

THE MINERAL VEIN

Official Newsletter of

THE MINERAL SOCIETY OF MANITOBA

OCTOBER 2014



DR. ED CLOUTIS- MARS CURIOSITY ROVER (OUT OF THIS WORLD) REPORT

By Bob Kitlar

On Sept 23rd Dr. Ed Cloutis (Professor with U of Wpg Geography Dept) held 22 MSM members spellbound for 1 ¾ hours as he spoke on the geology & mineralogy of the Mars Rover (called **Curiosity**) launched on November 26, 2011. Rover landed by sky crane (weighs 1 Ton) on Mars in the Gale Crater August 06, 2012.

Dr. Cloutis is one of 250 scientists working on the Mars Rover team.

Curiosity's goals:

- 1). Determine whether conditions on Mars were ever habitable in the past.
- 2). Search for "evidence" of past or present life (microbiology).

Capabilities of Curiosity:

- 1). Nuclear power... can explore for 10 – 20 years.
- 2). Ability to zap rocks (1 mm in size) with a laser beam. Looking at relative differences in chemical composition. 100,000 laser shots taken thus far.
- 3). Scoop up rocks & soil for chemical, mineralogical & structural analysis using X-ray spectrometer.
- 4). Sniff the atmosphere.
- 5). Take pictures.

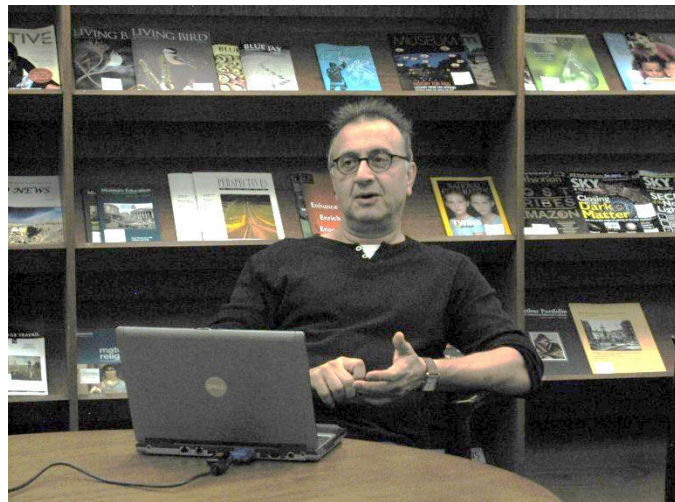
Geology Mission:

Sedimentary minerals & banded iron formation. Earth & Mars may have been quite similar in the Archean age. Gale Crater was picked because full of clays and clays mean water... sulphates mean saline lakes...was big enough (200 km across) to land safely. Target zone was +/- 25 – 50 km. Gale Crater is approx. 5 km high and has layering. Alluvium fan at Peace Vallis.

"DUSTSTONE" is the youngest rock

SULPHATES...more acidic...more desert-like

CLAY & SULPHATES are the oldest = habitable



Dr. Ed Cloutis

Smectites are "primitive" clays. Mineralogical layers are seen. Conglomerates on Mars (1' thick) suggest vigorous running water as well as the speed and depth of the water.

Dr. Cloutis has been using the Manitoba Gypsumville Crater (Lake St. Martin crypto crater) as a possible model to help explain the Gale Crater on Mars. Gypsum "fins" on Mars mimic those at Yellowknife Bay NWT...and therefore these Gale Crater structures are so being named & mapped.



September Gathering of the MSM Clan!!

THE MINERAL SOCIETY OF MANITOBA

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Yvonne Searle.....tel. 204-663 6637

The Mineral Vein is published monthly from September to June.

Meetings are held on the first Wednesday of each month from September to May inclusive at the Manitoba Museum in room P47 on the Planetarium level. They begin at 7:30 PM and feature announcements, an invited speaker and a raffle. Members are encouraged to bring along any new, interesting specimens, or specimens appropriate to the speaker's topic.

Field Trips take place from May to September to interesting sites in Manitoba plus neighbouring provinces and states.

Membership: A single membership is \$15 while a family membership is \$20. Memberships run from October to October and the annual dues are payable each October.

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UPCOMING EVENTS

1).October 1st meeting is our AGM... warm bodies are needed for a number of positions if the MSM is to continue to exist!! Membership renewals are due (rf left side of page) at the October meeting. Please make every effort to be there...as Red Green says...`We're All In This Together`.



We Want And Need You For Our MSM Executive!

2). MB Mining Convention is Nov 19 – 21.

Hello everyone! Another year's flown by...and it's time to gear up for the **2014 Manitoba Rocks! School Tours Mineral Ed Program** activities at the Manitoba Mining & Minerals Convention. It's always exciting to have school tours lining up to attend the Convention. The public open house takes place on Friday, Nov. 21st from 2 p.m. to 4 p.m., alongside the Friday afternoon School Tour.

It's great to be getting together with all of **YOU, our friends and participants!** We always appreciate your enthusiasm, fun activities and amazing displays that help make *Manitoba Rocks!*

happen! **Our 2014 participants ...**The Canadian Fossil Discovery Centre, Manitoba Prospectors & Developers Association, The Mineral Society of Manitoba, Mining Matters (Janice Williams), and our awesome gold-panning expert from B.C., Yukon Dan!

Please review all participant information details below: Note: **(**)** indicates attached Participant files.

PARTICIPANT INFORMATION

1. ****Waiver Release Forms:** All participants must complete the attached waiver release forms and return them to me by fax Fax: (204) 945-8427, by email, (or in person at 360-1395 Ellice Ave.,) by **October 3rd** (or **11th** at the latest).
2. ****Floor Plan** The floor plan is **NEW** this year, due to renovations at the Convention Centre. Yukon Dan's gold-panning is now the only activity taking place in the same area we used in previous years (Southeast Concourse). **All other participant displays** and activities will take place along the hallway (Southwest Concourse) directly west of Dan's area, and in Room 17 (and possibly Room 18). The Mineral Society (black light display and Rock Doc activity will be situated in Room 17 (near the VIP room). In the event that Room 18 becomes available, Room 17 will open through to Room 18, and Mining Matters, MPDA, and Rock Polishing will be in Room 18. Due to the nature of activities and use of glue guns (Mineral Society) and 'sand' dig boxes (CFDC), the Convention Centre won't permit these displays inside carpeted rooms (i.e. Room 17/18) due to potential damage to carpets. These activities will take place in the hallway outside as indicated in the diagram. The Convention Centre will supply extension cords for any of you who may require electricity (i.e. Mineral Society – glue guns). Please let me

know your requirements for electricity, and also what materials you may need to store overnight.

3. **Security and storage:** The gold panning area has an overnight security guard. Rooms 17 (and 18) are locked overnight once the School Tours are over. Displays in the hallway area may be covered by an additional security guard –we will advise you of this at a later date. Presenters with hallway 'displays are welcome to lock up any materials they wish to store overnight in Room 17(18). All presenters should take any valuables (i.e. laptops) home with them overnight.
4. **Set-up:** Wednesday, **November 19th, 8:30 a.m. to 11:30 a.m.** You may unload your materials at the York Street Main entrance to the Convention Centre. No dollies are available from the Convention Centre in at these doors. Please bring your own dollies for transporting materials.
5. **School Tours Hours:**
 - Wednesday, November 19th from 12:00 to 3:30 p.m. (Manitoba Rocks schools Pgm)
 - Thursday, November 20th from 9:00 a.m. to 3:30 p.m. (Manitoba Rocks schools Pgm)
 - Friday, November 21st from 9:00 a.m. to 3:30 p.m. (Manitoba Rocks schools Pgm)
 - Friday, November 21st from 2:00 p.m. to 4:00 p.m. (**Public Open House**)
6. **PARKING:** Parking passes for the Convention Centre will be available from me at the Convention Centre on Set up day, Nov. 19th. You can obtain the passes for each day in advance. Please let me know how many you need when you see me at the event during Set up. Note: having the passes doesn't guarantee a spot. The

Convention Centre parking is available only on a 'first come, first serve' basis.

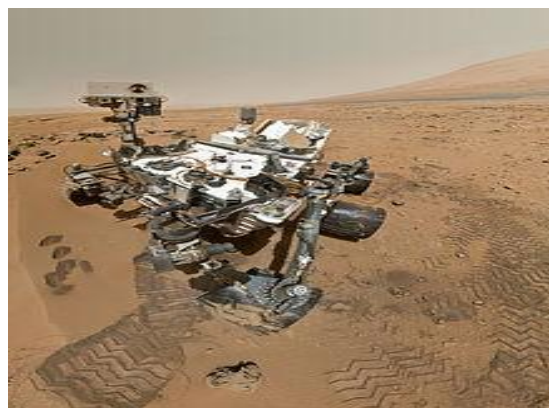
7. **LUNCH!!** We are pleased to provide you and your staff/volunteers a lunch each day during Convention as follows: **Wednesday**, (boxed lunch – in VIP Salon), **Thursday**, Premier's Luncheon (Room# to be announced), **Friday** (Bison Burger Luncheon -Trade Show area).

8. **DELEGATE BAGS:** Convention delegate bags will be available to you at the Convention Registration Desk provided that you **provide me with all of your names/volunteer names by October 30th**. Please ensure you send me a list of your organization's participants.

Thanks everyone! Please feel free to call me with any questions.

Susan Michaels

Outreach/Special Projects Coordinator
Client Services, Manitoba Geological Survey
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Learn more at **Mineral Resources Division**
and **Manitoba Rocks!**



Curiosity Selfie

http://en.wikipedia.org/wiki/Space_selfie

CURIOSITY REPORT CONT'D

Dr. Cloutis told MSM members that iron meteorites on Mars are 1 metre across... (can you imagine their weight...try to get that puppy home to your collection!!! LOL.

Mars analogies with Manitoba formations:

Mafeking Quarry

East German Creek (Swan River)

Gypsumville (Lake St. Martin)

High Rock Lake (N of Teulon...Peguis FN)

Bissett...old gold mine tailings piles weather over time and can be applied to Mars environment

West Hawk Lake

Gypsumville crater is studied by Ed's students in order to understand the Gale Crater site.

Biological side to Mars. Cryptoendoliths (colonize structural cavities within porous rocks, including spaces) such as blue- green algae (cyanobacteria), which are not visible on surface. In MB they seek a happy spot in the Gypsum. So far nothing on Mars. Curiosity's Rock / Mineral tally to date is about 200 minerals. Mission is 6 months away from "climbing the Gale Crater mountain". Hopefully as it meanders side to side in its trek, Curiosity will not get stuck!!!

Summation: Priority#1...IS GEOLOGY OF AREA SUITABLE TO HABITABILITY?

2020 Mars Mission = Evidence of Life

Curiosity website

http://www.nasa.gov/mission_pages/msl/

3).LETTER FROM MSM RECEIPT AARON KILMURY

Dear Mineral Society of Manitoba President,

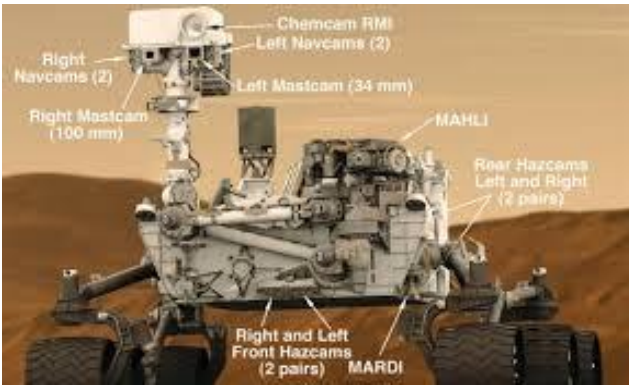
I am writing this letter out of great thanks and appreciation for the MSM Prize for this upcoming academic year. I had no expectation for this award and opening the letter in the mail today gave me great excitement. I have chosen to study vertebrate paleontology after I complete my undergraduate degree in geological sciences at the U of M, and this award has given me even more motivation to get to that step and make my dreams a reality.

I cannot thank you and the MSM enough for this and I hope this award continues to go out to grateful geology students for many more years. I wish you and the Society all the best in your endeavours and I hope to attend a few of the monthly meeting this year!

Sincerely,

Aaron Kilmury

That is all I have to report to my MSM earthlings!!!



The Curiosity rover carried two contact instruments, a microscopic imager and the Alpha Particle X-Ray Spectrometer to measure elemental composition. The 2020 rover will carry two much more capable contact instruments. The PIXL instrument will measure elements using X-ray lithochemistry while the SHERLOC instrument will measure minerals using laser Raman and fluorescence spectroscopy. Both of these instruments will have their own microscopic cameras, and the SHERLOC instrument carry a near copy of Curiosity's MAHLI microscopic imager. (MAHLI operates as both a normal camera as well as a microscopic camera. This camera, mounted on the rover's arm, has taken the selfie pictures that show the rover on the Martian surface as well as images of the wheels and beneath the rover.)

While Curiosity's Alpha Particle-X-Ray spectrometer could measure only the average composition of the surface in front of it, both PIXL and SHERLOC will make hundreds to thousands of measurements across each surface. Each measurement point will be approximately the size of a grain of sand.

<http://www.planetary.org/blogs/guest-blogs/van-kane/0807-mars-2020-instruments.html>