

ASA Message for Science Meets Parliament

National Benefit of Astronomy - the benefits to the tax payer

Australia has a long and proud tradition in astronomy. For the past 50 years, Australian astronomers have been at the forefront of their field. Today, it is one of the nation's highest impact sciences. The Australian Government recognises astronomy as a flagship Super Science and there has been significant financial investment for new facilities, particularly over the past 5 years. Australia's investment in astronomy has translated to world leading science and subsequent national and international recognition.

The past year has been a particularly big year for Australian astronomy. In 2011 Professor Brian Schmidt was a co-recipient of the Nobel Prize in Physics for his work at the Research School of Astronomy & Astrophysics at Mount Stromlo Observatory showing that the cosmos is expanding at an accelerating rate. The only other Australian Nobel Prize in Physics was in 1915! In March 2012, it was announced that Australia and New Zealand and Southern Africa would co-host the Square Kilometre Array, with Australia to host the low frequency component of the SKA. This was a wonderful announcement and will confirm Australia's place at the forefront of radio astronomy. This could also lead to global investment in Australian based infrastructure – something to emphasise to politicians!

Australian astronomers have pioneered some of the most important technological advances in astronomy over the past two decades, including the use of fibre optics and robotics in astronomy and advanced signal processing techniques. Most recently the work lead by Dr. John O'Sullivan from CSIRO in the search for exploding black holes led to the patented technology used for Wi-Fi networks.

Astronomy plays a crucial role in inspiring young people. Educators see astronomy as offering an attractive context within which students can be taught a range of scientific subjects. The ground-breaking nature of the SKA will inevitably excite and challenge young Australians to pursue careers in astronomy, engineering, and computing that could lead to further such advances in technology.

The top priorities set in the Mid Term Review of the Australian Astronomy Decadal Plan:

1. The astronomical community must ensure that Australia is in the best possible position to participate in and host the international SKA. This includes continued development and operations of ASKAP, protection of the radio quiet zone in Murchison, Western Australia, and a re-baselined operation of the existing national facilities for radio astronomy.
2. Australian astronomy needs to secure long-term access to a portfolio of astronomical facilities including access to 20 per cent of an 8-metre telescope. The community believes this best done via membership in the European Southern Observatory (ESO) but it could be alternatively pursued through a revitalised partnership with the Gemini and/or Magellan telescopes coupled to a long-term investment plan for operational and capital expenditure on next generation facilities.

3. Australian astronomy also benefits enormously from the breadth of astronomical discovery through investment in the areas of theoretical astrophysics, Antarctic astronomy and ground-based high-energy astrophysics, as well as through university-based research facilities. It is important that funding programs remain in place to support this scale of investment.

Current Issues:

Many of the strategic issues currently faced in astronomy are also relevant to other areas of the wider research and innovation sector. They include:

- The need for stable, long-term operational funding for major national and international research facilities.
- The low level of basic research grant funding available through the ARC.
- The need to build on the Super Science initiative and provide longer-term career paths for young scientists. Note that the ARC DECRA scheme, introduced in 2011 as a source of funding for early-career researchers, was highly oversubscribed in its first year (with a 12.8% success rate).
- The need for mid-career fellowships after the end of the Future Fellowship scheme in 2013.
- There needs to be more part-time and job share opportunities in research.
- High childcare costs and limited vacancies in childcare centres inhibit scientists to return to the work place after maternity/paternity breaks.
- The “Publish or Perish” landscape discourages participation in additional outreach/educational activities.
- Women are under-represented in astronomy. The current fraction of astronomy positions held by women is only 22 per cent and yet at the PhD level the fraction is closer to 50%. Why are so many women leaving research in the early-to-mid career stage?
- Career breaks have a significant impact on publication records, which are a primary marker of success for ARC grant assessments. What is the best way to measure research relative to opportunity?

ASA participants should use (but not be limited to) this list when formulating the key issues they wish to discuss with the Parliamentarians they meet during the SmP event. It is important to have a few ideas on how one could solve these issues (don't simply have a whinge.) Talk with your colleagues and think outside the box to come up with new initiatives to propose.

Astronomy Australia Ltd activities:

- The AAL will continue discussions with Government about the feasibility and timing of Australian membership in ESO in the 2015 time frame.
- AAL has received Commonwealth funds to invest in supporting ALMA access (\$20k).
- AAL has a contract with the National eResearch Collaboration Tools and Resources (NeCTAR) for \$1.65M to support the All-Sky Virtual Observatory.
- AAL received \$400k of Commonwealth funds to contribute toward MWA operations for FY2013-14.
- AAL also received funds to invest in Antarctic astronomy science planning an partnership with China (\$40k).

- In November 2011 AAL created the Astronomy Supercomputer Time Allocation Committee ([ASTAC](#)). This committee is chaired by Prof Geoff Bicknell from ANU, and is tasked with allocating time on gSTAR, and the million CPU hours available to astronomy per year on each of NCI and the Swinburne Supercomputer. In December ASTAC assisted iVEC by allocating some of the astronomy time on Epic - the first stage of the Pawsey Centre.

Mopra – was almost closed. Some funding has been secured to stave off imminent closure, but its continuing future and availability for Australian astronomers remains uncertain.

Cut to Access to Major Research Facilities Program (AMRFP):

AMRFP, managed by ANSTO, was closed on 30 June 2011. The program was the primary means for support for astronomers and students to travel overseas to observe with telescopes such as Gemini and the VLT.

Currently the AAO is providing some financial support to those observing teams who have been allocated observing time through ATAC. ANSTO also provided limited funding for travel between August and November 2012 but unfortunately this was not a reinstatement of the full program.

High Profile Astronomy Projects

Facilities and Engineering

Giant Magellan Telescope Integral-Field Spectrograph (GMTIFS)

The GMT Board announced in 2012 that GMTIFS, designed and built by the Research School of Astronomy & Astrophysics at the ANU, was selected to be among the first generation of instruments for the GMT. The other instruments are the wide-field multi-object optical spectrograph, GMACS, and the high-resolution optical spectrograph, GCLEF. GMTIFS will be the first-light instrument for the GMT Laser Tomography Adaptive Optics systems, and so will perform the first high angular resolution adaptive-optics science with GMT.

<http://rsaa.anu.edu.au/technology/instrumentation-projects/gmtifs>

HERMES

The Anglo-Australian Observatory is building the HERMES multi-object high-resolution spectrograph for the Anglo-Australian Telescope to study the stellar fossil record and determine how the Galaxy was formed. Commissioning is expected to take place in 2013.

<http://www.aao.gov.au/HERMES/>

gSTAR

Swinburne University of Technology's new \$3 million GPU Supercomputer for Theoretical Astrophysics, 'gSTAR' was launched in 2012. gSTAR represents the next generation of supercomputing, and features a compute component that is a hybrid of traditional x64 processing cores (the CPUs) and graphics processing units (GPUs). The compute nodes are combined with a petascale data store.

<http://astronomy.swin.edu.au/supercomputing/green2/>

PARKES PULSAR TIMING

The Parkes radio telescope has been the main site for Australian efforts to detect a gravitational wave background using millisecond pulsar timing. Continuing improvements in timing precision have been achieved through a suite of digital instrumentation projects from CSIRO and Swinburne University.

<http://www.atnf.csiro.au/research/pulsar/ppta/>

SkyMapper

The Australian National University (ANU) SkyMapper telescope is a state-of-the-art automated wide field survey telescope that will provide the world's first deep digital map of the southern sky. This will allow astronomers to study everything from nearby solar system objects to the most distant objects in the Universe. The collected data will be shared with astronomers around the world via the Virtual Observatory.

<http://rsaa.anu.edu.au/observatories/siding-spring-observatory/telescopes/skymapper>

Infrastructure for the Future

GIANT MAGELLAN TELESCOPE

The Australian Government has committed A\$88.4 million to partner in the construction phase of the 25-metre Giant Magellan Telescope (GMT), through the Australian National

University. GMT is a collaboration between institutions in the United States, Australia, and Korea to build a next generation optical telescope to answer fundamental questions on the nature of life, matter and energy in the Universe.

<http://www.gmto.org/>

MURCHISON RADIO ASTRONOMY OBSERVATORY

The Murchison Radio-astronomy Observatory (MRO) is Australia's candidate SKA core site as well as the location of ASKAP and other international projects – including the Murchison Wide-Field Array. The MRO provides pristine radio-quietness, superb observing conditions and has long-term government protection.

The MWA will consist of 2048 dual-polarization dipole antennas optimized for the 80-300 MHz frequency range, and will be located within the Murchison Radio astronomy Observatory (MRO), defined as a region within a 70 km radius circle in the Shire of Muchison in Western Australia.

<http://www.mwatelescope.org/index.html>

Square Kilometre Array - Australia•New Zealand

AUSTRALIAN SKA PATHFINDER (ASKAP)

CSIRO Astronomy and Space Science is building the world's leading radio telescope incorporating an innovation phased array feed design and leading edge ICT systems.

- 36 x 12m dishes
- 30 sq degree field of view
- 700 MHz – 1.8GHZ frequency coverage
- 300 MHz instantaneous bandwidth

<http://www.atnf.csiro.au/projects/askap/>

ICRAR AND THE PAWSEY SUPERCOMPUTING CENTRE

The International Centre for Radio Astronomy Research is a collaborative centre based in Perth, Western Australia to make a contribution to scientific and technical programs supporting ASKAP and the SKA. Already achieving research excellence in astronomical science and engineering, ICRAR has grown steadily since its launch in September 2009.

<http://www.icrar.org/>

In addition, the new \$80 million Pawsey Supercomputing Centre will provide advanced computing infrastructure to support SKA science and operations in Australia. Some fraction (e.g., 15% of time or 1 million core hours in 2012 on EPIC) of the computing time at the Pawsey Centre is available to the Australian Astronomy community through the AAL's Astronomy Supercomputer Time Allocation Committee.

http://www.ivec.org/Supercomputing/Pawsey_Supercomputing_Centre

Astronomy NCRIS

Through the National Collaborative Research Infrastructure Strategy (NCRIS) the Australian Government is committing \$45 million to support a range of projects to help ensure that Australian astronomers stay internationally competitive and have access to the facilities they require. Astronomy Australia Ltd (AAL) manages the NCRIS investments.

NCRIS funding for radio astronomy will be directed to the Australian SKA Pathfinder (ASKAP), a technology demonstrator for the proposed Square Kilometre Array radio telescope, and a next-generation, world-leading telescope in its own right. Funding will also be provided for the Murchison Wide-Field Array (MWA) radio telescope, a large-scale, low-frequency interferometer being constructed by a consortium of institutions from the United States, Australia and India.

In optical astronomy, NCRIS-funded projects include the further development of the Anglo-Australian Observatory, including upgrading and providing new instrumentation for the Anglo-Australian Telescope, continued access for Australian astronomers to the world-leading 8-metre class telescopes of the international Gemini and Magellan Observatories, and a contribution to the design and development phase of the proposed next-generation 25-metre Giant Magellan Telescope (GMT) in Chile.

Astronomy Outlook

Sourced from the Decadal Plan 2006

Astronomy is a profound expression of humanity's need to understand how the Universe works. We are living through a remarkable era of discovery in astronomy. For the first time we have found clear evidence for planets orbiting other stars, for massive black holes occupying the centres of our own Galaxy and many other galaxies, and for a dark energy component to the Universe whose origin and nature we have yet to fully understand. As the full complexity of the cosmos becomes apparent, today's astronomers require cross-disciplinary skills in fields as diverse as computer modelling, chemistry, fluid dynamics, statistics and even biology.

Over the coming decade astronomers in Australia and around the world will undertake fundamental research into the laws of physics on scales and in realms too extreme to examine in any laboratory. The questions that astronomers seek to answer are amongst the biggest that is possible to ask.

What is the nature of dark energy and dark matter?
How and when did the first stars form in the early Universe?
How are galaxies assembled and how do they evolve?
Is our understanding of gravity correct?
How do super-massive black holes in the cores of galaxies work?
What is the origin of evolution of cosmic magnetism?
How do stars and planetary systems form?
How common are planetary systems and conditions suitable for life?
How do stars produce and recycle the elemental building-blocks of life?

Australia has a long and proud tradition in astronomy. For the past 50 years, Australian astronomers have been at the forefront of their field. Today, it is one of the nations highest impact sciences. Australian astronomers have pioneered some of the most important technological advances in astronomy over the past two decades, including the use of fibre optics and robotics in astronomy and advanced signal processing techniques.

Astronomy plays a crucial role in inspiring young people. Astronomy is seen by educators as offering an attractive context within which students can be taught a range of scientific subjects.

Astronomy has always received the strong support of the general public. Fundamental research at the frontiers of science is an essential cultural element of any technologically advanced nation and is an important expression of our identity. Australians are justifiably proud of our positions as one of the world's most successful nations in astronomy.

Australian Astronomy Statistics

Sourced from the Decadal Plan & Mid Term Review

- An estimated A\$60M is invested annually by Australia in astronomy-related activities. Around 60% is used to fund university activities. Just over 30% is used to fund the AAO and the ATNF, both as providers of national astronomy facilities and a further 5% funds Australian 8-m telescope access and SKA.
- The five-year period between 2005-2010 has seen a major investment in new astronomy infrastructure and facilities with a total capital expenditure of \$230 million over the decade 2006-2015. This includes \$130 million for radio astronomy facilities and support (mainly for ASKAP, but also including the MWA and a 25 per cent share of the Pawsey Centre), and \$100 million for optical astronomy (mainly for GMT but also including some additional funding for the AAO).
- Australia's key observational strengths lie in the radio and the optical/infrared domains. Optical and radio astronomy account for over three quarters of the total citations gathered by Australian astronomers of the last decade.
- The total number of people involved in astronomical research in Australia has increased by more than 25 per cent since 2005. In mid 2010 there were 542 full-time-equivalent people working in technical, instrumentation, support and administrative roles.
- The fraction of astronomy positions held by women in astronomy has increased slightly to 22 per cent.
- Twelve Australian universities offer honours degrees in astrophysics.
- About 20 doctorates in astronomy are awarded per year. About one sixth of PhD graduates go on to careers outside astronomy. The number of astronomy PhD students enrolled in Australian universities increased by at least 50 per cent from 2005. In 2010 there were 237 enrolled students.

Various Australian Science Organisations

The Astronomical Society of Australia (ASA)

<http://asa.astronomy.org.au/>

The Astronomical Society of Australia (ASA) was formed in 1966 as the organisation of professional astronomers in Australia. Membership of the ASA is open to anyone contributing to the advancement of Australian astronomy or a closely related field. This means that the members are mostly active professional astronomers and postgraduate students. However some retired astronomers and distinguished amateur astronomers are also members, and several organisations are corporate members of the Society. The Society currently has approximately 550 members.

President: Dr. Kate Brooks

Astronomy Australia Limited (AAL)

<http://astronomyaustralia.org.au/>

Astronomy Australia Limited is a not-for-profit company limited by guarantee whose members are a range of Australian universities and research organisations. Its core business is to manage programmes that provide astronomers with access to national optical/infrared and radio astronomy infrastructure.

Board of Directors Chair: Professor Warrick Couch

National Committee for Astronomy (NCA)

<http://www.aao.gov.au/nca/>

The National Committee for Astronomy (NCA) is one of the National Committees of the Australian Academy of Science (AAS). The National Committee for Astronomy exists to foster astronomy in Australia, to liaise with international scientific bodies, and to advise the Council of the Australian Academy of Science on relevant matters. The NCA acts as a peak body for astronomy in Australia, with the aims of promoting the national value and benefits of the astronomical sciences, facilitating community-wide strategic planning initiatives, and managing relations between Australian astronomers and the International Astronomical Union.

Chair: Professor Elaine Sadler

Australian Institute of Physics (AIP)

<http://www.aip.org.au/>

Since the start of the AIP in late 1962 the society has grown to include over 1100 members from a diverse range of fields and interests. In December 2012, the AIP will be celebrating their 50th anniversary year with a launch of events for the next 12 months at their biennial congress at the UNSW. The AIP has served the needs and interests of professional physicists, and those with an interest in physics. Membership is open to anyone contributing to the advancement of Australian physics or a closely related field.

President: Dr. Marc Duldig

Australian Academy of Science (AAS)

<http://www.science.org.au/academy/>

The Academy was founded in 1954 and receives government grants towards its activities but has no statutory obligation to government. The objectives of the Academy are to promote science through a range of activities. The Fellowship of the Academy is made up of over 400 of Australia's top scientists. The Academy has published many reports on public issues such as national research policy setting, stem cell research, human cloning, pesticides, ecological reserves, food quality, genetic engineering, space science and climate change. The Academy also makes submissions to government ministers and parliamentary inquiries. The President of the Academy is, by virtue of that position, a member of the Prime Minister's Science, Engineering and Innovation Council. The Fellows of the Academy elect the Council, which manages the business of the Academy. The Council advises the Prime Minister on important scientific issues. The Academy is Australia's representative on the International Council for Science (ICSU) and many of its constituent organisations. There are 21 National Committees of the Academy

President: Professor Suzanne Cory, Professor of Medical Biology, University of Melbourne.

Science and Technology Australia

www.sta.org.au

Science and Technology Australia (STA) is the peak body for science and technology in Australia. STA represent the interests of some 68,000 Australian scientists and technologists. STA works to influence science and technology policy for the economic, environmental and social benefit of Australia. The STA President is a non-ministerial member of the Prime Minister's Science, Innovation and Engineering Council (PMSEIC), and this allows STA to contribute to discussions at the highest levels in policy-making in Australia. The organization was formerly known as Federation of Scientific and Technological Societies (FASTS) until June 2011.

President: Dr Catherine Foley, Chief CSIRO Materials Science and Engineering

Department of Industry, Innovation, Science, Research and Tertiary Education (IISRTE)

<http://www.innovation.gov.au>

The Department of Industry, Innovation, Science, Research and Tertiary Education strives as a key priority to encourage the sustainable growth of Australian industries by developing a national innovation system that drives knowledge creation, cutting-edge science and research, international competitiveness and greater productivity. The department is committed to developing policies and delivering programs, in partnership with stakeholders, to provide lasting economic benefits ensuring Australia's competitive future. The department also works to boost innovation by Australian industry and improve social and economic benefits for the Australian community.

The department is structured into a number of divisions including the Australian Astronomical Observatory and Questacon.

Minister for Tertiary Education, Skills, Science and Research: Senator the Hon Chris Evans

Minister for Industry and Innovation: The Hon Greg Combet MP

The Australian Research Council (ARC)

<http://www.arc.gov.au/>

The ARC is a statutory authority within the Australian Government's Department of Industry, Innovation, Science, Research and Tertiary Education Innovation portfolio. Its mission is to deliver policy and programs that advance Australian research and innovation globally and benefit the community. In seeking to achieve its mission, the ARC provides advice to the Government on research matters and manages the National Competitive Grants Program (NCGP), a significant component of Australia's investment in research and development.

Chief Executive Officer: Professor Aidan Byrne

Office of the Chief Scientist

<http://www.chiefscientist.gov.au>

The Office of the Chief Scientist supports the Chief Scientist for Australia in their role of providing independent advice to Government on a wide range of scientific and technological issues and their engagement with the science, research and industry communities, learned societies and other governments. The Chief Scientist provides high-level independent advice to the Prime Minister and other Ministers on matters relating to science, technology and innovation. The Chief Scientist is the Executive Officer of the Prime Minister's Science, Engineering and Innovation Council and report directly to the Minister for Industry, Innovation, Science, Research and Tertiary Education, the Hon Senator Chris Evans.

Australia Chief Scientist: Professor Ian Chubb

The Prime Minister's Science, Engineering and Innovation Council (PMSEIC)

<http://www.innovation.gov.au/Science/PMSEIC/>

The Prime Minister's Science, Engineering and Innovation Council (PMSEIC) is the pre-eminent science advisory body to government. Chaired by the Prime Minister and with a membership comprising of Ministers, the Chief Scientist and a select group of experts, PMSEIC provides advice to government on scientific and technological developments. In January 2012 the Prime Minister reformed the Council, which plans to meet three times a year to provide more timely independent scientific policy advice to Government on existing and emerging issues that a nation like Australia must confront. The Chief Scientist, Professor Ian Chubb, will lead the new Council, although the Prime Minister remains Chair.

Chair: The Prime Minister

CSIRO

<http://www.csiro.au>

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) is Australia's national science agency. CSIRO is an Australian Government statutory authority constituted and operating under the provisions of the Science and Industry Research Act 1949. CSIRO's primary functions under the Act are to carry out scientific research to benefit Australian industry and the community, and to contribute to the achievement of national objectives. CSIRO is accountable to the Minister for Innovation, Industry, Science and Research and is part of the Innovation, Industry, Science and Research portfolio.

Chief Executive Officer: Dr Megan Clark

The Australian Optical Society

<http://optics.org.au/>

The Australian Optical Society (AOS) is a non-profit organisation for the advancement of optics in Australia. The society was formed in 1983 for this purpose. The Society embraces anyone contributing to or interested in optics in the widest sense. The Australian Optical Society was established to provide a forum for persons involved in or in any way interested in optics, to strengthen the teaching of optics in Australia, to promote research in and other activities in optics in all its diversity, and to foster closer collaboration in optics both nationally and internationally.

President: Associate Professor Judith Dawes

Various Australian Astronomy Hubs

The Australia Telescope National Facility (ATNF)

<http://www.atnf.csiro.au>

The Australia Telescope National Facility (ATNF) sits within the CSIRO Astronomy and Space Science (CASS) division of CSIRO and supports Australia's research in radio astronomy. The ATNF operates the Australia Telescope, which consists of the Compact Array at Narrabri and the Parkes and Mopra radio telescopes. These telescopes can be used together as a long baseline array for use in Very Long Baseline Interferometry.

Director of CASS and ATNF: Professor Phil Diamond

Australian Astronomical Observatory (AAO)

<http://www.aao.gov.au/>

The Australian Astronomical Observatory is within the Australian Government's Innovation, Industry, Science and Research (IISR) portfolio. The AAO operates the Anglo-Australian and UK Schmidt telescopes and supports Australian access to Gemini and Magellan. It also builds instruments for all these telescopes.

Current Director: Professor Matthew Colless

International Centre for Radio Astronomy Research (ICRAR)

<http://www.icrar.org/>

The International Centre for Radio Astronomy Research (ICRAR) is a joint venture between the University of Western Australia and Curtin University of Technology. ICRAR has been established in Perth to make a major contribution to scientific and technical programs supporting ASKAP and the SKA.

Director: Professor Peter Quinn

ARC Centre of Excellence for All-Sky Astrophysics (CAASTRO)

<http://www.caastro.org/>

By bringing Australia's top astronomers together into a focused collaboration, CAASTRO aims to cement Australia's reputation as an international leader in astrophysical research, and to build unique expertise in wide-field radio and optical astronomy. CAASTRO also aims to position Australia to lead the science programmes planned for the SKA, a radio telescope for the 21st century that will answer fundamental questions about the origin and evolution of the Universe.

Centre Director: Professor Bryan Gaensler

The Research School of Astronomy & Astrophysics (RSAA), Mt Stromlo Observatory

<http://rsaa.anu.edu.au/>

The Research School of Astronomy and Astrophysics (RSAA) is The Australian National University's department of astronomy and astrophysics. The program at RSAA focuses on four main areas of research including Galactic archaeology, Cosmology, Planetary science, and black hole phenomena. In addition, the RSAA has a strong program in the design and implementation of advanced scientific instrumentation. RSAA astronomer, Professor Brian Schmidt, was co-recipient of the Nobel Prize for Physics in 2011 for his work at RSAA showing that the cosmos is expanding at an accelerating rate.

Current Director: Professor Harvey Butcher
In-coming Director in 2013: Professor Matthew Colless

Sydney Institute for Astronomy (SIFA)

<http://www.physics.usyd.edu.au/ioa/>

The Sydney Institute for Astronomy is a national and international leader in Astronomy and Physics, through cutting edge theoretical and observational research and the application of new technology for the next generation of instruments and telescopes. As well as being a research leader, SIFA is committed to excellence in postgraduate training and research-led undergraduate training. SIFA is also the home of CAASTRO.

SIFA Director: Professor Peter Tuthill

Swinburne Centre for Astrophysics & Supercomputing

<http://astronomy.swin.edu.au/>

The Centre for Astrophysics and Supercomputing was established in 1998 and is one of Australia's newest and fastest growing astronomy centres, and the largest astronomical group in Victoria. Swinburne is home to gSTAR. Research interests include astronomy visualization, star and planet formation, pulsars, globular clusters, supermassive black holes, galaxy evolution, and big bang cosmology.

Director: Professor Warrick Couch

Monash Centre for Astrophysics (MoCA)

<http://moca.monash.edu/>

The Monash Centre for Astrophysics was formally established in 2011, comprising researchers and students from the Schools of Physics and Mathematical Sciences at Monash University, Australia. Formerly the Centre for Stellar and Planetary Astrophysics (CSPA), the centre was intended to serve as a national focus for theoretical astrophysics in the areas of stellar and planetary science. Since the CSPA's inception in 2001, the breadth of astrophysics research at Monash has widened significantly. Current research within MoCA can be divided into seven active areas including stellar evolution and nucleosynthesis, solar physics, galaxy evolution, high-energy astrophysics, smoothed particle hydrodynamics, stellar and planetary dynamics, and General Relativity.

Director: Professor John Lattanzio

Murchison Radio-astronomy Observatory (MRO)

<http://www.atnf.csiro.au/SKA/site.html>

The MRO is Australia's candidate SKA core site as well as the location of ASKAP and other international projects – including the Murchison Wide-Field Array. The MRO is

approximately 315km north east of Geraldton and is ideal for radio astronomy as it exhibits excellent sky coverage, superb radio quietness, ionospheric stability and benign tropospheric conditions. The extremely low levels of radio-frequency interference will allow highly sensitive instruments such as ASKAP, MWA and potentially the SKA, to conduct ground-breaking astronomy research. The Australian Communications and Media Authority will protect the MRO from developments that may cause radio interference through a combination of special WA State legislation and existing Federal legislation administered.

We acknowledge the Wajarri Yamatji people as the traditional owners of the MRO site.

Pawsey Supercomputing Centre

<http://www.ivec.org/super-computing/pawsey-hpc-centre>

In 2009 the Australian Government, as part of its Super Science initiative, allocated \$80 million towards the establishment of the Pawsey Centre Project with the primary aim of hosting new supercomputing facilities and expertise to support SKA (Square Kilometre Array) research and other high-end science. The secondary goal of the Project is to demonstrate Australia's ability to deliver and support world-class advanced ICT infrastructure and therefore strengthen Australia's bid to host the SKA, which is critically dependent on advanced ICT.

The Pawsey Centre houses petascale supercomputing facilities and other expertise to provide immediate support to the Australian SKA Pathfinder and Murchison Widefield Array radio astronomy telescopes, as well as other high-end research areas of computational and data-intensive science, particularly nanotechnology, biotechnology, and geosciences. The Pawsey Centre is located in Kensington, Western Australia.

Some Shakers and Makers on Capital Hill

Current as of September 2012

The Prime Minister, The Hon **Julia Gillard** MP

The Deputy PM and Treasurer, The Hon **Wayne Swan** MP

The Minister for Tertiary Education, Skills, Science and Research, Senator the Hon **Chris Evans**

The Minister for Agriculture, Fisheries and Forestry, Senator the Hon **Joe Ludwig**

The Minister for Infrastructure and Transport, The Hon **Anthony Albanese** MP

The Minister for Trade, The Hon Dr **Craig Emerson**

The Minister for Broadband, Communications and the Digital Economy, Senator the Hon **Stephen Conroy**

The Minister for Climate Change and Energy Efficiency, the Minister for Industry and Innovation, The Hon **Greg Combet** AM MP

The Minister for Health and Ageing, The Hon Mark Butler MP

The Minister for Resources and Energy and Tourism, The Hon **Martin Ferguson** AM MP

The Minister for Sustainability, Environment, Water, Population and Communities, The Hon **Tony Burke** MP

The Minister for the Arts; Minister for Regional Australia, Regional Development and Local Government, The Hon **Simon Crean** MP

The Minister for School Education, Early Childhood and Youth, The Hon **Peter Garrett** AM MP

The Chief Scientist for Australia, Prof **Ian Chubb**

The President of the Australian Academy of Science, **Professor Suzanne Cory**

The President of the Australian Academy of Technological Sciences and Engineering, **Professor Robin Batterham** AO

The Chair of Universities Australia, **Professor Glynn Davis**

The President of the Science and Technology Australia, **Dr Cathy Foley**

The Chief Executive of CSIRO, **Dr Megan Clark**

The Chief Executive Officer of the Australian Research Council, **Professor Aidan Byrne**

The Chair of the National Health and Medical Research Council, **Professor Kathryn North**

The President of Engineers Australia, represented by **Prof David Hood**

The Chair of the Innovation Australia Board, **Mr David Miles** AM

The Chief Defence Scientist, Defence Science and Technology Organisation, **Dr Alexander Zelinsky**