at a meeting at Goddard entitled *Signposts of Planets*.

Theoretical models show that a single embedded planet may produce a spiral arm on each side of a disk. The structures around SAO 206462, however, do not form a matched pair, suggesting the presence of two unseen worlds, one for each arm.

Grady's research is part of a five-year international study of newborn stars and planets using the giant 8.2 meter Subaru Telescope. Operated by the National Astronomical Observatory of Japan, Subaru scans the heavens from a perch almost 14,000 feet above sea level at the summit of the Hawaiian volcano Mauna Kea. From there it has a crystal-clear view of innumerable young stars and their planet-forming disks throughout the Milky Way.

"What we're finding is that once these systems reach ages of a few million years—that's young for a star--their disks begin to show all kinds of interesting shapes," says John Wisniewski, a collaborator at the University of Washington in Seattle. "We've seen rings, divots, gaps--and now spiral features. Many of these structures could be caused by planets moving within the disks."

However, it is not an open and shut case. The research team cautions that processes unrelated to planets might give rise to these structures. Until more evidence is collected--or until the planets themselves are detected--they can't be certain.

Whatever the cause of the arms, their reality is undeniable and the great catalogue of stars has one more type. Stay tuned to science@nasa for future entries.

Author: [Dr. Tony Phillips](#) | Editor: [Dr. Tony Phillips](#) Credit: [Science@NASA](#)

ESA wrestles with software errors on Mars Express probe

European officials have temporarily halted scientific observations aboard the Mars Express spacecraft after a spate of software hiccups, but managers are hopeful the mission can resume research after eight years at Mars.

The Mars Express probe's 12-gigabit solid-state mass memory unit, which stores scientific and engineering data before transmission to Earth, has triggered a series of "safe modes" since mid-August, ultimately leading mission managers to suspend the science mission Oct. 16.

Launched in June 2003, Mars Express entered orbit around the Red Planet six months later and has studied the planet with a high-resolution color camera, a ground-piercing radar, and a suite of other instruments.

Mars Express has discovered underground water ice deposits, evidence of past liquid water and detected methane in the Martian atmosphere. The spacecraft also flew by the moon Phobos and collected the sharpest imagery ever of the planet's largest natural satellite.

Mars Express, which circles Mars in an oval-shaped elliptical orbit, initially entered safe mode due to a "complex combination of events relating to reading from and writing to memory modules" in the craft's solid-state mass memory system, according to the European Space Agency. It was the mission's first safe mode in three years.

After controllers executed a standard recovery sequence and resumed normal operations, Mars Express was again placed in safe mode, and engineers switched to a redundant B-side

memory unit controller to avoid future anomalies.

But two more safe modes in September and October, plus another error that did not interrupt science operations, compelled managers to suspend the mission to find a solution to the recurring problem.

The errors in the B-side unit occurred during communication between two subsystems of the solid-state memory unit.

Officials wish to avoid continued safe mode events because the spacecraft consumes propellant to change its orientation to point toward the sun, a crucial activity designed to ensure its batteries remain charged. ESA says each safe mode uses the same amount of fuel Mars Express would normally burn in six months of operations.

Mars Express has enough fuel for at least 10 more years, but managers worry more safe modes would reduce the mission's life. Mars Express is now in an extended mission through the end of 2014 after a two-year primary campaign that ended in 2005.

Controllers at the European Space Operations Center in Darmstadt, Germany, are preparing a workaround to "allow at least partial resumption of science observations," according to a posting on ESA's website.

Fred Jansen, the Mars Express mission manager, said the spacecraft has recovered from its last safe mode event and successfully completed initial testing of the workaround, which involves a new way of storing commands aboard the probe before they are executed.

Instead of using a special file in the solid-state mass memory unit, the commands would be housed in a hardware-based timeline store outside the memory system, bypassing the

issue believed to be the cause of the safe modes.

Jansen said the Mars Express radar sounding instrument, named MARSIS, conducted test observations Monday with no problems.

BY STEPHEN CLARK
SPACEFLIGHT NOW

Posted: November 1, 2011



By
Charles
Banville

Inner Harbour

A 27-day-old moon rises above one of Victoria's iconic landmarks the Empress Hotel.
Date: 6:00 PDT on October 24, 2011
Optics: Sigma 85mm F1.4 EX DG HSM
Camera: Canon EOS 7D
Exposure: One single light frame of 1.3 second, f/6.3, IS

**ASTRONOMY
CAFÉ**



Fairfield Community Centre

1330 Fairfield Rd. Victoria,
7:30pm - 10pm

Call Malcolm at (778) 430-4136 for directions and information.

New comers are especially encouraged.



New Observers Group

Hosted by Sid Sidhu
1642 Davies Road, Highlands. Call (250).391-0540 for information and directions.



Email Lists

Observer / CU Volunteers / Members

Contact Joe Carr to subscribe
web@victoria.rasc.ca

NEXT REGULAR MEETING

Wednesday December -14th 7:30pm - A104 Bob Wright Bldg, University of Victoria, 3800 Finnerty Rd.

RASC Victoria Council for 2010 / 2011

Past President John McDonald pastpres@victoria.rasc.ca	Secretary / Recorder Mark Bohlman secretary@victoria.rasc.ca	National Representative Chris Gainor nationalrep@victoria.rasc.ca
President Lauri Roche president@victoria.rasc.ca	Librarian Michel Michaud librarian@victoria.rasc.ca	Light Pollution Abatement Mark Bohlman lpa@victoria.rasc.ca
First Vice President Nelson Walker vp@victoria.rasc.ca	Website / E mail lists Joe Carr web@victoria.rasc.ca	New Member Liaison Vacant NewMembers@victoria.rasc.ca
Second Vice President Sherry Buttner vp2@victoria.rasc.ca	Skynews Editor Malcolm Scrimger editor@victoria.rasc.ca	Membership Coordinator Sherry Buttner Membership@victoria.rasc.ca
Treasurer Li-Ann Skibo treasurer@victoria.rasc.ca	Telescopes / School Programs Sid Sidhu telescopes@victoria.rasc.ca	Members at Large Bill Almond, Jim Hesser, Alex Schmitt, David Lee