

National committees for science

The Academy's national committees foster a designated branch or theme of natural sciences in Australia and serve as a link between Australian and overseas scientists in the same field. Following advice from the committees, the Academy appoints delegates to the business meetings of the International Council for Science (ICSU) and 31 of its member unions. The 21 national committees and three task forces represent a wide range of the disciplines within the Academy's fellowship.

Nominations for committee members are sought by the Academy from committee chairs and from the relevant corresponding scientific societies. The nominations are then considered by the Academy's Executive Committee, responsible for appointing committee chairs and members. Guidelines for national committees are available at www.science.org.au/natcoms/guidelines.

Committee reports

Reports have been received from the following committees:

Antarctic research

Chair: Professor Robert Vincent FAA

Australian scientists, including members of the National Committee for Antarctic Research (NCAR), continue to play prominent roles in the international programs of the Scientific Committee for Antarctic Research (SCAR) with good representation on a wide range of committees. Activities covered include Antarctic climate processes, biodiversity, change and ecosystem response, and the geological evolution of Antarctica. Whenever possible, new appointments to SCAR and other relevant international bodies were proposed during 2008. There was considerable revision of membership of SCAR committees after the General Assembly in July 2008.

One of the main activities of NCAR was to provide input into the Australian Antarctic Division's Strategic Plan, which was to set the science strategy for Australia's Antarctic science program in the 5-year period commencing in 2009. Committee members provided input through the chair, who is ex-officio a member of the Australian Science Advisory Committee, which is responsible to the Minister for the Environment. However, there has been a considerable delay in the implementation of the strategic plan. The office of the Minister for the Environment has not yet released the *Futures Document*, which will inform the strategic plan, and accordingly the current plan remains in operation.

The International Polar Year (IPY), which commenced in 2007, finished in March 2009. NCAR has worked with the IPY Australian Education Outreach and Communication Committee, hosted by Antarctic Tasmania, to publicise IPY activities. A number of lines of activity were pursued, including Australia-wide lecture tours involving both senior and young scientists involved in Antarctic research.

Astronomy

Chair: Professor Matthew Colless FAA

The National Committee for Astronomy (NCA) continued to oversee the implementation of the Australian Astronomy Decadal Plan 2006–15. However the management of those aspects of the decadal plan that were supported by the National Collaborative Research Infrastructure Strategy (NCRIS) funding for radio and optical astronomy is now being undertaken by Astronomy Australia Limited (AAL). The 15 members of AAL comprise all the institutions pursuing professional research in astronomy in Australia.

The other main business for the NCA in 2008 was preparations for the International Year of Astronomy (IYA) in 2009. The NCA is advised on IYA matters by the International Year of Astronomy Working Group, made up of 24 representatives from all the significant stakeholders, and chaired by the NCA chair. More than 120 IYA activities are being planned, ranging from participation in some of the international events such as the *100 Hours of Astronomy* and *Dark Skies – Quiet Skies*, through to celebrations of the new year using a pulsar countdown, a visit by an Apollo astronaut to commemorate the 40th anniversary of the first moon landing, astronomy themes for activities ranging from science festivals to school projects, and many grassroots events organised by amateur astronomers and other interest groups.



Photo: © Peter Challis, Harvard-Smithsonian Center for Astrophysics

More than 120 activities are planned for the International Year of Astronomy

Biomedical sciences

Chair: Professor Rob Baxter FAA

A major event at the end of 2007 was the National Forum on Biomedical Sciences, held at Monash University. At the meeting of the National Committee for Biomedical Sciences (NCBMS) in June 2008 it was resolved to hold a similar forum about every three years. The location could be rotated, and it could evolve in to a two to three day meeting, with international involvement. The focus would be on research and scholarship in education in biomedical sciences.

Improved liaison with the many corresponding societies of NCBMS was pursued in 2008, and the Australia and New Zealand Society for Cell and Developmental Biology accepted an invitation to become a corresponding society.

In 2008 the committee considered two looming workforce crises: (i) an oversupply of mid-career research-only scientists on short-term appointments with insufficient positions to move to, and (ii) an impending shortage of academic biomedical scientists due to an ageing workforce approaching retirement. A submission discussing these issues and suggesting possible remedies was made to the Future Fellowships consultation.

The committee supported the 50th anniversary celebrations of one of its corresponding societies, the Endocrine Society of Australia. The Academy was a sponsor of this event, providing certificates and endorsing profiles of Fellows who are prominent in Australian endocrinology.

Brain and mind

Chair: Professor Max Coltheart FAA

2008 was the first year of existence of the National Committee for Brain and Mind and progress in its initial year was limited by the chair being overseas in Europe for three periods. However, his public debate with Professor Karl Friston FRS at the International Congress of Psychology in Berlin in July on a topic central to the interests of this committee, *Functional neuroimaging has already told us a lot about cognition: Yes or no?*, yielded a great deal of scientific interaction and media attention. This will provide valuable input into the committee's future deliberations, such as the development of media releases to address misconceptions about what functional neuroimaging can and can't reveal about mental activities.

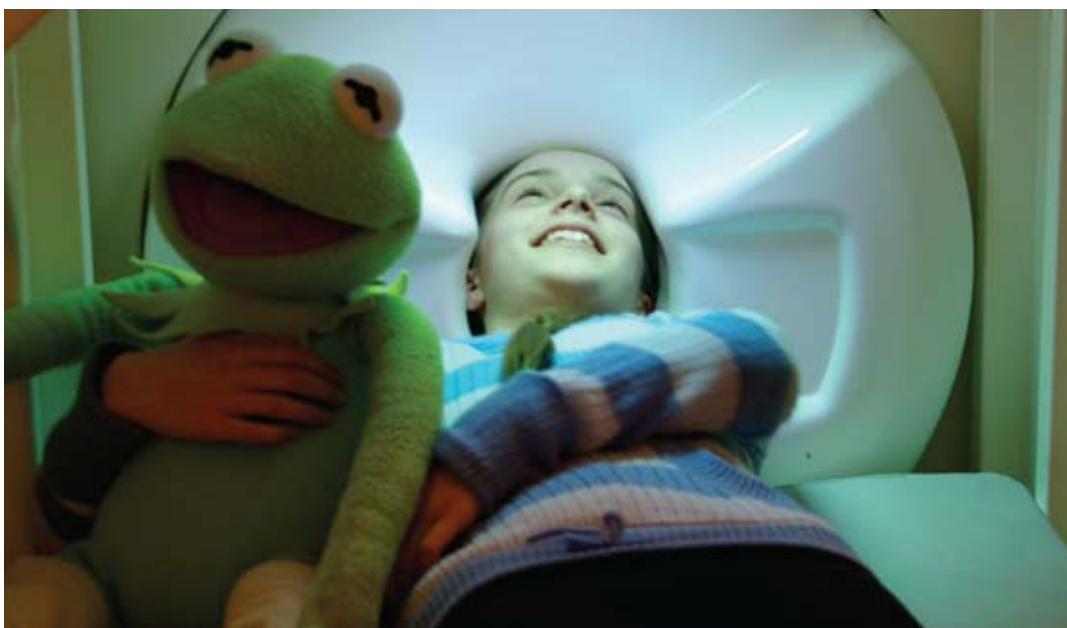


Photo: © Graciela Tesan, Macquarie Brain Research Laboratory

A child in the MEG (magnetoencephalography) waiting to start a visual experiment

Chemistry

Chair: Professor Chris Easton FAA

The National Committee for Chemistry (NCC) has continued to interact with the International Union of Pure and Applied Chemistry (IUPAC). Professor David Black, a member of the committee, is IUPAC Secretary General. The major activity in this area has been to promote 2011 as the International Year of Chemistry. It is expected that this will be formally ratified before the 2009 IUPAC General Assembly and that planning activities for the International Year of Chemistry will then be a major focus of discussion at the Assembly.

The NCC has continued to seek ways to work more effectively with the Royal Australian Chemical Institute (RACI). Nominations for the IUPAC Prize for Young Chemists are coordinated through the RACI. The President of RACI is an ex officio member of the committee.

During 2008, the committee: considered ideas for symposia based on water recycling and quality, and also chemical security; continued to provide support for conference activities in Australia; and pursued efforts to initiate IUPAC's Company Associates Program in Australia.

Crystallography

Chair: Professor Jenny Martin

Australian scientists were well represented at the International Union of Crystallography (IUCr) Congress in Japan in August this year. Professor Jill Trehwella, Federation Fellow from the University of Sydney, presented a plenary lecture at the congress. The Society for Crystallographers in Australia and New Zealand held a social get together at the congress.

At the General Assembly of the congress, the National Committee for Crystallography (NCCr) supported India's bid to hold the 2014 congress in Hyderabad. However the vote eventually went to Montreal, Canada. The crystallography community in India has indicated they will renominate at the next General Assembly for the 2017 congress, and the committee will continue to support their bid.

The 20th Australian Conference on Microscopy and Microanalysis and the 4th Congress of the International Union of Microbeam Analysis Societies were held in Perth from 10 to 15 February. The meetings were very well attended.

Professor Peter Colman FAA has been elected Vice-President of the International Union of Crystallography.

Four of the six Australian nominees approved by NCCr were elected as members of commissions of the IUCr and eligible existing members were re-elected.

The OPAL decadal plan for neutron scattering beamlines continues to be developed, with NCCr members Professors Keith Nugent FAA and Robert Robinson, and past chair of NCCr, Peter Colman FAA, participating in this process.

Members of the NCCr are planning a symposium in Adelaide in 2012 to commemorate the centenary of crystallography, a field of science established by Australian Nobel Prize winners William and Lawrence Bragg.

Replacement Research Reactor Task Force (task force of the National Committee for Crystallography)

Chair: Professor John White FAA

Successful restart of the reactor

The development of a new fuel for the OPAL reactor, replacing that supplied by INVAP (Argentina) was monitored and the OPAL reactor started again successfully reaching 20 megawatt on 23 May. Whilst there is still a problem of light and heavy water mixing through a very small leak in the reflector, there is continuing work by INVAP and Australian Nuclear Science and Technology Organisation (ANSTO) to ameliorate that situation and a long term response is being prepared. There is some effect of this on the irradiation programs at the reactor. Meanwhile the reactor is producing excellent neutron beams and many instruments are beginning to function although there is some delay on the data processing and informatics side due to scarcity of staff. The initial hope that at least some of the instruments would be at world's best performance at this period looks as if it will be realised. So far it has not been possible to test or characterise any of the neutron irradiation facilities in OPAL that might be suitable for fast neutron irradiation of geological samples in relation to $^{40}\text{Ar}/^{39}\text{Ar}$ dating.

Job losses at ANSTO and new CEO appointment

Following the Australian Government's 'efficiency dividend' process after the 2007 election, a number of staff have left ANSTO. A new CEO, Dr Adrian Paterson, was appointed (formerly head of the South African high temperature reactor project) and took up his position on 1 March.



ANSTO reactor pool: Excellent neutron beams being produced by the reactor

Photo: Courtesy of ANSTO

Effects of low level radiation, appraisals of new material and discussion

Three members of the committee have been particularly active in relation to the low levels of radiation question. The SBS program *Nuclear Nightmares* has been distributed and viewed by members. The committee will continue to look at other documents related to the 'hormesis' phenomenon but is currently of the opinion that this effect has been overstated and that the recent thorough study by the US National Academies is the best evidence so far that linear extrapolation of radiation damage in biological systems to the lowest levels is the appropriate procedure.

Linkage–Learned Academies Special Project (LASP) – Australian attitudes to nuclear power

The initial meeting of the LASP project group of the joint Australian academies was held in Melbourne on 17 July 2008. The obvious importance of the social sciences and humanities in understanding Australian attitudes to nuclear power was clear from these discussions. The need to find a director who is skilled in the social science area relating to public attitudes to risk, was accepted by all. There are cogent examples given by the way in which attitudes are formed and changed. More scientific facts were only one part of the story. With the limited resources of the project, a clear focus on the report structure was adopted with the project director working in close liaison with the committee on the objectives and structure.

Professor Daniela Stehlik was appointed to the project director position. Professor Stehlik is chair of Stronger Communities and Director of the Research Centre for Stronger Communities at Curtin University of Technology, Western Australia. She has the appropriate background and proposed a process which avoided the pitfalls of protracted discourse between representatives of entrenched positions at the outset. It is expected that the report will be available in mid to late 2009 and that the committee will be able to have input on it.

Other matters

Professor John White FAA, as chairman of the International Advisory Committee for the Japan Proton Accelerator Research Complex (J-PARC) Facility represented that committee at the formal opening of J-PARC on 16 December.

Data for science

Chair: Professor Ray Norris

The National Committee for Data in Science (NCDS) was established by the Academy in February 2008, together with Australian membership of the Committee on Data for Science and Technology (CODATA) of the International Council for Science. CODATA is currently assuming an increasing role in global science data management, and Australia's membership will position Australian data scientists in a strong position internationally. The NCDS aims to promote and facilitate data science across all disciplines of science and provide a national data science voice which can represent Australia at international forums. To achieve this, the committee will hold regular workshops, promote the development of data management policies and protocols, and promote the adoption of standards for data exchange.

The NCDS held its inaugural meeting in May 2008, and another in February 2009. In the intervening period it established its role and constituency. Other activities include:

- the establishment of a website www.atnf.csiro.au/people/rnorris/NCDS;
- participation by two members (Dr Ray Norris and Ms Kim Finney) on the International Council for Science Strategic Committee on Information and Data. The recent release of its report has created a great deal of international interest and debate;
- a presentation by Professor Jane Hunter at the eResearch Australasia Conference; and
- participation by Ray Norris in the CODATA General Assembly, and his re-election to the Executive Committee of CODATA.

Because of the pressure of other work, Ray Norris stepped down as chair in early 2009, and was replaced by Dr Rhys Francis.

Earth sciences

Chair: Professor Andrew Gleadow FAA

The AuScope initiative

The AuScope program under the National Collaborative Research Infrastructure Strategy (NCRIS) is now well established and supporting major geoscience research infrastructure needs across a range of programs. The fundamental research objective of AuScope is to investigate the structure and evolution of the Australian continent. A total funding allocation of \$46 million has been awarded by NCRIS over a five year period from 2007. Progress has been made during 2008 in planning a series of national geoscience transects through a working group chaired by Professor Brian Kennett FAA. A meeting of the working group took place with interested parties during the Australian Earth Sciences Convention during July in Perth.

Collaboration between Geoscience Australia, AuScope Earth imaging and Primary Industries and Resources South Australia has seen more than 500 kilometres of reflection profiling in November and December of 2008, extending from the south of Northern Territory into South Australia following the Darwin to Adelaide railway. The quality of data is good with striking features extending through the crust. This profiling follows one of the corridors identified by the transect working group.

Major conferences

The biennial Australian Earth Sciences Convention (AESC) was held in Perth from 20 to 24 July with approximately 900 delegates. This year the convention was organised jointly by the Geological Society of Australia and the Australian Institute of Geoscientists. Planning has already commenced for the next convention to be held in Canberra in 2010. Planning is also well under way for the 25th General Assembly of the International Union of Geodesy and Geophysics, to be held in Melbourne in 2011 and the 34th International Geological Congress, to be held in Brisbane in 2012. The Brisbane congress is to be known as Australia 2012 and its theme will be 'unearthing our past and future'.

International Year of Planet Earth 2008

A number of activities in Australia have been used to focus attention on the International Year of Planet Earth (IYPE) during 2008. Some of the major events or activities have included the AESC in Perth, a series of special features in the *Australian Journal of Earth Sciences*, the Australian contribution to the One World digital geological map of the world by Geoscience Australia, and the launching of the Kanawinka Geopark in Victoria and South Australia, the first such park in Australia. The Royal Australian Mint issued a special coin set celebrating the IYPE at the end of 2007, and a number of other conferences and activities in various parts of Australia have also been used to promote the IYPE.

Earth system science

Chair: Dr Roger Gifford

The synthesis and recommendations document *Vegetation dynamics and global climate change: Research priorities for the next decade* was signed-off by the Academy's Executive Committee in December 2008. The document is a product of the National Committee for Earth System Science's (NCESS) strategic planning activities and derived from an open planning workshop in August 2007 followed by multiple steps of wide comment and modification prior to completion. Negotiations are under way with the Department of Climate Change for its publication. The document had its impact, through direct discussion and via an NCESS submission to the exposure draft of an NCRIS review, on the decision making of the facilitator for the establishment of the Terrestrial Ecosystem Research Network under NCRIS.

Funding to develop a decadal strategic research plan for Earth system science was secured from the Department of Climate Change and a proposed draft document has continued to evolve within NCESS for release as an exposure draft for general comment and input, and as a background document for a planning workshop in 2009. An 'urgency statement' on the need for balanced long-term expansion of climate change research capacity in the areas of research infrastructure, human resources, and information management was

prepared by NCESS and sent to Ministers Wong, Garrett, Carr and Gillard by the President. The statement also formed the basis of the committee's submission to the Cutler Review of the National Innovation System.

The chair of NCESS attended the Fourth International Geosphere-Biosphere Programme (IGBP) Congress in Cape Town, South Africa, as the Australian delegate. There he presented a public poster highlighting Australian Earth system science, participated in the special two day meeting there of representatives of national committees for the IGBP, and delivered to the final congress plenary the summary of conclusions from that special meeting. NCESS contributed an item to the *IGBP Bulletin* in October. NCESS also helped to contribute comment by the Academy on the July exposure draft to the Garnaut review into greenhouse gas emission trading, and responded to questions arising from discussion with Professor Garnaut.

Terrestrial Carbon Task Force (task force of the National Committee for Earth System Science)

Chair: Professor Andy Pitman

The Terrestrial Carbon Task Force met in July at Ian Potter House. The aim for the meeting was to discuss the report *Vegetation dynamics and global climate change: Research priorities for the next decade*, to take its content forward, and to produce a well structured report to be passed to decision makers.

Geography

Chair: Professor Leslie Head

Committee members Professor Nigel Tapper and Professor Margaret Robertson represented Australia at the International Geographical Union (IGU) Congress in Tunis in August. The committee nominated Professor Ruth Fincher for one of the eight vacant vice-presidential positions, and she received the highest number of votes of all the nineteen candidates; an excellent result. Thanks are due to Professor Janice Monk (USA) and members of the Gender and Geography Study Group of the IGU for their role in lobbying for Ruth.

Committee member Ms Kathryn Berg (Royal Geographical Society of Queensland) has spearheaded the involvement of a number of geographical organisations in the national curriculum review process. This was somewhat delayed as the incoming government had other priorities, but indications are that the process will accelerate in 2009, and the committee is well-placed to participate in it. The committee views this as the main means in the next few years to have a voice for geography in public policy, and in enhanced communication between secondary and tertiary sectors.

The committee increased communication with other key geographical organisations through a strategic approach to committee membership (including representatives of the Institute of Australian Geographers, state societies and teacher associations) and a contribution by the chair to the Institute of Australian Geographers newsletter.

History and philosophy of science

Chair: Professor Rachel Ankeny (Dr Rosemary Robins, acting chair, March to October 2008)

The National Museum of Australia Student Essay Prize for the History of Australian Science was offered in 2008. The judging panel was Professor Rod Home, Dr Mike Smith and Dr Rosemary Robins. No prize was awarded. The funds have been held over and may be used to award a prize for a paper on the history of Australian science from among those submitted for the environmental history prize in 2009.

The national committee continued to work with Mr Gavan McCarthy (University of Melbourne) to help achieve the aims of the World History of Science Online (WHSO) project (www.dhst-whso.org/whso). The main project objectives are:

- Online access to bibliographies and catalogues of archives sources already prepared or in preparation in the International Union of History and Philosophy of Science Division of the History of Science and Technology member countries.

- Make accessible the world's scientific and technological bibliographies and archival sources through a central website.
- Contribute to build capacity in history of science and technology in all countries.
- Make available historical information for the scientific and technological disciplines that require it.
- Disseminate scientific information.
- Stimulate the use of history of science and technology in decision making on public policies, education programs and public understanding of science as well as in the agendas of sustainable human development, among others.

Dialogue commenced between members of history and philosophy of science, and science and technology study programs around Australia about the future of the discipline and strategies. This is in light of continued reorganisation in 2006 and 2007 of the faculties of arts and sciences at a number of major universities which traditionally have strengths in the field.

Mathematical sciences

Chair: Professor Hyam Rubinstein FAA

This has been another busy year for the National Committee for Mathematical Sciences (NCMS). In February, at the annual meeting of heads of mathematical sciences departments, the NCMS heard that very little of the new money from the Australian Government budget increase for teaching undergraduate students in mathematical sciences was passed on to departments. Most universities take around 50 per cent of such money in 'overheads'; that is, costs of central administration, buildings and power, libraries and student services. The remainder is passed on to faculties, where budget decisions are devolved.

NCMS attempted to gain a hearing with the new government and also were able to generate some media interest. However, with the inquiries into research and innovation, and into the higher education sector, no real progress has been made in rectifying this serious problem.

A major campaign was organised by Professor Terry Tao FAA to protest against huge cuts to the mathematical sciences program at the University of Southern Queensland. After a lot of media attention, the university made some very modest changes and most of the cuts went ahead. Generally, the annual review of staffing of mathematical sciences departments across Australia showed around an 8 per cent decline (or 40 positions) in 2007, which was extremely disappointing.

In the middle of the year, the NCMS learned that the Australian Research Council (ARC) had commissioned someone from outside the mathematical sciences to organise mathematics journal ranking for the new research assessment exercise, ignoring the work of the committee from 2007 for the previous Research Quality Framework. Little communication took place as to why this was necessary. When the list appeared, it had a number of problems. After representations to the ARC from Professor Peter Hall FAA, on behalf of the Australian Mathematical Society and the national committee, Professor Peter Taylor and the chair were able to have a meeting with the CEO of the ARC, Professor Margaret Sheil. She was very helpful in allowing us time to organise another journal ranking exercise in Melbourne. The chair would like to particularly thank Professor Hall, Professor Phil Howlett, Dr Aleks Owczarek and Associate Professor Jim Denier, amongst a host of people, who contributed to this major task. The lists were posted on the Australian Mathematical Society website, which led to much wider consultation and discussion taking place, and have been submitted to the ARC evaluation group.

Finally, the NCMS has been involved in discussions with the Australian Association of Mathematics Teachers and the Mathematics Education Research Group of Australasia about collaboration in the area of mathematics education in schools. With the move to a national curriculum in school mathematics, it is essential that cooperation and communication occur.

Mechanical sciences

Chair: Associate Professor Jim Denier

On the invitation of the Academy, the 22nd International Union of Theoretical and Applied Mechanics (IUTAM) International Congress of Theoretical and Applied Mechanics was hosted by the Australian theoretical and applied mechanics community. The congress president, Professor Ernie Tuck FAA, welcomed over 1100 delegates, from over 62 countries, to the Adelaide Convention Centre. Chair of the National Committee for Mechanical Sciences, Associate Professor Jim Denier, played a major organisational role as secretary general of the congress.

A total of 899 papers were presented in 14 parallel sessions during the five days of the congress. In addition to the contributed papers, there were also opening and closing lectures and 15 invited (sectional) lectures covering all aspect of fluid and solid mechanics. A further highlight of the congress was the award, for the first time, of the Batchelor Prize in Fluid Mechanics (sponsored by Cambridge University Press) and the Rodney Hill Prize in Solid Mechanics (sponsored by Elsevier). These two major prizes recognise sustained outstanding contributions to the fields of fluid and solid mechanics. The recipient of the Batchelor Prize, Professor Howard Stone of Harvard University, and the recipient of the Rodney Hill Prize, Professor Michael Ortiz of Caltech, presented lectures detailing their outstanding contributions to their respective fields.

The congress was supported by the Australian Mathematical Society, Australian and New Zealand Industrial Applied Mathematics and the University of Adelaide.

Medicine

Chair: Professor Bob Williamson FAA

The National Committee for Medicine (NCM) has attempted to influence policy with the Australian Government. The committee is firmly of the opinion that research funding through the National Health and Medical Research Council (NHMRC) should continue to be channelled through the Department of Health and Ageing. We have put this point of view to government, in particular in discussions around the Cutler report, the review of Australia's National Innovation System *Venturous Australia: Building strength in innovation*. We believe that the Academy should continue to argue for increases in research allocations to medical research, through the NHMRC as well as other mechanisms as appropriate.

Although the committee put a case to the Hon Nicola Roxon MP, Minister for Health and Ageing, that there should be a dedicated funding stream for translational research, this matter was referred by government to the Cutler committee and the various committees dealing with health funding. While many of our proposals lapsed because of the financial situation, we are pleased that the government has been able to fund a large increase in the number of postdoctoral and postgraduate awards, which will solve some of the resource issues at more junior levels. However, we note there is still a lack of strategy for dealing with the expectations of those in medical research, who hope for a vision for the whole system that is sustainable and has career options.

The committee has been raising the outcomes of a mentoring and skills workshop held early last year for early-career researchers both within the Academy and with NHMRC, Australian Research Council (ARC) and the CSIRO. The argument of the committee that the Cooperative Research Centre conditions be modified so that the community benefit, has been agreed with by government.

The committee has continued to have a close relationship with the NHMRC, and with its chief executive officer, Professor Warwick Anderson, who attended the July meeting. Many of the points that were made concerning funding, mentoring, misconduct, and the relationship between NHMRC and other government agencies were acted upon by Professor Anderson.

The final revised version of the NHMRC and ARC Australian Code for the Responsible Conduct of Research that was issued in 2007 continued to be considered by the committee during 2008. Professor David Vaux FAA, on

behalf of the committee, made a series of recommendations to the NHMRC and ARC that would provide both guidance and an oversight and appeals procedure when misconduct is alleged. We still argue that a national framework is needed to deal with more serious cases of misconduct, and will continue to raise this with Professor Anderson.

The committee notes with pleasure that AusAID, through its principal medical advisor Dr Jim Tulloch, has delivered on its commitment to international medical research programs in our region.

The committee prepared notes for Academy Council to assist with submissions concerning research through the Ministry of Defence (Defence Science and Technology Organisation), concerning NCRIS mapping of strategic infrastructure, and the Senate Inquiry into Academic Freedom.

At the July meeting of the committee, Professors Bob Williamson and Judith Whitworth retired.

Nutrition

Chair: Professor Jennie Brand-Miller

The committee focused on the sharp rise in iodine deficiency in Australia with *A call to action* (www.science.org.au/natcoms/nc-nutrition-iodine.htm) published early in the year. The consequences of iodine deficiency include a fall in Australia's average IQ, a rise in learning difficulties and a fall in the number of gifted individuals. To draw attention to the problem, the committee organised a one-day symposium at the Shine Dome in May in conjunction with the Nutrition Society of Australia and the International Life Sciences Institute Australasia. Food Standards Australia New Zealand subsequently announced mandatory addition of iodised salt in bread. This move alone is unlikely to be sufficient to protect the most vulnerable section of the population: pregnant women and their children. The committee will therefore focus further efforts on the need for population-based nutrition monitoring in Australia.



Photo: Stockxpert

Bread is to be supplemented with iodine

The committee is also working on the formation of a leadership program in nutrition for young and middle career nutritionists in Australia and New Zealand. One member of the committee, Associate Professor Maria Makrides has liaised with Professor Ricardo Uauy, the president of the International Union of Nutritional Science (IUNS). A one-day session is being organised in Bangkok immediately prior to the IUNS Congress in October 2009.

We are grateful to outgoing committee members Professor Graeme Macintosh and Ms Nola Caffin for their valuable contributions over two terms of office. We are also very grateful to the Academy for their support, particularly to Jeanette Mill, who takes our minutes and keeps us up to date with the Academy's activities.

Physics

Chair: Professor Michelle Simmons FAA

The National Committee for Physics met in February 2009 to plan for the *Investing in the future of physics* ARC Linkage-Learned Academies Special Project (LASP) application for funding in 2009–10 to prepare a decadal plan for physics in Australia. Due to the diversity of the discipline it was agreed that it was important how information was collected for this document. As a consequence, the optical physics group underwent a trial run during 2008 to collate information based on a template sent out via the Australian Optical Society. The committee met again in October ahead of the Australian Institute of Physics biennial congress to discuss the outcomes. The US decadal plan *Physics in a new era* and the Australian ARC report *Physics: A vision for the future* from 1993, were discussed as examples of previous 'strategic plans' in physics.

In September the chair submitted a 20-page ARC LASP application outlining the aims of the decadal plan and requesting funding for a part-time researcher to collate the statistical information for the project.

The committee prepared a one hour briefing at the Australian Institute of Physics biennial congress in Adelaide in the first week of December on the strategic plan. The committee, via the Academy, sponsored 150 lunch boxes on the second day of the congress and the meeting was heavily advertised at the congress with the plans enthusiastically received. The committee outlined a list of 23 subdisciplines, and nominated chairs and sub-chairs of these committees. The meeting of the committee in February instigated the action plan for this process.

The committee has welcomed the appointment of Professor Ron Ekers FAA from Academy Council as an observer to the committee to provide an important link over the next two years.

Plant and animal sciences

Chair: Dr TJ Higgins FAA

The business of the committee in 2008 was dominated by discussion about undergraduate and early postgraduate training of science students. Many disciplines are facing a major shortage of postgraduate students especially those with appropriate training and specific skills. An equally worrying situation was identified with respect to training of students needed for multidisciplinary projects.

The committee worked on preparing a case for the Academy Executive Committee seeking support for the development of a 'Future Biological Map of Australia'.

Radio science

Chair: Professor Andrew Parfitt

National activities

The National Committee for Radio Science hosted the 2008 *Workshop on Applications of Radio Science* (WARS) from 10 to 12 February on the Gold Coast. Forty poster and five keynote presentations were made, and an industry forum held.

The website continues to be an issue for committee, acting as a repository of published material from the WARS meetings (and therefore requiring a stable URL) and needing to be hosted in a location that permits ready updating. The active list of over 800 radio scientists still needs reviewing and updating. It was decided to migrate the current website to the Academy website, mirroring the historical data, but allowing the link to be maintained for archiving and citation purposes, and to update the list of radio scientists in 2009 through the new website.

Discussion continued on the creation of the Christiansen Medal, and to establish a medal and travel award to the WARS conference as a first step towards a more substantial award.

International activities

The most significant activity for the committee in 2008 was the triennial General Assembly of the International Union of Radio Science (URSI GA), held in Chicago from 7 to 16 August. There were 19 Australian delegates to the URSI GA, two of whom, Dr JM Le Floch from the University of Western Australia and Dr MA Voronkov from CSIRO, were Young Scientist Awardees. At the assembly Dr Phil Wilkinson was re-elected to the position of Vice-President for the period 2009 to 2011. Membership of the Committee on Data for Science and Technology was presented and the council determined to form a committee to explore data issues in radio science and to evaluate the benefits of membership.

Australian radio science achievements in 2008

Radio science continues to be visible in the Square Kilometre Array (SKA) project, with progress made on the Australian SKA Pathfinder instrument reported at WARS2008 and at the URSI GA.



Image: Paul Bourke, University of Western Australia

Artist's impression of one of the Australian SKA Pathfinder antennas



Photo: CSIRO

View over part of the site being developed for the Murchison Radio-astronomy Observatory

Space science

Chair: Professor Iver Cairns

2008 was a very busy year for the National Committee for Space Science (NCSS). Seven major items are reported here, all in addition to managing Australia's participation in international societies for space science.

First, the draft of the first Decadal Plan for Australian Space Science was released on 29 February for comment. The NCSS made submissions relevant to the decadal plan and Australian space science to the Review of the National Innovation System, the Review of the NCRIS Roadmap, and the defence white paper process. Presentations to COSPAR, the Australian Government Space Forum, Australian Space Development

Conference, Australian Space Science Conference (ASSC), and elsewhere promoted the plan and Australian space science, as did various media interviews and articles.

Discussions on space-based remote sensing or Earth observation have led to agreement on how to include Earth observation in the decadal plan and an explicit joint Academy–ATSE process to do so. The decadal plan is expected to be finalised and released in 2009 in several parts.



Image: Reto Stockli, NASA Earth Observatory

Our planet from space: Ten year plan for Earth observation in progress

The NCSS jointly sponsored and organised, with the National Space Society of Australia, the 2008 ASSC in Canberra. With extensive NCSS input, Australia's new research classification system was released, resulting in multiple new codes and a clear home for space science.

The committee would like to thank its outgoing members – Dr Charlie Barton, Dr David Cole, and Professors Peter Dyson, Brian Fraser and Andrew Parfitt – for their excellent work, and welcomes new members Professor Russell Boyce, Dr Graziella Caprarelli, Dr Alex Held, Professor Fred Menk and Dr David Neudegg.

Muses-C (Task Force of the National Committee for Space Science)

Chair: Professor Trevor Ireland

The Hayabusa spacecraft continues its slow journey back to Earth. At this stage it has a relative velocity of 450 metres per second with respect to Earth and is due back in June 2010.

In early November the Hayabusa Science Team met at the Japan Aerospace Exploration Agency (JAXA) in Sagami-ono. The main issue on the agenda was to cover aspects of the preliminary examination of the returned material. The first goal following return of the capsule will be to ascertain if any material has been collected. The capsule will be opened in a new dedicated facility at JAXA. The facility is equipped to allow cleaning of the outer surfaces in a room set up with a machine shop. The clean side of the facility includes a class 100 laboratory with a large vacuum chamber or clean vessel inside in which the capsule will be opened.

The preliminary examination of any particles will be carried out in Japan. The initial inspection at JAXA will



Image: A. Ikeshta (MEF) ISAS

The Hayabusa spacecraft returns to Earth in 2010

be followed by a period of analysis by two analysis teams. The preliminary examination will cover a range of tasks including particle analysis and composition (major elements), noble gas measurements, oxygen isotope analysis and trace element analysis. As well as Japanese researchers, the science team includes Dr Mike Zolensky (National Aeronautics and Space Administration, Johnson Space Center), Dr Scott Sandford (National Aeronautics and Space Administration, Ames), and Professor Trevor Ireland (Australian National University) who are to be part of the preliminary examination in Japan.

The capsule is scheduled for re-entry on the evening of 12 June 2010, with arrival expected around midnight. Firing of the ion engines in 2009 will allow better calculation of arrival time and the error ellipse of the landing. A Japanese team will be in Australia to recover the capsule and transfer it to Japan. The science team will not be involved in the recovery of the capsule.