

SKYNEWS



Comet 103P Hartley 2

October 16 2010 Stacked 11:19pm to 11:33pm

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DECEMBER MEETING NOTICE

December 8th
University of Victoria
Elliott Bldg.
Room 060 7:30pm

www.victoria.rasc.ca

Cover Astrophotography

by David Lee

Comet 103P Hartley 2

Hartley 2 at the VCO

It was a good night with hopes of viewing Jupiter and more glimpses of the comet. Malcolm on the deck of the observatory had already spotted the comet by the time I arrived. After getting the coordinates right we could see the diffused comet in the Meade 14 inch. Centering was a bit of a challenge but I thank Jim Cliffe for steering the Paramount to position my target. I took a number of frames with the Meade but I waited until the NP127is could see the target to get my final frames. In spite of the moonlight and some haziness I managed to capture enough frames to get an even better view than previous night

RASC Annual General Meeting

Cedar Hill Golf Course
Saturday, November 13, 2010

SPEAKER

Dr. Stephanie Cote

Group Leader: Canadian Gemini Office, HIA
"A Decade of Discoveries with the Gemini
Telescopes"



A Decade of Discoveries with the Gemini Telescopes

The twin 8 meter Gemini Telescopes have been the most powerful telescopes available to Canadian astronomers over the past 10 years. In the presentation Dr. Cote will

highlight the most interesting discoveries that were made with Gemini and in particular those in which Canadian astronomers were involved. Some of the key science results will touch upon planets around other stars, supernovae, the center of our Galaxy, the formation of the first galaxies in the Early Universe, and Gamma-ray bursts.

Drinks and Conversation: 6:00pm

Dinner Served: 6:30pm

Dinner Speaker: 7:30pm

Dinner is a fixed sit-down meal. You have two choices for the entrees as well as a vegetarian option. Please let Lauri Roche know which you prefer when you confirm your attendance.

- a) Chicken "Pesto": Breast of chicken stuffed with fresh pesto and Brie cheese, lightly breaded and topped with a cheddar cheese sauce.
- b) Halibut "Duglere": Fresh filet of Halibut topped with a creamy mushroom, shallot, caper and white wine sauce.
- c) Vegetarian Option

Dinner includes:

Warm dinner rolls Fresh garden salad Rice Pilaf
Fresh Vegetables Chef's choice dessert Tea or Coffee

Please call Lauri Roche by November 6th for dinner reservations at vp1@victoria.rasc.ca or call 250-652-2361. The cost is \$35 per person and guests are warmly welcome. Cheques should be made out to "RASC Victoria Centre".

The reception area and dining room are up the stairs at the Golf Course. There is an elevator available if needed.



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Scientists Watch for a "Hartley-id" Meteor Shower

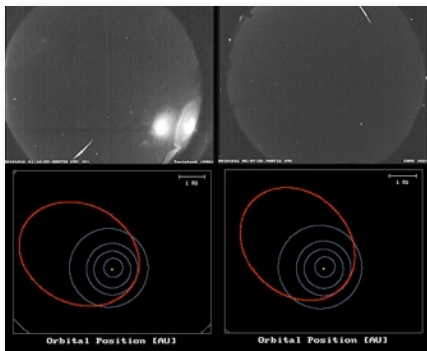


Comet 103P/hartley 2 photographed on Oct. 20th by Mike Broussard of Maurice, Louisiana.

Oct. 27, 2010: This month, Comet Hartley 2 has put on a good show for backyard astronomers. The comet's vivid green atmosphere and auburn tail of dust look great through small telescopes, and NASA's Deep Impact/EPOXI probe is about to return even more dramatic pictures when it flies past the comet's nucleus on Nov. 4th.

Another kind of show might be in the offing as well. Could this comet produce a meteor shower? "Probably not," says Bill Cooke of NASA's Meteoroid Environment Office, "but the other night we saw something that makes me wonder."

On Oct 16th, a pair of NASA all-sky cameras caught an unusual fireball streaking across the night sky over Alabama and Georgia. It was bright, slow, and--here's what made it unusual--strangely similar to a fireball that passed over eastern Canada less than five hours earlier. The Canadian fireball was recorded by another set of all-sky cameras operated by the University of Western Ontario (UWO). Because the fireballs were recorded by multiple cameras, it was possible to triangulate their positions and backtrack their orbits before they hit Earth. This led to a remarkable conclusion:



Two fireballs with "Hartley-esque" orbits observed on Oct. 16th by cameras in western Ontario (left) and the southeastern USA (right). Credit: UWO/NASA/Bill Cooke.

"The orbits of the two fireballs were very similar," Cooke says. "It's as if they came from a common parent."

There's a candidate only 11 million miles away: Small but active Comet Hartley 2 is making one of the closest approaches to Earth of any comet in centuries. It turns out that the orbits of the two fireballs were not only similar to one another, but also roughly similar to the orbit of the comet. Moreover, meteoroids from Comet Hartley would be expected to hit Earth's atmosphere at a relatively slow speed--just like the two fireballs did. Cooke stresses that this could be a coincidence. "Thousands of meteoroids hit Earth's atmosphere every night. Some of them are bound to look like 'Hartley-ids' just by pure chance."

Even so, he plans to keep an eye out for more in the nights ahead, especially on Nov. 2nd and 3rd. That's when a potential Hartley-id meteor shower would be most intense, according to calculations by meteor expert Peter Brown of UWO.

The comet was closest to Earth on Oct. 20th, but that's not necessarily the shower's peak-time. Cooke explains: "The comet has been sputtering space dust for thousands of years, making a cloud that is much bigger than the comet itself. Solar radiation pressure and planetary encounters cause the comet and the dust cloud to diverge—not a lot, but enough to make the date of the shower different from the date of the comet's closest approach."

If there is a Hartley-id shower—"that's a big IF," notes Cooke--it would emanate from the constellation Cygnus the Swan, visible to observers in the northern hemisphere almost directly overhead after sunset in early November.

Lunar interference should not be a problem. On Nov. 2nd and 3rd, the Moon will be a slender crescent, providing dark skies for a meteor watch.

"I'll definitely have our cameras turned on," says Cooke. "It's probably going to be a non-event. On the other hand," he points out, "we might discover a whole new meteor shower."

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

The Sky for November and December

Nov. 7th *Savings Time ends, turn your clocks back an hour.*

Moon

Nov 6th New Moon
Nov 13th First Quarter
Nov 21st Full Moon
Nov 28th Last Quarter

Events

Nov. 15th Gibbous Moon near Jupiter
 Nov. 17th Leonid Meteor shower, Full moon in the way.

Planets

Mercury - too close to the sun.
Venus - becomes a morning object and reaches greatest brilliance Dec 6th
Mars - Too close to the Sun.
Jupiter - is now the only evening planet visible to the naked eye, shining brightly in the South at nightfall. Uranus is close by.
Saturn - Visible in the pre-dawn sky in early November, but by years end it shines bright due south at dawn.
Uranus - shares the evening with Jupiter and only 3 degrees away shining at 6th Magnitude. During the next month Jupiter moves back towards Uranus to come to conjunction on Jan 3rd only half a degree away.
Neptune - Well placed for evening observing for the Month of November shining at 8th Magnitude.

December

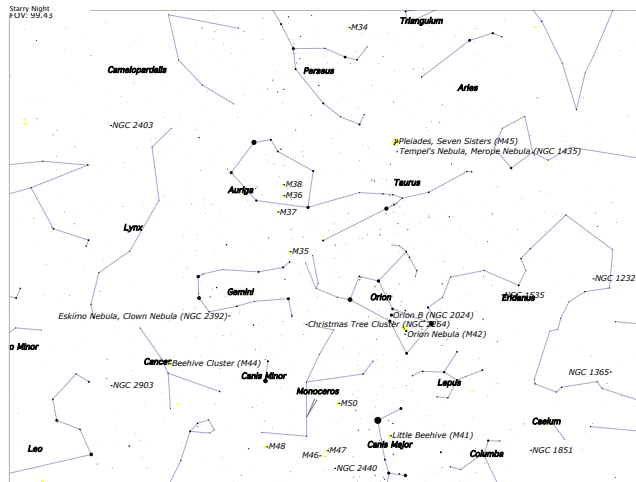
Dec 5th New Moon
Dec 13th First Quarter
Dec 21st Full Moon
Dec 28th Last Quarter

Events

Dec 2nd - Waning Moon 6° of Moon in predawn sky.

Dec 4th - Venus at Greatest brilliancy.
Dec 7th - Waxing crescent Moon 7 degrees above Mercury, low in evening sky.
Dec 13th - Geminid Meteor Shower peaks and into the predawn hours December 14th.
Dec 18th - Gibbous Moon 1 degree below the Pleiades.
Dec 20th - **Total Lunar Eclipse !!** 11:40pm - 1:40 am PDT
Dec 31th - Moon 7 ° below Venus

Winter Deep Sky Objects Star Clusters



This month I will cover some star clusters in three winter constellations worth looking for: Auriga, Gemini and Taurus. In Auriga there are three Messier objects worth looking for M37, M36 and M38. Messier 37 is the most condensed of the three and makes for a nice view in both binoculars and telescope. Under dark skies and placing M36 in the centre of the field it is possible to see all three objects at once with 7x50 binoculars. In Gemini M35, located at the feet of the twins is a nice sight in binoculars. In a telescope make sure to use a wide field eyepiece to take in all its splendor. It can be quite spread out and difficult to distinguish from the richness of our Galaxy. In Taurus is the spectacular M45 the "Pleiades" It is a jewel in both a telescope and binoculars. Long duration astrophotographs show wisps of delicate nebulosity which are energized by the hot bright 7 stars of this star cluster.

Cometary Poison Gas Geyser Heralds Surprises

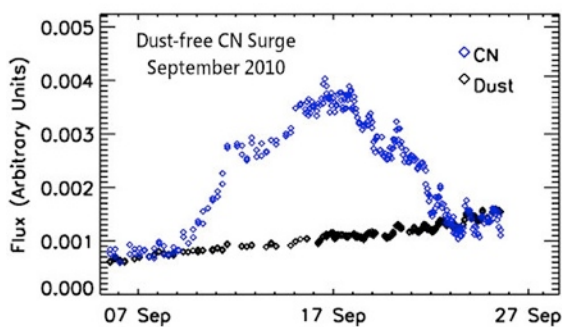
Nov. 2, 2010: As NASA's Deep Impact (EPOXI) probe approaches Comet Hartley 2 for a close encounter on Nov. 4th, mission scientists are certain of only one thing: "We're about to be surprised," says principal investigator Mike A'Hearn of the University of Maryland. "This comet is unlike any we've visited before, and we don't know what we're going to find."

In recent years, international spacecraft have buzzed the cores of four comets: Halley, Tempel 1, Borrelly and Wild 2. Deep Impact even blew a hole in one of them (Tempel 1) to see what was beneath the surface. Those previous flybys, however, may not have prepared researchers for the comet at hand.

"Comet Hartley 2 is smaller yet much more active than the others," explains A'Hearn. "Although its core is only 2 km wide—about a third the size of Tempel 1—it is spewing five times more gas and dust."

The comet has already shocked the science team by producing a massive surge of CN, the cyanogen radical commonly known as "cyanide." Cyanide itself wasn't the surprise; CN is a common ingredient of comet cores. Rather, it was the size and purity of the outburst that has researchers puzzled.

"The abundance of CN in the comet's atmosphere jumped by a factor of five over an eight day period in September—that's huge," says A'Hearn. "Curiously, however, there was no corresponding increase in dust."



This flies in the face of conventional wisdom. Comet cores are thought to be a mish-mash of volatile ices, rock, and dust particles, generally well mixed. When the ice evaporates to produce a jet of gas, dust naturally comes along for the ride. Yet this outburst was pure gas.

"We have never seen this kind of activity in a comet before. The amount of gas suggests a global event—but how could such an event occur without dust? It's a mystery."

A'Hearn stresses that readers shouldn't worry about a "poisonous comet." For one thing, Comet Hartley 2 is more than 11 million miles from Earth. There's no direct contact between our planet and the comet's gaseous shroud. Furthermore, the cyanide gas is very diffuse. If it did touch Earth, it would not be able to penetrate our planet's dense atmosphere.

May of 1910 provides a relevant example: Astronomers had just announced that Earth was passing through the cyanide-containing tail of Comet Halley, triggering a minor panic. People walked the streets of New York wearing gas masks, and unscrupulous merchants made a pretty penny selling "comet pills" to counteract poisoning. Nothing happened. Even direct contact with Halley's tail produced no ill effects.

The real significance of Hartley 2's cyanide surge is the tease. Something mysterious is happening ... and we're about to find out what.

The flyby officially begins on the evening of Nov. 3rd when Deep Impact/EPOXI is about 18 hours from closest approach. During the early stages of the encounter, all of the close-up images will be stored onboard the spacecraft. This is because Deep Impact cannot simultaneously point its high gain antenna toward Earth and its imagers toward the comet.

Closest approach occurs around 10 am EDT on Nov. 4th at a distance of 435 miles. About a half an hour later, the changing geometry of the encounter will allow simultaneous communications and imaging. With its big antenna once again pointing toward Earth, Deep Impact/EPOXI will begin transmitting close-up pictures of Comet Hartley 2. The complete data dump will take several hours.

"We will be waiting," said A'Hearn. "The best images won't reach Earth until many hours after the actual encounter."

Data from the close approach will continue to download through the 6th of November, but NASA will release preliminary results sooner than that. A live press conference is scheduled for 4 pm EDT (1 pm PDT) on Nov. 4th. Stay tuned to the [EPOXI web site](#) for updates.

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

Charles Banville Photograph



47 Tucanae

Date: September 10, 2010

Constellation: Tucana

Location: Parque Nacional La Campana, Chile,

Exposure: 86 RAW light frames of 60 seconds, ISO 1600

ASTRONOMY CAFE (EACH MONDAY)



Fairfield Community Centre

1330 Fairfield Rd. Victoria,

7:30pm - 11pm

Call Geoff at (250) 592-2264 for directions and information.

New comers are especially encouraged.

NEW OBSERVERS GROUP



Observer / CU Volunteers / Members

Email Lists: Contact Joe Carr to subscribe

webmaster@victoria.rasc.ca

December Meeting

Wednesday 8th - 7:30pm - Room 060 Uvic Elliott Building

Guest Speaker: Dr. Andrew Woodsworth

Update on the [ALMA](#) project

The Atacama Large Millimetre / submillimeter Array of radio telescopes is currently being built in the Atacama Desert in Chile. Canada is participating in this huge project, and Dr. Woodsworth is on the ALMA advising committee, so he will have current information to share upon his return from Chile.

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