

The International Year of Planet Earth (2007–2009): Earth Sciences for Society

EDUARDO F.J. DE MULDER, IYPE, Trondheim, Norway

TED NIELD, Geological Society of London, UK

EDWARD DERBYSHIRE, University of London, UK

Natural disasters like the 2004 tsunami bear graphic testimony to the Earth's incredible power and to an obvious corollary: that effective use of geoscientific knowledge can save lives and protect property. Such knowledge also enables satisfying, in a sustainable manner, the growing need for Earth's resources by an expanding human population.

This knowledge is readily available via the experience and publications of some half a million Earth scientists worldwide who comprise a professional community committed to contributing to a safer, healthier, and wealthier society. Professional guidance by Earth scientists can, for example, significantly improve many critical aspects of

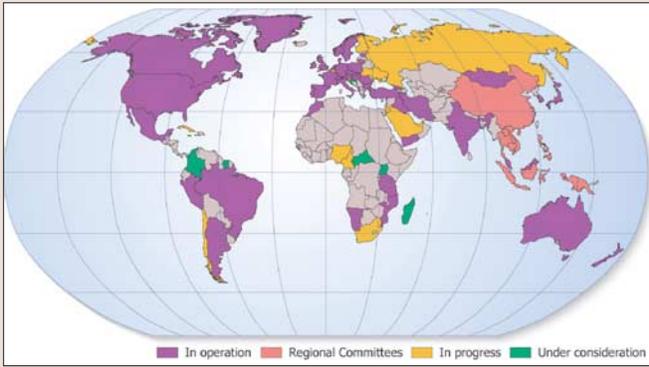


Logo of the International Year of Planet Earth: In 2002, the German Ministry of Education and Research instigated the Jahr der Geowissenschaften. The logo used in that event forms the basis of the International Year logo, (by kind permission of the German Ministry.) This consists of an inner circle (red) representing the solid Earth, then the biosphere in green and the hydrosphere in dark blue, above which is the pale blue atmosphere, all constituents of the Earth system.

Launch of 4 567 balloons from Piccadilly Circus in London in celebration of the start of the IYPE triennium and the bicentennial of the Geological Society of London, on 10 January 2007.

The International Year of Planet Earth enjoys the support of 26 associate partners, including many geoscientific organizations:

*ICSU—International Council for Science
IOC—Intergovernmental Oceanographic Commission of UNESCO
IPA—International Permafrost Association
IAGOD—International Association on the Genesis of Ore Deposits
SEG—Society of Exploration Geophysicists
SEG—Society of Economic Geologists
SGA—Society for Geology Applied to Mineral Deposits
IAH—International Association of Hydrogeologists
IGCP—International Geoscience Programme IGCP
EFG—European Federation of Geoscientists
AARSE—African Association of Remote Sensing of the Environment
SCA—Science Council of Asia
ProGEO—European Association for the Conservation of the Geological Heritage
SEPM—Society for Sedimentary Geology
CCOP—Coordinating Committee for Geoscience Programmes in East and Southeast Asia
GSAf—Geological Society of Africa
UNU—United Nations University
AGID—Association of Geoscientists for International Development
UN/ISDR—United Nations International Strategy for Disaster Reduction
NESF—Northeastern Science Foundation (USA)
AASG—Association of American State Geologists
ISPRS—International Society of Photogrammetry and Remote Sensing
GSA—Geological Society of America
NACSN—North American Committee for Stratigraphic Nomenclature
CPC—Circum-Pacific Council for Energy and Mineral Resources
IPA—International Palaeontological Association
CGMW—Commission for the Geological Map of the World*



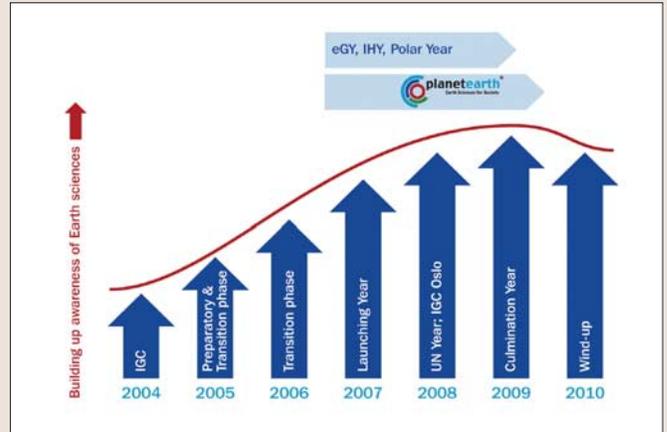
Map on progress in developing national committees by June 2007.

everyday life, including: identifying the best areas for urban expansion, avoiding certain sites for waste disposal, optimizing fresh water exploration, and locating toxic agents.

The obvious and significant benefits of a more widespread appreciation of Earth science are the impetus behind The International Year of Planet Earth (IYPE) 2007-2009. The stated goal of IYPE is to build on existing knowledge and make it more available to improve everyday life, especially in less developed countries, which is specifically expressed in the subtitle, "Earth Sciences for Society."

Ambitious outreach and science programs constitute the backbone of the International Year, now endorsed by all 191 member states of the United Nations Organization that has proclaimed 2008, the central year of the triennium, as the UN Year of Planet Earth.

What is IYPE? This project was jointly initiated in 2000 by



Relationship between the International Year of Planet Earth and other science year initiatives.

the International Union of Geological Sciences (IUGS) and the United Nations Educational, Scientific and Cultural Organization's (UNESCO) Earth Science Division. IUGS and UNESCO have enjoyed several decades of productive cooperation, notably through their joint International Geoscience Programme.

IYPE has 12 Founding Partners who actively support the initiative in kind or financially, including: the International Union of Geodesy and Geophysics (IUGG); the International Geographical Union; the International Union of Soil Sciences; the International Lithosphere Programme; the Geological Survey of the Netherlands; the Geological Society of London; the International Soil Reference and Information Centre; a consortium of the International Association of Engineering

Geologists and the Environment, the International Society of Rock Mechanics, and the International Society of Soil Mechanics and Geotechnical Engineering; the International Union for Quaternary Research; the American Geological Institute (AGI); the American Association of Petroleum Geologists (AAPG); and the American Institute of Professional Geologists (AIPG).

IYPE is designed to foster outreach and research activities (in the developing as well as developed countries) that raise public and political awareness of the Earth sciences' vast potential to improve quality of life and safeguard the planet. Among a range of objectives are:

- Reducing risks posed by natural and human-induced hazards.
- Reducing health problems by improving understanding of the medical aspects of Earth science
- Discovering new natural resources and making them available in a sustainable manner
- Building safer structures and expanding urban areas, utilizing natural subsurface conditions
- Determining the nonhuman factors in climactic change
- Improving knowledge concerning the occurrence of natural resources (as groundwater), which are often sources of political disputes
- Capacity building (i.e., developing opportunities for growth of science and reduction of the "digital divide")
- Improving the understanding of unique conditions on ocean floors relevant to the evolution of life

These objectives encompass related IYPE goals such as stimulating interest in the Earth sciences, expanding the number of geoscience students, increasing budgets for geoscience-related research, promoting geoscience applications, and promoting sustainable extraction of Earth's resources. Target audiences include: (1) decision makers and politicians who need to be better informed about how Earth science can be used for sustainable development; (2) the voting public, who need to know how Earth science can contribute to a better society; (3) fellow geoscientists, who are very knowledgeable about various aspects of the Earth but who need guidance in using their knowledge for the benefit of the world's population.

In addition, the geoscience community has expressed its support for this initiative via written declarations from the national geoscience committees of 44 nations. Moreover, a declaration in support of the IYPE was unanimously adopted by geoscientific communities in 140 countries at the 32nd International Geological Congress in Italy, in August 2004.

Timing and outreach. The UN Year (2008) is centered in a triennium starting in 2007 and running to the end of 2009. Fundraising began early in 2006. Most activities in 2007 are concerned with raising awareness by the general public. This will set the stage for the UN-Year when outreach activities and the generation of political awareness will culminate with the award of the first project grants for work on the Year's scientific themes. These activities will peak in 2009, when the first answers to questions posed by the IYPE will emerge. Formal activities for the International Year will wind up by mid-2010.

Outreach is a central focus of the IYPE as a means of generating interest and awareness of the Earth science's community's power to help create a sustainable future for humans and the planet. The publication of the IYPE's first brochure, *Planet Earth in Our Hands*, was a step in that direc-

tion; it was quickly followed by the brochure on outreach entitled, *Bringing Earth Sciences to Everyone*.

The outreach program will invite any interested party or group to submit project proposals addressing these aims. Projects can consist of events; cooperation for increased visibility; recycling of educational material; "citizen science" that involves the public in research; competitions; special magazine supplements; books, story ideas; support for documentaries or similar programs; and commissioned art.

Science program. The scientific themes selected for the IYPE were determined on the basis of their relevance to society. The selected themes are:

- Groundwater: reservoir for a thirsty planet?
- Hazards: minimizing risk, maximizing awareness
- Improving knowledge concerning the occurrence of natural resources (as groundwater), which are often sources of political disputes
- Earth and Health: building a safer environment
- Climate change: the "stone tape"
- Resources: toward sustainable use
- Megacities: going deeper, building safer* Deep Earth: from crust to core
- Ocean: abyss of time
- Soil: Earth's living skin
- Earth and Life: origins of diversity.

Specific questions, identified within each of these themes, have been designed to attract project proposals that answer a range of societal problems facing politicians and decision-makers. Scientists are invited to submit Expressions of Interest for research within these themes. Selection criteria for seed money grants require proposals to be geoscience-based, truly international, holistic and multidisciplinary, to have human impact, and to have potential for developing countries and for outreach.

Implementation of the science program will involve cooperation with the International Geoscience Programme, the global UNESCO-IUGS venture that has run successfully for more than 33 years. Brochures for all science themes may be downloaded from the IYPE Web site (www.yearofplanetearth.org).

One IYPE flagship science program, OneGeology, is a worldwide effort by most of the world's geological surveys to produce one digital, interoperable geological, scale 1:1M while using one common exchange language GeoSciML (www.onegeology.org).

Relation to other science years. Three other international science years, none of which has sought UN-Year status, will run at the same time as the IYPE: the International Heliophysical Year (IHY), the Electronic Geophysical Year (eGY), and the International Polar Year (IPY). Each international year has its own distinctive target groups, goals, and membership, though all share the view that a better understanding of the Earth System is the key to sustainable development.

The four initiatives have agreed to maintain close communication and to cooperate, coupling their science and outreach programs wherever possible and appropriate. This spirit of cooperation is formally stated in the Celimontana Declaration, available for viewing at www.egy.org. **TJE**

Corresponding author: e.demulder@planet.nl