

AURORA



Earth Day 2010 by Art Rae

On Sunday April 25, 2010 the RASC - Windsor Centre participated in the 2010 Earth Day celebration at Mic Mac Park.

It didn't rain in the tent on Earth Day so the telescopes stayed dry. So did the participants from our Centre who introduced lots of visitors to the annual Windsor event. Participants streamed by the displays set up that included two showing the history of astronomy and a photo show of astro images captured by our members and an essay on light pollution and abatement. By mid afternoon hopes grew thin as to whether the sky might lighten up so the solar telescopes could be operated. But inside lots of people were happy to receive the information and handouts that were presented.

Talking to visitors and giving them information handouts and star wheels were Randy Groundwater, Susan Sawyer-Beaulieu, Peter Bondy, Tina Chichkan, Steve Pellarin, Art Rae and our President Paul Pratt. Stopping by were Juliana Grigorescu and Past President Pierre Boulos.



Above photo by Art Rae. See page 5 for more Earth Day photos by Art.

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Calendar of Events

Our next meeting...

Tuesday June 15, 2010

7:30 p.m.

at

Maidstone K of C Hall

10720 County Road 34 (Old Highway #3)

Main Speaker...

Dave McCarter (RASC - London Centre)

Topic...

“Observing Trip to the Atacama Desert”

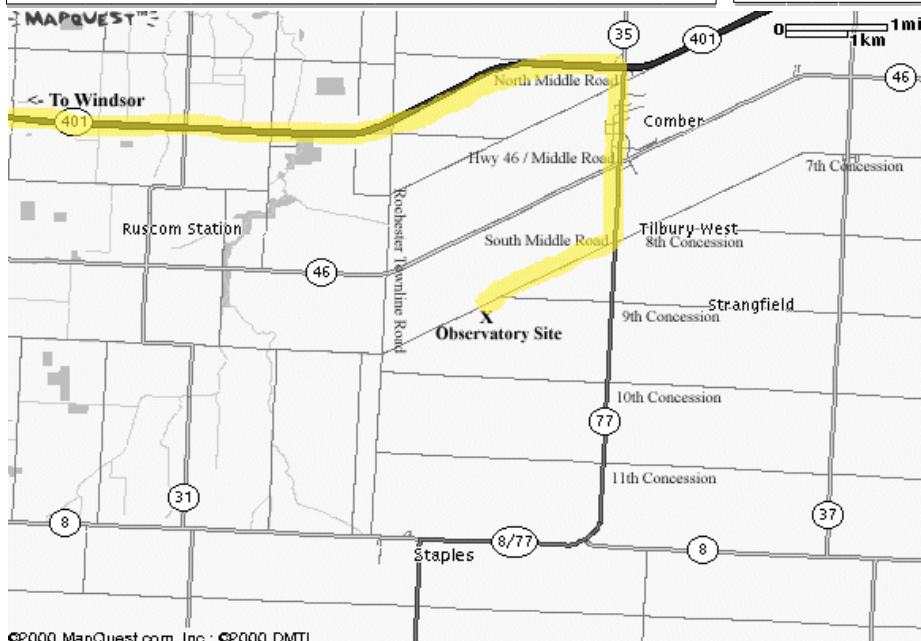
Activities...

Open House Night at Hallam: Saturday May 22nd starting at 9:30 p.m..

Asteroid Ceres passes through the Lagoon Nebula on May 31 and June 1. The Moon will be nearby.

Council Meeting: Tuesday June 8, 2010 starting at 7:25 p.m. at Steve Mastellotto's house.

Windsor Centre Picnic: Saturday June 12 at Hallam Observatory beginning at 6:00 p.m. The Centre will be providing BBQ'd hot dogs and hamburgers and you are asked to bring a side dish, something to drink (remember no alcohol is allowed at Hallam) and your lawn chair. Weather permitting we will also be observing after the sun sets so bring some warm clothes and mosquito repellent.



Hallam Observatory Site

Directions: The map above 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.

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 and December. The August, October, January, March and May issues are full newsletters (usually 6 pages) with a number of member submitted articles. The September, November, February, April and June issues are short flyers (2 pages) with one short article.

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 K of C Maidstone Recreation 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. And optionally the RASC Journal 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.

April 2010 Meeting Minutes by Dave Panton

Minutes from the meeting of April 20, 2010 held at the Maidstone Recreation Centre and chaired by President Paul Pratt.

Paul opened the meeting with an appeal for a volunteer or two to staff the kitchen to set up for coffee break as Tom Sobocan was unable to officiate. Donna Ronconi and Barb volunteered and took on this important duty.

The minutes from the March meeting were read and accepted after a motion by Pierre Boulos seconded by Barry Martin.

Update on the Public Observing Sessions of April 17th by Steve Pellarin: Two events were widely publicized in print and on radio to be held at the riverfront park and the West side of Malden Park. A day prior, Steve explained the weather did not look promising so all but one (Randy Groundwater) of the volunteers were contacted the night before advising them the events were canceled. Notifying the public is an impossibility and inevitably some will show up expecting the advertised event to be held. This is exactly what happened leaving an unknown Randy alone at Malden Park with one telescope and a crowd of people under an unexpected clear sky. Randy made urgent phone calls to obtain help, and find Steve to come and assist.

If there is a lesson we can learn, it is straight forward. Once an RASC Windsor event is publicized there is a commitment to be there no matter the circumstances. Dave Panton pointed out we follow that practice at Hallam on public open house nights. People come under virtually impossible conditions including total overcast and pouring rain.

Main Talk: "Mars Update" by Steve Pellarin

A series of photos showed how and where the Mars rovers have traveled and some of the many discoveries they have made over their much longer than expected useful lifetimes. Poor little Opportunity is stuck forever in a bed of soft powdery material and has become a fixed base observer. Spirit has one frozen wheel dragged along creating a little trench revealing a little more about the material just below the visible surface.

A new Mars science lab, also on six wheels and larger is being prepared for much more extensive travel and comprehensive analysis of the rocks and other materials it may encounter on it's travels. It's prime task is to find evidence of water. Nuclear powered, it can operate "24/7" Mars time. Steve told of the many staff working on Earth controlling Mars rovers must work on Mars time and wear watches that run on a day about 40 minutes longer than Earth days. In turn this creates all manner of difficulties in their personal lives.

The Mars Orbiter is slowly gathering a very comprehensive and highly detailed map of the surface. The data is not only very interesting, it is essential in planning future missions to Mars. The unrelated Herschel probe, launched last May to gather more data in the infra-red and other background radiation has suffered many technical problems and to date has not performed as expected.

Paul thanked Steve for his enthusiastic presentation.

Observers Report, Paul Pratt: The big Earth event is the Icelandic volcano eruption and spread of fine dust over a wide area to the East including all of Europe. Darkening the skies also happened on Earth Hour when people voluntarily reduced electricity usage for one hour. In Ontario the average power consumed declined by 560 Mw. during that time. Hong Kong enjoyed a near black out. Beyond our solar system Paul reported there were now over 400 confirmed planets orbiting stars within our observing capabilities.

The Sun has a blank face as it leaves it's 11 year sunspot minimum. At sunset Paul caught a nice photo of Venus and Mercury in a Detroit sunset. Paul reviewed the positions of the major observable planets for the month. Some observing situations are unique in the coming month, among them the Moon and Mars will be in the beehive cluster.

For those inclined, rise early the morning of Earth day and look for some Lyrid meteors. Some very nice Hubble shots of M81 and M82 in Ursa Major were shown as well as the Leo triplet of galaxies.

Dr. Baylis thanked Paul for his observers report. He also announced he was selling tickets for the upcoming annual **Science Centre Dinner**.

Break Period and 50/50 Draw: Break period allowed members and guests to enjoy coffee, hot chocolate and Tim Horton's bakery delights while socializing with others. John Huschilt won and donated the 50/50 draw prize to our treasury.

Coming Events

April 25th is **Earth Day** at Mic Mac park and RASC Windsor Centre will set up a display including light pollution concerns.

On May 8th The University of Windsor is holding a "**Science Rendezvous**". Solar observing will be done from the riverfront aided by RASC Windsor Centre members. In the evening star party is to be held at Hallam.

The next **Hallam public open house** will be held on May 22nd at 9:30 p.m.

Reports

Secretary, Dave Panton: back on the job after a recent disability had a nothing to report.

Treasurer, Greg Mockler: reported our current bank balance is \$5,590.

Librarian, Rick Marion: had a nothing to report.

Newsletter Editor, Steve Mastellotto: can always use more

(Continued on page 5)

Hallam Happenings by Dave Panton

The big news from Hallam is the telescope relocation project completion in time for the April open house. Thanks to all who worked hard on the project. Special thanks to Rick Marion and his employer for allowing use of their equipment to machine the big new adaptor plate. On re-assembly many steps followed, including re-leveling the telescope base by Al DesRosiers wielding a big new pair of 1 ½ inch box end wrenches donated and dedicated to this periodic task. Polar alignment by the drift method followed at night and a new “T-Point” model was created to improve pointing accuracy. The mount has a wonderful reputation world wide but for unknown reasons ours is not among the best of them. When carefully setup as above it will put all targets into the 40 mm eyepiece.

Tracking for astrophotography is subject to unavoidable mechanical variation. Star shots taken at only 30 seconds exposures exhibit slightly trailed images. The new autoguider provided and set up by Steve Mastellotto is now hard wired into the system. It is easy to use and works beautifully tracking stars very accurately. An additional aid for astrophotography is the addition of Hartmann masks made to fit both telescopes. These ancient devices make focusing DSLR cameras mounted at prime focus a cinch. Between the focus masks and autoguider we now have the capability of taking excellent photographs from Hallam.

A third piggy back camera mount was fabricated and mounted on the right end of the new adaptor plate. It is as convenient as the one on the left. The original, high on top of the C14 is rarely used.

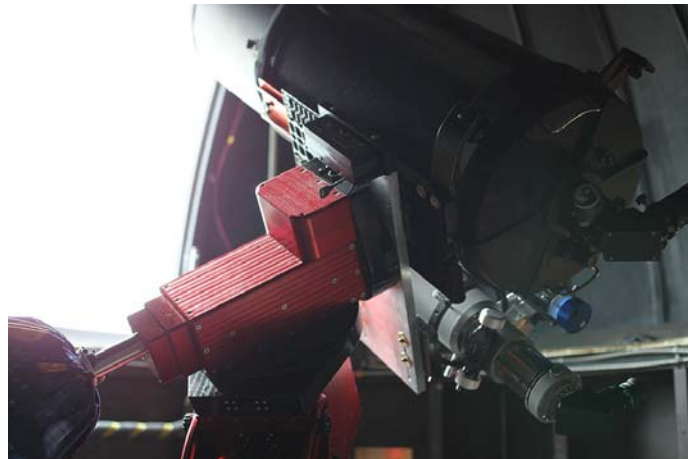
For visitors and casual observers the new setup provides two telescopes often conveniently usable simultaneously. This was done at the Science Rendezvous 2010 Star Party event on May 8th. Outside observing was impossible in the bitterly cold wind. Saturn was the hit of the evening.

On site, Moe Trepanier's father spent several hours rolling the ground flat on the whole site. Al DesRosiers has kept the lawn in wonderful condition so the place almost looks like a park. All with telescopes should keep in mind Al's big outside observing area along the pines. It is very well protected from surrounding lights.

Wind turbines are coming the Comber area, construction starting in the Fall. We expect three will be within a kilometer of Hallam but are not concerned. For those who wish to see a preview of wind turbines, look for the black arrow on our deck railing. Point your binoculars that way to see three beyond a gap in trees on the horizon. They are over 22 km away and part of the 44 turbine Port Alma Project by Kruger Energy.



Above: Hallam setup before relocation project.
Photo by Steve Mastellotto



Left: Hallam setup after relocation project.
Photo by Brian Thomas.

Right: Test autoguider photo of M3 is a stack of 4 three minute exposures by Dave Panton.



April 2010 Meeting Minutes (continued from page 3)

photos and articles by members.

Public Relations, Peter Bondy: Pete was absent so had nothing to report.

Light Pollution Abatement, Dan Taylor: Dan showed Donna Ronconi's shots taken recently in Amherstberg. The town received a substantial federal grant to make improvements and blew a big piece of it installing new lighting fixtures on the main streets. They have an antique look in daylight but are horrors of glare and light pollution, at night. They are worse than the retired cobra heads. Dan Taylor met with their public works supervisor regarding their selection.

Observatory Director, Dave Panton: reported the telescope remounting project team have finished their work and the expected benefits have already proven themselves in preliminary observing sessions.

National Council Rep., Mike Mastronardi: explained his work commitments prevent him from attending the Annual General Assembly St. John N.B. He requested a volunteer able to attend in his place and vote our proxies.

Membership, Tina Chichkan: reported our paid up member-

ship total is currently 103 people.

Second Talk: "Star Fest 2009" by Steve Pellarin

Steve and others from Windsor Centre attended this memorable event near Mount Forest last Summer. Steve had lots of photos showing the site, it's facilities and the large numbers of campers with their many telescopes. The weather for this event was also a feature of his photographs as it was the worst they have ever experienced. There was very little observing at night and one day heavy winds and rain blew tents over and damaged accessories like awnings attached to camper trailers. Passing only 4 km away a tornado, one of a record 19 in Ontario that day did severe damage in it's path and caused one fatality. Star Fest 2009 is an event to be remembered mostly for bad weather.

He also had information and photographs of two enterprising Canadians who have set up a small observatory for tourists to the Atacama desert in Chile. One of the most barren and driest places on Earth it is ideal for astronomy with clear skies almost all year. For those wish to enjoy two weeks of wonderful observing conditions air fare plus \$3,900 will buy the experience.

Meeting adjourned: 10:08 p.m.

Photos from Science Rendezvous and Earth Day 2010



Top Left: Science Rendezvous - Susan, John, Chitra Rangan (event organizer), Randy and Dan, Top Right: Susan's faux galaxy was a hit, Bottom Left: Interested visitors, Bottom Right: An Earth Day crowd shot.

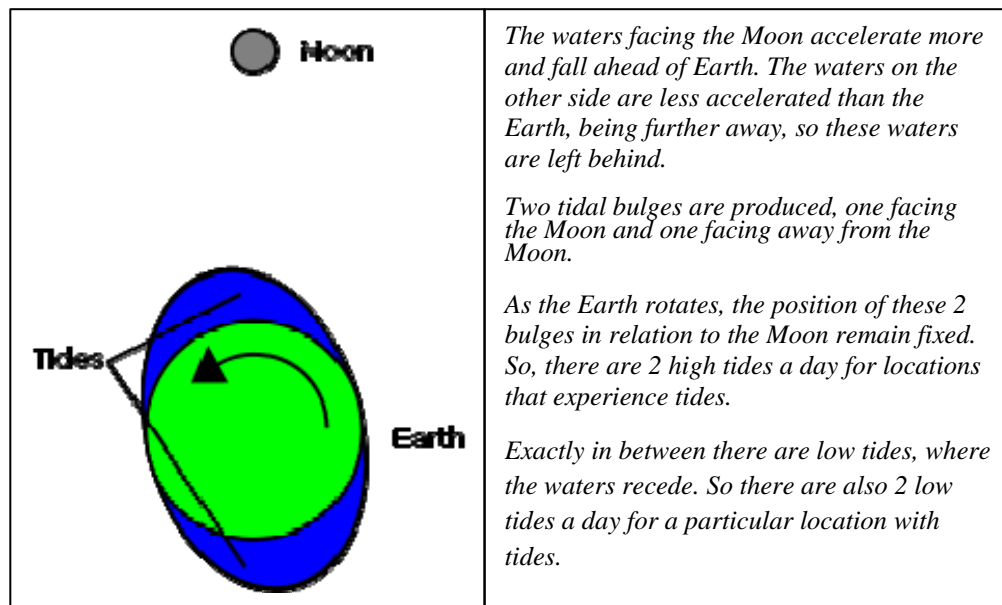
Where is the Moon Going? by Juliana Grigorescu

The Moon is our planet's companion, its satellite, a beacon in dark nights, etc (give your description for the Moon). It gives us delight with astronomical events such as eclipses, occultations, and with terrestrial events, such as the tides. We feel the "hand" of the Moon reaching down to us, and we were happy to reach down to the surface of the Moon, some 40 years ago.

The Moon has a very complicated motion. Satellites, in general, revolve in their planets' equatorial planes. It is not the case for the Moon! This is unusual. The Moon revolves, more or less, in the ecliptic plane, just like the planets. So, its orbit is more or less in the ecliptic plane ($\pm 5^\circ$). But the orbit itself rotates (precesses forward) with a period of 8 years and 10 months. This shows the effect of the Sun on the Moon.

The Earth has a very powerful effect on the Moon. It is called synchronous rotation. The Moon always shows the same face to the Earth. The far side we never see, and it is not always dark, so do not call it *the dark side of the Moon*.

But the Moon (and Sun) too has an impact on our planet; it creates tides.



The waters facing the Moon accelerate more and fall ahead of Earth. The waters on the other side are less accelerated than the Earth, being further away, so these waters are left behind.

Two tidal bulges are produced, one facing the Moon and one facing away from the Moon.

As the Earth rotates, the position of these 2 bulges in relation to the Moon remain fixed. So, there are 2 high tides a day for locations that experience tides.

Exactly in between there are low tides, where the waters recede. So there are also 2 low tides a day for a particular location with tides.

Because of the Moon's orbital motion, on two successive days high tides recur 50 minutes later. Two successive high tides happen at intervals of 12h, 25 min.

Both the Sun and the Moon can exert a pull on the waters. At New Moon (and Full Moon) the Sun, Earth and Moon are aligned and the pull is strong, producing *spring tides* (just a name for high tides). When the Moon is at First or Last Quarter the tides are lower, because the Moon is not aligned, but perpendicular to the Sun-Earth line. These are called *neap tides*. There are many, many factors influencing the tides, such as the Moon being at perigee or apogee, winds, the time of the year, etc....

Tides have ranges of one to two meters. But there are 2 places on Earth that have ranges of 16 m, and both are in Canada: Minas Basin, the eastern extremity of the Bay of Fundy in Nova Scotia and Leaf Basin in the Ungava Bay, in northern Quebec. My personal ambition is to visit Cape Split, an entrance to Minas Basin, where the air is filled with the roar produced by the turbulence of the waters growing and filling the channel. The current equals the combined flow of all the rivers and streams on Earth ($4 \text{ km}^3/\text{h}$). What a spectacle that must be!

Through tidal friction part of the kinetic rotational energy of the Earth is transformed into heat (3.5 TW, comparable to humankind's total rate of energy use). Tidal energy is a green and very promising source of energy for the future. There is already a power plant in Nova Scotia, at the Annapolis Basin, with a 20 MW peak of energy. Also, through tides angular momentum is transferred to the Moon, lengthening the day here on Earth by 1 second every 40,000 years. **The moon is going away** from us 3.8 cm per year. In one billion years from now there will be no total solar eclipses any more. But that is a distant future for us, humans.

So, where is the Moon going?