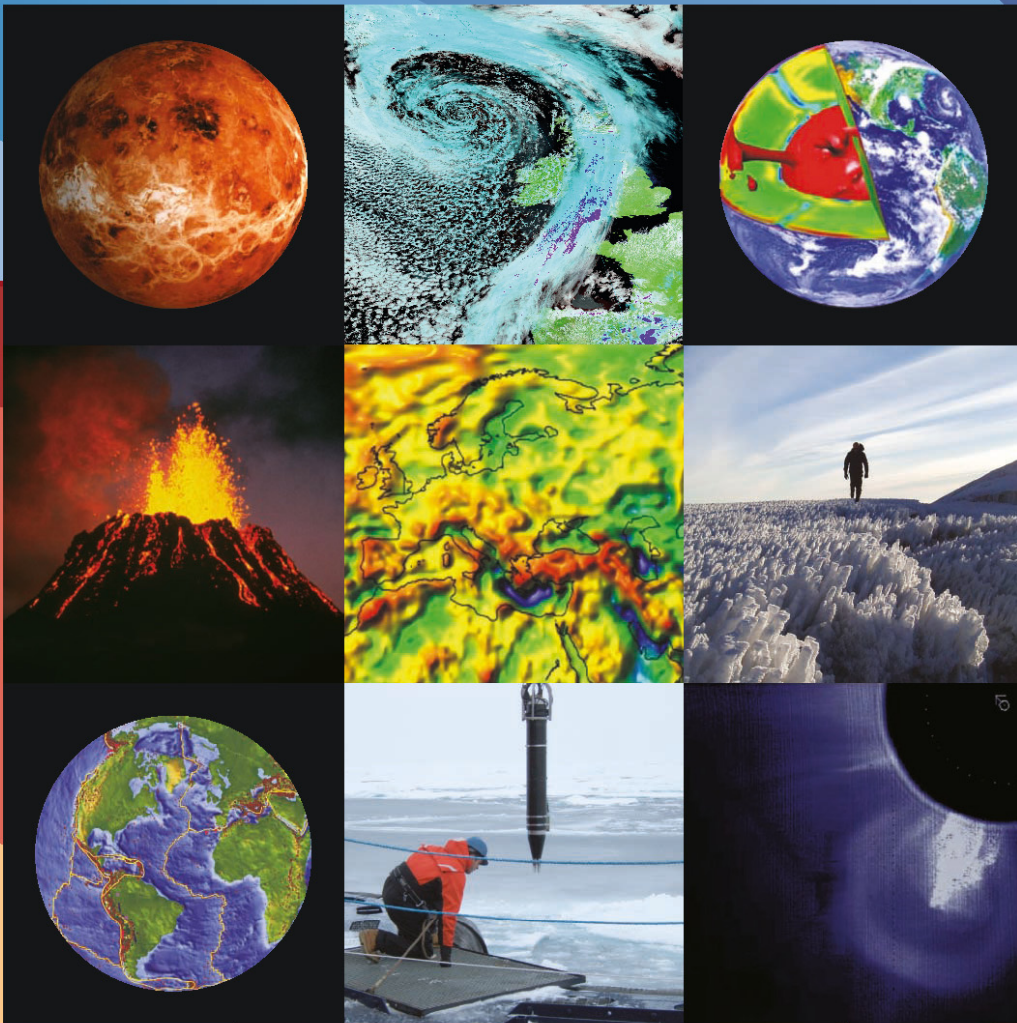




International Union of Geodesy and Geophysics (IUGG)
Frequently Asked Questions



What is IUGG?

Established in 1919, IUGG is the oldest non-governmental, international scientific organization dedicated to advancing, promoting, and communicating knowledge of the Earth system, its space environment, and the dynamical processes causing change. IUGG encourages the application of this knowledge to societal needs, such as mitigation of natural hazards, mineral and water resources, and environmental preservation. IUGG communicates the knowledge to governments and policy-makers for the benefit of humanity. IUGG is a Founder Member of the *International Council for Science* (ICSU).

IUGG is a union of eight International Scientific Associations, each of them promoting research and international cooperation in specific disciplines of Earth and space sciences:

- ◆ **International Association of Cryospheric Sciences (IACS)**
- ◆ **International Association of Geodesy (IAG)**
- ◆ **International Association of Geomagnetism and Aeronomy (IAGA)**
- ◆ **International Association of Hydrological Sciences (IAHS)**
- ◆ **International Association of Meteorology and Atmospheric Sciences (IAMAS)**
- ◆ **International Association for the Physical Sciences of the Oceans (IAPSO)**
- ◆ **International Association of Seismology and Physics of the Earth's Interior (IASPEI)**
- ◆ **International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI)**

IUGG is a national membership organization. Every country, in which independent activity in geodesy and geophysics has been developed, is eligible for IUGG membership. Scientists from any country can participate in the activities of the Union and its Associations, but only scientists from member countries are eligible to hold elected positions in the IUGG office.

What does IUGG do?

IUGG envisions a future Earth that is environmentally sustainable and where societies are resilient against natural hazards.

IUGG advances, strengthens, and promotes international research cooperation as well as science education and capacity building in Earth and space sciences through its Associations and national member countries. These scientific activities include (but not limited to) the following disciplines: the shape of the Earth, its gravitational and magnetic fields; the dynamics of the Earth as a whole and of its component parts; the Earth's internal structure (from the core to the crust), composition and tectonics; earthquakes and elastic wave propaga-

tion; the generation of magmas, volcanism and rock formation; the hydrological cycle and water resources; cryosphere including snow and ice; all aspects of the oceans; atmosphere and meteorology; ionosphere, magnetosphere and solar-terrestrial relations, and analogous problems associated with the Moon, Sun and the planets of the solar system. All the studies are carried out by the Union Associations.

IUGG develops and facilitates international cooperation in geosciences through its Associations, and more than 100 commissions, committees, working groups, services, and scientific partner organizations (cf. Figures 1 and 2).

IUGG Associations set up and promote activities of geodetic and geophysical services, e.g., the *International GNSS Service* (IGS); the *World Glacier Monitoring Service*; the *International Service of Geomagnetic Indices*; the *Permanent Service for Mean Sea Level*.

IUGG Associations develop and promote global standards for research, e.g., the *International Classification for Seasonal Snow on the Ground*; the *International Terrestrial Reference Frame*; the *International Geomagnetic Reference Field*; the *International Thermodynamic Equation of Seawater*; the *Manual of Seismological Observatory Practice*; or the *Guidelines for Professional Interaction During Volcanic Crises*. These products and services are widely used by researchers of different disciplines, companies, and private persons, and therefore serve as a link between research, policy-making and the public.

Together with its Associations and scientific partner organizations, IUGG initiates and promotes world-wide interdisciplinary research programs (e.g., the *International Lithosphere Programme*; cf. Figure 3), to explore the Earth System and its space environment as well as to analyze societal implications of the research.

IUGG organizes broad outreach activities especially in the developing world, e.g., *Electronic Geophysical Year 2007-2008* to strengthen open access to research data and to expand internet access in developing countries.

IUGG and its scientific bodies organize and sponsors scientific meetings and science education events bringing together scientists from all over the world and promoting participation of early career scientists, female scientists, and those living in less-affluent countries.

IUGG disseminates scientific knowledge through publications, e.g., books, scientific journals, handbooks, and presentations.

IUGG runs an honor and recognition program awarding the scientists for exceptional contributions to science and international research cooperation.

International Union of Geodesy and Geophysics (IUGG)

Associations

IACS
International Association of Cryospheric Sciences

- Divisions**
- Snow and Avalanches
 - Glaciers and Ice sheets
 - Sea Ice, Lake and River ice
 - Cryosphere, Atmosphere and Climate
 - Planetary and other Ices of the Solar System

Service

- The World Glacier Monitoring Service (WGMS)

- Standing Groups**
- IACS Standing Group on Glacier and Permafrost Hazards in Mountains (GAPHE)
 - Global Terrestrial Network for Glaciers (GTN-G) Steering Committee

IAG
International Association of Geodesy

- Commissions**
- Reference Frames
 - Gravity Field
 - Earth Rotation and Geodynamics
 - Positioning and Applications
 - Inter-Commission Committee on Theory

- Services**
- Bureau Gravimetric International (BGI)
 - Bureau International des Poids et Mesures (BIPM) - Time Department
 - Geodynamics and Earth Tide Service (GETS)
 - International Centre for Global Earth Models (ICGEM)
 - International Digital Elevation Model Service (IDEMS)
 - International DORIS Service (IDS)
 - International Earth Rotation and Reference Systems Service (IERS)
 - International Service for the Geoid (ISG)
 - International Gravity Field Service (IGFS)
 - International GNSS Service (IGS)
 - International Laser Ranging Service (ILRS)
 - International Service for Geodesy and Astronomy (IVS)
 - Permanent Service for Mean Sea Level (PSMSL)
 - Global Geodetic Observing System (GGOS)

IAGA
International Association of Geomagnetism and Aeronomy

- Divisions**
- Internal Magnetic Fields
 - Aeronomic Phenomena
 - Magnetospheric Phenomena
 - Solar Wind and Interplanetary Field
 - Geomagnetic Observatories, Surveys, and Analyses
 - Electromagnetic Induction in the Earth and Planetary Bodies

- Commissions**
- Interdivisional Commission on Developing Countries
 - Interdivisional Commission on History
 - Interdivisional Commission on Education and Outreach
 - Interdivisional Commission on Space Weather
 - International Service of Geomagnetic Indices

IAHS
International Association of Hydrological Sciences

- Commissions**
- Surface Water (ICSW)
 - Groundwater (ICGW)
 - Continental Erosion (ICCE)
 - Snow and Ice Hydrology (ICSIH)
 - Water Quality (ICWQ)
 - Water Resources Systems (ICWRS)
 - Remote Sensing (ICRS)
 - Coupled Land-Atmosphere System (ICLAS)
 - Tracers (ICT)
 - Statistical Hydrology (ICSH)

- Working Groups**
- Panta Rhei
 - Education in Hydrological Sciences
 - Precipitations
 - MOXI

IAMAS
International Association of Meteorology and Atmospheric Sciences

- Commissions**
- Atmospheric Chemistry and Global Pollution (ICAGP)
 - Atmospheric Electricity (ICAE)
 - Climate (ICCL)
 - Clouds and Precipitation (ICCP)
 - Dynamical Meteorology (ICDM)
 - Middle Atmosphere (ICMA)
 - Planetary Atmospheres and their Evolution (ICPAE)
 - Polar Meteorology (ICPM)
 - Ozone (IOC)
 - Radiation (IRC)

IAPSO
International Association for the Physical Sciences of the Ocean

- Commissions**
- Mean Sea Level and Tides
 - Properties of Seawater
- Services**
- Permanent Service for Mean-Sea Level
 - Standard Seawater Service

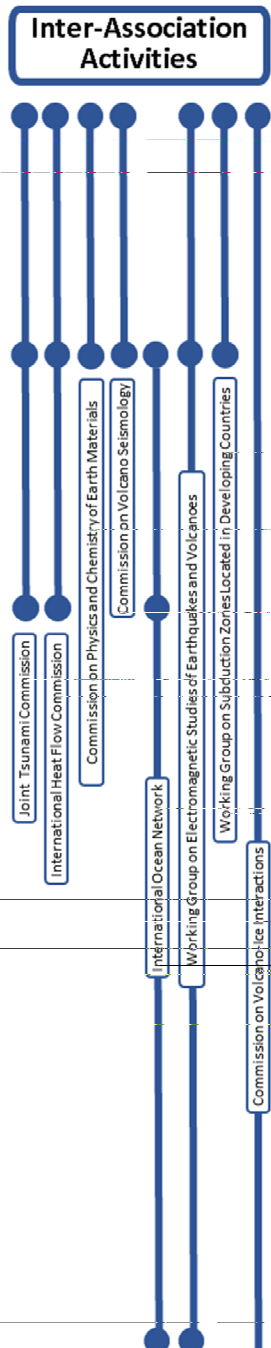
IASPEI
International Association of Seismology and Physics of the Earth's Interior

- Commissions**
- Earth Structure and Geodynamics
 - Earthquake Generation Process - Physics, Modelling and Monitoring for Forecast
 - Earthquake Hazard, Risk and Strong Ground Motion
 - Earthquake Source Mechanisms
 - Education and Outreach
 - Heatflow
 - Seismological Observation and Interpretation
 - Tectonophysics and Crustal Structure
 - European Seismological Commission
 - Asian Seismological Commission
 - African Seismological Commission
 - Latin American and Caribbean Seismological Commission

IAVCEI
International Association of Volcanology and Chemistry of the Earth's Interior

- Commissions**
- Chemistry of Volcanic Gases
 - Cities and Volcanoes
 - COSIV-Statistics in Volcanology
 - Arcs Magmatism
 - Collapse Calderas
 - Explosive Volcanism
 - Large Igneous Provinces
 - Monogenetic Volcanism
 - Remote Sensing
 - Submarine Volcanism
 - Tephra Hazard Modelling
 - Volcanic Lakes
 - Volcanic Hazards and Risk
 - Volcanogenic Sediments
 - Volcano Geohazards and Protected Volcanic Landscapes

- Inter-Association Activities**
- International Volcanic Health Hazard Network
 - Working Group on Volcano Acoustics
 - World Organisation on Volcano Observatories



Union Commissions and Working Group

- CLIMATIC AND ENVIRONMENTAL CHANGE
- MATHEMATICAL GEOPHYSICS
- GEOPHYSICAL RISK AND SUSTAINABILITY
- STUDY OF THE EARTH'S DEEP INTERIOR
- DATA AND INFORMATION
- PLANETARY SCIENCES
- WORKING GROUP ON HISTORY

Figure 1: IUGG Structure

Partner Organizations of IUGG

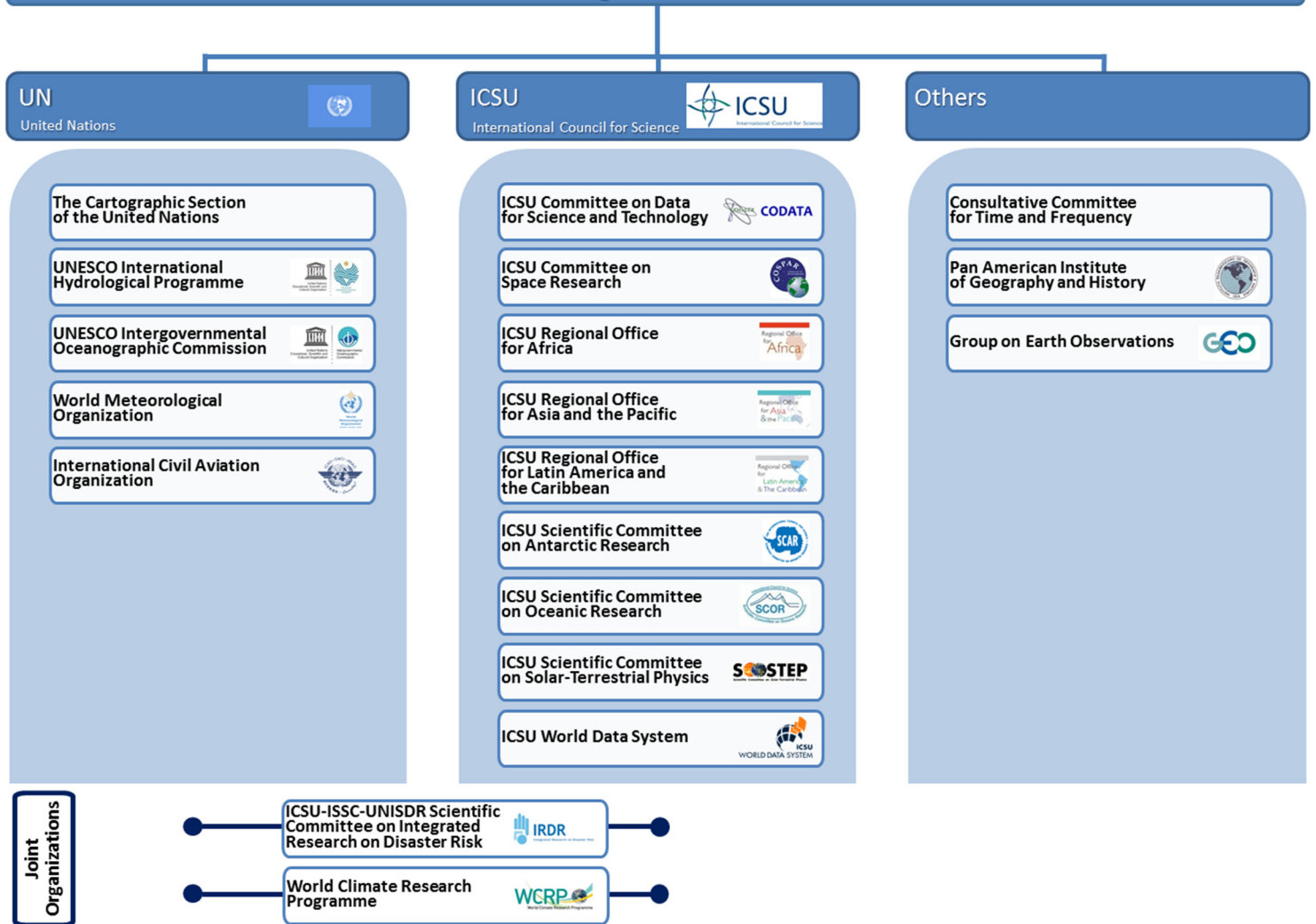


Figure 2: Partner Organizations of IUGG

Current	Past
<ul style="list-style-type: none"> International Lithosphere Programme (ILP, a joint IUGS-IUGG activity) Global Geodetic Observing System (GGOS, an IAG program) World Climate Research Programme (WCRP) Integrated Research on Disaster Risk (IRDR) International Year of Global Understanding (IYGU) Mathematics of Planet Earth (MPE) World Data System (WDS) 	<ul style="list-style-type: none"> International Geosphere-Biosphere Programme (IGBP, 1987-2015) International Year of Deltas (IYD, 2013-2014) Extreme Natural Hazards and Societal Implications (ENHANS, 2010-2014) International Year of Planet Earth (IYPE, 2007-2010) Electronic Geophysical Year (eGY, 2007-2008) International Polar Year (IPY, 2007-2008) International Heliophysical Year (IHY, 2007-2008) International Decade for Natural Disaster Reduction (IDNDR, 1990-1999) Geodynamics Project (1972-1979) Global Atmospheric Research Programme (1967-1980) International Hydrological Decade (1965-1974) Upper Mantle Project (1964-1970) International Geophysical Year (IGY, 1957-1958)

Figure 3: Programs and Projects initiated and/or supported by IUGG

How does IUGG carry out its work?

IUGG carries out its work through eight International Associations and several interdisciplinary Union Commissions and Working Groups (cf. Figure 1).

IUGG and its Associations hold General and Scientific Assemblies biennially with several thousand participants and organize and/sponsors topical conferences, symposia, workshops and other activities in the intervening period between assemblies.

How is IUGG governed?

The majority of IUGG member countries participate in the Union through the **National Committees for Geodesy and Geophysics** set up by the Adhering Bodies (e.g., national academy, research councils, major universities or governmental institutions). Each National Committee is represented at General Assemblies by a Delegate appointed by its Adhering Body. These Delegates - representing the geoscientists of their respective country - constitute the **IUGG Council**.

The IUGG Council directs IUGG's affairs (cf. Figure 4). It is governed by the **Statutes and By-Laws** of the Union.

The IUGG Council meets during the IUGG General Assembly and elects the **IUGG Bureau** and the **IUGG Finance Committee**. The IUGG Bureau handles administrative affairs between Council meetings. The **IUGG Executive Committee** (the Bureau, Association Presidents, and the Immediate Past Pres-

ident) works to further the scientific objectives of the Union and International Associations by effective co-ordination and formulation of general policies. The IUGG Finance Committee interacts with the IUGG Treasurer regarding budgetary matters.

What does IUGG offer for early career and female scientists?

- ◆ IUGG **encourages** early career and female scientists to actively participate in IUGG and all related bodies including appointing early career and female scientists to **positions of leadership** within their internal structures.
- ◆ IUGG and its Associations **award prizes** for outstanding scientific research of early career scientists.
- ◆ IUGG **organizes events** that are perceived as of direct utility to early career and female researchers, e.g., relating to career development, peer-networking, and mentoring from senior scientists.
- ◆ IUGG **convenes a Union symposium** at its General Assemblies dedicated specifically to the vision of early career scientists of the future of our planet.
- ◆ IUGG **encourages** early career and female scientists to be **symposium conveners** in collaboration with senior scientists.
- ◆ IUGG **encourages** the engagement of early career and female researchers from less-economically developed countries through, for instance, **travel grants** or campaigning for **free access** to information and Internet resources.

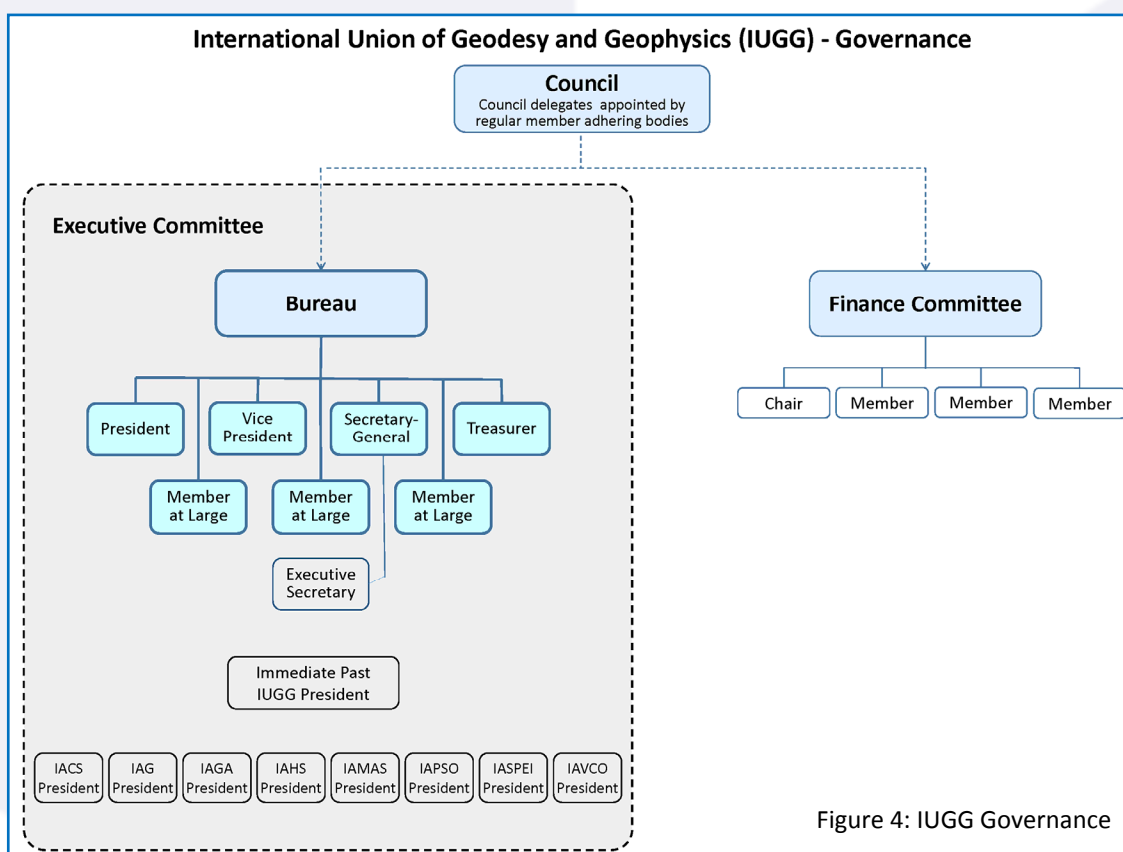


Figure 4: IUGG Governance

How to join IUGG?

The IUGG membership is national. Every country in which "independent activity in geodesy and geophysics has been developed" is eligible for IUGG membership. Annual membership fees are variable and dependent on the countries overall economy and scientific activities related to Earth and space sciences. The fees are determined according to the category established by the IUGG Finance Committee (in compliance with Statute III and By-Law III). Multi-national or regional geodetic, geophysical, or other geosciences organizations can become Affiliate members of IUGG free of charge. IUGG has no individual membership category, but some of the Union Associations have it. Scientists from non-member countries can be engaged in the activities of Union Associations even before their country becomes an IUGG member.

Prerequisites for becoming a member according to IUGG Statutes:

- ◆ **Identification of Adhering Organization** to represent the new member country to IUGG
- ◆ The **Adhering Organization** is usually the principal scientific academy or council for national research. However, it can be any other institution or association of institutions, whether non-governmental or governmental, that represents geoscientific activities.
- ◆ Establishment of a **National Committee** for IUGG by the Adhering Organization identifying at least one officer (Chair of the Committee). The Chair forms the Committee inviting, on behalf of the Adhering Organization and in consultation with Union Associations, national distinguished experts, early career and female scientists to join the National Committee to represent the Union Associations. The term of these officers is generally the same as the IUGG Quadrennium (e.g., 2015-2019).
- ◆ Indication whether **regular or associated membership** is envisaged:
 - **Regular (paying) members:** appoint a Delegate to the IUGG Council, and vote on matters of business. Scientists from member countries may hold office in the Union and the Associations and vote in their business meetings.
 - **Associate (non-paying) members:** have no voting rights. Associate membership is welcomed as a first step toward regular membership if a country's economic condition currently does not permit the payment of annual dues.

In case any further information on the application procedure is needed, please do not hesitate to contact the IUGG Secretariat (secretariat@iugg.org) or any Association (www.iugg.org/associations).

Benefits of IUGG membership

IUGG membership allows countries and its scientists to participate in all IUGG, Associations and related bodies activities. It enables its scientists to be elected to the IUGG office and be part of a global network of researchers working together on geophysical research topics in well-established commissions or working groups.

Every member country is represented by a National Delegate to the IUGG Council which directs IUGG's affairs, shapes research developments, and decides about officer positions through elections. It provides opportunities for international leadership incl. establishing scientific policy, setting standards, guiding programs, and convening symposia.

It enables member countries to be represented on international interdisciplinary bodies (committees, working groups, commissions) established under IUGG, ICSU, and other international scientific organizations.

It allows member countries to organize scientific meetings of all groupings of the IUGG family including IUGG General Assemblies and Association Scientific Assemblies.

It enables scientists from member countries to get access to funding opportunities such as the IUGG Grants Program or IUGG Symposia Support.

It enables scientists from member countries to get access to publications, and geoscience educational activities.

Why IUGG is more important than ever!

IUGG was established in 1919 by a merger of several previously existing geoscience associations to further the **collective goals** of international research for the advancement of science and technology.

International cooperation is needed to further Earth and space sciences to the benefit of the society; IUGG is one of the best ways to promote this because

- ◆ IUGG has national membership and is a union of eight International Scientific Associations bringing together major disciplines of geosciences with the goal of **improving our understanding of the dynamic Earth**.
- ◆ IUGG, in cooperation with the **International Council for Sciences (ICSU)** and the **United Nations (UN)**, develops international research programs, coordinates global and regional geoscience projects, operates services, defines scientific standards, conducts outreach, and organizes scientific meetings worldwide.
- ◆ IUGG advocates **non-discriminatory practices, free and open data**, and the empowerment of stakeholder groups within science and in society more generally.

At the **IUGG General Assembly 2019, in Montreal, Canada**, IUGG will celebrate the Union's past century's achievements and promote the ideals of IUGG to a new generation of scientists and policy-makers.

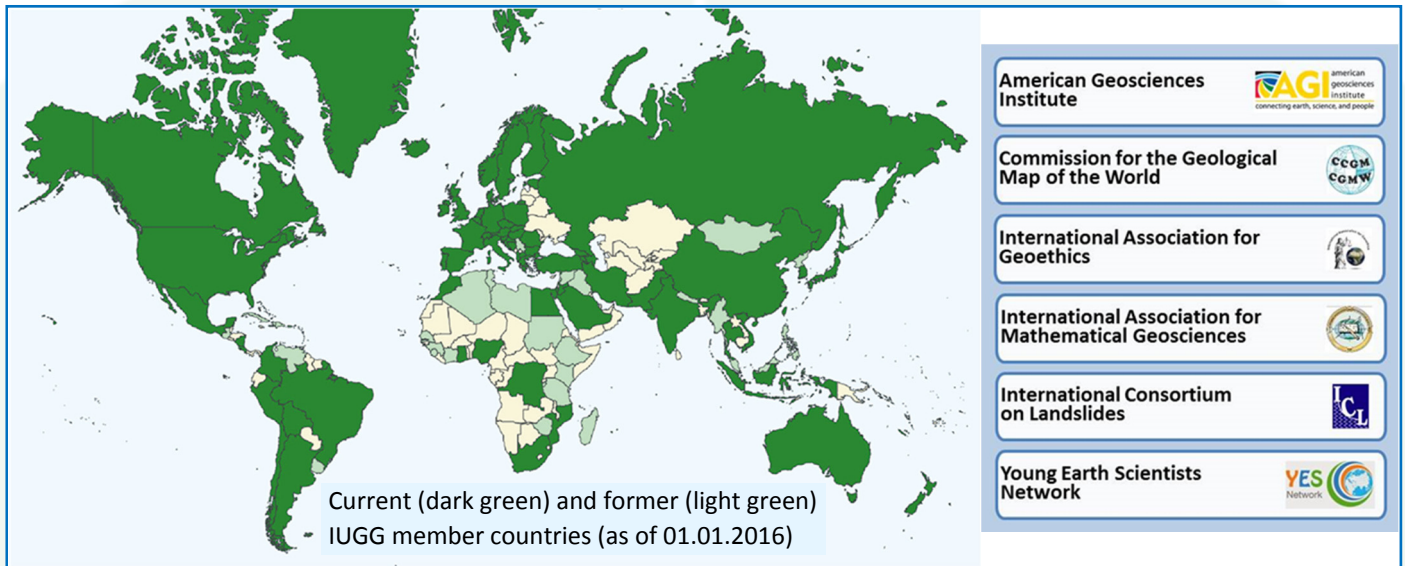


Figure 5: National and Affiliate Members of IUGG

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