

学 界 情 報

IASPEI Newsletter

(No. 1, March 1980)

以下に掲載するものは IASPEI (International Association of Seismology and Physics of the Earth's Interior) 事務局から発行されるニュースレターである。本号が第1号であり、今後年1回程の頻度で発行される予定との事である。英文で書かれているものの、IASPEI の活動を本会会員諸氏に

お知らせするのに好都合と考えて、本誌にこのニュースを適宜掲載する事にした。なお IASPEI の現会長は B.A. Bolt 教授、副会長は V.I. Kelis-Brok 教授と東北大の鈴木次郎教授である。

1980 年 4 月

「地震」編集委員会

NEWSLETTER NO. 1 MARCH 1980

TO: Notional Correspondents, Officers and Representatives of the Association, and related organizations.

This is the first of what I hope will be a series of newsletters covering items of interest to members of IASPEI. It is intended primarily to keep National Correspondents informed about Association affairs, and it is hoped that they will pass the information on to seismologists in their own countries. Would National Correspondents please check that this newsletter is addressed to the correct person, at the correct address, and inform me of any errors?

This issue is mainly concerned with immediate matters arising from the General Assembly in Canberra. I shall be glad to receive general items of Association interest to publish in later issues of the newsletter.

R.D. Adams
Secretary-General

OBITUARY

All seismologists will be deeply grieved to learn of the death on 22 January 1980 of Prof E.F. Savarensky, of Moscow. Prof. Savarensky is a past president of the European Seismological Commission and his death will be mourned not only in his own country but by seismologists everywhere. We remember his active participation in Association meetings, including the Canberra Assembly in the month preceding his death.

GENERAL ASSEMBLY, CANBERRA, 2-15 DECEMBER 1979

The XVII General Assembly of IUGG was held at the Australian National University, Canberra, 2-15 December 1979. About 2,000 people attended, of whom 253 were registered with IASPEI. In addition 360 gave their main interest as the International Commission on Geodynamics and 56 as the Tsunami Committee. Business sessions of IASPEI were held as follows:

First Plenary Session, 3 December 1979

The session was opened at 2 pm by the President, Prof Berckhemer, who then delivered his Presidential Address, in which he reviewed the achievements in seismology and physics of the Earth's interior in the previous four years, and also summarised the work of the Association and its Commissions.

The following committees were appointed:—

Nominations Committee: C. Kisslinger (Chairman), T. Asada, N.V. Kondorskaya, H.I.S. Thirlaway, K. Whitham.

Resolutions Committee: B.A. Bolt (Chairman), W.D. Smith, L. Stegena.

Audit Committee: S. Duda (Chairman), Gu Gong-Xu, J. Hjelme.

The session concluded with three invited lectures:—

“Long range seismic refraction probing of the continental subcrustal lithosphere, its mechanical properties, differentiation and dynamic processes” by K. Fuchs. This lecture was delivered by Dr C. Prodehl.

“Methods and results of Vibroseis profiles”. J.E. Oliver.

“Methods and results of Geothermal Exploration”. J.W. Elder.

Second Plenary Session, 12 December 1979

The session was opened at 8 pm by the President, Prof Berckhemer.

Finances Over the past four years a total of about \$70,000 had been received from IUGG. About one third of this had been spent on administration costs, and the remainder towards scientific meetings. Similar expenditure was forecast for the next period. Dr J. Hjelme presented the report of the Audit Committee, which was adopted.

Elections After some discussion of the procedures involved, the following officers for the period 1979-83 were elected on the suggestion of the nominations committee:

President: Prof B.A. Bolt (USA)

First Vice-President: Prof V.I. Keilis-Borok (USSR)

Second Vice-President: Prof Z. Suzuki (Japan)

Secretary-General: Dr R.D. Adams (UK)

Executive Committee:

Prof H. Berckhemer (FRG) (past President)

Prof J.-C. De Bremaecker (USA) Dr E.G. Kausel (Chile)

Dr A.R. Ritsema (Netherlands) Prof F.D. Stacey (Australia)

Resolutions Nine Resolutions were adopted; after some minor alterations. Three Resolutions concerned the internal organisation of IASPEI and resulted in the establishing of a new Commission, and the re-establishing of one Working Group as a Commission and another as a Sub-Commission.

New Commissions are: Commission on Quantitative Geodynamics (formerly Working Group on Quantitative Geodynamics); Commission on Physical Properties of Materials of the Earth's Interior. The Working Group on Optimization of Algorithms for the Determination of Earthquake Parameters is re-established as the “Sub-Commission on Earthquake Algorithms” of the Commission on Practice.

Association Representation Dr E.G. Kausel (Chile) was appointed IASPEI representative on the Solid Earth Geophysics Working Group of SCAR. Dr N.V. Kondorskaya (USSR) was appointed IASPEI representative on the Governing Council and Executive Committee of the International Seismological Centre.

1981 General Assembly There was some discussion of the draft programme for the 1981 General Assembly, to be held in London, Ontario 21-30 July, 1981. It was noted that a joint Symposium on an aspect of near-field Earthquake seismology was to be arranged with the International Association of Earthquake Engineering. It was also recommended that at subsequent General Assemblies of IASPEI a draft programme for the next Assembly be available for consideration.

Appreciation Professor Kisslinger moved a vote of thanks to the retiring President, Professor Berckhemer, and to the retiring Secretary-General, Professor De Bremaecker for their services to the Association during their terms of office.

FUTURE MEETINGS OF INTEREST

European Seismological Commission XVII General Assembly will be held at Budapest Hungary, 21-29 August, 1980 in association with the meeting of the European Geophysical Society.

IUGG XVIII General Assembly will be held at Hamburg, FRG, in 1983.

IAEE The International Association of Earthquake Engineering will hold its next World Conference on Earthquake Engineering at Istanbul, Turkey, 8-13 September, 1980.

IASPEI GENERAL ASSEMBLY, 1981

The next General Assembly of IASPEI will be held in London, Ontario, Canada 21-30 July, 1981.

Major topics will be:

Earthquake Ground Motions and their Effects on Critical Structures (in association with the International Association for Earthquake Engineering).

Earthquake Prediction and Risk

Among the themes to be included in other scientific symposia will be:

Heterogeneity within the Earth

Studies of the Earthquake Source

Thermal Aspects of Plate Interactions.

Digital Seismology

Properties of Materials at High Pressures and High Temperatures

Structure of the Arctic

In addition, meetings and workshops will be arranged by the Association's technical commissions and working groups.

It is hoped to issue a first circular very shortly, and a second circular, including a call for papers, late in 1980. Further information may be obtained from:

Prof A.E. Beck

Department of Geophysics

University of Western Ontario

London, Ontario

CANADA, N6A 5B7

IASPEI COMMISSIONS

The following is a provisional list of principal officers and members of Commissions. Please inform the Secretary-General of any errors or omissions.

Commission on Controlled Source Seismology

Co-chairmen: Prof I.P. Kosminskaya (USSR)

Prof St. Mueller (Switzerland)

Secretary: Dr J. Ansorge (Switzerland)

Members: S. Asano (Japan), S.A.D. Bamford (UK), M.J. Berry (Canada), J.C. Dooley (Australia), R. Green (South Africa), A. Guterch (Poland), A. Hirn (France), R. Kanestrøm (Norway), C.E. Lund (Sweden), R.P. Meyer (USA), L.C. Ocola (Peru), E. Penttila (Finland), K. Posgay (Hungary), C. Prodehl (FRG), N.N. Puzyrev (USSR), A. Udias (Spain), R.B. Whitmarsh (UK), Zeng Rong-Sheng (China),

Commission on Digital Seismometry

Chairman: Prof S. Alexander (USA)

Members: Z.I. Aranovich (USSR), J.R. Bannister (Chile), P.W. Basham (Canada), O. Dahlman (Sweden), J. Filson (USA), H.-P. Harjes (FRG), J. Hjelme (Denmark), N.V. Kondorskaya (USSR-Commission on Practice), P. Mechler (France), L.A. Mendes-Victor (Portugal), M. Mizoue (Japan), K.J. Muirhead (Australia), F. Ringdahl (Norway), H.I.S. Thirlaway (UK), E. Wielandt (Switzerland).

Commission on Earthquake Prediction

Chairman: Prof T. Rikitake (Japan)

Secretary: Prof F.F. Evison (New Zealand)

Members: M. Arsovsky (Yugoslavia), G.G.R. Buchbinder (Canada), M. Caputo (Italy), J.P. Eaton (USA), S.A. Fedotov (USSR), Hsu Shao-si (China), A.M. Isikara (Turkey), E. Kausel (Chile), V.I. Keilis-Borok (CMG), C. Kisslingler (USA), A. Lopez-Arroyo (Spain), T.V. McEvelly (USA), K. Mogi (Japan), V.I. Myachkin (USSR), I.L. Nersesov (USSR), H. Stiller (GDR), Z. Suzuki (Japan), L.R. Sykes (USA), A. Vogel (FRG).

Subcommission on Physics of the Earthquake Source

Chairman: V.I. Myachkin (USSR)

International Heat Flow Commission (with IUGG, IAVCEI, and IAPSO)

Chairman: Prof L. Stegena (Hungary)

Secretary: Dr M.L. Gupta (India)

Vice Chairman: Prof A.E. Beck (Canada)

Vice Secretary: Dr L. Rybach (Switzerland)

Past Chairman: Prof E.A. Lubimova (USSR)

Working Group Chairman: Dr D.S. Chapman (USA)

Members: R. Allis (New Zealand), V. Cermak (Czechoslovakia), J.P. Cull (Australia), J. Francheteau (France), R. Haenel (FRG), V.M. Hamza (Brazil), E. Hurtig (GDR), R.D. Hyndmann (Canada), R.I. Kutas (USSR), O. Matsubayashi (Japan), L.A. Mendes-Victor (Portugal), F. Mongelli (Italy), S.W. Richardson (UK), J.G. Selater (USA), V.M. Sugrobov (USSR), *Ex Officio* Secretary-General, IUGG, IASPEI, IAVCEI, IAPSO.

Commission on Microseisms

Chairman: Prof H. Korhonen (Finland)

Vice Chairman: Dr L. Grinda (Monaco)

Secretary: Dr E. Hjortenbergh (Denmark)

Members: Ye. M. Antonenko (USSR), P. Bernard (France), R. Cabre (Bolivia), W.L. Donn (USA), L.A. Drake (Australia), S.J. Duda (FRG), C. Eva (Italy), S. Haubrich (USA), M. Longuet-Higgins (UK), T. Santo (Japan), J. Savino (USA), M.N. Tabulevich (USSR), J. Vautravers (France), K. Wadati (Japan).

Commission on Physical Properties of the Earth's Interior

Chairman: Prof F.D. Stacey (Australia)

Members: T.J. Ahrens (USA), O.L. Anderson (USA), R.C. Liebermann (USA), H.A. Spetzler (USA), H. Stiller (GDR), D.C. Tozer (UK), V.N. Zharkov (USSR).

Commission on Practice

Chairman: Dr N.V. Kondorskaya (USSR)

Secretary: Dr P.W. Basham (Canada)

Vice Chairman: Dr E.R. Engdahl (USA)

Members: L.V. Christoskov (Bulgaria), O. Dahlman (Sweden), D. Denham (Australia), J. Hjelme (Denmark), V. Karnik (Czechoslovakia), W.H.K. Lee (USA), C. Lomnitz (Mexico), A. Lopez-Arroyo (Spain), T.V. McEvelly (USA), L.C. Ocola (Peru), Qin Xing-Ling (China), W.D. Smith (New Zealand), S. Suyehiro (Japan), J. Vanek (Czechoslovakia), P.L. Willmore (UK).

Subcommission on Data Exchange Chairman: Dr J. Hjelme (Denmark)

Subcommission on Earthquake Algorithms Chairman: Dr E.R. Engdahl (USA)

Subcommission on Magnitude Chairman: Dr J. Vanek (Czechoslovakia)

Commission on Quantitative Geodynamics

Chairman: Prof D.L. Turcotte (USA)

Members: J.-C. De Bremaecker (USA), B.M. Naymark (USSR), H. Neugebauer (FRG), D.P. McKenzie (UK), J.S. Turner (Australia).

Standard Earth Model Committee (with IAG)

Chairman: Dr E.R. Lapwood (UK)

Secretary: Prof R.O. Vicente (Portugal)

Members: A.L. Hales (USA), J.A. Jacobs (UK), V.I. Keilis-Borok (USSR), R.H. Rapp (USA), H. Takeuchi (Japan).

Commission on Strong Motion Seismology

Chairman: Dr D.M. Boore (USA)

Members: N.N. Ambraseys (UK), B.A. Bolt (USA), A. Eisenberg (Chile), T. Mikumo (Japan), M. Niazi (USA), J. Shoja-Taheri (Iran), W.D. Smith (New Zealand), H. Stockl (FRG).

European Seismological Commission

President: Dr A.R. Ritsema (Netherlands)

Vice-Presidents: Dr N.V. Kondorskaya (USSR), Prof H. Korhonen (Finland)

General Secretary: J.-M. Van Gils (Belgium)

**IASPEI RESOLUTIONS ADOPTED AT PLENARY SESSION,
CANBERRA, 12 DECEMBER 1979**

1. CONTROLLED SOURCE SEISMOLOGY

IASPEI,

Recognizing the substantial progress made in the past decade in determining crustal and upper mantle structure through the application of "Controlled Source Seismology", and

Noting that the results obtained indicate considerable heterogeneity in structure,

Urges that, in detailed regional studies of the crust and upper mantle, refraction and reflection methods be used when possible in combination, supplemented by observations from deep sources wherever available.

2. DIGITAL SEISMOLOGY

IASPEI,

To facilitate international exchange and wide use of digital seismic data, and in order to develop digital seismology and data exchange between countries,

Resolves that no more than a few standard digital formats be established at the earliest possible time,

Further, to make the availability of digital data well-known to seismologists,

Resolves that a directory of digital recording stations and locations of archived data be published and updated at least annually,

Further, because of the importance of older data,

Resolves that digitized analogue seismograms be included with the archived new digital data,

Further, resolves that digital formats and exchange procedures accommodate all seismologists, whether inexperienced in digital seismology and with limited computational facilities or with access to extensive computational facilities.

3. UNESCO

IASPEI,

Noting the invaluable support for the Earth Sciences provided by UNESCO in the past, particularly by its encouragement of international co-operation to mitigate the risks to mankind from earthquakes, volcanic eruptions and other natural hazards,

Recognizing that the assessment of risks from natural hazards to people's lives, social welfare and economic activity remains of paramount importance,

Recommends that ICSU be invited to encourage UNESCO to continue to implement its work programme in seismology, Earth Sciences, and the assessment of risk.

4. SEISMOLOGICAL PRACTICE

IASPEI,

Recognizing the continuing need to make available more readings of amplitude and period of seismic waves,

Urges seismological agencies to report these whenever possible, according to the Instructions for Measuring Amplitudes and Periods, adopted by its Commission on Practice at the Canberra Assembly 1979,

Further, conscious of the need to improve methods of magnitude determination, and *noting*

with appreciation the publication by World Data Center A for Solid Earth Geophysics of the results of the first stage of the experiment for determining a Homogeneous Magnitude System of the Eurasian Continent as requested in resolution 10 of the Durham Assembly of 1977,

Urges that further work be undertaken to extend the Homogeneous Magnitude System to other areas of continental dimensions, and that the work in Eurasia be extended to include selected reference stations from India and Southwest Europe,

Further, In complimenting the editor, Dr P.L. Willmore, and *expressing thanks* to World Data Center A for Solid Earth Geophysics for its publication,

Commends the revised edition of the Manual of Seismological Observatory Practice to seismological agencies for their guidance,

Further, noting with satisfaction the progress and continued support of the Historical Seismogram Microfilming Project by the United States Geological Survey and World Data Center A, for preserving and making available seismograms and supporting documentation for selected stations and earthquakes from the beginning of instrumental recording,

Urges the continuation of this Project through its international phase, and requests that stations and institutions with historically significant collections of seismograms, station bulletins and other supporting documentation co-operate in the programme by organizing their collections, by providing an inventory of their holdings and making them available to World Data Center A for microfilming.

5. COMMISSION ON QUANTITATIVE GEODYNAMICS

IASPEI,

Recognizing the importance of further work on the quantitative aspects of geodynamics,

Re-establishes the "Working Group on Quantitative Geodynamics" as the "Commission on Quantitative Geodynamics".

6. SUB-COMMISSION ON EARTHQUAKE ALGORITHMS

IASPEI,

Recognizing the continued need both to develop optimal methods of estimating the basic parameters of earthquakes and to present the resulting algorithms in a form suitable for routine use,

Re-establishes "The Working Group on Optimization of Algorithms for the Determination of Earthquake Parameters" as "The Sub-Commission on Earthquake Algorithms" of the Commission on Practice.

7. COMMISSION ON PHYSICAL PROPERTIES OF MATERIAL OF THE EARTH'S INTERIOR

IASPEI,

Recognizing the importance of continuing work on the properties of materials in the Earth's interior,

Establishes a Commission on Physical Properties of Materials of the Earth's Interior.

8. EQUAL RIGHTS AND RESPONSIBILITIES

IASPEI,

Considering that the number of women scientists participating in IASPEI activities is increasing, and that the practice of denoting gender in English has changed,

Resolves that all statutes and bylaws be worded so as to make it clear that men and women have equal rights and responsibilities in all activities of the Association,

Further, that the word *men* in lines seven and eight of Bylaw 2 be replaced by *persons*,

Further, that the last sentence of Article VIII of the statutes be revised by replacing the words *by him* with *by the Treasurer* so that henceforth it states "It shall give discharge to the Treasurer for the accounts prepared by the Treasurer for the preceding period and submitted to the General Meeting."

9. RESOLUTION OF THANKS

IASPEI,

Expresses its warmest thanks to its representative in the Australian Organizing Committee and to his collaborators for the excellent preparations and arrangements for its meetings in Canberra.

INSTRUCTIONS FOR MEASURING AND REPORTING AMPLITUDES AND PERIODS

The following instructions were adopted by the Commission on Practice at Canberra, and as stated in Resolution 4 above, should be used whenever possible in the reporting of amplitudes and periods.

Instructions for measuring and reporting amplitudes and periods for magnitude determination from observations at regional and teleseismic distances

The determination of earthquake magnitude is based on observations of amplitude *A* and period *T* of seismic waves. It is essential for subsequent earthquake studies to report the time that an observation of *A* and *T* is made.

The amplitude of a seismic signal on a record is defined as its deflection from the base-line. It is important that *A*, *T*, and the time of the observation should be measured for *P*, *S*, and surface waves.

For many phases, and particularly in surface waves, the record is symmetrical about the base-line and amplitude may be determined either by direct measurement from the base-line or by halving the peak-to-trough deflection. For phases that are strongly asymmetrical the amplitude should be measured as the maximum deflection from the base-line.

The amplitude and period from the vertical component is the most important. If horizontal components are available, readings from these should be also reported. When such readings are reported, they should be measured at the same time on the record so that the amplitudes can be combined vectorially.

The period *T* corresponding to amplitude *A* is measured in seconds between two neighbouring peaks, or two neighbouring troughs, or from trace crossings of the base-line.

P WAVES

The *P* wave amplitude measured should be that of the maximum trace deflection, usually within the first 25 seconds of the first onset or before the arrival of the next clear phase, but this interval may be extended up to 60 seconds for large earthquakes recorded on broad-band instruments. When more than one component is available, the amplitude from each should be reported separately.

The observation time should always be measured as the time to the first peak or trough of the trace cycle being measured. This need only be estimated to the nearest 1 to 2 seconds. The amplitude measured on the record should be converted to ground motion in nanometres or some other stated SI unit, using the amplitude-period response curve of the instrument. When several instruments of different frequency response are available, the amplitude and period from each should be reported separately.

S WAVES

The measurement of amplitudes and periods on the seismogram is performed as described above. It is recommended that the beginning of the *S* wave be checked against travel-time tables. The amplitude and period should be selected in the interval up to 40-60 seconds after the beginning of *S* waves.

SURFACE WAVES

For surface waves the measurement of amplitudes, periods and times of observation on records is performed as described above for the *maximum* deflection from the base line. If the maximum deflection does not occur in the period range 17-23 seconds, then the largest deflection within this range should also be reported for teleseismic distances ($\Delta > 25^\circ$). For large earthquakes when mantle waves are often recorded, amplitudes and periods of the vertical and horizontal components with the period in the neighbourhood of 200 seconds should also be measured. The

observations of A and T for all waves mentioned above should be included in station reports. It is essential in reporting such observations that the type of instrument used is clearly stated. For this, the classification given in the Manual of Seismological Observatory Practice may be used. Broad-band instruments are preferred for all measurements of amplitude and period.

Note: Seismograms can be very complicated, and ultimately, the selection of a particular measurement *must* be left to the observer's experience.

Additional considerations for local earthquakes

TRACE AMPLITUDE MEASUREMENT

On some types of short-period instruments it is not possible to measure the period of seismic waves recorded from close events, and thus to convert trace deflection to ground motion. In such cases magnitude scales may be used which depend on measurement of trace amplitude.

DURATION MEASUREMENT

For local earthquakes, stations should report the signal duration defined as: the time in seconds between the first onset and the time the trace never again exceeds twice the noise level which existed immediately prior to the first onset. Very often local earthquake recordings will cause high-gain, short-period instruments to saturate, thereby making an amplitude reading impossible even for small seismic disturbances. Therefore, to provide data from which to derive relations between magnitudes based on duration and those based on signal amplitude, both types of observations should be made of as many of the same earthquakes as possible.

○国際火山学会議開催のお知らせ

下記の通り、1981年8月29日から9月9日の期間、火山・地熱地域の現地討議も含めて、日本火山学会およびIAVCEI(国際火山学地球内部化学協会)の共催によつて、「ARC VOLCANISMの火山活動」のテーマのもとに国際火山学会議を開催す

ることになりました。国外からは100~150名の参加が予定されております。Arc VolcanismとSubductionの関係についての興味ある論文が多数発表される予定です。会議参加御希望の方には申込書をお送りしますので、下鶴までお申し出下さい。

(組織委員会委員長 下鶴大輔)

記

First Circular
February, 1980

IAVCEI SYMPOSIUM
ON
ARC VOLCANISM

August 28-September 9, 1981; Tokyo

- Sponsors: Volcanological Society of Japan and International Association of Volcanology and Chemistry of the Earth's Interior.
- Schedule: August 28 to August 30: Field trips to Hokkaido and geothermal fields (field trips to other volcanic areas and excursions may be also offered).
August 31 to September 5: Scientific meetings in Tokyo and then Hakone.
September 6 to September 9: Field trips to Kyushu, Izu, Oshima, Asama and geothermal areas (field trips to other volcanic areas and excursions may be also offered).
- Topics: All aspects of arc volcanism, both continental and insular, will be discussed, but with special emphasis on the island arcs. A variety of tectonic setting will be considered. Social and economic aspects of volcanism will be additional special topics for discussion.