

AURORA



Volume 38, No. 2

The Royal Astronomical Society of Canada - Windsor Centre

October 2012

A "Dream Comet" Heading Our Way? by Kelly Beatty, S&T Magazine

Faint, distant comets get discovered all the time, usually by robotic telescopes that sweep up huge swaths of sky every clear night. Most come and go quietly. But a new find made on September 24th by a pair of amateur sky sleuths has the astronomy world atwitter (in this word's traditional *and* modern connotations) with the prospect that it could become very bright late next year.

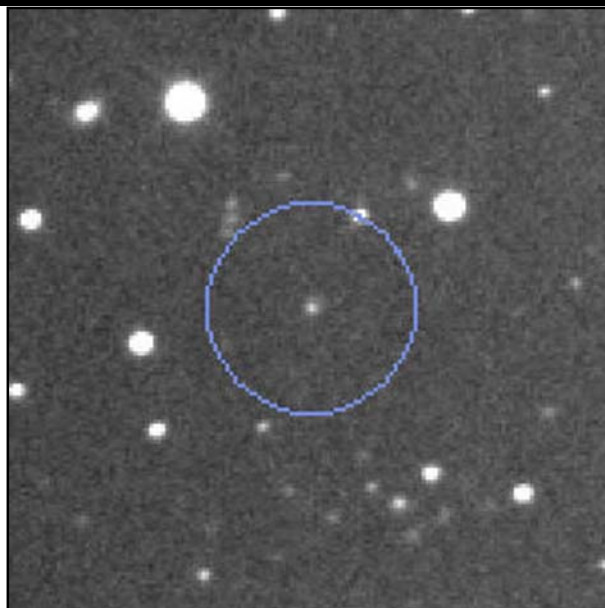
It was first spotted as a faint, 18.8-magnitude object in images taken by Vitali Nevski (in Belarus) and Artyom Novichonok (in Russia) using a 16-inch (0.4-m) reflector that's part of the world-wide [International Scientific Optical Network](#) (ISON). "We could not be certain that it was a comet," Novichonok explains, "because the scale of our images is quite small [2 arcseconds per pixel], and the object was very compact."

The next night they confirmed its cometary nature using the larger reflector at Majdanak Observatory in Uzbekistan, but by then other astronomers had done likewise. According to naming conventions established by the International Astronomical Union, that one day of uncertainty led to the comet being generically named "ISON" instead of "Nevski-Novichonok". Its formal designation is C/2012 S1.

Naming uncertainties aside, we already know a lot about this object, thanks to two sets of prediscovery images dating to last December and January. The comet is inbound from the Oort Cloud and will pass *very* close to the Sun — just 725,000 miles (1.2 million km) from its white-hot photosphere — on November 28, 2013. Before then and thereafter (if it survives perihelion), Comet ISON could put on a spectacular show.

In fact, the geometry could make C/2012 S1 a "dream comet," as one eager skywatcher has commented, because it will swing just 40 million miles (0.4 astronomical unit) from Earth a few weeks after perihelion, when it will be high in moonless, northern skies after sunset. Initial predictions by the IAU's Minor Planet Center suggest that Comet ISON could peak at magnitude -10 or brighter at perihelion (when it will be just 1° from the Sun), and that it could remain visible to the unaided eye from early November to the first weeks of 2014.

An added bonus is that the comet passes very close to Mars in early October 2013 and could potentially be seen with the unaided eye.



The discovery image of Comet ISON (C/2012 S1), as recorded by Vitali Nevski and Artyom Novichonok on September 24th. At the time the comet was 19th magnitude — roughly 100,000 times fainter than the limit of unaided vision. V. Nevski / A. Novichonok / ISON

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Calendar of Events

Our next meeting (Annual General Meeting)...

Tuesday November 20, 2012

7:30 p.m.

at

Ojibway Park Nature Centre

5200 Matchette Road

Main Speaker...

TBD

Topic...

"TBD"

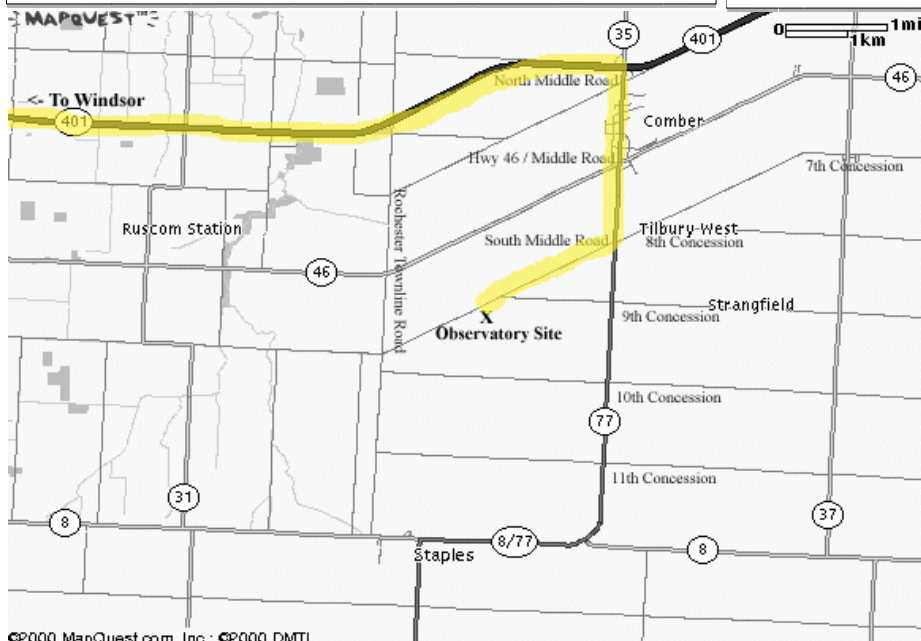
Activities...

Open House Night at Hallam: The next open house night at Hallam is on Saturday October 20 at 7:00 p.m..

RASC - London Centre: Will be holding the grand opening of their new observatory at the Fingal dark site on Sunday October 21 starting at 6:00 p.m.. BBQ, ribbon cutting and then observing if dark. You can respond Rick Saunders, prez@rasclondon.ca for more information.

Meteor Showers: Watch for the Orionids to peak overnight on Saturday/Sunday October 20/21 and the Leonids peak on Saturday November 17th at 3 a.m..

December Social: Our annual Holiday Party will be held on Friday December 7th at 7:00 p.m. at the Ojibway Park Nature Centre. The dinner is "pot luck" style and will be served around 7:00 p.m..



Hallam Observatory Site

Directions: The map at left shows the Comber area and it includes the major highways (401, 77, 8 and 46) that are in the area of the observatory.

The most direct route from Windsor is "highlighted" on the map which is to take Highway 401 East to Highway 77 South to South Middle Road. Turn right onto South Middle Road and go about 1 kilometer and just after the point where Concession 9 joins it (it is hard to see this intersection) you will find the observatory site on the South side (left) of the road. 3989 South Middle Road.

If you hit the Rochester Townline Road (you come to a stop sign) you have gone too far.

Submissions

Aurora is published monthly except for July, August and December. The September, October, January, March and May issues are full newsletters (usually 6 pages) with a number of member submitted articles. The November, February, April and June issues are short flyers (2 pages).

Submitted articles can be of any length from a paragraph to multiple pages. I can scan pictures and/or diagrams (both prints and film) to support your article and the originals will be returned to you.

Submission deadline is the 1st of the month.

Editor: Steve Mastellotto Email: mmastellotto@cogeco.ca

Membership

The Windsor Centre of The Royal Astronomical Society of Canada meets on the 3rd Tuesday of every month (except July and August) at the Ojibway Park Nature Centre. In addition to regular meetings the centre hosts a number of observing nights, a picnic and a December social. Members receive a copy of the Observer's Handbook, a subscription to SkyNews magazine and access to the Centre's library and telescopes. Optionally the RASC Journal is available in print form—online version free.

Annual Membership Fees: Please see the RASC website at www.rasc.ca for current rates.

Contact Greg Mockler at (519) 326-7255 or visit our website at <http://www.rascwindsor.com> for more information.

September 2012 Meeting Minutes by Art Rae

The monthly meeting of The Royal Astronomical Society of Canada - Windsor Centre was held at the Ojibway Park Nature Centre on September 18, 2012.

Windsor Centre **1st Vice-President Brian Thomas** chaired the Meeting. Brian called the meeting to order at 7:35 p.m. and welcomed members and guests to the Ojibway Nature Centre.

A **motion to accept the Minutes** of the June 19, 2012 General Members Meeting was made by Pierre Boulos, seconded by Greg Mockler. **MOTION CARRIED**

Brian introduced the speaker for the meeting, Mr. Irek Kusmierczyk of WEtech Alliance.

The FIRST Robotics Innovation Program for Students

WEtech Alliance is Windsor-Essex's Technology Accelerator; an industry-led, provincially funded non-profit organization focused on driving the growth and success of Windsor-Essex's technology centric companies & entrepreneurs through, mentoring, programs and connections.

One of the programs is a robotics development project for young people to let them experience and become motivated in the technology field surrounding robotics. This is accomplished through a new Federally and industry sponsored and supported-motivation program called F.I.R.S.T., or For Inspiration and Recognition of Science and Technology.

To demonstrate why robotics are important a video of the latest Mars Rover was shown. Mr. Kusmierczyk then introduced two students from Sandwich Secondary School who are involved with the Canadian division of the F.I.R.S.T. program and part of a team that has built and marketed a competition robot. They are the only competing team in southwest Ontario. They are sponsored by General Motors and Centreline Co. The project is a young people's simulation of business where various members of the team design, fundraise and build a working robot. The school team called, "SABRE BYTES ROBOTICS TEAM 772" has competed and won their competition in St. Louis and Smokey Mountain, USA.

It was pointed out that the program is important to learning as participants in the program become ten times more academically skilled than non-participants. The F.I.R.S.T. Canada course costs \$6,500 for a new team robot of which the Federal government funds \$5,200 and local sponsors need to contribute \$1,300 for the first year. In years two and three the team has to canvas for corporate sponsorship.

After the main presentation the students described their robot that includes 17 motors, and in this year's competition must run autonomous for 15 seconds, 2 minutes in manual mode and perform multiple sequences depending on the game strategy. "We get six weeks to design, build and test." Each year the game is different and world wide release will come at the same time for all participants. The students start from a 250 page rule book.

Team member candidates are screened by their peers through an interview process. The members learn collaboration, a real world need and the concept of gracious professionalism. Both teachers and parents are part of the team effort.

Mr. Kusmierczyk outlined the ecosystem build including setting up University of Windsor mentoring, support from the St. Clair College Ford Centre of Excellence for machining and Brave Controls Company for software programming mentoring. He requested the RASC to be a supporting partner. For younger students in grade schools there is a robotics competition called First Lego Teams. "We need funding initiatives, ideal recruitment vehicle. If you know of someone interested contact myself, Irek Kusmierczyk, at WEtech Alliance." There are currently three First Lego teams in the area.

Brian thanked the presenters then called for the **BREAK**.

During the Break the Sandwich School students demonstrated their robot operation and fielded more questions from members and guests.

Winner of the **50-50 Draw** was Brian Thomas who kindly donated it back to the Centre.

Past President, Pierre Boulos: Pierre was called to announce nominations for the Windsor Centre 2013 slate of officers, Council and appointed positions is now open and a list of nominees will be presented for consideration at the October meeting and voted upon at the November meeting. He asked that members let him know if they are willing to stand for a position and to look for upcoming notices.

Director of Observing Report, Matt McCall: Matt first gave an overview of important events of the past summer showing images including the Moon and Venus, Martian Triangle, a Jovian impact and a new version of Stellarium.

Events to look for over the next month include:

- Uranus will be within 1 arc minute from 44 Piscium September 22
- The Harvest Moon is on September 29th
- Pleiades(M45) rising in the east with Capella
- Alignment of Venus and Regulus on October 3rd in the morning
- Jupiter and Orion after midnight
- M1 Crab Nebula and Betelgeuse. There was some discussion that Betelgeuse is not close to being a super-nova yet.
- Dark Sky Nights at Point Pelee for 2012 are Oct.13th, Nov.17th and Dec.14th.
- Dark Sky Nights at Point Pelee for 2013 are Jan.12, Feb.9 and Mar.9 with the March night a possibility to view Centaurus A and Omega Centaurus.
- Asteroid Pallas at mag. 8.7 will be in opposition in October

Hallam Happenings by Dave Panton

September was kind to observers at Hallam both indoors and on the deck. The September open house was well attended and thanks are due to all who helped. Al DesRosiers said it best noting: "The parking lot looked like at Wal-Mart." The mystery is where these people are all coming from. Some are new, others enjoyed themselves at prior open houses and came back for a second or third visit. It's great to have them and all appear to enjoy themselves at each visit.

September Open House was blessed with a sky that at first looked poor but which cleared nicely as it became dark. Further, it featured lots of meteors and by numerous accounts one very nice fireball.

In the dome, Steve's AT 111 refracting telescope with its new remotely operated focuser is up and running for imagers who wish to use CCD or camera's equipped to produce images on the warm room computer screen. Fear not, those of us who still twist knobs for focusing. It also works great manually in the dome.

Our landlord Moe Trepanier reported many of his crops were poor via a dry Summer but the big field on which we are located had adequate rain to produce a good crop of soybeans. They are a big visual improvement over all the dead Ash trees killed by the emerald ash borer and removed for crop space this Spring.

Some plans are afoot to try to block Lila's bright yard light from Highway 77. Initially there was hope of cooperation (at our expense) to modify the light but it proved not practical for a variety of reasons. A major objection was spending money on another person's property with no guarantee it would be a permanent solution.

Better we keep our assets on our own site. To that end a proposal to erect light barriers has been worked out to block light from hers and another source without seriously compromising the horizon view for those sitting on the deck or providing security to those who may wish to invade our premises. The cost to be determined will be significant but it is a matter preserving our observatory.

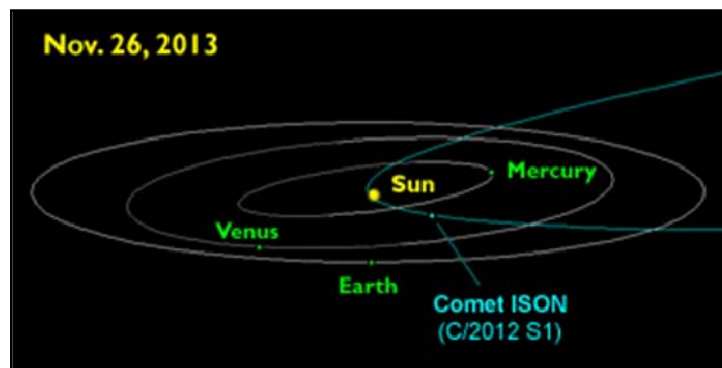
A reminder: The Hallam Observatory annual access fee of \$40 is due at the October meeting. If you no longer wish to use the observatory please turn in your key to Treasurer Greg Mockler.

Photo of Venus at right by Pete Barbaro. Video capture with Imaging Source DBK21 video camera at the prime focus of a Celestron 8" SCT @ f/6.3. Stack of best 169 images of 1760.

New "Dream Comet" continued from page 1

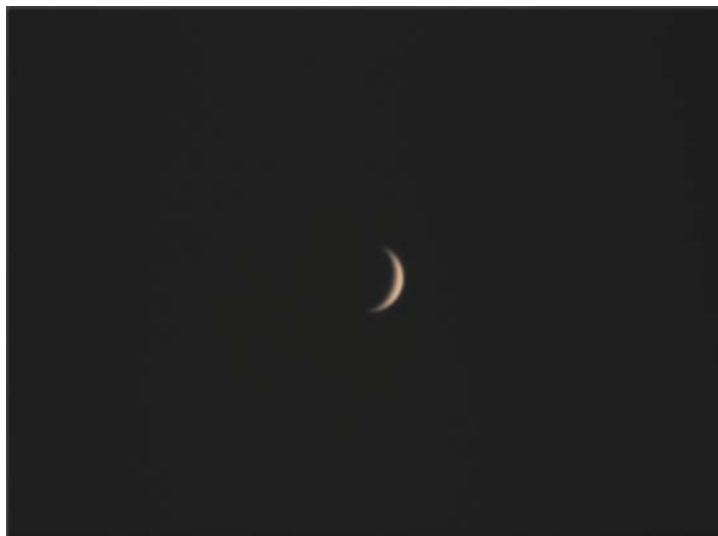
tially be observed by the sensitive Mast Cameras on the rover Curiosity.

Of course, a lot can happen in the coming year. I'm old enough to recall how the much-heralded Comet Kohoutek (C/1973 E1), whose apparition was over-hyped, ultimately proved very disappointing (read: "complete dud"). And yet, Comet ISON has "turned on" very early — it's still $6\frac{1}{4}$ a.u. from the Sun, well beyond Jupiter's orbit. Moreover, its orbit bears striking similarity to that of the Great Comet of 1680, a dazzler with a very long tail so bright that that reportedly could be seen in daylight. Dynamacists are wondering whether that object and Comet ISON are fragments of the same parent body.



As plotted by the Jet Propulsion Laboratory's "Horizons" system, Comet ISON (C/2012 S1) will pass very close to the Sun — but not crash into it — in late November 2013. At that time it might be at least magnitude -10 — bright enough to be spotted despite very strong solar glare. NASA / JPL

Regardless, it's been a long dry spell since Comet Hale-Bopp (C/1995 O1) put on its long-running show in 1997 — though Comet 17P/Holmes briefly caught our eye in 2007). Now prospects are good for beautiful appearance from not one but *two* celestial visitors next year. [Comet Pan-STARRS](#) could provide the warm-up act in March, followed by headliner Comet ISON eight months later.



September Meeting Minutes

(Continued from page 3)

Brian thanked Matt for his D. of O. Report, thanked members and guests for their attending, reminded everyone to visit the Hallam Observatory monthly Open House dates and the October meeting then adjourned the meeting.

The meeting was **adjourned at 9:39 p.m.**

Next meeting will be on October 16, 2012 at the Ojibway Nature Centre.



Robotics demo by "Sabre Bytes" students during the September membership meeting. Photo by: Art Rae

Calendars

Our Treasurer, Greg Mockler is taking orders for the 2013 Calendar. Price will be \$17.50 including S&H and HST if gets over 10 orders. Please see Greg at the September meeting.

For Sale

Nikon D300S DSLR (body only, but with battery and charger - **\$700.00**.

Nikon D5000 DSLR (body only, but with battery and charger **\$350.00**.

Canon T2i DSLR (body only but with battery and charger **\$350.00**.

Contact Mike Mastronardi at: Phone: (519) 966-2250, Cell: (519) 965-1705, or email: michael.mastronardi@stantec.com

Orion SkyView Pro 120 - 4.7" f/8.3 achromatic refractor. Includes custom fitted case, dew shield, dual speed focuser, visual back, 2 "to 1 1/4" adaptor, 1 1/4" Sirius Optics MV1 filter to reduce chromatic aberration, Kendrick Flocking inside tube,

Proposed 2013 Council of the RASC - Windsor Centre

Elected Officers

	<i>Open Position</i>
President	
1st Vice-President	Brian Thomas
2nd Vice-President	Sue Iihola
Secretary	Art Rae
Treasurer	Greg Mockler
National Council Rep.	Mike Mastronardi

Councilors

Tina Chichkan	Randy Groundwater
Steve Mastellotto	Matt McCall
Steve Pellarin	Dave Panton
Paul Preney	Dr. Susan Sawyer-Beaulieu
Dan Taylor	C. Joady Ulrich

Appointed Officers

Honorary President	Dr. William Baylis
Past-President	Paul Pratt
Librarian	Rick Marion
Recording Secretary	Art Rae
Public Education Director	Matt McCall
Public Relations Director	Sue Iihola
Directors of Observing	Steve Pellarin
	<i>Open Position</i>
	Matt McCall
	Dan Taylor
	Dave Panton
	Steve Mastellotto
	Steve Mastellotto
Light Pollution Abatement Dir.	
Hallam Observatory Director	
Aurora Editor	
Webmaster	

Orion mounting rings with Vixen style dovetail plate, Wilcox rings allow for easy tube rotation, 8x30 Orion finder and all dust caps and covers. Note this is an OTA package only and does not include a mount, tripod or eyepiece diagonal. Scope has been used since 2003 and is in mint condition. **\$400.00**.

Also available separately - Orion full aperture glass **Solar Filter** - current retail is **\$80.00**, Orion **8mm Stratus Eyepiece** - currently **\$140**, Orion SteadyPix **camera mount** - currently **\$25**, and a **Baader Semi-APO filter**. Everything is negotiable. Contact Mel Richardson at: Phone (519) 948-5914 or email: ib-melrod@yahoo.com.

Member Astrophotos



Top Left: Orion rising over the trees by Scott Stuckless from the RASC - London Centre observing site near Fingal. **Top Right:** The Fireworks Galaxy (NGC 6946) received its name because it has had 8 supernovae in the last 100 years. Image is by Brian Thomas and is 45 x 4 minute exposures for an incredible total of 3 hours through the C-14 at Hallam and his Canon 5D at ISO 800. **Middle Left:** M33 imaged from the city by Pete Barbaro is a stack of 33 x 3 minute images at ISO 1000. **Middle Right:** The Veil Nebula imaged by Rick Marion using his modified Canon 40D and the AT111 scope at Hallam is a stack of 26 images of 5 minute exposures at ISO 800. **Bottom Left:** Brian Thomas captured this aurora on October 1 from his backyard. **Bottom Right:** Steve Mastellotto captured M52 and the Bubble Neb-



ula with his SBIG 8300c CCD camera and the AT111 at Hallam. This image is a stack of 24 x 5 minute exposures.