

I U G G

INTERNATIONAL ASSOCIATION OF SEISMOLOGY
AND PHYSICS OF THE EARTH'S INTERIOR

European Seismological Commission

ACTIVITY REPORT 1980 - 1982

L. Waniek
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A.R. Ritsema



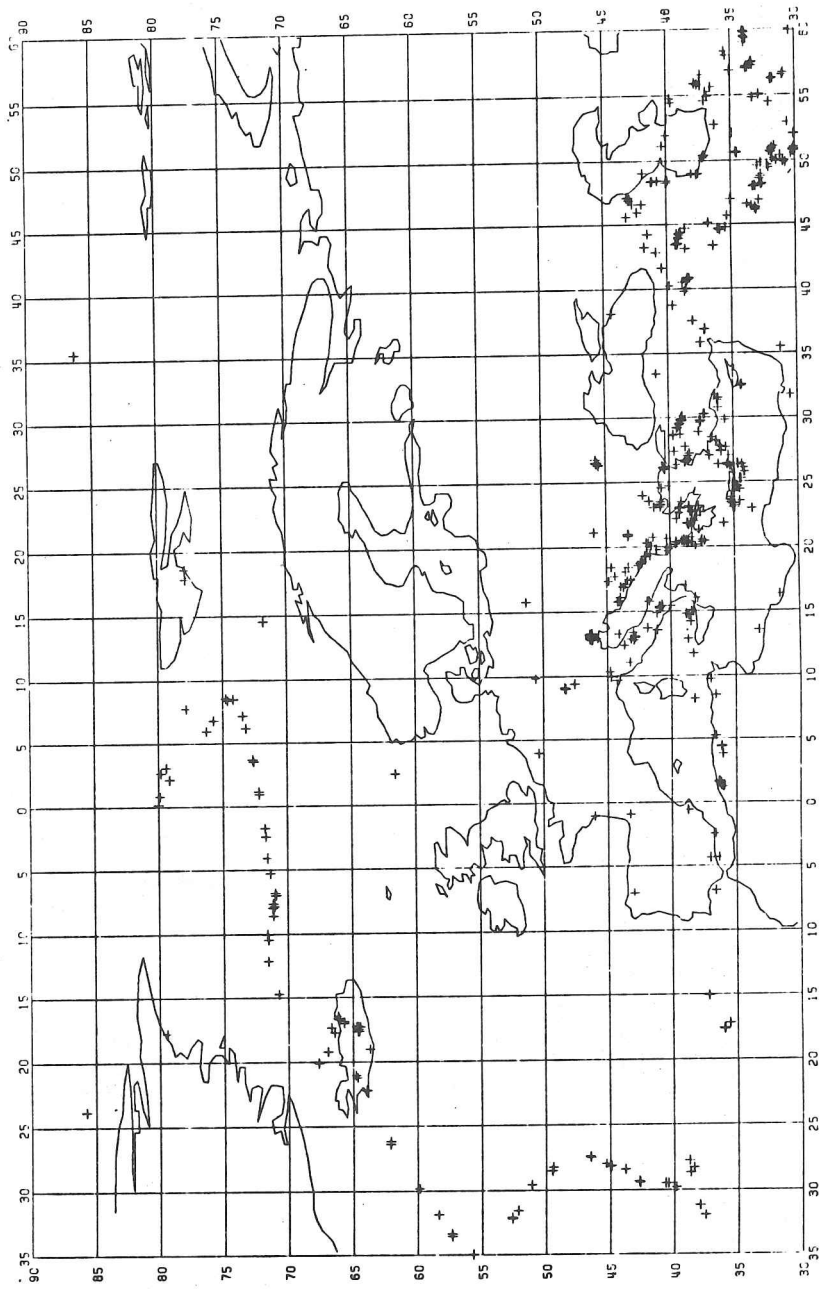
K.N.M.I., DE BILT, 1982

Publication number: K.N.M.I. - 160

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LATITUDE : 30.000N - 90.000N MAGNITUDE: MB MS ML M >4.9
 LONGITUDE: 035.000W - 060.000W DEPTH:MM: >4.9
 REFAYS : EXPLOSIONS EXCLUDED PERIOD : 1970 01 01 - 1980 12 31
 TOTAL NUMBER OF EARTHQUAKES FOR THIS SELECTION : 526

NAME: COMPUTER PRINTOUT OF THE
 NSDC EARTHQUAKE-DATA FILE





MOTTO

From its beginning the ESC has been the only scientific body in the field of seismological research which covers all of the European area.

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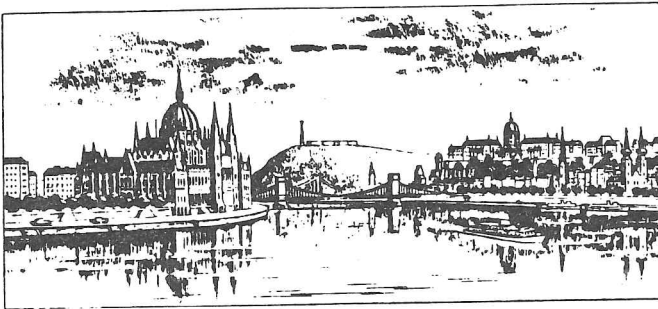
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1.

EUROPEAN SEISMOLOGICAL COMMISSION

THE 17TH GENERAL ASSEMBLY



B U D A P E S T

22-29 AUGUST 1980

1.1. MINUTES OF ESC SESSIONS

1.1.1. BUREAU MEETING, AUGUST 21, 1980, 2.30 P.M.

Present: Ritsema, Korhonen, Kondorskaya, Van Gils, Waniek.'

President Ritsema opened the session and welcomed the Bureau.

1. Appointment of Titular Members

Not all countries answered the Circular Letter sent to the National Committees in 1979 on the nomination of Titular Members. The Bureau decided in these cases to propose to the Plenary Session a continuation of those Titular Members who were in charge during the former period. Some new Titular Members were appointed to replace Savarensky, Grigorova and Murphy: USSR - Kondorskaya, Bulgaria - Christoskov, Ireland - Jacob. Mr. Grinda of Monaco has retired; it will be proposed to the General Assembly that Mme Bethoux will replace him as Titular Member. Six countries delivered procurations: Austria - Duma, Denmark - Hjørtenberg, Romania - Radu, Czechoslovakia - Vanek, Turkey - Van Gils, Yugoslavia - Prosen.

2. Nominating Committee

The Bureau agreed to appoint a Nominating Committee consisting of Hjørtenberg, Morelli, Mueller, Vanek.

3. Proceedings ESC - Strasbourg - 1978

The first volume on European Catastrophic Earthquakes edited by Ritsema and Kárnik has been published in Tectonophysics 53, 3/4 (1979). The second volume on Terrestrial and Space Techniques in Earthquake Prediction Research, edited by Vogel, was to be printed by Vieweg in 1979. The third volume on Deep Seismic Sounding and Earthquakes was to be published under the sponsorship of S. Mueller in PAGEOPH. The fourth volume, supposed to be edited by the Polish Academy of Sciences, will be published in 1980 as No. A-9 (135).

4. New Sub-Commissions

According to discussions at the Bureau Meetings in Vienna 1979 the need for the creation of two new Sub-Commissions on Earthquake Prediction Research and Engineering Seismology was considered. This proposal will be strongly recommended to the Executive Committee.

5. IASPEI - General Assembly - London, Ontario - 1981

In the hope that enough members will be present, the Bureau agreed that at that time the provisional programme of our next meeting in Leeds (U.K.) should be established by the Executive Committee. In any case the Bureau should prepare a detailed programme of the 18th General Assembly during the meeting of the ESC/EGS Programme Committee in 1981.

6. 18th General Assembly - Leeds (U.K.) - 1982

There was a general consensus to devote the 18th General Assembly to the work of the new Sub-Commissions. Two symposia concerning the first activities in engineering seismology and earthquake prediction should be convened by the corresponding Sub-Commissions Presidents.

7. Co-ordination in the field of earthquake prediction

In the light of the fact that several agencies and persons are trying to establish separate research in the field of earthquake prediction, it is felt that the ESC should play a co-ordinating role in this modern branch of seismology. ESC is the only scientific body on the continent which covers the whole territory of Europe and as a commission of the IASPEI, the ESC has to endorse the research on fundamental problems in earthquake prediction which up to now are not solved.

8. Relations ESC - EGS

According to recent experience, the relations between ESC and EGS might be co-ordinated in a better way for what concerns the meetings. As at Leeds the ESC again will meet jointly with the EGS the necessary steps for a better timing of sessions will be made by the Secretary General with the new chairman of the EGS-Programme Committee, Dr. J. Lemaire.

9. Miscellaneous

The agenda of the ESC-Plenary Session of August 22, 1980, 9.00 a.m. has been established.

1.1.2. EXECUTIVE COMMITTEE, AUGUST 21, 1980, 3.00 P.M.

Present: Ritsema, Korhonen, Kondorskaya, Van Gils, Waniek, Stiller, Willmore, Peterschmitt, Morelli, Mueller, Kárník, Hjørtenberg.

1. Renewal of Sub-Commissions and Working-Groups

Vlaar has sent in his resignation as President of the Sub-Commission on Theory and Interpretation. H. Stiller, the former Vice-President of this Sub-Commission, is proposed as his successor. As Vice-President will be proposed J. Behrens.

The President of the Sub-Commission on Deep Seismic Sounding proposes to add a new Working-Group dealing with deep reflections. It was agreed to charge K. Fuchs as the chairman of this Working-Group. Considering the fact that P. Willmoreé will be in active service only for the next period, the chairmanship of this Sub-Commission has to be considered at the next General Assembly.

2. Creation of new Sub-Commission

The President informed the Executive Committee about the activities that should be undertaken in the field of earthquake prediction research and engineering seismology. It was agreed on that H. Berckhemer and A. Lopez-Arroyo could be entrusted to prepare the scope and structure of the new Sub-Commission on Earthquake Prediction and Engineering Seismology respectively. In accordance to this a general agreement was obtained on the subject of participation in these Sub-Commissions for the following persons: I. Christoskov, Isikara, Meissner, Mescua, Popov, Radu, Vogel and II. Burton, Greiser, Mayer-Rosa, Oliveira, Papastamatiou, Petrini, Polinari, Shebalin, Schenk, Skoko, Steinberg.

3. Co-ordination of European activities in the field of earthquake prediction

See point 7 of par. 1.1.1.

4. Use of the Global Telecommunication System of the WMO for seismic data transmission

The President stressed the fact that almost all ESC countries are members of the World Meteorological Organization and pay their national dues for the telecommunication system. It would be advisable to all countries to use this system for seismic data transmission. As for the moment losses in transmission data by this means still do occur, it is recommended to the National Seismological Networks to look for better links to their National Meteorological Agencies. The best alternative communication system is still the commercial telex.

5. Agenda for the next Executive Committee

The agenda for the session of the Executive Committee was settled (see minutes of the session of the Executive Committee, August 26, par. 1.1.4.).

6. Recent stage and perspectives of the EMSC

Council President S. Mueller reported the development of the EMSC since 1976. The new Statutes of the EMSC gave the possibility to survive a few years more. As the substantial increase of budget in the following years cannot be covered by international support only, new measures have to be found to guarantee further prosperity of the EMSC. The session of the Executive Committee of the EMSC was announced to be held on August 22 at 10.00 a.m.

7. ESC-Plenary Opening Session, August 22, 1980

The Executive Committee agreed with the program proposed by the Bureau. According to a proposal of D. Csomor the 70th anniversary of the foundation of the first seismic station and seismological institute in Hungary by Prof. R. Kövesligethy will be briefly mentioned.

8. Miscellaneous

- Information by L. Stegena about Budapest Proceedings.
- The new President of Sub-Commission on Engineering Seismology is proposed to be the liaison officer to EAEE (as successor of Prof. E. Savarensky).
- The letter from Dr. Meyers from WDC-A, asking for historical seismograms and bulletins was briefly discussed.
- A new liaison officer to the Lithosphere Project has to be nominated.

1.1.3. PLENARY OPENING SESSION, AUGUST 22, 9.00 A.M.

1. Opening of the session

President Ritsema opened the session and stated with pleasure the fact that an exceptionally great number of seismologists could come to attend the 17th General Assembly of the ESC.

He deplored the absence of some friends who passed away during the

last period. In order to honour their memory he gave the floor to C. Morelli, E. Peterschmitt, N. Kondorskaya, L. Christoskov and L. Waniek to give short necrologies of P. Caloi, M. Choudhury, W. Hiller, E. Savarensky, E. Grigorova and R. Myachkin, to whom the European Seismological Community is deeply indebted.

2. "In Memoriam"



Pietro CALOI

1907, February 22 - 1978, February 13

Pietro Caloi was born on 22 February 1907 in Monteforte d'Alpone (Verona). He died 13 February 1978 in Rome.

At the age of 22 doctor in Mathematics at the University of Padova, till 1936 in Trieste at the Istituto Geofisico (where he established the first seismic station), was called in 1936 to Rome at the newly formed Istituto Nazionale di Geofisica, where he created the new principal seismic station and was successively Chief Geophysicist and Observatory Director.

From 1937 he was associate professor in seismology at the University of Rome, and formed the new generation of seismologists in Italy.

Author of 208 publications, his main interests were the study of the surface waves, with the connected proposal in 1963 of the "asthenosphere"; new method for the focal parameters determination; the earth's crust, mantle and core. Other fields of research were the Physics of the Earth's Interior, free oscillations of sea and lakes, dam deformations and control, slow crustal movements, interactions asthenosphere-hydrosphere, induced seismicity, etc. He was national member of the Accademia Nazionale dei Lincei.

In 1951 he convened and chaired in Verona the meeting where the creation of ESC was decided.

He will be always remembered as a pure and silent scientist.

C. Morelli

Mansur Ahmed CHOUDHURY



1926, septembre 1 - 1979, décembre 17

Né à Sylhet - Pakistan Oriental - M.A. Choudhury effectue ses études au Collège de sa ville natale, puis à l'Université de Dacca. Après un séjour à l'Observatoire de Quetta il prépare de 1954 à 1957 à Paris sa thèse de doctorat. Dans ce travail fondé sur des enregistrements des tremblements de terre de l'Hindou-Kouch, il met en évidence des anomalies de propagation des ondes pP et sP et l'influence du mécanisme au foyer.

Les problèmes de propagation dans le manteau supérieur, dans le noyau, tant en Europe que dans le continent austral, la détermination des coefficients de qualité Q formaient l'objet principal de ses recherches effectuées au sein des Instituts de Physique du Globe de Paris et de Strasbourg.

Pendant plusieurs années M.A. Choudhury a assumé la responsabilité du groupe de travail "Onde de Volume" de notre sous-commission "Structure de l'intérieur de la Terre".

E. Peterschmitt

Evgeniy SAVARENSKI



1911, July 18 - 1980, January 22

On January 22, 1980 the prominent Soviet seismologist, Corresponding Member of the Academy of Sciences of the USSR, professor Evgeniy Fedorovich Savarenski suddenly passed away. He was a world-known scientist, an organizer of seismological investigations in the USSR, an active participant of a number of international geophysical bodies and an educator of several generations of Soviet seismologists. In his person Soviet science lost an eminent scientist and excellent teacher.

Evgeniy Savarensky was born on July 18, 1911 in Tula in the family of an engineer-geologist. Later on his father, Fedor Savarensky, became a well-known scientist in the field of hydrology, and an active Member of the Academy of Sciences of the USSR.

Evgeniy Savarensky graduated from the Moscow Institute of Geological Exploration. From 1931, still a student, he began working in the Institute of Physics of the Earth of the Academy of Sciences of the USSR at that time called the Seismological Institute. In 1940, Savarensky maintained a candidate thesis and in 1949 the degree of doctor in physical-mathematical sciences was conferred to him. He then became head of the Department of Seismology of the Institute.

Development of new methods of studying the interior structure of the Earth is connected with the name of Professor Savarensky. He worked out techniques of a reliable determination of the total Earth's crust thickness from surface waves data, while the study of emergence angles of seismic rays and of boundaries of the second kind allowed to simplify the methods for the investigation of the Earth's crust structure.

A characteristic feature of Professor Savarensky's work is its direct connection with practice and the national economy. So, theoretical and research studies of microseisms resulted in the creation of a procedure for the location of cyclones and storms. Reorganization of the Soviet network of seismic stations and their re-equipment with new instrument carried out under his guidance allowed to obtain the much more accurate and principally new data necessary for solving problems of seismicity, seismic zoning and earthquake engineering. These data served as the basis for a fundamental work of Soviet seismologists: the Atlas of Earthquakes of the USSR, carried out under the guidance of Evgeniy Savarensky and with his active personal participation.

Evgeniy Savarensky was an author of 180 scientific papers. Two of his books "Elements of Seismology and Seismometry" and "Seismic Waves" are well-known handbooks on seismology in the USSR and abroad.

In 1935, Savarensky organized the Moscow seismic station in the Institute of Seismology and from 1936 he was its permanent chief and scientific leader. After the disastrous Ashkhabad earthquake of 1948, a service to the Government of urgent reports was organized at the Moscow Seismic Station of all felt earthquakes in the territory of the USSR and of the strongest ones of the world. The Moscow seismic station became central. Twenty-four hours a day it acquires and processes data on earthquakes coming in from many stations of our country. This seismic station occupied a peculiar place in Savarensky's activity. His main scientific papers were written at the station and first of all on the basis of its materials. Evgeniy Savarensky liked to work there, it was the place where his disciples came to discuss their scientific problems and got friendly advices.

Being for a long time, from 1956 to 1977, Chairman of the Council on Seismology and Earthquake Engineering attached to the Presidium of the Academy of Sciences of the USSR, Evgeniy Savarensky promoted unification of theoretical studies with engineering application of seismology. He contributed a great deal to the development of seismology in the Union republics. Seismological institutes in Tajik, Uzbek, Kirghiz, Kazakh and Armenian SSR were organized at that time with participation of the Council.

Evgeniy Savarensky carried out a great work on training scientific specialists in the field of seismology. From 1947, he was lecturing a course of seismology at the Physical and later on at the Geological Departments of Moscow State University, and also at the Physical Department of Leningrad State University. The Professor title was conferred to him in 1950. In recent years he occupied the chair of seismology and geoacoustics at the Geological Department of Moscow University. Many of his disciples became leading professionals in geophysics. He directed and conferred baccalaureate and doctorate degrees to about 50 of his students. Some of them became corresponding members of the Academy of Sciences of the USSR and Union Republics. Evgeniy Savarensky was the guide for many foreign seismologists studying with him as post-graduate students.

For the great service done in the development of the geophysical sciences and in training scientific specialists, Professor Savarensky was decorated with the Order of Lenin, Order of the Red Banner of Labour, two orders of the Badge of Honour and several medals. For his scientific merits achieved in seismology, he was rewarded with the Golden Medal of O.Y. Schmidt by the Presidium of the Academy of Sciences of the USSR.

His high culture, his wide horizon of scientific interests and knowledge, his benevolence and sympathy imposed profound respect of people who met and collaborated with Professor Savarensky.

Fond memories of Professor Evgeniy Savarensky always will live in our hearts.

N.V. Kondorskaya



Ekaterina GRIGOROVA

1918, March 13 - 1980, March 21

The 21st of March 1980 Ekaterina Grigorova passed away. Bulgarian seismology lost a renowned scientist and a warm-hearted colleague.

Ek. Grigorova was born on March 13, 1918 in Parvomay. After her secondary studies in the town of Pazardjik she graduated from the Faculty of Physics and Mathematics at the University of Sofia in 1942. At first she taught in the towns of Pazardjik, Parvomay and Sofia. Later on she worked as a geophysicist in the Department of Geology and Mining Research, specializing in gravimetry and earth magnetism. From 1951 she became active in the field of seismology. Since the creation of the Geophysical Institute in 1960 Ek. Grigorova worked in the Department of seismology.

In collaboration with Docent K. Kirov and later on independently, she studied the seismicity problems of the country, the macroseismic field, strong earthquake effects, energy classification etc. Consecutively, she was promoted as a research worker, head of the Department of seismology and senior research worker.

Ek. Grigorova participated actively in international scientific co-operation. As the chairman of the Working-Group of the Carpat.-Balcan region she made significant contributions to the development of seismological studies in this part of Europe.

Her studies and results obtained in the fields of seismicity and seismic zoning will remain of principal importance for the regional seismological investigations in the Balcans.

She was an esteemed colleague and a seismologist renowned all over the world. We will bear in our minds her successful work as well as her readiness to collaborate in the interest of development of European seismology.

L. Christoskov



1899, Février 2 - 1980, Juillet 31

Né à Altdorf, village près de Stuttgart, deuxième de 4 enfants d'un père instigateur sévère et d'une mère d'une bonté et douceur extraordinaire, Wilhelm Hiller gardera pendant toute sa vie l'empreinte de sa jeunesse. De la campagne il auro acquis l'amour de la nature, des promenades et séjours en particulier dans le Jura Souabe doublés d'une approche géologique et botanique. De l'héritage de ses parents appa-raitront la sévérité, le sentiment du devoir à accomplir, en premier lieu pour lui-même le poussant à rechercher la perfection dans ses entreprises, mais aussi la bonté envers les autres, cette bonté qui lui permettra d'établir des contacts nombreux avec ses collègues et amis, le conduira à s'engager personnellement au risque de sa liberté pour alléger pendant la 2ème guerre mondiale le sort du signataire de ces lignes.

Après les études primaires et secondaires, W. Hiller passera une année sur le front de guerre en France - il y sera gravement blessé - . Les études universitaires faites à Stuttgart et à Tübingen - mathématiques et physiques - devraient le conduire à l'enseignement. Son entrée au Statistisches Landesamt du Wüttemberg orientera toute sa carrière vers la géophysique en général et vers la séismologie plus particulièrement. Cette orientation se traduira dès 1929 dans sa thèse de dr. ingénieur: Etude des Variations de Vitesses des Ondes superficielles suivant les Trajets océaniques continentaux.

1930-1940 sera la grande période de son activité scientifique. Elle est caractérisée par la construction d'abord de la station de Stuttgart qui deviendra très rapidement une des meilleures du monde, ensuite du réseau séismologique du Wüttemberg dont la station de Messtetten implantée à coeur. Son habileté manuelle lui permettra d'introduire des améliorations techniques notables.

Rapidement les études de plusieurs séismes du sud de l'Allemagne - Rastatt 1933, Saulgau 1935, Hornisgrinde 1936 - dans lesquels les problèmes de propagation d'ondes et de mécanisme au foyer seront traités simultanément, feront de W. Hiller le spécialiste des "séismes proches".

Après la deuxième guerre mondiale, marquée par des conditions difficiles de sa captivité, une carrière professorale à Stuttgart et à Tübingen, et les tâches administratives lui feront prendre le pas sur la recherche axée plutôt vers les problèmes de sismicité pratique. Son enseignement, toujours actuel, lui permettra de créer autour de lui une école. Ses élèves, répartis dans de nombreux pays, répercuteront

à leur tour l'enseignement du maître.

Les qualités scientifiques et humaines de W. Hiller, lui vaudront d'être porté à de nombreuses responsabilités dans des organisations nationales et internationales. Au moment de la création de la Commission Séismologiques Européenne - Bruxelles 1951 - son rôle à côté de I. Lehmann et P. Caloi sera déterminant pour vaincre certaines oppositions. Elu président il organise la première assemblée générale - Stuttgart, 23-28 septembre 1952 -. Au cours de cette réunion qui a laissé un souvenir profond auprès des participants, il fut possible de dresser un bilan des connaissances séismologiques en Europe et d'ouvrir la voie aux travaux fondamentaux réalisés dans les années suivantes dans les domaines de la séismicité et des sondages séismiques profonds.

Cette impulsion initiale donnée par W. Hiller a contribué fortement à la collaboration amicale entre les séismologues européens régnant au sein de la C.S.E., dépassant de loin les simples relations collégiales, propageant ainsi l'esprit de son premier Président.

E. Peterschmitt

Victor MYACHKIN



1930, July 4 - 1980, July 28

He died suddenly, quite unexpected to all, only some days after we have sent him congratulations to his 50th birthday.

Victor Myachkin finished his studies at the Moscow State University in 1952. Since this time he joined the staff of the Institute of the Physics of the Earth of the USSR Academy of Sciences in Moscow. As a member of the division of Prof. Y.V. Riznichenko he directed his interests to measurements of the stress field in coal mines by means of ultrasonic sounding. In the early sixties this work was extended to be an effective experimental method applicable nearly in all mining regions. It was also in this period that his close co-operation with Czechoslovak seismologists started, being continued to the whole rest of his life.

As the head of the Laboratory of the Physics of Earthquake Focus he was an excellent organizer who succeeded in linking theoretical work, field investigations and laboratory experiments. He organized the first expedition to Kamchatka for the seismic sounding of a region in

which an earthquake was expected. This pioneer work in observations of long term travel-time changes resulted in a successful forecasting of several earthquakes in this region.

In the last decade his outstanding activity and enthusiasm was focussed to physical problems of earthquake prediction research. He contributed essentially to the completion of the recent ideas on the mechanism of tectonic earthquakes. More than 60 papers exhibit the scientific scope of his interests. For his book on seismic sounding of focal zones and on processes associated with the preparation of earthquakes he got the degree of Doctor of Sciences in 1975.

He was for a long time a member of the IASPEI Commission on Earthquake Prediction and the chairman of its Sub-Commission on Physics of the Earthquake Source. Also his personal engagement for a broad co-operation with American geophysicists on the above mentioned problems has to be pointed out.

European seismology loses in Dr. V. Myachkin a dedicated colleague and a great number of seismologists all over the world a very good friend.

L. Waniek

3. Presidential Address - by A.R. Ritsema

Ladies and Gentlemen, dear colleagues and friends,

I am happy to welcome you at the 17th General Assembly of ESC in Budapest. Two years ago in Strasbourg, the invitation of the Hungarian Academy of Sciences was unanimously accepted. We thank the Academy for their hospitality. 16 years ago our tenth General Assembly also was held in Budapest, and all of us that participated will remember the good time. It is the first time that a General Assembly takes place in the same town as one before. This unique occurrence is a compliment to the country, your Academy and to the people that really run this conference, namely the members of the Local Organizing Committee under chairmanship of Professor Stegena and Dr. Bisztriczany, successors of famous Hungarian geophysicists, such as Eötvös, Kőveslighety and also Eged.

Our internal rules and statutes say that it is our task by all possible means to promote work in our science of seismology in the European area, defined as the area between 30°-90° N and 30° W - 40/60° E. No mention is made of purpose. This question to what end we do this work will be raised with more emphasis in the present time of declining

funds. This implies a basic search for customer wishes. Although the pleasure of a purely academic intellectual exercise should not be neglected it is evident that social and human implications should be stressed, more than has been done in the past. More concrete this means more attention to earthquake effects on men and on structures, to the improvement of basic knowledge to promote possible future resources of the earth, and to the prevention of disasters. I am certain that great efforts in these directions will be asked from us in the future.

The ESC exists 29 years. Professor W. Hiller, the motor behind the European approach, was nominated first president during the IUGG General Assembly in Brussels in 1951. For me, as a student at the time, it was also my first international geophysical conference and I remember meeting for the first time the great men of our science, such as Gutenberg, Byerly and from Europe Hiller, Rothé, Stoneley, miss Lehmann, Sir Harols Jeffreys, Markus Bâth and others. What has been the result of these 29 years of development of European contacts in seismology, what can we show to the people in earthquake-prone regions as a result that affects their life, what have we done to enlarge earth resources and to heighten the living-standard of people by lessening the earthquake hazards in regions that need such help? I must confess that I am not able to point to many axamples that may give us the feeling that our work was not in vain. We may point to the better insight in earthquake risk and hazard we obtained, which however, up till now has more specifically been to the benefit of insurance companies, more so than to our fellow-citizens. We have done work in earthquake prediction, we temporarily had the very optimistic view that we would be able sooner or somewhat later maybe, to predict such disasters. Since than, the work increased but the expectations now are far from those a few years ago. In fact, I expect that nobody present here will dare to take the responsibility for the announcement of an earthquake forecast at a specific place and time in the European area within the next five years.

During the past two years 1978-1980 there were at least 12 earthquakes that caused important material damage to structures in the European area. As a bad omen (or as a stimulus) the first one occurred within 24 hours of my nomination as President of ESC. This Tailfingen earthquake of 1978, September 3 caused considerable damage in Southern Germany and was felt by many of the participants of the ESC meeting in Strasbourg. In total during these two years there were nearly 200 casualties and several thousands of injured in Europe. Most of them in the Albania/Yugoslavia earthquake of April 15, 1979, $M = 7$, and in the Azores earthquake of January 1, 1980, $M = 6.9$. It is true, there have been ESC presidential terms that were far more disastrous in this respect than that of the present Bureau. But also now, none of these earthquakes has been forecasted by anyone of us - nor by someone else.

European seismologists have been very active in this period. We will hear in due course the reports of the Sub-Commission Chairmen, so I will not go into details here. I wrote down the list of symposia, study groups, workshop meetings and seminars during these years, somehow related to the European situation, and I came to the formidable number of 25 with an accumulated time of nearly 140 days. Including travelling, this means that we could have spent fully 1/3 of these 2 years attending meetings and travelling around. There is thus no lack in opportunities to meet for European seismologists, also not in the next few years to come. A list of 11 meetings is already prepared in which European seismologists will be interested to participate in the coming 16 months up till the end of 1981. A rather disturbing thing I came about is the fact that the greater part of these meetings were and are not organised, nor sponsored by ESC. This brings me to the main point of my address, namely the other organisations, agencies and commissions that apparently are so much interested in the field covered by ESC that time and money are more or less freely invested for the purpose. Apart from meetings organized by IASPEI or its Commissions, the InterUnion Commissions, the IAEE and EAEE, EGS and local seismology groups (bi- or multi-lateral regional discussion meetings are not included in the list I quoted) there is also an active interest from agencies such as: UNESCO, UNDP, UNDRO, KAPG, CCMS, ENCD-Geneva, ESA, Council of Europe, a.o.

ESC always has stimulated and stressed initiatives by the individual seismologists of Europe, and I am of the opinion that we should be happy with so much activity in the European field. We should not forget that often just these restricted meeting - in topics and in number of attendees - are the most fruitful for further developments in the field.

Remarkably, many of the non-ESC activities somehow were concerned with aspects of earthquake prediction. It also is a matter of some concern, that these parallel activities sometimes do overlap in the topical subjects as well as time of occurrence. This was one of the reasons that ESC at the end of 1979 started to investigate what kind of programs in the field of earthquake prediction existed in the ESC member countries. Our request for information to the Titular Members and to those colleagues of which it was clear to the Bureau that they were engaged in such studies, resulted in 18 received reports. Together with the programs presented in the framework of the 2nd workshop of the Council of Europe in spring this year there were reactions from 16 different countries out of a total of 35.

Analysis of the received material shows that nearly all European countries are engaged in work that somehow is related to earthquake prediction. Specific topics for study that arose from the inventariation are: the compilation of catalogues, data banks and quantification of earthquakes in a region; the statistics of these events,

seismicity, seismic sequences, swarms and pattern recognition; geological and geodetic aspects, such as surface effects, strain, tilt, levelling, earth tides, groundwater level, radon emanations, etc.; earthquake mechanisms, source studies, stress patterns; seismic zoning maps, risk, hazard analysis, reduction of earthquake losses; instrumentation, such as microshock recording, telemetry; laboratory experiments, crack propagation, anisotropy effects; theoretical models studies, inhomogeneous media; artificial sources such as rockbursts, and triggered by waterreservoirs; and historical case studies.

At some specific time each of these topics may contribute significantly to the prediction of earthquakes, but on its own they are insufficient to be classified as earthquake prediction work. Only integrated studies can be classified as such. The known countries with integrated programs of a multi-disciplinary kind are: Portugal, Spain, Italy, Yugoslavia, Albania, Greece, Turkey, Bulgaria, Rumania, USSR and Iceland. Some of these programs are actively supported by other countries. Among them are the U.K., France, the F.G.R., Switzerland, the USSR and USA. Sponsoring agencies, apart from the local governments are UNESCO, UNDP, UNDRO, the KAPG, Council of Europe, ESA, the NATO and the ICTP.

Some of the programs have been initiated already, but the majority still is in the preparatory stage. This means that, in comparison with some other countries outside Europe, we are not in the front-line yet. Still, what concerns the variety of earthquake types, Europe, when compared to the classical regions of California, Central and Eastern Asia and Japan, is in a very favourable position for significant contributions in the field. The European area comprises not only seismic zones of the transcurrent fault type (N. Anatolian fault zone), but also of the subduction type (Hellenic and Calabrian arcs), and of the mid-ocean type (Iceland and mid-Atlantic ridge).

The earthquake prediction studies in California, Central Asia, China and Japan after 5-10 years of work have not yet reached the operational stage. This is one of the reasons that we may not expect any hard results from our programs within the next ten years or so. Nevertheless, such efforts by all means should be supported and welcomed as an important and necessary step in the history of European seismology. But as responsible ESC members it is not only our task to execute the work in the field, but also to let sponsors realise that water-tight forecastings of major and minor earthquakes in space, time and magnitude are not to be expected in the next decade or so. The work is indispensable for any progress in the field, but immediate success cannot be guaranteed.

Another essential point is the realisation of the necessary co-ordination in Europe of the different activities. This is, where ESC has made some preliminary steps, discussing with individual agencies

the necessity for such an effort. The Bureau hopes that such co-ordination of efforts can be reached within the next interval between General Assemblies.

Ladies and Gentlemen,

It is time to return to the present. We have much work before us during the next 8 or 9 days. I don't foresee difficulties in the program because of the excellent accomodation and organisation by our Hungarian colleagues. There are a number of points, however, that need attention and I invite all of you to comment on them to the Bureau: We should think seriously about the future of ESC. Do we proceed along the lines of the last few years in having our General Assemblies once in the two years in a joint meeting with EGS? Do we keep our identity as ESC in such a way, or is a corporate membership with EGS maybe desirable? How should future meetings being organised? Should we keep the rather rigid division in Sub-Commissions as it has been for the last 10 years, or should it be made more flexible and on a more or less temporary or interim basis? Are election procedures satisfactorily? What is expected from the Bureau in the time between General Assemblies? The ESC Bureau has these points on their Agenda during these Budapest meetings, the Bureau is open for any suggestion from your side and we should appreciate if you would inform us of your thoughts on these points. Thank you in advance.

I now wish all of you interesting sessions and fruitful discussions, and I herewith declare our 17th General Assembly of ESC opened.

4. Activity Reports of the Sub-Commissions

A. Seismicity - V. Karnik

During the period between the 16th and 17th General Assemblies (Strasbourg 1978 - Budapest 1980) the activities of the Sub-Commission members and members of the ten Working-Groups were concentrated on the following topics:

- a. Revision or compilation of uniform earthquake catalogues and basic maps on a regional basis, the work was completed for Central and Eastern Europe. An Atlas of Isoseismal Maps was published for that region as well as epicentra and I_{max} maps. Some countries established seismological data files, the WG on Statistical Methods started to compile the inventory of such files in Europe.
- b. Earthquake hazard studies on sites or areas of particular importance were carried out in several countries applying statistical and seismotectonic analysis. A special KAPG seminar was organised in Bratislava in April.

- c. Revised map of maximum observed intensity for Europe is in the process of compilation using results of regional or national projects.
- d. Up-dating of the MSK-64 scale: a special seminar was held in Jena in March 1980. Proceedings are in press in Gerlands Beiträge für Geophysik.
- e. Two meetings were held on the preparation of a draft project for the survey of seismicity of the Iberian-Maghreb region in Rabat, 11-13 Jan. 1979 and in Lisbon 2-4 June 1980.
- f. Special national networks for monitoring seismic activity have been established or are under installation using modern digital techniques and telemetry in Romania, Hungary, Spain, Greece, Italy etc.
- g. Large earthquake sequences were studied in detail, particularly that of the destructive earthquake of April 15, 1979 in Monte Negro/Albania; three seminars were organized on the results of the investigations on the event in April 1980: in Albania, where ESC was represented by director EMSC E. Peterschmitt and later by president A.R. Ritsema, in Titograd and later in France.

The results of the above mentioned activities will be presented during the Budapest Assembly.

Future activities

1. It is very desirable to continue the systematic accumulation of basic seismological parameters of European earthquakes by the proper operation of the EMSC in Strasbourg. In this respect the magnitude determinations should be standardized for near shocks as soon as possible. New parameters describing the focus and the mechanism should be introduced on a routine basis.
2. Closer links must be established with geologists for improving the seismotectonic definition of potential earthquake regions. The near-field effects of large earthquakes must be more thoroughly studied in collaboration with other Sub-Commissions.

In general the methods of estimating earthquake hazard must be further developed particularly for improving the reliability of the results. Because of the growing importance of engineering applications of seismological data or methods it is recommended to combine the efforts of the present WG on Strong Ground Motion and WG on Engineering Seismology into a new SC of Engineering Seismology which would be responsible for the studies relating to microzoning, macroseismic scales, strong motion recording and data processing.

3. Because of the need to continue a regular exchange of methods in seismicity studies, earthquake hazard and seismic risk assessments, a second Symposium on that topic will be held in May 1981 in Liblice in Czechoslovakia.

4. A close contact and collaboration with UNESCO, UNDRO and other UN agencies is to be maintained in the field of earthquake hazard assessment and mitigation in the European area in order to assist in the development of new projects.

Shortcomings

Our work is suffering by a lack of a more frequent participation of earth scientists from some high seismicity countries like Greece, Turkey, Algeria and others.

B. Data Acquisition - P.L. Willmore

The main activity of the Sub-Commission was devoted to the preparation of a special Symposium on European Digital Seismic Network (EDSNET) which was to be held during the 17th General Assembly of the ESC in Budapest.

The planning of such a symposium requires that the main framework of discussion should be clarified in advance, so that appropriate experts can be invited to contribute, and any necessary practical investigations should be initiated in time to be considered.

The suggested framework of discussion was as follows:

- What categories of data need to be preserved in European archives?
- How do packing densities and data storage intentions vary between agencies and between the systems which they are currently considering?
- How good are the available triggering algorithms for systems of limited storage capacity? Do they cover all the requirements of the first item above?
- In the light of the second and third item above, do we need to unify "start" and "stop" commands for participating stations? If so, must they act within minutes, hours or days of the event?
- If the transfer from short-term to long-term storage needs response within hours or less any unification requires automatic co-ordination. "Meteosat" having been suggested for this purpose, how practicable is this approach?
- Assuming that criteria for data retention are agreed, can we specify a common format for exchange?
- How far can we see the science of seismology developing as a consequence of the adoption of new digital standards?

- What should be the resulting timetable for the symposium in 1980?

All these questions were discussed in detail during a special Workshop on Modern Methods of Registration and Interpretation of Seismic Observations held in Yalta (USSR), October 24-30, 1979. This Workshop was co-sponsored by the Soviet Geophysical Committee of the Academy of Sciences of the USSR and by KAPG (for details see par. 2.2.).

C. Microseisms and Seismic Noise - E. Hjørtenberg

At the 16th General Assembly of ESC in Strasbourg 1978 a meeting was held with the topic Meteorological Microseisms. During the meeting E. Hjørtenberg was elected president of the Sub-Commission and V.N. Tabulevich was elected vice-president of the Sub-Commission. The following new members were appointed: Antonenko (USSR), Bisztricsany (Hungary), W. Grosse-Brauckmann (FRG), G. Houtgast (The Netherlands), F.I. Monakhov (USSR), S. Pirhonen (Finland), C. Radu (Roumania), T. Risbo (Denmark) and E. Wielandt (Switzerland).

Five papers on microseisms were presented during this meeting. On 6 December, 1979 a session on microseisms was held by the IASPEI Commission on Microseisms at the 17th General Assembly of IUGG in Canberra.

At this meeting P. Bernard retired as president of the Sub-Commission after a long chairmanship. The new president is H. Korhonen and the new vice-president is M.L. Grinda.

With sorrow we have learned that Savarensky passed away. He was very active in the creation of our Sub-Commission and that of the IASPEI as well. He gave one of his last papers at the Canberra meeting.

At the Eleventh Nordic Seminar on Detection Seismology, held in Copenhagen, May 19-21, 1980, some results of Scandinavian noise measurements were presented. Bungum reported that a sub-array at NORSAR had been changed to an experimental variable aperture seismic array, and results from this array showed the dependence of spatial noise coherency in frequency in the band 1-4 Hz with implications for determining the vectorial wave number field. I. Hansson reported results of preliminary noise measurements on the Swedish local earthquake network. S. Tienari and H. Korhonen presented a paper entitled "Some problems in classification of storm microseisms". It was learned that in Finland measurements have been carried out in accordance with the IASPEI resolution of 1975 (microseismic storm project) published in the Comptes-Rendus of the 16th IUGG General Assembly in Grenoble. In addition, measurements of 20 seconds period microseisms have also been carried out.

As for the work on microseisms carried out in the other European

countries reference is made to the bibliography of microseisms 1977-1979, containing 59 papers, which may be obtained from SC President.

D. Earthquake Mechanism and Prediction - A. Udias

New Configuration

At the Budapest General Assembly of the ESC (August 1980) it will be decided to create a new Sub-Commission to deal with the problems of earthquake prediction. This decision will result in a separation of prediction problems from those of focal mechanism, leaving for our SC only the problems of the source. New trends in the activities related to programs of earthquake prediction in Europe has created the necessity of a new SC. As a result of this, the name of the SC will be changed into "Physics of Earthquake Sources", indicating a broader approach to the problems related with the physical processes at the foci of earthquakes.

The structure of the SC will remain the same with a President (A. Udias) and a Vice-President (B.V. Kostrov). No titular members are listed since any European seismologists active on source studies may consider himself with all rights as a member of the SC.

Activities 1978-1980

Besides the activities carried out by the members of the SC the following corporate activities must be listed.

1-7 June 1979. Symposium on Physics of Earthquake Source and Earthquake Prediction Problems. Organized by the SC in Mogilany (Krakow) Poland. 18 papers were presented and discussed. Proceedings will be published by the Polish Institute of Geophysics (see par. 2.1.).

5-10 May 1980. Workshop on Earthquake processes and premonitory phenomena. Organized by ISAST and ICTP of Trieste under the chairmanship of Prof. Teisseyre. Several members of the SC collaborated (see par. 2.4.).

21-29 August 1980. 17th General Assembly of ESC (Budapest). At the session of the SC 14 papers are to be presented and discussed. A workshop will be held on the determination of source parameters from spectra of seismic waves. As a conclusion of this workshop some recommendations concerning this determination will be distributed.

E. Theory and Interpretation - H. Stiller

During the Budapest Meetings two half-day sessions were reserved for

the Sub-Commission. Most part of the papers may be grouped together under the point of view of their method of investigation. First of all we should mention the papers of V. Cervený and co-workers from CSSR dealing with the theory of seismic wave propagation. This is a well-established direction in theoretical seismology and it is proposed that Prof. Cervený should be the head of a corresponding working group within our Sub-Commission. A further complex of papers will be concerned with model seismic experiments for studying wave generation and propagation in the laboratory. These papers came mainly from the group of Prof. Behrens (Berlin W) but there were also important contributions from Prof. Waniek and co-workers from CSSR. It is interesting that this direction of experimental modelling has close connections to problems in mining industry. But theory and interpretation of seismological investigations also includes the problems of relating the observations to certain physical and chemical properties of the corresponding material (structure and composition). Such investigations will be presented in the paper of E.A. Lubimova et al. and in two papers from the group of H. Stiller.

A very actual paper was given by Ritsema describing Atmospheric pressure waves of the Mt. St. Helens eruption detected by the distant seismograph station of De Bilt.

The papers of M. Baer and D. Mayer-Rosa and of B.G. Mikhailenko and F. Hron are concerned with the problem of computation of synthetic seismograms.

At the end of the session chairman Stiller organizes a short discussion on prospective work of the Sub-Commission. A new structure of the Sub-Commission and Working-Groups as given in the enclosure is proposed.

The activity of the Sub-Commission is further reflected in the preparation of the joint ESC/EGS Symposium on Physical and Chemical Properties of the Mantle (for details see par. 1.3.3.).

F. Deep Seismic Sounding - C. Morelli

The activity of the SC in the period 1978-1980 has strongly increased both in theoretical research and in experimental field work. Theory was mostly dedicated in the improvement of the inversion analysis and in the geological interpretation of the results. In the experimental work the international co-operation was fairly enlarged, so that very long profiles could be realized (e.g., Fennolara in 1979; Central and Eastern Mediterranean 1978-79). Also improved were the field techniques, with consequent better results in the recording and in the quality of deeper informations. Good results were obtained also in the application of O.B.S.

Detailed works permitted the study of lateral heterogeneities in the lower crust (Pyrenées), and of deep faults with strong thickness reduction (Larderello).

The increase in the experimental work performed is documented in the "Activity Report 1978-80" of the SC (101 pg.) by C. Morelli, which contains 26 reports from following countries and institutes:

Finland	I. Seismology
France	I. Phys. Globe, Paris
Germany FR	Bundesanst. f. Geowiss., Hannover
	I. Geophysik, Hamburg
	I. Geophysik, Karlsruhe
	I. Geophysik, Kiel
	I. Geophysik, München
Italy	It. Expl. Seism. Group
Norway	Norsar Univ. Oslo
Spain	Univ. Complutense, Madrid
Switzerland	I. Geophysik, Zürich
U.K.	Roy. Soc. Expl. Seism. Work. Group
Yugoslavia	Geozavod

The report for Eastern Europe has been presented verbally by Prof. Prosen.

The activity of the Sub-Commission is demonstrated also by the fact that the majority of SC members contributed to the joint ESC/EGS Symposium on Crustal Structure of Europe, which will be held in the course of the Budapest General Assembly.

5. Report of the EMSC Strasbourg

Compte-Rendu d'Activité par E. Peterschmitt

ARRIVEE DES DONNEES.-

L'arrivée des données par Telex s'est encore développée au cours de la période de référence. Le C.S.E.M. est alimenté actuellement de façon régulière par ce moyen des pays suivants : Albanie, Allemagne RDA, Allemagne RFA, Autriche, Belgique, Bulgarie, Danemark, Espagne, Finlande, Grande-Bretagne, Hongrie, Irlande, Italie, Pays-Bas, Pologne, Roumanie, Suède, Suisse, Tchécoslovaquie, Yougoslavie (LJU) et de façon occasionnelle depuis : Portugal, Tunisie, U.R.S.S., Yougoslavie.

Il serait souhaitable que ce moyen de transmission de données puisse encore être étendu à d'autres pays européens. Si certains bulletins arrivent de façon assez rapide, d'autres présentent des délais marqués ; dans certains cas ils ne peuvent plus être utilisés, dans d'autres ils conduisent à retarder le processus de traitement.

DETERMINATIONS TRES RAPIDES.-

Ces déterminations ont été effectuées dans de nombreux cas même lorsque l'importance de l'évènement ne se justifiait pas. Deux cas ont été particulièrement intéressants :

- 3 septembre 1978 Jura Souabe (séisme de l'assemblée générale de la C.S.E. de Strasbourg). Le traitement a été fait très rapidement en collaboration avec des collègues des services sismologiques étrangers.
- 15 avril 1979. Adriatique-Monténégro. Malgré des circonstances défavorables - matin du dimanche de Pâques - grâce au bon fonctionnement du réseau privé d'alerte téléphonique, la récolte des données et le traitement ont pu être réalisés dans le délai de quelques heures.

Malheureusement souvent le traitement au C.S.E.M. est retardé ou rendu aléatoire par le manque de données proches de certains pays pourtant sismiques qui ne font aucun effort pour une transmission rapide de données clés.

DETERMINATIONS NORMALES.-

Pour l'année 1977-78 et le premier semestre de 1979 un effort particulier a été fait pour calculer et diffuser des résultats chaque fois qu'ils étaient fiables.

Ainsi les diffusions suivantes ont été réalisées :

	<u>Janv-Juin</u>	<u>Juillet-Déc.</u>	<u>Total</u>
1977	526	497	1023
1978	542	517	1059
1979	906	363	1249

Au cours de l'année 1979 il s'est produit un retard important dans les diffusions. Ce retard était dû en partie aux délais accentués de réception des innombrables répliques du séisme du 15 avril et d'autre part au grand nombre d'évènements calculés.

Le Conseil du C.S.E.M. dans sa réunion du 23 novembre a décidé qu'il importait de ramener les délais à des valeurs maximales de 2 mois environ. En conséquence depuis le 2ème semestre de 1979 le traitement d'évènements faibles intéressant un seul pays - par exemple la Turquie - a été abandonné.

SEISMES MARQUANTS.-

Le tableau annexe donne la liste des tremblements de terre les plus importants ou présentant un intérêt particulier.

La séric de l'Adriatique-Monténégro - séisme principal le 15 avril 1979 - est dans ce contexte en tête de liste. Un effort particulier a été fait pour le traitement : en utilisant seulement des stations à courte distance. Le traitement de nombreuses répliques a été abandonné en raison d'une distribution peu favorable des données.

Le séisme profond du 17 décembre 1978 est intéressant par sa position géographique dans le Golfe de Goete, à l'extrême nord de la mer Tyrrhénienne.

ASPECTS SCIENTIFIQUES.-

A côté du travail de routine, il y a lieu de mentionner certains aspects scientifiques. Ainsi une attention particulière a été portée à dissocier les chocs multiples.

La détermination de la série des répliques du 15 avril 1979, a permis la préparation d'un travail sur leur répartition géographique, travail présenté par E. Peterschmitt au symposium de Shkodra, Albanie, 4-5 avril 1980.

PROGRAMME EUROPEEN DE PREDICTION DES SEISMES.-

Le C.S.E.M. a été considéré comme centre principal de données sismiques devant être actif dans le programme européen de prédiction sismique, programme mis au point au cours des réunions de travail de Strasbourg - 5 au 7 mars 1979 -, adopté par l'assemblée parlementaire du Conseil de l'Europe de Strasbourg (recommandation 864) et confirmé par les réunions des 31 janvier et 1er février 1980 à Strasbourg.

Dans le cadre de ce programme, le C.S.E.M. devrait connaître un développement important (voir documents annexes).

STATUTS.-

Il s'est avéré que les statuts adoptés à Cracovie en 1976, devront être révisés. Un nouveau projet est soumis à l'Assemblée générale de Budapest.

FINANCES.-

Du point de vue financier, la situation est très précaire: augmentation constante des dépenses et réduction de subventions. Si le déséquilibre important entre les apports de la France et ceux des pays étrangers ne se réduit pas de façon substantielle, le C.S.E.M. ne pourra pas continuer ses activités européennes.

Le projet de nouveaux statuts tend à résoudre ce problème.

6. Activity Report of the Secretary General - J.M. van Gils

Mis à part les travaux ordinaires du secrétariat, le secrétaire général s'est occupé principalement des sujets suivants:

1. Préparation, impression et distribution des comptes-rendus de la XVIe Assemblée Générale de la C.S.E. à Strasbourg (1978);
2. La représentation de la C.S.E. au Conseil de l'Europe dans le cadre du Comité Ad Hoc de Recherche sur les Tremblement de terre.
3. Participation à la Réunion du Comité de Programme de l'E.G.S. à Bruxelles.
4. Participation à la Réunion du Comité de Programme pour la mise au point définitive du programme scientifique de l'Assemblée conjointe de ESC/EGS à Budapest.
5. Assistance en tant que secrétaire de séance aux réunions du Conseil du C.S.E.M.

7. Creation of new Sub-Commissions

The Bureau and the Executive Committee informed the General Assembly that two new Sub-Commissions should be created at the end of the Budapest meeting. According to the recent development of seismology in Europe it was proposed to establish a Sub-Commission on Earthquake Prediction Research and a second one on Engineering Seismology. The Assembly was asked to propose members able to work efficiently in both of these fields. The necessary changes in the existing Sub-Commissions on Seismicity, Data Acquisition and Earthquake Mechanism and Prediction are to be considered. After some discussion the Assembly agreed on the fact that the Executive Committee should prepare the constitution of these new Sub-Commissions for final agreement at the Closing Plenary Session (par. 1.1.7).

8. Information of the Local Organizing Committee

Prof. Stegena then presented all the necessary information concerning the availabilities offered by the Local Organizing Committee (sessions, accommodation, social events, transportation, etc.). As an extra in the announced program Dr. Sulsterova of Tirana will show the Albanian films on the damage originating from the magnitude 7 earthquake of April 15, 1979, and the consecutive reconstruction of villages in the

Northern part of Albania.

1.1.4. EXECUTIVE COMMITTEE, AUGUST 26, 6.00 P.M.

Present: Ritsema, Kondorskaya, Van Gils, Waniek, Karnik, Stiller, Peterschmitt, Mueller, Udias, Morelli, Berckhemer, Lopez-Arroyo.

1. Expected activities of new Sub-Commissions

Berckhemer gave a review of possible future activities in Earthquake Prediction Research. Close contacts to the existing Sub-Commission on Focal Mechanism were recommended. New instrumentation, regional prediction sites, seismotectonics should be the main tasks of the new Sub-Commission. Co-operation with the European Council, KAPG and other organizations must be initiated.

Lopez-Arroyo discussed the future structure of the Sub-Commission on Earthquake Engineering. Working-Groups covering the scopes of macro-seismic scales, near field seismology, microzoning and seismic risk estimation are to be created.

Corresponding changes in the structure of the Sub-Commission Seismicity and Sub-Commission Focal Mechanism were recommended. Lopez-Arroyo was designed to be the liaison officer to IAEE.

2. Changes in existing Sub-Commissions and Working-Groups

The Sub-Commission for Focal Mechanism and Earthquake Prediction is proposed to be titled Sub-Commission on Physics of Earthquake Sources; as president will remain Udias.

The Subcommission on Deep Seismic Sounding proposes to create a Working-Group for Deep Seismic Reflections with chairman Fuchs.

3. Recent stage and future of the EMSC

See point 5 in par. 1.1.7.

4. Invitation to the 19th General Assembly of the ESC, 1984

The Secretary General announced that oral invitations were presented by Christoskov from Bulgaria, by Stiller from the GDR, by Isikara from

Turkey and by Kondorskaya from the USSR.

5. Letter from WDC-A

The co-operation with WDC-A in collecting copies of seismic records before 1964 and old seismic bulletins was recommended (see point 8 in par. 1.1.2.).

1.1.5. "AD HOC" MEETING OF NEW SUB-COMMISSIONS, AUGUST 28, 1.00 P.M.

Present: Ritsema, Kondorskaya, Korhonen, Van Gils, Waniek, Berckhemer, Lopez-Arroyo and about 20 further ESC-members.

1. Introduction

President Ritsema briefly reported the reasons for the creation of the new Sub-Commissions on Earthquake Prediction Research and on Engineering Seismology in the frame of the ESC (see point 4 in 1.1.1., point 2 in 1.1.2. and point 7 in 1.1.3.).

2. General Concepts

The designed Presidents of the Sub-Commissions described the scope of future activities in general. The detailed scientific problems have to be precised during the next two years. To get a more clear picture of the recent stage of our knowledge in the above directions, two special symposia are proposed to be held during the 18th General Assembly of the ESC in Leeds (U.K.). In the discussion took part: Burton, Karnik, Willmore, Van Gils, Waniek and Vogel.

3. Discussion on the structure and composition of the new Sub-Commissions

In two separate sections the discussion was continued to prepare the first draft of the structure and composition of the both Sub-Commissions (see par. 1.4.2.).

1.1.6. ELECTION OF THE NEW BUREAU, AUGUST 28, 6.00 P.M.

Present: Titular Members and Officers of the ESC (see list of participants).

1. Electoral body and rules of voting

Secretary General Van Gils mentioned the main points of ESC internal regulations to guarantee correct elections. He stated that the presence of Titular Members and Officers represent 25 votes, which makes the elections possible (see Chap. 5). He recommended to carry out the elections in a successive manner, beginning with that of the president then of the two vice-presidents and finishing with the secretaries.

2. Elections

The proposals for the new Bureau were presented by Vanek as a representative of the Nominating Committee. Voting was performed by secret ballot.

<u>Results:</u> President	:	Ritsema	(+ 23)
Vice-Presidents	:	Bisztricsany	(+ 15)
		Kondorskaya	(+ 16)
		Korhonen	(+ 10)
		Udias	(+ 8)
		Sulstarova	(+ 1)
Secretaries	:	Van Gils	(+ 24)
		Waniek	(+ 22)
		Mayer-Rosa	(+ 3)

According to the results of the elections the new Bureau of the ESC for the period 1980 to 1982 consists of: A.R. Ritsema, president; N.V. Kondorskaya and E. Bisztricsany, vice-presidents; J.M. van Gils, secretary-general and L. Waniek, assistant-secretary.

1.1.7. ESC PLENARY SESSION, AUGUST 29, 9.00 A.M.

1. Opening of the Session

The President opened the session and asked Dr. Csomor to give a brief information on the occasion of the 70th anniversary of the foundation of the first seismological observatory in Budapest. Dr. Csomor remembered the merits of Prof. Radó Köveslighethy in developing Hungarian Seismology. His name has always to be associated with the beginning of the national network in Hungary and with the foundation of the Seismological Institute of the Lórand Eötvös University in Budapest. He was also a very active member of the International Association of Seismology, being its Secretary General from its creation

Election of the new ESC-Bureau

August 28, 1980

LIST OF PARTICIPANTS

E. Peterschmitt	L	F	
E. Substareva		Alb.	ARRIOWANA N.L.
D. Prosen		Yugoslavia	
.....	 B.
E. ...		Finland	Finland
E. BANDA (for LOPEZ ARROYO)		SPAIN	Finland
Alfonso ...		PORTUGAL	
D. Gyese		FRG	
C. RADU		ROMANIA	
H. Stiller		Ger. D. R.	
D. Mayer-Rosa		SWITZERLAND	
P. L. Willmore		U.K.	
Olaf Dahlman		SWEDEN	
H. ...		Finland	
G. Gilman		Poland	
G. DUMA		AUSTRIA	
C. Eva		ITALY	
E. BISZTRICSANY		HUNGARY	
N. Kowaldorskecz		USSR	
L. Christman		Bulgaria	
V. KARNIK		... SE Serbia	

up to 1922.

2. Results of elections

The Secretary General presented the results of the Bureau elections (see par. 1.1.6.). Dr. Ritsema expressed his thanks for the confidence placed in him and the other re-elected Bureau members. He thanked Dr. Korhonen for his conscientious presence at the meetings and his work in the ESC Bureau. He also congratulated him with his nomination as president of the IASPEI Commission on Microseisms. He welcomed Dr. Bisztricsany as new vice-president and expressed his confidence in the future collaboration in the new Bureau.

3. Composition of Sub-Commission and Working-Groups

President Ritsema reported on the Executive Committee meetings, leading to the proposal for a new internal composition of the ESC. The creation of two new Sub-Commissions on Earthquake Prediction Research and Engineering Seismology and corresponding changes in the existing Sub-Commission were recommended to be accepted by the General Assembly. After a broad discussion the General Assembly agreed on the composition of the ESC as given in par. 1.1.4.2.

4. Current stage and future of the EMSC

S. Mueller, as president of the EMSC-Council, pointed out, according to the outcome of the Council Meeting and the open meeting, that the objectives of the EMSC should remain:

1. Rapid epicentres determination, if necessary in a few hours;
2. a rapid data exchange;
3. the emission of a regional bulletin of events with a magnitude > 3.

The situation of the Centre, as it is now, no longer may subsist if no greater financial support can be given by the European countries. If the last point cannot be achieved, it seems that the actual statutes should be changed in the sense of the draft project that was circulated to the titular members.

Since the draft project did not encounter the awaited reaction, it was decided in the Council to disseminate a questionnaire to all institutions and persons interested in view to collect the necessary material and to make a decision about the future of the EMSC in London (Ontario).

In order to help the Council for what concerns the future of the Centre, the president of the ESC will send a letter to all the national representatives in order to spur the member countries to make the necessary financial effort to maintain the Centre alive (for details see par. 1.2.).

5. Proceedings of the 17th General Assembly of the ESC

It was agreed that the Proceedings in question should be published before the Leeds General Assembly in 1982. The Hungarian Academy of Sciences offered the possibility to publish in a condensed form all papers presented in one special volume of about 280 pages. As responsible editor Prof. Bisztricsany was appointed. Prof. Willmore announced that the EDSNET Symposium will be published as a special monograph in the U.K.

6. IASPEI General Assembly, London, Ontario

IASPEI Secretary General R.D. Adams reported on the programme of the IASPEI General Assembly, July 19 - August 1, 1981 in London, Ontario. He urged to a wide representation of European seismologists which could be of great importance for further international co-operation. President Ritsema proposed that a meeting of the ESC Executive Committee should be organized in London. This meeting will be mainly devoted to set up the program of the 18th General Assembly of the ESC in Leeds, 1982.

7. 18th General Assembly of the ESC

The General Assembly decided to held its next meeting at the same time as the annual meeting of the EGS, i.e. August 1982, Leeds (U.K.). It was agreed to convene two joint symposia on Seismotectonics (Eva, Pavoni) and Heterogeneity of the Mantle (Tozer, Ahrens) and further two special ESC Symposia on Earthquake Prediction Research (Berckhemer) and Engineering Seismology (Lopez-Arroyo).

8. 19th General Assembly of the ESC in 1984

The General Assembly accepted with gratitude the invitations by the USSR to Kiev, by Turkey to Istanbul, by the GDR to Berlin and by Bulgaria to Sofia. The final decision will be taken at the next General Assembly in Leeds, 1982.

8. Symposia in the period from 1980 to 1982

The time schedule of Symposia sponsored or co-sponsored by the ESC was announced by the Secretary-General Van Gils.

10. Co-operation in collecting historical seismograms

The General Assembly strongly recommended European support for the Historical Seismograms Microfilming Project by the USGS and WDC-A for preserving and making available historical seismograms and in collecting documentation for selected stations and earthquakes from the beginning of instrumental recording.

11. Closing of the Session

The President expressed his gratitude to all participants for their active work which exhibited the good and close co-operation among European seismologists and which resulted in new ideas and projects. In the name of the ESC he expressed his warmest thanks to the Hungarian Academy of Sciences and to the Local Organizing Committee for the excellent preparation of the 17th General Assembly of the ESC, for the quality of arrangements and for the hospitality to all participants. The European seismological community is indebted to Prof. L. Stegena and Prof. E. Bisztricsany for all their efforts and personal engagements strongly contributing to the full success of this meeting.

1.1.8. BUREAU MEETING, AUGUST 29, 10.00 A.M.

Present: Ritsema, Kondorskaya, Bisztricsany, Van Gils, Waniek.

1. Proceedings of the 17th General Assembly

Vice-President Bisztricsany reported the necessary steps which have to be taken for publishing the Proceedings. The Hungarian Editorial Board consisting of Bisztricsany, Horvath and Stegena will distribute a circular letter to all authors in the near future.

2. 18th General Assembly of the ESC, Leeds, U.K., 1982

Secretary General Van Gils was appointed to be responsible for co-operation with the EGS Programme Committee.

3. ESC Activity Report 1980-1982

It was decided to prepare and distribute in the next period a comprehensive Activity Report of the ESC. Responsible for this publication will be the Secretaries and President.

4. Liaison Officers

President Ritsema proposes to nominate liaison officers who could represent the ESC in different scientific and governmental bodies. Nomination of these officers should be discussed during the Leeds General Assembly.

1.2. ACTIVITIES OF THE EMSC COUNCIL

1.2.1. EMSC EXECUTIVE COUNCIL MEETING, AUGUST 23, 10.00 A.M.

Present: Peterschmitt (Director EMSC), St. Mueller (Chairman), Van Gils, Burton, Aichele, Gibowicz, Kondorskaya, Christoskov, Mayer-Rosa.

1. Activity report

The rapid determination of epicentres produced particularly scientifically useful information for the earthquakes 3 September 1978, Jura Souabe and 15 April 1979, Adriatique-Montenegro.

Considerable time has been spent on improving computing techniques to facilitate more rapid handling of data; this is nearly completed. To benefit from this improvement rapid data transmission to Strasbourg becomes more essential and in some cases data would be handled within 2 or 3 hours of the event if it arrives then in Strasbourg. It is expected to implement these improvements, with its requirement for rapid data transmission to Strasbourg, as of 1 January 1981. Original phase data readings are the prime requirement to be supplied by subscribing agencies.

There is also a requirement for round the clock availability of contact with a seismologist in each country (for details see par. 1.1.3.).

2. Financial report

The 1980/81 payment of national subscribers is now due. The payment is 7% of the annual budget which stands at 162,000FF. The French Ministère des Affaires expects 80% of the running costs to be found from contributions and subscriptions. (The future may be guaranteed until 1982, but then the Ministère des Affaires withdraws its existing level of support. It requires evidence that other nations are also prepared to support the centre.)

3. Draft Statutes

The University of Strasbourg has insisted that the legal status of EMSC be clarified.

The first suggestion was that EMSC become a Franch Co. in Strasbourg. This is clearly not satisfactory. The second suggestion was for an Association organized under French law as the host nation.

-Strasbourg, alone in France, has adopted European statutes: the

problem would be much more difficult elsewhere in France.

The new proposed statutes were then partially reviewed. Seven founding members or organisations will be required e.g. NERC.

The new post of Secretary General is the equivalent in function to the existing Director, presently Peterschmitt.

Because of the fundamental changes required in EMSC, and the perilous state of CSEM's finances, an "open meeting" was arranged for 10.00 a.m. thursday, 28 August. It is expected that all interested parties in the ESC will attend this meeting in an effort to express the seismological communities requirement of CSEM and to impress on the French Ministère des Affaires the usefulness of continued existence of CSEM at Strasbourg.

1.2.2. OPEN MEETING OF THE EXECUTIVE COUNCIL, AUGUST 28, 10.00 A.M.

The open meeting produced three conclusions:

1. All ESC representatives wanted a monthly bulletin of epicentres from EMSC.
2. One third of the ESC representatives wanted the EMSC to provide a service for the rapid determination of epicentres in Europe.
3. Seven ESC countries declared their intent to try to support the EMSC through subscriptions as Founder Members: Switzerland, United Kingdom, Rumania, Finland, Federal Republic of Germany, Italy and Portugal.

1.2.3. EMSC EXECUTIVE COUNCIL MEETING, AUGUST 28, 5.00 P.M.

Present: (a) Mueller (Chairman), Peterschmitt (Director EMSC), Kondorskaya, Karnik, Christoskov, Dahlman, Burton, Gibowicz, Aichele.
(b) Schlich (Director IPG, Strasbourg), Aubert (Director INAG, Paris), Petit (Director CNRS, Paris).

1. Purpose

The purpose of the meeting was to (a) evaluate the need for the EMSC in the light of views expressed by the seismological community in the open meeting held within the ESC earlier in the day and (b) to decide

on a mechanism which would demonstrate to the French authorities that national bodies outside France were prepared to support EMSC financially

2. Proceedings

- a. The open meeting held in the ESC during the morning to discuss the EMSC problems has produced three conclusions (see par. 1.2.2.).
- b. The EMSC will be maintained by the IPG Strasbourg, INAG, CNRS and the French Ministry of Foreign Affairs until the end of April 1981. (N.B.: It should be noted that the annual budget of the EMSC runs from 1 May to 30 April.)
- c. It was agreed that between now and the end of this year a letter will be forwarded to all national representatives seeking their views and the level of financial support they hope to provide. In order to convince the French Authorities of genuine commitment replies should come from national representative bodies and be signed, where possible, at Directorate level.
- d. It may be of some advantage to be a Founder Member of the new EMSC rather than join later; any such differences will depend on the opinions of the new Council when it is formed. 10'000 FF is perhaps the minimum level for founding members to demonstrate their support of the EMSC, however, Schlich's intention is to look for a "mark of interest". It is expected that the running costs of the EMSC will be about 50-60'000 FF per year and if there are 20 members then the cost to each is obviously about 50'000 FF divided by 20, etc. If there are about 10 contributing members then Schlich stated that he will probably regard this as adequate. Replies from intending Founder Members may also include a redrafted version of the EMSC aims for incorporation into the new statutes.
- e. There must be at least seven Founding Members by French Law.

P.W. Burton

1.3. REPORTS OF SYMPOSIA AND CONCLUSIONS

1.3.1. LIST OF SYMPOSIA

During the Budapest General Assembly the following joint ESC/EGS Symposia were convened:

- A8 Physical and Chemical Properties of the Mantle.
Conveners: H. Stiller and H. Berckhemer, 24 papers.
- A9 Recent Crustal Movements.
Conveners: P. Vyskočil and N. Pavoni, 24 papers.
- A10 Recent Crustal Structure of Europe.
Conveners: A. Guterch and C. Prodehl, 54 papers.

The following ESC Symposia were convened:

- AS1 EDSNET.
Conveners: P.L. Willmore and C. Teupser, 13 papers.
- AS2 Earthquake Hazard and Prediction.
Conveners: V. Kárník and A. Udias, 26 papers.

The following ESC Sub-Commission sessions were held:

- Seismicity, 44 papers.
- Data Acquisition, 10 papers.
- Microseisms and Seismic Noise, 6 papers.
- Focal Mechanism and Earthquake Prediction, 23 papers.
- Theory and Interpretation, 21 papers.
- Deep Seismic Sounding, 7 papers.

1.3.2. REPORT OF THE SYMPOSIUM ON EARTHQUAKE HAZARD AND PREDICTION (by V. Kárník)

21 papers of the announced 26 were presented (with two changes of titles: AS2.2 replaced by BS2.2 and AS2.4 by BS1.4) Naturally, the

whole field could not be covered and the presented papers concentrated on theoretical and experimental work in determining stress field and their variations demonstrated also on the examples of seismic regimes in Europe. Various approaches of seismic hazard assessment were presented on examples from Central Europe or the Iberian peninsula.

Precursory phenomena were described in earthquake sequences (time gaps, unusual decays in earthquake numbers), in v_p/v_s variations or in the changes of the electromagnetic field. Observations of earthquake lights were also reported as an occasional premonitory phenomenon. Finally, present earthquake prediction projects were announced showing the need for a more concerted action in Europe where earthquake prediction research is only at its very beginning.

1.3.3. REPORT OF THE SYMPOSIUM ON PHYSICAL AND CHEMICAL PROPERTIES OF THE MANTLE (by H. Stiller)

Most of the reports of A8 were given as announced in the programme. There were only the following changes: The paper of N. Nessler (A8.12) was not given. The paper of H. Vollstädt, H. Stiller and A. Kraft (A8.22) was given in session of SC Theory and Interpretation. Instead of this, the paper "Thermal evolutionary model" by E.A. Lubimova (USSR) was included. A further additional paper came from L. Fleitout and O. Jaoul (France): "Transient creep and its influence on post-glacial and post-seismic rebound".

The various papers may be divided into several groups. A great part of the lectures was concerned with analysis and interpretation of observations (in particular seismological, but also gravimetric and electromagnetic). Furtheron there were some papers on theoretical investigations and their application to the Earth. The third group contains laboratory investigation at geophysically relevant materials under high pressures and temperatures.

The lectures of S.A. Raikes (Upper mantle heterogeneity beneath the Rheinisch massif) and the following by K. Wyllegalla and P. Bormann on similar investigations of the upper mantle with help of data from three stations on the territory of the GDR were good examples for how to use suitable methods of analysis to find important information from usual seismological data. So it was possible to construct certain features of an upper mantle model for the corresponding region. The paper of J. Zschau on the relationship between seismic velocities and anelasticity from data of stations in the Western United States also yielded concrete results on possible physical reasons for the asthenosphere using the well-known theory of a seismic absorption band. But it is important that there are not less than eight free parameters which must be fitted or substituted by "reasonable" numerical values. Thus

it came out clearly that complex investigations (observation, theory, estimation of parameters in laboratory experiments, interpretation) should be much more performed in future. Similar problems were discussed in the lecture of H. Stiller and S. Franck: There are observations on elastic discontinuities at phase boundaries and there exists also a theoretical description of such phenomena, but up to now we have no laboratory investigations for the estimation of the unknown parameters. A promising new trend in laboratory investigations was shown in the lecture of H. Burkhardt et al. (The influence of mineral reactions on the propagation of compressional and shear waves in rocks under high pressures and temperature). Investigations at a complex system, in which certain components may react among one another, are much better simulations of conditions in the Earth's mantle than investigations of "pure" substances. We also want to make reference to such papers that try to explain the present structure of the Earth as a result of an evolutionary process. This concerns both thermal evolution of the whole planet (E.A. Lubimova) as evolution of certain regions of lithosphere in the framework of plate tectonics (M.J.R. Wortel).

Summarizing it can be stated that symposium A8 was of high scientific level and showed some new trends for prospective developments.

1.3.4. CONCLUSIONS OF THE MEETING OF THE SUB-COMMISSION ON SEISMICITY

- a. It is necessary to maintain at the EMSC the systematic determination of parameters of European events permitting to carry out urgent studies before the ISC determinations are available.
- b. It is very desirable to intensify the work on seismotectonic correlations for improving the estimates of earthquake potential in different parts of Europe. A special workshop or symposium should be organized at the earliest occasion.
- c. The up-dating of the MSK-64 scale should be completed before Leeds 1982 by a more concentrated effort of the Working-Group on Macro-seismic Scale (now in the new Sub-Commission on Engineering Seismology).
- d. The statistical and seismotectonic methods of seismic hazard assessment must be further developed.
- e. The first version of the map of maximum observed macroseismic intensity in Europe was presented and will be distributed as a basis for comments before the end of 1980 to the Titular Members.

1.3.5. CONCLUSIONS OF THE WORKSHOP ON THE DETERMINATION OF FOCAL PARAMETERS (SC Focal Mechanisms)

The determination of source parameters of earthquakes are of great interest for seismological and seismotectonic studies. These parameters include the orientation of the fault planes, the seismic moment, fracture length, stress drop, average acting stress, dislocation, etc. Of these parameters one should pay primary attention to those that can be independently determined. These should be preferred for purpose of comparison and classification of earthquakes over those that are derived from them.

From the analysis of the spectrum of seismic waves, the two most easily determinable parameters are the seismic moment and the dimensions of the focus (fracture length). These parameters should be determined from a number of stations well distributed around the epicenter, using body, surface and coda waves.

Results must be given as mean values, their deviations and the number of observations used are to be added. For seismic moment and dimensions, the values of the spectral amplitudes reduced to ground motion and the corner frequencies should always be given, since this facilitates comparison of different methods. A guide-line of the methodology was prepared by D. Procházková (CSSR).

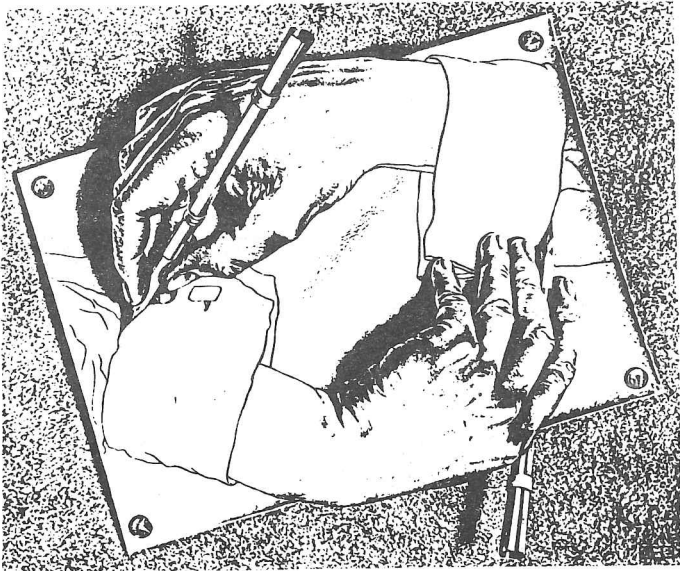
In this meeting it was decided to change the name of the Sub-Commission. The new name is: Sub-Commission on Physics of the Earthquake Source.



2.

EUROPEAN SEISMOLOGICAL COMMISSION

ACTIVITIES IN THE PERIOD FROM 1979 TO 1982



M.C. Escher, 1948

2.1. SYMPOSIUM ON THE PHYSICS OF THE EARTHQUAKE SOURCE AND EARTHQUAKE PREDICTION PROBLEMS, MOGILANY (POLAND), 1-6 JUNE 1979

Under the auspices of the ESC and the Polish Academy of Sciences a special symposium on problems of physical processes in earthquake foci and on earthquake prediction was held in Mogilany near Krakow, 1-6 June 1979. The symposium was convened by the ESC Sub-Commission on Focal Mechanism and Earthquake Prediction, the convenors were A.R. Ritsema, A. Udias and R. Teisseyre.

A number of about 40 participants from European countries used the possibility to discuss the recent stage and further development of earthquake physics and premonitory phenomena in the fine conditions of the Castle of Mogilany.

Twenty-five papers were presented during the symposium. The proceedings were published in a special issue of the Publications of the Institute of Geophysics of the Polish Academy of Sciences, A10 (142), 1980.

2.2. WORKSHOP ON MODERN METHODS OF REGISTRATION AND INTERPRETATION OF SEISMIC OBSERVATIONS, YALTA (USSR), 24-30 OCTOBER 1979

According to the recommendations adopted at the 16th General Assembly of the European Seismological Commission a special International Workshop on Modern Methods of Registration and Interpretation was held in Yalta from 24-30 October 1979. The meeting was sponsored by the Commission KAPG and its incorporated Working-Groups 4.1 and 4.2 and was convened by Prof. N. Kondorskaya, Vice-President of the ESC.

During the Workshop Meeting in Yalta the recent problems of broadband digital seismometry in Europe were discussed in detail. More than 40 papers were presented, a poster session with 24 papers closed the meeting. More than 150 participants from European countries attended the Workshop.

The workshop gave a good possibility to prepare the proposed symposium on European Digital Seismological Network (EDSNET) which was incorporated into the program of the 17th General Assembly of the ESC in Budapest. Moreover, the Yalta meeting gave a representative survey on

problems connected with a more realistic interpretation of seismic data. A more effective use of new seismological data in recent seismological practice seems to be necessary.

The fruitful results of the meeting could not be reached without the close co-operation among the ESC and the corresponding KAPG Working-Groups. This co-operation should be extended in all branches of modern seismology.

The following recommendations were adopted:

- It was recommended to distribute the Questionnaire of the SC-Instrumentation and Data Processing to all European countries.
- To accept for the ESC-Budapest meeting the program of the Symposium on European Digital Seismic Network according to the proposals of Prof. Willmore.
- To discuss at subsequent special meetings the possibilities of the new network for solving problems associated with seismic wave generation and wave propagation.
- To involve into the program of the Budapest meeting the question of a more correct estimation of focal depth.
- To continue in systematic synthetic interpretation of DSS data together with all other seismological observations.
- To introduce and develop special experimental laboratory methods in solving problems on the actual structural pattern of rock media.
- To begin with systematic studies on microcracking in selected seismically active regions.
- To recommend the last version of the draft of Instructions for Magnitude Estimation for accepting them during the IUGG General Assembly in Canberra 1979.

2.3. INTERDISCIPLINARY CONFERENCE ON EARTHQUAKE PREDICTION RESEARCH

IN THE NORTH ANATOLIAN FAULT ZONE, ISTANBUL (TURKEY),

31 MARCH - 5 APRIL 1980

Experts in the fields of geophysics, geology and geodesy from many countries in Europe and overseas concerned with earthquake research and hazard assessment took part. They met to present results of earlier research, to discuss current research activities relevant to earthquake

prediction in the North Anatolian fault zone and to work out and organize a program for earthquake prediction research in the most riskful parts of the fault zone.

According to the various aspects of an interdisciplinary approach in earthquake prediction research the sessions of the meeting were organized as follows:

- Geological history of the North Anatolian fault zone;
- Seismotectonics: Seismicity statistics according to historical and instrumental records, focal mechanism, relations between seismic activity and neotectonics;
- Pre-earthquake strain and triggering effects from continuous records;
- Pre-earthquake strain and deformation from repeated high precision geodetic surveys;
- Physical state and processes of changing physical rock properties in the earthquake source region;
- Space techniques in geodynamics and earthquake prediction research;
- Theory of earthquake generation and prediction;
- Interdisciplinary approaches to earthquake prediction;
- Future research.

The conference held at the Department of Geophysics, was sponsored by the Faculty of Earth Sciences, University of Istanbul and the Turkish National Union of Geodesy and Geophysics, co-sponsored by the UNESCO, the Parliamentary Assembly of the Council of Europe, the IASPEI Commission on Earthquake Prediction, the European Seismological Commission and under the auspices of the Scientific and Technical Research Council of Turkey, the Earthquake Research Institute, the General Directorate of Mapping and the Turkish National Committee on Earthquake Engineering.

The proceedings of the conference entitled "A Multidisciplinary Approach to Earthquake Prediction" edited by A.M. Isikara, A. Vogel and H. Soysal as the second volume of the series "Progress in Earthquake Prediction Research" will be published by Verlag Vieweg.

2.4. WORKSHOP ON EARTHQUAKE PROCESSES AND PREMONITORY PHENOMENA,

TRIESTE (ITALY), 5-9 MAY 1980

The Workshop was divided into the four following sessions in which 26 papers were presented.

1. Models of fracturing and the focal parameters.

Chairman: Prof. R. Madariaga, Paris.

The time domain approach consists in modelling the observed signal with a series of impulses from a simple fracture (circular cracks) or with dislocation events. Recently it has been proved that most events are indeed multiple sources and that series of simple models usually yield satisfactory results: examples of these new techniques were presented at the meeting.

The second approach is the frequency domain analysis of the body wave impulses, and uses the amplitude spectral form to extract information about the source. The main problem here, widely discussed at the Workshop, is that the models used are derived from the simple circular crack model and therefore subject to difficulties arising from the readings and interpretation of spectra of multiple events.

2. Geodetic measurements and strain determination.

Chairman: Prof. E. Livieratos, Thessaloniki.

The session's works gave a panoramic view of the contribution of geodetic methods to crustal strain determinations and outlined the trends for future research in that field. The papers presented covered both the finite and point cases of strain determination, namely the geometric geodetic procedures, the gravity procedures and the tilt- and strain-meter procedures.

Detailed analyses of many problems related to these procedures focused on numerical aspects, statistics, physical inferences and localized the problems which need further investigation and understanding. It has been stressed that geodetic techniques can provide extremely useful information concerning crustal deformation related to earthquakes, as well as to other earthsciences.

3. Earthquake mechanism and regional earthquake studies.

Chairman: Prof. A. Udias, Madrid.

The determination of focal mechanism is a very important tool in understanding the stress conditions on the earth crust. Seismic evidence such as polarity of first-arrivals of P-waves, wave forms, Rayleigh wave trains etc. provide the necessary observational data for these studies. Statistical and deterministic methods were presented in this session, followed by an active interchange of methods, computer programs etc. among researchers.

4. Earthquake prediction and source rheology.

Chairman: Prof. R. Teisseyre, Warsaw.

Prof. Teisseyre presented here an introductory lecture on the subject. Several papers were reporting the influence of rheology on the observed phenomena in the region of active faulting. An other group of papers reported some new results in the observation of premonitory events.

The necessity of further concentration in research on material changes due to large deformation has been stressed.

The organization of a future, similar workshop on the above mentioned topics has been suggested by the participants. Moreover it was found strongly advisable that the Centre for Earthquake Prediction Research being presently formed at SISSA take care of such an organization, thus giving a strong impulse to future international collaboration in that field.

2.5. SECOND INTERNATIONAL SYMPOSIUM ON SEISMICITY AND ON ANALYSIS OF SEISMIC HAZARD, LIBLICE (CZECHOSLOVAKIA), 18-23 MAY 1981

The Symposium was organized by the Czechoslovakian Academy of Sciences for the Commission of the Academies of Sciences of the Socialist Countries for Planetary Geophysics (KAPG), and the European Seismological Commission. About 70 people attended, mainly from Europe, but with some participants from as far afield as India, and the Democratic People's Republic of Korea.

The programme was divided into sections dealing with Seismo-Geology, Tectonics and Mechanism of Seismic Sources; Seismicity and Macro-seismic Observations; Ground Motion; and Seismic Hazard, and was enlivened by much discussion following individual papers and after each theme.

Many individual earthquakes, and the seismicity of particular areas were discussed in some detail. Precursory migration of the Montenegrin earthquakes of 1979 was detected, and shocks associated with open-cast mining in Poland were reported some being felt with intensities as high as 6-7. Studies of seismicity patterns included an extraordinary diurnal pattern of occurrence for events in Bulgaria.

Macroseismic observations received much attention, which included a method for quantitative estimation of intensity. A feature of the

Symposium was the presentation of a draft map of maximum observed intensity throughout Europe on a scale of 1:7 500 000, and an Atlas of Seismological Maps depicting intensities and epicentres in individual countries and regionally in Central and Eastern Europe, produced by the Geophysical Institute, Prague, for KAPG.

The latter part of the meeting included discussion of ground motion and assessments of seismic hazard in particular areas. The problems of maximum magnitude determination were discussed and also general questions of zoning and earthquake insurance.

The proceedings will be published by the Czechoslovakian Academy of Sciences, probably towards the end of 1981.

2.6. SYMPOSIUM ON PHYSICAL AND GEODYNAMICAL PROCESSES IN EARTHQUAKE

FOCAL REGIONS, POTSDAM (GDR), 2-7 NOVEMBER 1981

This symposium was sponsored by the Commission of the Academies of Sciences of the Socialist Countries for Planetary Geophysics (KAPG) and the European Seismological Commissions (ESC) and was organized in co-operation with the Geophysical Institute of the Czechoslovak Academy of Sciences, Prague.

The general scope of the symposium covered both theoretical and experimental studies on the physical processes in focal regions, their implications for a physical understanding of premonitory phenomena and their relations to geodynamical processes. This outline included the following main topics:

- Cracking processes and rock deformations, changes of physical parameters and acoustic emission: theoretical and experimental high pressure - high temperature results.
- Focal parameters of earthquakes, models of earthquake sources. New approaches for extracting information about the earthquake sources from the observed seismic signals. Direct and inverse solutions.
- Physics of premonitory processes and problems of earthquake prediction.
- Source mechanism of induced seismic events (reservoir and mining caused seismic events).
- Focal mechanism and tectonic processes in seismic active regions, the stress state in the earth's crust. Occurrence and mechanism of intraplate earthquake.

More than 60 people from different European countries attended the Symposium. The papers presented (about 50) will be published in a special issue of the new Journal on Earthquake Prediction Research edited by Prof. Rikitake of the Tokyo Institute of Technology.

2.7. EXECUTIVE COMMITTEE MEETING, LONDON, ONTARIO, 28 JULY 1981

Present: Ritsema, Van Gils, Kondorskaya, Hjelme, Udias, Hjørtenberg, Stiller, Berckhemer, Lopez-Arroyo, Mueller, Kostrov.

Observer: Vanek, Bolt

Guest: Briden (Leeds, U.K.)

1. Deceased members since Budapest 1980

Somville, 3 September 1980 - 100 years old.

Bonelli Rubio, fall 1980.

Y.V. Ritznichenko, 1 January 1981.

E. Tillotson, 29 March 1981.

2. Report Budapest Meetings

The activity report of the ESC is not yet finished. The scientific proceedings are in press. SC-Presidents give condensed progress reports. The difficult financial situation at the EMSC is discussed on the basis of the director's report. A last appeal for support will be sent out by the president of the ESC to all national delegates and European bodies having shown interest in earthquake hazard and risk. At the final plenary of IASPEI a resolution is adopted to support EMSC. The list of officers is reviewed and completed.

3. Leeds General Assembly, 23-29 August 1982

A provisional agenda is adopted. Four ESC Symposia are proposed:

- Seismotectonics, conveners Pavoni/Eva;
- Earthquake Prediction Research, conveners Berckhemer/Nikolaev;
- Engineering Seismology, conveners Lopez-Arroyo/Ambraseys;
- Mantle heterogeneity and lithosphere development, conveners Ahrens/Tozer (co-IASPEI).

Sub-Commission meetings are planned in parallel with the Symposia. The time-schedule for sending in titles and abstracts is fixed (see chap. 3).

4. European Earthquake Prediction Research

It is remarked that many parallel activities exist in Europe in the field of earthquake prediction. It is proposed that individual ESC members engaged in these initiatives should report on it to the ESC Secretariat which than may forward this information to National delegates of ESC.

5. 19th ESC-General Assembly, 1984

A formal invitation has been received from the USSR Academy of Sciences to host the 1984 General Assembly of ESC in Baku, 1-6 October 1984. In Leeds 1982 voting on this matter will take place.

6. IUGG General Assembly 1983

It is decided that in the IUGG General Assembly in Hamburg, 15-27 August 1983 the ESC will organize poster sessions on European seismicity, seismic risk and lithosphere structures.

IASPEI RESOLUTIONS ADOPTED AT PLENARY SESSION, LONDON, CANADA, 30 JULY 1981

1. EUROPEAN-MEDITERRANEAN SEISMOLOGICAL CENTRE

IASPEI,

Recognizing the valuable services rendered over the past five years by the EUROPEAN - MEDITERRANEAN SEISMOLOGICAL CENTRE (EMSC) in Strasbourg to the scientific community and the general public in the form of a rapid epicentre determination of strong earthquakes, the regular dissemination of epicentral data, the cataloging of earthquakes and the transmission of European earthquake data to seismological world data centres,

Noting that the demand for such services, in particular the rapid information for civil protection authorities and news media, will increase in importance during the years to come,

Being aware of the imminent danger that these services will have to be terminated at the end of 1981 due to financial difficulties,

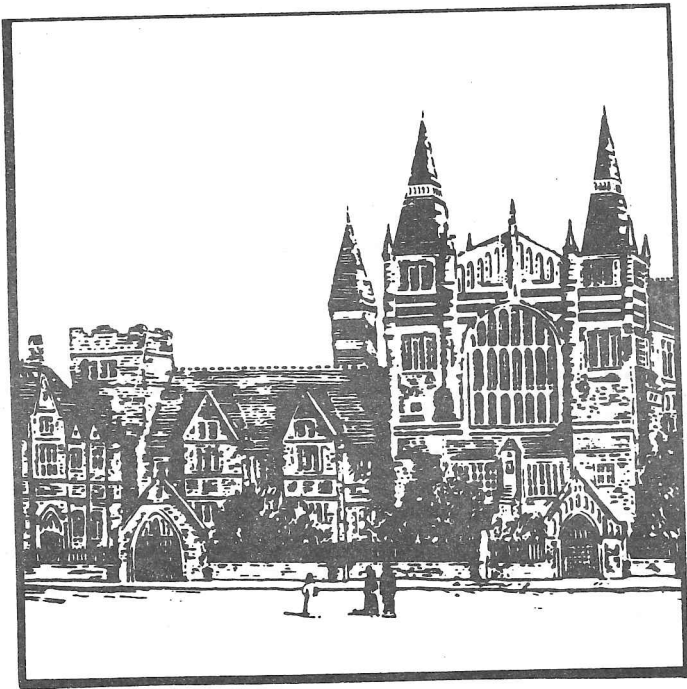
Urges all national and international organizations concerned to provide the necessary support for assuring the continuation of the EMSC services beyond 1981.



3.

EUROPEAN SEISMOLOGICAL COMMISSION

THE 18TH GENERAL ASSEMBLY



LEEDS

22-23 AUGUST 1982

3.1. GENERAL INFORMATION

The ESC will hold its 18th General Assembly in Leeds, England, in the period from 23-28 August 1982 in conjunction with the 9th Annual Meeting of the EGS. The organization of both meetings is in the hands of a Local Organizing Committee under the chairmanship of Professor J.C. Briden.

The scientific program for the ESC has been prepared by its Bureau according to the decision of the Budapest General Assembly (see par. 1.1.7.) and of the Executive Committee Meeting in London, Ontario (see par. 2.7).

An outline of the scientific program is given below. It contains two joint ESC/EGS Symposia:

- S1: Seismotectonics, convener: C. Eva, Instituto Geofisico e Geodetico, Universita di Genova, Via Balbi 30, CP 3145, Genova, Italy and M. Pavoni, Zürich, Switzerland.
- S4: Heterogeneity of the Mantle, conveners: D.C. Tozer, School of Physics, The University, Newcastle upon Tyne, NE1 7RV, England and T.J. Ahrens, Pasadena, USA.

and further two ESC Symposia on topics connected with the two new Sub-Commission:

- S2: Earthquake Prediction Research, convener: H. Berckhemer, Institut für Geophysik, Inst. f. Meteorologie und Geophysik, 6 Frankfurt am Main, Filburgstrasse 47, FRG.
- S3: Engineering Seismology, convener: A. Lopez-Arroyo, Instituto Geografico, Cal. Ibanez de Ibero 3, Madrid 3, Spain.

In addition to these symposia, there will be also meetings of

- a. Sub-Commissions: SC1 - Seismicity - V. Karnik
SC2 - Data Acquisition - P.L. Willmore
SC3 - Physics of Earthq. Sources - Udias
SC4 - Microseism and Seismic Noise - E. Hjørtenberg
SC5 - Theory and Interpretation - H. Stiller
SC6 - Deep Seismic Soundings - C. Morelli
SC7 - Earthquake Prediction Research - H. Berckhemer
SC8 - Engineering Seismology - A. Lopez-Arroyo
- b. The EMSC Council - St. Mueller, and
- c. The ESC Bureau and Executive Committee.

3.2. PROVISIONAL TIME SCHEDULE

The time schedule for the Sessions, shown on the following page, is preliminary. Definite is, that title and abstract of proposed communications are to be sent before May 15, 1982 to Secretary General J.M. van Gils, Observatoire Royal, Avenue Circulaire 3, 1180 Bruxelles, Belgium, and to the respective Symposium convener or Sub-Commission President.

The final Program will be fixed in a session of the joint ESC/EGS Program Committee for the Leeds meeting in June 1982.

It is important that activity reports of the individual Sub-Commissions should be available in Leeds. The following time schedule is proposed for the sending in of materials for this report:

- June 15, activity reports of Working-Groups should reach Sub-Commission Presidents.
- July 15, activity reports of Sub-Commissions should reach ESC-President and Secretary-General.
- On the basis of these reports it will be possible to give ESC members at the Opening Plenary a review of the "state of the art" in each Sub-group.

3.3. PROPOSALS FOR THE AGENDA

In the Bureau and Executive Meetings future developments in ESC will be put on the Agenda. Topics for discussion will be amongst others:

1. the composition of ESC;
2. the type of meetings to be organized;
3. activities between General Assemblies;
4. external relations with other groups (see note below).

Each ESC member is invited to think about these and other points that may be of interest for the development of European Seismology, so that in Leeds some proposals can be formulated for an optimally functioning of ESC.

Note on External Relations

In the past two years many international organizations in the European

LEEDS 1982

PROVISIONAL TIME SCHEDULE

date	a.m.	p.m.
AUGUST		
Sun 22		15h ESC Bureau + Executive
Mon 23	11h Opening Session	S1 Seismotectonics SC2 Data Acquisition
Tue 24	S1 Seismotectonics SC5 Theory & Interpretation	S2 Earthquake Prediction SC4 Microseisms
Wed 25	S2 Earthquake Prediction SC6 Deep Seismic Sounding	S2 Earthquake Prediction SC6 Deep Seismic Sounding
Thu 26	S3 Engineering Seismology SC3 Physics Earthq. Sources	S3 Engineering Seismology SC7 Earthquake Prediction
Fri 27	S4 Heterogen. Earth Mantle SC1 Seismicity	S4 Heterogen. Earth Mantle SC1 Seismicity
Sat 28	S4 Heterogen. Earth Mantle SC8 Earthquake Engineering	14h Closing Plenary

Deadlines for Abstracts : 1982, May 15
 Activity Reports WG : 1982, June 15
 Progress Reports SC : 1982, July 15

Principally there are no more than 2 parallel sessions at a time.

Note: Changes are possible in the date and time of SC Meetings and of the length of the sessions. Evening sessions are not excluded.

area have shown an active interest in European seismology. The ESC has not always been asked to participate in or to contribute to such activities. It poses a principal question upon the ESC, namely whether the ESC should take the initiative to try to co-ordinate these activities or at least to be represented in them.

The list of interested parties comprises amongst others:

- a. Union groups, such as the IUGG, IASPEI, IAEE, ICL (Inter-Union Commission on the Lithosphere), ICMG (Inter-Union Commission Mathematical Geophysics), CSTG (International Co-ordination Group of Space Techniques for Geodesy and Geophysics, subgroup of the IAG), IUGS.
- b. United Nations Organizations, such as UNESCO, UNDRO, UNCD (Commission on Disarmament), UNDP.
- c. International groups, such as the OECD (Organization for Economic Co-operation and Development), CCMS (Commission on the Challenges of Modern Society), WMO/GTS (Global Telecommunication System of WMO), NASA.
- d. European Associations or groups, such as the EAEE, EGS, EUG (European Union of Geosciences), ESA (European Space Agency), KAPG, the Council of Europe with its Ad hoc Committee of Experts on Earthquake Prediction Research and the European Relief Plan for Natural Disasters, the Commission of the European Communities, CSCE (Conference on Security and Co-operation in Europe).
- e. Nationally based European activities, such as the ICTP (International Centre Theoretical Physics, Trieste), Centro Geomorfologia Integrata.
- f. Bilateral and regional working groups in the field of seismology.

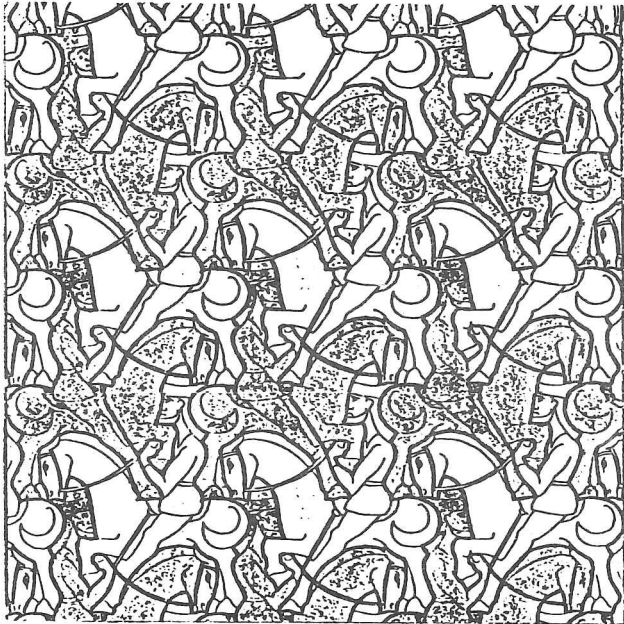
One of the tasks for the future is to clarify the relations of these organizations with the ESC and to use the contacts to the benefit of all parties. As a first step - to be decided in the Leeds General Assembly - ESC members participating in these non-ESC activities could be appointed as reporters for the ESC, with the task to keep ESC informed about such activities. ESC than in future may contribute better to the program of these groups than was the case up till now. The reporters also could make these groups aware of the activities of ESC and its Sub-Commissions.



4.

EUROPEAN SEISMOLOGICAL COMMISSION

COMPOSITION OF THE ESC



M.C. Escher, 1946

4.1. TITULAR MEMBERS

<u>COUNTRY</u>	<u>NAME</u>
Albania	E. Sulstarova
Algeria	
Austria	J. Drimmel
Belgium	J.M. van Gils
Bulgaria	L. Christoskov
Czechoslovakia	A. Zatopek
Denmark	J. Hjelme
Egypt	M. Maamoun
Finland	H. Korhonen
France	E. Peterschmitt
Fed. Rep. of Germany	P. Giese
German Dem. Rep.	H. Stiller
Greece	A. Galanopoulos
Hungary	E. Bisztricsany
Iceland	R. Stefansson
Ireland	A.W.B. Jacob
Israel	F. Abramovici
Italy	C. Morelli
Libanon	J. Plassard
Luxemburg	J. Flick
Lybie	
Marocco	D. Ben Sari
Monaco	N. Bethoux
Netherlands	A.R. Ritsema
Norway	H. Bungum
Poland	R. Teisseyre
Portugal	L. Mendez Victor
Romania	L. Constantinescu
Spain	A. Lopez-Arroyo
Sweden	O. Dahlman
Switzerland	S. Mueller
Tunesia	M. Allouche
Turkey	A. Necioglu
United Kingdom	P.L. Willmore
U.S.S.R.	N.V. Kondorskaya
Yugoslavia	D. Skoko

4.2. BUREAU

President : A.R. Ritsema (Netherlands)
Vice-Presidents : N.V. Kondorskaya (USSR)
 E. Bisztricsany (Hungary)
General-Secretary : J.M. van Gils (Belgium)
Secretary : L. Waniek (Czechoslovakia)

4.3. SUB-COMMISSIONS AND WORKING-GROUPS

SC1. Seismicity (Séismicité)

V. Karnik (Czechoslovakia), B. Papazachos (Greece)

- WG Statistical Methods (Méthodes Statistiques),
G.F. Panza (Italy).
- WG Instrumental classification of earthquakes (Classification
instrumentale des séismes),
L. Christoskov (Bulgaria).
- WG Maximum Intensity Maps (Cartes d'intensité maximum),
C. Radu (Romania).
- WG Global tectonics (Tectonique globale),
B. Papazachos (Greece).
- WG Carpathian-Balkan Region (Région Carpathes-Balcans),
L. Christoskov (Bulgaria).
- WG East Mediterranean Region (Région Méditerranée de l'Est),
J. Plassard (Lebanon).
- WG Ibero-Maghreb Region (Région Ibéro-Maghreb),
L. Mendes-Victor (Portugal).

SC2. Data Acquisition (Acquisition des données)

P.L. Willmore (U.K.), J. Hjelme (Denmark)

- WG Field instruments (Instruments de campagne),
P.L. Willmore (U.K.).
- WG Broad-band instruments (Instruments à large bande passante),
C. Teupser (GDR).
- WG Standardization and Normalization (Standardisation et normalisation),
N.V. Kondorskaya (USSR).
- WG Data Collection and Processing (Collection et traitement des
données),
H. Aichele (FRG).

SC3. Physics of Earthquake Sources (Physique des sources séismiques)

A. Udias (Spain), B.V. Kostrov (USSR)

- SC4. Microseisms and Seismic Noise (Micros ismes et Bruit de fond s ismique)
E. Hj rtenberg (Denmark), T.N. Tabulevich (USSR).
- WG Meteorological Microseisms (Micros ismes m t orologiques), V.N. Tabulevich (USSR).
 - WG Seismic Noise (Bruit de fond s ismique), E. Hj rtenberg (Denmark).
- SC5. Theory and Interpretation (Th orie et Interpr tation)
H. Stiller (GDR), J. Behrens (FRG), S. Franck (GDR)
- WG Theory of seismic Wave Propagation (Th orie des Ondes S ismiques), V. Cerven y (Czechoslovakia).
 - WG Seismic Modelling (Mod les r duits), L. Waniek (Czechoslovakia).
 - WG Physics of high Pressures (Physique des hautes Pressions), H. Vollstaedt (GDR).
 - WG Complex Interpretation (Interpr tation complexe), L. Stegena (Hungary).
 - WG Seismotectonic Processes (Processus s ismotectonique), N.N.
- SC6. Deep Seismic Sounding (Sondages S ismiques Profonds)
C. Morelli (Italy), A. Guterch (Poland)
- WG Synthesis (Synth se), V.B. Sollegub (USSR), C. Prodehl (FRG).
 - WG Region North Europe (R gion Europe Nord), M. Sellevoll (Norway), C.E. Lund (Sweden).
 - WG Region Southwest Europe (R gion Europe Sud-Ouest), P. Giese (FRG), A. Hirn (France).
 - WG Region East Europe (R gion Europe Est), D. Prosen (Yugoslavia), K. Posgay (Hungary).
- SC7. Earthquake Prediction Research (Recherches sur la Pr diction des S ismes)
H. Berckhemer (FRG), N.V. Nikolaev (USSR), A.H. Isikara (Turkey)
- Regional representatives (Responsibles r gionaux):
C. Radu (Romania), Drumia & I.L. Nersessov (USSR), L. Mendes-Victor (Portugal), R. Meissner & A. Vogel (FRG), St. Mueller (Switzerland), J. Mezcua (Spain), G. Papazachos (Greece), E. Hurtig (GDR), E. Sulstarova (Albania).
- SC8. Engineering Seismology (Ing nierie s ismologique)
A. Lopez-Arroyo (Spain), V. Schenk (Czechoslovakia), D. Mayer-Rosa (Switzerland)
- WG Macroseismic Scales (Echelles macros ismiques), N. Shebalin (USSR).

- WG Near Field Seismology (Séismologie Champ Proche)
N. Ambraseys (U.K.), G. Schneider (FRG).
- WG Microzoning (Microzonage),
N.N.
- WG Seismic Risk and Design Criteria (Risque séismique et Critères conceptuels),
P. Burton (U.K.), D. Mayer-Rosa (Switzerland), A. Lopez-Arroyo (Spain).

4.4. EMSC

European Mediterranean Seismological Centre
(Centre Séismologique Européo-Méditerranéen)
Director : E. Peterschmitt (France)

EMSC Council (Conseil du EMSC)

President : St. Mueller (Switzerland)

Members : H. Aichele (FRG), L. Christoskov (Bulgaria),
G. Gibowicz (Poland), V. Karnik (Czechoslovakia),
N.V. Kondorskaya (USSR)

4.5. EXECUTIVE COMMITTEE

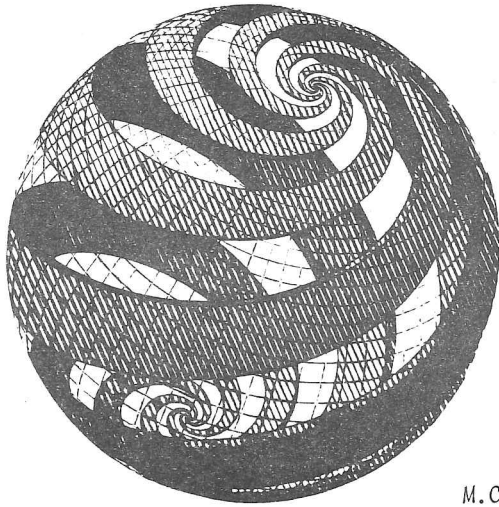
H. Berckhemer	:	President SC Earthquake Prediction Research
E. Bisztricsany	:	Vice-President of the ESC
E. Hjørtenberg	:	President SC Microseisms and Seismic Noise
V. Karnik	:	President SC Seismicity
N.V. Kondorskaya	:	Vice-President of the ESC
A. Lopez-Arroyo	:	President SC Engineering Seismology
C. Morelli	:	President SC Deep Seismic Sounding
E. Peterschmitt	:	Director of the EMSC
A.R. Ritsema	:	President of the ESC
A. Udias	:	President SC Physics of Earthquake Sources
H. Stiller	:	President SC Theory and Interpretation
J.M. van Gils	:	General-Secretary of the ESC
L. Waniek	:	Secretary of the ESC
P.L. Willmore	:	President SC Data Acquisition



5.

EUROPEAN SEISMOLOGICAL COMMISSION

STATUTES OF THE ESC AND EMSC



M.C. Escher, 1958

COMMISSION SEISMOLOGIQUE EUROPEENNE

Règlement Intérieur
adopté à l'Assemblée Générale de Cracovie
le 28 Septembre 1976

I. Objet de la Commission

La Commission Sismologique Européenne - C.S.E. - fait partie de l'Association Internationale de Sismologie et de Physique de l'Intérieur de la Terre. Les décisions, tant administratives que scientifiques, prises par la Commission, ne pourraient s'opposer aux décisions de l'Association.

La Commission Sismologique Européenne se fixe comme but de favoriser par tous les moyens possibles les études sismologiques relatives aux régions limitées :

- à l'Ouest : par la Crête médiane de l'Atlantique au Nord du 30^e parallèle,
- au Nord : par l'Océan Arctique,
- à l'Est : par l'Oural et les pays côtiers Mer Caspienne, de la Mer Noire et de la Méditerranée (inclus),
- au Sud : par les pays côtiers de la Méditerranée (inclus).

II. Constitution

La Commission est constituée par des membres titulaires et de membres associés.

1) Membres titulaires

Les membres titulaires sont élus par l'Assemblée Générale à raison d'un membre pour chacun des pays compris dans les limites définies au chapitre 1. Chaque comité national sera invité à présenter des candidatures au préalable. Le pays ainsi représenté officiellement doit faire partie de l'Union Géodésique et Géophysique Internationale.

Les membres titulaires sont personnellement responsables :

- a) des votes pour leur pays
- b) des rapports nationaux qui peuvent leur être demandés par la C.S.E.

Un membre qui n'aura pas assisté, ou ne se sera pas fait remplacer à 2 assemblées générales consécutives, ou qui n'aura pas fourni ou fait fournir les rapports demandés - sans raisons valables -, pourra être déclaré démissionnaire d'office par l'Assemblée Générale, et un remplaçant pourra être élu en dehors des propositions faites par les Comités Nationaux.

2) Membres associés

Toute personne s'intéressant aux progrès de la sismologie européenne, recommandée par le Comité National ou invitée par le Bureau, peut devenir, sur sa demande, membre associé.

III. Les Sous-Commissions.

Les Sous-Commissions créées à l'intérieur de la Commission Sismologique Européenne pour la résolution de problèmes scientifiques particuliers peuvent être composées indifféremment de membres titulaires et de membres associés. Par contre, les Sous-Commissions devant résoudre les problèmes administratifs seront composées uniquement de membres titulaires auxquels peuvent être adjoints des membres du Bureau de l'Association Internationale de Sismologie et de Physique de l'Intérieur de la Terre.

Les Sous-Commissions sont créées sur proposition d'au moins 3 membres de la Commission par décision d'une Assemblée Générale. Elles sont administrées suivant un règlement intérieur particulier annexé au présent texte.

IV. Les Groupes de travail

Les Groupes de Travail sont normalement insérés dans une Sous-Commission dont ils suivront le règlement intérieur ; ils ne devraient normalement pas comprendre plus de 5 membres.

Dans certains cas exceptionnels, un Groupe de Travail pourra être indépendant sans pour cela être doté des avantages offerts à une sous-commission.

V. Le Centre Sismologique Europeo-Méditerranéen.

Le Centre Sismologique Europeo-Méditerranéen, créé à Strasbourg à partir du 1er janvier 1976, est placé sous la responsabilité de la C.S.E. Il a la charge d'effectuer les tâches d'intérêt commun dans le domaine géographique de la C.S.E., en particulier : détermination des épicentres, traitement de données. Il est doté d'un statut annexé au présent règlement.

VI. Période administrative

La période administrative est l'intervalle de temps séparant deux Assemblées Générales consécutives. En règle générale, cet intervalle de temps comprend 2 années.

Les membres titulaires sont élus pour deux périodes administratives. Ils sont rééligibles. En cas d'absence à une Assemblée Générale, chaque membre titulaire est tenu de déléguer ses pouvoirs à un compatriote assistant à l'Assemblée Générale ou à défaut à un membre du Bureau. Cette délégation devra être notifiée par écrit au Bureau.

VII. Bureau

La Commission est administrée par le Bureau composé :

du Président
du Président sortant
de deux Vice-Présidents
du Secrétaire général
du Secrétaire adjoint

Le Président sortant est membre de droit du Bureau pendant une période administrative.

Le Bureau est renouvelé à chaque Assemblée Générale. Dans le cas de deux Assemblées Générales rapprochées, il pourra être décidé de supprimer une élection. Cette décision ne peut intervenir qu'une fois. Le Président est rééligible immédiatement une fois seulement ; les Vice-Présidents normalement deux fois seulement. Le Secrétaire Général et le Secrétaire Adjoint sont rééligibles sans restrictions.

Deux membres du Bureau, quelles que soient leurs fonctions dans le Bureau, peuvent être des membres associés ; les autres sont obligatoirement des membres titulaires.

Un même pays ne peut être représenté qu'une seule fois dans le Bureau. En cas d'égalité des voix, celle du Président est prépondérante.

VIII. Officiers de la Commission - Comité Exécutif.

Les membres du Bureau, les présidents des Sous-Commissions, le Directeur du CSEM sont les officiers de la Commission dont la réunion constitue le Comité Exécutif.

Le Comité Exécutif se réunit à l'occasion de chaque Assemblée Générale de la CSE au moins une fois. Il assiste le Bureau dans la préparation et la coordination des assemblées générales. Il désigne les représentants de la C.S.E. au Conseil du CSEM. Il intervient en outre pour toute question importante soit à l'initiative du Président, du tiers des membres du Bureau ou du tiers de ses membres.

Dans l'intervalle de deux assemblées générales il pourra être consulté soit à l'initiative du Président, du tiers des membres du Bureau ou du tiers de ses membres, soit par écrit, soit au cours d'une réunion exceptionnelle. Ses décisions auront force de loi jusqu'à la prochaine assemblée générale.

IX. Assemblée Générale

L'Assemblée Générale est l'organe souverain de la Commission sauf restrictions stipulées au paragraphe X. Elle est composée de l'ensemble des membres titulaires et associés régulièrement inscrits. Les convocations en vue d'une Assemblée Générale ordinaire sont envoyées à l'ensemble des membres titulaires et des membres associés au moins trois mois avant la date choisie par l'Assemblée Générale pré-

cédente. Si aucune décision dans ce sens n'a été prise par celle-ci, le choix de la date et du lieu est laissé au Bureau. Le Bureau, à la demande d'un tiers des membres titulaires, doit convoquer une Assemblée Générale extraordinaire.

X. Election

1) Pour l'élection du Bureau et pour toute question administrative, le corps électoral est composé des membres titulaires et des officiers de la Commission. Un même pays ne pourra cumuler plus de 3 voix. Une même personne ne pourra cumuler des voix en raison de ses diverses fonctions. Le cumul des voix par délégation d'un membre absent est autorisé.

Les élections seront, en principe, effectuées de façon successive en commençant par celle du Président, ensuite des deux Vice-Présidents et en terminant par les Secrétaires. En cas d'unanimité, des élections groupées peuvent avoir lieu.

Il pourra au préalable être constitué un Comité de Nomination de 4 membres au maximum, composé pour moitié au moins de membres titulaires, pour transmettre des propositions pour le nouveau Bureau. Ce Comité n'a qu'un rôle consultatif. Ses membres sont inéligibles pour le Bureau.

2) Pour les questions scientifiques, composition des bureaux des Sous-Commissions, ainsi que pour le choix du lieu et de la date de la prochaine Assemblée Générale, le corps électoral est constitué par l'ensemble des membres titulaires et des membres associés composant l'Assemblée Générale.

3) Les votes ont lieu au bulletin secret à la majorité simple.

En cas d'unanimité préalable, il pourra être procédé au vote à mains levées.

XI. Modification du Règlement intérieur

Le présent règlement intérieur prendra effet à la première Assemblée Générale suivant celle de son adoption. Il est valable pour une durée de 8 années. Une modification doit être approuvée par deux tiers des membres. Au delà de cette durée, un nouveau règlement intérieur pourra être adopté à la majorité simple.

XII. Interprétation du Règlement

Le texte français servira à l'interprétation à donner au règlement.

Règlement Intérieur des Sous-Commissions
adopté à l'Assemblée Générale de Cracovie
le 28 septembre 1976

- I. Les membres des S.C. sont élus par l'Assemblée Générale de la C.S.E. pour 2 périodes administratives et sont rééligibles.
- II. La composition d'une S.C. peut être modifiée avant l'expiration de son mandat.
- a) soit en cas de force majeure (décès, démission)
 - b) soit sur proposition motivée du Président de la S.C. celui-ci diffusera ses propositions 3 mois avant la prochaine Assemblée Générale de la C.S.E. à tous les membres de la S.C. ainsi qu'au Bureau de la C.S.E.
 - c) sur proposition des 2/3 des membres de la S.C. à l'occasion d'une Assemblée Générale de la C.S.E.
- III. Les S.C. proposeront à chaque renouvellement leur bureau qui comprendra obligatoirement un Président, rééligible normalement deux fois seulement, un Vice-Président et un Secrétaire. Ces propositions devront être soumises à l'assemblée générale pour ratification.
- En cas d'empêchement le président est automatiquement remplacé par le Vice-Président ou à défaut par le Secrétaire.
- IV. La dissolution d'une S.C. pourra être prononcée par la C.S.E. dans les cas suivants :
- a) sur proposition motivée du président de la S.C., proposition notifiée 3 mois avant l'Assemblée Générale de la C.S.E. aux membres de la S.C. et au bureau de la C.S.E.
 - b) sur proposition de 2/3 des membres de la S.C. à l'occasion d'une Assemblée Générale de la C.S.E.
 - c) si la S.C. n'a eu aucune activité pendant les 2 périodes administratives écoulées, la dissolution a lieu d'office.
- V. Devant chaque Assemblée Générale de la C.S.E. le Président ou le Secrétaire de chaque S.C.
- 1) donnera le résultat des élections éventuelles
 - 2) présentera un rapport d'activité faisant ressortir en particulier les suites données aux résolutions adoptées à l'Assemblée Générale précédente,
 - 3) rendra compte des décisions prises,
 - 4) proposera le texte des résolutions qui doivent être adoptées par l'Assemblée Générale.
- VI. Le même règlement est applicable aux groupes de travail, sauf restriction figurant à l'article IV du règlement général.

EUROPEAN SEISMOLOGICAL COMMISSION

Internal Regulation
adopted at the General Assembly at Cracow
September 28th, 1976

I. Purpose of the Commission

The European Seismological Commission (E.S.C.) shall be part of the International Association for Seismology and the Physics of the Interior of Earth. Decisions, administrative as well as scientific taken by the Commission must not be in opposition to the decisions of the Association.

The European Seismological Commission aims to encourage by all possible means seismological studies relative to the area delineated :

- in the West : by the mid-Atlantic Ridge north of latitude 30°N,
- in the North : by the Arctic Ocean,
- in the East : by the Ural Mountains and countries near the coasts of the Caspian Sea, the Black Sea and the Mediterranean Sea (inclusive),
- in the South : by the countries on the coasts of the Mediterranean Sea (inclusive).

II. Constitution

The Commission shall consist of titular members and associate members.

1) Titular Members

Titular members shall be elected by the General Assembly, being one member for each country within the limits defined in Section I. Each National Committee will initially be invited to submit names of candidates. The country thus officially represented must form part of the International Union of Geodesy and Geophysics.

Titular members will be responsible personally for :

- a) the votes of behalf of their country
- b) any national reports for which they may be requested by the C.S.E.

A titular member who does not attend or who is not represented at two consecutive general assemblies, or who does not furnish or cause to be furnished the requested reports - without valuable reasons - may be declared out of office by the general assembly, and a replacement may be elected irrespective of proposals made by National Committees.

2) Associate Members

Anyone interested in the progress of European Seismology, recommended by the National Committee or invited by the Bureau may become on his or her request an associate member.

III. The Sub Commissions

Sub-Commissions formed inside the European Seismological Commission for the resolution of particular scientific problems may be composed indifferently of titular and associate members. On the other hand sub-commissions required to resolve administrative problems shall be made up entirely of titular members, to which may be added members of the Bureau of the International Association for Seismology and the Physics of the Interior of the Earth.

Sub-Commissions shall be formed on the proposition of at least 3 members of the Commission by the decision of a general assembly. They shall be administered by a special interior regulation appended to the present text.

IV. Working Groups

Working groups normally shall form parts of a sub-commission whose internal regulations they will follow ; they normally should not include of more than 5 members.

In certain exceptional cases, a working group may be independent without thereby having of the advantages offered to a sub-commission.

V. The European-Mediterranean Seismological Centre

The European-Mediterranean Seismological Centre, created at Strasbourg and effective from January 1st 1976, is placed under the responsibility of the E.S.C. Its charge is to perform the tasks which are of common interest in the geographical area of the E.S.C., in particular : epicenter determinations, data handling and processing. Its statutes are annexed to the present by-laws.

VI. Administrative Period

The Administrative Period shall be the interval of time between two consecutive General Assemblies. As a general rule, the time interval between general assemblies shall be two years.

Titular members shall be elected for two administrative periods. They are eligible for re-election. In the case of absence from a general assembly, each titular member should delegate his duties to a compatriot present at the general assembly ; or, in default, to a member of the Bureau.

VII. Bureau

The Commission shall be administered by the Bureau consisting of :

a President
the immediate Past-President
two Vice Presidents
a General Secretary
an assistant Secretary

The immediate Past-president shall be a member by right of the Bureau for one administrative period.

The bureau shall be renewed at each General Assembly. In the case of two General Assemblies near together, it may be decided to suppress an election. This decision shall only happen once. The President is eligible for re-election immediately, once only ; the Vice-Presidents twice only. The Secretary General and the assistant Secretary are eligible for re-election without restriction.

Two members of the Bureau, whatever their function in the Bureau, may be associate members ; the others must be titular members.

A country cannot be represented by more than one person in the Bureau. In the case of equal voting, the President shall give a casting vote.

VIII. Officers of the Commission - Executive Committee

The members of the Bureau, the presidents of Subcommissions, the Director of the EMSC are the officers of the Commission, a meeting of which shall constitute the Executive Committee.

The Executive Committee meets at the occasion of each General Assembly of the ESC, once at least. Its role is to assist the Bureau in the preparation and the coordination of the General Assemblies. It designates the representatives of E.S.C. at the Council of E.M.S.C. Besides it intervenes in any important question at the initiative either of the President, of one third of the members of the Bureau at least or of one third of its members.

Between two General Assemblies, it may be consulted at the instance either of the President, of one third of the Bureau members or of one third of its members, either by letter or during an extraordinary meeting. Its decisions have force of law till the next General Assembly.

IX. General Assembly

The General Assembly is the ruling body of the Commission except special restriction stipulated at § X. It is made up of the whole of the titular members and the regularly enrolled associate members. The letters of convocation for an ordinary General Assembly shall be sent to all the titular and associated members at least 3 months before the date chosen by the preceding assembly. If such a

decision has not been taken by the latter choice of a date and place shall be left to the Bureau. The Bureau, at the request of a third of the titular members, shall call an extraordinary General Assembly.

X. Election

1) For the election of the Bureau and for all questions of administration, the electoral body shall be made up of the titular members and the officers of the Commission. One country cannot have more than 3 votes. One person cannot have more than one vote by reason of his different offices. The adding of votes by delegation of an absent member shall be authorised.

Elections, in principle, shall be carried out in a successive manner, beginning with that of President, then two Vice-Presidents and finishing with the Secretaries. In the case of unanimity, group elections may take place.

It may be possible as a preliminary to form a Nomination Committee of not more than 4 members including at least half of titular members in order to suggest proposals for the new Bureau. This committee shall only have a consulting role. Members of the committee are ineligible for the Bureau.

2) For scientific questions, the composition of bureaux of sub-commissions, as well as for the choice of place and date of the next general assembly, the electoral body shall be made up of all titular members and associate members composing the general assembly.

3) Voting shall be by secret ballot and by simple majority. In the case of foreseen unanimity it may proceed by show of hands.

XI. Modification of Interior rules

These internal rules shall be effective at the first General Assembly following the one of their adoption. They shall be in force for a period of 8 years. Any modification must be approved by two thirds of the members. At the end of this period a new set of internal regulations may be adopted by a simple majority.

XII. Interpretation of rules

The French text shall serve for the interpretation to be given to the rules.

Internal Rules for the Sub-Commissions
approved at the General Assembly at Cracow
September 28th, 1976.

- I. The members of the Sub-Commissions shall be elected by the General Assembly of the E.S.C. for 2 administrative periods and are eligible for re-election.
- II. The composition of a Sub-commission may be modified before the expiration of its term of office :
- a) by "force majeure" (decease or dismissal)
 - b) on the proposition of the president of the E.S.C. The latter shall circulate his proposals 3 months before the next general assembly of the E.S.C. to all members of the S.C. and also to the Bureau of the E.S.C.
 - c) on the proposition of 2/3 of the members of the S.C. on the occasion of a general assembly of the E.S.C.
- III. The S.C. shall propose, at each renewal, its Bureau consisting obligatory of a President, normally able for reelection twice only, a vice-president and a secretary. These proposals have to be passed before the General Assembly for confirmation.
- In case of impediment, the president is automatically replaced by the vice-president or, if needed, by the secretary.
- IV. The dissolution of a S.C. may be pronounced by the E.S.C. in the following cases :
- a) On the justified proposition of the president of the S.C., the proposition notified 3 months before the general assembly of the E.S.C. to the members of the S.C. and to the Bureau of the E.S.C.
 - b) On the proposition of 2/3 of the members of the S.C. on the occasion of a general assembly of the E.S.C.
 - c) If the S.C. has not been active during the past 2 administrative periods, the dissolution shall take place automatically.
- V. Before each general assembly of the E.S.C. the president or the secretary of each S.C.
- 1) shall give the results of the contingency elections
 - 2) present a report of activity, calling attention in particular to the consideration of the resolutions adopted at the preceding general assembly
 - 3) shall note any decisions taken
 - 4) shall propose the text of the resolutions which should be adopted by the general assembly.
- VI. The same rules shall apply to the working groups, except for restrictions stipulated in § IV of the General Internal Rules.

STATUTS DU CENTRE SEISMOLOGIQUE EUROPEO-MEDITERRANEEN - CSEM -

adoptés par l'Assemblée Générale à Cracovie
le 28 septembre 1976

Vu la résolution adoptée à Grenoble le 1er septembre 1975 par la Commission Sismologique Européenne - C.S.E.,

Vu la résolution adoptée à Grenoble le 4 septembre 1975 par l'Association Internationale de Sismologie et de Physique de l'Intérieur de la Terre, au sujet de la cessation des activités du Bureau International de Sismologie de Strasbourg - B.C.I.S. - au 31 décembre 1975,

il est créé, sous la responsabilité de la Commission Sismologique Européenne, à partir du 1er janvier 1976 à Strasbourg, le

CENTRE SEISMOLOGIQUE EUROPEO-MEDITERRANEEN - C.S.E.M. -

OBJECTIFS DU CENTRE

- 1/ Mettre en place un système de détermination rapide des épicentres européens et méditerranéens (délai normal de quelques jours, le cas échéant de quelques heures), assurer son fonctionnement et diffuser immédiatement les résultats pour répondre aux besoins humains et scientifiques.
- 2/ Rassembler toutes données sismologiques nécessaires au fonctionnement du Centre sous une forme unifiée et directement accessible au calcul afin de faciliter leur traitement.
- 3/ Déterminer les épicentres des tremblements de terre du domaine européen-méditerranéen à partir d'un maximum de données et diffuser les résultats dans les délais les plus brefs.
- 4/ Assurer et intensifier l'échange des données avec les autres centres nationaux, régionaux et mondiaux.

DOMAINE GEOGRAPHIQUE DU CENTRE

Le domaine géographique est celui de la Commission Sismologique Européenne qui s'étend aux régions limitées de la façon suivante :

- à l'Ouest : par la Crête médiane de l'Atlantique au nord du 30ème parallèle ;
- au Nord : par l'Océan arctique ;
- à l'Est : par l'Oural et les pays côtiers de la mer Caspienne, de la mer Noire et de la Méditerranée (inclus) ;
- au Sud : par les pays côtiers de la Méditerranée (inclus)

STRUCTURE DU CENTRE

1/ Conseil du centre

L'activité du Centre est orientée et contrôlée par un Conseil constitué comme suit :

- le président de la C.S.E. ou son délégué, président ;
- 6 personnes désignées par le Comité Exécutif de la C.S.E. ;
- 1 personne désignée par le Comité français de Géodésie et de Géophysique C.N.F.G.G. ;
- 1 personne désignée par l'Institut National d'Astronomie et de Géophysique I.N.A.G.
- 1 spécialiste désigné conjointement par le C.N.F.G.G. et l'I.N.A.G.
- 1 personne désignée par le Ministère français des Affaires Etrangères
- le Président de l'Université Louis Pasteur ou son représentant ;
- le Directeur de l'I.P.G. de Strasbourg ;
- de représentants d'organisations ou d'institutions non mentionnées ci-dessus participant au fonctionnement du Centre pour une part supérieure à 7 % du budget annuel prévisionnel, chaque représentant n'ayant qu'une seule voix ;
- le Directeur du Centre avec voix consultative.

Le Conseil se réunit au moins une fois par an et obligatoirement à l'occasion des Assemblées générales de la C.S.E.

La durée du mandat des personnes désignées par la C.S.E. est de quatre ans. Elles sont renouvelées par moitié, lors des assemblées générales tous les deux ans. Les membres sortants sont rééligibles.

Les attributions du Conseil s'étendent aux domaines suivants :

- Veiller à ce que les objectifs du C.S.E.M. définis plus haut soient atteints ;
- Demander les moyens nécessaires au bon fonctionnement du Centre ;
- Approuver et contrôler le budget établi par le Directeur.

2/ Directeur du Centre

Le Centre est placé sous l'autorité d'un directeur nommé par le Conseil du Centre. Il assure la bonne marche du Centre et la mise en oeuvre des décisions du Conseil. Il rend compte de son activité devant le Conseil. Le Directeur est responsable de la gestion financière du Centre. Le Directeur établit au début de chaque année un rapport qui sera présenté à la C.S.E. et diffusé aux parties intéressées.

IMPLANTATION

Le Centre est implanté dans les locaux mis à sa disposition par l'Université Louis Pasteur avec l'accord de l'Institut de Physique du Globe. Cette mise à disposition peut être résiliée de part et d'autre par préavis de deux ans.

Cette durée peut être diminuée par accord entre le Conseil du CSEM et ceux de l'Université Louis Pasteur et de l'Institut de Physique du Globe.

RESSOURCES FINANCIERES DU CENTRE

Les ressources financières font l'objet d'un budget spécial du Centre. Elles peuvent provenir de subventions publiques, semi-publiques ou privées, nationales ou internationales : dons, legs, souscriptions ou tout autre apport financier. Le caractère non lucratif du Centre est conforme aux lois françaises concernant les associations sans but lucratif.

MOYENS EN PERSONNEL ET EN MATERIEL DU CENTRE

Le Centre disposera d'un personnel propre et de personnes mises à sa disposition par les organismes concernés par ses travaux. Ce personnel, pour son activité au Centre, sera placé sous l'autorité du Directeur du Centre.

CLAUSE DE REVISION DES STATUTS

Les présents statuts prennent effet à la date de leur approbation. Ils sont révisables lors des assemblées générales de la C.S.E. à la demande du Président, de 1/3 des membres du Conseil du C.S.E.M., de 1/3 des membres de la C.S.E. ou des organismes représentés.

Les modifications seront approuvées à la majorité simple des membres présents à l'assemblée générale de la C.S.E.

DISSOLUTION

Les présents statuts, sujets à révision, sont d'application aussi longtemps que le Centre sera en fonction en France.

En cas de dissolution ou de transfert du Centre, les biens seront affectés suivant les décisions du Conseil.

INTERPRETATION DES STATUTS

Le texte français servira à l'interprétation à donner aux statuts.

STATUTES OF THE EUROPEAN-MEDITERRANEAN SEISMOLOGICAL CENTRE - EMSC

adopted at the General Assembly at Cracow
September 28th, 1976.

In light of the resolution adopted by the General Assembly of the European Seismological Commission at Grenoble on September 1st, 1975,

In light of the resolution adopted by the International Association of Seismology and Physics of the Earths Interior at Grenoble on September 4th, 1975 concerning the discontinuance of the activities of the Bureau Central International de Séismologie of Strasbourg - BCIS -, effective December 31st, 1975, the

EUROPEAN - MEDITERRANEAN SEISMOLOGICAL CENTRE (EMSC)

is created at Strasbourg under the responsibility of the European Seismological Commission, effective from January 1st, 1976.

OBJECTIVES OF THE CENTRE

- 1/ To initiate a system of rapid determination of european and méditerranean epicentres (normally within a few days in certain cases within a few hours) to assure its operation and to diffuse the results in answer to humanitarian and scientific needs.
- 2/ To gather all seismological data, needed for the functioning of the Centre under a unified form and directly accessible for calculation in order to facilitate processing.
- 3/ To determine the epicentres of earthquakes occurring in the European-Mediterranean area from a maximum of data and to diffuse the results with a minimum of delay.
- 4/ To secure and increase the data exchange with other national, regional and world data centres.

GEOGRAPHICAL AREA OF THE CENTRE

The geographical area is the one of the E.S.C. which extends to the regions limited as follows :

- to the West : By the Mid-atlantic Rift, north of the 30th parallel ;
- to the North : by the Arctic Ocean ;
- to the East : by the Ural Mountains and the countries bordering the Caspian Sea, the Black Sea and the Mediterranean Sea (included) ;
- to the South : by the coastal countries of the Mediterranean Sea (included).

STRUCTURE OF THE EMSC

1/ EMSC Council.

The activity of the Centre is directed and controlled by a Council constituted as follows :

- The President of the ESC or his delegate, President ;
- 6 persons named by the ESC Executive Committee ;
- 1 person named by the Comité National Français de Géodésie et de Géophysique - C.N.F.G.G.
- 1 person named by the Institut National d'Astronomie et de Géophysique - INAG -
- 1 expert named jointly by the CNFGG and INAG ;
- 1 person named by the French Ministry of Foreign Affairs ;
- the President of the Université Louis Pasteur, Strasbourg - or his representative ;
- the Director of the Institut de Physique du Globe, Strasbourg - IPG - ;
- representatives of organizations or institutions, other than those mentioned above, sharing the operating costs of the Centre for parts greater than 7 % of the yearly provisional budget, each representative having one vote only ;
- The Director of the EMSC will normally attend, but will do so as consultant, without voting power.

The Council has at least once meeting a year, including an obligatory meeting during each general assembly of the ESC.

The nomination of half of the sitting ESC members is renewed during the general assembly /every two years/. Out-going members can also be re-elected.

The prerogatives of the Council are :

- to ensure that the objectives of the EMSC, as defined above, are best attained ;
- to approve and control the budget established by the Director ;
- to ask the necessary means for the proper functioning of the Centre.

2/ The EMSC Director

The Centre is placed under the authority of a director named by the Council. He is responsible for the proper acting of the Centre and of the execution of the decisions of the Council. He reports about his activity to the Council. The Director is responsible for the financial administration of the Centre. The Director shall prepare every calendar year a report to be presented to the ESC and distributed to the parties concerned.

ACCOMODATION

The Centre is situated in the premises put at its disposal by the Louis Pasteur University in agreement with the Institut de Physique du Globe. This disposal may be cancelled by any of the parties concerned with a notice of two years.

This duration may be shortened by agreement between EMSC-Council and the IPG Council.

RESOURCES OF THE CENTRE

The resources are from a special budget of the Centre. The funds may come from the public, semi-public or private, national or international grants or subsidies : gifts, legacies, suscriptions or any other financial support.

The non-profit character of the Centre is in accordance with french law.

PERSONAL AND MATERIAL OF THE CENTRE

The Centre shall have some staff members of its own, and other put at its disposal by the institutions which support its activities. Staff in both categories shall be placed under the authority of the Director of the Centre in respect of their activities in the Centre.

AMENDMENTS

The present statutes shall be put into effect from the moment of its approval. They shall be subject to amendment at the time of general assemblies of the ESC at the instance of the President, one third of the members of the council of the EMSC, one third of the members of the ESC or the institutions represented.

The amendments may be adopted by a simple majority of the members present at the general assembly of the E.S.C.

TERMINATION

The present statutes, subject to any amendments, will remain in force for as long as the Centre can discharge its functions on its present site.

In the event of termination or transfer of activity, the assets may be disposed of in accordance with the decisions of the Council

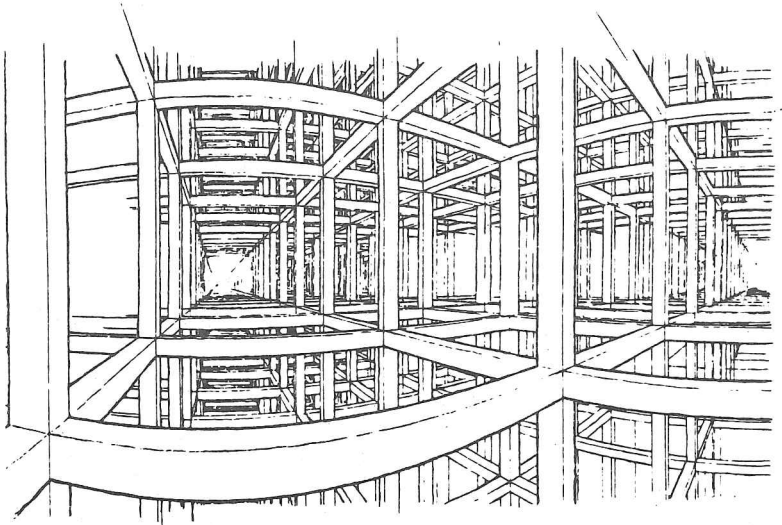
DISPUTES

In the event of any dispute, the French text will be operative, and the matter will be decided in accordance with the laws of France.

6.

EUROPEAN SEISMOLOGICAL COMMISSION

LIST OF ADDRESSES



M.C. Escher 1957

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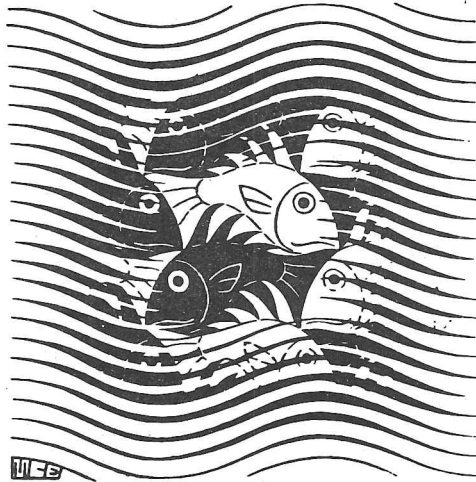
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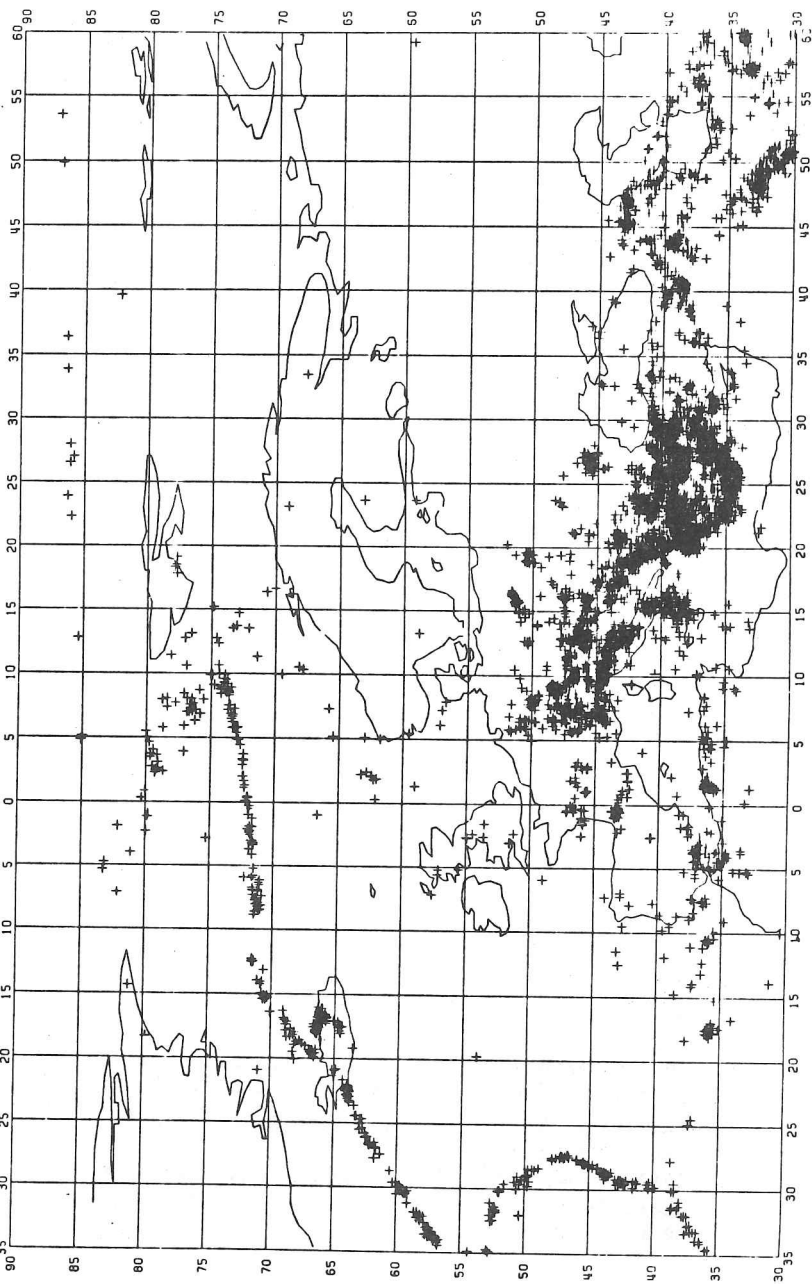
ACKNOWLEDGMENTS

From many sides support was received in the composition of this Activity-Report. The compilers gratefully acknowledge in particular:

- the written contributions from numerous ESC officers and members;
- the grant offered in the framework of the Cultural Treaty between Czechoslovakia and the Netherlands for a three-week stay of the first author at the KNMI, De Bilt;
- the support of the Royal Netherlands Meteorological Institute to ESC in hosting the drafting group and for the provisions made available for the publications of this report;
- the conscientious contributions of Mrs. J. van Bodegraven and Mr. J.J. Wittebol with respect to typing and printing.

LATITUDE : 30.000N - 90.000N MAGNITUDE: M5 ML M < 5.0
 LONGITUDE : 00.000W - 180.000W DEPTH: 0-600 KM
 PERIOD : 1970 01 01 - 1980 12 31
 REPAIRS : EXPLOSIONS EXCLUDED
 F-E
 TOTAL NUMBER OF EARTHQUAKES FOR THIS SELECTION : 6934

KNMI COMPUTER PRINTOUT OF THE
 NGSDC EARTHQUAKE-DATA FILE



NOTE

The illustrations on page 47, 61, 66, 83 and 88 are from the Netherlands artist M.C. Escher (1898-1972).

The epicenter maps at page 3 and 89 are printouts of the NGSDC Earthquake Data File for the period 1970-1981 for magnitude 5 and larger, and smaller than 5 respectively. Explosions, for so far obvious, have been excluded.

