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## FOREWORD

The year 2000 has been a demanding year for most of us. The major earthquakes in Turkey, Greece and Taiwan have accelerated the efforts to explore the reasons of the encountered damage as well as for the implementation of earthquake hazard mitigation measures. Different groups from different countries conducted detailed research investigations to have better understanding of the factors affecting observed damage, to evaluate local site conditions and source characteristics and the effect of these factors on the structural response. Major studies have been initiated to mitigate the earthquake risk for cities located in seismically active regions. Most of these efforts are still going on and significant measures are under way to mitigate earthquake risk. Some important initiatives have taken place to inform the public officials and the related professional bodies to acquire more effective means to prevent similar situations as witnessed during the 1999 earthquakes.

As the European Association for Earthquake Engineering, we strongly believe that the major problem is the awareness of the public and public officials of earthquake risk. The technical issues and earthquake engineering research are very important, however, the implementation of the preventive measures are much more difficult and much more crucial.

We are more aware of the need to increase the collaboration among our member societies and among earthquake engineers in Europe. We would like to advance our joint efforts and improve our cooperation to attain more effective means for investigating the effects of different factors, for determining and implementing earthquake risk mitigation measures.

Thus we believe time has come to assess the existing state of affairs within our association and implement the necessary modifications to increase the effectiveness and the impact of EAEE. European Association for Earthquake Engineering is the only organisation encompassing most of the earthquake engineering community in Europe and in the Mediterranean countries. These recent earthquakes have shown to everybody that the only way to survive during earthquakes is to design and build according to present state-of-the art in earthquake engineering. As EAEE, it is our duty and goal to advance the science of earthquake engineering as well as to increase the implementation of all preventative measures. This is our responsibility and contribution to our society and to human race. Therefore we have to find ways and means within our association to establish more efficient and responsive organisation to achieve our goals. Some radical changes appear necessary to increase the participation of interested individuals and parties. We have to modify our Statutes to be able to coop with these crucial issues and we need your support and suggestions.

Atilla M. Ansal

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## FROM THE PRESIDENT

The strong earthquakes that we face in Europe from time to time leave the surviving persons with the affliction of the loss of beloved members of their family and neighbours. But these persons also have to face the damage or the demolition of their house, which adds confusion to affliction.

In the future, the assessment of the residual strength of buildings after an earthquake and also the assessment of the seismic performance of existing structures before earthquake, and their reinforcement in both cases, will be a major subject of concern in the seismic areas. Here again, it will be of utmost importance to find inexpensive ways to improve the situation, mainly in poor countries; otherwise the goals will not be achieved in practical terms and/or in a reasonable time. Technical documents and standards dealing with this subject are now available, but work should continue to adapt the procedures to the actual social and economical possibilities.

To prepare the future, young researchers and engineers must be involved in this field. Therefore, the decision of our Swiss colleagues to focus the Regional Seminar they organise from the 3rd to the 7th of September on the subject of seismic assessment and reinforcement of structures is an excellent choice and we can trust that the young attendees will benefit as much as possible from the lectures and of the research reports which will be presented at that time.

Many members of our national associations are involved in the work of conversion of the EUROCODE #8 ENV into a European Norm (EN). This is a very important task, which will give to a great number of our European countries a common basis of safety against earthquakes. Major progress has been made during the last period; they have taken into account recent research and experimental results obtained in Europe and elsewhere. EUROCODE #8 is a very important issue, which I think will be a major topic of the next ECEE.

Our TGs and WGs face difficulties to meet and sometimes the work does not progress very much. Nevertheless, some of them have performed an efficient task and results will be presented in the London Conference. The Executive Committee of your European Association has already discussed the ways to improve the situation, which will entail possibilities of financing through our Association. We will also have to take into account the evolution of the political and economical situation in Europe. All these facts will lead to the Executive Committee proposing at the next General Assembly modifications in the functioning and the statutes of our Association.

However, the improvements that can be imagined to the functioning of our Association can be done only with the volunteer work of the participants to the working and task groups and to other activities, and once again I encourage all national associations to participate in our European works.

Philippe Bisch
EXECUTIVE COMMITTEE

Minutes of the Third Meeting for the 1998-2002 Period
September 16, 2000

Attendance:
- P. Bisch, President
- A. Ansal, Secretary General
- P. Carydis, Ex. Com. Mem. Greece
- M. Koller, Ex. Com. Mem. Switzerland
- N.N. Ambraseys, Honorary Member

Absentee:
- A. S. Elnashai, Vice President
- R. Flesch, Vice President
- F. Braga, Secretary

Observer:
- W. Lenhardt, Austria (R. Flesch)

Prologue
The Third Meeting of the Executive Committee of the European Association for Earthquake Engineering was held in Lisbon, Portugal on Saturday, September 16, 2000 between 10:00 am and 5:00 pm. The Executive Committee meeting was chaired by the President.

Agenda:
1. Approval of the Agenda
2. Approval of the Minutes of the Second Ex.Com. Meeting
3. Report of the President
4. Report of the Vice-President Prof. A.S. Elnashai
5. Report of the Secretary General
6. EAEE Statutes
7. Regional Seminars
8. Task and Working Groups
9. EAEE Bulletin
10. Miscellaneous

Item 1: The Agenda of the Meeting was approved by all members present.

Item 2: The minutes of the Second Executive Committee Meeting were approved.

Item 3: The President expressed his concern for the earthquakes that have taken place in Turkey and Greece during 1999, and his support for the field missions and for the analytical work done by EAEE members.

The President expressed his worries about the regional seminars and other educational activities and about the level of activities in EAEE Task and Working Groups during the previous year.

He summarised the work done within the framework of EuroCode 8 and in the preparation of the ENV that was an important step for earthquake resistant design and construction. He stated the need to improve the functioning of the association taking into account the political and economical changes taking place in Europe. He pointed out the increasing difficulties of finding funds even to have meetings. He stressed the importance of voluntary work and motivation in the election of the Executive Committee members as well as the Task Group coordinators. He suggested modifying the EAEE Statutes to increase the effectiveness and the level of activities of EAEE.

Item 4: The report prepared by the Vice-President Prof. Elnashai was read by the Secretary General since it was not possible for Prof. Elnashai to attend the meeting. In his report, Vice-President summarised the activities that has been going on in UK concerning earthquake engineering short course held at the Imperial College and recent educational programmes in the field of earthquake engineering.

He summarised the research activities mainly mentioning about the network project funded by UK and EU on “Safety Assessment for Earthquake Risk Reduction”.

He stated that the second circular and call for abstracts for the 12th ECEE will be published and distributed shortly and that a web site is under preparation. He said that a review policy has been agreed whereby not only abstracts but papers will also be reviewed by an international panel of experts.

The importance of getting recognition from EU and related agencies for reviewing and assisting in earthquake related projects were discussed in detail. It was decided to prepare one page summary concerning EAEE history and activities that can be presented with a cover letter written by the President to all EU National Representatives as well as to the directors of DG12 and DG4. Considering the relevance of this recognition, it was decided to give priority to this issue to achieve positive results.

Item 5: The Secretary General informed the Committee and expressed his condolences for the death of Prof. Sergej Bubnov from Slovenia who was the Co-Founder, past President, Secretary General and Honorary Member of EAEE.

Secretary General summarised the situation and the major difficulties encountered after the 17 August Kocaeli and 12 November Düzce earthquakes. He pointed out the problems in the repair and strengthening works that is going in the earthquake affected areas. He mentioned the importance of earthquake education in three levels as: the education of engineers, public officials and the general public.

He expressed his concern about the organisation of the regional seminars due to the financial demand on the organising society. He suggested the possibility of EU supported summer schools as one other alternative for EAEE educational activities.
He summarised his thoughts about the present situation in the international associations that operate on voluntary bases. Due to the economic and political changes in the Europe and in the World, most of these international associations are faced with financial difficulties in organising their activities. He expressed the need for some modifications to increase the activities and effectiveness of the EAEE in the future. He stressed the importance of finding new ways of injecting energy into the association to increase the input from the member societies as well as from the individuals who are involved with research and applications in the field of earthquake engineering. He mentioned that one possible alternative is to allow the association to have individual membership that could lead to more favourable conditions for voluntary contributions. In addition membership fees collected from individual members as well as from member societies would give more flexibility to the Executive Committee and to Task Groups to organise meetings and to initiate some activities.

The Executive Committee discussed the possibilities concerning individual membership and membership fees. There was a general consensus about the advantages of having individual members in the EAEE. Different views were presented concerning the membership fees. It was suggested to get in contact with the Secretary General of the International Association for Earthquake Engineering to find about the developments that has been going for some time on these issues.

Item 6: As decided in the previous Executive Committee meeting, the President presented his suggestions concerning possible modifications and changes in the EAEE Statutes. The Executive Committee exchanged views concerning the possibilities for modifications in the EAEE Statutes. The Committee debated in detail the possible modifications in the election of officers and executive committee members and other items in the Statutes. The general tendency was to have both the representatives of the national societies as well as the individual members in the executive committee. The importance of the voluntary participation to EAEE activities was discussed and some possibilities were suggested to achieve this purpose in the election of the executive committee members.

It was decided that the President, Vice-Presidents and Secretary General should work together and prepare proposals for possible modifications in the EAEE Statutes concerning the election of the executive committee members, officers, individual membership, regional seminars, financial and general organisational issues to be discussed in the next Executive Committee meeting.

Item 7: The Executive Committee exchanged ideas concerning the organisation of the regional seminars for informing and educating young engineers and scientists about the developments in the field of earthquake engineering. There was a general agreement that regional seminars are very important and EAEE should make an extra effort to have at least two regional seminars during the four-year interval between the European conferences.

The Executive Committee discussed the future possibilities and approved the preliminary proposal of Martin Koller, the Executive Committee Member of Switzerland, to organise a regional seminar during the first half of September 2001 in Switzerland.

Item 8: Secretary General summarised the activities of the existing Task Groups and the Executive Committee discussed the present situation concerning:

TG2 on "Interpretation of Strong Motion Records for Engineering Applications"
Coordinator: Prof. N.N. Ambraseys, UK
Task Group have successfully completed the first phase of their project of compiling strong motion data from Europe and produced a CD containing approximately 2000 records. The CD was distributed free of charge to all interested parties.

The Executive Committee approved the proposal of Prof. Ambraseys to initiate short seminars, as the second phase of their project, to educate the practising engineers about the contemporary use of strong motion records for analysis and design purposes. It was decided to inform all National delegates about this proposal and encourage them to organise seminars that will be conducted by the members of TG2.

TG3 on "Earthquake Hazard, Earthquake Risk and Earthquake Scenarios"
Coordinator: Prof. Mauro Dolce, Italy
Secretary General informed the Executive Committee about the activities of TG3. There was a general agreement that a short report summarising the activities of TG3 during the year 2000, prepared by the Coordinator to be published in EAEE Bulletin, would be very informative and appropriate.

TG6 on "Earthquake Geotechnical Engineering and Microzonation"
Coordinator: Prof. Atilla Ansal, Turkey
Secretary General informed the Executive Committee about the symposium on "Site effects and experimental data" organised during the "XXVII General Assembly of the European Seismological Commission" by Subcommission F - WG3 on "Microzonation" jointly with TG6 and about the decisions reached in the meetings of the WG3 and SC-F. It was decided that WG3 and TG6 should work together and prepare a short guidelines for conducting microzonation studies to be first distributed to all active members of the WG3 and TG6 to be reviewed and improved. The main intention is to distribute the finalised version of the "Microzonation Guidelines" to all related agencies involved in microzonation.
The Executive Committee approved these proposals and it was decided that the EAEE Bulletin should be published once a year and as 500 copies and it was decided that the EAEE Bulletin should be put on display in the related libraries. Secretary General will inform all National Delegates to be put on display in the related libraries in their perspective countries.

New Task Groups

The Committee discussed the possibilities of establishing a new TG related to earthquake insurance. It was decided that Martin Koller should investigate this possibility by getting in contact with related individuals in Switzerland and Europe. He was asked to inform the Executive Committee about the developments on this matter in the next Executive Committee meeting.

Item 9: Secretary General summarised the present situation of the EAEE Bulletin and the difficulties of publishing two issues per year because of insufficient number of articles and contributions. He informed the Committee that it was not possible for him to publish the second issue for the year 1999 mostly because of the additional workload due to the recent earthquakes in Turkey and partly because of lack of articles. He proposed to publish only one issue per year summarising all the EAEE activities within that year. He also mentioned about the increasing cost of mailing and proposed to publish only 500 copies per issue. Since the Bulletins are also available in the EAEE Home page, he proposed to send 10 copies from each issue to all National Delegates to be put on display in the related libraries in their perspective countries.

The Executive Committee discussed in detail concerning the present situation of the official journal of the EAEE, the European Earthquake Engineering Journal published in Italy. There was a general agreement about the need for improvement concerning the format, scientific quality, popularity and acceptance of the journal within the earthquake engineering community. It was decided that the Secretary General should get in contact with the Chief Editor Prof. Dulio Benedetti to discuss about the possibilities for the future of the journal.

Item 10: The Executive Committee debated on the possibilities of establishing an award lecture to be presented in each European Conference on Earthquake Engineering. It was decided to prepare draft guidelines for the selection of the award lecturer.

The Executive Committee discussed in detail the proposal of Martin Koller concerning the EAEE Charta for the support of post earthquake missions. The establishment of a clearing centre
in the earthquake stricken country would be very suitable and would decrease the demand for information from individuals. The different types of post earthquake missions were discussed. There was a general agreement that each member society can appoint one person to be in charge of collecting preliminary data, to be responsible for establishing the clearing centre web sites and to respond to the inquires coming from other national societies. The educational aspect of post earthquake missions was evident and this aspect should be considered important.

The Executive Committee asked M.Koller to prepare a draft “EAEE Charta for Post Earthquake Missions” in the light of the discussions in the meeting, to be reviewed and to be published in the EAEE Bulletin and in the EAEE Home page. It was also decided to ask the National societies to nominate a coordinator that will be responsible for post earthquake missions.

The date for the next meeting was discussed. The two possibilities are Italy and Switzerland regional seminars if they take place. Otherwise Secretary General will be responsible to determine a possible date by corresponding with the Executive Committee members. The meeting ended with the thanks of the President and all those present to Prof. Carlos Oliveira for his hospitality and for organising the Executive Committee Meeting.

Secretary General

Report of the President

Dear colleagues,

This is the third meeting of our Executive Committee. The previous meeting was held in Paris, on the 27th of June, last year.

May I recall first that we had to deplore two intense earthquakes in Turkey, one particularly devastating in August last year, and one near Athens in Greece. All these events concentrated a lot of energy, and many of our members were involved in the analysis of these events, either in missions shortly after the earthquakes or in analytical work.

Since our last meeting, the life of our Association has not been very active, and I regret very much that we were not able to organise either a Regional Seminar or other activities related to education in conjunction with the work of our working and task groups.

Some members of our national associations were involved in the work of conversion of the EUROCODE #8 ENV into a European Norm (EN). This is a very important job, which will give to a great number of our European countries (even for those not affiliated to CEN) a common basis of safety against earthquakes. As far as I am concerned, as Vice-President of the SC8 and as French technical contact, I had a lot of work to complete and I trust that the other members of the Task Groups were also very busy. Major progress has been made during this period, which have taken into account recent research and experimental results obtained in Europe (f. i. in Ispra laboratories) and elsewhere.

Our Secretary General will give us a rundown later on in the meeting on what has been happening during this year. I would like to thank him for all his efforts during that time made particularly difficult given all these events in Turkey. We shall also approach later a point concerning the activities of our groups.

As I already proposed during our last meeting, I think that we should try to improve the functioning and the rules of our Association to take into account the evolution of the political and economical situation in Europe. We also have to consider that it is more and more difficult to obtain financing for our activities, even for meetings taking place at longer intervals. So the improvements that could be imagined to the functioning of our Association can be done only with the volunteer work of the participants in our Executive Committee and to the working and task groups. Therefore, I think that the rules for the designation of the members of our Committee should be changed to better take into account their motivation.

In fact, we have the choice between doing nothing, which is probably not the best for the future of our Association, doing slight modifications and thirdly making a full renovation of our statutes and way of functioning. But we also have to take into account our history. This question will be discussed later during our meeting.

We have this project to set up a chart for the post-earthquake missions.

We also envisaged during our previous meetings the way to constitute a kind of network, but there was no significant progress on that subject.

Probably we can consecrate some time to these subjects during our meeting.

Finally, I thank all of you who have been able to be here and I trust that our works will be useful for the future of our Association.

Philippe Bisch

Report of the Vice-President

Prof. Amr S. Elbashai

Education and Training

A most successful short course was run at Imperial College in September 1999, supported by EAEE. There were 59 attendants from most of the top engineering firms in the UK as well as a number of guests from EAEE member states. The course was jointly organised by the UK national earthquake engineering organisation, SECED and Imperial College.

There has been a flurry of activity in the UK on earthquake engineering education. Imperial College won a UK Government contract to run a Masters Training package in earthquake risk management for five years, starting in October 2001. Liverpool University is planning a post-graduate course in the subject and Heriot Watt University is planning a new
module to be taken by MSc students attending other structural or geotechnical courses.

We look forward to the materialisation of the many offers received previously for organising Regional Seminars, since the programme has been rather slow.

**Research Activities**

There are a number of networks researching earthquake engineering topics and funded nationally and on the European level. The largest of which is a network on ‘Safety Assessment for Earthquake Risk Reduction’ acronym SAFERR. This comprises 13 members from most EU member states and has been launched in July 2000. It runs for 3 years, and is coordinated by the Imperial College group. The network is looking for young researchers interested in working in this exciting collaborative environment. Interested parties should contact Professor Elnashai.

It is now either allowed or will be allowed shortly that Turkish researchers can be funded on EU projects. This is an exciting prospect, since there are excellent talents in Turkey in the topic and there is surplus funding in the EU states.

**12th ECEE**

The first circular was sent around in large numbers and some responses have been received. The second circular, which also includes the call for abstracts, has been finalised and is being printed for circulation in two weeks time. A web site is under construction and is nearing completion. A review policy has been agreed whereby not only abstracts but also papers will be reviewed by an international panel of experts.

**Report of the Secretary General**

**September 1998 - December 2000**

**General**

The activities of the Central Office during September 1998- December 2000 involved correspondence with National Delegates, Task and Working Group Coordinators and Conveners concerning related national or international organisations asking information about EAEE activities, and the publication of the Bulletin. During this period the Secretary General participated to:

1. Second Int. Conf. on Earthquake Geotechnical Engineering, Lisbon, Portugal, 14-16.11.1999
2. XXII General Assembly of the International Union of Geodesy and Geophysics (IUGG99), Birmingham, UK, 18-30.7.1999
5. Second European Workshop on the Seismic Behaviour of Asymmetric and Set-Back Structures, Istanbul, Turkey, 8-10.10.1999
7. 2nd Mediterranean Meeting on Seismology and Seismic Engineering (SISMIC499), Faro, Portugal, 27-29.10. 1999,
11. XXVII General Assembly of European Seismological Commission, Lisbon, Portugal, 10-15.9.2000
12. Dynamic Evolution of Active Faulting in the Mediterranean Region; Algiers, Algeria, 9-11.10. 2000,
14. (EC) Joint Research Centre (ISIS-SSMU-ELSA) and the DG Environment (Civil Protection Unit) Workshop on - Mitigation of Seismic Risk - Support to Recently Affected European Countries, Beligrade, Italy, 27-28.11. 2000

**Executive Committee**

The Central Office organised the second and third Executive Committee meetings in Paris, France on June 26, 1999 and September 16, 2000 upon the kind invitation of the French Association for Earthquake Engineering and Portuguese Association for Earthquake Engineering, respectively. The minutes of these meetings was prepared and forwarded to all Executive Committee Members, all National Delegates, all TG Coordinators, all WG Conveners, the representative of ESC and UNESCO. The minutes of the second meeting was also published in the EAEE Bulletin Vol.18 No.1 and the minutes of the third meeting will be published in Vol.19, No.1 and both minutes were inserted in the EAEE Home Page.

**European Seismological Commission**

The Secretary General participated to the meeting of the Subcommission on Engineering Seismology on September 13, 2000 and the ESC General Assembly on September 14, 2000 held in Lisbon, Portugal, during ESC General Assembly. The ESC General Assembly approved the recommendations for establishing cooperation among Subcommission A on “Seismology” with TG10 concerning the effects of historical earthquakes on historical structures. It was also decided to have the next ESC General Assembly in Genova, Italy during September 2002.

**Journal Of European Earthquake Engineering**

Upon the suggestion of the EAEE Executive Committee, the Secretary General had a meeting with Prof. Dulio Benedetti, the Editor of the Journal of European Earthquake Engineering, in Milan on November 29, 2000.

The main purpose of the meeting was to discuss about the future possibilities for the Journal of European Earthquake Engineering. It was very clear
that the Executive Committee of the EAEE and Prof. Benedetti as the editor the EEE Journal have similar perspectives for the advancement of the Journal. Both parties want to increase the popularity and at the same time improve the impact of the journal in the European earthquake engineering community. In order to realize these goals EAEE believes it would be helpful to start with a new image and with an effective advertisement campaign. The new image may require modifications of the editorial board, one or two new co-editors to work together with Prof. Benedetti, rephrasing of the aims of the journal, an improvement of the review procedures with more international reviewers, perfecting the quality of the printed version, a new web page and availability of the electronic version of the journal in the internet.

Bulletin
The Central Office published two issues of the EAEE Bulletin, Vol.17, No.2 (December 1998), Vol. 18, No.1 (August 1999). Both issues were printed as 1500 copies and were distributed to all Delegates, TG and WG Coordinators and Conveners, major earthquake related organisations abroad, all Delegates of the International Society for Earthquake Engineering and all Titular Members of the ESC.

The Bulletins have been prepared by the Secretary General with some financial support from the Turkish Earthquake Foundation and Turkish Chamber of Civil Engineers only for printing and postage expenses. However, after the 1999 Kocaeli and Düzce earthquakes, partly because the increased workload of the Secretary General, partly from the lack of contributions from National Societies and National Committees and partly due to the large increase in the postage costs, it was not possible to prepare and publish the second issue for the year of 1999 (Vol.18, No.2). Upon the suggestion of the Secretary General, due to the reasons listed above, the Executive Committee approved the decision to publish the EAEE Bulletin once a year with limited distribution, since the Bulletin is also available in the EAEE homepage.

Internet - WEB
The Internet-EAEE Homepages were updated continuously to contain all the published Bulletins as well as other related information forwarded to the Central Office.

Secretary General
March 2001

EAEE-Charta: Support of Post-Earthquake Reconnaissance

Support description
The classical problem after an earthquake is the following: Most seismologists and earthquake engineers of the affected country
- can not be contacted since they immediately leave their offices for the damaged area for aftershock surveys or PER activities,
- are submerged by an avalanche of mails and faxes requesting information (strong motion records, extend of damages, etc.) and support for PER missions.

Therefore, it is suggested that the home association builds up a "clearing centre", as close as suitable to the affected area, that
- collects relevant information about the earthquake
- sends its address to all member associations that have signed the Charta, by mail and fax, and maintains someone on duty to answer foreign requests
- facilitates the organisation of PER activities
- shields local authorities, scientists and engineers from further uncoordinated requests

In order to facilitate PER activities, the clearing centre should:
- during the phase of preparation;
- help foreign colleagues in deciding whether it is worth sending a PER team by providing preliminary scientific information,
- inform about the daily life conditions in the struck area (transportation, accommodation, food supply, etc.)
- provide, if possible, the PER teams unable to understand the local language with an interpreter (e.g. a PhD student or young research fellow; his/her expenses must be taken in charge by the foreign PER team)
- once a PER team has arrived in the affected area
- give an overview about the interesting scientific aspects ("things that should be visited")
- support foreign PER teams in getting access to the damaged areas and, as far as suitable, coordinate the activities of different PER teams (e.g. visit of public services, buildings, industries, etc.)
- provide, if possible, the PER teams unable to understand the local language with an interpreter (e.g. a PhD student or young research fellow; his/her expenses must be taken in charge by the foreign PER team)

Preparing work
A list has to be established and regularly updated by EAEE that contains the complete address (phone, fax, e-mail) of
- the responsible for the organisation of PER missions,
- the president,
- the national delegate,
- of each member association that has signed the Charta. After an important earthquake, the home
The Bulletin of the European Association for Earthquake Engineering

association is expected to send the address of its clearing centre to all these colleagues by e-mail or fax. Each member association prepares its own organisation of a clearing centre according to its own possibilities.

Martin Koller
Delegate of Switzerland

TWELFTH EUROPEAN CONFERENCE ON EARTHQUAKE ENGINEERING
9-13 September 2002
Barbican Centre, London, UK

The preparations for the Twelfth European Conference on Earthquake Engineering are now well under way. The Technical Programme of the Conference will include the following Keynote Lectures:

- Professor Nicholas Ambraseys, UK: Earthquake hazard in Europe and adjacent regions.
- Mr. Joe Barr, UK: Seismic design of bridges
- Professor Ian Davis, UK: Seismic risk mitigation
- Professor Amr Elnashai, UK: Experimental verification in earthquake analysis
- Professor Ezio Faccioli, Italy: “Complex” site effects in earthquake strong-motion, including topography
- Professor Peter Fajfar, Slovenia: Structural analysis in earthquake engineering
- Professor Michael Fardis, Greece: Code development in earthquake engineering
- Mr. Jack Pappin, UK: Design of foundations and lifelines for seismic loading
- Professor Haluk Sucuoğlu, Turkey: Repair and strengthening

Close to 800 abstracts have been received for the Conference and these are now under review by an international committee of referees. Authors will be notified of the outcome of the review process at the beginning of June 2001. The deadline for submission of abstracts was extended from 31 January to 19 February, because near the original deadline the web site became overloaded, but this will not result in any delay in terms of the preparation and publication of papers. In fact, Manuscripts of those papers that are accepted for the Conference will be now be required by the 15 October 2001, as opposed to the end of October. The complete papers are to be reviewed by the Technical Affairs Committee and then the decisions discussed at a two-day meeting in London, so that authors can be notified of the outcome before the end of the current year. Final camera-ready manuscripts will be required by 15 February 2002, by which time the publication fee must also be paid.

The format of the Conference will be a balance between oral and poster presentations, with a larger proportion of papers in the latter format since in recent conferences this has proved successful in allowing greater discussion and avoided the problems of excessive numbers of parallel sessions. The number of oral presentations will be limited so that these can be allocated sufficient time and each session will begin with a Special Paper, chosen by the referees on the basis of originality and relevance of the subject and reputation as a speaker of the presenter, which will be assigned a little more time for the presentation.

Registration for the Conference will be open from 1st January 2002 and there will be a period of early registration at reduced rates. A brochure with details of the Conference, accommodation, social programme and registration will be published and distributed before the end of the year. However, information regarding all aspects of the Conference, including the cocktail reception on Sunday 8th September 2002 and the Conference Dinner on Thursday 12th September, will be posted on to the Conference web site at www.12ecee.org.uk as it becomes available.

We look forward to seeing all members of the European Association in London in September 2002 and to an enjoyable and productive Conference.

Julian Bommer
Vice-Chairman, Technical Affairs Committee

20TH EUROPEAN REGIONAL EARTHQUAKE ENGINEERING SEMINAR ON SEISMIC ASSESSMENT AND UPGRADING OF EXISTING STRUCTURES

Organised by European Association for Earthquake Engineering & Swiss Society for Earthquake Engineering and Structural Dynamics
September 3 - 7, 2001
Institut Universitaire Kurt Bösch, Sion, Switzerland

ORGANISING AND SCIENTIFIC COMMITTEE
Dr Olivier LATELTIN – Chairman
Federal Office for Water and Geology Bienne
Prof. Atilla M. ANSAL
Secretary-General of EAEE
Istanbul Technical University, Turkey
Prof. Marc BADOUX
Swiss Federal Institute of Technology Lausanne
Philippe BISCH
President EAEE, Séchaud et Metz, France
Jean-Daniel ROUILLER
Cantonal Geologist, Director of Crealp Sion
Dr. Pascal TISSIERES
Secretary-General SGEB, Tissières Ingénieurs Martigny

SPONSORING ORGANISATIONS
- Swiss Society for Earthquake Engineering and Structural Dynamics SGEB
- Federal Office for Water and Geology FOWG
- Etat du Valais

Purpose:
The majority of structures situated in seismic zones have not been designed and built for seismic loading.
The recent earthquakes of El Salvador and India should remind us that engineering knowledge exists and there are seismic building codes that could prevent most buildings from collapse. Many seismically vulnerable buildings, bridges and other structures must be identified and upgraded. This task has tremendous socio-economic implications and constitutes a direct and worldwide challenge to the earthquake engineering community. Answering this challenge includes the need for research to improve available assessment methods and upgrading techniques.

The 20th regional seminar is mainly organised to inform young researchers, practising engineers and scientists about new developments in the field of seismic assessment and upgrading of existing structures. The seminar will combine contributions from young researchers and engineers with keynote lectures by leading earthquake engineers. The lectures will present state-of-the-art lectures on the seismic assessment and upgrading of buildings and bridges.

**Seminar themes:**

The Program will address the seven major themes indicated below and will be conducted in a General Session. There will be no concurrent sessions and two major themes will be addressed each day and will include Keynote Speakers, contributions from young researchers or engineers and panel discussions. The Organisation Committee invites participants to submit an abstract electronically to: olivier.lateltin@bww.admin.ch until May 15, 2001, on one of the following topics:

1. Assessment criteria and acceptable vulnerability of structures
2. Seismic screening and rapid assessment methods (building and infrastructures)
3. Detailed assessment methods
4. Upgrading techniques for buildings and bridges
5. Upgrading strategies and design
6. Analyses of upgraded structures
7. Case studies

Contributions on the assessment and upgrading of a broad range of structures, including non-engineered and historic structures, lifelines and utilities, industrial structures, etc. will be welcome. In addition, there will be a half-day technical field trip, an Ice Breaker reception at the beginning, five buffet lunches and an evening banquet. The seminar language will be English, no translations will be provided.

**Keynote speakers:**

Prof. Atila M. ANSAL, Istanbul Technical University, Civil Engineering Faculty, Istanbul, Turkey
“Geotechnical aspects of seismic assessment and retrofit”

Prof. Hugo BACHMANN, Institute of Structural Engineering, ETH-Zürich, Switzerland
“Softening as upgrading strategy - a case study”

Philippe BISCH, President EAEE, Sechaud et Metz, Fontenay-aux-Roses, France

**Role of buildings codes in seismic assessment and upgrading of structures: EC 8 as an example”**

Prof. Gian Michele CALVI, Dipartimento di Meccanica Strutturale, Università degli Studi di Pavia, Italy

“Seismic assessment and retrofit of bridges”

Prof. Michael N. FARDIS, University of Patras, Dept. Of Civil Engineering, Patras, Greece

“Seismic assessment procedures: a review”

Prof. Domenico GIARDINI, Director of the Swiss Seismological Service, ETH-Zürich, Switzerland

“Seismicity in Europe and hazard mapping”

Dr. Rui PINHO, Dep. of Civil and Environmental Engineering, Imperial College, London, UK

“Seismic assessment and upgrading of reinforced concrete buildings”

Prof. Miha TOMAZEVIC, Slovenian National Building and Civil Engineering Institut, Ljubljana, Slovenia

“Seismic assessment and retrofit of masonry structures”

**Questions regarding registration, abstracts or other non-technical aspects of the Regional Seminar should be addressed to:**

Federal Office for Water and Geology
Dr. Olivier Lateltin
Ländestrasse 20, CH-2503 Biel, Switzerland
Tel: +41 32 328 87 59, Fax:+41 32 328 87 12
e-mail: olivier.lateltin@bww.admin.ch

**Abstract and publication:**

The abstracts (one to two pages, including figures) will be prepared according to the guidelines and sent to olivier.lateltin@bww.admin.ch until 15th of May. The Abstracts as well as the contribution of the keynote speakers will be published in the Proceedings of the 20th European Regional Earthquake Engineering Seminar.

**Accommodation:**

30 rooms will be reserved for young researchers at the Institut Universitaire Kurt Boesch, at Sion. Each EAEE Member Society will nominate one young researcher (age below 35 years) that can submit abstracts and take part in the Regional Seminar free of charge. Other participants can send an abstract but are expected to pay a registration fee. Some rooms have been reserved at the Hotel Ibis, av. Gramp Champsec in Sion (Tel. +41 27 203 81 91 Fax +41 27 203 13 20). The number of participants for the Regional Seminar is limited. More information will be sent with the second circular (Prices for room with breakfast: 100 sfr/day single bed; 130 sfr/day double bed).

**Conference Center:**

The Regional Seminar will take place at the Institut Universitaire Kurt Boesch, located in the surroundings of Sion (Tel +41 27 203 73 83 Fax +41 27 203 73 84; e-mail: institut@iukb.ch). For more information, please visit http://www.iukb.vsnet.ch.

Bus transportation will be organised between the Hotel Ibis and the Institut Universitaire Kurt Boesch, twice a day.
Transportation to Sion:
The nearest international airports will be Geneva or Zürich-Kloten. Sion can be reached directly by train from these two airports. The journey takes about 2 to 3 hours.

Conference fee:
The conference fee will include registration, conference publication, five lunch buffets, icebreaker reception and evening banquet. The conference fee will not include accommodation.

TASK AND WORKING GROUP REPORTS

Task Group (TG) 2: Strong Motion Records for Engineering Applications
During the past decade Imperial College of Science, Technology and Medicine, London; Ente Nazionale per l'Energia Elettrica (http://www.enel.it/), Rome; Ente per le Nuove Tecnologie, l'Energia e l'Ambiente (http://www.enea.it/), Rome; and Institut de Protection et de Sûreté Nucléaire (http://www.ipsn.fr/), Fontenay aux Roses attempted to retrieve, process and analyse strong-motion records, chiefly analogue, from the European, Mediterranean and Middle Eastern regions. This dataset contains information for 1,089 record sets from 482 separate earthquakes and 352 individual strong-motion stations and, in the frame of the EC-project "Dissemination of European Strong-Motion Data", was extended with more than 1,400 new strong-motion records, giving a total of more than 7,500 European component records now held at the Imperial College strong-motion databank.

The CD-ROM "Dissemination of European Strong-Motion Data" contains:
- a databank with 1,068 uncorrected and uniformly corrected strong-motion records and elastic response spectra from Europe and adjacent regions.
- a database with associated earthquake-, station- and waveform-parameters.
- a browser-program for searching, selecting, visualising and exporting the records and associated parameters.
- user documentation.

The databank, database and browser program are the result of our effort to process, archive and uniformly present European "ground response" acceleration time histories that have been recorded between 1971 and 1999. The compilation and processing of this dataset were supported by the European Council, Environment, and Climate Research Programme, DGXII (http://www.cordis.lu/), contract ENV4-CT97-0397 (Dissemination of European Strong-Motion Data).

Imperial College of Science, Technology and Medicine (http://www.cv.ic.ac.uk/), supported by the European Council through the 5th Framework Programme (http://www.cordis.lu/p5), contract EVR1-CT-1999-40008.

Copies of the CD-ROM are available upon request from:
- European Commission (http://www.cordis.lu)
- Research Directorate General
- Directorate D.I.-Preserving the Ecosystem SDME7/85
- Rue de la Loi 200
- 1049 Bruxelles/Wetstraat 200, Belgium
- Tel: +33 2 299 11 11 & Fax: +33 2 296 30 24
- Project director: Mrs M. Yeroyanni
- e-mail: marie.yeroyanni@cec.eu.int

Imperial College of Science, Technology and Medicine (http://www.cv.ic.ac.uk/)
- Department of Civil and Environmental Engineering
- Engineering Seismology and Earthquake Engineering
- Imperial College Road
- London SW7 2BU, United Kingdom
- Tel: +44 20 7594 61 12 & Fax: +44 20 7594 60 53
- Project coordinator: P. Smit (p.smit@ic.ac.uk)

Societa Gestione Impianti Nucleari
- Via Torino 6, 00184 Rome, Italy
- Tel: +39 06 85 09 85 94 & Fax: +39 06 85 09 27 36
- R. Berardi (berardi.raniero@enel.it)

Ente per le Nuove Tecnologie, l'Energia e l'Ambiente (http://www.enea.it/)
- Centro Ricerche Casaccia
- Via Anguillaresi 301, 00100 Rome
- Tel: +39 06 30 48 43 44 & Fax: +39 06 30 48 48 72
- D. Rinaldis (dario.rinaldis@casaccia.enea.it)

Institut de Protection et de Sûreté Nucléaire (http://www.ipsn.fr/)
- SERGD, BERSSIN
- Avenue de la Division Leclerc 60-68
- 92265 Fontenay aux Roses, France
- Tel: +33 1 46 54 76 83 & Fax: +33 1 46 54 81 30
- F. Cotton (fabrice.cotton@ipsn.fr)

P. Smit

Task Group (TG) 8: Seismic Behaviour of Irregular and Complex Structures

Activity Report
TG8 was established in August 1994 as a Working Group (WG12). In 1995 its scope of activities was extended, and it was reorganized as a Task Group, the purpose of which is to promote research, as well as to disseminate knowledge by means of providing forums for scientific exchange in the field.

Activities to date:
Activities up to 1999 were reported in the EAEE Bulletin's issues of December 1995, August 1998 and December 1999. In the following more recent activities are summarized.

Workshops
* Two Proceedings volumes of the Second European Workshop on the Seismic Behaviour of Asymmetric and Irregular Buildings held in Istanbul on October 8-9, 2001.
The Bulletin of the European Association for Earthquake Engineering

1999 (see Dec. 1999 issue of the EAEE Bulletin) were published, and distributed to the participants. Information about availability of copies can be obtained from Prof. F. Karadogan, Istanbul Technical University (karadogan@itu.edu.tr).

* A third workshop to be hosted by the University of Firenze, and organized by Professors G. Sara and M. De Stefano, is slated for September 2002, with tentative dates September 16-17. Invitations to members of TG8 and other prospective participants will be sent shortly. A Proceedings volume will be published after the event.

Publications


Experimental Research

The recognition that lack of experimental validation of theoretical research findings was hampering the updating of process for earthquake design provisions relating to irregular structures led to a series of shaking-table tests at the University of Bristol Earthquake Research Centre facility. Professor M. De Stefano, Dr. T. Trombetti and the writer designed the model, and it consists of a three storey mass eccentric steel frame, as shown schematically in the Figure. The model was excited bi-directionally by a two component earthquake. The specimen was built and tested under the supervision of Dr. C. Taylor and Dr. A. Crewe of the Bristol Earthquake Research Centre. The analysis of the data is almost complete, and a report comparing analytical with experimental results is now in preparation.

Three Storey Building

![Diagram of a three storey building](image)

**Experimental Research**

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1. Background

Nowadays, most innovative techniques for the passive control of seismic vibrations - namely base seismic isolation (BSI), passive energy dissipation (PED) and provisional hydraulic coupling (HC) by means of shock transmitters - are considered to be already fully mature technologies of providing a mitigation of seismic damage for civil structures and equipment and have proven to be reliable and cost-effective for many structures such as bridges and viaducts, civil buildings, cultural heritage and critical facilities. With regard to the PED systems, several types of devices were recently developed and optimized, like viscous, elastic-plastic, viscoelastic and electromagnetic systems, as well as systems using shape memory alloys (SMA) and other smart materials.

There are already approximately two thousand applications of BSI, PED and HC in various countries, which concern not only new constructions but also several retrofits of existing important structures, including cultural heritage, as initially judged necessary, especially after the Loma Prieta (1989), Northridge (1994) and Kobe (1995) earthquakes and more recently, after those which struck Italy in 1997-98 and Greece, Taiwan, Turkey, Central America and India in the last two years.
In addition, the progress of floor seismic isolation and that of active, hybrid and especially, semi-active vibration control techniques, for which important projects are now in progress in various countries, has already led to some promising results, not only for the control of wind-induced vibrations, but also for the seismic protection.

The only remarkable still remaining problems for the innovative passive anti-seismic techniques concern the design rules for structures provided with such systems. In fact, although design rules or guidelines are now available in most countries, they are still different in the different countries, frequently still penalize the use of the innovative anti-seismic systems with respect to the conventional design and their application still requires heavy approval processes. For the non-passive control systems the problems are even worse: in fact, these techniques are not considered by design rules.

International cooperation and detailed exchange of information and experience in both civil field (including cultural heritage) and the industrial (nuclear and non-nuclear) field are extremely important for the correct development and application of all the above-mentioned innovative techniques. To this aim, at San Francisco in 1989, Italian, Japanese and US experts started organizing an International Seminar on the innovative anti-seismic techniques. This first Seminar mainly dealt with BSI of the nuclear reactors. Since then, this Seminar has been held every two years, at Nara (Japan) in 1991, Capri (Italy) in 1993, Santiago (Chile) in 1995, Taormina (Italy) in 1997 and Cheju (Korea) in 1999. The Seminar objectives were gradually extended from the nuclear reactors to the other types of structures and from BSI to the other vibration control techniques. More and more experts from more and more countries and International Institutions (the European Commission and the International Atomic Energy Agency) joined the International Organizing Committee. Until the last event of Cheju, the Seminar was organized in conjunction with the International Conferences on Structural Mechanics in Reactor Technology (SMIRT), in the framework of its Post-Conference events.

This 7th International Seminar, on the contrary, as recommended at Cheju, has been organized as an independent event, based on the great interest in holding it in an area like Umbria Region, which suffered severe earthquake damages in 1997 and where new important applications of the innovative anti-seismic techniques were recently completed or are in progress, and especially at site like Assisi, where the restoration of the worldwide famous “Basilica Superiore di San Francesco” was seismically retrofitted and restored by making use, for the first time in the world, of SMA devices (it is well known that the 1997 earthquake had severely damaged the Basilica, including famous frescos of Cimabue and Giotto).

Similar to the two previous events held in Italy, this 7th Seminar is being organized by the Italian Working Group on Seismic Isolation (GLIS) of the Italian National Association for Earthquake Engineering (ANIDIS) through the sponsorship and patronage of the Italian Agency for New Technology, Energy and the Environment (ENEA), the Government of Umbria Region and other Partners. For the organization of this Seminar, GLIS has been supported by the Task Group 5 on Seismic Isolation of Structures (TG5) of the European Association for Earthquake Engineering (EAEE). Co-organizers are at present ENEA, the European and International Associations for the Control of Structures (EACS and IASC), the Joint Research Center at Ispra (JRC) of the European Commission (EC), the Faculty of Architecture of the University of Ferrara and that of Engineering of the University of Perugia, the Orders of Architects and Engineers of Perugia and Terni Provinces (those located in Umbria) and the Italian National Seismic Survey (SSN), together with other Institutions from several countries (Armenia, Austria, Belgium, Chile, Chinese Taipei, Czech Republic, France, Germany, Greece, India, Italy, Japan, Korea, Mexico, New Zealand, P.R. China, Portugal, Russia, Spain, Turkey, the United Kingdom and the USA).

The aim of the Seminar is the further strengthening of already established good basis for international collaboration for research, transfer of technology and information, and implementation in practice of base seismic isolation, passive energy dissipation, hydraulic coupling and shape memory alloys, as well as dissemination of information among the population in seismic prone countries to promote implementation of base isolation in retrofitting or new construction of housing.

2. Scope

The 7th Seminar is being organized based on the increasing success of the previous ones and according to the recommendations made by participants in the Closing Panel of the last Seminar at Cheju, Korea, 1999. It will provide again an opportunity for the exchange of updated, detailed information concerning the state-of-the-art on the development and applications of the previously mentioned innovative anti-seismic techniques.
Similar to the previous events, topics covered by the Assisi Seminar will be base and floor isolation, passive energy dissipation and provisional hydraulic coupling. In addition, as at Cheju, the development of active, semi-active and hybrid control of seismic and non-seismic vibrations and the critical issues concerning the application of innovative anti-seismic techniques in low and moderate seismic areas will be dealt with.

With regard to the passive control techniques, particular attention will be devoted to the following issues, whose importance was identified at Cheju:
- Extension of retrofit using the innovative anti-seismic techniques;
- Improvement of studies concerning innovative systems applicable to cultural heritage;
- Improvement of knowledge and development of systems for vertical isolation;
- Promotion of more applications to hospitals and chemical plants and components;
- Wide extension of application from strategic to apartment buildings;
- Performance of adequate monitoring;
- Improvement of knowledge on seismic input, in particular for near-field earthquakes (how correct is this point was confirmed later by the 1999 earthquake in Turkey);
- Improvement of studies concerning some reliability and uncertainty issues which have not been yet fully analyzed (including scale effects for qualification tests, the behavior of the anti-seismic devices at earthquake levels exceeding the design value and failure modes, at extremely violent beyond design earthquakes, of structures provided with the anti-seismic systems);
- Consideration of other sources of vibrations which may damage or weaken structures, for instance, traffic.
- Comparison of design rules and guidelines applicable in the different countries;
- Issues related to the applications in the low and moderate seismicity areas.

To this aim, differently from previous seminars, after those containing general lectures on state-of-the-art on application and R&D, specific Oral Sessions will be devoted to lectures on the different kinds of structures of interest for application of the innovative anti-seismic techniques (namely: bridges and viaducts; strategic and important buildings such as hospitals emergency management centers and schools; regular apartment buildings; cultural heritage; and high risk nuclear and chemical plants). The main new ongoing R&D projects will also be presented in the Oral Sessions, while more specific but important topics concerning R&D and single applications will be presented in the Poster Session. As suggested at Cheju, invited lectures and contributed papers on applications shall be containing sufficiently detailed reference to seismic input, the codes used and problems faced in using them, as well as cost evaluations.

In addition, the proposal made at Cheju, to develop international design guidelines for structures provided with the innovative anti-seismic systems (which also explain such systems correctly and leave official codes out of consideration) will be further discussed and again as suggested at Cheju, a volume collecting the English translations of design rules and guidelines made available to the organizers will be distributed to the participants in the Seminar as a draft and may be published after some months.

Finally, it is worthwhile stressing that the collaborations established for the organization of the Seminar with the Regional Government of Umbria and the local Orders of Architects should ensure the larger participation of governmental officials and designers, with respect to previous seminars, which had been augured at Cheju.

3. General Remarks On The Program

The Seminar will last three and a half days, starting in the afternoon of Tuesday, Oct. 2, 2001, at 3:30 p.m.

Contacts are in advanced progress with the IAEA to check the feasibility of organizing the Seminar in conjunction with the Final Meeting of the Research Coordinated Program (CRP) of the IAEA on “Intercomparison of Analysis Methods for Predicting the Behaviour of Seismically Isolated Nuclear Structures”. In such a meeting the Final Report of such a CRP, as prepared by Its Technical Secretary, should be approved for publication by the Representatives of the participating countries, after being examined and if necessary, updated based on the results of the Seminar. The aforesaid meeting, restricted to the Representatives of the countries participating in the CRP, should be held in the morning on Saturday, October 6, 2001.

At any rate, a Meeting of Task Group 5 of the EAEE will take place in such a day, which will be opened to all European participants who are interested to join the Task Group and non-European observers, as well. In addition, a Meeting of Subcommittee (SC) 1 of Technical Committee (TC) 167 on “Anti-Seismic Devices” of the European Committee for Standardization (CEN) will take place in the morning of October 2, 2001; this meeting will be restricted to the members of CEN TC 167 /SC 1.

The Seminar consists of Oral Sessions, Poster Presentations and the International Exhibition. It will be preceded and followed by Technical Visits, in particular to the “Basilica Superiore di San Francesco in Assisi both in the morning of October 2 and on October 6.

The Oral Program will consist of invited lectures presented or co-authored by experts from the countries and international Institutions that are the most involved in the development and applications of the new techniques, namely: Armenia, Austria, Belgium, Chile, Chinese Taipei, the EC, EACS, France, Germany, Greece, IAEA, IASC, India, Japan, Korea, Mexico, New Zealand, Portugal, the P. R. China, the Russian Federation, Spain, Thailand, the United Kingdom and the USA. As detailed in Sect. 2,
presented in such lectures will be the state-of-the-art of applications and designs in both the civil and the industrial fields, overviews on the ongoing R&D projects and future programs, and observations (if any) of behaviours of structures provided with the innovative systems in actual earthquakes occurred after the last Seminar at Cheju, Korea in 1999, as well as the progress in the development of codes and standards, design rules, seismic input for structures, and cost evaluation. New development of active, semi-active and hybrid control techniques for seismic and non-seismic vibrations and new applications of such techniques, as well as key issues in the application of innovative anti-seismic techniques in low and moderate seismic regions will also be addressed.

The last part of the Oral Program will be a Closing Panel, followed by Closing Remarks, where experts from the most seismic areas and international Institutions will draw conclusions based on the results of the Seminar works and will make recommendations for future activities, including whether the Seminar shall continue in 2003, and if yes, whether connected to the SMiRT Conference to be held at Prague or not, and where it may be organized: among others, the possibility of holding the 2003 8th Seminar in Vienna (Austria) or Yeravan (Armenia) will be considered. To this aim, it is noted that the American University of Armenia already officially confirmed its proposal to organize the 8th Seminar in Yeravan in 2003.

In the Closing Panel, decisions will also be taken on the foundation and objectives of the “International Association of Seismic Isolation”, which had been recommended in previous Seminars: this Association may group National Associations or groups of them like the Japanese JSSI, the “Chinese Committee of Seismic Control of Structures”, the Italian GLIS, etc.

Poster Presentations and the International Exhibition, organized in parallel to the Oral Sessions, will last the whole Seminar duration. Poster Presentations will concern invited and selected contributed technical papers dealing with specific items of particular interest for the Seminar, such as new R&D on specific topics and single important applications. Poster presentations of design rules applicable in the single countries, which are part of the documents to be published in the already mentioned volume, are also particularly welcome, in order to allow for a first discussion on this topic among the participants. In the International Exhibition displayed will be the general activities and products of research centres, industrial companies and other Institutions. The International Exhibition will be opened to the public, during at least one day.


All invited lectures presented in the Oral Sessions and invited or contributed papers presented as Posters (those contributed after acceptance of the International Technical-Scientific Committee) will be published in the Seminar Proceedings (whether on printed volumes or compact disk - CD - will be decided by the organizers at a later date), with the exception of the English translations of design guidelines, which will be collected in a specific volume, to be published after the Seminar, if all contributors agree and if a suitable editor is identified.

All lectures and papers and the related abstracts shall be written in English and shall be made available to the Seminar Technical Secretariat as electronic files, as explained in Sect. 5. Proceedings will be distributed to the participants some months after the Seminar, while an Abstract Volume will be distributed at the Seminar.

5. Deadlines For Full Manuscripts

All authors of both lectures for the Oral Sessions and papers for the Poster Session are also requested to submit the FULL MANUSCRIPTS (including the contributions for the volume on design rules), again as electronic files, possibly with Format “.pdf” (ADOBE-ACROBAT), otherwise with Format “.doc” (WORD), to the Seminar Technical Secretary (Dr. M. Forni, by e-mail to forni@bologna.enea.it or by mail on magnetic support) within August 31, 2001, so that photocopies of full paper manuscripts can be made and distributed to the participants at the Seminar. All lectures and papers for the Poster Session and the volume on design guidelines shall be typed again according to required format.

6. Official Language and Simultaneous Translation

The Seminar official language will be English (all lectures shall be written and presented in English). However, simultaneous translation into Italian and when necessary (for welcome addresses, discussion, etc.), from Italian into English, will be available.

7. Seminar Announcements

The Second Seminar Announcement, containing information on the updated technical program, will be distributed in September 2001. This First Announcement is available on Internet at the GLIS address http://192.107.65.2/glis; it will be periodically modified to account for the most updated information, by also including the scheduled detailed Seminar Program as soon as this is sufficiently assessed and after June 15, the list of papers to be presented in the Poster Session.

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The 5th World Congress on Joints, Bearings and Seismic Systems for Concrete Structures
Rome, Italy
7 to 11 October 2001

The World Congress on Joints, bearings and Seismic Systems for Concrete Structures is the only congress entirely dedicated to these particular devices and
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therefore is of great scientific and economic interest world-wide. Many participants are expected including designers, researchers, contractors, representatives of state and local administrations and manufacturers from all over the world. The event will focus on topics of particular importance to progress in this field: regulations, specifications, guidelines, product choices, design methods and applications. These topics will be covered by leading experts and the opportunity will be provided for collaboration and exchange of views among international professionals.

The scope of the Congress is to present state-of-the-art knowledge and to highlight further avenues for development in this field. It is felt that there are strong possibilities for developments of design and technology particularly in the area of seismic attenuation.

The International Joints and Bearings Research Council has held four World Congresses on this subject in North America. In October 2001, the IJBRC has appointed ACEDIS (the Italian National Association of Structural Device Manufacturers) as their agent to organize the event and to provide an ideal forum where state-of-the-art information can be shared and discussions on future development can be promoted at the highest level.

With the aim of providing complete information on all aspects of the subject, both theoretical and practical, the event will bring together recognized scientists and leading manufacturers. Thanks to the participation of exhibitors from all over the world, the technical exhibition will offer the most complete overview of the achievements and potential of the structural device industry.

A number of prominent speakers have kindly consented to take part in the event. They include Prof. Kawashima, Dr. Naaseh and Dr. Camomilla. Other invited speakers include Dr. Muller. Congress activities will commence on October 7th with a welcoming reception and a concert, and will close on October 11th with the technical visit.

It is of particular interest that the Congress is being held in Rome, with its innumerable monuments, almost invariably clear skies and a grand, impressive character. The city’s vast artistic heritage has fascinated visitors over the centuries and will not fail to charm the Congress delegates as well. A special social and cultural program has been organized which will include a private visit to Michelangelo’s breathtaking frescos in the Sixtine Chapel. A gala dinner is planned at the Villa Miani, built high on the slopes of Monte Mario in the early 1900’s for Count Mario. It is set in beautiful gardens and offers a unique panorama of the city.

October is the best time of year with warm days to appreciate the history and art, stratified over the ages, from the ancient and medieval, to the renaissance, baroque and neo-classical, and mild nights to walk in the narrow streets crowded with people until early morning.

It is believed that the delegates’ families and friends will find this a good opportunity to visit the Eternal City, and efforts have been made to organize an interesting and pleasant programme for accompanying persons. A baby-sitting service will be available near the auditorium. For those wishing to extend their stay in Italy after the Congress, Special 2-day tours to Sorrento and Florence will be offered.

For further information please visit www.ega.it/jbss5_2001 or contact the Organising Secretariat

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The Bulletin of the European Association for Earthquake Engineering

XVth International Conference on Soil Mechanics & Geotechnical Engineering
Earthquake Geotechnical Engineering Satellite Conference

LESSONS LEARNED FROM RECENT STRONG EARTHQUAKES
23 - 25 August 2001
Istanbul, Turkey

INVITATION
The Turkish National Committee of Soil Mechanics and Foundation Engineering and the Technical Committee (TC4) on Earthquake Geotechnical Engineering of the International Society for Soil Mechanics and Geotechnical Engineering take great pleasure in renewing their cordial invitation to attend the Satellite Conference on Earthquake Geotechnical Engineering to be held in Istanbul prior to the XVth International Conference on Soil Mechanics and Geotechnical Engineering.

OBJECTIVES
The Conference will offer an opportunity for the presentations and discussions on geotechnical engineering issues observed during recent strong earthquakes.

INTERNATIONAL ADVISORY COMMITTEE
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**SCIENTIFIC PROGRAMME**

**Saturday, August 25**

**Theme 1: Experiences in Recent Earthquakes**
- G.Gazetas (Greece) Soil Effects in the Parnitha (Athens) Earthquake and Comparisons with the Kocaeli Earthquake
- J.Bray (USA) Ground Failure in Adapazarı, Turkey
- C.H.Chen (Taiwan) Ground Failures Caused By The September 21, 1999, Taiwan Earthquake
- A.Erken (Turkey) The Role of Geotechnical Factors on Observed Damage in Adapazarı During 1999 Earthquake
- S.Yasuda (Japan) Liquefaction-Induced Settlement of Buildings and Coastal Damage During The Kocaeli and Other Earthquakes

**Theme 2: Strong Motions & Site Amplification**
- M.Erdik (Turkey) Strong Ground Motion and Site Response in 1999 Kocaeli and Düzce Earthquakes
- P.Y.Bard (France) Ground Motion Variability and Interpretation Of Sparse Strong Motion Records
- Y.Iwasaki (Japan) A Case Study of Effects of Strong Ground Motion on Site Amplification - from a Series of Records of Vertical Array at Man-Made Island, Kobe
- K.Pitilakis (Greece) 1D versus 2D Site Effect Analysis Applications in EUROSEISTEST, Thessaloniki and Kozani

**Theme 3: Dynamic Characterization of Soils**
- K.H.Stokoe II (USA) Field and Laboratory Measurements at Strong-Motion Sites
- R.W.Boulanger (USA) Confinement and Disturbance Effects on Dynamic Properties of Fibrous Organic Soil
- M.Romo (Mexico) A Neurofuzzy System for the Evaluation of Clay Dynamic Properties Evaluation From Cone Penetration Tests
- R.S.Steedman (UK) Dynamic Centrifuge Modelling Of Deep Seatled Liquefaction In Clean Sands
- L.Wang (China) Dynamic Characterization of Loess Ground Treated by Dynamic Tamping
- Yoshiida, N. (Japan) Dynamic Soil Properties and Modelling

**Theme 4: Liquefaction and Counter Measures**
- T.Kokusho (Japan) Failure Mechanisms In Liquefaction Studied In Recent Earthquakes
- T.Durgunoğlu (Turkey) Case History for Ground Improvement Against Liquefaction Carrefoursa Shopping Center – Izmit, Turkey
- A.EIgamal (USA) Computational Modelling of Liquefaction-Induced Deformations
- R.Seed (USA) Recent Advances in Liquefaction Hazard Assessment
- I.Towhata (Japan) Mitigation of Seismically Induced Deformation of Loose Sandy Foundation by Uniform Permeation Grouting

**Seminar for Local and Young Engineers on “Geotechnical Earthquake Engineering and Microzonation”**

Thursday 23 -Friday 24 August will be organized as a workshop with simultaneous translation to Turkish devoted to lectures to inform the local engineers and scientists about the current State-of-the-Art and Practice in the field of Earthquake Geotechnical Engineering.

**Thursday, August 23**
- A.Barka (Turkey) Seismotectonic Issues in Earthquake Engineering and Microzonation
- M.Vardar (Turkey) Engineering Geology for Microzonation
- C.S.Oliveira (Portugal) Large Metropolitan Area of Lisbon on the topic of microzonation and impact studies
- H.Eyidogan (Turkey) Geophysical Methods in Earthquake Engineering and Microzonation
- D.Lo Presti (Italy) Geotechnical and Geophysical investigations for Seismic Response
- K.Pitilakis (Greece) Site Amplification

**Friday, August 24**
- J.P.Bardet (USA) Geotechnical Issues in Earthquake Engineering
- L.Youd (USA) Liquefaction and Counter Measures
- R.Seed (USA) Characterization and Treatment of Seismic Site Response
- A.Marcellini (Italy) Seismic Zonation Methodologies
- A.Ansal (Turkey) A Seismic Zonation Case Study
- P.S.Pinto (Portugal) Dynamic Analysis of Solid Waste Landfills and Lining Systems
- A.Pecker (France) Behaviour and Design of Shallow Foundations Subjected to Earthquakes
- K.Tokimatsu (Japan) Behaviour and Design of Deep Foundation Subjected to Earthquakes

**DATE AND PLACE**

The Earthquake Geotechnical Engineering Satellite Conference will be held on 23-25 August 2001, at Süleyman Demirel Cultural Centre, Istanbul Technical University Campus, Ayazaga, Istanbul, Turkey.

**LANGUAGE**

The official language of the Conference is English.

**REGISTRATION**

Registration fee will be US$ 150. It will include a copy of the special volume, coffee and lunch on Saturday August 25, 2001 and a site visit on August 26, 2001.

**PROCEEDINGS**

A separate special volume containing all the papers reviewed and accepted by the International Advisory Committee will be published before the conference and will be discussed at the conference, but will not be presented orally by the authors.

**CONFERENCE ORGANISER**

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Controversial Issues In Earthquake Engineering

Announcement of the First International ROSE Seminar
Pavia, 25-26 June 2001

Organised by European School for Advanced Studies in Reduction of Seismic Risk

The University Institute for Advanced Studies (I.U.S.S.)

The Institute was created on an agreement between the Italian Minister of University and the Rector of the University of Pavia, with the purpose of introducing advanced programs at the under-graduate and post-graduate level. The development of a system of European Schools of Advanced Studies at the Master's level is one of the goals of the Institute. The aim of the European School in Reduction of Seismic Risk is to prepare professionals in the field of earthquake engineering. The seminar described herein is being organized as a part of the activities of the School for the year 2001.

Objectives of the Seminar

The European School of Advanced Studies in Reduction of Seismic Risk has been established in the year 2000 to offer a high level educational environment in earthquake engineering to top-level graduate students from all over the world. The teaching system is based on short courses, offered in series by very highly qualified international faculty. As a part of the School program, an international seminar will be organized every year, to present and discuss the Ph.D. theses in an advanced stage of development. Although no Ph.D. thesis has been yet started, the First International ROSE Seminar has been organized to establish a tradition and to allow a forum for discussing some of the most controversial current issues in earthquake engineering. It is foreseen that only eight presentations will be given thus allowing an in-depth discussion on each of them. All members of the Scientific Board (who are at the same time teachers at the ROSE School) will be present and will assure a lively and entertaining discussion. However, if the Seminar is to have a real impact on the development of the state-of-the-art in earthquake engineering it will essentially depend on the participation of a significant number of representatives of the world scientific community in this field, who are therefore strongly encouraged to attend the seminar.

The eight contributions to the seminar will be published, after a standard review process, in a special issue of the Journal of Earthquake Engineering, which will be distributed to all participants and to the subscribers to the journal together with the first issue released in 2002.

The novel educational approach developed within the ROSE School has offered the occasion of proposing a session on innovative concepts in engineering education, which will be open to educators in all fields of knowledge, to discuss the teaching evolution imposed by the development of communication media.

Monday, June 25
9:00–10:00 Welcome and registration
10.00–12.00 Session 1

Innovative Concepts In Advanced Education

D.P.Abrams, University of Illinois, Urbana
G.L.Fenves, University of California, Berkeley
V.Cantoni, Università degli Studi di Pavia
G.Vaggi, Università degli Studi di Pavia

12.00–14.00 Welcome Reception
14.30–16.30 Session 2: Chairman: I.M.Idriss

Controversial Issues In Earthquake Engineering

J.J.Bommer, “Deterministic vs. probabilistic seismic hazard assessment: an exaggerated and obstructive dichotomy”
J.Berrill & S.Yasuda “Lateral spreading and piled foundations”

17:00–19:00 Session 3: Chairman: K.J.Bathe

Controversial Issues In Earthquake Engineering

P.E.Pinto, P.Franchin & A.Lupoi “Difficulties in probabilistic determination of seismic risk”
G.L.Fenves “Improvement of simulation for earthquake engineering”

20:30 First ROSE Seminar Dinner

Tuesday, June 26
8:30–10:30 Session 4: Chairman: M. Nakashima

Controversial issues in earthquake engineering

G.M.Calvi & S.Pamprian "Beam--column joints damage and collapse: does it hold any relevance in RC frames assessment?"
J.Spangler Shortreed, F.Seigle & G.Benzoni "Simulation issues with a real-time seismic testing system"

11:00–13:30 Session 5: Chairman: M.Collins

Controversial issues in earthquake engineering

A.S.Elnashai “Do we really need inelastic dynamic analysis?”
E.Cosenza & G.Manfredi “Assessment of gravity load designed structures: problems in modelling”
M.J.N.Priestley “Direct displacement-based seismic design of marginal wharves”

14:30–17:30 Session 6, Chairman G.M.Calvi

(ROSE School Boards Members)

ROSE School: First six months of life and future programs

Special presentation (time and location to be defined):
E.C.Carvalho "Novel use of displacement-based design for seismic assessment and strengthening of RC buildings" (Summary of the research project ENV4-CT97-0548 – NODISASTR – funded by the CEC)

Chairman

G. M. Calvi, Università degli Studi di Pavia, Italy

Scientific Board

D.P.Abrams, Univ. of Illinois at Urbana, USA
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19
SSF-2- Site Effects and Experimental Data

XXVII General Assembly of the European Seismological Commission

Lisbon University, 15 September 2000

Conveners:
Alberto Marcellini, Convener of ESC/SCF/WG2
Atilla Ansal, Coordinator of EAEE/TG6

Summary:
The session was characterized by a large participation with respect to the other ESC Sessions: 11 and 15 papers were presented at oral and poster session, respectively.

According to the conveners requests the main topics of submitted and presented papers were: site effects analysis with particular reference to empirical approaches, theoretical evaluation of site effects and microzonation methodologies.

Particularly relevant has been the first topics: 10 papers dealt directly with the evaluation of site effects using micro earthquakes or microtremors measurements. Nakamura technique received a significant attention by the participants with interesting presentation and discussions about the reliability and stability of the method. Site effects were also tackled by analysing the data collected by dense array.

The main conclusions of the attendees about Nakamura technique were:

- The method is quite reliable concerning the estimation of the predominant period of soil;
- The amplitude of amplification is quite questionable (the attendees judgement was not unanimously);
- The method does not solve the problem of non-linearity.

Non-linearity aspects were also discussed in other presentations. As it was expected scientists coming from low-seismicity countries focused mainly on wave amplifications in linear domain, while scientists coming from high-seismicity countries evidenced the role of soil behaviour and non-linearity.

In few words site effects was mainly tackled from seismological point of view in the first case and from geotechnical point of view in the latter.

Finally papers dealing with the whole microzonation subjects were presented by means of illustration of several case histories.

Oral Presentations
D.Fah, F.Kind, S.Steimen, & D.Giardini, Structural information contained in microtremor H/V ratios
Y.Zastlavsky, A.Shapira & J.Leonov, Measurements of site effects at strong motion accelerograph stations in Israel
D.Albarello, Selection of significant seismic resonance frequencies estimated by repeated HVSR microtremor measurements
A.Gosar, M.Mucciarelli, R.Stopar, & M.Car, The earthquake on 12 April, 1998 in Kin mountains (Slovenia): ground motion amplification study using microtremors and modelling based on geophysical data
H.B.Havenith, D.Jongmans, E.Faccioli & K.Abdrahkmatov, Primary aspects of the dynamics involved in the triggering of seismically induced landslides: site effects
M.R.Gallipoli, M.Mucciarelli, M.Arcieri, E.Lapenna, Stability of HVSR from earthquakes and microtremors
S.Gresta, M.Mucciarelli, M.R.Gallipoli, H.Langer, P.Mammino, C.Monaco, J.Lettica, M.S.Barbano & R.Rigano, Microzoning of Ragusa-Ibla (South-eastern Sicily, Italy) from a multidisciplinary investigation
A.Ansal, E.Togrol, A.Kurtulup, R.Yiusan & V.Okur, Near fault site effects during Kocaeli earthquake
F.Kind, D.Fah & D.Giardini, Determination of local structures from ambient vibrations with a high-resolution F-K-spectrum estimation
A.Marcellini, R.Daminelli, G.Franceschina, M.Pagani, A.Tento Weak motion site effects and their use in microzonation
M.R.Gallipoli, M.Mucciarelli, R.Castro Structure and soil-structure effects on HVSR measurements

Alberto Marcellini

Symposium on The Dynamics of Active Faulting in the Mediterranean Region

October 9-11, 2000, Algiera

On October 9,10,11;2000 the Algerian Research Centre in Astronomy, Astrophysics and Geophysics (CRAAG, Algeria) organised a symposium on “The Dynamics of active faulting in the Mediterranean region”, commemorating the 20th anniversary of the El-Asnam earthquake (October 10, 1980). This symposium sponsored by the IASPEI and IAG was
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<td>October 11, 2000 Afternoon</td>
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<td>Three Dimensional Velocity Structure and Relocated Aftershocks for the 1985 Constantine, Algeria (Ms = 5.9) Earthquake. BOUIN, A.M. &amp; DORBATH, C.</td>
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The Bulletin of the European Association for Earthquake Engineering

Seismic Response Control of Building Structures by Friction Dampers. Ouakili, A.  
Failure of Concrete under Dynamic Tension. Brara & Klepacsko, J. R.  
Structural Assessment by Modal Testing and Analysis. Bourahla, N. & Bouriche, F.  
Calculation Of Free Field Response Of Non Homogeneous Soil Deposit From Bedrock Response Spectrum. Afra,H.  
Seismic Response Analysis of the Foundation Rocks of El-Ain El-Skhna Area, Suez, Egypt Determined from Seismic Refraction Technique. Abu El-Ela, M.  
Stress Level Estimation for the Ground beneath the 15th of May City Buildings, Helwan, Cairo, Egypt. Tealeb, A.A., Sobaih, M.E., Mohamed, A.A. & Abdel-Rahman, K.  
Experience of Ain Temouchent Earthquake. Chikhi, T.  
Turkish Earthquake of Kocaeli, August, 17th, 1999. Ferroukhi, M.  
Preparadness of population to natural disaster (Earthquake). Psychological aspect. Akhundova,S.  
Elements de reflexion sur la problématique des risques majeurs. Mimi, A.  
Les nouvelles technologies de telecommunictions au service de la prévision sismique et du seccourisme. Mekraoui, M. & Sebak, M.  

A.K.Yelles-Chaouche  
President of CRAAG

Workshop - Mitigation of Seismic Risk - Support to Recently Affected European Countries  
November 27-28, 2000, Hotel Villa Carlotta, Belgirate, Italy

1. PREAMBLE

This workshop is an initiative of the Joint Research Centre on the grounds of informal discussions between Mr. Papayannakis, Member of The European Parliament, and Mr. Busquin, EC Commissioner for Research, just after the Earthquakes that struck Turkey and Greece last year.  
The workshop is jointly organized by the Joint Research Centre (ELSA team of ISIS) and the DG Environment (Civil Protection Unit). It is divided into four parts, namely: 1) Recent Earthquakes - Lessons and Expectations, 2) Earthquake Related Activities in the EU and Abroad, 3) Policy Issues, and 4) Research and Action Needs (two parallel sessions - one on Earthquake Engineering and another on Civil Protection and Risk Management). It ends with a Round-table attempting to answer the question: "What do we need to better mitigate seismic risk in Europe?"  
The objective of the event is to bring together scientists, supporters to policy and decision making and National and European authorities to present and discuss the problems related with civil protection, reconstruction and repair of the affected areas and preventive protection of high-risk zones. A major scope is to set-up an integrated programme for effective mitigation of the seismic risk in Europe. Preparation of a background document on the required short-term and medium-term future actions is proposed.  
The workshop format and program were defined on the advice of the organizing (strategic) committee. It includes oral presentations from invited speakers and poster contributions. The objective is to cover the major issues related to seismic risk mitigation and to review the results from recent programmes, actions and research projects undertaken and developed at National and European levels.  
In spite of the fact that the Workshop was announced with very short notice, we had to increase the limited number of participants in order to accommodate most of the registration requests. This clearly reflects the importance of the subject and also the interest of the National Authorities and of the research and technical communities.  
Part of the invited speakers and poster authors could not comply with the too short deadline for delivering the written contributions. Therefore, this preliminary version of the proceedings is not complete; it is foreseen to issue a final version after the workshop, including contributions from all speakers, poster authors and the conclusions and recommendations, as addressed in the workshop round-table scheduled for the second day.  
On behalf of the Organizing Committee, we thank you all for the support and contribution given to the workshop. In particular, the participations of the Vice-Ministers of Public Works from Greece, Mr. Nasos Alevras, and Portugal, Mr. Luis Parreirão, and from Mr. Mihail Papayannakis, Member of The European Parliament, are deeply appreciated. Their presence is an implicit recognition of the potential importance of the event for their countries and for the European Community.  
Michel Géradin & Artur Pinto

Patronage Committee

Mihail Papayannakis, MEP, EP; Philippe Busquin, Commissioner, EC; Margot Wallström, Commissioner, EC; Nasos Alevras, Vice-Minister of Public Works, Greece; Luis Parreirão, Vice-Minister of Public Works, Portugal; Franco Barberi, Director of Civil Protection Agency, Italy; Achilles Mitsos, Director General Research, EC; James Currie, Director General Environment, EC; Herbert Allgeier, Director General JRC, EC; Evangelos Vardakas, Director, Conformity and Standardization, DG Enterprise, EC; Mustafa Taymaz, Director, The General Directorate of Disaster Affairs, Ministry of Public Works and Settlement, Ankara, Turkey; Theodossios P. Tassios, Professor Emeritus, Technical University of Athens, Greece

Organizing Committee (strategic committee)

David Wilkinson, DG - Joint Research Centre, Institute for Systems Informatics and Safety; Michel Geradin & Artur Pinto, DG - Joint Research Centre, Institute for Systems Informatics and Safety, Safety in Structural Mechanics; Alessandro Barisich & Panagiotis Alevantis, DG - Environment, Civil Protection; Yvan Capouet, Cabinet of Mr. Busquin; Pierre Frigola, DG - Joint Research Centre, Interinstitutional and International Relations; Marco Malacarne & Christopher Lowry, DG - Research, Human capital and mobility - Access to research infrastructures; Marie Yeroyanni, DG - Research, Preserving the ecosystem I
Session 1
Expectations
Part 1 - Recent Earthquakes - Lessons and Challenges
T.P. Tassios, Emeritus Professor, NTU Athens
Earthquake Engineering in Europe, Issues and Challenges
Keynote Lecture:
European Commission

27-28 November, November 27, 2000 – Monday
Chairman: M. GERADIN; Co-chairman: A. PINTO
Opening Ceremony

Mr. M. Papayanakis, Member of the European Parliament, EP
Mr. Ph. Busquin, Commissioner for Research, EC, (Video Registered Message)
Mrs. M. Wallstrom, Commissioner for Environment, EC, (Message read by P. Alevantis)
Mr. N. Alevras, Vice-Minister of Public Works, Greece
Mr. L. Parreira, Vice-Minister of Public Works, Portugal
Mr. D. Wilkinson, Director of the Inst. for Systems Informatics and Safety, JRC (Representing the Joint Research Centre Director-General)

Keynote Lecture:
Earthquake Engineering in Europe, Issues and Challenges
T.P. Tassios, Emeritus Professor, NTU Athens

Part 1 - Recent Earthquakes - Lessons and Expectations
Session 1: Chairman: A. Ghazi; Co-chairman: A. Ansal
Prevention and mitigation of seismic risk in Greece, V. Andrianakis, President EPPO, Greece
The 1999 Athens Earthquake, G. Gazetas, Professor, NTU Athens
The 1999 Turkey Earthquakes and Prevention and mitigation of seismic risk in Turkey, H. Sucuoğlu, Professor, EEREC, METU, Ankara, Turkey
Recent earthquakes and Prevention and mitigation of seismic risk in Italy, F. Sabetta, Deputy-Director of Servizio Sismico Nazionale, Italy
Recent earthquakes and Prevention and mitigation of seismic risk in Portugal, C.S. Oliveira, President of Earthquake Engineering Society, Civil Protection Adviser

Part 2 - Earthquake Related Activities in the EU and Abroad
Session 2: Chairman: E. Alarcon; Co-chairman: J. Pauschke

European Commission

Community research in the field of Earthquake Engineering, A. Ghazi, Biodiversity and Global Change, DG Research, EC
Community actions in the field of Civil Protection, P. Alevantis, Civil Protection, DG Environment

Community actions in the field of Standardization for Earthquake Protection, G. Katsarakis, Construction - DG Enterprise

Non-European Views and Programmes
Mitigation of Seismic Risk - American Views and Programmes, P. Nelson, Division Director (NSF), USA
Integrated Management for Earthquake Disaster Risk in Japan, H. Tatano, DPR, Kyoto, Japan

Session 3: Chairman: P. Carydis; Co-chairman: G. Magone

Other Associations and Bodies
CEN Activities in the Field of the Eurocodes, H. Bossenmayer, Chairman of CEN/TC250 (Structural Eurocodes)

Contribution of EUR-OPA Major Hazards Agreement to the mitigation of seismic risks, J.P. Massue, EUR-OPA Major Hazards Agreement

ECCREDI Activities - Relevance to Seismic Risk Mitigation, K. Meskouris, ECCREDI

IIASA Activities on Earthquake Risk Management, A. Amendola, IIASA, Vienna

The World Association of Structural Control - Relevance for earthquake protection, F. Casciati, Univ. of Pavia

Activities of the EAAE - The Role of Central European Countries, A. Ansal, EAAE General Secretary

European Projects
Earthquake Engineering Research Infrastructures, R. Severn, Univ. of Bristol


November 28, 2000 – Tuesday
Part 3 - Policy issues
Session 4: Chairman: J. Mazars; Co-chairman: A. Castellani
Cultural Heritage Specific Problems, G. Croci, Univ. of Rome
Policies For Seismic Risk Mitigation: Greek Experience, S. Anagnostopoulos, Univ. Patras
The Role of Insurance Companies, A. Smolka, Munich RE
The Role of the National Associations, P. Sollougub, AFPS, France

Part 4 - Research and Action Needs
Part 4-EE (Earthquake Engineering)
Session 5-EE: Chairman: A. Plumier; Co-chairman: M. Meskouris
European Design Codes for Structures in Earthquake Prone Regions (Eurocode 8) - Present state, co-normative and pre-normative research needs
Topic Coordinator: M. Fardis, Speakers: M. Fardis, C.S. Oliveira, J. Bouwkamp
Seismic assessment and strengthening of existing vulnerable constructions - Present state and research needs
Topic Coordinator: P.E. Pinto, Speakers: P.E. Pinto, A. Elnashai

Session 6-EE: Chairman: J. Bouwkamp; Co-Chairman: P. Negro
New methods for assessment and design of structures in seismic zones (present state and research needs)
Topic Coordinator: G.M. Calvi, Speakers: G.M. Calvi, P. Fajfar
Part 4-CP&RM (Civil Protection and Risk Management)

Session 5-CP&RM: Chairman: P.Alevantis; Co-chairman: A.Amendola

Needs for research into socio-economic impacts of Earthquakes
Topic Coordinator: I.Bergiannakis, Speakers: I.Bergiannakis

Needs for Research in the Civil Protection Area
Topic Coordinator: P.Alevantis, Speakers: P.Alevantis, D.Galanopoulos

Session 6-CP&RM: Session Chairman: F. Rocha; Co-chairman: H. Tatano

Organizational Methodology for Civil Protection (The Formidable Project and Beyond)
Topic Coordinator: P. Alevantis, Speakers: K. Holevas

Risk reduction strategies for seismic events and the NEDIES Project
Topic Coordinator: A. Lucia, Speakers: Theofilii

Round-Table
Presentation of results and recommendations of working groups
What we need to better mitigate seismic risk in Europe?
(Chairman: T.P. Tassios)

3. WORKSHOP DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

Summary
The workshop mitigation of seismic risk – support to the recently affected countries was organized by the Joint Research Centre and DG Environment with the support of several European institutions, associations and national governments.

The objective was to bring together the Commission Services concerned, the National Authorities and the Scientific and Technical Communities to discuss the main issues for seismic risk mitigation and to propose adequate actions to alleviate and hopefully avoid the catastrophic effects of earthquakes in Europe.

The participants (150 participants from 21 different countries, including USA and Japan) presented and discussed their views and action plans for seismic risk mitigation. They approved a series of actions and procedures that should be undertaken in Europe to accomplish such an objective.

The discussion held at the end of the Workshop identified five key points for an effective mitigation of the seismic risk which can be part of a 'European action plan' aiming to promote disaster mitigation efforts in Europe. These are:

1. The involvement of all the relevant institutions and organizations (European Commission, National Governments, Regional authorities, Associations, Private sector (including insurance));
2. The importance of citizen protection from risks within the EU policies. The enlargement of the EU

enhances the importance of earthquake risk mitigation since the candidate states are often earthquake prone countries (e.g. Romania, Slovenia and Turkey);
3. The focus on a list of selected topics related to Earthquake risk mitigation for which further action/development have been identified;
4. The need of a EU-based platform for:
   • formal co-operation between National Earthquake mitigation agencies;
   • advice on the balance between the different relevant actions required (Research, Education, Regulatory documents, Civil protection, ...);
5. The need of increased international collaboration. Collaboration between EU, USA and Japan must be promoted and the new information technologies should be fully exploited for this goal.

Background
The workshop mitigation of seismic risk – support to the recently affected countries was an initiative of the Joint Research Centre on the grounds of informal discussions between M. Papayannakis, MEP, and M. Busquin, Commissioner for Research, just after the Earthquakes that struck Turkey and Greece in 1999.

The workshop was jointly organized by the Joint Research Centre, Safety in Structural Mechanics Unit and DG-Environment, Civil Protection Unit with collaboration from DG Research, DG Enterprise, the European Consortium of Earthquake Engineering Research Infrastructures and several European Associations, institutions and experts.

The recent earthquakes in Europe caused heavy dead and economic losses (the death toll in Turkey (1999) is estimated at 40,000 human lives and more than 200,000 housing units will have to be built) but, looking a few years back, one finds similar or even more catastrophic seismic events (In 1980, a terrible earthquake struck southern Italy, killing 4,580 people and leaving 250,000 homeless). The Umbria/Marche, 1997, Italy, earthquake is an example of heavy damage to the priceless European architectural heritage.

Earthquakes are by far the most deadly natural disasters in the world. A third of the world's population lives in areas considered to be "at risk". Damage is greater today for two reasons: First of all, countries are more densely populated, including those at risk; Secondly, there is new industrial infrastructure that may be vulnerable in the event of an earthquake: gas and oil pipelines, dams, chemical plants, communication networks, and so on.

There is no doubt that man shall not be able to prevent earthquake occurrences. However, we are able to gain a better understanding of the complex mechanisms behind these events and therefore we must design, construct and retrofit our buildings and infrastructures adequately, limiting the damage that earthquakes cause.

Earthquake risk is, first of all, a public safety issue to which International, National and Regional authorities are deemed to enforce appropriate
mitigation measures and provide adequate means to protect citizens. It is however underlined that protection includes several aspects, namely: prevention and mitigation, preparedness and intervention, research and regulatory documents, information and training, implying involvement of different disciplines and actors. Therefore, initiatives promoting international co-operation and mutual assistance contribute in achieving a higher level of seismic safety. Promoting information exchange and networking is an effective way towards this direction.

Scope and objectives
The objective of the workshop was to bring together the Commission Services concerned, the National Authorities and Scientific and Technical Communities to discuss the main issues for seismic risk mitigation and propose adequate actions to alleviate and hopefully to avoid the catastrophic effects of earthquakes in Europe.

As stated by Commissioner Busquin in his introductory message to the workshop participants, this objective fits with the wishes of the Commission and its President, Mr Prodi, and particularly with the fact that we find appropriate solutions for problems that dramatically hurt the citizen. Specifically, the problems related to human life, economic and social damages and also, as we unfortunately saw during the recent earthquakes, losses of our cultural heritage. Therefore, it is worth to reinforce collaboration and bring up guidance for the future. This workshop fits in with the "European Research Area" that aims to bring European researchers into networks dedicated to the provision of both specific services (early alert, anticipation, quick response, validation and integration of knowledge, interfacing with stakeholders and policy makers) and products (e.g. generation of databases, common standards, etc.)

Also, as pointed out by Commissioner Wallström, “we have achieved a higher level of understanding disasters and we have certainly developed better ways to face them. However, we are still facing an increasing level of vulnerability due to Europe's high population density and urbanisation, associated to the ever-higher complexity of our economies. Additionally, as news arrive almost instantaneously at everyone’s home, public opinion is requesting a better and safer European environment. To meet this objective, we expect the research and engineering community to help us in several areas. First and above all in prevention. Through training and information. By ensuring a better understanding of the psycho-social-economic effects of disasters.”

Mr. Papayannakis, Member of the European Parliament, addressed the participants expressing his support and the support of the European Parliament to the initiative and underlying the importance of the event for the European citizens in seismic prone zones. Moreover, M. Papayannakis offered his efforts to promote the recommendations of the workshop, specifically in the appropriate Commissions of the EP.

The Workshop Programme included the participation of representatives of different European Institutions, Associations and from three EC General Directorates involved in Standardisation (DG Enterprise), Civil Protection (DG Environment) and Research (DG Research). These are the main three components that should be taken into account for Seismic Risk Mitigation. Furthermore, the National Authorities supported the initiative, as it was expressed by their Governmental representation at the highest level.

Representatives from the United States and Japan also presented their experiences and programs and opened doors for a real implementation of the cooperation agreements already set-up between their States and the European Commission. Natural Hazards and corresponding risk mitigation, at a certain stage and to some extent, should be considered at world level.

The Workshop programme was divided into four parts, namely: Part 1 - Recent earthquakes in Europe – Lessons and Expectations, Part 2 - Earthquake Related Activities in the EU and Abroad, Part 3 - Policy issues and Part 4 - Research and Action Needs. Furthermore, a round-table discussion took place at the end of the second day under the general heading: - What do we need to better mitigate seismic risk in Europe ?

During the opening ceremony, M Papayannakis, Member of the European Parliament, addressed the participants expressing his support and the support of the European Parliament to the initiative and underlying the importance of the event for the European citizens in seismic prone zones. Moreover, M. Papayannakis offered his efforts to promote the recommendations of the workshop, specifically in the appropriate Commissions of the EP.

The EC Commissioner for Research, Ph. Busquin, addressed the participants by a video registered message and M. Alevantis, representative of the Civil Protection Unit, read a written message from the Commissioner for Environment, M. Wallström.

The vice-Minister for Public Works from Portugal, L. Parreirão, addressed the participants underlying the importance of the initiative and summarizing the National activities and proposing a series of actions at European level for an effective mitigation of the seismic risks.

The Director of ISIS, JRC, D. Wilkinson, pointed out the aspects of public safety concerned with the
mission of the JRC and highlighted several aspects relevant to the Commission new approach for research – the European Research Area - and proposed to set-up an integrated programme for seismic risk mitigation in Europe involving the European Parliament, the European Commission, National and Regional Authorities and all other interested institutions.

Representatives from the Greek, Italian and Turkish Authorities also expressed their viewpoints on the matter and summarized their initiatives and actions, challenging the European authorities for integrated and co-ordinated actions at the European Union level.

The first part of the workshop, which included critical reporting of the lessons learned from the Greek, Turkish, Italian and Portuguese recent earthquakes, was followed by a keynote lecture by Professor Tassios, entitled Mitigation of Seismic risk in Europe – Issues and Challenges. He addressed the technical and policy aspects and underlined the pioneer Community programmes on training of researchers, the role of the design and construction regulations and civil protection services.

The second part of the workshop was devoted to the earthquake related activities in the EU and abroad. Representatives of the three concerned DGs (Research, Enterprise and Environment) presented the activities and actions supported and promoted and gave indications on the future potential priorities.

Priscilla Nelson, program director of the National Science Foundation (NSF), USA, presented the NSF views and programmes. In particular the newly launched Network for Earthquake Engineering Simulation (NEES), which is deemed to transform earthquake engineering research from its current reliance on physical experiments to investigations based on integrated models, databases and model-based simulation, exploiting Internet technology to integrate and interconnect these nationally distributed facilities with a computer network to afford remote access. The NEES network will provide interoperability, resource sharing, scalable and efficient net-wide deployment, open-system standardization, database consistency and integrity, and modularity in both software and hardware architectures. Total NSF funding for the NEES project is 81.9 Million Dollars over the period 2000-2004

H. Tatano, from the Disaster Prevention Research Institute (DPRI), Kyoto University, Japan, presented the activities of DPRI. More specifically, he described a proposed integrated management system for disaster risk mitigation, including the need for examining the urban vulnerability from such an integrated perspective. The inter-relations between urban disaster risk management and urban planning and management were underlined as well as the role of individual cities in modern society, as part of regional or global networks, involving information, communication and transportation technologies as well as socio-cultural interdependency. It was therefore pointed out that urban disaster risk management is a task involving research and corresponding integration and partnership between academics and practitioners (policy-makers, administrators, engineers, operators, etc.).

Representatives from European and international organizations and associations such as Eur-opa Major Hazards Agreement, CEN (Comité Européen de Normalisation), European Association for Earthquake Engineering (EAEE), European Association for Structural Control (EASC), International Institute for Applied Systems Analysis (IIASA) summarized their activities and role. A few European funded projects on Earthquake Engineering and Seismic Hazard were presented with particular emphasis on the European consortium of Large-scale facilities for earthquake research and the Research and Training networks. Their strong contribution to the set-up of coordinated research programmes for earthquake protection and to training of young researchers as well as fostering international collaborations was underlined.

The second day was devoted to policy issues for seismic risk mitigation and also included contributions from the insurance companies. Furthermore, parallel sessions on earthquake engineering and civil protection and risk management addressed the main topics for research, codification (Eurocode 8) and civil protection and risk management coordination.

Conclusions and Recommendations

Most of the participants congratulated the organizing committee of the workshop and considered it as the first opportunity to discuss the earthquake risk issues in a broader framework. These positive reactions came essentially from the political and decision-making representatives, who are facing in their countries and institutions many difficulties in setting-up appropriate measures and actions for seismic risk mitigation.

The response and recovery efforts -even if successful- cannot eliminate disaster consequences. Therefore, the importance of preventive measures against natural and environmental risks should be reflected to the disaster protection policy and initiatives at both national and international levels.

Modern cities have become increasingly vulnerable to earthquake disasters due to the over-concentration of population and economic activities, the complexity of infrastructure and systems, the transformation of life styles and the lack of public awareness. Therefore, it should be recognised that earthquake risk mitigation is one of the most important policy components contributing to sustainable development in seismic regions.

There is a common feeling that a ‘European action plan’ should be initiated aiming to promote disaster mitigation efforts in Europe.

The workshop round-table discussion identified five key points for an effective mitigation of the seismic risk in Europe. These are (see Table 1):

1) The establishment of the list of institutions and organizations to whom the recommendations should be addressed, having in view the involvement of all the relevant actors (European Commission, National
3) The identification of a list of selected subjects related to Earthquake risk mitigation for which the need for further action/development were identified. They are frequently interdependent and multidisciplinary, they integrate science, engineering and management and involve the academics, the technical community and the citizens;

4) The confirmation of a need for EU-based platform for the formal co-operation between National Earthquake mitigation agencies and for the provision of advice on the appropriate balance between the different relevant actions which are required (Research, Education, Regulatory documents, Construction Quality control, Civil protection, …);

5) The agreement on the need for further international cooperation. Earthquake risk mitigation should be considered at a certain stage and to some extent a worldwide problem, and therefore collaboration between EU, USA and Japan must be promoted and the new information technologies should be fully exploited for this goal.

Table 1 – Key points for an effective mitigation of the seismic risk in Europe (as discussed and agreed during the workshop round-table)

1. Recommendation addressees:
European Commission, National Governments, Regional authorities, Associations, Private sector (including insurance) …

2. Importance of document:
enhanced by interest of future EU member states which are often seismic sensitive countries.

3. Main subjects of interest selected:

4. Need for EU-based platform
for formal co-operation between National Earthquake mitigation agencies.

5. Need for further international collaboration
USA (e.g.: NSF - NEES program, FEMA), Japan (e.g.: BRI, PWRI, DPRI)

Furthermore, action needs and procedures were identified and proposed in the following fields: Research, Education, Regulatory documents, Civil Protection and Assessment, Re-design and retrofit of existing vulnerable buildings and infrastructures. A detailed list of topics and subjects, as identified during the workshop, is given in Annex.

**Research Issues**

In what concerns research for earthquake risk mitigation, a list of priority topics were identified, which include rational methods for redesign, socio-economic consequences of earthquakes and mid-term hazard/risk assessment which are indispensable input for decision-making, and development of new techniques for detection, rescue and upgrading.

However, it is important to underline that much importance is put on the related procedures. In fact, there is a common opinion that much more effectiveness can be achieved if research moves from a project to programme approach, allowing interdisciplinary activities and full exploitation of the research results. Furthermore, long-term support of network research projects is advised. It is worth mentioning that these views are fully in line with the European Research Area approach proposed by the Commission and adopted by the European Council.

Another important point concerns the financing of existing earthquake engineering large-scale facilities in a European context. It should be continued and strengthened for both the existing as well as for new research infrastructures. Ambitious programs were launched abroad (e.g. The NEES project, NSF-USA, allocates 81.9 Millions of Dollars over the period 2000-2004 for new research infrastructures).

**Existing Buildings and infrastructures**

It is recognized that the existing buildings and infrastructures designed and constructed without appropriate earthquake resistant characteristics are the main source of risk and shall be responsible for most casualties, injuries and economic losses. It is however recognized that their retrofit or replacement by new constructions represents a major effort, which is often beyond the ‘possibilities’ and ‘knowledge’ of the owners. In fact, strong incentives should be given to the owners and alternative-financing policies should be found (banks, insurance companies, states, EU).

Moreover, the scientific and technical communities, on the demand of the owners and public authorities, should: 1) provide the tools for the establishment of pre-disaster scenarios to support early interventions; 2) establish a commonly accepted methodology for vulnerability studies and set damage assessment criteria, including non-structural losses; 3) perform risk analysis of large infrastructure systems (both national and trans-national) and of industrial plants within given urban environment; 4) provide guidance to public authorities for decision making regarding intervention feasibility and priorities; 5) develop guidelines for assessment and redesign of individual buildings.

**Regulatory Documents**

There is no doubt that design codes are of primordial importance to ensure earthquake resistant structures and the activities of CEN for the development of the Eurocodes, in particular of Eurocode 8, are very
positively recognized. This effort has shown that, if based on sound technico-scientific knowledge, harmonized codes can be achieved.

However, there are further aspects that should be improved such as the code format, towards more simple and comprehensive documents to the technical community and a more rational definition of limit states. Furthermore, adequate mechanisms for the periodic code revision and for its enforcement should be guaranteed.

On the other hand, the governments of the candidate states to the EU should be encouraged to take part in the preparation of Eurocode8 and in other related activities.

Other aspects that should be framed are: code enforcement, quality assurance of design and construction, combat against sub-standard construction, rationalisation of the role of the insurance industry and clarification of the liability of designers, which are five interdependent points to be faced by the authorities and the private/public insurance companies.

In addition to these, there is a need for systematic certification of construction products, such as the damping and isolation devices for earthquake protection. This certification should be also extended to equipment for detection and rescue.

Civil Protection
The initiative of Commissioner Wallstrom for the establishment of a Community co-ordination mechanism for Civil Protection interventions in the event of emergency, i.e. transnational support to affected regions, etc., is welcomed.

Furthermore, the workshop suggests the imaginative promotion of public awareness on seismic risk, potentiality of interventions, etc. and a few actions for an effective role of the civil protection agencies, namely: 1) Information’s collection and management (e.g. disaster scenarios including vulnerability studies, rapid prediction of post-disaster damage, etc.); 2) Periodical testing of emergency plans; 3) Training (university assistance included); 4) Full control of communications during emergency states.

Education
Appropriate training of engineers and construction technicians is also an important objective to achieve. They should be aware of the consequences of poor design and construction practice. Therefore, it is advised that a minimum earthquake engineering education curriculum should be enforced with a possible concerted action on teaching programmes in universities. Postgraduate courses in Earthquake Engineering are encouraged.

Furthermore, it is proposed to promote seminars for: 1) future assessors (inspectors); 2) rescue volunteers; 3) technicians of building industry, as well as permanent schemes of continuing education for engineers, architects and other building agents specially after new codes are introduced.

ANNEX
List of topics and subjects identified as crucial for the mitigation of the seismic risk in Europe resulting from the discussions at the Workshop

Research Issues
• A. Priority subjects
  • Rational methods for redesign
  • Socio-economic consequences of Earthquakes, including disaster medicine
  • Mid-term hazard/risk assessment
  • Potentially active fault mapping and seismo-tectonic studies
  • Development of new techniques for detection, rescue and upgrading
  • Site-specific hazard studies.
• B. Procedures
  • From project to programme approach: European Research Area, Networking
  • Long-term support of network research projects
  • Funding of new large-scale facilities (US ex.)
  • Dense and integrated strong motion recording and seismological networks and other monitoring systems: indispensable tool for decision-making, civil protection and research
  • Encouragement of interdisciplinary activities

Education
• Minimum earthquake engineering education curriculum
• A concerted action on teaching programmes in universities
• Encouragement of postgraduate courses in Earthquake Engineering
• Continuous seminars for
  • future assessors (inspectors)
  • rescue volunteers
  • technicians of building industry
• Permanent schemes of continuing education for engineers, architects, …
• Relationship with civil protection

Regulatory Documents
• Rationalisation of the role of insurance
• Liability of engineers
• Design documents: improved formats and definition of limit states
• Eurocodes and other CEN documents
• Certification of detection and rescue equipment
• Certification of damping and isolation devices
• Quality assurance documents and incentives for their enforcement …
• Combat of sub-standard construction
• Encouragement of the governments of candidate states to take part in CEN preparation of EC8, etc.

Civil Protection
• Establishment of a Community co-ordination mechanism for Civil Protection intervention in the event of emergency, transnational support to affected regions, etc.
and Greece.

consequences of the recent earthquakes in Turkey

Greece on 21 and 22 February 2000, the Minis ters

EUR-OPA Major Hazards Agreement held in Athens,

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Ministerial meeting of the

Europe's EUR-OPA Major Hazards Agreement.

situation Management and Co-operation – An

November 2000.

The primary result of the Moscow seminar was

the unanimous recognition of the system

“EXTREMUM”, developed by EMERCOM of Russia,

as being the only one at the present time which is able
to provide a quick estimate of damage and casualties
caused by major earthquakes all over the world.

It has been agreed that during two six-month
periods, starting on 1 August 2000 to the end of
January 2001 and from 15 April to October 2001, the
EXTREMUM system be tested by providing rapid
information on damage and casualties assessment of
any earthquake with a magnitude higher or equal to

1) M ≥ 5.5. for the Euro-Mediterranean region; and
2) M ≥ 6.5. worldwide, to:

1. the network of the Euro-Mediterranean Centres of
the Council of Europe's EUR-OPA Major Hazards
Agreement;
2. specific national institutions, organisations and/or
professionals appointed by national authorities;
3. the Executive Secretariat of the Council of
Europe's EUR-OPA Major Hazards Agreement.

The Valletta (Malta) and Toulouse (France) seminars
were organised to report and evaluate the
EXTREMUM achievements as well as to direct future
needs and developments.

Principle characteristics of the EXTREMUM System

The EMERCOM of Russia's System “EXTREMUM”
was developed within the Russian State Federal
Programme “Federal System of Seismological
Observations and Earthquake Precision (FSSN)”. It
is designed to store, analyse and use in the most
effective way the considerable massif of spatially
distributed information on:
1) space/in the scales of 1:5,000,000; 1:1,000,000; 1:100,000; 1:10,000 and
larger/; 2) seismic hazard/seismic zoning and
microzoning maps of different scale; 3) elements at
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risk/population, buildings and structures, lifeline systems, hazardous facilities; and 4) algorithms for combining the parameters of mathematical models for estimation of population distribution, buildings’ damage and damage distribution, human casualty, etc.

EXTREMUM is an extensively GIS based tool, having already incorporated numerous data about various parts of the world, at different levels. This data has been collected, and the system has been developed through the efforts of many professionals and over a period of many years, as a part of some previous projects, and through the initiative of the EMERCOM of Russia.

“EXTREMUM” testing and results
The testing of “EXTREMUM” has not yet come to a close but we can already say that the EXTREMUM has provided estimates which are fairly good for the predefined objectives of its use, i.e: following the strong to catastrophic earthquake event taking place anywhere in the world, to understand immediately the scale of the problems to which the community is exposed, and to estimate whether wider international emergency response action and disaster relief are necessary or not; and in the affirmative, on which scale and with what urgency.

J.P. MASSUE,
Executive Secretary, Council of Europe’s EUR-OPA Major Hazards Agreement

Z. MILUTINOVIC,
Director, Council of Europe’s European Centre for Vulnerability of Industrial and Lifeline Systems (ECILS), Professor at the Institute of Earthquake Engineering and Engineering Seismology, University “St. Cyril & Methodius”, Skopje, Republic of Macedonia

WORLD AGENCY OF PLANETARY MONITORING AND EARTHQUAKE RISK REDUCTION


The Agency is established on the basis of the Charter in order to improve activities in the field of natural and technological security assuring an efficient information exchange for the benefit of mankind. Some highlights of the Charter are given below:

Objectives and main activities of the Agency
The objectives of the Agency shall be to reduce the impact of natural and anthropogenic disasters on human life and health, as well as property. The main activities of the Agency shall be:

1. Promoting monitoring of geospheres in order to estimate the potential for earthquakes and other natural disasters, and to detect anthropogenic ones rapidly.

2. Forecasting possible consequences of natural and anthropogenic catastrophes, developing response scenarios, and rendering assistance in the case of disasters.

3. Assessment and mitigation of natural and anthropogenic risks.

4. Monitoring and assessing the vulnerability of the built environment in terms of seismic performance, and carrying out microzonation of urban and rural areas.

5. Monitoring of mining and oil extraction activities by geophysical and remote sensing techniques, in order to reduce the associated risks.

6. Developing dedicated systems to monitor the transport and storage of hazardous materials.

7. Evaluating the effectiveness of projects designed to reduce the impacts of disasters on the environment.

8. Training technical and scientific staff, and educating the public in fields of expertise of the Agency.

9. Developing guidelines and standards for levels of quality in activities where the Agency has expertise.


Taking into consideration its objectives, the Agency will consider, before launching its activities, the existing and planned related programs sponsored by international government and non-government institutions, in order to achieve cooperation, synergy and efficiency.

Membership
Membership shall be open to governments, governmental and non-governmental organizations; any other individuals and legal entities.

General Assembly
The General Assembly shall consist of the members of the Agency. Each member who has a written mandate may represent one or several members at the General Assembly, except those cases when presence in person is required in accordance with the special provisions of the Charter. Legal entities shall be represented by their representatives.

The General Assembly shall be the supreme body of the Agency and shall have the following powers:

• to elect the Chairman of the General Assembly session;
• to determine the number of members of the Co-ordination Council and to elect them;
• to nominate and discharge the Director of the Agency;
• to adopt programs of activities and the Agency’s strategy;
• to approve the reports submitted to it;
• to appoint, when necessary, one or several auditors;
• to fix annual membership fees;
• to take decisions on appeals on membership in the Agency;
• to modify the Charter;
Ordinary sessions of the General Assembly shall be held once in four years. They shall be convened by the Co-ordination Council. Extraordinary sessions shall be convened upon the decision of the Co-ordination Council or of the Director of the Agency or upon the demand of at least one fifth of the members with obligatory announcement of the agenda. The Director of the Agency sends written convocation notices to the members of the Agency three months prior to the General Assembly.

**Executive Direction**

The Executive Direction shall consist of the Co-ordination Council and the Director of the Agency. The Executive Direction can engage third parties, including non-members of the Agency, whose activity is necessary to accomplish the tasks of the Agency resulting from the present Charter.

The Co-ordination Council shall be composed of the members of the Agency. Each member of the Agency may propose only one candidate to the Co-ordination Council. The Co-ordination Council members shall be elected by show of hands at the General Assembly session for the period till next ordinary session.

All the decisions concerning the members of the Co-ordination Council election shall be taken by majority of votes of the members of the Agency or their representatives.

The Co-ordination Council shall exercise the following main functions:
- proposes programs of activities of the Agency to the General Assembly;
- takes decision concerning the headquarters of the Agency;
- convenes the General Assembly;
- prepares draft agendas for the General Assembly;
- makes proposals concerning membership fees to the General Assembly;
- brings proposals concerning modifications of the Charter to the General Assembly;
- recommends the draft budget;
- takes decisions about admission of new members or exclusion from members of the Agency and inform the General Assembly about it;
- takes other decisions whenever required;
- performs function of the depository of the present Charter.

The Director of the Agency shall exercise overall management of the Agency and shall represent the Agency in relations with third parties in conformity with the Charter performing, in particular, the following tasks:
- administers the work of the Co-ordination Council;
- manages the resources of the Agency;
- organizes the functioning of the Agency, in particular, creates and manages the work of the headquarters and eventual bureaux and missions, establishes executive structures of the Agency;
- engages, trains and supervises any person whose activity is necessary for accomplishment of the Agency's objectives;
- concludes any agreements necessary for realization of programs;
- calls meetings of the Co-ordination Council and convokes extraordinary sessions of the General Assembly each time when he deems it necessary;
- takes other decisions when he is required to do so.

**Relations With Other Organizations**

The Agency may co-operate and conclude agreements with international, national governmental and non-governmental organizations.

The Agency may accept different functions from other international organizations whose aims and activities correspond to that of the Agency.

The Agency may have its own representation offices or missions to international organizations.

**Resolutions adopted on May 5.**

We, the participants of the Founding Conference of the World Agency of Planetary Monitoring & Earthquake Risk Reduction (hereinafter the Agency), have declared as follows:
- the Agency is being founded as a non-profit organization in compliance with the article 60 and other articles of the Swiss Civil Code;
- the Agency is being founded to reduce the impact of natural and technological disasters on human life and health, as well as property.

The Founding Conference of the Agency decided:
2. To adopt the Charter of the Agency of Planetary Monitoring & Earthquake Risk Reduction.

The Founding Conference of the World Agency of Planetary Monitoring & Earthquake Risk Reduction (hereinafter the Agency), in accordance with the acting Charter of the Agency, for the purpose of exercising the executive functions for the period till the next ordinary session, has elected the following members of the Co-ordination Council on May 5, 2001:
- Atilla Ansal, Zhu Chuanzhen, David Khidasheli, Jean-Pierre Massue, Alexey Nikolaev, Mikhail Shakhramaniy, Ravi Shanker, Luiz Mendes Victor, Max Wyss

Some participants have approved the goals of the Founding Conference of the World Agency of Planetary Monitoring & Earthquake Risk Reduction (hereinafter the Agency) and confirmed their readiness to participate in the activities of the Agency, but could not attend the Founding Conference, due to personal reasons. As a result, the 15 members Co-ordination Council has not been formed completely, since only 9 members have been elected and the Director cannot be appointed yet.
NEWS FROM MEMBER ASSOCIATIONS

From Spanish Association for Earthquake Engineering (AEIS)

* Volumes I-a and I-b of Proceedings of the First Spanish Conference for Earthquake Engineering (Murcia, 1999) are available from AEIS (Volume II is actually in press). They contain about 40 papers all written in Spanish. Sell price: 250 EUR (postage included). Check with secretaria@aeis.es to order them.

The Secretary General of AEIS has changed after the elections held in March 2000. The present members of the Executive Committee are:

President: Dr. Rafael Blazquez
Vice-President: Mr. Antonio Jiménez
Secretary General: Mr. Francisco Beltrán
Vice-secretary: Mr. José G. Sánchez-Cabañero

* The II Ibero-American Conference on Earthquake Engineering will be held in Madrid on October 15-19, 2001, host by AEIS. More than 100 abstracts have been submitted so far (official languages are Spanish and Portuguese). For details check the web page of our Association: http://www.aeis.es/AIBIS/2CII5.htm

Rafael Blázquez.

From Slovak Association for Earthquake Engineering

Central Europe is usually described as a region with moderate seismicity. In spite of that the design of civil engineering structures including seismic effects has recorded in our countries a long history. For Slovakia territory the actual seismic design of civil engineering structures started in fifties of 20th Century. The Standard’s provisions passed during the years through several revisions and modifications including innovations of seismic zonation maps. The present valid Slovak National Standard “Seismic Actions on Structures” STN 73 0036:1997 can be considered as reasonably compatible Standard with main issues of Eurocode 8 and its Parts.

The response of engineering practice to new Slovak seismic standard has shown the view of designers and their preparedness to apply simpler or more sophisticated approaches in the calculation and seismic design. This new standard was the occasion for elaboration of innovative seismic and seismotectonic maps, with convenient application of probabilistic and deterministic approaches in seismic risk analysis. Description of seismic sources on national territory and in neighbouring countries together with appropriate attenuation laws appeared to be very suitable tool for assessment of peak ground acceleration and site effects.

Very soon after the new standard came into the force there appeared several parametric studies, which evaluated whether or not to consider the contribution of seismic loading to the total stress-state of a structure. It was recognised soon that in extreme combinations of unfavourable soil conditions and seismically inconvenient design the seismic effects should be verified for the territory of all country. The demands for expert judgement became more frequent and designers started to realise more and more the necessities of seismic calculations and design.

Fortunately, basic knowledge of structural dynamics obtained during university studies created good but not fully sufficient base for many engineers-designers. The source was a good tradition in the national technical education of related theoretical disciplines. Usually, the theoretical education in structural dynamics starts in second or third year of university studies. This concerns the courses of applied mechanics and dynamics and the theory of engineering structures. In total, approximately half of graduate students have got some knowledge about behaviour of structures under dynamic loading. But on the other hand, some specifically oriented study courses recorded a lack of respective theoretical education. Therefore, two ways are suggested: either to add seismic design and theory into basic university education or to include it into continuous education of engineers - designers and architects.

One can observe also some objections against more complicated calculation and different level of structural safety. In national Slovak conditions the approaches with direct using of q-factor are rare, design problems are solved using appropriate detailing. In comparison with Eurocode 8 the Slovak Standard STN 73 0036:1007 is more consistently based on wave theory and structural and soil dynamics. It includes also the provisions for man made – technical seismicity and seismic effects of transport and explosions.

It is worth to mention that good progress has been recorded also in the introduction of Eurocode 8 (for a while like ENV 1998 PreStandard) into the system of Slovak national standards. All Parts of ENV 1998 were translated, completed with national application documents and edited. Nowadays, they are fully applied for the completion of detailing and for comparative studies. Simultaneous use of national seismic standard STN 73/0036:1997 and Eurocode 8.
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SEJSMOSTOKJOE STROIETEL'STVO
Scientific and Technical Journal
RUSSIAN RESEARCH INSTITUTE OF THE PROBLEMS OF SCIENTIFIC AND TECHNOLOGICAL PROGRESS AND INFORMATION IN CONSTRUCTION (VNIINTPI) RUSSIAN ACADEMY OF ARCHITECTURE AND CONSTRUCTION SCIENCES

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From Bulgarian National Committee for Earthquake Engineering

THE EARTHQUAKE (M7.8) SOURCE ZONE - SW BULGARIA, (Full catalogue and macroseismic maps)


The book describes the history of the zone in SW Bulgaria where in 1904 two very strong shocks occur in time domain of 200 minutes (M7.2 as foreshock and M7.8 as main event). The full catalogue is presented since historical times up to 2000 with number of earthquakes exceeding 5500. All known and many new constructed macroseismic maps - more than 100 have been included as well.

From Russian National Committee in Earthquake Engineering (RUNCEE)

A new, revised, version of Russian Seismic Building Code was developed and adopted in 2001 as a State Law in Russian Federation.

The main new features of the new code are:

?? New differentiated values of the Reduction Factors that take into account the different seismic behaviour of different structures during recent earthquakes in Turkey, Taiwan, Armenia etc.

?? Three Seismic Zonation Maps have been included in the Code instead of One Map in the former Code. These are maps for return periods 500 years, 1000 years and 5000 years.

?? The inelastic soil behaviour during strong earthquakes is taken into account by different soil factors.

Some others activities:

?? We are now in process of an Uniform Seismic Building Code for all former USSR countries development.

?? October, 9 to 13, 2001, in Sochi-city, the 4th Russian National Conference in Earthquake Engineering with International participation will be held. Former USSR countries experts and experts from some other countries will participate.

J.Eisenberg

Prof.. Ing. Emilia Juhasova, DrSc.
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and Chairwoman of Slovak Standardisation Committee for Loading of Structures
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Eisenberg, J.M. "International Conference on Structures Seismic Reliability (Turkey, Istanbul - Izmit, November 16-17, 1999)"

International Seminar on Earthquake Engineering and Seismic Zonation. (Dominican Republic, Santo-Domingo, December 5 - 9, 1999)

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EUROPEAN SCHOOL OF ADVANCED STUDIES IN REDUCTION OF SEISMIC RISK

An international graduate school in earthquake engineering will begin in January 2001, based at the University of Pavia in Italy. The ROSE (Reduction of Seismic Risk) graduate school has been launched for the following reasons:

• Recent earthquakes have shown that their impact on all aspects of human life is increasing. In developing countries the number of casualties can still be enormous. In advanced countries, the complexity of the social economical system makes it extremely vulnerable even to relatively low damage. The world demand for specialists in earthquake engineering is therefore increasing.

• Earthquakes are a world problem; hence there are no reasons for competition between different countries. The Internet revolution allows real time communication all over the world. The earthquake engineering community is a small world club, with intensive ties and a common language. It is conceivable to organize a teaching system in short courses, with a duration of not more than six weeks, offered in series with little overlapping and therefore asking each member of a highly qualified international faculty to teach a course every two-three years. It may also be allowed that most of the work towards the preparation of a Ph. D. thesis is performed in any institution where a faculty member is employed.

For these and many other reasons, the European School of Advanced Studies in Reduction of Seismic Risk has been founded and the first graduate courses will start in the year 2001.

Organisation

A total of 9 courses per year will be offered, with approximately 30 hours of classes per course. Each course will have duration between 3 and 6 weeks, with a maximum of two weeks overlapping between two courses, according to the scheme shown below. It is expected that each course will require approximately 120 hours of work in addition to lectures. Each course will be concluded by a written examination. Each course completed successfully will count for six credits.

Individual research projects may be assigned to students, which shall be concluded with the preparation of a dissertation, counting for 12 credits, approved by two Faculty members. A Master degree will require a minimum of 60 credits, with no more than one dissertation. A Doctoral degree will require a minimum of 100 credits, with no more than two dissertations, and the completion of a thesis, approved by no less than three Faculty members.

Each year an international seminar will be organized, where all the theses completed in the year will be presented. At least two scientists not belonging to the Faculty will be invited, to present a seminar and to be formal members of the commission appointed to evaluate the work of the candidates. The Ph.D. titles will be conferred after the presentation and discussion of the thesis, with the approval of the external members.

Courses

Nine courses will be offered every year, with at least one course taken from each one of the following four areas:

1. Applied mathematics and mechanics
2. Seismology, geology and geotechnics
3. Theory of structures and structural analysis
4. Design and evaluation of structures

To obtain a Master degree it will be mandatory to have passed courses addressing the basic aspects of seismology, the fundamentals of dynamic analysis of structures and some aspects of structural design. All courses, examinations, dissertations and theses will be in English.

Scientific Board, Advisory Board and Director

The Scientific Board includes all teachers offering at least one course over three years and meets normally once per year, in the occasion of an International Seminar where all the Doctoral theses in course of completion will be presented and discussed. The present members of the Scientific Board, still to be completed, are:

D.P. Abrams, Univ.of Ill. at Urbana-Champaign, USA
K.J. Bathe, Mass. Inst. of Tech., Cambridge, USA
J.J. Bommer, Imperial College, London, UK
F.Brezzi, Università degli Studi di Pavia, Italy
G.M. Calvi, Università degli Studi di Pavia, Italy
M.Collins, University of Toronto, Canada
A.S. Elnashai, Imperial College, London, UK
E.Faccioli, Politecnico di Milano, Italy
M.N. Fardis, University of Patras, Greece
G.L. Fvenes, Univ. of California at Berkeley, USA
L.Gambarotta, Università degli Studi di Genova, Italy
T.Hughes, Stanford University, USA
K.Kawashima, Tokyo Institute of Technology, Japan
M.Nakashima, University of Kyoto, Japan
S.Otani, University of Tokyo, Japan
P.E. Pinto, Università di Roma “La Sapienza”, Italy
M.J.N.Priestley, Univ.of Calif. at San Diego, USA
F.Sabetta, Servizio Sismico Nazionale, Roma,
F.Seible, University of California at San Diego, USA
D.Veneziano, Mass. Inst. of Tech., Cambridge, USA

The Advisory Board, meets whenever needed, but not less than once per year, with the following purpose:

• to take decision about the organization of the courses, their contents and teachers;
• to give indications on the admission criteria for master and doctoral students

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Cooperation agreements
Reciprocal agreements for mutual recognition of credits and exchange of students are being negotiated with the following Institutions:

- University of California, San Diego
- University of California, Berkeley
- University of Illinois, Urbana
- Imperial College, London
- University of Kyoto
- University of Tokyo
- Tokyo Institute of Technology

An agreement is being signed with the Italian National Seismic Service (Servizio Sismico) to allow the development of individual studies in the following fields: geographical information systems and damage scenario simulation, vulnerability evaluation for buildings and infra-structural systems, development and maintenance of accelerometers networks, planning and management of emergency situations. The agreement includes the possibility of organizing field trips in the occasion of specific studies or earthquake events.

Location
The official location of the Academy and of the school is the Collegio A. Volta, a new residential facility at the Scientific Campus of the University of Pavia, with 130 single rooms with bathrooms and a conference and lectures center with a main room with 130 seats.

The experimental and numerical facilities of the Faculty of Engineering and, more specifically, of the Department of Structural Mechanics, are available to the School.

Admissions

Applications for admission to the winter term of the Master School should be received not later than 15th October 2000. Electronic forms are available at the site http://spadino.unipv.it/rose.html. Original documents are to be sent separately by mail. A maximum of 20 students will be admitted, on the basis of academic qualifications. Results obtained in the Graduate Record Examination will be considered with particular attention. Some proof of knowledge of the English language shall be attached to the application (e.g. a score of 570 or higher in the TOEFL exam). By 30th October the evaluation procedure will be concluded and the results will be communicated to the applicants by e-mail. A confirmation of the intention to join the School is expected within two weeks.

Admission fees are then due by 15th January 2001. Applications to be admitted to the spring or fall terms may be submitted not later than 15th January and 15th June respectively and will be considered in case of availability of places.

Admissions to the Doctoral school will be based on written and oral examination, following prior selection on the basis of academic qualifications and experience. The first examination session will probably take place in June 2001. If this will be the case, applications should be received not later than 15th April 2001.

Admission fees
The admission fee for the Master Course is 6,000 € (Euro) and covers one year. Admission to additional terms possibly needed to complete the requirements for a degree is possible at a fee of 2,000 € per term. The same yearly fee applies for the Doctoral Courses.

Financial support
For all students admitted to the School, a subsidized rate of 250 €/month is offered at the Collegio Volta for lodging in single rooms with bathroom. Cost of meals in student refectories is included.

For applicants to the Winter term, 2001, the Academy is offering three scholarships covering the tuition costs (6,000 €) and six scholarships covering tuition and lodging costs (approximately 9,000 €).

Additional scholarships may become available before the start of the school. Scholarships and research assistantships will be available to doctoral students. Information regarding scholarships will be made available on request.

Further Information
ROSE School, Secretariat, Collegio A. Volta
Via Ferrata, 27100 Pavia, Italy.
Tel: +39-0382-548-735, e-mail: rose@unipv.it
Website: http://spadino.unipv.it/rose.html.

Prof. G. Michele Calvi
Director of the School

MARIE CURIE TRAINING SITES

In Earthquake Engineering

In its fifth Framework Programme (2000-2003), the European Commission (DGXII) has recognised the Earthquake Engineering Research Centre (EERC) at the University of Bristol as a Marie Curie Training Site in earthquake engineering. Within the awarded contract, opportunities are provided to researchers working for a higher degree in a university or equivalent institution of a Member or Associated State, to spend between 3 and 12 months at EERC Bristol as part of their higher degree studies. A subsistence allowance of 1200 Euro per month will be paid for the researcher, plus a travel allowance of 100 euro per month. There will be no charge for the use of experimental and other facilities at EERC Bristol.

Candidates for these Marie Curie training awards must be less than 35 years of age, an allowance being made for compulsory military service or for childcare.
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A policy of equal access opportunities will be applied between men and women.

It is suggested that intending candidates for these awards should first consult their research supervisor/advisor, for information about facilities, which EERC can offer, in particular whether experience of these facilities can enhance the quality of their proposed research.

Further Information can be obtained from either Prof. R.T. Severn or Dr. C. A. Taylor at the:
Earthquake Engineering Research Centre
Queen's Building, University Walk
Bristol BS8 1TR, UK
Tel: +44 117 928 7708, Fax: +44 117 928 7783
E-mail: Colin.Taylor@bristol.ac.uk
Or Janet.Davies@bristol.ac.uk
Web-site: http://www.cen.bris.ac.uk/civil/research/eerc/index.htm

R.T. Severn

In Earthquake Engineering and Structural Dynamics

The European Laboratory for Structural Assessment (ELSA) at The EC Joint Research Centre of Ispra achieves recognition as a Marie Curie Training Site in Earthquake Engineering and Structural Dynamics.

In its fifth Framework Programme (2000-2003), the European Commission (DG RESEARCH) has recognized European Laboratory for Structural Assessment (ELSA) as a Marie Curie Training Site in Structural Dynamics and Earthquake Engineering. Within the awarded contract, opportunities are provided for postgraduate young researchers holding a degree obtained from a university or equivalent institution of higher education, to spend between 3 and 12 months at ELSA/JRC Ispra as part of their doctoral studies. A subsistence allowance of 1200 Euro per month will be paid for the researcher, plus the initial and final travel cost reimbursement.

The candidate must be less than 35 years old and a national of a Member State of the European Union or an Associated State or residing in the Community for at least the last five years. A policy of equal opportunities will be applied between women and men. The candidate must also pursue her/his doctoral studies in a country other than where the Training Site is located.

It is suggested that intending candidates for these awards should first consult their research supervisor/advisor, for information about the facilities ELSA can offer at both analytical and experimental level, in particular whether a living experience can enhance the quality of their own research.

Further information can be obtained from either Armelle Anthoine or Pierre Pegon
ELSA, TP 480
JRC Ispra, I-21020 Ispra (VA), Italy
E-mail: armelle.anthoine@jrc.it or Pierre.pegon@jrc.it
Tel.: + 33 323 876563 or + 0332 789123
Fax: + 0332 789049

General information about the Training Site together with vacancies can be found on the CORDIS Web site at http://www.cordis.lu/improving/ or on the ELSA Web site at http://www.elsa.jrc.it.

MSc Course in EARTHQUAKE ENGINEERING RISK MANAGEMENT

Imperial College of Science Technology and Medicine

The course is based on the most up-to-date concepts in hazard assessment, seismic design and risk management. It builds on the international success and high profile of the MSc in Earthquake Engineering and Structural Dynamics, run by Imperial College since 1987 and provides a most important element to the training, with new modules in theory of risk management, disaster mitigation of engineering planning and assessment of safety-critical structures.

Objectives
The objectives of the course are to train high quality engineers, capable of dealing with earthquake risk assessment and mitigation problems from the earthquake source through to structural design, assessment, strengthening, insurance, and disaster management.

Method of Delivery
The course is designed to allow full time attendance for 11 months (October to September), or on a part-time basis for two years or three years. Also, individual modules may be attended by practicing engineers without registering for a degree.

Industrial Involvement
An Industrial Advisory Committee has been assembled for this course, comprising the following companies and institutions:
- Ove Arup, EQE, Whitby Bird, BNFL, WS Atkins, Allot and Lomax, High Point Rendel, SECED, ICE, IStructE, NII, BRE, SCI.

Who May Apply
The course is suitable for civil engineers. It can also be of interest to graduates of geophysics and mechanical engineering. It is essential that applicants have a strong technical education background. Practical experience, though not mandatory, is desirable.

Employment Prospects
Earthquake engineering is rapidly increasing in importance, due to the increased cost exacted by earthquakes on developing and developed societies alike. The number of formally trained earthquake engineers is much smaller than the growing demand. Moreover, the new modules offer the opportunity of working in the insurance industry.

Financial Support
A limited number of scholarships are available for highly qualified candidates, and are granted on a competitive basis.
OBITUARY NOTICE

PROFESSOR SERGEJ BUBNOV
1914 - 2000

Professor Sergej Bubnov, one of the pioneers of earthquake engineering in Europe, died in Ljubljana on 10. April, 2000, at the age of 85.

Sergej Bubnov was born in 1914 in Petrograd, Russia, as a son of a famous Russian admiral. He came with his parents to Dubrovnik in early Twenties and graduated in Civil Engineering at Belgrade University in 1939. After World War II he was employed in different design offices and construction companies. From 1964 till 1974 he was the director of the association of construction companies GIPOSS, and from 1975 on till his retirement he was the vice-minister for environment and spatial planning in Slovenia.

He became interested in earthquakes and their consequences already during his childhood in Dubrovnik, where a major earthquake occurred in the 17th century. He had a leading role in the development of the Slovenian standard for earthquake resistant structures, which was implemented in 1963, and which was after the 1963 Skopje earthquake adopted, with slight changes, as the federal code. This was the beginning of earthquake resistant construction in the former Yugoslavia. Since then Sergej Bubnov has dedicated a lot of his time to earthquake engineering and has remained active even in a great age. His last book was published in 1996. Because of his numerous achievements he was given the title of Professor at Faculty of Architecture, Civil Engineering and Geodesy at the University of Ljubljana in 1978.

S. Bubnov was, together with N. N. Ambraseys and S. V. Medvedev, the founding member of the European Association for Earthquake Engineering (EAEE), which was established on October 1, 1964, soon after the disastrous 1963 earthquake. The initial name of the organisation was European Commission for Earthquake Engineering of the IAEE (ECEE). The head office of the EAEE was located in Ljubljana and Sergej Bubnov became the Secretary General of ECEE. He served at this position until the 6th European Conference on Earthquake Engineering, which was organised by YAE in Dubrovnik in 1978. The general assembly of EAE, held during this conference, elected Sergej Bubnov for the president of EAE. After serving one term as the president, Sergej Bubnov became an honorary member of the EAE in 1982. He became also the first president of the Yugoslav Association for Earthquake Engineering (YAE).

Sergej Bubnov served for 25 years as the general editor of the main professional journal of civil engineers in Slovenia and was, until his last days, an active member of the Association of Civil Engineers in Slovenia.

The interests of Sergej Bubnov reached far beyond earthquake and civil engineering. He was fluent in several languages. He was a great connoisseur of arts and his great love was Slovenian impressionists. His opinions on different problems in society were often published in daily newspapers and magazines.
All that had the honour and luck to work with Sergej Bubnov will recall him as an extraordinary man, highly educated and with broad horizon, honest and consistent, renowned and respected at home and abroad. We will remain grateful to him and will miss him and his wise advice.

Peter Fajfar

DR. DIMITRI PAPASTAMATOIU

Dimitri Papastamatiou died in Athens on 4th July 2000, after a short illness. Dimitri was the second person to graduate with a PhD from the Imperial College Engineering Seismology Section (following Dr. S.K. Sarma), taking his doctorate in 1971 under the supervision of Professor Ambraseys. The subject of his thesis was "Ground motion and response of earth structures to strong earthquakes".

Dimitri left Imperial in 1974 and worked until 1980 as Senior Engineer in the Advanced Technology Group of Dames & Moore in London. During this time, he also acted as a UNESCO consultant to the Institute of Earthquake Engineering and Engineering Seismology in Skopje, Yugoslavia. He continued to undertake teaching and research in strong ground-motion and seismic hazard analysis and worked on applications in regional and site-specific seismic hazard assessment for nuclear power plants, industrial installations and residential complexes. Dimitri also participated in a number of field studies of destructive earthquakes in the Eastern Mediterranean.

Between 1980 and 1981, Dimitri was a Director of Geognosis Ltd, in London responsible for the development of numerical codes for static and dynamic analysis of continua. This work included applications in seismic fault studies in El Asnam, Algeria, following the destructive earthquake of 10 October 1980. In 1981, Dimitri established his own specialist consultancy, delta pi associates, in London, of which he was Managing Director until 1988. His work included consulting for the Central Electricity Generating Board and then Nuclear Electric (as a Member of the Seismic Hazard Working Party), British Petroleum and Ove Arup amongst others. During this period, Dimitri was also a consultant to the recently formed Institute for Earthquake Engineering & Engineering Seismology (ITSAK) in Thessaloniki, Greece, and continued to engage in research in strong-motion data acquisition and analysis. He participated in field studies of destructive earthquakes in Greece, including the September 1986 Kalamata earthquake.

Dimitri left London in 1988 with his family to return to his native Greece to take up the post of Senior Lecturer in Engineering Seismology in the Civil Engineering Department of the National Technical University of Athens. In 1994, he was promoted to Associate Professor in the same Faculty, where his work included teaching and research in active tectonics, strong ground-motion recording and analysis, seismic hazard assessment and seismic response of classical monuments. One of his major enterprises at NTUA was the setting up of the Earthquake Field Laboratory, a compact borehole strong-motion array on the island of Cephalonia to collect ground response data in one of the most active seismic areas in Europe. In 1994, he was awarded the T.K.Hsieh award for the 1993 paper "Earthquake response at Grangemouth", published in Géotechnique (vol. 43: pp. 537-553, with co-authors J.W. Pappin, J.A. Richards and M. Sweeney).

Dimitri's work also extended well beyond Europe: he participated in the reconstruction of Popayán in Colombia, following the destructive earthquake in 1983, and more recently in an EU-funded project on seismic hazard in El Salvador, to which he brought his unique experience on many aspects of the work, including the installation of a new strong-motion accelerometer network. Dimitri continued to be active in field studies of destructive earthquakes in Greece right up until the time he became ill, and nor did he neglect his connections with the UK, organising joint field trips with the MSc group from Imperial College.

Dimitri Papastamatiou was born in 1941, a scion of a cultured family. His father had been Head of the Geological Survey of Greece and a pioneer in seismotectonics, and his late brother, Nicholas (who, too, sadly died early), was an eminent professor of physics at the University of Milwaukee. Dimitri himself was a combination of erudite engineer and perceptive scientist. Lateral thinking was a hallmark of his research - among his many publications, the 1980 Bulletin of the Seismological Society of America paper “Incorporation of crustal deformation to seismic hazard analysis” (vol: 70, pp. 1321 – 1335) and the 1988 Earthquake Engineering and Structural Dynamics paper “Physical constraints in engineering seismic hazard analysis” (vol 16: pp.967-984, co-author S K Sarma) are recognized by many as significant advances in post-Cornell seismic hazard assessment.

Dimitri leaves to mourn his wife Caroline, whom he met when they both worked for Dames & Moore, and two fine sons, Yannis and Alexis, of whom he was inordinately proud. At his funeral service in Athens, the head of the Civil Engineering Department told mourners that in five days time Dimitri was to have been made full Professor, a recognition he and his family would have treasured, and one that was fully warranted for this accomplished teacher and fine researcher. Just as his scientific thinking was often lateral, so too was his unique and special sense of fun. Many of us will have cherished memories of delightful post-meeting sessions at nearby pubs, where, in former days, the indispensable Gauloise cigarettes would be produced, to go with that inimitable wry sense of humour, and the sudden, impulsive gale of laughter that was a special feature of his character. Dimitri was an exceptional human being, and such a thoroughly nice and charming person that he will be greatly missed by the multitude of colleagues and friends he had gathered over the years.

Dr. Willy Aspinall
3-5.10.2001 7th International Seminar on Seismic Isolation, Passive Energy Dissipation and Active Control Of Vibrations Of Structures, Assisi, Italy, Chairman: Prof.A.Martelli, Faculty of Architecture, University of Ferrara, c/o ENEA; Via Martini di Monte Sole, 4; I-40129 Bologna, Italy; Tel: +39-051-6098468; Fax: +39-051-6098544; e-mail: martelli@bologna.enea.it

3-5.10.2001 Lessons Learned From Recent Strong Earthquakes, Istanbul, Turkey, Earthquake Geotechnical Engineering (TC4) Satellite Conference, XVth International Conference on Soil Mechanics & Geotechnical Engineering, Contact: A.Ansal, Istanbul Technical University, Civil Engineering Faculty, Ayazağa, Istanbul 80626, Fax: +90-2122856006, e-mail: ansal@itu.edu.tr, http://www.ins.itu.edu.tr/eaee/satconf.htm

7-12.4.2002 Third World Conference on Structural Control, Como, Italy, Contact: 3WCS Organizing Committee, c/o Mrs. Nadia Tansini, A.Volta Cultural Center, Villa Olmo, Via Cantoni 1, 22100 Como, Italy, Fax: +39031573395, e-mail: congress@ici84.cilea.it

7-12.4.2002 Third World Conference on Seismic Isolation, Passive Energy Dissipation and Active Control Of Vibrations Of Structures, Assisi, Italy, Chairman: Prof.A.Martelli, Faculty of Architecture, University of Ferrara, c/o ENEA; Via Martini di Monte Sole, 4; I-40129 Bologna, Italy; Tel: +39-051-6098468; Fax: +39-051-6098544; e-mail: martelli@bologna.enea.it

1-6.9.2002 XXVIII General Assembly of European Seismological Commission, Genoa, Italy


4-6.9.2001 Third International Conference on Earthquake Resistant Engineering Structures, Malaga, Spain, Contact: Susan Hanley, Conference Secretariat ERES2001, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO40 7AA, U.K. Tel: 44-238 029 3223, Fax: 44-238-029 2853, e-mail: shanley@wessex.ac.uk


7-10.10.2001 10th Int. Conference on Soil Dynamics and Earthquake Engineering (SDEE'2001), Philadelphia, Pennsylvania, USA, Contact: SDEE'2001 Secretariat, Department of Civil and Architectural Engineering, Drexel University, 3141 Chestnut Street, Philadelphia, PA 19104, USA, Fax:+1 215895-1363, e-mail: sdee2001@drexel.edu, http://www.drexel.edu/sdee2001

7-10.10.2001 5th World Congress on Joints, Bearings and Seismic Systems for Concrete Structures, Rome, Italy, Organising Secretariat: Studio Ega, Viale Tiziano 19, 00196 Rome, Italy, Fax +39-06-3240143, e-mail: ega_jbss5@ega.it, web:http://www.ega.it/jbss5_2001

7-8.3.2002 Soil Structure Interaction in Urban Civil Engineering, Zurich, Switzerland, Contact: Institute for Geotechnical Engineering, CH-8093 Zurich, Switzerland, Tel:+41 1 633-2500, Fax:+41 1 633-1079, e-mail: dekanovsky@igt.baug.ethz.ch

3-7.6.2002 Ninth International Conference on Piling and Deep Foundations, Nice, France, Contact: Deep Foundation Institute, 120 Charlotte Place, Third Floor, Engelwood Cliffs, NJ 07632 USA

21-25.7.2002 Seventh U.S. National Conference on Earthquake Engineering, Boston, Massachusetts, Contact: Earthquake Engineering Research Institute (EERI), 499 14th Street, Suite 320, Oakland, CA 94612-1934 USA, Fax: +1 510 451 5411, E-mail: 7ncee@eeri.org

18-20.9.2002 International Workshop on Wave Propagation, Moving Loads, vibration reduction (WAVE2002), Okayama University, Japan, Contact: WAVE2002, Okayama University, Dep. of Environmental and Civil Engineering, 3-1-1, Tsushima Naka, Okayama Shi, 700-8530 Japan, Tel:+81 (0)86 251 8862, Fax:+81(0)86 251 8866, e-mail: wave2002@cc.okayama-u.ac.jp, http://www.civil.okayama-u.ac.jp/ WAVE2002

25-27.9.2002 Fifth International Congress on Advances in Civil Engineering, Istanbul, Turkey, Contact: Dr.Alper Ilki, Istanbul Technical University, Faculty of Civil Engineering, Ayazaga, 80626 Istanbul, Turkey, Tel:+90 212 2853975, Fax:+90 212 285-6106, e-mail: ace2002@itu.edu.tr, http://www.ins.itu.edu.tr/ace2002

Others

25-26.6.2001 First International ROSE Seminar on Controversial Issues in Earthquake Engineering, Pavia, Italy, Secretariat: ROSE School, Collegio Alessandro Volta, Via Ferrata, 27100, Pavia, Italy, Tel: +39 0382 548735; Fax: +39 0382 528422, E-mail: rose@unipv.it, Web-site: http://spadino.unipv.it/rose.html

18-30.8.2001 31st IASPEI General Assembly and 9th IAGA Scientific Assembly, Hanoi, Vietnam, Secretariat: Institute of Geophysics, Box 411, Buu Dien Boho, Hanoi, VIETNAM, e-mail: iaga-iaspei@ftp.vn

27-31.8.2001 XVth International Conference on Soil Mechanics & Geotechnical Engineering; Istanbul, Turkey, Contact: Prof. Dr. Ergün Togrol, Chairman, Organising Committee XVth ICSMGE, Faculty of Civil Engineering, Istanbul Technical University, 80626 Ayazaga, Istanbul, Turkey, Fax: 90 212 2853582, e-mail: 15icsmge@itu.edu.tr, http://www.itu.edu.tr/2001/