

CASCA Education and Public Outreach Committee Report

May 10, 2015

Submitted by Mike Reid (Chair)

This report covers the period June 2014 to May 2015.

Current Committee Members

The current membership of the CASCA EPO Committee consists of:

- Chair: Michael Reid (2014-2017), University of Toronto/Dunlap Institute
- Vice-chair: Joanne Rosvick (2005-16) Thompson Rivers University
- Julie Bolduc-Duval (2010-16) CEGEP de Thetford
- Jan Cami (2008-17) University of Western Ontario
- Eric Chisholm (2010-16) National Research Council
- Robert Cockcroft (2014-2017) McMaster University
- Sara Ellison (2014-2017) University of Victoria
- Phil Langill (2014-2017) Rothney Astrophysical Observatory/UCalgary
- Ian Short (2009-16) Saint Mary's University

Major Activities, 2014-2015

New and Departing Members

Outgoing committee chair Dennis Crabtree handed over leadership of the committee to incoming chair Mike Reid. The committee thanks Dennis for his many years of service as a committee member and as its chair. This year, committee members Louise Edwards and Gordon Sarty completed their terms with the committee. The committee thanks them for their service.

Membership Renewal

To try to strengthen the connection between the EPO and research communities, as well as to replace outgoing committee members, the committee recruited new members Sara Ellison, Robert Cockcroft, and Phil Langill.

Tracking EPO Activities Nationally

For many years, Dennis Crabtree has maintained a Google form which allows EPO activities to be recorded and tracked. While the data gathered through this form have proven

very useful, the form has many limitations. It is difficult to input recurring events, reminders are not automatically sent to remind people to fill it out, the entire form has to be filled out every time for each new event (i.e. there are no “accounts” that store ID information), there is no way for users to see which events have already been submitted, and users cannot access the submitted information. Thus, in the fall of 2014, the EPO committee recommended to the CASCA Board that a new dedicated site be created that would address some of the shortcomings of the existing system. The Board was receptive to this idea. However, in the process of trying to implement this idea, the committee got sidetracked by the next item on this list.

Renewing cascaeducation.ca

The committee’s discussions about gathering EPO reports on the web led to a discussion about CASCA’s EPO web presence. For many years, CASCA provided small but sustained funding for updates to be made to cascaeducation.ca. That support stopped several years ago and the site is now badly out of date, with many broken links. The committee considered a proposal to redevelop cascaeducation.ca from Jennifer West, who developed the current version of casca.ca. The consensus among the committee was that, although cascaeducation.ca was useful, its structure as mainly a list of links is not as relevant today, when Google is so powerful, as it was when the site was first created. Nevertheless, the site should not be left in its current embarrassing state. Jennifer has already put together a very reasonable replacement which, while not a lot more ambitious than the current version, is at least more modern and up to date. Thus, the committee recommends that the Board contract Jennifer to launch her new version of cascaeducation.ca. It further recommends that money be set aside annually (in the amount of a thousand dollars or so) to pay Jennifer or someone with similar aptitudes to keep the site up to date. However, see the next item in this list.

Creating a National Teacher Outreach Program

In the course of its discussions about cascaeducation.ca, the committee began discussing CASCA’s broader national outreach objectives, specifically with regard to teachers. At around this time, committee chair Mike Reid was approached by RASC president Randy Atwood, who wanted to know about opportunities for the RASC and CASCA to collaborate on teacher outreach. This has led to a very profitable discussion about a national strategy for teacher outreach.

In March 2015, Mike Reid convened a discussion among the heads of several agencies with interests in teacher outreach: CASCA, the RASC, the FAAQ, Discover the Universe, and the Dunlap Institute. Over the course of a pair of group telecons and several one-on-one meetings, CASCA, the RASC, and Dunlap agreed in principle to sponsor a full-time coordinator for a national teacher outreach program. As of our last telecon in early May, 2015, it was decided that this group would meet again after CASCA, once CASCA VP Bob Abraham had pitched the idea to the CASCA board.

International Year of Light

The EPO committee was approached a few times in late 2014 about its efforts in relation to the International Year of Light. Unfortunately, the timeline for us to develop a major outreach initiative in support of the IYL was too short. The committee chose instead to focus on laying the groundwork for future long-term programs.

Reports on Individual Programs

Discover the Universe

Discover the Universe (DU) is a online astronomy training program for teachers and informal educators across Canada. It is offered by CASCA, the Royal Astronomical Society of Canada (RASC) and the Fédération des astronomes amateurs du Québec (FAAQ). All our programs are offered in English and French by our coordinator Julie Bolduc-Duval.

Between June 2014 and May 2015, DU reached 833 teachers and educators through different activities:

- 3-week workshops for teachers - Fall 2014 and Spring 2015
- 3-week workshop for informal educators – June 2014
- 5 different webinars throughout the year
 - October 2014: Eclipses and photography with guest speaker Alan Dyer (English) - Eclipses, presented by Julie (French)
 - November 2014: Rosetta mission
 - December 2014: TMT, with guest speaker Luc Simard
 - February 2015: Astronomy news and 2015 preview
 - April 2015: Cosmic Light

DU was also very successful with fundraising as we secured over \$85,000 from different sources for 2015, which is a nice improvement of our annual \$20 000/year budget in 2012-2014. Money comes from PromoScience-NSERC (\$25,000), NovaScience-Quebec government (\$30,642) and the IAU Office for astronomy development (~ \$9800). CASCA has also agreed to provide \$20,000 per year for three years – THANK YOU! This new funding will allow us to develop new projects and invest in marketing while maintaining our high-quality and much-appreciated programs.

Julie Bolduc-Duval was invited by the *Canada Science and Technology Museum* in Ottawa to present the astronomy content of their 3-day national teacher training workshop in July 2014. She also volunteered to present a few talks in local schools and astronomy clubs.

Reports from Individual Committee Members

Robert Cockcroft

Robert Cockcroft (Manager) and Sarah Symons (Director) oversee McMaster's McCallion Planetarium which averages 300 live and interactive shows per year (or approximately 10 000 visitors per year) to public and private group audiences alike. He also trains graduate students to use the Digitalium Alpha 2 that the dome houses, in addition to developing their public speaking skills. Cockcroft was also recently awarded a small grant to develop shows in collaboration with First Nations' members that will be based on First Nations' folklore and culture.

In this role as Planetarium Manager, he also fields regular questions from local media. He is also involved with the other two astronomy outreach programs on McMaster campus: the Origins Institute's 3D Theatre, and Sidewalk Astronomy.

Cockcroft's research interests include ancient Egyptian astronomy; over the last year, he has been invited to speak at several of the southern Ontario amateur astronomy clubs, and other private groups, to discuss this topic and the latest results from his recent (2013) mission to Egypt.

Cockcroft teaches several courses, including a third-year astronomy course to students in McMaster's Honours Integrated Science Program. The material is similar to that of many first-year introductory astronomy courses, but also teaches students how to teach.

Ian Short

Ian Short developed a unique Web-based application called GrayStar that allows Instructors and students with no research-grade computational skills, or access to research-grade computers, to compute stellar atmospheric models and spectral line profiles with ad hoc input parameters, and to visualize associated structure plots and observables, using nothing other than a common WWW browser running on a commodity operating system. The output is aimed at demonstrating stellar astronomy and astrophysics typical of the 2nd and 3rd year undergraduate curriculum, and for 1st year courses designed for science majors. The code is written entirely in JavaScript and HTML and runs reliably on any platform typically found in a classroom, undergraduate computing lab, or in a student's possession, including mobile platforms. The code takes a few seconds to compute a model and is suitable for ad hoc demonstrations during lectures and in exploratory investigation in lab-style assignments. Quantitative results can be cut and paste from the HTML output into a spreadsheet for lab reporting, and more advanced students can see and capture the source code using common WWW-browser developer's tools. GrayStar source files are available for download for local installations that can then be modified and adapted by individual users. Short published a

refereed paper on GrayStar with suggested lab ideas (see Short, C. I., 2014, JRASC, 108, 230), and gave a presentation on how to use GrayStar for various pedagogical goals to an audience of about 35 undergraduate and graduate students and faculty at Saint Mary's University in October 2014. (See www.ap.smu.ca/~ishort/GrayStar/ and www.facebook.com/GrayStarModels)