Geoscience Canada

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Volume 33, Number 3, September 2006

URI: https://id.erudit.org/iderudit/geocan33_3icg01

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Publisher(s)

The Geological Association of Canada

ISSN

0315-0941 (print)
1911-4850 (digital)

Explore this journal

Cite this article

Teller, J. & Barr, S. (2006). 2008: The International Year of Planet Earth. *Geoscience Canada*, *33*(3), 97–99.

ISSUES IN CANADIAN GEOSCIENCE

2008: THE INTERNATIONAL YEAR OF PLANET EARTH

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In late 2005, the General Assembly of the United Nations proclaimed 2008 as the International Year of Planet Earth (IYPE). Two thousand and eight will be the central year in a Planet Earth triennium that will begin in January 2007 and end in December 2009. The implication of a UN proclamation is that all 191 UN nations have adopted the aims and ambitions of the IYPE and are willing to contribute to their implementation. Hence, this proclamation is the most ambitious scientific and outreach program ever designed in the geosciences, and provides an unprecedented opportunity to showcase to the world the relevance and socioeconomic importance of the Earth sciences.

This new international multidisciplinary Earth science initiative was conceived by the International Union of Geological Sciences (IUGS), which represents about 250,000 geoscientists from 117 countries. Planning for the IYPE began in 2000; twelve-organizations – IUGS, IUGG, IGU, AGI, INQUA, AAPG, ILP, IUSS, ISRIC, GSL, TNO, and AIPG – were part of the initial effort to organize this special year for the Earth sciences and became Founding Partners. They will share responsibility for activities in 2007-2009 with an IYPE Board of Officers and UNESCO. Senior Advisors from around the world will help coordinate efforts and encourage National Committees to be established; these National Committees will operate independently, setting goals and priorities for the IYPE, based on their national interests and needs. Planning for the IYPE is being coordinated with other Earth-related international initiatives for the 2007-2009 period, specifically the International Polar Year (IPY), International electronic Geophysical Year (IeGY), and the International Heliophysical Year (IHY).

Eduardo F.J. de Mulder (Geological Survey of the Netherlands) is Acting Chair of the Board of Officers of the International Year of Planet Earth. A small number of very distinguished individuals have agreed to serve as Goodwill Ambassadors for the IYPE. In addition, two Heads of State have accepted the invitation to be IYPE Patrons: Sam Nujoma, Founding President of Namibia, and Benjamin Mkapa, until 2006, President of Tanzania. Other such appointments are pending.

The primary aim of the IYPE is to increase public awareness and understanding of the ways in which our science can make planet Earth a safer, healthier, and wealthier place, and to demonstrate that Earth scientists are key players in creating a balanced and sustainable future for all. Efforts will include persuading decision makers, politicians, and other community leaders to apply effectively the great store of knowledge accumulated by the world's half-million earth scientists, and to encourage those leaders to consult us on matters related to the Earth. During the 2007-2009 timeframe of IYPE activities, Earth scientists from around the world will also be trying to explain to the general public how the Earth works, how its history provides important insight into our future, and what Earth scientists do to make the world a better place in which to live. Plans are underway to raise $20,000,000 for implementation of IYPE, with the intent that the funds will be divided about equally between support for Research and for Outreach activities. Potential sources for financial support are multinational corporations, intergovernmental institutions, development banks, and science organizations, and local governmental and non-governmental organizations.

Ten broad and socially-relevant themes have been developed for the Research and the Outreach components of the IYPE. These are summarized below, and can be viewed on, and downloaded from, the website [www.yearofplanetearth.org]. A prospectus and flier, *Planet Earth in our Hands*, has also been published. The ten themes have been chosen for their scientific importance, societal impact, potential for outreach, and multidisciplinary nature.

Groundwater - toward sustainable use: Much of the drinkable water on Earth exists as groundwater. New techniques of explo-

ration and production, and an improved understanding of the dynamics of natural water reservoirs, are helping Earth scientists find this essential commodity.

Hazards - minimizing risk, maximizing awareness: The Earth can be a dangerous place, and is often made more dangerous by human actions. Crucial to minimizing the hazard potential is an understanding of the geological conditions and the processes acting on them, so there can be an accurate assessment and communication of the risk.

Earth and health - building a safer environment: Everyone who lives in a "polluted" environment appreciates that where you live affects your health. Much of the control, over whether an environment is healthy or not, lies beneath our feet in the environmental geochemistry of our habitat.

Climate - the 'stone tape': Understanding climate trends, so vital to our stewardship of Planet Earth, relies heavily on the preserved record of sediments, sedimentary rocks, and ice, which serve as "groundtruth" for our efforts to understand future trends.

Resources - new discovery and sustainable development: Earth scientists have consistently confounded gloomy predictions about the exhaustion of resources by improving their understanding of the Earth and of how natural resources accumulate in the Earth. We must continue to find new and better ways of locating important resources and providing the energy needed to sustain our economies.

Megacities - going deeper, building safer: Urban areas commonly are concentrated on narrow coastal strips; available space is diminishing, and costs are rising. We must consider going deeper into the Earth to build our cities.

Deep Earth - from crust to core: The Earth's long history and evolution is recorded in only a thin crustal zone overlaying a central nickel–iron core and mantle that makes our planet dynamic. Our understanding of the crust and the Earth below is essential for economic and environmental planning.

Ocean - abyss of time: The oceans, and their record, provide important insight into how the Earth works. Although our improving knowledge of the oceans has revolutionized our understanding of the planet, much more remains to be discovered.

Soils - the mantle for life: Humans depend on soil, but mismanagement has led to erosion, depletion, and salinization in many regions. We must improve our understanding of the processes at work in producing and altering this essential resource.

Earth and life - origins of diversity: The history of life tells us about the Earth's past environment and the geological, hydrological, and atmospheric controls that have varied through time. This helps us understand the dynamic interaction of these processes in the modern world, so we know how to sustain the health of the planet's life support system in the future.

Although these themes provide the IYPE with a focus, the IYPE will operate mainly responsively, building on demand from the research community, much like the International Geoscience Program (IGCP), and will be guided by an Advisory Board of experts. Beginning late in 2006, the Board will be receiving "Expressions of Interest" from scientific groups around the world. The Outreach component of the IYPE is viewed as especially important, because the public, policy makers, and politicians make decisions about society's response to geological components in our changing environment.

Many of the IYPE's activities will be at the national level. To that end, National Committees of the IYPE have been formed, or are in the process of being formed in over 40 countries, including Canada. With the approval and support of the Canadian Geoscience Council and Council of Presidents, the Geological Association of Canada established an interim committee to coordinate the development of IYPE activities in Canada and facilitate the assembling of a formal Canadian National Committee for IYPE (CNC-IYPE). The interim committee consists of Sandra Barr (Wolfville), Simon Hanmer (Ottawa), Michel Malo (Ste-Foy), Jim Teller (Winnipeg), and Jennifer Bates (Dartmouth). The committee is expanding to include representation from a broad spectrum of the geoscience community in Canada. Invitations have been extended to professional societies, government and non-government agencies, and to industry, and by late Fall it is anticipated that a formal CNC-IYPE will be in place. Such participation may be either as full committee members or as associated delegates. Through this wide-reaching network, the CNC-IYPE will ensure that exciting Earth science activities such as NEPTUNE [www.neptunecanada.ca] and POLARIS [www.polarisnet.ca] are promoted and showcased to the Canadian public and their elected officials. It is envisaged that IYPE-linked special sessions and programs will take place at society meetings and other venues throughout 2007, 2008, and 2009. The ultimate objective is to promote geoscience through planned Outreach activities at national, regional, and local levels.

A multi-authored popular book on the geology of Canada is planned as a major Outreach activity in the timeframe of IYPE. Under the editorial team of Aïcha Achab, John Clague, David Corrigan, Rob Fensome, Jim Monger, Godfrey Nowlan and Graham Williams, the book will be aimed at a non-specialist audience and will feature many high-quality photographs and other attractive graphics. It will highlight: 1) the big ideas of geology (e.g. plate tectonics, climate change, and landscape development), especially how these relate to Canada and Canadians; 2) the evolution of the Canadian landmass and life through geological time, from the earliest rocks and fossils to the present Ice Age and living systems; 3) the development, occurrence and sustainability of resources (e.g. oil and natural gas, coal, minerals, aggregates, water), and 4) geologically related social issues such as the environment, health (e.g. radon gas, asbestos), climate change, and geological hazards such as earthquakes, tsunamis, floods and landslides. The book, whose projected release date is August 2008, will thus reflect the activities and achievements of all geoscientists in Canada, past and present, and will be a showcase product of IYPE in Canada.

We call on the entire Canadian geoscience community to become involved in organizing exciting activities related to geoscience and the IYPE, at all levels from elementary school through to professional organizations. We encourage you to share with us and the CNC-IYPE your ideas for possible outreach activities during the International Year. The IYPE is an outstanding opportunity for Canadian Earth scientists to tell everyone about what we know is an exciting, integral, and important part of everyone's lives, to make geology and the world around us come alive in the minds of the public, and to promote our own profession at all levels. The opportunities offered by this initiative are unprecedented, especially in the current climate of global awareness of Earth processes in such areas as natural disasters, climate change, rising commodity prices, and other Earth-related crises. Please do not wait to be asked - seize the opportunity to give Earth science the profile it deserves.

Accepted as submitted, 5 September 2006