

A Brief History of ACURA

In early 2000 the Canadian Astronomical Society (CASCA) published and undertook the promotion of the first Canadian Long Range Plan for Astronomy and Astrophysics (see below). ACURA is the results of an initiative launched in 2002 by Canadian universities to help promote the development of LRP projects and coordinate activities at the university level. The first meeting of the Institutional Council was held on December 16, 2002. The Board of management was constituted on June 25, 2004 and ACURA was incorporated as a not for profit organisation on January 13, 2005. As the banner below reveals, ACURA currently regroups 21 universities with graduate programs in astronomy and astrophysics. Readers are invited to consult the ACURA web site for details: By-laws, governance, meeting minutes, major projects (Thirty Meter Telescope, Square Kilometre Radio Array, etc.)

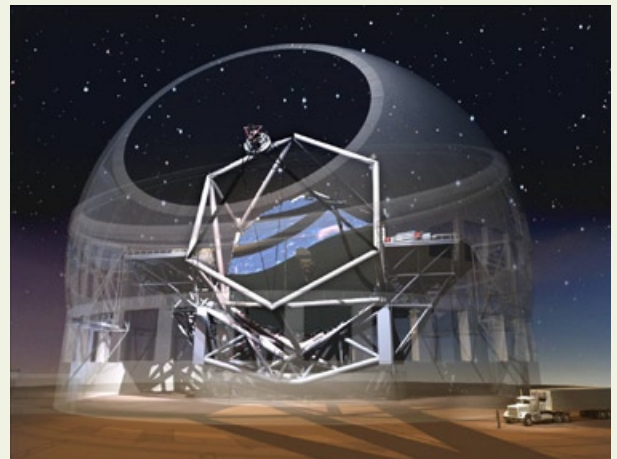
<http://www.universityastronomy.ca/>

ACURA Institutions and Representatives, 2007-08

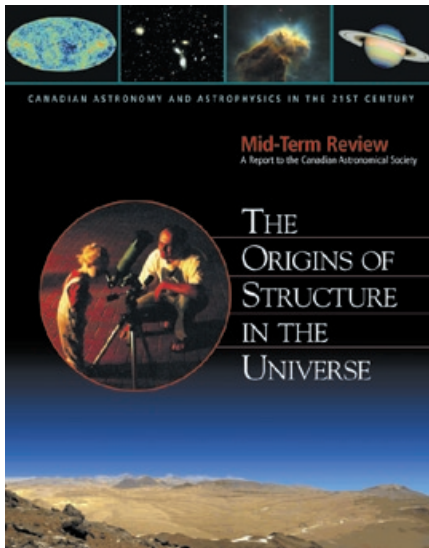
INSTITUTION	REPRESENTATIVE
Athabasca University	Prof. Martin Connors, Centre for Science
Bishop's University	Prof. Jonathan Rittenhouse, Vice-Principal
Brandon University	Dr. John Rice*, Professor emeritus
McGill University	Prof. Victoria Kaspi, Department of Physics
McMaster University	Prof. William Harris*, Department of Physics and Astronomy
Queen's University	Prof. David Hanes, Chair, Physics Department
Saint Mary's University	Prof. Malcolm Butler*, Dean of Graduate Studies
Trent University	Prof. Peter Dawson, Department of Physics
University of Alberta	Prof. John Beamish, Chair, Department of Physics
University of British Columbia	Prof. Don Brooks, Associate Vice-President Research & International
University of Calgary	Prof. Rose Goldstein*, Vice-President Research & International
Université Laval	M. Edwin Bourget*, Vice-recteur à la recherche et à la création
University of Lethbridge	Dennis Fitzpatrick, Vice-President Research
University of Manitoba	Prof. Peter G. Blunden*, Chair, Department of Physics and Astronomy
Université de Montréal	Prof. Pierre Bastien*, Département de physique
University of Regina	Prof. Katherine Bergman, Dean of Science
University of Toronto	Prof. Pekka K. Sinervo (**), Dean, Faculty of Arts and Science
University of Victoria	Prof. Richard Keeler*, Associate Vice-President Research
University of Waterloo	Prof. George Dixon, Vice-President Research
University of Western Ontario	Prof. Martin Houde*, Department of Physics and Astronomy
York University	Prof. Michael De Robertis, Chair, Department of Physics and Astronomy

(*) Board of Management Member; (**) Institutional Council Chair

The A|C|U|R|A Bulletin aims at providing a report of activities to member institutions, for the information of members and decision makers and to facilitate the task of administrators supporting ACURA projects in various forums.



Two ACURA supported projects: the Thirty Meter Telescope and the Square Kilometre Array of radio-telescopes



The Canadian Long Range Plan for Astronomy and Astrophysics: background and developments

The LRP for 2000-2010 was developed in the late 1990s with financial support from the National Research Council Herzberg Institute of Astrophysics (NRC/HIA) and the Natural Sciences and Engineering Research Council (NSERC). It was the outcome of a challenging planning and priority setting exercise by the Canadian astronomical community. The 1999 LRP was updated by its 2004 Mid-Term Review (MTR), key elements remaining unchanged.

Canadian astronomy is world class by its science, technology and training. To maintain that status, Canadian astronomers must continue working at the forefront. The engineering scale and technological sophistication of next generation telescopes require the intellectual and financial resources of the world astronomy community. The LRP and its MTR recommended that Canada become involved in a few selected world facilities well aligned to its scientific excellence and to which Canadian scientists and industries can bring unique contributions. These are the James Webb Space Telescope (JWST), successor to the Hubble Space Telescope, the Atacama Large Millimetre Array (ALMA), a Very Large Optical Telescope (VLOT) and the Square Kilometre Array (SKA) of radio-telescopes. The MTR Table on the right lists all LRP items and the recommended expenditures for the period 2005-11. The reports of the LRP and MTR Committees can be accessed through the home page of the CASCA web site <http://www.casca.ca/>.

In 2004, ACURA, Caltech, the University

of California and the U.S. National Optical Astronomy Observatory join in a detailed design study of a Thirty Meter Telescope (TMT). ACURA's has now secured full funding for its \$20.5M 25% share of the cost of this study thanks to contributions from the Canada Foundation for Innovation, NSERC, NRC/HIA, the Ontario Innovation Trust, the British Columbia Knowledge Development Fund and ACURA universities.

At the time of the 2004 MTR, our participation to JWST had been approved by the Canadian Space Agency and our contribution to ALMA had been assured through NRC. In January 2007, the NRC executed a Memorandum of Agreement with Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) expressing Canada's intent to participate in the development of the Australia SKA Pathfinder prototype in Western Australia. By 2015-20, when TMT and SKA become operational, they will likely have been the dominant cost centers of the LRP.

More detailed updates on LRP projects are available from the Coalition newsletter at http://www.casca.ca/indexA_coalition.php

Recommended Expenditures for the Period 2005-2011 (millions dollars)

	Priority	Ground	Space
World Facilities	ALMA	*	22
	SKA	*	24.5
	VLOT/TMT	*	12.5
	JWST	*	60.6
	Subtotals		171.5
Moderate Projects	Herschel/Planck	*	
	Other space projects		
	Gemini	*	21.3
	Receiver/Correlator Group		2.0
	DAO Telescopes		0.25
Subtotals		23.6	24.5
People	HIA Research Staff	*	4.3
	Herzberg Fellowships	*	3.2
	CSA Fellowships	*	1.5
	NSERC Fellowships	*	1.6
	Experimental Astro Labs		4.9
	Research grants		2.1
Subtotals		16.1	1.5
Computing	CVO		3.0
	HPC		15.0
	Equipment grants		3.5
	Subtotals		21.5
Education & Outreach		3.0	1.3
Totals		235.7	87.9

* indicates association with a strong recommendation

The Coalition for Canadian Astronomy

The Coalition was formed in 2000, when the Long Range Plan for Astronomy and Astrophysics (LRP) was launched. For the first time, representatives from the astronomical community (CASCA), academia (ACURA) and industry charted together a course for scientific and engineering excellence in a field of research.

The Coalition is a response to the challenges posed by the internationalisation of astronomy and the scope and cost of the facilities in which Canadians must participate to remain at the forefront of the discipline. The Coalition's strategy is to work with all the stakeholders and funding partners to promote the LRP and identify the funding to realize the benefits it will bring to Canada.

The Coalition has carried out an in-depth study of the hurdles laid on the road of major scientific research initiatives in Canada:

<http://www.casca.ca/media/WG%20Final%20Report%20-%20English1.pdf>

The Coalition has been advocating on behalf of the three stakeholder communities to secure funding for the LRP. To date, nearly \$85 million has been secured to implement key elements of the plan.

Since its inception, the Coalition has met with over 70 members of Parliament including cabinet ministers, ministerial staff and government officials from various departments. The Coalition and the LRP have been able to garner support from all four political parties and has a core base of supporters. The Coalition will return to Ottawa in November 2007 and in spring 2008 for several days of meetings with various politicians and government officials to seek the necessary crucial support and funding for the remaining elements of the LRP.

The Evolving ACURA-NRC Partnership

The National Research Council Canada was created in 1916 when the world largest telescope, the Dominion Astrophysical Observatory (DAO) 72-inch (1.8 m) aperture telescope, was under construction on Little Saanich Mountain near Victoria B.C. The NRC Act mandates the organisation “to operate and administer any astronomical observatory established or maintained by the Government of Canada”. In the early 1900’s the few astronomers working in Canada were all associated with either the DAO or with the Dominion Observatory in Ottawa. Today, more than 90% of the 450 Canadian Astronomical Society members in Canada are in ACURA universities.

The NRC has played and is continuing to play a crucial role in the development, support and management of astronomical facilities for Canadian astronomers. Its Herzberg Institute of Astrophysics (HIA), with its strong instrumentation divisions, is de facto the national astronomical laboratory for Canadian astronomers, much as TRIUMF is the national laboratory for subatomic physics. Canada’s contributions to the operation of off-shore facilities for ground-based astronomy, such as the Canada-France-Hawai’i Telescope, the James Clerk Maxwell Telescope and the Gemini Observatory are made by NRC. The astronomical community is widely consulted by HIA, through its Advisory

Committee. HIA has much contributed to the definition of the Long Range Plan (LRP) for Astronomy and Astrophysics. HIA has also redirected substantial internal resources toward participation in major LRP projects such as the Atacama Large Millimetre Array, the Thirty Meter Telescope and the Square Kilometre Array.

The NRC is a large organisation, of which HIA is but one of 22 Institutes. The NRC Council and Executive have to manage a wide range of expectations in setting internal priorities. The decisions reached by NRC carry an impact beyond NRC, critically so for astronomy, and it would therefore be highly desirable to have more transparency in the process, including a clear mechanism for independent community input into those decisions.

ACURA, with the Coalition, is maintaining close and productive contacts with the NRC. ACURA and its member institutions aim at devising procedures to further improve the transparency of NRC’s management of astronomical research facilities and in becoming closer partners of NRC in the funding and management of Canadian astronomy.

The success of the LRP hinges on collaboration between Canadian astronomers, universities, federal research agencies and industries. Its successful implementation requires continued communication, planning and coordinated funding by all the

partners responsible for various elements of the plan. To this end, in December 2006 ACURA proposed to NRC the creation of an oversight committee that would assist in this coordination and communication function. To be known as the Agency Committee on Canadian Astronomy (ACCA), it would have senior representatives from NRC, NSERC, CSA, Industry Canada, HIA, CASCA and ACURA.

The ACCA would meet biannually, or more frequently as considered necessary, to review the progress toward completion of the LRP and to anticipate funding and management issues.

NRC President Coulombe agreed to take the lead in inviting agencies to appoint representatives on the ACCA. All did and the first ACCA meeting, chaired by Dr. Coulombe, took place on September 10, 2007. ACURA and the Coalition await the outcomes of the Committee’s work which should be pivotal for the continuing development of Canadian astronomy.



ACURA Dues and Expenses

Member institutions are assessed annual dues whose levels are set according to the three-year rolling average of NSERC individual Discovery Grants funding received by each institution upon recommendations by the Space and Astronomy Grant Selection Committee. Grants included are those for which the research project is clearly in astronomy or astrophysics. The current dues schedule, adopted by the Institutional Council on June 4, 2006 is

Three-Year Average	Annual Dues
<\$100 000	\$1 000
\$100 000 – 300 000	\$5 000
\$300 001 – 500 000	\$10 000
>\$500 000	\$15 000

ACURA total annual income from these dues is \$103 000 or 2.3 % of the total individual Discovery Grants funding received for 2007. This income covers the following annual expenses:

• Contribution to cost of information campaigns in Ottawa	\$40 000
• Executive Director stipend (part time)	\$40 000
• Professional and clerical services	\$7 000
• Meeting and travel expenses	\$5 000
• Office expenses	\$3 000

ACURA is generously subsidised by member representatives who provide valuable time in service to the Association and cover their travel costs to ACURA meetings.

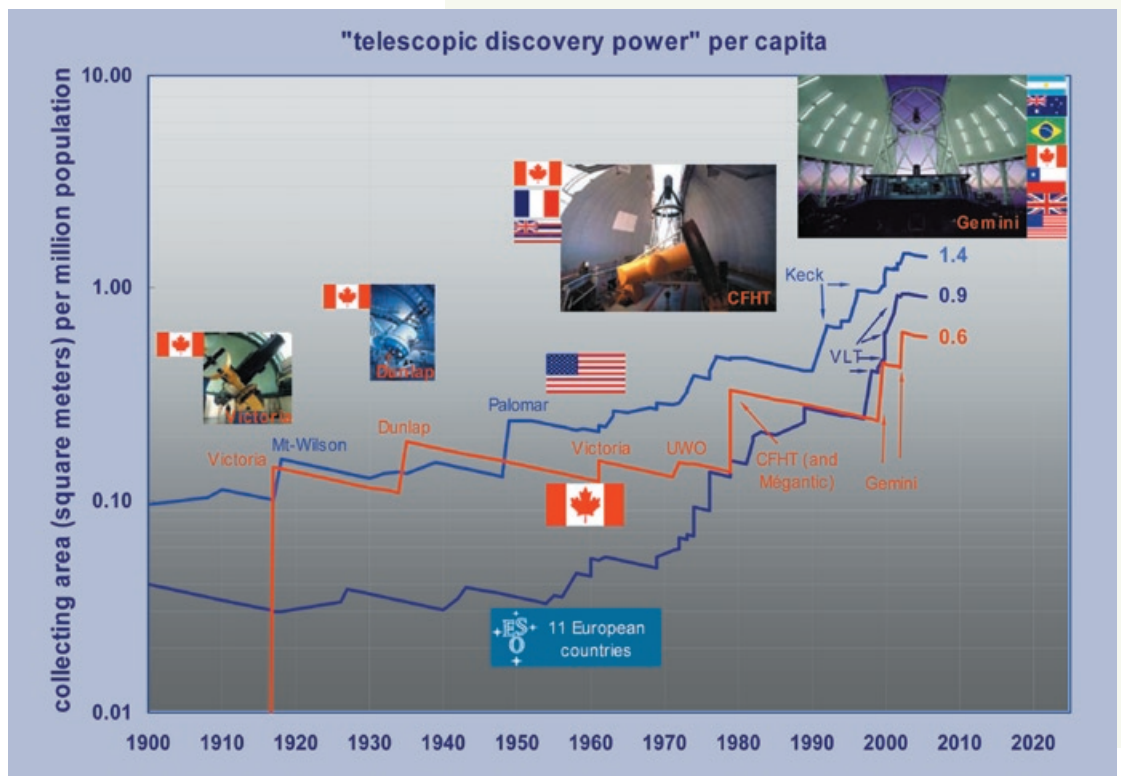
Telling Facts

- Canadian universities host vibrant astronomy programs.
 - Graduate students enrolment has increased by 60% over the last five years.
 - Astronomy professors receive 140 or 1.4% of the NSERC Individual Discovery Grants. They hold 23 or 2.8% of the Canada Research Chairs in NSERC funded disciplines.
- Canadian astronomers make discoveries whose impacts are the strongest in the world (Thompson Scientific citation records).
- Canadian industry leads the world in the engineering and construction of astronomical observatories. Half of the world largest ground-based observatories have been built by Canadian firms. The direct return on investment has been two-to-one. It has been ten-to-one including spin-of technologies (KPMG study).
- The relative populations of International Astronomical Union members are similar in Canada (7.2 per million population) and in the U.S.A (8.4).
- Canadians once led the world in “telescopic discovery power” (see below). The CFHT brought a recovery in 1979. Other developed countries currently invest much more in astronomy per capita than the Government of Canada does. A result is that other countries now have significantly more “telescopic discovery power” per capita than Canada does.

Ratios of per capita astronomy investments

Countries	current ratio	ratio with full LRP
U.S.A. / Canada	4.5	1.7
Germany / Canada	3.6	1.4
Australia / Canada	2.5	0.8

Canadian astronomers have become world leaders by focusing their limited resources on activities where they can excel. By teaming up with Canadian industry, they contribute to the creation of innovative technologies and of wealth for the nation.



Contact Us:



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for Research in Astronomy
Association canadienne d'universités
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