



**INTERNATIONAL  
COUNCIL FOR SCIENCE**  
REGIONAL OFFICE FOR  
ASIA AND THE PACIFIC

Strengthening International Science for the Benefit of Society

# **2016 ANNUAL REPORT**

REGIONAL OFFICE FOR ASIA AND THE PACIFIC







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# **ICSU REGIONAL OFFICE FOR ASIA AND THE PACIFIC**

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# VISION

The long-term ICSU vision is for a world where science is used for the benefit of all, excellence in science is valued and scientific knowledge is effectively linked to policy-making. In such a world, universal and equitable access to high quality scientific data and information is a reality and all countries have the scientific capacity to use these and to contribute to generating the new knowledge that is necessary to establish their own development pathways in a sustainable manner.

# MISSION

ICSU mobilizes knowledge and resources of the international science community for the benefit of society, to:

- Identify and address major issues of importance to science and society
- Facilitate interaction amongst scientists across all disciplines and from all countries
- Promote the participation of all scientists in the international scientific endeavour, regardless of race, citizenship, language, political stance and gender
- Provide independent, authoritative advice to stimulate constructive dialogue between the scientific community and governments, civil society and the private sector

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**Mohd. Nordin Hasan**  
*Director*  
ICSU Regional Office for Asia and the Pacific

# MESSAGE FROM THE DIRECTOR

It has been another exciting and productive year at the ICSU Regional Office for Asia and the Pacific (ROAP). Its role in the development of Future Earth continues to flourish with the consolidation of the development phase of its new programme – Sustainability Initiative in the Marginal Seas of South and East Asia (SIMSEA). This is one of ROAP's main contribution to the growth of Future Earth in Asia. It serves as an example of how regional collaboration in transdisciplinary solutions oriented research can be planned and developed. In addition to this, two of ROAP's Regional Committee members, Soottiporn Chittmittrapap and Nordin Hasan, were invited to the Regional Advisory Committee (RAC) of Future Earth in Asia. Nordin was subsequently selected to Chair the RAC.

The work of ROAP on hazards and risk led by the Steering Group on Natural Hazards and Risk (SGNHR) continues to progress. In the year under consideration it was involved in research on historical records of high energy events in the Gulf of Thailand, co-organised the 4<sup>th</sup> *International Tsunami Field Symposium*, in Phuket, Thailand, and convened a symposium session in the 12<sup>th</sup> *Annual Meeting of the Asia Oceania Geosciences Society in Singapore*. The Chair of SGNHR represented ROAP in several meetings at the global level including the Science and Technology Major Group Meeting which presented a Plenary Statement at the *UN 3rd World Conference on Disaster Risk Reduction in Sendai, Japan*. He also represented ROAP in the Integrated Research on Disaster Risk (IRDR) Science Committee meeting in Stellenbosch University, South Africa.

One of the pilot projects developed under the guidance of the Urban Health and Wellbeing Programme of ROAP obtained funding for implementation. This is a landmark achievement spearheaded by the Research Center for Environmental Changes of the Academy Located in Taipei. The project will use the systems approach

to research green transportation and urban health in the face of climate change in the city of Taipei. This pioneering effort will engage with nine different groups of researchers and illustrate the development of practical approaches to integrative research and decision-making in complex systems.

The collaboration with the International Union of Psychological Sciences (IUPsyS) on capacity development for research in psychological intervention after disasters entered its 4<sup>th</sup> year in 2015. The 4<sup>th</sup> International Workshop on the subject was successfully held in Taipei, hosted by the Center for Sustainability Science, and the Research Center for Environmental Changes of the The Academy Located in Taipei. We thank all partners who made the workshop possible, and the mostly early career scientists who attended the workshop.

In the science for policy arena, ROAP participated in several national and regional meetings, the most significant of which were the 3<sup>rd</sup> UN Secretary-General Scientific Advisory Board Meeting, the *International Symposium on Transnational Cooperation towards Enhancing Ocean Governance*, on World Ocean Day, and the *Science, Technology and Society Forum ASEAN-Japan Workshop for Innovation, Science and Technology Cooperation*, all held in Kuala Lumpur.

The agreement between ICSU and the Government of Malaysia on the hosting of ROAP ends in September 2016. I would like to take this opportunity to thank the Ministry of Science, Technology and Innovation, Government of Malaysia, which through its agency the Academy of Sciences Malaysia (ASM) provided solid support to ROAP since its inception in 2006. I hope the collaboration between ICSU and the Government of Malaysia will continue to grow as an epitome of what is possible in international collaboration in science for the benefit of society.



**Lourdes J. Cruz**  
*Chair*  
Regional Committee for Asia and the Pacific



# MESSAGE FROM THE CHAIR OF THE REGIONAL COMMITTEE

Let me begin by congratulating Director Nordin Hasan who was selected as Chair by the recently formed eight-member Regional Advisory Committee (RAC) for Future Earth in Asia. Congratulations also to Professor Emeritus Dr. Soottiporn Chittmittrapap, a member of the ICSU Regional Committee for Asia and the Pacific (RCAP), who was also selected as one of the members of RAC. This committee is expected to evolve into a full Future Earth and become an effective advocate of Future Earth in the region.

2015 turned out to be a very good year for ICSU Regional Office for Asia and the Pacific (ROAP). ROAP successfully led the development of several pilot project proposals on the systems approach for urban health and wellbeing. One of these, *"Planning Green Transportation for Better Urban Health under Climate Change"* successfully bid for funds from the Ministry of Science and Technology in Taiwan and is currently an on-going research project at the Research Center for Environmental Changes of The Academy Located in Taipei. The Steering Group on Natural Hazards and Risk of ICSU ROAP was also successful in obtaining funds to support a two-year research project on coastal hazards in South-East Asia from Zayed University where the Chair, James Terry is based. Additional funds for the project was obtained from the National University of Singapore.

ICSU ROAP together with the International Centre of Excellence on Integrated Research on Disaster Risk (IRDR-ICoE), Taipei organized the 4<sup>th</sup> *International Workshop on Psychological Intervention after Disasters* in November 2015. The series of workshops for capacity building is spearheaded by the International Union of Psychological Science with support from ICSU and other partners. The

training provided focuses on enhancing the science needed to better understanding the scientific basis of psychological interventions after disasters.

The Sustainability Initiative for the Marginal Seas of South and East Asia (SIMSEA), a flagship project of ROAP is now in its second year of development. SIMSEA is seen as "an international alliance of physical, ecological and social scientists working together in collaboration with other stakeholders to generate policy and community-relevant knowledge towards sustainability of the marginal seas of South and East Asia".

During the year ICSU ROAP was independently reviewed to assess its functioning and achievements over the past five years. Quoting from the executive summary of the review, "ICSU ROAP is viewed upon favourably and positively in the region, with all feedback from interviewees generally positive". It has "exhibited very good adherence to the ICSU strategic plan and all initiatives undertaken have been consistent with the overall direction of the strategic plan". On assessing the performance of ICSU ROAP over the past five years, the Review Panel's Report stated that "despite its limited financial and human resources, ICSU ROAP is extremely effective." Thus the Panel's recommendation is "to maintain the office with its current staff, as the work undertaken is exemplary. The strong network the office has fostered can only be a benefit to international science and the visibility of regional science".

Let us commend ICSU ROAP for its excellent performance!

## ICSU REGIONAL OFFICE FOR ASIA AND THE PACIFIC 2016 EVENTS REGISTER

DATE	EVENT
27 – 29 January	<i>United Nations International Strategy for Disaster Reduction Science and Technology Conference on the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030</i> Geneva, SWITZERLAND
5 February	<i>SIMSEA Workshop</i> Tokyo, JAPAN
23 – 24 February	5 <sup>th</sup> Meeting of Steering Group on Natural Hazards and Risk Kuala Lumpur, MALAYSIA
11 March	Launch of Universiti Malaysia Sabah (UMS) SIMSEA Research Group Sabah, MALAYSIA
21 – 22 March	4 <sup>th</sup> SIMSEA Science Steering Committee (SSC) Meeting Diliman, THE PHILIPPINES
12 – 13 April	Meeting of ICSU's Union Members Paris, FRANCE
14 – 15 April	116 <sup>th</sup> ICSU Executive Board Meeting Paris, FRANCE
25 April	Launch of Future Earth Korea Seoul, KOREA
27 April	21 <sup>st</sup> Meeting ICSU Regional Committee for Asia and the Pacific Seoul, KOREA
30 May – 1 June	<i>16<sup>th</sup> Annual Conference of the Science Council of Asia</i> Colombo, SRI LANKA

DATE	EVENT
16 June	<i>ROAP Symposium on Greening Society at 23rd Pacific Science Congress</i> Taipei, TAIWAN
19 July	<i>Forum on Advancing Science and Technology in the Implementation of the Sendai Framework for Disaster Risk Reduction</i> Kuala Lumpur, MALAYSIA
31 July – 5 August	<i>13<sup>th</sup> Annual Conference of the Asia Oceania Geosciences Society</i> Beijing, CHINA
25 – 26 August	<i>1<sup>st</sup> Workshop to Strengthen Scientific Advisory Capacities for Disaster Risk Reduction</i> Bangkok, THAILAND
7 – 10 September	<i>Universiti Malaysia Sabah Training Workshop on Transdisciplinary Research</i> Sabah, MALAYSIA
21 – 22 September	<i>6<sup>th</sup> Meeting of Steering Group on Natural Hazards and Risk</i> Jakarta, INDONESIA
26 – 29 September	<i>SIMSEA Regional Symposium</i> Manila, THE PHILIPPINES
10 - 11 October	<i>1<sup>st</sup> Meeting of ROAP Science Planning Group on Epigenetics</i> Kuala Lumpur, MALAYSIA
14 - 17 November	<i>5<sup>th</sup> International Workshop on Psychological Intervention after Disasters</i> Manila, THE PHILIPPINES
21 - 22 November	<i>22<sup>nd</sup> Meeting ICSU Regional Committee for Asia and the Pacific</i> Sabah, MALAYSIA

A close-up photograph of several colored pencils (yellow, red, blue, green) arranged to form a triangular shape on a light blue background.

PLANNING,  
COORDINATING  
AND PROMOTING  
RESEARCH

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A photograph showing a portion of a map of Southeast Asia, specifically highlighting Malaysia and Singapore. A wooden ruler is placed diagonally across the map.

FUTURE EARTH  
IN THE ASIA  
AND THE  
PACIFIC

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A dark teal background featuring a glowing network diagram with interconnected nodes and lines, resembling a molecular or digital structure.

REGIONAL  
NETWORKING

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# Planning, Coordinating and Promoting Research



# PLANNING, COORDINATING AND PROMOTING RESEARCH

## Health and Wellbeing in the Changing Urban Environment

Health and wellbeing in the evolution of urban environment continue to become a major focus for the Regional Office. This year, it embarks on an initiative to produce a science plan on epigenetics and its relations to urban health in Asia and the Pacific region.

### ROAP Science Planning Group on Epigenetics

The newly constituted ICSU Regional Office for Asia and the Pacific (ICSU ROAP) Science Planning Group on Epigenetics met in Kuala Lumpur on 10 and 11 October 2016 to discuss the production of a science plan on epigenetics to increase epigenetics research and focus in Asia and to understand and address the effects and understanding of epigenetics on urban health, and of the need to strengthen the capacity of the regional scientific community to engage in research on epigenetics. The Plan will review the epigenetics landscape in urban health, document what is known about triggers and epigenetic modifications, identify emerging research areas, including research on genetic products, change, biochemical pathways and their relations to diseases in rapidly expanding urban populations. How knowledge of epigenetics can impact disease risk assessments, influence urban planning, public health and other policies, will also be explained. The plan also envisages drawing attention to the use of epigenetics knowledge to identify biomarkers and therapeutic targets and provide illustrative case studies of relevance to the further development of the field in Asia and the Pacific.

## Natural Hazards and Risk

The Regional Office for Asia and the Pacific promotes the scientific study of natural hazards and disaster risk for the benefit of sustainability and human resilience in the Asia-Pacific region.

### United Nations International Strategy for Disaster Reduction (UNISDR) Science and Technology Conference on the Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030

Professor James Terry, the Chair of Steering Group on Natural Hazards and Disaster Risk (SGNHR) represented ICSU ROAP at the UNISDR Science and Technology Conference on the implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030 which was held from 27–29 January 2016 in Geneva, Switzerland. There were four Work Streams at the Conference—Work Stream 1: The Scientific and Technical Partnering for the Implementation of the Sendai Framework; Work Stream 2: Understanding Disaster Risk, Risk Assessment and Early Warning; Work Stream 3: Use of Science, Technology and Innovation Tools, Methods and Standards to Support the Implementation and Reporting of the Sendai Framework; and Work Stream 4: Leveraging Science through Capacity Development and Research. Prof James Terry led the team that reviewed contributions for presentation during Work Stream 1. Participation at this Conference forms part of the missions of SGNHR in engaging with the implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030, emphasising the importance of natural hazards in meeting the stated targets and priorities for action.



### 5<sup>th</sup> Meeting of Steering Group on Natural Hazards and Risk

The Steering Group on Natural Hazards and Risk (SGHNR) of ICSU ROAP met in Kuala Lumpur on 23 and 24 February 2016. The Group was chaired by James Terry, Professor at Zayed University, Dubai, United Arab Emirates. It had four other members and a new Senior Advisor, Richard Sanders from Willis Re, Singapore. Professor Emeritus Mohd Nordin Hasan, the Director of ICSU ROAP, was an ex officio member of the group.

The members reported on the outcomes of the conferences and meetings attended and also on the research activity and recent publications. The meeting discussed on funding possibilities for research and activities, how to increase the Group's participation in future conferences and workshops related to natural hazards and disaster risk reduction and recruitment of new members into the Steering Group. The Group also discussed the recent developments in the insurance/reinsurance industry.

### Forum on Advancing Science and Technology in the Implementation of the Sendai Framework for Disaster Risk Reduction

ICSU ROAP joined the United Nations University International Institute for Global Health (UNU-IIGH) and United Nations Development Programme to organize a public forum on *Advancing Science and Technology in the Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030*. The Forum was held in Kuala Lumpur on 19 July 2016. The primary objective of the forum was to raise awareness about the value of science, technology, and innovation (STI) for disaster risk reduction by engaging with the principal stakeholders to stimulate discussion on options to build STI capacity, as well as to identify strategic next steps. The forum included a launch event of the supplement of the *Asia Pacific Journal of Public Health* comprising six policy relevant papers on the broad theme of capacity development in response to “Global Environmental Change and Human Health: Extreme Events and Urbanization in the Asia-Pacific Region”.

### 13<sup>th</sup> Annual Conference of the Asia Oceania Geosciences Society

The 13<sup>th</sup> Annual Conference of the Asia Oceania Geosciences Society (AOGS) was held in Beijing on 31 July – 5 August 2016. AOGS was established in 2003 to promote geosciences and its application for the benefit of humanity, specifically in Asia and Oceania and with an overarching approach to global issues. It holds annual conventions providing a unique opportunity of exchanging scientific knowledge and discussion to address important geo-scientific issues among academia, research institution, and public. The members of ICSU ROAP SGHNR participated in the Conference. Dr Vena Pearl Bongolan was the leading convener of the session on *Analysing Dangerous Phenomena: Applications of Modelling and Non-linear Methods* and Prof James Goff was the chief convener of the General Session of the Interdisciplinary Geosciences Section.

### Strengthening National-level Scientific Advisory Capacities for Disaster Risk Reduction

Disaster risk reduction is a top priority for governments, and other stakeholders throughout the world. This is particularly true in Asia and the Pacific where disaster risk is very high because of high population densities, climate variability, and tectonic activity. The Sendai Framework for Disaster Risk Reduction 2015 – 2030 articulates not only the need for improved understanding of disaster risk in all its dimensions of exposure, vulnerability and hazard characteristics but also of the need to strengthen disaster risk governance through the provision of timely scientific advice to the policy communities in the region. It specifically calls for stronger mobilization and application of science in decision-making and practice, and for increased international scientific cooperation. As a result of the regional initiatives in Asia, the *1<sup>st</sup> Asian Science and Technology Conference for Disaster Risk Reduction* was held in Bangkok in August 2016 to understand the key issues and challenges as well as prioritize needs and opportunities in the application of science and technology in disaster risk reduction. Following





this regional conference, ICSU and ICSU ROAP along with the International Research on Disaster Risk (IRDR) International Programme Office, the Academy of Sciences located in Taipei, IRDR International Centre of Excellence (IRDR – ICoE) – Taipei organized the 1<sup>st</sup> workshop to strengthen national level advisory capacities for disaster risk reduction on 25 – 26 August 2016 in Bangkok, Thailand. The workshop was hosted by the National Research Council Thailand. This first workshop aimed at exploring and understanding the gaps and challenges in implementing the science-based decision making in a selection of countries; sharing the best practices of science-based decision making, and suggesting a framework for the development of national-level plans for strengthening national scientific advisory capacities for disaster risk reduction. This workshop would be followed by a second one when a selection of countries in Asia and the Pacific would present the draft of their national plans for regional recognition and endorsement.

### 6<sup>th</sup> Meeting of Steering Group on Natural Hazards and Risk

The 6th meeting of the ICSU ROAP SGNHR was held in Jakarta on 21 and 22 September 2016. The terms of reference of the Group was updated to the version given below. It now takes into account latest developments in the field of disaster risk reduction, and of the needs of the Sendai Framework for Disaster Risk Reduction:

- To foster collaboration between academia, research institutions and scientific societies that focus on natural hazards and risk;
- To advise ICSU ROAP on appropriate actions that facilitate a regional approach to the multidisciplinary study of hazards and risk;
- To coordinate with agencies that can support the implementation of ICSU ROAP science plans on hazards and disasters (Science Plan on Earthquakes, Floods, and Landslides; Science Plan on the Special Vulnerability of Islands);



- To engage with the implementation of The Sendai Framework for Disaster Risk Reduction 2015 – 2030, emphasising the importance of natural hazards science in meeting the stated targets and priorities for action;
- To undertake fundamental scientific research on natural hazards in the Asia-Pacific region, and identify funding opportunities for associated projects;
- To disseminate key messages from scientific knowledge to wider society, and to cooperate with national and regional disaster management authorities, so as to raise awareness of hazards and risk in vulnerable communities; and
- To liaise and collaborate with the Asian insurance and reinsurance industry sector dealing with catastrophe risk analysis, to identify goals and to offer relevant scientific expertise.

The Group welcomed Dr Vena Pearl Bongalan of the University of the Philippines as a new member. She is a member of the disaster risk modelling and simulation research interest group based at the Scientific Computing Laboratory of the university.

The Indonesian Institute of Sciences (LIPI) which is the National Member of ICSU in Indonesia hosted and participated in the meeting on its second day. Prof Dr IskandarZulkarnain, Head of LIPI welcomed the group. The SGNHR and LIPI exchanged information during a short seminar hosted by LIPI, on their respective roles and functions, presented news about their current research projects and recent publications, and explored the potential for collaboration in research on natural hazards and risk, between LIPI and ICSU ROAP through the work of the SGNHR and partners.







### 5th International Workshop on Psychological Intervention After Disasters

In November 2016, the *5th International Workshop on Psychological Intervention after Disasters* (PIAD) was held in Manila, Philippines. This Workshop was the 5<sup>th</sup> in a series of similar workshops dealing with psychological research and practice concerning disasters and how people and communities deal with the effects of disasters on their biopsychosocial wellbeing. It was organized by ICSU ROAP on behalf of the International Union of Psychological Science (IUPsyS), with funds mainly from the international programme of Integrated Research on Disaster Risk, International Centre of Excellence (IRDR-ICoE) of The Academy Located in Taipei, IUPsyS, and the United Nations University International Institute for Global Health (UNU – IIGH). It was hosted by the Department of Psychology, University of the Philippines, Diliman with additional support from the Psychological Association of the Philippines, the Center for Applied Development Science (CADS), University of Jena, and the Chinese Psychological Society. Following four successful workshops in 2012, 2013, 2014 and 2015, which were held in Beijing, Mianyang, China and Taipei, the 2016 Workshop focused on young scientists and scientist-practitioners in psychology and allied fields from the Asia and Pacific region. Applications were received from 36 possible candidates from the Asia and Pacific region, and 17 were selected and invited to participate. It was expected that this Workshop would further the longer-terms of IUPsyS and its partners towards meeting the need for enhanced capacity for evidence-based planning and management of psychological intervention after disaster in Asia and the establishment of a regional network of researchers.

## Future Earth in Asia and the Pacific



# FUTURE EARTH IN ASIA AND THE PACIFIC

ROAP continued to contribute to the development of Future Earth in the region by its involvement in the many strategic Future Earth regional programmes and activities.

## Future Earth Asian Perspective Symposium on Air Pollution Transdisciplinary Collaboration

The Research Center for Sustainability Science together with the Research Center for Environmental Changes, Academy of Science located in Taipei and Future Earth, Taipei hosted a Future Earth Asian Perspective Symposium on Air Pollution Transdisciplinary Collaboration on 29 February – 1 March 2016 that aimed to promote transdisciplinary

research collaboration. The symposium introduced to participants, Future Earth, the new international platform for research on global sustainability, and explored means to enhance research collaboration across disciplines and sectors of society, on the issue of air pollution in Asia. It was sponsored by the Ministry of Science and Technology, Executive Yuan. About 40 participants from across Asia attended the Symposium. Air pollution is a grave threat to health and development in Asia. The World Health Organization estimated that globally in 2012, 3.7 million deaths were attributable to ambient air pollution and 4.3 million deaths to household air pollution. At the end of the Symposium, several recommendations of priority research topics were made. These included the need to commission and undertake collaborative transboundary research programmes on air pollution in Asia in particularly on the characterization of aerosol composition and their effects on public health; the need to develop realistic air pollution indices and critical pollutant levels that can be applied to the region; and the need to enhance research on the socio-economic drivers of regional trans-boundary pollution. Before declaring the symposium closed, Academician Yuan-Tseh Lee announced the decision to organise a young scientists summer school next year, that will promote collaborative transdisciplinary research on air pollution in Asia. ICSU ROAP Director, Prof MohdNordin Hasan attended the Symposium.





## Launching of Future Earth Korea

Future Earth Korea was launched as a landmark event organised by the Korean Academy of Science and Technology (KAST), in Seoul Korea on 25 April 2016, on the occasion of the 25<sup>th</sup> KAST International Symposium. The theme of the Symposium was “Future Earth and Sustainable Development Goals in Asia”. The event was graced by several prominent leaders including the President of KAST Professor Myung-Chul Lee, the President of the International Council for Science Professor Gordon McBean, and former Korean Prime Minister Dr Duck-Soo Han who is presently the Chairman of the Board of Directors, Climate Change Centre of Korea. Future Earth is the new international platform for research on global sustainability developed by the International Council for Science and its partners. The ICSU Regional Office for Asia and the Pacific was instrumental in the move towards the establishment of Future Earth Korea, having laid the groundwork for its development during the 5<sup>th</sup> ICSU ROAP Regional Consultation in Asia and the Pacific themed “Future Earth in Asia and the Pacific”, that was held in Seoul in November 2013. In the beginning, the then Chair of ROAP’s Regional Committee for Asia and the Pacific (RCAP) Dr Hong-Kum Lee, and RCAP current member Professor Jung-Hye Roe were the prime movers for the establishment of Future Earth Korea. They have both been made members of the National Committee of Future Earth Korea. The establishment of Future Earth Korea is fully supported by KAST and the National Academy of Sciences (NAS) Korea.

## Workshop on SIMSEA in Japan

The Application Laboratory, Japan Agency for Marine-Earth Science and Technology, Center for International Collaboration Atmosphere and Ocean Research Institute, the University of Tokyo, and Japan Society of Ocean Policy co-organized the Workshop to further promote the international programme called *Sustainability Initiative in the Marginal Seas of South and East Asia* (SIMSEA), in Tokyo, Japan on 5 February 2016. The SIMSEA Program which was conceived by the ICSU Regional Committee for Asia and the Pacific and further developed by ICSU ROAP was an activity designed to support collaborative interdisciplinary solutions-oriented research according to the framework of Future Earth, the new international platform for research on global sustainability. Specifically, SIMSEA will study the viability of the marginal seas in South and East Asia and develop a network of networks among researchers to initiate, establish and support interdisciplinary research under the framework of Future Earth.

## Launching of Universiti Malaysia Sabah SIMSEA research group

The Universiti Malaysia Sabah (UMS) launched the SIMSEA Research Group on 11 March 2016. By doing so UMS joins other institutional partners in Japan, New Zealand, and the Philippines in undertaking research to generate policy and community-relevant knowledge towards sustainable development in the region. SIMSEA is an international programme initiated by ICSU ROAP through an alliance of natural and social scientists working with development planners, managers, local communities and other sectors of society to conduct solutions-oriented transdisciplinary research for global sustainability. The collaboration emerged as a project designed in response to Future Earth, the newly established international platform for research on global sustainability. SIMSEA’s regional office is hosted by the Marine Science Institute of the University of the Philippines in Manila. The transdisciplinary research platform has a two-pronged objective:

1. Co-designing an integrative programming that would establish the sustainability of the Marginal Seas of South and East Asia, and
2. Facilitating cooperation among researchers in closing the gaps in scientific knowledge, through projects and programmes, for the benefit of societies.

For the period of 2015-2020, the key research topics are as follows:

Dynamic Planet:

Assessing:

- Coastal and marine ecosystem services sustainability, as well as the cumulative effects of extreme changes;
- Weather patterns particularly on humans and livelihoods;
- The relationships between rapid urbanization and marine pollution associated with changing urban and rural landscapes; and
- Monitoring of tipping point and resilience of marginal seas concerning global change.

Sustainable Development

Identifying:

- The impacts of economic growth on socio-economic and environmental wellbeing;
- The mechanisms to define balance, trade-offs and cultural bottom lines in resource use;
- Indicators for ocean health in different regions; and





- Cultural and other determinants of unity and wise use of resources.

#### Establishing

- Ecologically coherent networks of locally managed marine areas including marine protected areas; and
- Co-developing and co-learning, while fostering ocean views among planners, users and managers.

The UMS SIMSEA Research Group is led by Professor Fadzilah Majid-Cooke. Several researchers from the centres of excellence and faculties of UMS are members in this new research platform.

#### 4th SIMSEA Science Steering Committee Meeting

Sustainable Initiative of Marginal Seas of South and East Asia held its 4th Science Steering Committee (SSC) meeting at the SIMSEA Regional Office that is hosted by the Marine Science Institute of the University of the Philippines, Diliman on 21 and 22 March 2016. The Meeting was attended by all members of the SSC, and it welcomed the new Director of the Marine Science Institute, Professor Fernando Siringan to the Committee as an ex officio member. It took note of progress in the development of SIMSEA and congratulated Professor Fadzilah Majid Cooke on the launch of the SIMSEA research group which she leads, at Universiti Malaysia Sabah. A draft SIMSEA charter was discussed, and the possibility of creating the SIMSEA Research Fellowship was explored. The fellowship aims to provide support to early career scientists to conduct transdisciplinary research in the region of the marginal seas of Asia. The meeting also endorsed plans to hold a capacity development workshop during the 2nd half of 2016 to enhance the ability of scientists in the region to plan and conduct transdisciplinary research on the subject of the sustainability of marginal seas in Asia and the Pacific. The Meeting discussed the SIMSEA regional symposium to be held in September 2016 which among other things aims to support knowledge needs for sustainability in the region of the marginal seas of Asia and to consolidate research efforts towards sustainability in the marginal seas.

#### Universiti Malaysia Sabah Training Workshop on Transdisciplinary Research Design

Universiti Malaysia Sabah held a 4-day training Workshop in September 2016 on understanding transdisciplinarity and the preparation of transdisciplinary research proposals. The Workshop was organized by Professor Fadzilah Majid Cooke of the Faculty of Arts, Humanities and Heritage with the assistance of ICSU ROAP. Professor Fadzilah recently established a transdisciplinary research group to undertake research under the Sustainability Initiative in the Marginal Seas of South and East Asia (SIMSEA), a regional activity of Future Earth, the new international platform for research on global sustainability. It is a 10-year initiative to advance Global Sustainability Science, build capacity in this rapidly expanding area of research and provide an international research agenda to guide natural and social scientists working around the world. SIMSEA is the regional platform for international engagement to ensure that knowledge about the marginal seas of Asia is generated in partnership with society and users of science. The training was targeted for researchers of the UMS research node on SIMSEA which has 15 researchers from several faculties of the University working together as a team. Professor Roderick Lawrence of the University of Geneva, School of Social Sciences, was the trainer for the Workshop.

### **SIMSEA Regional Symposium 2016**

The three-day Regional Symposium of the Sustainability Initiative in the Marginal Seas of South and East Asia (SIMSEA) was held on 26 – 29 September 2016 in Diliman, Quezon City, Philippines. Hosted by the Regional Office of SIMSEA and the Marine Science Institute of the University of the Philippines, Diliman, the symposium attracted the participation of 111 scientists and other stakeholders from 11 countries in the region. The Symposium aimed to promote transdisciplinary research in the context of Sustainable Development Goals focused on coastal and marine issues; explore opportunities for research collaboration and networking towards sustainable development in the region, and introduce transdisciplinary research in sustainable development to early career and others scholars in the area. The marginal seas of South and East Asia extend from the Kurile Islands in the North to the Indonesian archipelago in the South and the Indian Ocean to the West. The South and East Asian marginal seas are vulnerable to rapid coastal population growth, over-harvesting of marine biological resources, and pollution. Its ecosystems support more than 30% of the world's coral reefs and produce about 40 million tons of fish and more than 80% of the world's aquaculture products annually. The high extraction volume of marine bioresources, rapid population growth and rapid economic development increasingly challenge the ability of these seas to provide the ecosystem services that drive economic growth and development in the region. SIMSEA is endorsed as a regional activity of Future Earth, the new international research platform that aims to provide the knowledge and support to accelerate transformations to a sustainable world.

### **Briefing on SIMSEA and Future Earth in Manila**

The Hon. Fortunato T. de la Peña, Secretary of the Department of Science and Technology (DOST), Republic of the Philippines was given a briefing on SIMSEA, Future Earth in Asia, and Future Earth by the Chair of the ICSU Regional Committee for Asia and the Pacific, Professor Lourdes Cruz, and the Director of ICSU ROAP, Professor Mohd Nordin Hasan. Secretary de la Peña was keen to assist ICSU ROAP to seek avenues of support for SIMSEA which, it is hoped, will be positioned under Future Earth Philippines National Committee when it is established. It has been suggested that Future Earth Philippines can be hosted by the National Academy of Science and Technology, a Department of Science and Technology (DOST) agency, and resources can be made available to the SIMSEA Programme Office which is hosted by the Marine Science Institute, of the University of the Philippines, Diliman (MSI), via NAST. He expressed the hope that the support of SIMSEA by DOST can begin with an initial three-year support for the programme that can gradually evolve into a long-term programme of NAST.



Governance



# GOVERNANCE

## 21<sup>st</sup> Meeting of ICSU Regional Committee for Asia and the Pacific

The International Council for Science Regional Committee for Asia and the Pacific (RCAP), held its 21<sup>st</sup> Meeting in Seoul on 27 April 2016. This meeting which was hosted by KAST was especially significant as it was also attended for the first time by the President of ICSU Gordon McBean, the Director of the Future Earth Asia Hub in Tokyo, Fumiko Kasuga, and Soon-Chang Yoon, Vice President External Relations of KAST, as observers. Dr Kasuga is also a member of the Committee on Science Planning and Review of ICSU, the highest policy-making committee of ICSU. The RCAP agreed during the meeting among other things to support plans by the Regional Office for Asia and the Pacific to engage with the re-insurance industry in research on natural hazards and risk; to initiate the formation of a science planning group to explore research needs on the role of epigenetics on human health in the face of increasing urbanity in Asia and the Pacific; and on the importance of engaging with space agencies in the region to enhance data gathering capacity of the ROAP - RCAP initiated programme on the sustainability of the marginal seas of South and East Asia (SIMSEA).



## 22<sup>nd</sup> Meeting of ICSU Regional Committee for Asia and the Pacific

The 22<sup>nd</sup> Meeting of ICSU Regional Committee for Asia and the Pacific (RCAP) was held in Kinabalu Park on 21 and 22 November 2016. The Park, a World Heritage Site that includes Mount Kinabalu which at 4096 metres, is the fifth highest peak in Southeast Asia. A critical development endorsed by the Meeting was the establishment of the ICSU Regional Office for Asia and the Pacific (ROAP) Research Support Programme which will be funded by ROAP from funds it has accumulated since its establishment in 2006. The Programme aimed to provide seed funding for research by early career scientists in work on the priority areas identified by ROAP. Four RCAP members, Soottiporn Chittmittrapap, Javed Iqbal, Toshio Yamagata and JianXin Zhang, will be rotating off RCAP, after serving two three-year terms of service. Also stepping down at the end of the year is Professor Emeritus Mohd. Nordin Hasan the founding Director of ICSU ROAP, who has served the Office since 2006. As part of its programme to interact with scientists in the local area, the RCAP together with Sabah Parks, organized a half-day seminar on current issues in science on the second day of the meeting. Two RCAP members, Professor Chuulun Togtokh and Professor Javed Iqbal gave lectures on Conservation of Natural-cultural Integrity in the Western Altai Mountains of Mongolia and Discovery of Anticancer Drug from Pine Trees: The Story of Taxol respectively. Dato' Seri Tengku Dr Zainal Adlin Tengku Mahamood, Chairman of the Board of Trustees of the Sabah Parks, gave a warm welcome to all members of RCAP and gave a presentation on Sabah Parks and Kinabalu Parks to all present.



# Regional Networking





# REGIONAL NETWORKING

## ICSU Regional Associate, Science Council of Asia 16th Annual Conference in Colombo

ICSU ROAP Director, Professor Mohd Nordin Hasan attended the *16<sup>th</sup> Annual Conference of the Science Council of Asia (SCA)* in Colombo from 30 May to 1 June 2016. The theme of the Conference was “Science for the People: Mobilizing Modern Technologies for Sustainable Development in Asia”. The three-day meeting was inaugurated by the Acting Minister for Science, Technology and Research Sri Lanka. In the opening session, Professor Yasuhiro Koike of Keio University gave a keynote lecture on the status of photonic polymers for high-speed and high-quality communication technologies. Also, nine plenary presentations were made by invited speakers, and more than 100 oral presentations on subjects ranging from nanotechnology, urban planning, gender, and health were delivered by participants in a total of 14 separate parallel sessions. The SCA is a Regional Associate of ICSU.

## ROAP Symposium on Greening of Society at 23rd Pacific Science Congress

The *23rd Pacific Science Congress (PSC-23)* was held in Taipei, Taiwan on June 13–17, 2016. It was hosted by the Academy of Sciences located in Taipei. The main theme of the PSC-23 was “Science, Technology, and Innovation: Building a Sustainable Future in Asia and the Pacific”. In conjunction with the symposium, ROAP organised a Symposium on

the *Greening of Society for Global Sustainability* that was held on 16 June 2016. Four scientists presented their interpretations of green development in their respective countries (Mongolia and Malaysia) or research domains (urban environment and fisheries). The researchers shared their long experience in research to enhance green development and develop green societies within the context of their areas of interest. Commonalities drawn from the presentations included the need to be holistic in planning and management of development so that progress in one sector such as agriculture does not destroy valued societal heritage such as cultural diversity and traditions; importance of choosing the appropriate/correct metrics to monitor and spur change towards sustainability in societies; significance of understanding the political economy of greening and of governance beyond government; necessity of framing better and more frequent science-policy dialogues at all levels of society; and importance of managing to enhance the resilience of societies and to fully account for the cumulative impacts of human activities on ecosystems.

At the end of the symposium, the panel agreed among other things that more effort must be devoted to understanding the dynamics of change and the effects of unintended consequences. The role of education in enhancing this understanding in a rapidly interconnected world was seen as a major challenge as was the need to efficiently shape behaviour towards more sustainable production and consumption patterns.



# ICSU in Asia and the Pacific



# REGIONAL COMMITTEE FOR ASIA AND THE PACIFIC

**Lourdes J. Cruz** (Chair – 2015-2017)  
Member & Immediate Past-President,  
National Research Council of the Philippines  
Department of Science & Technology  
General Santos Avenue  
Taguig City 1631  
PHILIPPINES

**Soottiporn Chittmittrapap** (2014-2016)  
Secretary-General,  
196 Phaholyothin Road, Chatuchak,  
Bangkok 10900  
THAILAND

**B.V.R. Chowdari** (2015-2017)  
Senior Executive Director  
President's Office  
Professor  
School of Materials Science & Engineering  
Nanyang Technological University  
50 Nanyang Avenue  
SINGAPORE 639798

**Togtokh Chuluun** (2015-2017)  
Director  
Institute for Sustainable Development  
National University of Mongolia  
Ikh Surguuliin gudamj -1, P.O.Box -46A/523  
210646 Ulaanbaatar  
MONGOLIA

**Prof Javed Iqbal** (2014-2016)  
Founder and Chairman  
Cosmic Therapeutics  
48, Villa Greens, Gandipet  
Hyderabad 500075  
INDIA

**Toshio Yamagata** (2014-2016)  
Director  
Application Laboratory  
Japan Agency for Marine-Earth Science and  
Technology (JAMSTEC)  
3173-25, Showa-machi, Kanazawa-ku, Yokohama  
Kanagawa, 236-0001  
JAPAN

**Jianxin Zhang** (2014-2016)  
Professor of Psychology  
Institute of Psychology  
#A4, DaTun Road, BeiShaTan, ChaoYang District  
Beijing 100101  
CHINA

**Aswatini Raharto** (2015-2017)  
Sasana Widya Sarwono 3rd Floor  
Jl. Jend. Gatot Subroto No.10  
Jakarta  
INDONESIA

**Jung-Hye Roe** (2015-2017)  
Professor  
School of Biological Sciences,  
Seoul National University, Seoul 151-742  
REP OF KOREA

Ex Officio  
**Heide Hackmann**  
Executive Director  
International Council for Science (ICSU)  
5 rue Auguste Vacquerie  
75016 Paris  
FRANCE



Ex Officio

**Mohd Nordin Hasan**

ICSU Regional Office for Asia & Pacific  
902-4, Jalan Tun Ismail, Kuala Lumpur  
MALAYSIA

**Sukiman Sarmani**

(ASM Representative)  
School of Chemical Sciences & Food Technology  
Faculty of Sciences & Technology  
Universiti Kebangsaan Malaysia  
43600 Bangi, Selangor  
MALAYSIA

**Kazuyuki Tatsumi**

(ICSU Executive Board Liason)  
Past President, IUPAC  
Graduate School of Science  
Research Centre for Materials Science &  
Department of Chemistry  
Furo-cho, Chikusa-ku, Nagoya  
JAPAN



# SECRETARIAT

**Director:**

Mohd Nordin Hasan FASc  
([nordin.hasan@icsu-asia-pacific.org](mailto:nordin.hasan@icsu-asia-pacific.org))

**Senior Science Officer:**

Tengku Sharizad Tengku Dahlan  
([sharizad.dahlan@icsu-asia-pacific.org](mailto:sharizad.dahlan@icsu-asia-pacific.org))

**Administrative Officer:**

Mohd Hizamddin Jaafar  
([hizam.jaafar@icsu-asia-pacific.org](mailto:hizam.jaafar@icsu-asia-pacific.org))

# Financial Summary





# FINANCIAL SUMMARY

## JANUARY - DECEMBER 2016

INCOME	MYR	EUR
<b><u>Annual Grants</u></b>		
Malaysian Government	694,610.00	147,790.00
ICSU – PARIS	343,297.50	75,000.00
<b>Sub Total</b>	<b>1,037,907.50</b>	<b>222,790.00</b>

<b><u>Other Income</u></b>		
Balance b/f 2015	660,256.17	140,480.00
Reimbursements, Bank Interests, FD Withdrawals	30,128.80	6,410.00

<b><u>Earmarked funds</u></b>		
PIAD – Received from Paris @ USD37,000	149,110.00	31,725.00
PIAD – Received from UNU-IIGH @ USD10,000	41,809.09	8,896.00
PIAD – Received from IUPSyS @ USD15,000	62,358.38	13,268.00
AI – Funds received from Paris @ (USD168,200.00)	746,808.00	158,896.00
<b>Sub Total</b>	<b>1,690,470.44</b>	<b>359,675.00</b>

<b>TOTAL INCOME</b>	<b>2,728,377.94</b>	<b>582,465.00</b>
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EXPENDITURE	MYR	EUR
Emolument	551,873.68	117,420.00
Communication & Utilities	16,492.21	3,509.00
Supplies/other materials	-	-
Maintenance/repairs	-	-
Services	3,047.85	648.00
Meetings/Consultations & Activities expenditure	1,478,698.14	314,617.00
<b>Total Expenditure</b>	<b>2,050,111.88</b>	<b>436,194.00</b>

<b>BALANCE C/F TO 2017</b>	<b>678,266.06</b>	<b>146,271.00</b>
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EUR1.00:RM4.70

## Membership of ICSU



## NATIONAL MEMBERS

ICSU's National Members provide input, from a national, multidisciplinary perspective, on priority areas for future ICSU activities. They also play an important role in facilitating links with national governments and science agencies. The majority of ICSU National Members are scientific academies, although some are national funding agencies or other nationally representative science bodies. The following list includes full Members, Scientific Associates\*, and Observers\*\*. Pacific Islands includes Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu.

Albania, Academy of Sciences	Caribbean, Caribbean Academy of Sciences (CAS)
Angola, Foundation of Science and Development	Chile, Academia Chilena de Ciencias
Argentina, National Scientific and Technological Research Council (CONICET)	China: CAST, China Association for Science and Technology (CAST)
Armenia, National Academy of Sciences of the Republic of Armenia	China: Taipei, Academy of Sciences located in Taipei
Australia, Australian Academy of Science	Colombia, Academia Colombiana de Ciencias Exactas, Fisicas y Naturales
Austria, Die Österreichische Akademie der Wissenschaften	Costa Rica, Academia Nacional de Ciencias
Azerbaijan, Azerbaijan National Academy of Sciences	Cuba, Academia de Ciencias de Cuba
Bangladesh, Bangladesh Academy of Sciences	Czech Republic, Czech Academy of Sciences
Belarus, National Academy of Sciences (NASB)	Côte d'Ivoire, Académie des Sciences, des Arts, des Cultures d'Afrique et des Diasporas Africaines (ASCAD)
Belgium, Royal Academies for Science and the Arts of Belgium (RASAB)	Denmark, Royal Danish Academy of Sciences and Letters
Bolivia, Academia Nacional de Ciencias de Bolivia (ANCB)	Dominican Republic, Academy of Sciences of the Dominican Republic
Bosnia & Herzegovina: ANUBiH, Academy of Sciences and Arts of Bosnia and Herzegovina	Egypt, Academy of Scientific Research and Technology (ASRT)
Bosnia & Herzegovina: ANURS, Academy of Sciences and Arts of the Republic of Srpska	El Salvador, Viceministerio de Ciencia y Tecnología de El Salvador
Botswana, Ministry of Infrastructure Science and Technology	Estonia, Estonian Academy of Sciences
Brazil, Academia Brasileira de Ciências (ABC)	Ethiopia, Ethiopian Science and Technology Agency
Bulgaria, Bulgarian Academy of Sciences (BAS)	Finland, Council of Finnish Academies
Burkina Faso, Centre National de la Recherche Scientifique et Technologique	France, Académie des Sciences
Cameroon, Cameroon Academy of Sciences	Georgia, Georgian Academy of Sciences
Canada, National Research Council of Canada	Germany, Deutsche Forschungsgemeinschaft (DFG)
	Ghana, Ghana Academy of Arts & Sciences



Greece, Academy of Athens	Morocco, Hassan II Academy for Science and Technology
Guatemala, Academia de Ciencias Médicas Físicas y Naturales de Guatemala	Mozambique, Scientific Research Association of Mozambique (AICIMO)
Hungary, Hungarian Academy of Sciences	Namibia, Ministry of Education: Directorate of Research, Science and Technology
India, Indian National Science Academy	Nepal, Nepal Academy of Science and Technology (NAST)
Indonesia, Indonesian Institute of Sciences (LIPI)	Netherlands, Koninklijke Nederlandse Akademie van Wetenschappen
Iran Islamic Rep. Of, University of Tehran	New Zealand, Royal Society of New Zealand
Iraq, Ministry of Science and Technology	Nigeria, Nigerian Academy of Science
Ireland, Royal Irish Academy	Norway, Norwegian Academy of Sciences and Letters
Israel, Israel Academy of Sciences and Humanities	Pakistan, Pakistan Association for the Advancement of Science
Italy, Consiglio Nazionale delle Ricerche	Panama, Universidad de Panama
Jamaica, Scientific Research Council	Peru, Academia Nacional de Ciencias
Japan, Science Council of Japan	Philippines, National Research Council
Jordan, Royal Scientific Society	Poland, Polish Academy of Sciences
Kazakhstan, National Academy of Sciences of the Republic of Kazakhstan	Portugal, Academia das Ciencias de Lisboa
Kenya, Kenya National Academy of Sciences	Romania, Academia Româna
Korea Democratic People's Republic of, State Academy of Sciences	Russian Federation, Russian Academy of Sciences
Korea Republic of, National Academy of Sciences of the Republic of Korea	Rwanda, Kigali Institute of Science and Technology (KIST), Rwanda
Lao PDR, Lao National Science Council	Saudi Arabia Kingdom of, King Abdulaziz City for Science and Technology (KACST)
Latvia, Latvian Academy of Sciences	Senegal, Association des Chercheurs Sénégalais
Lebanon, National Council for Scientific Research	Serbia, Serbian Academy of Sciences and Arts
Lesotho, Department of Science and Technology	Seychelles, Seychelles Centre for Marine Research and Technology
Lithuania, Lithuanian Academy of Sciences	Singapore, Singapore National Academy of Science
Luxembourg, Fonds National de la Recherche	Slovak Republic, Slovak Academy of Sciences
Macedonia, Former Yugoslav Rep. Of, Macedonian Academy of Sciences and Arts	Slovenia, Slovenian Academy of Sciences and Arts
Madagascar, Ministère de l'Enseignement Supérieur et de la Recherche Scientifique	South Africa, National Research Foundation (NRF)
Malawi, National Commission for Science and Technology	South Pacific, University of the South Pacific
Malaysia, Academy of Sciences Malaysia	Spain, Ministerio de Ciencia y Innovación
Mauritius, Mauritius Research Council	Sri Lanka, National Science Foundation
Mexico, Academia Mexicana de Ciencias	Sudan Republic of, National Centre for Research
Moldova, Academy of Sciences of Moldova	Swaziland, National Research Council
Monaco, Principauté de, Centre Scientifique de Monaco	Sweden, Royal Swedish Academy of Sciences
Mongolia, Mongolian Academy of Sciences	Switzerland, Swiss Academy of Sciences
Montenegro, Montenegrin Academy of Sciences and Arts	

Tajikistan, Academy of Sciences of the Republic of  
Tajikistan  
Tanzania, Tanzania Commission for S&T  
Thailand, National Research Council of Thailand  
Togo, Chancellerie des Universités du Togo  
Tunisia, Université Tunis El Manar  
Turkey, Scientific and Technical Research Council of  
Turkey  
Uganda, Uganda National Council for Science and  
Technology (UNCST)  
Ukraine, National Academy of Sciences  
United Kingdom, Royal Society  
United States, National Academy of Sciences  
Uruguay, Comisión Consejo Nacional de Innovación  
Ciencia y Tecnología (CONICYT)  
Uzbekistan Republic of, Uzbekistan Academy of  
Sciences  
Vatican City State, Pontificia Academia Scientiarum  
Venezuela, Fondo Nacional de Ciencia, Tecnología e  
Innovación  
Vietnam, Vietnam Union of Science and Technology  
Associations  
Zambia, Zambia Academy of Sciences  
Zimbabwe, Research Council of Zimbabwe

## SCIENTIFIC UNIONS

- International Astronomical Union (IAU)
- International Brain Research Organization (IBRO)
- International Geographical Union (IGU)
- International Mathematical Union (IMU)
- International Union for Quaternary Research (NQUA)
- International Society for Photogrammetry and Remote Sensing (ISPRS)
- International Union of Anthropological and Ethnological Sciences (IUAES)
- International Union of Biochemistry and Molecular Biology (IUBMB)
- International Union of Biological Sciences (IUBS)
- International Union of Crystallography (IUCr)
- International Union of Food Science and Technology (IUFoST)
- International Union of Forest Organisations (IUFRO)
- International Union of Geodesy & Geophysics (IUGG)
- International Union of Geological Sciences (IUGS)
- International Union of the History and Philosophy of Science (IUHPS)
- International Union of Immunological Society (IUIS)
- International Union of Materials Research Societies (IUMRS)
- International Union of Microbiological Societies (IUMS)
- International Union of Nutritional Sciences (IUNS)
- International Union for Pure and Applied Biophysics (IUPAB)
- International Union of Pure and Applied Chemistry (IUPAC)
- International Union of Pure and Applied Physics (IUPAP)
- International Union for Physical and Engineering Sciences in Medicine (IUPESM)
- International Union of Pharmacology (IUPHAR)
- International Union of Physiological Sciences (IUPS)
- International Union of Psychological Sciences (IUPsyS)
- International Union of Soil Sciences (IUSS)
- International Union of Theoretical and Applied Mechanics (IUTAM)
- International Union of Toxicology (IUTOX)
- Union Radio Scientifique International (URSI)



## INTERDISCIPLINARY BODIES

The Interdisciplinary Bodies bring together different scientific disciplines to address scientific issues of international relevance that are of interests to ICSU Members. Some of these bodies are co-sponsored with other organisations.

### Thematic Organizations

- Programme on Ecosystem Change and Society (PECS)
- Integrated Research on Disaster Risk (IRDR)
- Committee On SPace Research (COSPAR)
- Scientific Committee on Antarctic Research (SCAR)
- Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)
- Scientific Committee on Oceanic Research (SCOR)
- Scientific Committee On Solar-TERrestrial Physics (SCOSTEP)

### Global Environmental Change Programmes

- DIVERSITAS, An International Programme of Biodiversity Science
- International Geosphere-Biosphere Programme (IGBP)
- International Human Dimensions Programme on Global Environmental Change (IHDP)
- WMO-ICSU-IOC World Climate Research Programme (WCRP)

### Monitoring and Observations

- Global Climate Observing System (GCOS)
- Global Ocean Observing System (GOOS)
- Global Terrestrial Observing System (GTOS)

### Data and Information

- ICSU World Data System (WDS)
- Committee on DATA for Science and Technology (CODATA)
- International Network for the Availability of Scientific Publications (INASP)

## SCIENTIFIC ASSOCIATES

- The Academy of Sciences for the Developing World (TWAS)
- Academia de Ciencias de América Latina (ACAL)
- Federation of Asian Scientific Academies and Societies (FASAS)
- International Arctic Science Committee (IASC)
- International Association of Hydraulic Engineering and Research (IAHR)
- International Cartographic Association (ICA)
- International Commission for Acoustics (ICA)
- International Commission for Optics (ICO)
- International Council for Laboratory Animal Science (ICLAS)
- International Council for Scientific and Technical Information (ICSTI)
- International Federation for Information Processing (IFIP)
- International Federation of Library Associations and Institutions (IFLA)
- International Federation of Societies for Microscopy (IFSM)
- International Federation of Surveyors (FIG)
- International Foundation for Science (IFS)
- International Institute for Applied System Analysis (IIASA)
- International Union for Vacuum Science, Technique and Applications (IUVSTA)
- International Water Association (IWA)
- Pacific Science Association (PSA)
- Society for Social Studies of Science (4S)







**INTERNATIONAL  
COUNCIL FOR SCIENCE**  
REGIONAL OFFICE FOR  
ASIA AND THE PACIFIC

**ICSU ROAP OFFICE**

ICSU Regional Office for Asia & Pacific,  
902-4, Jalan Tun Ismail,  
50480 Kuala Lumpur, MALAYSIA,

**Tel** : +603 26984192

**Fax** : +603 26917961

**Email** : [secretariat@icsu-asia-pacific.org](mailto:secretariat@icsu-asia-pacific.org)

[www.icsu.org/asia-pacific](http://www.icsu.org/asia-pacific)