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This informal newsletter is intended to keep IUGG Member National Committees informed about the activities of the IUGG Associations, and actions of the IUGG Secretariat. Past issues are posted on the IUGG website (<http://www.iugg.org/publications/ejournals/>). Please forward this message to those who will benefit from the information. Your comments are welcome.

This is a special issue of the IUGG Electronic Journal dedicated to the 31st General Assembly of the International Council for Science held in Auckland, New Zealand, from 31 August to 3 September 2014. It is based on the News Releases of the ICSU General Assembly.

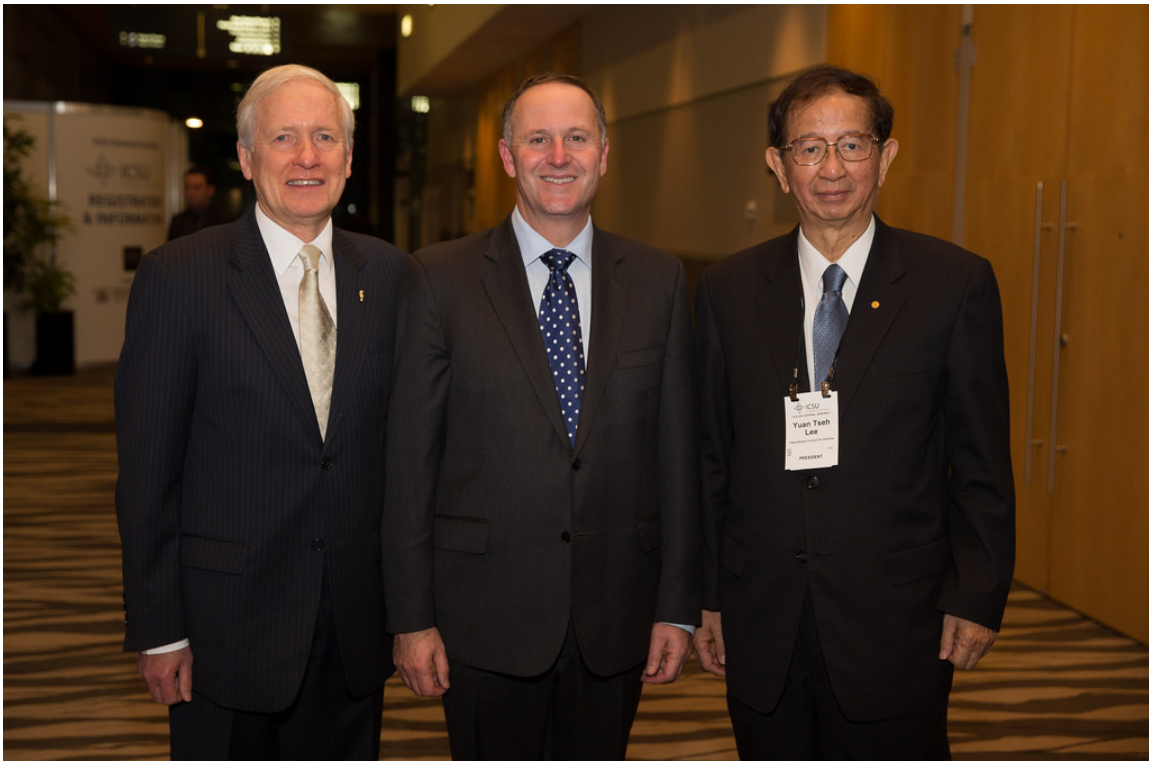
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1. 31st ICSU General Assembly

Leading scientists from around the world gathered in Auckland, New Zealand, for the tri-annual General Assembly of the International Council for Science (ICSU) to discuss key strategies for global science and scientific organizations.

On 31 August, New Zealand Prime Minister John Key opened the 31st General Assembly of the International Council for Science with a speech stressing New Zealand's unique environmental challenges and its contributions to international research. The ICSU President, Nobel Prize laureate Yuan-Tseh Lee in his speech paid tribute to the achievements of the global environmental change research programs which will soon merge into Future Earth. "Without them, we would hardly understand so much about our changing Earth," he said. "Let us remember why we are here," he urged, "It is to strengthen international science to help humanity cope with global challenges and achieve sustainable transformation." The meeting was hosted by the Royal Society of New Zealand, whose President David Skegg noted that so far only three ICSU General Assemblies have been held in the southern hemisphere and this was the first in the South Pacific.



David Skegg, John Key and Yuan-Tseh Lee (from the left to the right; photo: ICSU)

Sir Peter Gluckman, Chief Science Advisor to the Prime Minister of New Zealand, delivered a keynote speech, pointing out that researchers have to find an answer to the challenge of responding to disruptive changes that are underway in science. “The rise of open science and the massive expansion of the scientific endeavor accompanied by the rise of the celebrity scientist and the very individualistic reward system of public science has exposed a number of issues about the integrity of the science system itself.” Gluckman stressed the importance of public trust in science – which is essential for solving the key challenges society faces in the 21st century. “Science systems are changing rapidly, and if we do not manage these changes properly, they can contribute to loss of public trust,” he said.



Peter Gluckman (photo: ICSU)



After the Opening Ceremony. Left panel (from the left to the right): Andrew Mackintosh, IACS Secretary General; Alik Ismail-Zadeh, IUGG Secretary General; John Key, New Zealand Prime Minister; Yuan-Tseh Lee, ICSU President. Right panel: Alik Ismail-Zadeh and Harsh Gupta, IUGG President (Photos: ICSU).

2. Science advice to governments comes of age at Auckland conference

Responding to the increasingly global nature of societal challenges, practitioners of science advice to governments formed a global network to share practice and strengthen their ties, at the First global conference on science advice to governments, which was held in Auckland, New Zealand, from 27 to 29 August prior the ICSU General Assembly.

Science advice to governments has emerged as a discipline in its own right, which is both art and science. This is what delegates to the world's first summit of science advice heard at a meeting in Auckland with a strong call to strengthen international collaboration, an agreement to formalize the network and to meet again in 2016. Convened by ICSU and hosted by New Zealand's Chief Science Advisor, Peter Gluckman, this historic summit marked a turning point in the global awareness that robust and credible science has an important place in public policy making. The conference brought together some 200 participants including science advisors, senior officials, representatives of national academies, experts and scholars from more than 40 countries across Africa, the Asia-Pacific region, Europe, the United States, Canada and Latin America. "Our goal was to start a global conversation on the practices and challenges of conveying science advice to governments," said Gluckman. "As brokers of knowledge, science advice practitioners aim to communicate what is known and what is not known in such a way as to assist decision makers in balancing evidence, social values and other imperatives in the policy process. This is no small task, particularly in contentious areas of policy, where public concern is high and the science is inevitably uncertain."

The role of science advisor can at times be controversial. Anne Glover, Science Advisor to Jose-Manuel Barroso, the President of the European Commission, gave a candid account of some of the challenges she has faced. "There is no point having a Chief Science Advisor and not taking advantage of them," she said. "The diversity of cultural approaches to science advice cannot be underestimated, and one size does not fit all. Without networks, which connect practitioners of science advice, we are missing something," she added, referring to the opportunities presented by the conference. The participants agreed that science advice is critical for underpinning everything from economic growth through poverty alleviation, international trade, diplomacy, sustainable development to disaster risk management. "Many governments around the world have recognised the need to inform their policy decisions with the best knowledge available," said Steven Wilson,

ICSU Executive Director. “I am thrilled that the practitioners working at this critical interface are strengthening their ties to build the practice and to learn from each other.”

Another focus of discussion was the experience of early career scientists who are often at the leading edge of new scientific thinking. Jacqueline McGlade, Chief Scientist at UNEP, said that one of the roles of science advisors is to protect and nurture these new perspectives in order to ensure continual progress in the provision of science advice.

Speaking at the summit, Romain Murenzi, the executive director of The World Academy of Science (TWAS), which represents the academies of the developing world, underlined the importance of strengthening collaboration among science advisory structures worldwide. “We need to get to a place where the science culture is pervasive and where we can truly say there is scientifically literate society. The role of science advice to government plays a big role in this,” he said.

The two-day summit was designed to promote open discussion on the provision of science advice in some of the most challenging policy contexts: situations of crisis; when evidence is in conflict with political views; and when evidence must cross geopolitical borders and cultures. Key themes that emerged from the delegates’ discussions included the importance of recognizing the broad social context in which science is undertaken and applied; the value of involving policy makers and public alike in shaping the questions that science can begin to answer; and a commitment to greater collaboration amongst practitioners of advice to advance principles and accountabilities in brokering knowledge that can both honor and transcend our diversity.

The summit ended with a strong call to build upon the energy and enthusiasm generated within this growing network of practitioners. Peter Gluckman will chair the development of a more formal network supported by an expanded organizing committee. Multinational organizations as ICSU and the OECD Global Science Forum are working with organizers to take the initiative forward. Workshops on specific issues will be held over the next two years and a 2nd Global Conference on Science Advice to Governments will be held in Europe in 2016. Full details of the meeting proceedings are available here: <http://www.globalscienceadvice.org/>

3. Celebrating 30 years of global change research

Three decades of research collaboration among thousands of volunteer scientists across the globe to deepen our understanding of the Earth System was celebrated at the ICSU General Assembly. Delegates heard how the combined efforts of the four global change programs in the past decades have shaped our understanding of the Earth System and underpinned the major policy assessments such as the Intergovernmental Panel on Climate Change (IPCC). “The value of the global change programs is putting together the big picture. The sum is greater than the parts,” said Sybil Seitzinger, Executive Director of the International Geosphere-Biosphere Programme (IGBP). The World Climate Research Programme (WCRP) was set up in 1980, followed by IGBP. In 1989 a UN General Assembly resolution called on countries around the world to “increase their activities in support of WCRP and IGBP.” DIVERSITAS – biodiversity science was established soon after, then the International Human Dimensions Programme (IHDP) in 1996, followed by the Earth System Science Partnership in 2001.

IGBP was established as the major international program to increase understanding of the biogeochemistry of the Earth system. At a meeting in Mexico in 2000, IGBP Vice Chair Nobel Laureate Paul Crutzen said that Earth system changes are so great that we could no longer be said to be in the Holocene. He coined the term Anthropocene at that meeting. “It was a major shift in our

understanding in the dynamics of the Earth system and human activities,”Seitzinger said. “Twenty years ago we knew very little about the magnitude of change humans were having on the nitrogen cycle. The scientific community was fragmented and we did not have an Earth System perspective. The coordination through IGBP has led to major advances and we can now quantify the magnitude of human impact on the nitrogen cycle.”

Dave Carlson, Director of the World Climate Research Programme (WCRP), thanked the thousands of volunteer scientists who contributed to the realization of the WCRP vision. He added that “what is important is to look at the big picture across these projects, where a small number of people in a small number of secretariats organized these things.”

Anne-Helene Prieur-Richard, Acting Executive Director of DIVERSITAS – which has focused on understanding the biodiversity component of the Earth system – described the changes in the focus of biodiversity research over the past three decades. If in the 1980s the focus of the program was to answer the principal questions like “What is biodiversity? Where is it in the world?”, in the 1990s the focus shifted to how biodiversity contributes to ecosystem processes and functions. Prieur-Richard also paid tribute to the legacy of IHDP, highlighting work on the consequences of urbanization, new metrics to measure human and natural capital and understanding how different institutional systems shapes human behavior and decision-making processes. Seitzinger stressed that all the global change programs provided a way for policymakers to access the research community and vice versa. “They are a platform for engagement and this is one of the big success stories of IGBP,” she said. For example, more than 100 IGBP scientists have been involved as authors and reviewers in the IPCC Fifth Annual Assessment released in the past year. Another significant policy product is the annual Global Carbon Budget which is a timely update on global emissions and carbon sinks. The legacy of global change research will be carried on by the new Future Earth program, into which IGBP, IHDP and DIVERSITAS will be merged in 2015.

4. Science-driven disaster risk reduction

Disasters due to natural events continue to grow in number and intensity. The beginning of the 21st Century has been marked by a significant number of disasters that have resulted in tragic loss of life, property, and one nuclear emergency. Natural hazards are becoming a direct threat to civilization because of the rapid increase of physical and social vulnerability to hazards at local, regional and global levels. The reality is that the economic impact of disasters far exceeds the cost of mitigation and preparedness by orders of magnitude. However, all disaster risk reduction (prevention, mitigation and preparedness) including warning systems, requires long-term planning. To undertake that planning, a dependable, science-driven approach is needed to assess disaster risks at all levels. This should provide the world with a clear and unambiguous scientific view on the current state of knowledge in disaster risk, the potential socio-economic impacts of natural hazards, and the ways to reduce (if not prevent) significant human and economic losses.

At the ICSU General Assembly Alik Ismail-Zadeh, IUGG Secretary General, presented a report on disaster risk assessment initiative developed by ICSU during the last years. The 2011 ENHANS Declaration (<http://www.enhans.org/about/Declaration.pdf>) calls for a reduction of disaster risks based on comprehensive holistic inter- and trans-disciplinary approaches to disaster risk research and on disaster risk assessments. IUGG together with IRDR and the ICSU GeoUnions (8 International Scientific Unions dealing with Earth and space sciences) informed the scientific community at the 30th ICSU General Assembly (Rome, Italy, 2011) of the urgent need for disaster risk assessment undertaken by an intergovernmental body set up for the purpose. The General Assembly concluded that the substance of the initiative merited consideration by the ICSU

Executive Board. The Executive Board, in turn, decided to invite the IRDR Scientific Committee, working with the ICSU GeoUnions, to discuss with concerned ICSU Members and relevant UN bodies the need for an intergovernmental body for the assessment of disaster risk.

In November 2013, at its 110th Meeting, the ICSU Executive Board considered the report from IRDR related to the initiative. While the Board recognized that the creation of an intergovernmental structure of the type originally proposed would require political and material support at the highest level, it considered that an integrated, interdisciplinary scientific synthesis across all hazards of the state of knowledge and response, hazards' occurrence and impacts and priorities for research in the decades to come would be important to the post-HFA process, the ICSU Members and relevant UN bodies, and all governments. It decided that the preparation of such a synthesis should begin with a scoping exercise involving the IRDR, the ICSU GeoUnions and other like-minded bodies of scientists. The ICSU Regional Offices would have a role to play in ensuring the global coverage of such a synthesis.

In 2014, an ad-hoc group including experts from the ICSU Executive Board, IRDR, concerned International Scientific Unions, and ICSU Regional Offices was established in order to render this scoping process operational. The first meeting of the group was held at ICSU in Paris on 2 May 2014. The decision of the expert group was to prepare a credible scoping paper articulating the urgent need for science-driven disaster risk reduction based upon integrated research and assessment of the risks. This would be carried out through the assignment of drafting responsibilities within the expert group. The scoping paper will be primarily addressed to those taking part in events immediately leading up to the World Conference on Disaster Risk Reduction (WCDRR, Sendai, Japan, 14-18 March 2015), as well as the Conference itself, and will set out cogent arguments in favor of an authoritative mechanism for providing on a regular basis the scientific assessment and synthesis of the policy-relevant results of peer-reviewed published research. This periodic assessment would cover: (i) understanding natural hazards and the vulnerability associated with disasters; (ii) the capability of predictive systems to disseminate timely and accurate information needed for policy and decision making; (iii) methodologies and approaches for reducing vulnerability and increasing resilience of societies; and (iv) the overall ability of societies to reduce risk (through the prevention, mitigation and preparations for the increasing impact of natural events). The assessment would contribute to the significant enhancement of our knowledge of disaster risk at global, regional, and local levels and the awareness of those living with risk. The assessment should be undertaken by a high-level, multidisciplinary body of experts on disaster risk reduction to be established by national governments together with international scientific organizations dealing with disaster risks.

The report was favorably accepted by the Delegates of the assembly. The ICSU General Assembly endorsed the initiative and decided: (i) To recognize the initiative on disaster risk assessment so far undertaken by IRDR, the International Scientific Unions, and the ICSU Regional Offices; (ii) To request the Executive Board to work closely with UNISDR and other international and intergovernmental bodies to integrate scientific knowledge and assessment into decision-making and actions related to disaster risk reduction; and (iii) To invite individual ICSU National Members to actively encourage their governments to support the proposed intergovernmental disaster risk assessment process.

5. Open access to scientific records. Cautions against misuse of metrics

In a strong show of support for open access to the scientific record, the Assembly voted for the statement which stakes out five key goals for open access and offers 12 recommendations that pave

the road for attaining them. “Open Access is a key mechanism to support the development of science and of vital importance to all scientists both young and old,” said John Ball, who led the ICSU working group that developed the statement. “It is a powerful tool for creating and validating knowledge, and for supporting science as a public good, and not as something carried out behind closed doors,” he added. The five goals in the statement assert that access to the scientific record should be (i) free of financial barriers for any researcher to contribute to; (ii) free of financial barriers for any user to access immediately on publication; (iii) made available without restriction on reuse for any purpose, subject to proper attribution; (iv) quality-assured and published in a timely manner; and (v) archived and made available in perpetuity.

The statement also makes 12 recommendations for achieving these goals, including those on metrics, stating that these, when used as an aid to the evaluation of research and researchers, should help promote open access and open science. It also cautions that metrics should be regarded as an aid, and not a substitute, for good decision-making. They should not normally be used in isolation to assess the performance of researchers, to determine appointments, or to distribute funds to individuals or research groups, for which it says expert review is indispensable.

The ICSU’s position takes account of the specific situation related to research data, asserting that publishers should require authors to provide explicit references to the datasets underlying published research. They also should require clear assurances that these datasets are deposited and available in trusted and sustainable digital repositories. Citing datasets in reference lists using an accepted standard format should be considered the norm. The statement also suggests that terms of contracts governing the purchase of scientific periodicals and databases by libraries serving universities and research establishments should be publicly accessible. The full statement can be downloaded from the ICSU’s website at <http://www.icsu.org>

6. ICSU Executive Board elected

Daya Reddy, an internationally recognized mathematician from South Africa, became the new ICSU President-elect. Reddy will take over from the ICSU President, Gordon McBean, in October 2017. Reddy was born in Port Elizabeth, South Africa. He obtained his PhD degree in civil engineering from the University of Cape Town, and a PhD degree from Cambridge University. He was appointed professor of applied mathematics at the University of Cape Town in 1989, and served as dean of its science faculty from 1999–2005. He currently holds the South African Research Chair in Computational Mechanics. He is President of the Academy of Science of South Africa, and serves as Co-Chair of the InterAcademy Council, a body which produces reports on scientific, technological and health issues for governments and global organizations. He is an elected fellow of TWAS and the African Academy of Sciences. He is a recipient of the Order of Mapungubwe (Bronze), awarded by the President of South Africa for distinguished contributions to science, and of the Georg Forster Research Award from the Alexander von Humboldt Foundation in Germany. Daya Reddy’s research interests lie at the intersection of applied mathematics and engineering sciences. Much of his work is concerned with analysis and computational simulation in solid and fluid mechanics, and concerns the development of mathematical models of material behavior, analysis of these models, and the construction and implementation of algorithms for their numerical solution. His work is motivated by applications in areas such as materials science and biomechanics.

Other Members elected to the ICSU Executive Board are:

Vice-President for Scientific Planning and Review: Li Jinghai (chemical engineering/computational science/energy technology, China: CAST)

Vice-President for External Relations: Michael Clegg (plant biology, USA)

Secretary General: David Black (chemistry, Australia)

Treasurer: Barbara Erasmus (physics, France)

Ordinary Members (from the National Membership):

John Ball (mathematics, UK)

Raghavendra Gadagkar (genetics and developmental biology, India)

Nicole Moreau (Chemistry/medicinal/chemistry/biochemistry/enzymology/bacteriology, France)

Kazuyuki Tatsumi (chemical engineering, Japan)

Ordinary Members (from the Union Membership):

Manuel de León (physical, chemical and mathematical sciences, Spain)

John Buckeridge (biological sciences, Australia)

Orhan Altan (earth and space sciences, Turkey)

Cheryl de la Rey (social sciences, South Africa)

7. Canadian climate scientist is new ICSU President

Gordon McBean, an internationally recognized meteorologist and climate change expert, assumed the presidency of ICSU by the closure of the 31st General Assembly. McBean succeeded Yuan Tseh Lee, and is the second Canadian to take up this office. Gordon McBean was born and educated in Canada, and obtained a PhD in physics from the University of British Columbia (UBC), Vancouver. After an academic and research career that included serving as Professor of Atmospheric and Oceanographic Sciences at UBC, he was appointed Assistant Deputy Minister in Environment Canada, and was, from 1994 to 2000, responsible for climate, weather and air quality sciences and services in the federal government. He currently holds professorships in the Departments of Geography, Political Science and Physics at the University of Western Ontario, London, Canada, and is Director of Policy Studies at the Institute for Catastrophic Loss Reduction and Co-Director of the Centre for Environment and Sustainability there.

For many years McBean has been involved into activities of ICSU Union and interdisciplinary bodies, including the International Union of Geodesy and Geophysics as a Bureau Member (1987-1995), World Climate Research Programme (WCRP) and the planning of interdisciplinary research programme Integrated Research on Disaster Risk (IRDR), whose Scientific Committee he chaired until 1 November 2011. As a member of the Future Earth Transition Team, he played a key role in defining the research initiative's organizational design and objectives. He is also President of Global Change START International, an organization which supports regional networks and capacity enhancement in Africa and Asia, and notably in the context of ICSU's international global change programmes. He is chair of the International Advisory Board, IRDR International Centre of Excellence, China: Taipei; the Ontario Climate Consortium and member of several other international and national committees. His service and achievements in the fields of climate change and natural hazards research have been recognized with the Orders of Canada (2008) and Ontario (2010). He is a Fellow of the Royal Society of Canada. As a lead author and review editor for the Intergovernmental Panel on Climate Change (IPCC), he was a member of the team that was awarded the 2007 Nobel Peace Prize.

In his inaugural address, Gordon McBean said that he was “very proud of the role the Council has played, and will continue to play, in planning, coordinating and 'making happen' global scale research for the benefits for all societies.”



Gordon McBean (photo: ICSU)

He emphasized that the Council will continue to provide societies and governments with policy relevant science that can and should form the basis policy making. “I am very proud to be your new President and look forward to working with you now and in the future,” he concluded.

End of IUGG Electronic Journal Volume 14 Number 9 Special issue (17 September 2014)

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Note: Contributions to IUGG E-Journal are welcome from members of the IUGG family. Please send your contributions to Alik Ismail-Zadeh by e-mail (insert in Subject line: *contribution to E-Journal*). The contributions will be reviewed and may be shortened.