

Resolutions adopted by the XIIth General Assembly

Resolution N° 1

The International Union of Geodesy and Geophysics

RECOMMENDS that the following policy be followed as far as possible

- 1) The responsibility for the scientific content of the Union publications should rest solely with the Associations, but that the Union should arrange for the uniformity of presentation.
- 2) When publishing symposia or scientific information all manuscripts, except those specially invited, should be reviewed by a competent referee.
- 3) Prior to a symposium copies or summaries of the papers to be presented should be distributed to the participants.
- 4) Where possible symposia should be submitted for publication to scientific journals of international standing and that the journals should be asked to provide copies of the report of the symposium at a suitable discount.
- 5) The General Secretary examine with the Secretaries of the Associations the possibility of adopting not more than two standard formats, the international format 21 x 27 cm and Royal octavo, so that there be two numbered series of symposia in each Association and therefore in the Union.
- 6) The presentation of all scientific publications of the Union be as similar as possible to that adopted for symposia and particularly to the two formats.
- 7) The communications to the General Assemblies should be classified by the Secretaries of the Associations into a number of subjects and that each subject should be printed in one booklet which should be edited by a scientist appointed by the Association.
- 8) The Union and the Associations set aside part of their resources for the publication of data or scientific information.
- 9) Information concerning mainly administrative or representative questions should be disseminated by means of:
 - a) Minutes to National Committees or to participants in meetings.
 - b) Brief résumés published in the IUGG Chronicle.
 - c) Explanatory leaflets as deemed necessary by the General Secretary or the Bureau.
- 10) The reports of National Committees on different disciplines be continued if so decided by the association and that the National Committees be invited to print and present their reports in the format 21 x 27 cm in order to facilitate collection and binding of the reports.
- 11) Each publication of scientific information should be sold by the Union for the entire benefit of the corresponding Association, and that the following free distribution be made:
 - 1 copy for each National Committee
 - 1 copy for each member of the Executive Committee of the Association concerned
 - 1 copy to each member of the Bureau of the Union.
 - 25 reprints for the authors of articles.and that for the publication of data, or of scientific information, one copy should be sent to all institutes having provided part of the data or the information.
- 12) The IUGG Chronicle should continue to be published by an economic process and should not be used to publish scientific articles.

13) The IUGG monographs could be used to publish summary accounts of symposia of the Union or administrative subjects.

Resolution N° 2

The International Union of Geodesy and Geophysics

a) WELCOMES the increasingly good bibliographic coverage given in geodesy and geophysics by the four major general abstracting services in English, French, Russian and Spanish.

b) RECOMMENDS that Associations advise these four services on additional sources and journals to be abstracted.

c) ASKS the ICSU Abstracting Board to bring all four together to facilitate their work.

d) WELCOMES the increased scope of Meteorological and Geostrophysical Abstracts, and the possibility of a parallel increase in International Geological Abstracts, which will complete the coverage of geophysical subjects in English.

e) RECOMMENDS the publication of a list of existing bibliographies in geodesy and geophysics.

f) RECOMMENDS that Associations consider the future value of any special bibliographies published by them, or of particular concern to them, in view of the changed circumstances brought about by the improvement in the general abstracting journals and the great expense of publishing bibliographies.

Resolution N° 3

The International Union of Geodesy and Geophysics

CONSIDERING that since a standard value for the velocity of light in vacuo i. e. 299792.5 ± 0.4 kms/sec was adopted by the Union at its XI General Assembly in Toronto, it is desirable also to standardize the formulae for calculating refractive index in order to achieve uniformity in calculations

RESOLVES that the following formulae be provisionally adopted as standard

a) for light waves (the Barrell and Sears formula)

$$(n_G - 1) 10^7 = 2,876.04 + \frac{16.288}{\Lambda^2} + \frac{0.136}{\Lambda^4}$$

reduced to ambient conditions by

$$n_L = 1 + \frac{n_G - 1}{1 + \alpha t} \cdot \frac{p}{760} - \frac{0.000\,000\,055\,e}{1 + \alpha t}$$

b) for radio micro-waves (the Essen and Froome formula)

$$(n_r - 1) \cdot 10^6 = \frac{103.49}{T} (p-e) + \frac{86.26}{T} \left(1 + \frac{5748}{T}\right) e$$

n_L = refractive index of air in ambient conditions

n_G = refractive index of air of group wave length in normal air with 0.03 % CO₂ at

N. T. P.

Λ = light group wavelength in microns

t = temperature in °C

T = temperature in °K

p = atmospheric pressure in mm Hg

α = coefficient of expansion of air (0.003 661)

e = partial water vapour pressure in mm Hg

Resolution N° 4

The International Union of Geodesy and Geophysics

CONSIDERING international procedure concerning the use of metric units in scientific reports,

STRONGLY RECOMMENDS that this practice be adopted in all papers submitted to IUGG. Thus heights of rockets and satellites should be given in kilometres instead of miles and altitudes of balloons and aircraft in metres or kilometres instead of feet.

Resolution N° 5

The International Union of Geodesy and Geophysics

CONSIDERING the importance of a close liaison between its Associations and Commissions and COSPAR.

DECIDES to appoint an IUGG/COSPAR Committee,* consisting of as many representatives, duly nominated by the several interested associations, as are essential to represent each specialized scientific field of the IUGG.

RECOMMENDS that the functions of the IUGG/COSPAR Committee be tentatively defined as follows:

(a) To provide a mechanism for presenting IUGG interests and recommendations to COSPAR. The members of the IUGG/COSPAR Committee are to take appropriate initiative within their associations and among their colleagues to provide such information to the Committee and thus to the IUGG member of COSPAR. The Committee is also to serve as a focus of space interests within the IUGG.

(b) To consider COSPAR agenda, which will be circulated to the Committee by the IUGG member of COSPAR, and to provide the IUGG member with advice on topics relating to the fields of interest of the members of the Committee.

(c) To consider IUGG interests in space science, including experiments and symposia, which should be recommended to COSPAR for action. In this sense, the Committee, by virtue of its specialized membership, can provide COSPAR with expert scientific advice and assistance in the fields covered by the IUGG. Members of the Committee shall take initiative, working within their associations and with their colleagues, to provide scientific recommendations to the Committee and thus, through the IUGG member of COSPAR, to COSPAR.

Resolution N° 6

The International Union of Geodesy and Geophysics

RECOMMENDS that

1) An increase be made in the financial resources of the Central Bureau of the International Latitude Service (I.L.S.),

2) The northern I. L. S. stations should continue in operation with the present instruments, and with some improvement in their equipment, due to the fact that the need for accurate polar coordinates for both astronomical and geophysical purposes is greater than ever before,

3) The I. L. S. be reorganized into an International Polar Motion Service utilizing both time and latitude observations made at both independent and I. L. S. stations,

4) A small working group be created, initially to establish a definite plan for the organization of international cooperation in the study of polar motion, and then to direct the work in the future. The group should submit to the I. A. U. recommendations concerning the future location of the Central Bureau of the I. L. S.

5) The coordinates of the pole shall be given in the following forms:

$$x = x_0 + x_1$$

$$y = y_0 + y_1$$

where x and y are computed using fixed initial latitudes and x_1 and y_1 are computed using the mean latitude of epoch. The coordinates of the mean pole of epoch are x_0 and y_0 .

6) Results obtained with the I. L. S. and independent instruments should be published in detail as soon as practicable.

7) The following problems should be investigated further:

- a. Reduction to a uniform system, and careful analysis of the data of the I. L. S.
- b. Elaboration of criteria for the precision of latitude observations and comparison, by means of these criteria, of observations made with different instruments.

8) The density field in altitude of the atmosphere above each station should be studied in order to fix the order of magnitude of accidental refraction, and that as a minimum one such study be made when choosing a new location.

9) The necessary measures be taken to assure equilibrium in temperature between

* now known as the IUGG Committee on Space Research

an instrument and the air of the shelter, and that the intrinsic properties of the instrument should be studied to avoid optical and mechanical faults.

10) A detailed study of the local gravity field should be made to reveal the anomalies whenever there are reasons to suspect abnormal variations of the vertical. Such a study would be useful when a new station is created.

11) An astrolabe be installed at Mizusawa.

12) The observatory of Quito should place in service the astrolabe that has been sent there, and that the observatory should undertake the determination of time and latitude, and the observations of fundamental stars.

13) Two other astrolabes should be installed in the southern hemisphere for the study of polar motion, preferably in observatories already equipped with position-measuring instruments, and heartily endorses the plan of the National Chilean Observatory to install an astrolabe in Santiago.

14) The La Plata Observatory establish a P. Z. T. at the same latitude as that of Mount Stromlo.

NOTES with satisfaction the assurance given by Prof. Cassinis that the activity of Carloforte latitude station will be continued, and stresses the importance of this station.

RECOMMENDS that the International Astronomical Union also consider the adoption of these resolutions.

Resolution N° 7

The International Union of Geodesy and Geophysics

CONSIDERING the conclusion of the report of the tripartite IAPO-ICSU- International Hydrographic Bureau Committee established at the General Assembly, Toronto, 1957, that an up to date chart of the bottom topography of the Oceans is urgently needed,

RECOMMENDS

1) That a permanent service on the General Bathymetric Chart of the Oceans, federated in FAGS be established under the sponsorship of IAPO.

2) That the office of this permanent service be located in an institute actively engaged in deep-sea research.

CONSIDERING the urgent need for their immediate adoption urges the ICSU to endorse the above recommendations at the forthcoming meeting of its Executive Board, Lisbon, October 1960.

REQUESTS that

1) The ICSU solicit the assistance of the International Hydrographic Bureau in expediting the supply of the necessary plotting sheets from the cooperating hydrographic offices to the office of the permanent service on General Bathymetric Chart of the Oceans, when established.

2) The good offices of the "Comité International de Géophysique" be obtained to effect a close interchange of data between the International Hydrographic Bureau and the World Data Centres A and B.

3) The SCOR and SCAR be asked to cooperate closely with the office of the permanent service of the General Bathymetric Chart of the Oceans in the supply of bathymetric information.

REQUESTS the ICSU to study the ways and means of providing suitable financial assistance to the International Hydrographic Bureau and to the cooperating hydrographic offices.

Resolution N° 8

The International Union of Geodesy and Geophysics

NOTING the proposal formulated by the International Commission on European Levelling at its meeting from 5th to 10th October 1959 at Liverpool with representatives of the International Commission on Mean Sea Level,

RECOMMENDS that a joint Special Study Group of the International Associations of Geodesy and Physical Oceanography be formed to study the changes which can possibly occur in the relative positions of oceans and land surfaces.

Resolution N° 9

The International Union of Geodesy and Geophysics

CONSIDERING that present arrangements for making basic meteorological data available to research workers all over the world are unsatisfactory and that for this reason research is often seriously hindered,

RECOMMENDS that

1. Steps should be taken to make readily available the following classes of data from all countries:
 - (a) Atmospheric ozone observations
 - (b) Observations of the components of the radiation budget from stations suitably equipped
 - (c) Certain data on chemical analyses of atmosphere and rainwater
 - (d) Certain observations on radioactivity of atmosphere and rainwater
 - (e) Aerological observations, that is the data on upper air winds, temperatures and humidities obtained by aerological soundings.
2. The data on ozone, radiation, chemical composition and radioactivity should be collected at one centre, published and distributed on request.
3. Aerological data being too large in amount for collection and publication by one international centre at the present time should be dealt with in any one of the three following ways, as appropriate:
 - (a) Printed and widely distributed in regular periodical form and made available to libraries and institutes throughout the world,
 - (b) Collected in the form of tabulations, punched cards or other suitable storage medium, by national centres which will undertake to supply copies of information on request to any appropriate person or organization,
 - (c) Collected at an international data centre which will undertake to make the data generally available in a manner similar to that indicated in either of the two preceding sub-paragraphs.
4. In making data generally available there should be no obligation upon any organization to make them available free of charge, but that charges commensurate with the costs of processing and distributing would be entirely appropriate.
5. A catalogue should be maintained by the international data centre, recording the nature of the data which are available in each country, and the manner in which copies of the data may be obtained by research workers. The catalogue should itself be made generally available to libraries, institutions or other subscribers.
6. The World Meteorological Organization should, in accordance with the terms of its Convention and the terms of its Working Agreement with IUGG, be urged to ensure that these requirements are met as fully as may be possible with no avoidable delay after agreement on matters of detail between the appropriate bodies of WMO and IAMAP. In order to facilitate this agreement the IAMAP has set up a "Committee on Meteorological Data for Research" authorized to negotiate on behalf of IAMAP with any similar body which WMO may decide to create.

Resolution N° 10

The International Union of Geodesy and Geophysics

CONSIDERING that

1. Considerable damage and loss of life may be caused by tsunamis,
2. The operation of the warning systems centered at the Honolulu Magnetic Observatory of the US Coast and Geodetic Survey, at the Japan Meteorological Agency and at the Meteorological Service, USSR, have been useful in reducing the risk to life in the Pacific,

3. The warnings issued are based on available knowledge concerning the generation and propagation of tsunamis,

RECOMMENDS that

1. The present tsunami warning system be expanded through the co-operation of nations around the Pacific,
2. International co-operation in interdisciplinary research concerning tsunamis be promoted by the establishment of a committee composed of members of I. A. S. and I. A. P. O.

3. Data concerning tsunamis be collected at the Data Center A and B for convenient availability to research workers,

4. The U.S. Coast and Geodetic Survey undertake the compilation of a bibliography on tsunamis,

5. The European Seismological Commission undertake tsunami studies on the Atlantic Coast of Europe (particularly Portugal) and of Morocco and in the Mediterranean,

and EXPRESSES

its appreciation of the interest shown by WMO in this field and assures WMO of its sincerest wish of close co-operation.

Resolution N° 11

The International Union of Geodesy and Geophysics

CONSIDERING the importance of operational problems in the World Magnetic Survey and recognizing the role of the CIG in coordinating broad scientific interest in the WMS, proposes to the CIG the addition of a discipline member for the WMS.

Resolution N° 12

The International Union of Geodesy and Geophysics

CONSIDERING the significance of lunar studies for geophysical research, urges geophysicists to investigate lunar influences in the different fields of terrestrial sciences,

REQUESTS the assistance of the Committee on Lunar variations for this purpose.

Resolution N° 13

The International Union of Geodesy and Geophysics

APPRECIATING the new series of High Latitude Geophysical Data issued monthly by the Geophysical Institute, College, Alaska,

RECOMMENDS that other polar observatories also consider publishing quickly similar monthly reports summarizing their observations.

Resolution N° 14

The International Union of Geodesy and Geophysics

RECOMMENDS that the proposals made at the symposium held at Paris, 1959, entitled "Codification of rules for protection from volcanic eruptions", including the report presented by Prof. B. Gèze during the Helsinki Assembly, be printed and distributed to the national committees and to the authorities of countries with active volcanoes.

Resolution N° 15

The International Union of Geodesy and Geophysics

HAVING CONSIDERED the proposal for the Establishment of a Committee for the Study of the Dynamics and Morphology of the Marine Littorals.

RECOMMENDS that a Committee on Near Shore Oceanography be established by the International Association of Physical Oceanography with the participation of the International Associations of Scientific Hydrology, Geomagnetism and Volcanology with the following terms of reference:

1. To gather information from individual scientists and existing organizations as to their present activities and views;

2. To prepare a memorandum indicating the most desirable lines of future work, and to draw up plans for a symposium in this field.

Resolution N° 16

The International Union of Geodesy and Geophysics

RECOMMENDS that the publication of a quarterly "Bulletin of volcanic eruptions" be commenced,

GRATEFULLY ACCEPTS the offer made by the Volcanological Society of Japan to publish and distribute this Bulletin as part of the Bulletin of that Society

RECOMMENDS that this material be also attached as a supplement to the "Catalogue of the Active Volcanoes".

Resolution N° 17

The International Union of Geodesy and Geophysics

CONSIDERING the fact that seismological studies are of primary importance in the seismic countries in South America and particularly in Bolivia, Chile, Columbia, Ecuador and Peru,

RECOMMENDS the development of seismological research in these countries by improving the instrumentation of already existing seismological stations and by creating new stations.

Resolution N° 18

The International Union of Geodesy and Geophysics

IS PLEASED to note that UNESCO, in close cooperation with WMO, is planning a symposium, to be held in Rome in 1961, on the subject of climatic change.

CONSIDERING that

a) Committee 4 of IAGA has been asked to arrange a symposium on the subjects of paleomagnetism and paleoclimatology and

b) A Committee on Problems in Geochemistry has been formed in IUGG to organize symposia in subjects which include geochronology and radio-carbon dating

WELCOMES AND RESOLVES to support these symposia and

RECOMMENDS that the Convenors of the IUGG symposia, when coordinating their plans for these symposia, keep the General Secretary and the Secretaries of the relevant Associations informed.

Resolution N° 19

The International Union of Geodesy and Geophysics

CONSIDERING the importance of upper mantle studies for investigations of solid earth geophysics.

DECIDES to undertake a broad programme of research, including among others the following subjects:

1. Deep drilling.
2. Development of deep sea seismographs for the exploration of the upper mantle under the oceans.
3. Special studies of deep focus earthquakes.
4. Magnetic and gravimetric studies.
5. Studies of tectonic and magmatic development of crust
6. Theoretical studies of phase changes, thermal conditions, equation of state.
7. High pressure laboratory studies of behaviour of rocks.

Resolution N° 20

The International Union of Geodesy and Geophysics

RECOGNIZING that the gravimetric method is of basic significance for the determination of the detailed shape of the earth and in spite of the fact that different nations have increased their gravity survey, there exist in the continents and in the oceans large gaps in the gravity anomaly field which reduce the accuracy of the obtained N -, ζ - and η - values,

URGES that all nations should accelerate the gravity survey of their countries and, if possibilities exist, also the gravity survey of the oceans, and make the obtained results accessible to the institutions applying the gravity anomalies for geodetic purposes.

Resolution N° 21

The International Union of Geodesy and Geophysics

NOTING the significant advantages that would accrue to the science of Geodesy from a high altitude satellite equipped with flashing light and devices for electronic tracking and ranging,

RECOMMENDS that a satellite of this type be placed in orbit at high altitude, ca 1200 to 1500 kilometres.

INTERNATIONAL ASSOCIATION OF GEODESY

Resolution N° 22

The International Association of Geodesy

APPRECIATING the work carried out by its Special Study Group N° 19 in investigating electronic and electro-optical distance measurement methods

RESOLVES that such methods be accepted for fundamental geodetic work, provided that the instruments used have been established as having the required characteristics as recommended in the report of the S. S. G. N° 19 and provided the operating procedures and precautions recommended are followed,

RECOMMENDS that when such measurements are included in the adjustment of networks, the probable errors for the instruments concerned, which are indicated in the report, should be adopted as a guide,

CONCLUDES that electro-optical instruments are suitable for base measurements and that instruments using radio micro-waves are suitable for traverse, trilateration and for determining the scale of triangulation nets by the measurement of complete figures but not of bases or of single sides

Resolution N° 23

The International Association of Geodesy

CONSIDERING that terrestrial refraction is of fundamental importance in geodesy and that inaccuracy of the determination of its effect creates a serious source of errors in many geodetic measurements, predominant, for instance, in vertical angle measurements, levelling, and distance measurements with the use of radio micro-waves,

RECOMMENDS that every encouragement be given to research work in this field.