

Upcoming Events

February 25th, 2016 1300 hrs Private Dining Room, CRC

A Sampler of Results from CASSIOPE/ePOP

Gordon James

Deputy Mission Scientist, ePOP



Gordon James

During the 2.3 years since the launch of the "CAScade, Smallsat and IOnospheric Polar Explorer" (CASSIOPE) Canadian small satellite, the Enhanced Polar Outflow Probe (e-POP) instrument suite on CASSIOPE has steadily carried out plasma, magnetic field, radio, and optical observations of the high-latitude topside ionosphere at the high resolution.

From its elliptic polar orbit of 325×1500 km at 81° inclination, e-POP has supplied data for the scientific investigation of plasma outflows, and associated effects of auroral currents and plasma microstructures on radio propagation at an unprecedented level of detail.

An important feature of the ePOP mission is coordinated campaigns to operate simultaneously ePOP and other ground or spaceborne facilities. This talk presents an overview of the e-POP payload, its scientific objectives, and selected examples of its results.

Gordon James received the Ph.D degree in physics from the University of British Columbia in 1968. As Research Scientist, he investigated the physics of electromagnetic waves in the ionosphere at the Communications Research Centre from 1970 to 2014. This career in space radio science involved the application of data from spacecraft and sounding rockets to the study of spontaneous and artificial wave processes in the VLF to HF range. In 1998 he joined the planning of the Canadian small satellite CASSIOPE/e-POP mission, a Low-Earth-Orbit spacecraft for basic research in ionospheric physics. The satellite continues to function successfully since its launch on 29 September 2013. James serves in CASSIOPE/e-POP as the Deputy Mission Scientist and as the Principal Investigator for the Radio Receiver Instrument in the 8-instrument payload.

The satellite and its scientific packages underwent qualification at the David Florida Laboratory during 2007 - 2009. Some images of that testing appear on the following page.

All events are in the **Private Dining Room**, Bldg. 4 at 1300 hrs unless otherwise noted.

Renovations to Bldg. 2 are not expected to be completed before Summer 2016.

Friends and spouses, Shirleys Bay staff are all welcome, but **please be advised of updated security requirements on Page 4.**

Join the Friends for lunch before the presentation in the Shirleys Bay Cafeteria, Bldg. 4!

CASSIOPE Spacecraft Qualification at the CSA's David Florida Laboratory



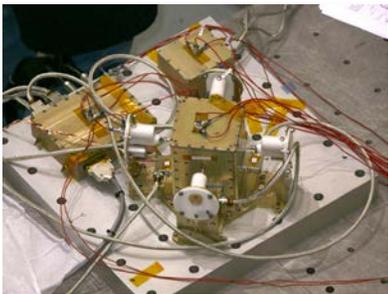
CSA/DFL Image 07-5568



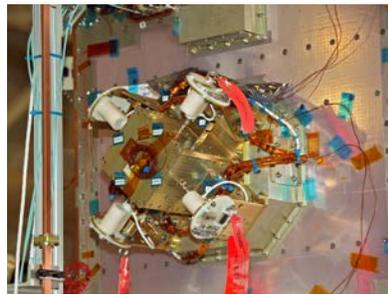
CSA/DFL Image 07-5574



CSA/DFL Image 07-5584



CSA/DFL Image 07-1404



CSA/DFL Image 09-0524



CSA/DFL Image 08-0081



CSA/DFL Image 09-0926



CSA/DFL Image 09-1087



CSA/DFL Image 09-1245

Image Descriptions:

07-5568 Antenna testing, DFL RF Range

07-5574 Antenna testing; Wilf Lauber and Siva Palananithan

07-5584 Pierre Charron and Gordon James examine results

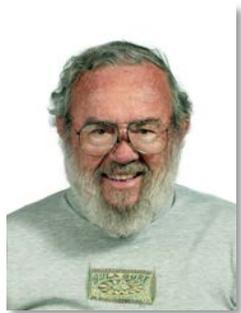
07-1404 Instrumentation vibration qualification

09-0524 CASSIOPE e-POP Radio Receiver Instrument

09-0526 Installation of solar blankets

09-1087, 09-1245 View of spacecraft in thermal vacuum chamber

08-0081 Artist's concept of e-POP Mission



Colin Billowes

Billowes' Rant

Adventures in Solar and Wind Power

I've just watched a BBC video clip on a solar electric plant in Morocco. It consists of a vast array of curved aluminum mirrors which heat oil in a pipe placed at the focal point. This hot oil is used to generate steam in a conventional steam turbine plant. But the big advance, according to the BBC, is that they take some of the power generated during the day and use it to heat sodium chloride stored in a mammoth nearby tank. During the night, the heat stored in the salt is recovered to drive the steam turbines to provide 24/7 electric power.

Absolutely nothing new in this – it's been done many times before in various forms. Typically, not a word was said about the costs. Clearly the capital costs are high and the long term operating costs are not going to be trivial.

And then there is the question of the 24/7 claims. I've lived in desert countries with over 300 days of sunshine a year but I don't think there is any place on earth which does not have some consecutive overcast days. I know from painful experience that in the southern Sahara there can be as many as seven consecutive days of overcast weather which sure knocks the hell out of any allegedly continuous solar-electric system.

I tell this story because of the massive amounts of research and subsidies still going into solar and wind energy in Ontario, much of which, in my opinion, is a total waste of money. Current Ontario electric power is: Nuclear 61.1% Hydro 22.4% Gas 12.1%, wind 3.7%, Biofuel (Garbage) <1%, Solar <1%. Thus 83% of our power is green and another 12% is natural gas, which is generally considered to be fairly clean.

So why are we bothering to spend all this money subsidizing technologies which currently only provide about 4% of our power – and that's only when it's sunny and windy - at heavily subsidized costs? In fact, now that it has been decided to renovate the [Darlington Nuclear Plant](#), we probably won't even need solar, wind or natural gas power in the future.

OK you may say – we are all scientists and we should support technical R&D. Sure we should when it is sensible, has good prospects of real benefits and the cost is reasonable. But wind and solar do not fit this criteria - they are no longer new technology and they will never compete on costs. No matter how much money we put into wind and solar, costs and efficiencies cannot fall much further.

One way of illustrating what this foolish policy is costing us can be gained from comparing the retail cost of power in Ontario, which at one time was among the world's cheapest, but which has risen dramatically in the last few years, with that of the Florida Power company whose retail cost of power has actually fallen slightly in the same period – and they ain't got no hydro! And they don't have much solar or wind – hurricanes do them in!

In my opinion, the whole wind and solar powered energy program has become a giant rip-off and we will be paying for it for many years to come.

[Colin Billowes](#)

As always, Colin welcomes your comments!



CRC Image 08-3679

Visitor Access

Please remember that we need to provide a Visitor Clearance Request (VCR) short-list of members who plan to attend **any** CRC events.

Accordingly, if you plan to attend the February 25th lecture, you **must notify Andre Kennedy of your intention to do so by February 23rd**.

If you do not state your intention to attend in advance, you will be denied access to CRC at the Reception Centre.

Please contact our [Badge and Access Coordinator Andre Kennedy](#) for details and action.

Annual CRC Curling Bonspiel 2016

The following is a message from Lloyd Perrier who is organizing this year's event.

Hello Curlers,

The CRC 45th Annual Bonspiel will have a change of venue this year. It will be held at the [Almonte Curling Club](#) on April 1st, 2016.

I am hoping to get 2 full draws (16 teams) but I can make a go of it if I get at least 8 teams. If we only get 8 teams, we will start at 10:00am, have lunch after the first game and curl the second game after lunch.

The second change will be that I will not be buying a prize for all participants as has been the custom. I will have a prize for the winning team, with the presentation of the trophy and a consolation prize for the team that tries the hardest.

If you are entering a team, [please complete the entry form](#) and return it to me by March 1st. If you would like to curl but are not on a team, [send me an email](#) indicating what level you curl at and I will try to find a place for you. I would like to make a decision by early March, whether it is a go or not.

Hope to see you all on April Fool's Day in Almonte.

Lloyd

lloyd.perrier@gmail.com



From the Image Archives... 20th Anniversary DOC Group Images

From old buildings in our last issue, to old staff members in this one! During the 20th Anniversary of Communications Canada in 1988-1989, group photographs were taken of every section both at 300 Slater Street and at CRC. Here are a few... please let us know if you'd like to see more in future issues!

(Please click on any image to download a full-size version)



CRC Image 89-0690, Materiel Management



CRC Image 89-0759, Plant Engineering



CRC Image 89-1044, DSAT



CRC Image 89-1020, DIP



CRC Image 89-1025, DDR



CRC Image 89-1051, DRC

Upcoming Events

March 31st, 2016



Democratizing the Provision of Earth Observation Data

The [Urthecast](#) Story, presented by Mac Evans

CRC Private Dining Room, 1300 hours

Message From The Chair

Do you have any suggestions for projects that your Friends' Board might undertake? Do you have a collection of images that we might freely digitize?

Or stories about work at DRTE/CRC that might make an interesting article for our newsletter? We have a great archive of images from the CRC collection that can be used to illustrate many of the early research projects on the campus.

Our organization is only as good as the support of its members. We welcome all contributions for our newsletters or website, whether those be old photographs, reminiscences, or just web-links to items that might be of interest to our members.

Please show your support by attending our presentations! And please, keep your comments coming!

John A. Brebner, Chair

Contact us...

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