

Resolutions of the Union Adopted at the XXIII General Assembly

Sapporo, Japan, 9 July, 2003

Resolution 1: Geophysical Seafloor Observations

The International Union of Geodesy and Geophysics,

Considering,

1. That measurements of the Earth's time varying gravitational field will soon be available, in particular over the oceans, from the CHAMP and GRACE satellite missions; and
2. That the gravitational field over the oceans and the pressure at the bottom of the oceans are both sensitive to changes in the distribution of mass within the oceans; and
3. That the magnetic field over ocean areas, which is to-day monitored by several satellites, undergoes variations related to activity in the core, induction, and global ocean circulation; and
4. That significant improvement of seismological observations can be achieved by enhanced coverage in the ocean basins; and

Recognizing,

1. That the value of assimilating data into ocean models; and
2. The importance of validating and calibrating satellite data and ocean models using *in situ* measurements; and
3. The benefits of enhanced global coverage of information on seismic sources and earth structure;

Recommends,

1. That regional and global networks of multidisciplinary geophysical seafloor observatories be deployed in all ocean areas; and
2. That efforts in this regard be coordinated through the International Ocean Network Committee.

Resolution 2: Ocean Modelling

The International Union of Geodesy and Geophysics,

Noting,

1. The value of ocean models for current, future and retrospective studies of the influence of the oceans on the Earth's rotation, deformation, gravitational field, and geocenter; and
2. The importance of having available models that conserve mass and are forced by atmosphere surface pressure; and

- Recognizing,
1. The major investment in resources required to develop, maintain, and operate the ocean models that are used in such studies; and
 2. The value of assimilating data into ocean models;

Recommends, That support for such modelling activities be continued, including support for the development of forecast ocean models that conserve mass and are forced by surface pressure; and

Encourages, The continued collaboration between geodetic and ocean modelling groups.

Resolution 3: Integrated Global Geodetic Observing System (IGGOS)

The International Union of Geodesy and Geophysics,

- Recognizing,
1. The great progress made in the use of space and terrestrial techniques for monitoring the phenomena and processes in the System Earth during the last decades; and
 2. The efforts made towards the integration of space techniques in the management of observations, data processing, evaluation, and modelling of the observable parameters, in particular by the different international services; and
 3. The urgent need to further develop and strengthen the scientific and organizational collaboration of geodesy within the geosciences; and
 4. The necessity of generation and accessibility of consistent products for users in Earth sciences, neighbouring disciplines and society in general; and

Considering, That the International Association of Geodesy (IAG) has taken an initiative towards the realization of IUGG Resolution no.1 adopted at the 22nd General Assembly in Birmingham 1999 by installing the integrated Global Geodetic Observing System (IGGOS);

Strongly supports The establishment of the IGGOS Project within the new IAG structure as geodesy's contribution to the wider field of geosciences and as the metrological basis for the Earth observation programs within IUGG and the international organizations mentioned in the 1999 Resolution no.1; and

Urges That other associations cooperate with the new project by providing data, models, products, and know-how useful for

IGGOS and the benefit of geosciences; and participate in the IGGOS project by joining the relevant components in its structure and assisting its symposia and meetings.

Resolution 4: Adoption of the Resolutions B1.1 through B1.9 of IAU 24th General Assembly, 2000

The International Union of Geodesy and Geophysics,

Noting,

1. That the International Astronomical Union (IAU) adopted the resolutions appended below at its 24th General Assembly in Manchester, England, August 2000, concerning definition of the celestial reference system, time scales, and Earth's precession and nutation; and
2. That the celestial reference system and the nutation-precession model have a practical influence on geodetic observational processing and their geodynamic interpretation; and

Recognising,

1. That the International Earth Rotation Service (IERS), a service jointly affiliated with the IAU and IAG has adopted these IAU resolutions in its calculations and publications, but continues in parallel with the calculations in the previous system; and
2. That adoption of these IAU resolutions by the IERS has been undertaken in a way that makes a smooth transition in geodetic time series, almanac publications, and other services relevant to practical navigation, geodesy, and geodynamics; and
3. That the full operational implementation of these IAU resolutions may require more time than originally proposed in the resolutions;

Endorses,

Resolutions B1.1, B1.2, B1.3, B1.4, B1.5, B1.6, B1.7, B1.8, B1.9 of the 24th General Assembly of the IAU; and

Recommends,

That the IERS continues to provide users with data and algorithms for the conventional transformations, as well as those recommended by the IAU 24th General Assembly, to ensure continuous operation of astronomical and geodetic systems.

**Resolution 5: The Impact of Biomass-burning Aerosols on
Precipitation**

The International Union of Geodesy and Geophysics,

Considering, Biomass burning from agricultural practices, household consumption and wildfires produces substantial quantities of aerosol particles that can increase small cloud droplet number concentration; and

Realizing, That higher concentrations of small cloud droplets affect their coalescence and the formation of precipitation and thus the water supply; and

Welcoming, The recognition of the potential effect of all aerosol sources on precipitation by Congress XIV of the World Meteorological Organization, WMO, in May 2003 and its projected actions focused on biomass burning plumes;

Urges, The scientific community to undertake systematic studies of the impact of biomass burning aerosol on precipitation formation on all scales including feedback effects on climate as well as the competing effects of industrial fine particle aerosols and natural coarse particle aerosols such as sea salt and soil dust; and

- Recommends,*
1. That a body be established to undertake an international program of study and assessment of the rain related effects of biomass burning in collaboration with WMO and other international organizations; and
 2. That this body creates a mechanism to assemble the scientific evidence needed to lay the groundwork for a UN sponsored conference on pollution effects on precipitation and hence water supply; and
 3. That this body reports in the IUGG Newsletters and the General Assembly in 2007 on the steps taken and the progress made.

**Resolution 6: Data Access under the Comprehensive Nuclear Test
Ban Treaty**

The International Union of Geodesy and Geophysics,

- Recognising,
1. That free, open, international exchange of data has been the basis of advances in seismology and related sciences; and
 2. That the International Monitoring System for the Comprehensive Nuclear Test Ban Treaty (CTBT) provides a

4. The co-ordination of InSAR space and ground systems of member countries for optimal scientific utilization of these assets for the benefit of society.

Resolution 8: MST/IS Radar in Antarctica

The International Union of Geodesy and Geophysics,

Considering,

1. That planetary waves, atmospheric tides and gravity waves play a key role in the dynamics of the polar middle atmosphere, including the formation and termination of ozone holes and coupling between the lower and upper atmospheres; and
2. Our limited knowledge of the physics of clouds that occur only in the polar stratosphere and mesosphere and which are important for monitoring natural and anthropogenic effects on climate; and
3. That Mesosphere-Stratosphere-Troposphere / Incoherent Scatter (MST/IS) radars are the only observational tools capable of quantitative studies of the dynamics of the atmosphere from the troposphere to the ionosphere; and
4. That the orographic forcing of waves is different between the hemispheres and that the different separation between the geographic and geomagnetic poles means that the impact of the dynamics of the middle and upper atmospheres will be different between hemispheres; and
5. That substantial solar wind energy enters through the magnetosphere into the polar ionosphere and excites aurora, strong currents, winds and waves through plasma-neutral coupling; and
6. That combined incoherent scatter / MST radar observations at conjugate points in the polar regions provide an unparalleled tool to study these complex processes; and

Noting,

That there are no MST/IS radar systems in the entire Antarctic region, which leaves a major gap in the global radar network;

Recommends,

That MST/IS radars be established at the earliest opportunity in the Antarctic region in order to fill this gap and provide invaluable information to the scientific community.

Resolution 9: Release of Airborne and Marine Magnetic Data
The International Union of Geodesy and Geophysics,

Considering, The importance of magnetic anomaly mapping for global geological and tectonic interpretation ; and

Noting,

1. The existence of numerous sets of low-level airborne and marine magnetic anomaly data, and the rapid progress made in storing and compiling such data; and
2. That many data sets remain classified or confidential, even after most have outlived their original purpose; and
3. That the situation has not significantly improved following IAGA resolution 3 of 1997 ;

Recommends, That the custodians of such data sets develop suitable mechanisms to release them into the public domain as soon as possible.

Resolution 10: Inter-operability and Protection of Global Navigation Satellite System signals

The International Union of Geodesy and Geophysics,

Noting,

1. The extensive use of the Global Positioning System (GPS) over the past decade, the highly successful integrated receiver and analysis experience in combining GPS and GLONASS observations, and incredible potential of combining multiple Global Navigations Satellite Systems (GNSS), anticipated by the addition of European GNSS Galileo; and
2. The GPS/GNSS modernization program features three civil signals, and,
3. The broad user base of the GPS/GNSS system within IUGG and sister organizations as a tool for science, multidisciplinary applications and societal benefits.

Recognizes, The need to foster and protect GNSS systems; and

Recommends,

1. That GNSS providers are strongly encouraged to cooperate and coordinate closely to ensure inter-operability and compatibility in developing, deploying and operating seamless systems now and in the future and to maximize common frequencies and signals; and

2. That scientists in IUGG and sister organizations are encouraged to engage in continual activities to protect the signal and spectrum of collective GNSS, to secure long term availability of these satellite signals available from present and future GNSS systems.

Resolution 11:

Thanks

The International Union of Geodesy and Geophysics,

Gratefully records its appreciation for the organization, arrangements made, and generous financial support for the XXIII General Assembly. IUGG particularly acknowledges the gracious presence of their majesties the Emperor and the Empress of Japan for their warm welcome and message they extended to all participants and for their informal interaction with delegates from around the world. On behalf of all participants, the Council expresses its warm thanks to the Japanese National Committee for IUGG, to the Science Council of Japan and 16 Japanese geophysical societies, to the Japan Marine Science and Technology Center, to the Local Organizing Committee, to the Program Committee, and to all others involved in making the XXIII General Assembly a success and an enjoyable meeting in Sapporo.