

Applications

HAZARDS

Space weather and the effects of magnetic storms: damage to satellite systems, disruption of satellite communications, GPS errors, varying orbital drag on satellites, radio communication fadeouts, induced currents in power grids, corrosion in pipelines; electric and magnetic monitoring of earthquakes and volcanoes.

ENVIRONMENT

Global change: climate change past and present; solar variability and global temperature change; tracing of pollutants; dam siltation; coastal dynamics; salinity mapping; water resources.

MINERAL & OIL EXPLORATION

Sub-surface mapping and modelling; stratigraphy; dating of sedimentary rocks and mineralisation; hydrocarbon maturation; directional drilling.

GEOLOGY

Tectonic reconstructions; continental drift; crustal structure and rock properties; stratigraphy; dating of rocks, ocean floor, and marine cores; archaeology.

NAVIGATION

Magnetic compass corrections and navigation; satellites; guidance and detection systems; biomagnetism, animal navigation.

HUMAN HEALTH

Effects of magnetic fields on humans: radiation exposure to astronauts and high-flying aircraft, biomagnetic effects of electromagnetic radiation.

X-ray images of the Sun from solar minimum to solar maximum [Yohkoh spacecraft, courtesy Loren Acton, Montana State University]

IAGA is

- ▶ a network of more than 2000 scientists from more than 70 countries
- ▶ science-driven, non-Governmental, not-for-profit
- ▶ supported by contributions from the national bodies of participating countries.
- ▶ one of the seven Associations of the *International Union of Geodesy and Geophysics* (IUGG); IUGG is a member of the *International Council for Science* (ICSU).

IAGA covers

- ▶ solid-Earth magnetism
- ▶ aeronomy of the middle and upper atmosphere
- ▶ physics of the ionosphere and magnetosphere
- ▶ solar, planetary, and cometary physics.

IAGA serves

- ▶ research establishments
- ▶ government agencies
- ▶ intergovernmental bodies
- ▶ universities
- ▶ private enterprise
- ▶ general public

with emphasis on the needs of developing countries.

IAGA promotes

- ▶ collaboration between nations
- ▶ participation by developing countries
- ▶ free interchange of scientific information
- ▶ excellence in science.

IAGA coordinates

- ▶ international scientific activities and initiatives
- ▶ studies of Earth and space environments
- ▶ global networks of observatories
- ▶ international standards and protocols.

IAGA produces

- ▶ databases and catalogues
- ▶ reference models
- ▶ procedural guides and standards
- ▶ special reports and bulletins
- ▶ IAGA News.

IAGA supports

- ▶ international scientific meetings
- ▶ specialist forums, workshops, and meetings
- ▶ attendance at meetings by young scientists and scientists from developing countries
- ▶ training and education.

IAGA comprises

- Division I - Internal Magnetic Fields
- Division II - Aeronomical Phenomena
- Division III - Magnetospheric Phenomena
- Division IV - Solar Wind and Interplanetary Field
- Division V - Geomagnetic Observatories, Surveys, and Analyses
- Interdivisional Commission on Developing Countries
- Interdivisional Commission on History

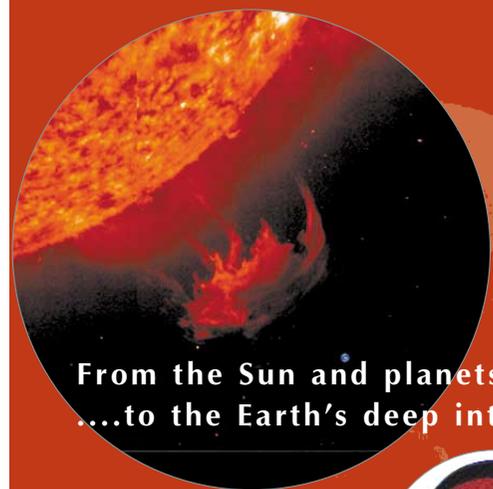
and contributes to

- inter-disciplinary activities with other Associations and Unions
- international science bodies and societies
- International Service of Geomagnetic Indices (ISGI)
- World Data Center (WDC) services.

Information about IAGA can be found at www.iugg.org/IAGA



International Association of Geomagnetism and Aeronomy



From the Sun and planets....
...to the Earth's deep interior



EARTH



Association Internationale de Géomagnétisme et d'Aeronomie



An Association of the *International Union of Geodesy and Geophysics*



3. The International Geomagnetic Reference Field (Z, 2005.0) [Courtesy: IAGA]

4. Scalar magnetic anomaly map of the Earth [Courtesy: Stefan Maus]

5. Aurora oval [Dynamics Explorer view from space, copyright University of Iowa]

6. The Van Allen radiation belts [Courtesy of Windows to the Universe, www.windows.ucar.edu]

7. The Sun's corona [Copyright 2002 by Fred Espenak, www.MrEclipse.com]

8. Coronal loops on the Sun [Courtesy: TRACE mission, Stansford-Lockheed Institute for Space Research & NASA]

9. The Sun as seen in extreme ultra-violet light [SOHO mission; courtesy of NASA/PI/Catech]

10. Other planets have magnetic fields [Courtesy of NASA]

1. Magnetic field lines generated by the Earth's core [Numerical simulation by Gary Glatzmaier & Paul Roberts]

2. Radial magnetic field at the core-mantle boundary, 1980.0 [Courtesy: Jeremy Bloxham & Andrew Jackson]

3. The International Geomagnetic Reference Field (Z, 2005.0) [Courtesy: IAGA]

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Background: Influence of the Sun on the Earth's magnetic field in space [Courtesy: NASA]

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