
Appendix 3 – ICSU Interdisciplinary Bodies and Joint Initiatives

ICSU participates in international science initiatives in two ways: by establishing its own **Interdisciplinary Bodies** or by lending its support to **Joint Initiatives** that have multiple sponsors and partners. Initially established by ICSU General Assemblies, Interdisciplinary Bodies focus on specific areas of international research that are of interest to all or many ICSU Members. Their roles vary depending on the area of science and on the related needs of the international science community, but usually combine operational and policy/advisory functions. They are designed to become self-sufficient and independent in terms of day-to-day operations and financing. Most Interdisciplinary Bodies have their own secretariat. Joint Initiatives, co-sponsored by ICSU and other international organisations (eg, from the UN system), are an important means of bringing together a range of partners to address a particular issue or area. One of the key features of these collaborative programs is the ability to consider the issue from the broadest possible perspective while minimising overlap and duplication of effort.

The information below was collected from the ICSU website and from websites and reports from the individual Interdisciplinary Bodies and Joint Initiatives. The information was current as of December 2004.

Committee on Data for Science and Technology (CODATA)

(www.codata.org)

CODATA is an interdisciplinary Scientific Committee of ICSU that works to improve the quality, reliability, management and accessibility of data of importance to all fields of science and technology. CODATA is a resource that provides scientists and engineers with access to international data activities for increased awareness, direct cooperation and new knowledge. CODATA was established by ICSU to promote and encourage, on a world-wide basis, the compilation, evaluation and dissemination of reliable numerical data of importance to science and technology. CODATA is concerned with all types of data resulting from experimental measurements, observations and calculations in every field of science and technology, including the physical sciences, biology, geology, astronomy, engineering, environmental science, ecology and others. Particular emphasis is given to data management problems common to different disciplines and to data used outside the field in which they were generated. Its objectives are:

- the improvement of the quality and accessibility of data, as well as the methods by which data are acquired, managed, analysed and evaluated, with a particular emphasis on developing countries;
- the facilitation of international cooperation among those collecting, organising and using data;
- the promotion of an increased awareness in the scientific and technical community of the importance of these activities;
- the consideration of data access and intellectual property issues.

In short, the purpose of CODATA is to help foster and advance science and technology through developing and sharing knowledge about data and the activities that work with data.

Involved countries or organisations

There are 23 member countries and 14 ICSU Scientific Unions have assigned liaison delegates.

Australian involvement

- The Australian Academy of Science paid membership subscriptions up until 1999/2000, but no longer pays subscriptions.
- Australia has a national working group for CODATA, chaired by Professor Richard Simpson.

Main programs

CODATA has four primary activities, all in support of its fundamental aim of fostering worldwide cooperation in scientific and technical data:

- Sponsorship of a Biennial CODATA International Conference on data, which attracts approximately 300 data specialists from around the world.
- Specialist meetings of scientific data experts, which address issues specific to one discipline or topic.
- Publications on data handling, data compilation, surveys of data activities, and conference proceedings.
- Sponsorship of Task Groups, Working Groups, Commissions and other groups addressing specific data issues.

The national committees of CODATA often organise data activities on a national level. Much of the most important work of CODATA, however, lies outside its formal activities in its providing a milieu in which data experts from different countries can interact, cooperate directly, develop bilateral collaborations outside of CODATA, and exchange ideas and knowledge.

Committee on Space and Research (COSPAR)

(www.cosparhq.org)

COSPAR's objectives are to promote on an international level scientific research in space, with emphasis on the exchange of results, information and opinions, and to provide a forum, open to all scientists, for the discussion of problems that may affect scientific space research. These objectives are achieved through the organisation of Scientific Assemblies, publications and other means. In its first years of existence COSPAR played an important role as an open bridge between East and West for cooperation in space. When this role became less prominent with the decline in rivalry between the two blocks, COSPAR, as an interdisciplinary scientific organisation, focused its objectives on the progress of all kinds of research carried out with the use of space means (including balloons). COSPAR acts mainly:

- as a forum, with strong contributions from most countries engaged in space research, for the presentation of the latest scientific results, for the exchange of knowledge and also for the discussion of space research problems;
- as a scientific committee advising, as required, the UN and other intergovernmental organisations on space research matters or on the assessment of scientific issues in which space can play a role;
- as a panel for the preparation of scientific and technical standards related to space research;
- as an entity promoting, on an international level, research in space, much of which has grown into large international collaborative programs in the mainstream of scientific research.

COSPAR strives to promote the use of space science for the benefit of mankind and for its adoption by developing countries and new space-faring nations.

Involved countries or organisations

There are 42 member countries.

Australian involvement

- The Australian Academy of Science pays formal membership subscriptions.
- No Australian scientists appear to be involved in leadership roles in any of the Scientific Commissions, sub-commissions, Panels, or Task Groups.

Main programs

Two primary types of scientific body are active in COSPAR – Scientific Commissions (SCs) and Panels:

- SC A on Space Studies of the Earth's Surface, Meteorology and Climate;
- SC B on Space Studies of the Earth-Moon System, Planets, and Small Bodies of the Solar System;
- SC C on Space Studies of the Upper Atmospheres of the Earth and Planets Including Reference Atmospheres;
- SC D on Space Plasmas in the Solar System, Including Planetary Magnetospheres;
- SC E on Research in Astrophysics from Space;
- SC F on Life Sciences as Related to Space;
- SC G on Materials Sciences in Space;
- SC H on Fundamental Physics in Space;
- Technical Panel on Satellite Dynamics;
- Panel on Technical Problems Related to Scientific Ballooning;
- Panel on Potentially Environmentally Detrimental Activities in Space;
- Panel on Space Research in Developing Countries;
- Panel on Standard Radiation Belts;
- Panel on Space Weather;
- Panel on Planetary Protection;
- Panel on Capacity Building.

An Integrated Programme of Biodiversity (DIVERSITAS)

(www.diversitas-international.org)

DIVERSITAS is an international global environmental change research program. Its missions are:

- to promote integrative biodiversity science, linking biological, ecological and social disciplines in an effort to produce socially relevant new knowledge;
- to provide the scientific basis for an understanding of biodiversity loss, and to draw out the implications for the policies for conservation and sustainable use of biodiversity.

DIVERSITAS aims to achieve these goals by synthesising existing scientific knowledge, identifying gaps and emerging issues of global importance, promoting new research initiatives, building bridges across countries and disciplines, investigating policy implications of biodiversity science, and communicating these to policy makers and international conventions.

Sponsoring countries and organisations

DIVERSITAS relies mainly (90%) on voluntary national contributions for funding.

The following countries provide financial support to DIVERSITAS: USA; Germany; Switzerland; Netherlands; Norway; Mexico; Sweden; Austria; United Kingdom; and China-Taipei. IGFA, the International Group of Funding Agencies for global environmental change research, facilitates the dialog between national funding agencies and DIVERSITAS. The remaining 10% of funding is provided by the sponsors (ICSU, SCOPE, IUBS, IUMS and UNESCO). Research projects contributing to DIVERSITAS are funded by national and regional agencies, on a competitive basis.

Australian involvement

Australia does not contribute any funding directly to DIVERSITAS, although it contributes indirectly via Australian Academy of Science membership subscriptions to ICSU, IUBS and IUMS. Prof. Stork (James Cook University) was on the DIVERSITAS Task Force, which was replaced by a formal Scientific Committee in 2002. Dr Meryl Williams is on the current Scientific Committee. There is no formal Australian national committee for DIVERSITAS (19 other countries have DIVERSITAS NCs), although there are some informal Australian activities/networks related to DIVERSITAS activities that could be developed into a formal national committee. Scientists from the CSIRO and the Australian Network for Plant Conservation are involved in the DIVERSITAS collaborative research network.

Main programs

DIVERSITAS pursues its science plan in the form of three core projects and several cross-cutting networks. In addition, the International Biodiversity Observation Year was an initiative of DIVERSITAS that spanned the whole program. It was a one-time event to celebrate biodiversity during 2001 and 2002.

The core projects of DIVERSITAS are:

- **bioDISCOVERY (Core Project 1)** seeks to assess how much biodiversity there is on Earth, develop the scientific basis for monitoring biodiversity and promote the establishment of biodiversity observatories, and understand and predict biodiversity changes.
- **ecoSERVICES (Core Project 2)** strives to expand the science of biodiversity and ecosystem functioning to larger scales and over a greater breadth of the biological hierarchy, to develop an effective means for linking changes in ecosystem structure and functioning to changes in ecosystem services, to assess human response to ecosystem services changes, and feedbacks onto ecological systems; and to Examine the impacts of biodiversity change on human health.
- **bioSUSTAINABILITY (Core Project 3)** develops new knowledge to guide policy and decision making. Its four main objectives are to evaluate the effectiveness of current measures for the conservation and sustainable use of biodiversity, to study the social, political and economic drivers of biodiversity loss, to investigate social choice and decision making, and to understand the interactions between humans and biodiversity in urban ecosystems. Collectively, these activities comprise a cycle of discovery, analysis and information sharing that supports the application of socially relevant knowledge.

The cross-cutting networks of DIVERSITAS are:

- Global Invasive Species Programme (GISP);
- Global Mountain Biodiversity Assessment (GMBA).

DIVERSITAS and its partner global change programs IGBP, IHDP and WCRP have formed the Earth System Science Partnership (ESSP), with the joint projects:

- Global Carbon Project (GCP);
- Global Change System for Analysis, Research and Training (START);
- Global Environmental Change and Food Systems (GECAFS);
- Global Environmental Change and Human Health;
- Global Water System Project (GWSP).

Astronomical and Geophysical Data Analysis Services (FAGS)

www.kms.dk/fags

FAGS was formed by ICSU in 1956 and includes today twelve Permanent Services each operating under the authority of one or more of the interested Scientific Unions – International Astronomical Union (IAU), International Union of Geodesy and Geophysics (IUGG), and Union Radio-Scientifique Internationale (URSI). Their tasks are to:

- continuously collect observations, information and data related to astronomy, geodesy, geophysics and allied sciences;
- to analyse, synthesise, and draw conclusions from them;
- to distribute data;
- to publish the results obtained.

Sponsoring organisations

FAGS is sponsored by IAU, IUGG, and URSI. There is no direct national membership.

Australian involvement

Australia does not contribute any funding directly to FAGS, but contributes indirectly via Australian Academy of Science membership subscriptions to IAU, IUGG and URSI. P.Wilkinson (from the Australian Government IPS Radio and Space Services) is on the FAGS Council (as the URSI Representative).

Main programs

The current Services within FAGS are:

- International Earth Rotation and Reference system Services (IERS);
- Bureau Gravimetrique International (BGI);
- International GPS Service for Geodynamics (IGS);
- International Centre for Earth Tides (ICET);
- Permanent Service for Mean Sea Level (PSMSL);
- International Service of Geomagnetic Indices (ISGI);
- Quarterly Bulletin on Solar Activity (QBSA);
- International Space Environment Service (ISES);
- World Glacier Monitoring Service (WGMS);

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- Centre des Données astronomiques de Strasbourg (CDS);
 - Sunspot Index Data Centre (SIDC);
 - International VLBI Service for Geodesy and Astrometry (IVS).

Global Climate Observing System (GCOS)

(www.wmo.ch/web/gcos/gcoshome.html)

GCOS was established in 1992 to ensure that the observations and information needed to address climate-related issues are obtained and made available to all potential users. GCOS is intended to be a long-term, user-driven operational system capable of providing the comprehensive observations required for monitoring the climate system, for detecting and attributing climate change, for assessing the impacts of climate variability and change, and for supporting research toward improved understanding, modelling and prediction of the climate system. It addresses the total climate system including physical, chemical and biological properties, and atmospheric, oceanic, hydrologic, cryospheric and terrestrial processes. GCOS does not itself directly make observations nor generate data products. It stimulates, encourages, coordinates and otherwise facilitates the taking of the needed observations by national or international organisations in support of their own requirements as well as of common goals. GCOS is intended to meet the needs for:

- climate system monitoring, climate change detection and monitoring the impacts of and the response to climate change, especially in terrestrial ecosystems and mean sea-level;
- climate data for application to national economic development;
- research toward improved understanding, modelling and prediction of the climate system.

GCOS priorities are:

- the earliest possible detection of climate trends and climate change due to human activities;
- seasonal-to-interannual climate prediction;
- reduction of the major uncertainties in long-term climate prediction;
- improved data for impact analysis.

Sponsoring organisations

GCOS is sponsored by WMO, IOC of UNESCO, UNEP and ICSU. There is no direct national membership.

Australian involvement

- Mike Manton of Australia's Bureau of Meteorology (BOM) is Chair of one of the three science panels of GCOS;
- Australian scientists played a significant role in the preparation of GCOS 2nd Report on Adequacy of the Global Observing Systems for Climate, and have been very active in the development of GCOS over the last decade;
- Australia's BOM contributes observational data to GCOS.

Main programs

GCOS is directed by a Steering Committee that provides guidance, coordination and oversight to the program. Three science panels, reporting to the Steering Committee, have been established to define

the observations needed in each of the main global domains (atmosphere, oceans, and land), to prepare specific program elements and to make recommendations for implementation. The science panels are:

- Atmospheric Observation Panel for Climate (AOPC) – sponsored by GCOS and WCRP;
- Ocean Observing Panel for Climate (OOPC) – sponsored by GCOS, GOOS and WCRP;
- Terrestrial Observation Panel for Climate (TOPC) – sponsored by GCOS and GTOS.

GCOS will build, to the extent possible, on existing operational and research observing, data management and information distribution systems, and further enhancements of these systems. The GCOS will be based upon, inter alia:

- Existing and enhanced World Weather Watch (WWW) systems;
- The Global Atmosphere Watch (GAW) and related atmospheric constituent observing systems;
- The Global Ocean Observing System (GOOS) for physical, chemical and biological measurements;
- The Global Terrestrial Observing System (GTOS) for land surface ecosystem, hydrosphere, and cryosphere measurements;
- The maintenance and enhancement of programs monitoring other key components of the climate system, such as terrestrial ecosystems (including IGBP), as well as clouds and the hydrological cycle, the earth's radiation budget, ice sheets and precipitation over the oceans (including WCRP);
- Programs to monitor the key physical, chemical and biological aspects of the impacts of climate change (including the World Climate Impact Assessment and Response Strategies Programme);
- Data communication and other infrastructures necessary to support operational climate forecasting (including the World Climate Data and Monitoring Programme and the Climate Information and Prediction Services).

Global Ocean Observing System (GOOS)

<http://ioc.unesco.org/goos>

GOOS is part of an Integrated Global Observing Strategy (IGOS) in which UN agencies are working together with ICSU and satellite agencies. In that context, GOOS forms the ocean component of GCOS (the Global Climate Observing System) and the marine coastal component of the GTOS (the Global Terrestrial Observing System). The vision guiding the development of GOOS is one of a world where the information needed by governments, industry, science and the public to deal with marine related issues, including the effects of the ocean upon climate, is supported by a unified global network to systematically acquire, integrate and distribute oceanic observations, and to generate analyses, forecasts and other useful products. The primary objectives of GOOS are:

- to specify the marine observational data needed on a continuing basis to meet the needs of the world community of users of the oceanic environment;
- to develop and implement an internationally coordinated strategy for the gathering, acquisition and exchange of these data;
- to facilitate the development of uses and products of these data, and encourage and widen their application in use and protection of the marine environment;
- to facilitate means by which less-developed nations can increase their capacity to acquire and use marine data according to the GOOS framework;
- to co-ordinate the ongoing operations of GOOS and ensure its integration within wider global observational and environmental management strategies.

Involved countries or organisations

There are 71 member countries. GOOS is sponsored by the IOC of UNESCO, WMO, UNEP and ICSU.

Australian involvement

Tom Trull of the Antarctic CRC is on the GOOS Steering committee.

In partnership with the Government of Western Australia, and the Commonwealth of Australia through its Bureau of Meteorology and other Commonwealth marine agencies, the IOC is establishing a new regional office in Perth, Western Australia. The Perth Office will co-ordinate the full range of IOC activities, including those that use resources from other UNESCO sectors, but its primary role is to facilitate the balanced development and enhancement of programs of the Global Ocean Observing System (GOOS) in the region.

Australian scientists have played substantial roles in the development of GOOS, and in the establishment of the international bodies to maintain standards and coordination. The principal national contact for GOOS is Phil Parker, Bureau of Meteorology. The mechanism for national coordination of GOOS is the Australian National GCOS-GOOS Working Group.

Australian agencies involved with GOOS are the Bureau of Meteorology, CSIRO Marine Research, Australian Oceanographic Data Centre, Royal Australian Navy, Australian Institute of Marine Science, National Tidal Facility of Australia, Australian Antarctic Division, Joint Australian Facility for Ocean Observing Systems and the Bureau of Meteorology Research Centre. These agencies contribute to many core elements of the observing system.

Main programs

Existing Operational Systems and Bodies are:

- JCOMM: Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology;
- JCOMMOPS: JCOMM in situ Observing Platform Support centre;
- DBCP: Data Buoy Co-operation Panel;
- SOOP: Ship-of-Opportunity Programme;
- GLOSS: Global Sea Level Observing System;
- TIP: Tropical Moored Buoys Implementation Panel;
- TAO: Tropical Atmosphere Ocean project;
- TRITON: Triangle Trans-Ocean buoy Network;
- PIRATA: Pilot Research Moored Array in the Tropical Atlantic;
- CPR: Continuous Plankton Recorder Programme;
- GCRMN: Global Coral Reef Monitoring Network.

GOOS Pilot Projects include:

- GODAE: Global Ocean Data Assimilation Experiment;
- ARGO: 'Observing the global ocean in real time';
- GEO: Global Eulerian Observations;
- RAMP: Rapid Assessment of marine pollution.

Global Terrestrial Observing System (GTOS)

www.fao.org/gtos

GTOS is a program for observations, modelling, and analysis of terrestrial ecosystems to support sustainable development. GTOS facilitates access to information on terrestrial ecosystems so that researchers and policy makers can detect and manage global and regional environmental change.

GTOS was established in January 1996 in response to international calls for a deeper understanding of global changes and their impacts on the Earth System and its ability to support sustainable development. The GTOS mission is to provide policy-makers, resource managers and researchers with access to the data and information they need to detect, quantify, locate, and warn of changes (especially reductions) in the capacity of terrestrial ecosystems to support sustainable development. The program focuses on five issues of global concern – changes in land quality, availability of freshwater resources, loss of biodiversity, climate change, and impacts of pollution and toxicity.

Sponsoring organisations

GTOS is sponsored by FAO, UNEP, UNESCO and WMO. There is no direct national membership.

Australian involvement

Australia has minimal formal involvement in GTOS, through work at the technical level only.

Main programs

- Global Terrestrial Network;
- Net Primary Productivity Demonstration Project;
- Terrestrial Carbon Observations Network;
- Terrestrial Observation Panel for Climate;
- Global Observation of Forest and Land Cover Dynamics Panel;
- Terrestrial Ecosystem Monitoring Sites Database;
- Terrestrial Coastal Environments;
- Regional Programs and Networks.

International Geosphere-Biosphere Programme (IGBP)

www.igbp.kva.se

IGBP's mission is to deliver scientific knowledge to help human societies develop in harmony with Earth's environment. Its scientific objective is to describe and understand the interactive physical, chemical and biological processes that regulate the total Earth System, the unique environment that it provides for life, the changes that are occurring in this system, and the manner in which they are influenced by human actions. As one of four international global environmental change research programs, IGBP works towards its objective in close collaboration with the International Human Dimensions Programme on Global Environmental Change (IHDP), the World Climate Research Programme (WCRP), and DIVERSITAS, an international program of biodiversity science. IGBP is an international scientific research program built on interdisciplinarity, networking and integration. It addresses scientific questions where an international approach is the best or the only way to provide an answer. It adds value to a large number of individual, national and regional research projects through integrating activities to achieve enhanced scientific understanding.

IGBP's integrating activities add value by:

- developing common international frameworks for collaborative research based on agreed agendas;
- forming research networks to tackle focused scientific questions;
- promoting standardised methodologies;
- guiding and facilitating construction of global databases;
- undertaking model intercomparisons and comparisons with data;
- facilitating efficient patterns of resource allocation;
- undertaking analysis, synthesis and integration activities on broad Earth System themes.

Involved countries and organisations

IGBP's central budget mostly comes from national contributions from about 50 countries around the world. The rest comes from ICSU grants earmarked for specific activities.

Australian involvement

- The Australian Academy of Science pays formal membership subscriptions.
- Australia is one of eight countries to provide direct support to International Project Offices, through the Global Carbon Project based in Canberra and the START project based in Canberra headed by Graeme Pearman (CSIRO). Graeme Pearman is also on the IGBP scientific committee.
- Most IGBP projects have Australian scientists on their scientific steering committees.

Main programs

IGBP has adopted a new structure of eight projects in total. Six projects are centred on the three major Earth System compartments - ocean, land and atmosphere - and the interfaces between them. Two projects - PAGES and GAIM - focus on a whole system perspective, from the past into the future. In general, there is a focus on interaction between and integration across the IGBP projects.

- Past Global Changes (PAGES);
- Global Analysis, Integration, and Modelling (GAIM) Task Force;
- Global Ocean Ecosystem Dynamics (GLOBEC);
- International Global Atmospheric Chemistry (IGAC);
- Land-Ocean Interactions in the Coastal Zone (LOICZ);
- Surface Ocean Lower Atmosphere Study (SOLAS);
- Integrated Land Ecosystem – Atmosphere Processes Study (ILEAPS);
- Land-Use and Land-Cover Change (LUCC) – finishes in 2005;
- Global Change and Terrestrial Ecosystem (GCTE)- finished in 2003;
- Joint Global Ocean Flux Study (JGOFS)- finished in 2003;
- Biospheric Aspects of the Hydrological Cycle (BAHC) – finished in 2002.

IGBP is also involved in the following joint projects with the other members of the ESSP (DIVERSITAS, IGBP, IHDP and WCRP):

- Global Carbon Project (GCP);
- Global Change System for Analysis, Research and Training (START);
- Global Environmental Change and Food Systems (GECAFS);
- Global Environmental Change and Human Health;
- Global Water System Project (GWSP).

The Integrated Global Observing Strategy (IGOS)

www.igospartners.org

IGOS is a strategic planning process involving a number of partners that addresses how well user requirements are being met by the existing mix of international observational networks, and how these requirements might be better met in the future. Users include international decision-making bodies and organisations, national governments, non-governmental and public service organisations, the scientific community, the private sector, the media and the general public. IGOS serves as guidance to those responsible for defining and implementing individual observing systems. IGOS aims to:

- provide an overarching view to help improve understanding by governments of the significance of global monitoring;
- provide a framework for decisions to ensure continuity in the observation of key variables;
- offer a forum for exchange of information;
- identify gaps in existing observation systems;
- encourage specific activities to develop and enhance individual components of the strategy;
- promote amongst different user groups all aspects of strategy implementation by national and international agencies.

IGOS covers all forms of data collection concerning the physical, chemical, biological and human environment including the associated impacts.

Sponsoring organisations

IGOS is sponsored by GCOS, GOOS, GTOS, FAO, ICSU, IOC, UNEP, UNESCO, WMO, CEOS, WCRP and IGBP. There is no direct national membership.

Australian involvement

Australia does not pay any formal membership subscriptions to IGOS – Australian involvement is via formal membership to some of the sponsoring bodies.

Main programs

- Approved themes – Global Carbon Cycle; Geohazards; Ocean; Water cycle;
- Themes under preparation – Atmospheric chemistry; Coastal observations; Coral Reefs Sub-Theme;
- Proposed themes – Land Cover; Cryosphere.

International Human Dimensions Programme on Global Environmental Change (IHDP)

(www.ihdp.org)

IHDP is an international, interdisciplinary, non-governmental science program dedicated to promoting and co-ordinating research. IHDP's mission is to generate scientific knowledge on coupled human-environment systems, achieve comprehensive understanding of global environmental change processes and their consequences for sustainable development, and make contributions to explore:

- the anthropogenic drives of global environmental change;
- the impact of such change on human welfare; and
- societal responses to mitigate and adapt to global environmental change.

IHDP fosters high-quality research. The dynamics of land-use and land-cover change, interactions between institutions and global environment, human security, sustainable production and consumption systems as well as food and water issues, urbanisation and the global carbon cycle are investigated in the context of global environmental change.

Sponsoring countries and organisations

Funding is provided by annual contributions from IHDP's scientific sponsors, ICSU and ISSC, and a number of supporting countries. In 2001, IHDP was supported by grants from Germany, USA, the Netherlands, Sweden, Norway, Switzerland, Austria, Spain, New Zealand and Finland.

Australian involvement

Australia does not provide direct funding to IHDP, but contributes indirectly via membership to ICSU and ISSC. No Australians are currently on the IHDP Scientific committee. However, Australian scientists are involved in IHDP core projects. Graeme Pearman is an ex-officio member of the scientific steering committee as the START representative. Australia does not have a National Committee for IHDP – several other countries do.

Main programs

IHDP presently has four Core Science Projects:

- Global Environmental Change and Human Security (GECHS);
- Institutional Dimensions of Global Environmental Change (IDGEC);
- Industrial Transformation (IT);
- Land-Use and Land-Cover Change (LUCC) – finishes in 2005.

IHDP is also involved in the following joint projects with the other members of the ESSP (DIVERSITAS, IGBP, IHDP and WCRP):

- Global Carbon Project (GCP);
- Global Change System for Analysis, Research and Training (START);
- Global Environmental Change and Food Systems (GECAFS);
- Global Environmental Change and Human Health;
- Global Water System Project (GWSP).

International Network for the Availability of Scientific Publications (INASP)

www.inasp.info

INASP is a cooperative network of partners. Its mission is to enhance the flow of information within and between countries, especially those with less developed systems of publication and dissemination. INASP was established in 1992 by ICSU as a program of the Committee for the Dissemination of Scientific Information. Its objectives are:

- to map, support and strengthen existing activities promoting access to and dissemination of scientific and scholarly information and knowledge;
- to identify, encourage and support new initiatives that will increase local publication and general access to quality scientific and scholarly literature;
- to promote in-country capacity building in information production, organisation, access and dissemination.

Sponsoring countries and organisations

INASP receives financial support from the Australian Centre for International Agricultural Research, Association of Commonwealth Universities, British Medical Association, Carnegie Corporation of New York, European Commission Exchange, Gibbs Trust, ICSU, INTAS, International Institute for Communication and Development, Morel Trust, National Academy of Sciences, Norwegian Agency for Development Co-operation, Royal Danish Ministry of Foreign Affairs, Royal Swedish Academy of Sciences, Swedish International Development Cooperation Agency, Technical Centre for Agricultural and Rural Cooperation ACP-EU, United Kingdom Department for International Development, Wellcome Trust, Wenner Gren, and the World Health Organisation.

Australian involvement

Australia is involved via the Australian Centre for International Agricultural Research (ACIAR).

Main programs

- INASP-Health;
- Initiative on networking organisations and networks in rural development (South-South);
- Library support programs;
- Programme for the Enhancement of Research Information (PERI);
- African Journals OnLine Publishing Project (AJOPP);
- ICT Training;
- Publications.

Committee on Allocation of Radio Frequency (IUCAF)

www.iucaf.org

IUCAF is an international committee (set up in 1960 by URSI, IAU, and COSPAR) that works in the field of spectrum management on behalf of the passive radio sciences, like radio astronomy, remote sensing, space research, and meteorological remote sensing. The IUCAF brief is to study and coordinate the requirements for radio frequency allocations established by the afore-mentioned sciences and to make these requirements known to the national and international bodies responsible for frequency

allocations. IUCAF has official standing as a non-voting organisation at the International Telecommunication Union. IUCAF takes action aimed at ensuring that disruptive emissions do not interfere with the above sciences (when operating within allocated bands) by other radio services. IUCAF is particularly concerned about radio transmissions from aircraft, space vehicles, and land-based telecom services.

Sponsoring organisations

IUCAF is sponsored by IAU, COSPAR and URSI. There is no direct national membership.

Australian involvement

The Australian Academy of Science pays membership subscriptions to the three sponsoring organisations. Anastasios Tzioumis (CSIRO Australia Telescope National Facility) is on the IUCAF Committee.

Millennium Ecosystem Assessment (MA) (www.millenniumassessment.org)

MA is an international work program designed to meet the needs of decision makers and the public for scientific information concerning the consequences of ecosystem change for human well-being and options for responding to those changes. MA was launched by U.N. Secretary-General Kofi Annan in June 2001 and aims to help to meet the assessment needs of the Convention on Biological Diversity, Convention to Combat Desertification, the Ramsar Convention on Wetlands, and the Convention on Migratory Species, as well as needs of other users in the private sector and civil society. If the MA proves to be useful to its stakeholders, it is anticipated that an assessment process modelled on the MA will be repeated every 5–10 years and that ecosystem assessments will be regularly conducted at national or sub-national scales. MA focuses on ecosystem services (the benefits people obtain from ecosystems), how changes in ecosystem services have affected human well-being, how ecosystem changes may affect people in future decades, and response options that might be adopted at local, national, or global scales to improve ecosystem management and thereby contribute to human well-being and poverty alleviation. MA aims to:

- identify priorities for action;
- provide tools for planning and management;
- provide foresight concerning the consequences of decisions affecting ecosystems;
- identify response options to achieve human development and sustainability goals;
- help build individual and institutional capacity to undertake integrated ecosystem assessments and to act on their findings.

Sponsoring countries and organisations

The four-year MA budget is approximately US\$17 million, with more than \$7 million of additional support through in-kind contributions. Major financial support is being provided by the Global Environment Facility, United Nations Foundation, the David and Lucile Packard Foundation, World Bank, United Nations Environment Programme, the government of Norway, and the Kingdom of Saudi Arabia.

18 countries/regions are affiliated via their National Academies of Science, but Australia is not one of those affiliated countries.

Australian involvement

Australia has no formal involvement. However, Australian scientists do provide some in-kind support for MA activities, and have been involved in several peer reviews of MA programs, particularly in round 2.

Scientific Committee on Antarctic Research (SCAR)

(www.scar.org)

SCAR is a scientific committee of ICSU and is charged with the initiation, promotion and co-ordination of scientific research in Antarctica. SCAR also provides international, independent scientific advice to the Antarctic Treaty system. The principal objectives of SCAR are:

- to initiate, promote, and co-ordinate international scientific activity in the Antarctic with a view to framing and reviewing scientific programs of circumpolar scope and significance;
- to keep under review scientific matters pertaining to the integrity of the Antarctic environment, including the conservation of its terrestrial and marine ecosystems;
- to provide, upon request, scientific and technological advice to the Antarctic Treaty Consultative Meetings and other organisations, both governmental and non-governmental.

Sponsoring countries or organisations

Funding comes from member countries relevant Scientific Unions of ICSU. There are 27 member countries, including Australia.

Australian involvement

The Australian Academy of Science and the Australian Antarctic Division share the cost of formal membership subscriptions to SCAR. Australian scientists are involved with the various scientific committees of SCAR.

Scientific Committee on the Lithosphere (SCL)

(www.sclilp.org)

The International Lithosphere Program (ILP), instituted in 1980 as the successor to the International Geodynamics Project, seeks to elucidate the nature, dynamics, origin and evolution of the lithosphere, with special attention to the continents and their margins. Believing these goals are best attained through international, interdisciplinary collaboration, the Inter-Union Commission on the Lithosphere has established international, multidisciplinary working groups and coordinating committees to pursue its specific research objectives. The International Lithosphere Program is guided by the Scientific Committee on the Lithosphere (SCL), which was established by ICSU.

Sponsoring countries or organisations

The ILP and SCL are sponsored by ICSU, IUGG and IUGS. There is no direct national membership.

Australian involvement

Australia is a member of the three sponsoring bodies, via Australian Academy of Science membership subscriptions. There does not appear to be much involvement by Australian scientists in leadership roles of any of the various SCL projects.

Main programs

- Geoscience of global change;
- Contemporary dynamics and deep processes;
- Continental lithosphere;
- Oceanic lithosphere;
- Coordinating Committees.

Scientific Committee on Problems of the Environment (SCOPE)

(www.icsu-scope.org)

SCOPE is an interdisciplinary body of natural and social science expertise focused on global environmental issues, operating at the interface between scientific and decision-making instances. It is a worldwide network of scientists and scientific institutions developing syntheses and reviews of scientific knowledge on current or potential environmental issues. SCOPE's scientific program is designed to cover environmental issues - either global or shared by several nations - in need of interdisciplinary approaches through synthesis, assessment, and evaluation of information available on natural and human-made environmental changes and the effects of these changes on people. SCOPE reviews existing and potential environmental problems and has played an important role in the development of major international research programs. It is a recognised authority at the interface between the science and decision-making spheres, providing analytical tools to promote sound management and policy practices.

Sponsoring countries or organisations

SCOPE is supported by 40 member countries and 22 ISCU Unions and International Bodies.

Australian involvement

The Australian Academy of Science paid membership subscriptions up until 2001-2002 but stopped subscriptions in 2002-2003. Australia and the Academy are still listed as members on the SCOPE website. Several Australian scientists are involved in various SCOPE projects. The Academy is also a formal member of various bodies that sponsor SCOPE.

Main programs

Cluster 1 – Managing Societal and Natural Resources. Projects founded on scientific research, but emphasising its applications in developing options for practices and policies for a more sustainable biosphere:

- Global Invasive Species Programme;
- Southern African Savannas Network;
- Peri-Urban Environmental Change;
- Urban Solid Waste Management;
- Adaptive Ecopolis Development to Meet the Challenge of Environmental Change;
- Forest Management and Conservation in an Information-rich World;
- Bridging the gap between ecology researchers and managers of protected areas;

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- Assessment of Sustainability Indicators;
 - Consequences of Industrialised Animal Production.

Cluster 2 – Ecosystem Processes and Biodiversity. Projects focused on ecosystem processes, their interactions with human activities, and the relation between biological diversity and ecosystem functioning:

- Earth Surface Processes, Material Use and Urban Development;
- Land-Ocean Nutrient Fluxes: Silica Cycle;
- International Program on Ecosystem Change;
- Biodiversity and Ecosystem Functioning;
- Emerging Ecosystem;
- Monsoon Asia Integrated Regional Studies;
- International Nitrogen Initiative and Fertilizer Nitrogen;
- Microbial genomes in the environment.

Cluster 3 - Health and Environment. Projects that develop methods to assess chemical risks to human and non-human species and use case studies of environmental contamination to assess the health and environmental risks of specific chemicals:

- Scientific Group on Methodologies for the Safety Evaluation of Chemicals;
- Radioactivity at Nuclear Sites;
- Cadmium in the Environment;
- Biological Measures of Water Quality: Their Relevance to Present and Future Contaminants;
- Biodiversity, Health and the Environment.

Scientific Committee on Oceanic Research (SCOR)

www.jhu.edu/~scor

SCOR is the leading non-governmental organisation for the promotion and coordination of international oceanographic activities. SCOR does not have the resources to fund research directly, but focuses on promoting international cooperation in planning and conducting oceanographic research, and solving methodological and conceptual problems that hinder research. Scientists from thirty-five nations participate in SCOR working groups and scientific steering committees for the large-scale ocean research projects. SCOR promotes capacity building for marine scientists in developing countries through special efforts to include such scientists in SCOR activities, through travel grants to as many as 75 individuals each year, and through a new activity on Regional Graduate Schools of Oceanography and Marine Environmental Sciences.

Sponsoring countries or organisations

SCOR is supported by its 35 Member countries, plus grants from various organisations.

Australian involvement

The Australian Academy of Science pays formal membership subscriptions. Several Australian scientists are involved in various SCOR projects.

Main programs

- 11 Current Working Groups;
- Large-Scale Ocean Research Programs:
 - Global Ecology and Oceanography of Harmful Algal Blooms;
 - GEOTRACES Planning Group;
 - Global Ocean Ecosystem Dynamics;
 - Joint Global Ocean Flux Study (JGOFS);
 - Integrated Marine Biogeochemistry and Ecosystem Research Project;
 - Surface Ocean-Lower Atmosphere Study.
- SCOR-IOC Ocean Carbon Activities;
- Capacity-Building Activities.

Scientific Committee on Solar Terrestrial Physics (SCOSTEP)

(www.ngdc.noaa.gov/stp/SCOSTEP)

The principal tasks of SCOSTEP are:

- to promote international interdisciplinary programs in solar-terrestrial physics, and to organise and coordinate such programs of interest to, and approved by, at least two of the following bodies: IAU, IUGG, IUPAP, URSI, and COSPAR;
- to define the data relating to these programs that should be exchanged through the World Data Centres;
- to provide such advice as may be required by the ICSU bodies and World Data Centres concerned with these programs;
- to work with other ICSU bodies in the coordination of symposia in solar-terrestrial physics, especially on topics related to SCOSTEP's programs.

During the years 2004-2008, SCOSTEP's comprehensive international program is [CAWSES](#) (Climate and Weather of the Sun-Earth System).

Sponsoring countries or organisations

SCOSTEP is sponsored by ICSU, IAU, IUGG (IAGA), IUGG (IAMAS), IUPAP, URSI and COSPAR plus contributions from 30 national member bodies.

Australian involvement

The Australian Academy of Science pays formal membership subscriptions. Australian scientists are involved in various SCOSTEP committees and projects.

World Climate Research Programme (WCRP)

(www.wmo.ch/web/wcrp)

The objectives of WCRP are to develop the fundamental scientific understanding of the physical climate system and climate processes needed to determine to what extent climate can be predicted and the extent of human influence on climate. The program encompasses studies of the global atmosphere, oceans, sea and land ice, and the land surface which together constitute the Earth's physical climate system. WCRP studies are specifically directed to provide scientifically founded quantitative answers to the questions being raised on climate and the range of natural climate variability, as well as to establish

the basis for predictions of global and regional climatic variations and of changes in the frequency and severity of extreme events.

Sponsoring countries or organisations

WCRP is sponsored by ICSU, IOC of UNESCO, and WMO. There is no direct national membership.

Australian involvement

The Australian Academy of Science pays formal membership subscriptions. Australian scientists are involved in various WCRP projects and steering committees.

Main programs

- Climate and Cryosphere (CliC);
- Climate Variability and Predictability (CLIVAR);
- The Global Energy and Water Cycle Experiment (GEWEX);
- Stratospheric Processes And their Role in Climate (SPARC);
- Surface Ocean-Lower Atmosphere Study (SOLAS) – cosponsored by WCRP, IGBP and SCOR;
- Working Group on Numerical Experimentation (WGNE);
- Working Group on Coupled Modelling (WGCM);
- Working Group on Surface Fluxes (WGSF).

WCRP is also involved in the following joint projects with the other members of the ESSP (DIVERSITAS, IGBP, IHDP and WCRP):

- Global Carbon Project (GCP);
- Global Change System for Analysis, Research and Training (START);
- Global Environmental Change and Food Systems (GECAFS);
- Global Environmental Change and Human Health;
- Global Water System Project (GWSP).

Panel on World Data Centres (WDC)

www.ngdc.noaa.gov/wdc

WDC was established in 1968 to advise ICSU on the management of the World Data Centres, and to carry out related activities. It succeeded the other ICSU bodies that created the World Data Centre system for the International Geophysical Year (IGY) of 1957-1958 and which supervised its operation during and after the IGY. Currently, the Panel oversees about forty World Data Centres in 12 countries. WDCs are funded and maintained by their host countries on behalf of the international science community, and are responsible for collecting, archiving, and distributing a wide range of data. These data cover time-scales ranging from seconds to millennia and provide baseline information for research in many disciplines, especially for monitoring changes in the geosphere and biosphere - gradual or sudden, foreseen or unexpected, natural or man-made. All data held in WDCs are available for no more than the cost of copying and sending the requested information.

Through its varied activities and initiatives, the Panel promotes the use of new technology, enabling good science to be done with both new and old data by the scientists of many nations.

Involved countries

Twelve countries host World Data Centres, including Australia.

Australian involvement

Australia hosts the WDC for Solar-Terrestrial Science in Sydney, via the Commonwealth government's IPS Radio and Space Services.