THE NEWSLETTER OF THE EUROPEAN ASSOCIATION FOR EARTHQUAKE ENGINEERING

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FROM THE SECRETARY GENERAL

Dear Colleagues,

This year we are bit delayed because of the excessive amount of work. As you may already know, if you are a partner of the FP7 Project SERIES, EAEE is one of the partners under the umbrella of the Bogazici University. This time it seemed more feasible to be under the University umbrella. However, we completed our formal application to FP7 to be officially registered as EAEE, I hope to receive some response in the coming months. So eventually our next move will be to prepare an FP7 proposal most likely again a Marie Currie proposal to conduct training courses in member countries for the purpose of reviving EAEE Regional European Earthquake Engineering Seminars.

This year we had our second Auditing by a Registered Audit Company and we completed and submitted all the required documents to the Department of Associations in Istanbul during late April.

The first item in this issue of the Newsletter is the Minutes of the Executive Committee held in Crete, Greece in September 2008. We also had a Joint Meeting with ESC, European Seismological Commission. The main outcome of this meeting is summarised in the Minutes. But I think the most important decision was to organise Joint conference every eight years. So the next EAEE conference in 2014 will be the Second European Conference on Earthquake Engineering and Seismology. In 2009 the EAEE Executive Committee is planning to have their yearly meeting in Istanbul prior to the forthcoming International Earthquakes and Tsunamis Conference on June 20, 2009.

The second item was intended to be an invitation for the nomination of the First Prof. Nicholas Ambraseys Distinguished Lecture Award to be presented in 2010 during 14th European Conference on Earthquake Engineering in Skopje. However, due to the delay in the publication of the Newsletter, the process of nominations are finished and the Awards Committee has already reached a decision which will be announced in June after the approval of the Executive Committee.

The third item will be the first time we publish something of technical nature. Mónica Amaral Ferreira prepared a report about the L'Aquila Earthquake of 6 April totally based on the information in the Internet. We would like to welcome any similar contributions on popular topics and issues in earthquake engineering.

The fourth item is the updated Annual Summary Report for the Bulletin of Earthquake Engineering. We are very happy with the increasing popularity and success of the Journal. We will start publishing six issues per year starting as of 2010. We will need your support in order to achieve this enlargement.

In this issue again as something new we have an announcement from Global Earthquake Model (GEM) project concerning a Request for Proposals.

As the last item we are very sad to report the death of our dear colleague Dr. Alexandros Rousopoulos, who served as the President of EAEE between the years of 1982 and 1986.

Atilla Ansal

May 2009

We cordially invite all interested scientists and engineers to be an Individual Member of EAEE. It is 30 Euros per year with electronic yearly subscription to Bulletin of Earthquake Engineering published by Springer. All the necessary information is in the EAEE web pages (http://www.eaee.org)

MINUTES OF THE EXECUTIVE COMMITTEE MEETING

NUMBER: 3 **DATE: SEPTEMBER 7, 2008** **PLACE: CRETE, GREECE**

Attendance:
Martin Koller, President
Robin Spence, Vice President
Mihail Garevski, Vice President
Atilla Ansal, Secretary General
Rainer Flesch, Treasurer
Andreas J Kappos
Carlos S Oliveira
Dario Slejko, ESC Representative

Absentee:
Mauro Dolce
Jacob Eisenberg
Peter Fajfar

Prologue: The third meeting of the Executive Committee of the European Association for Earthquake Engineering for 2006-2010 Period was held in Hersonissos, Crete, Greece on Sunday afternoon September 7, 2008 between 14:00 and 19:00 hours on the occasion of the 31st General Assembly of the European Seismological Commission (ESC) following the EAEE-ESC Joint Executive Committee meeting. The EAEE Executive Committee meeting was chaired by the President.

Item 1 Approval of the Agenda: The proposed Agenda was approved and the minutes of the Second Executive Committee Meeting were signed by all the Executive Committee Members present.

Item 2 Introduction by the President and Assessment of EAEE-ESC Joint Meeting: The President welcomed the members to the Third Executive Committee Meeting and expressed his contentment about the EAEE-ESC Joint Executive Committee Meeting held in the morning.

The basic agreements reached during the Joint EAEE-ESC Executive Committee can be summarised as:

1. To organise joint conferences every eight years. The proposals to organise joint conferences should be submitted by both EAEE and ESC National Members. Both applications to EAEE and ESC Executive Committees and both presentations to EAEE and ESC General Assemblies should be identical. In the case of more than one application, the selection of the location will be based on the total number of the votes casted in both General Assemblies.
2. To organise special sessions that would interest ESC members during EAEE Conferences and vice versa to organise special sessions that would interest earthquake engineers in ESC General Assemblies. It was agreed that these special sessions should be scheduled as a block either at the beginning or at the end and it should be possible to register only to this block of sessions at reduced registration rate.
3. In the year of separate conferences (e.g. 2010), the common block of engineering seismology is hosted by the ECEE, and the same subject is a poster only session at the ESC General Assembly. During the years without EAEE conference, the common block is hosted by the ESC General Assembly, and EAEE encourages its members to attend this common block.
4. To support and encourage joint activities among EAEE Task Groups and ESC Working Groups. Both ESC and EAEE should inform all their members via web pages and Newsletters about the EAEE-ESC Joint Working groups.
5. To establish an interaction between EAEE and ESC to improve and enhance the Strategic Research Agenda and related activities.
6. To organise joint Executive Committee Meetings during EAEE conferences and during ESC General Assemblies in between.
7. To prepare joint training courses during the ESC General Assemblies.
8. To prepare and submit joint training course proposals to FP7 and other funding agencies.

The President emphasised that even though a great achievement was made at the joint meeting, it would only be alive if both organisations keep supporting joint activities in every occasion. There was a general agreement that it is important to have decided to initiate the interaction of two associations on the Strategic Research Agenda. It was also decided to support EAEE-ESC Joint Working Groups and to inform all EAEE members via EAEE web pages and Newsletter about the EAEE-ESC Joint Working Groups that would be open to those who may be interested.

The President recommended that Vice President, Mihail Garevski should try to implement what EAEE agreed together with ESC in the forthcoming ECEE in 2010.

Item 3 Developments concerning ECEE 2010: The Vice President Mihail Garevski presented a summary concerning 2010 conference preparations. He mentioned that the preparation activities started with the design of the first announcement. Sufficient number (5000) of copies of the first announcement was printed to be distributed during the 14th World Conference on Earthquake Engineering in Beijing, China. Besides, a booth was reserved in the Exhibition Hall to present the promotional posters. Web pages for the 14th ECEE will

be ready before the World Conference. He pointed out that all efforts would be made to announce the 14th ECEE at every possible occasion to increase the participation of all related international groups.

The Vice President proposed to have "Disaster Management" as one of the conference themes and to invite one keynote speaker on this topic. The Executive Committee supported the idea of having a session and one keynote lecture on disaster management. Sálvano Briceño (Director, Secretariat of the International Strategy for Disaster Reduction, UN/ISDR) was proposed as a potential keynote speaker.

The proposal of the Vice President Mihail Garevski to invite one or two keynote lecturers from Japan, China and USA was welcomed by the Executive Committee.

The Executive Committee recommended that the conference city should only be announced as Skopje and the name of Ohrid should be deleted also from the logo of the conference.

Mihail Garevski suggested to present the list of keynote speakers to the Executive Committee before the end of this year and also proposed to organise one of the future Executive Committee meetings in Skopje. The Executive Committee welcomed these proposals.

It was suggested that it will be necessary to announce the list of invited lecturers, the first draft program with sessions and topics along with the names of the scientific and organising committees in the second announcement.

The Executive Committee recommended that the keynotes be printed as a volume in the Springer Book Series on Geotechnical, Geological, and Earthquakes Engineering, and all the accepted papers should be in a locally produced CD as the conference proceedings.

It was emphasized that in China where a big campaign of conference promotion will be carried on, it is important to inform people about the web site of the conference and the deadline of abstract submission and this information that is absent on the first announcement should be given as a poster on the booth or by applying a sticker on the announcements.

The Executive Committee after thorough discussion decided to recommend that abstracts and full papers should be reviewed by the members of the Scientific Committee and those that are commercially oriented and unrelated with the selected themes for the conference should be declined. The type of presentation, whether it will be an oral or a poster presentation should be based on the review of the full paper.

The Executive Committee agreed on three deadlines: abstract submission as 1 year, keynote submission as 6 months and full paper submission as 4 months prior to the conference.

The Executive Committee recommended not to plan for more than 4-5 parallel sessions in the conference program. It was also suggested that it would be preferable if posters are presented during the whole conference and if time wise possible, it would be preferable to have short 3-5 min oral presentations for each poster during the poster sessions.

Item 4 Recent developments in EU activities: Vice President Robin Spence summarised the major activities related to EU. He proposed three topics that need to be discussed in the meeting:

(a) The Report to the European Parliament that was adopted by the regional committee of the European Parliament at a meeting in October. This report very concisely covers all of the related topics on earthquake risk mitigation. However, a report does not have a significant impact on the application. An EU resolution or an EU decree could be much more effective for the initiation of earthquake risk mitigation measures in the member states. Therefore EAEE Executive Committee decided to recommend to EAEE National and Individual Members from EU Countries that it is necessary to lobby for the support of the member states and respective EU parliamentarians to increase their awareness about the earthquake problems and to initiate actions for earthquake risk mitigation measures.

(b) Brussels Meeting: The participants (A. Ansal & C. Oliveira) summarised their impressions concerning the meeting on "The Reduction of Earthquake Risks in Europe" held on 13 March 2008 in Brussels. There was a general agreement that EAEE should continue along these lines and should try to organise smaller groups to lobby in the member states and also keep the communication active with the Brussels.

The Executive Committee elected Mauro Dolce, Robin Spence, and Rainer Flesch as the members and Carlos Oliveira as the Chairman of EAEE European Activities Group. It was also decided that the Group can be enlarged with addition of new volunteers such as Mario Lopes and Helmut Wenzel.

(c) The Strategic Research Agenda: Robin Spence suggested that Strategic Research Agenda should be updated. It was suggested that summary sheet of the whole document can be more easily reviewed and updated and it would be appropriate if Robin Spence would take the responsibility of revising the document.

Item 5 Central Office Report for 2007-2008 term: The Report of the Central Office Activities for the term September 2007 - September 2008 was presented by the Secretary General, summarising the activities related to the EAEE Executive Committee, EAEE Memberships, Budget, EAEE Newsletter, EAEE Web pages, EAEE participation to the FP7 Project SERIES, and about the Brussels meeting on "The Reduction of Earthquake Risks in Europe", and the meeting on the "European Earthquake Engineering Protection Initiative" in Milan.

After sufficient discussion, the Executive Committee decided that EAEE should not participate in the "European Earthquake Engineering Protection Initiative" in the future.

The Secretary General reviewed the Executive Committee decisions approved by postal balloting for having them as official items in the Minutes of an Executive Committee meeting:

1. Executive Committee decided to invite Prof. Jakob Eisenberg to the EAEE Executive Committee as the first Reserve Member to replace late Prof. Emilia Juhasova on 24/8/2008.

2. Executive Committee approved the expenditure of 525€ related to the publication of the EAEE Brochure and posters to be distributed and displayed in the forthcoming conferences on 28/6/2008

3. Executive Committee approved the expenditure of 613€ for the Audit report on 13/4/2008.

4. Executive Committee approved that Individual Members should pay all their membership fees for the previous consecutive four years in order to participate to the EAEE General Assembly, to vote and to be candidate for any post in EAEE on 13/4/2008.

Secretary General presented the budget given below for the term of September 2007-2008.

	INCOME	EXPENDITURE
BALANCE FROM SEPTEMBER 2007	1,136.13 €	
Membership fees from		
National Members	2,774.00 €	
Corporate Members	196.00 €	
Individual Members Electronic Subs.	1,599.60 €	
Individual Members Paper Copy Subs.	639.00 €	
Individual Members Electronic+Paper Copy Subs.	294.00 €	
Secretary of the Central Office		2,750.00 €
Office Expenses		
Auditing Cost		613.00 €
Rate for bank account and Interest		73.94 €
SPRINGER		
Hard Copy(2007+2008)		1,753.00 €
SUM	**6,638.73 €**	**5,189.94 €**
DIFFERENCE	**1,448.79 €**	
SPRINGER DEBT	**839.00 €**	
BALANCE FOR SEPTEMBER 2008	***609.79 €***	

The budget was controlled by the Treasurer Rainer Flesch as of July, 2008. In the present situation the incomes and the expenditures were 6,638.73 € and 5,189.94 €, respectively with a balance of 1,448.79 € from which 839.00 € (750.00 € for electronic subscription) is EAEE's recent debt to Springer. The budget was approved by the Executive Committee.

Secretary General informed the Executive Committee about the increases in EAEE membership prices for BEE Volume 7 (2009). The share of Springer will be increased from 162€ to 174€ for Organisational members and from 43€ to 46€ for individual members with paper copy subscription. It was agreed to ask all National Delegates whether they prefer to receive paper copy and if the National Associations prefer to a have paper copy, they will be charged 75€ otherwise they will be required to pay only 50€ starting from 2009.

Item 6 Selection Guidelines for EAEE Prof. Nicholas Ambraseys Lectureship: The Executive Committee previously decided to establish EAEE Award Lecture to honour Prof. Nicholas N. Ambraseys to be presented in every European Conference on Earthquake Engineering with the First Lecture to be presented during the 14th ECEE, Skopje. The draft Guidelines for Prof. Nicholas Ambraseys Distinguished Lecture Award prepared by the Central Office were discussed in detail.

It was decided to present the award with two years intervals; every four years during European Conferences on Earthquake Engineering and in between two years during the General Assemblies of the European Seismological Commission. Later this proposal was approved by the ESC Executive Committee.

Executive Committee agreed to appoint an Awards Committee composed of five members for the selection of the Prof. Nicholas Ambraseys Distinguished Lecture Award and to revise the Guidelines accordingly. The first Awards Committee was appointed as composed of A.Ansal (Chairman), A.Kappos, M.Koller, R.Flesch. It was decided to ask one member from ESC and later ESC proposed D.Slejko as the fifth Committee member. The call for nominations will be announced via EAEE Newsletter and EAEE web pages. It was agreed that nominations can be submitted by all EAEE Individual Members, Delegates of National and Organisational Members as well as members of EAEE National Societies until the end of March 2009 with a cover letter giving the reasons of nominations. All the revisions proposed for "Guidelines for Prof. Nicholas Ambraseys Distinguished Lecture Award" were approved by the Executive Committee.

Item 7 Revised Rules for EAEE Task Groups: Secretary General presented the draft Rules for EAEE Task Groups with the revisions as proposed in the previous Executive Committee Meeting. The revised version was circulated among the Coordinators of all Task Groups and in general the revised version received positive response from most of the TG Coordinators. It was decided to revise the language of the document to enable more flexibility to the Coordinators. All the revisions proposed for "Rules for EAEE Task Groups" were approved by the Executive Committee.

Item 8 EAEE Statutes: Executive Committee Member Andreas Kappos summarised his suggestions related to the rationalization of decision-making process within the EAEE. His proposal was to modify the EAEE Statutes by assigning different weights to Individual and National Members such that as in most similar international organisations important decisions can be taken by the assembly of national delegates.

Executive Committee discussed the possible changes in EAEE Statutes in detail and it was decided to adopt and inquire if it will be possible according to the Turkish Association Laws,

- To adopt delegate system for all types of memberships such that each National Association will be represented in the EAEE General Assembly by one (1) delegate for every 100 members of the National Society and Individual Members will be represented by one (1) delegate for every 100 Individual members that will be elected by balloting among the Individual Members participating to the Conference 24 hours prior to the General Assembly.
- The Executive Committee agreed to reinstate a Secretary post in the Executive Committee who will be elected by the Executive Committee as in the previous EAEE Statutes that was omitted in the existing Statutes.

Item 9 Task Group Activities: The activities of the Task Groups were reviewed based on the reports received by the Central Office as a response to the inquiry forwarded to all TG Coordinator. Coordinators of TG5 (Prof. Alessandro Martelli), TG6 (Prof. Kyriasiz Pitilakis), TG7 (Prof. Roy T.Severn), TG8 (Prof. Victor Rutenberg) and TG11 (Prof. Andreas Kappos) reported their activities. The other coordinators did not respond except Mauro Dolce, who stated that due to very heavy duties he could not comply with guidelines of TG activities and he would check if he could find someone as the coordinator of TG3. Prof. Severn suggested that Prof. M.Fardis should be invited to be new Coordinator for TG7 since he is involved very actively on infrastructure and testing facilities.

Item 10 Bulletin of Earthquake Engineering: Secretary General briefly summarised the situation of Bulletin of Earthquake Engineering. He explained that BEE has been selected by ISI and was included in SCIE and CC/Engineering, Computing, and Technology Index starting from the first issue of 2007 and received its first impact factor for 2007 recently as 1.125. With this impact factor BEE ranked as the second among the presently SSI indexed five Earthquake Engineering Journals. Secretary General presented the numbers of submitted, published, in printing, under review, rejected and withdrawn manuscripts during the last year in comparison with the previous years. He summarised the six (three forthcoming, three starting in few months) new Special Issue proposals that were received during the past year. He mentioned that since number of submitted manuscripts is increasing steadily, he is expecting that most likely in 2010 it will be feasible to have 6 issues per year.

Item 11 Miscellaneous: It was decided to have the next Executive Committee Meeting in Istanbul, Turkey on Sunday June 21, 2009 just before the First International Conference on Earthquakes & Tsunamis, Civil Engineering Mitigation Activities Implementing Millennium Development Goals.

Epilogue: The third meeting of the EAEE Executive Committee held in Crete ended with the thanks of the President to all participating members.

Atilla Ansal

Secretary General

First Prof. Nicholas Ambraseys Distinguished Lecture Award

to be presented in 2010 during 14th European Conference on Earthquake Engineering in Skopje

The nominations for the Prof. Nicholas Ambraseys Distinguished Lecture Award should be sent to Atilla Ansal, Chairman of the Awards Committee by e-mail (ansal@boun.edu.tr or atilla.ansal@gmail.com). Written citations (~ 1-2 pages) are requested giving the reasons of nominations.

The Prof. Nicholas Ambraseys Distinguished Lecture Award is granted by the European Association for Earthquake Engineering to distinguished European researchers in the field of Earthquake Engineering residing in one of the member countries.

The motivations for the Prof. Nicholas Ambraseys Distinguished Lecture Award are;

(a) To honour Prof. Nicholas Ambraseys, a pioneer in Earthquake Engineering in Europe.

(b) To award European leading researchers in the field of earthquake engineering,

(c) To recognize and encourage outstanding contributions in the field of earthquake engineering in Europe,

(d) To promote European Association for Earthquake Engineering,

The The Prof. Nicholas Ambraseys Distinguished Lecture Award is granted with two year intervals on the occasion of the European Conference on Earthquake Engineering every four years and in between during the General Assembly of European Seismological Commission as one of the keynote lectures in the Earthquake Engineering block. The award recipient will be granted a Commemorative EAEE Plaque.

L'Aquila earthquake viewed from World Wide Web: A Preliminary report - The first week

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Abstract
Just seven years ago, the so called Molise earthquake strikes San Giuliano di Puglia and 28 people died, including 27 children when their primary school collapsed. On April 6, 2009 another tragic event struck Italy, L'Aquila region more precisely, as residents slept, killing at least 294 people and leaving 30.000 homeless.
The World Wide Web is a powerful mean of information, promoting multiple searches at any time in any place around the world. After the Sichuan earthquake (May 12, 2008), it was possible to collect extensive information using online newspapers. Unfortunately, language barriers hampered non-chinese researchers in the collection of the extensive information existent on online newspapers, institutional sites, opinion articles, blogs, videos or online interviews, unlike the earthquake that struck Italy a week ago (April 6, 2009) permitting to collect a huge set of documents and images, using the Web, from different subjects like social, technical, political, religious, personal comments and others.
The present paper tries to describe the different post-earthquake phases using only online data, long before eyewitness and reflected reports are made available.

Introduction
"Io vivo in automobile, per ora. Non voglio lasciare la mia terra" wrote Anna Pacifica Colasacco on her blog (miskappa). Anna was born on July 22, 1956 in L'Aquila and lived there - via Costa Masciarelli, 8 - till April 6, 2009.
An earthquake devastated the mountainous Abruzzo region of central Italy, in the Holy Week, leaving at least 294 people dead, 21 children, including a four-month-old baby. This earthquake crisis continues to shake the region - some aftershocks were even felt in nearby Rome - damaging buildings in medieval towns and terrifying the 17.000 people currently living in tent villages. Homeless survivors, in excess of ten thousand, are being housed in hotels near the Adriatic Coast and around 30 percent of people have found accommodation with friends or relatives.
Due to the instantaneous sharing of information on online media it is possible to make a preliminary report of the worst earthquake hitting Italy in nearly 30 years.
This paper is divided into three sections. Initially, Section I, shows the principal news headlines each day and Section II provides an overview of all the aspects that are triggered by an earthquake, such as social, structural, economical and resilience-wise. Finally, Section III illustrates L'Aquila before and after the earthquake.

Section I:

First day – 06/04/2009
An earthquake shook the east-central Italy, the mountainous Abruzzo region at 3.32 a.m. (01:32:39 UTC) causing severe destruction on 26 "comuni" (localities). The locality of Castelnuovo was described as a pile of debris. Onna is the worst-hit area – "rasa al suolo"- is reduced to rubble; 40 people died.
The epicentre was in L'Aquila, a medieval fortress hill town with about 80.000 people inhabitants (including surrounding areas). At 6:30 a.m. the Italian National Institute for Geophysics and Vulcanology (INGV) published the first results on its website: Magnitude: M_l=5.8 and M_w=6.2, Epicentre Coordinates: 42.334°N, 13.334°E and hypocentral depth of 8.8 km.
European-Mediterranean Seismological Centre (EMSC) also had extensive available information, like epicentre location, aftershocks distribution or moment tensor (Figure 1).

Figure 1 – Epicenter location from EMSC.

Second day – 07/04/2009
The Emergency Operations Center is located at the Guardia di Finanza Academy.
Tented camps are mounted for 18.000 people capacity.
Containers have been set up with showers and toilets.

Third day – 08/04/2009
Rescuers picked through rubble for a third night searching for survivors of an earthquake that killed 272 people.

Fourth day – 09/04/2009
There are 1.500 soldiers in Abruzzo helping with the emergency, as well as 2.000 firemen, 2.000 police and 3.000 volunteers.
One estimate for insurers puts damage to Italy's economy at 2 billion to 3 billion euros ($1.5 billion to $2.2 billion).

Fifth day – 10/04/2009
Mass state funerals and national day of mourning. The Vatican granted a special dispensation to hold a Mass on Good Friday, the only day on the Roman Catholic calendar on which Mass is not normally organized.

Sixth day – 11/04/2009
Public anger was growing, with many people saying there had been impending signs of a large earthquake and they should have been warned to prepare for the worst.

Seventh day – 12/04/2009
Search and rescue works are finished.
"Within two months we hope to certify which buildings can be inhabited and only then will we know how many citizens can return to their homes," Silvio Berlusconi (Italian PM) stated. More than 1.000 buildings have already been checked to determine if they are safe, mostly public buildings and factories important to restarting the devastated area's economic engine. Only 152 residential dwellings have been checked at this stage.

Eighth day – 13/04/2009
The first 1.000 building inspections declare that 30% are "unusable" and 20% have "restricted use", i.e. the access to the building is partially or temporarily allowed.

Section II:

Seismic activity
The April 6th 2009, earthquake is related to normal faulting and the East-West extensional tectonics that dominate along the entire Apennine belt, primarily as a response to the Tyrrhenian basin opening faster than the compression between the Eurasian and African plates.

Table 1: Major earthquakes in Italy over the past century

Date	Magnitude	Region/Locality	Casualties
1905-09-08	7.9	Calabria	5.000
1908-12-28	7.2	Messina	82.000
1915-01-13	7.0	Avezzano	32.600
1930-07-27	6.5	Irpinia	14.000
1976-05-06	6.5	Friuli	976
1980-11-23	6.5	Naples/Eboli	2.735
1990-12-13	5.8	East Sicily	13
1997-09-26	6.4	Assissi and Umbria few days later	11
2001-07-17	5.2	Alto Adige	1
2002-09-06	6.0	Sicily	2 (heart attacks)
2002-11-31	5.9	Campobasso/San Giuliano di Puglia	28
2003-04-11	4.6	North Italy	0
2009-04-06	6.3	Abruzzo/L'Aquila	289

Source: Adapted from http://www.nationalpost.com

INGV produced also a first peak ground acceleration map and regional centroid moment tensors map (Figures 2 and 3). Figure 4 illustrates the Central Italy seismicity by region from 1981 to 2006.

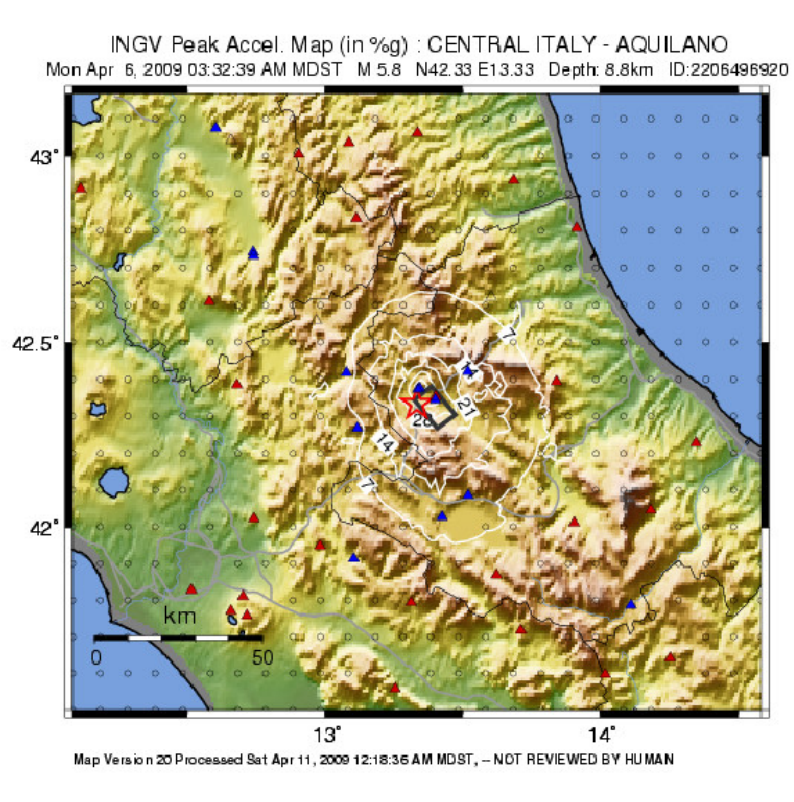


Figure 2: Peak ground acceleration map from INGV.

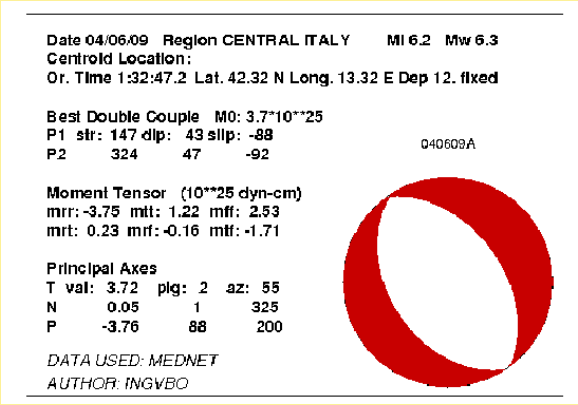


Figure 3: Quick regional centroid moment tensors (INGV).

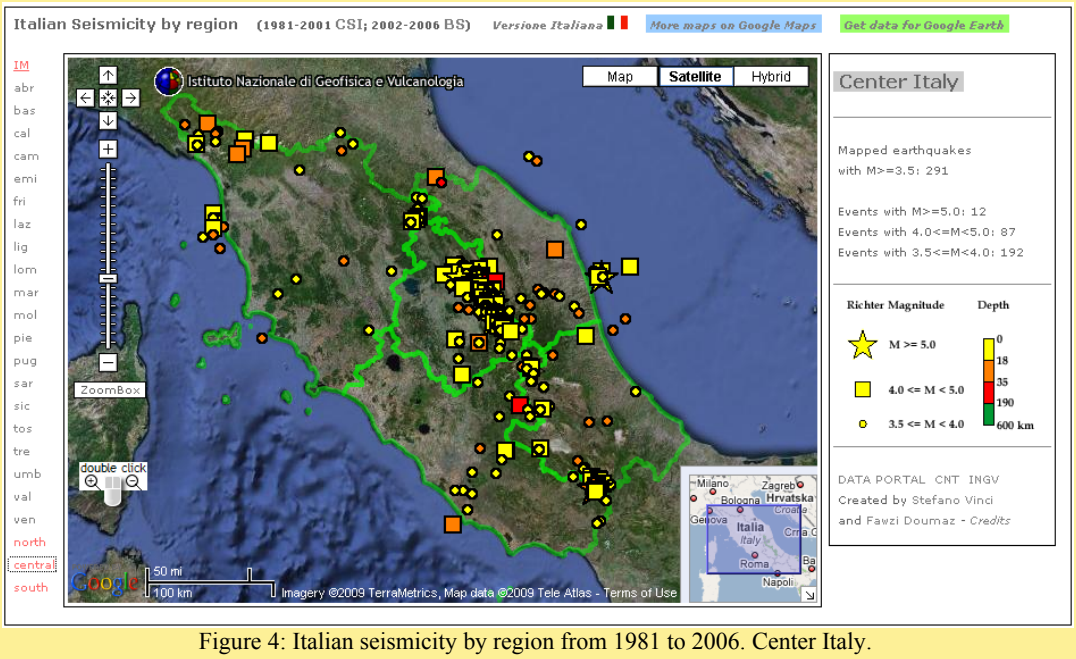


Figure 4: Italian seismicity by region from 1981 to 2006. Center Italy.

EMSC also shows in Figure 5 L'Aquila earthquake as recorded by different seismic stations.

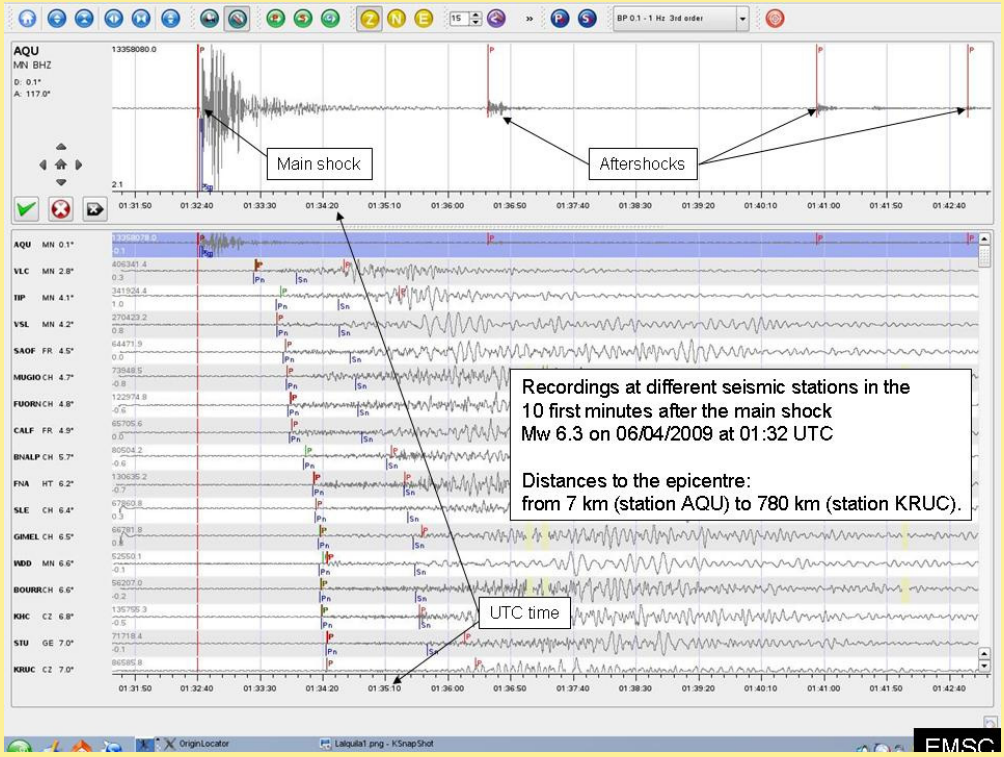


Figure 5: L'Aquila earthquake as recorded by seismic stations (Source: MedNet, ReNaSS, Strasbourg (EOST), Toulouse (OMP), Clermont-Ferrand (OPGC), Grenoble (OG), Nice Sophia Antipolis, GEOFON_Network, Aristotle University Thessaloniki Network, Czech Regional Seismic Network, Eidgenössische Technische Hochschule Zürich, Switzerland).

Unfortunately, in the first week strong motion data was not published in detail, and so it is impossible to comment on ground motion input.

Predictable or not predictable?

Seismic activity had increased over the past two months in the medieval city of L'Aquila. On March 30th 2009, panic involved L'Aquila population due to several shakes, the day after the Italian Civil Protection closed four schools after a technical inspection which demonstrated moderate damage in these structures. L'Aquila University was also closed and the "Casa dello Studente" was evacuated during three hours while the structure underwent a full technical inspection, after the March 30th event.

Giampaolo Giuliani, from a physics institute at Gran Sasso predicted the earthquake based on underground levels of the radon gas. His warnings were ignored by authorities, and he was also accused of scaremongering the population and forced to remove his finding from the internet, because the shake did not occurred on the foreseen date (one week before). Ignazio Guerra of the University of Calabria said that it is impossible to rely on that technique to predict an earthquake: "There have been earthquakes without the emission of radon gas just as there have been emissions of radon gas without earthquakes. Thus this method is far from perfect."(http://blogs.physicstoday.org).

Khan *et al.* (1990) in their paper defended the existence of a relationship between earthquake producing processes and radon movement, the variation in radon levels is related to the intensity of an impending earthquake (http://www.medicaljournal-ias.org/3_3/Khan1.pdf).

Predictable or not, it is clear that L'Aquila population were not prepared to react to this disaster - even with the vans with loudspeakers that had driven around the town a month ago telling locals to evacuate their houses - they did not have disaster's preparedness plans, they are not familiarized with this type of disaster; they were vulnerable. In synthesis, all the societies have this problem; disasters and preparedness are not yet a solved problem, disaster "are always the consequences of human actions and social decisions…It is attitudes and behaviours which in the main have to be changed" (Quarantelli, 1992).

Damages

Web offers a variety of information about the crisis and first estimations like geo-information for disaster management, satellite images, photographs as well as media information and personal reports. The following topics are an example of the type of information gathered during these days.

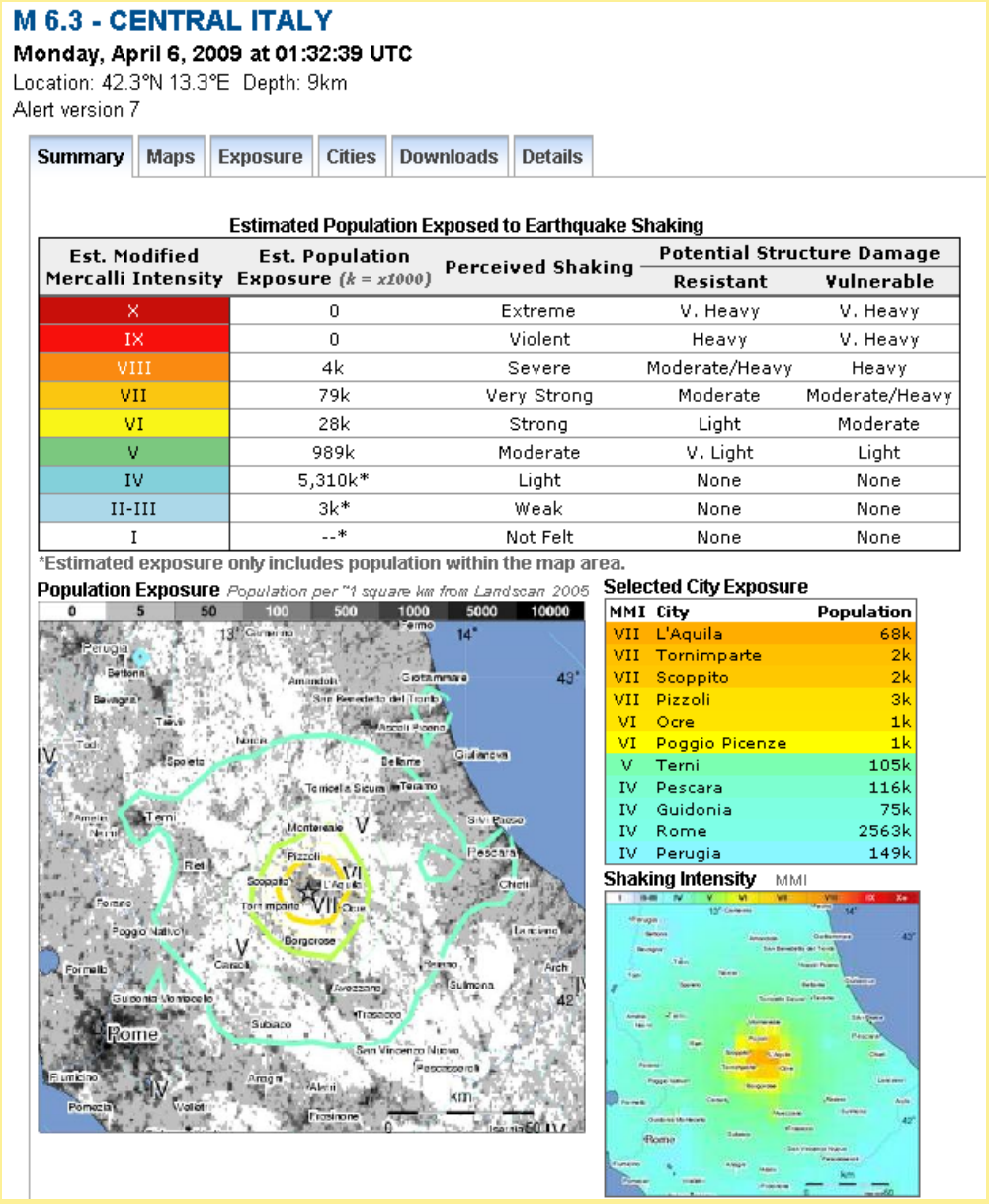
PAGER

The U.S. Geological Survey's National Earthquake developed an automated system capable of rapidly estimating the number of people, cities, and regions exposed to severe shaking named PAGER (Prompt Assessment of Global Earthquakes for Response). This tool provides quick visual overviews of shaking levels and population densities as shown in Figure 6.

During the first week no Agency, besides PAGER with Intensity evaluation, has published any analytical estimative of the seismic impact of the earthquake.

Images

The day after the event, when browsing over some comments about the Abruzzo earthquake in an Italian web forum, it was possible, in a few minutes, to draw a simple map using Google Earth, of the cities who felt the earthquake (Figure 7).



M 6.3 - CENTRAL ITALY

Monday, April 6, 2009 at 01:32:39 UTC

Location: 42.3°N 13.3°E Depth: 9km

Alert version 7

Summary | Maps | Exposure | Cities | Downloads | Details

Estimated Population Exposed to Earthquake Shaking

Est. Modified Mercalli Intensity	Est. Population Exposure (k = x1000)	Perceived Shaking	Potential Structure Damage	
			Resistant	Vulnerable
X	0	Extreme	V. Heavy	V. Heavy
IX	0	Violent	Heavy	V. Heavy
VIII	4k	Severe	Moderate/Heavy	Heavy
VII	79k	Very Strong	Moderate	Moderate/Heavy
VI	28k	Strong	Light	Moderate
V	989k	Moderate	V. Light	Light
IV	5,310k*	Light	None	None
II-III	3k*	Weak	None	None
I	--*	Not Felt	None	None

*Estimated exposure only includes population within the map area.

Population Exposure *Population per ~1 square km from Landscan 2005*

0 5 50 100 500 1000 5000 10000

Selected City Exposure

MMI	City	Population
VII	L'Aquila	68k
VII	Tornimparte	2k
VII	Scoppito	2k
VII	Pizzoli	3k
VI	Ocre	1k
VI	Poggio Picenze	1k
V	Terni	105k
IV	Pescara	116k
IV	Guidonia	75k
IV	Rome	2563k
IV	Perugia	149k

Shaking Intensity MMI

Figure 6: PAGER estimations

Figure 7: Example of localities where people felt this earthquake based on web forum comments

Artistic Patrimony

After a first inspection in the historical sites of Rome, a city archaeological authority stated that the third-century Baths of Caracalla in Rome suffered damage that still had to be quantified.

The historical centre of L'Aquila has been devastated. The first news refers to the collapse of the rear part of the apse of the Romanesque Basilica of Santa Maria di Collemaggio, much of which was restored in the 20th century. The bell tower of the 16th century San Bernardino church and the cupola of the Baroque Sant'Agostino church also fell. City's Cathedral ("Duomo"), which was rebuilt after the 1703 earthquake, also suffered severe damages.

The third floor of the 16th century castle that houses the National Museum of Abruzzo was also affected but officials have not been able to verify the damage to the art collection there. Porta Napoli, built in 1548 in honor of the Holy Roman Emperor Charles V, was also destroyed.

On April 8th (3 days later) authorities estimated that 70% of L'Aquila patrimony was destroyed.

Buildings

Apparently Italian authorities have not invested enough in making buildings earthquake-resistant, despite their frequency. Often, corruption and irresponsibility seems to be involved in design and construction of more recent buildings (last 30 years); concrete had bad quality and some experts refer that unwashed sea sand was extensively used in constructions to increase the profit of contractors. Modern buildings that suffered partial or total collapse included a hospital, city buildings and university buildings.

In the 1960-70's new housing projects were achieved in novel urban areas of L'Aquila, including earthquake prone sites like the suburb of Pettino.

After the disaster many buildings remained intact while others – from the same epoch and number of floors - were nearly destroyed (Figure 8), some engineers stated that shoddy construction practices were responsible, quoting, as examples:

- columns with 30x60 cm cross-section, in turn of 80x80 cm;
- first floor levels collapsed due to collapse of concrete columns at the base;
- use of unwashed sand directly taken from the sea shore;
- slippage in smooth reinforcing bars;
- stirrups at 50 cm spacing and;
- non-adequate consideration of the dynamic response of the structure and the mechanical load bearing characteristics of the subsoil. The nature of subsoil should determine the depth and type of foundations structures (i.e.: footings or piles).

Figure 8: 6-floor reinforced concrete collapse at Via Campo di Fossa , 6 b, L'Aquila.

Hospitals and Schools

Earthquakes repeatedly demonstrate that schools and hospitals remain inoperational after disasters. This time was not an exception - although the role of schools and hospitals requires that they should be fully operational during the emergency phase – parts of L'Aquila's main hospital San Salvatore were evacuated because these were at risk of collapse, only two operating rooms were in use. The hospital was erected 10 years ago. Injured waited in hospital hallways or in the courtyard and many were being treated in the open field (Figure 9).

According to the news, in three hours two field hospitals were set up around the town of L'Aquila. These field hospitals do not just house the victims; they also house all the patients who were previously in San Salvatore hospital. Those who did survive, though injured, arrived in droves at makeshift hospitals.

Other example of deficient structural behavior is the partially collapse of the school dormitory "Casa dello studente" causing the death of eight students. Italian Government estimates that about 16 million Euros is needed to rebuilt the dormitory and 110 million Euros to rebuilt and recover all the Abruzzo's schools damaged by the earthquake.

As school reconstruction takes time, it is important to restore normality and continue with the school year. For those who need to do the obligatory exam "Esame di maturità" (the final exams for young adults, typically aged 18 or 19), the Ministry will provide portable computers to students receive online courses.

For the youngest students, due to school disruption, these have to change schools and be relocated in other localities. All Italian schools are gathering furniture and didactic material and sending to the safe Abruzzo's schools which will receive these children.

Figure 9: Patients were ushered into the streets of L'Aquila.

Other important buildings

Civil Government (Prefettuta) and police station both strategic public buildings for emergency operations were not usable due to the collapse and severe damages that occurred.

The 5-floor Cadastral building with heavy damages was built in the 1970's; first use was to be a hotel, but someone had decided to change it and rent to Italian Government becoming Cadastral building. All the existing data and cartography will be placed in tents if the structure does not collapse in the meantime.

The overall public construction are very critical in L'Aquila; there were several changes of use during more recent years; private buildings became public without changing or checking the code resistance; where these public buildings should have been designed or checked with a cumulative importance factor of 1,2 or 1,4.

Post-Earthquake numbers

The death toll rises and today (April, 13) 294 is the number of fatalities. Figure 10 summarize the evolution of the number of fatalities during this week.

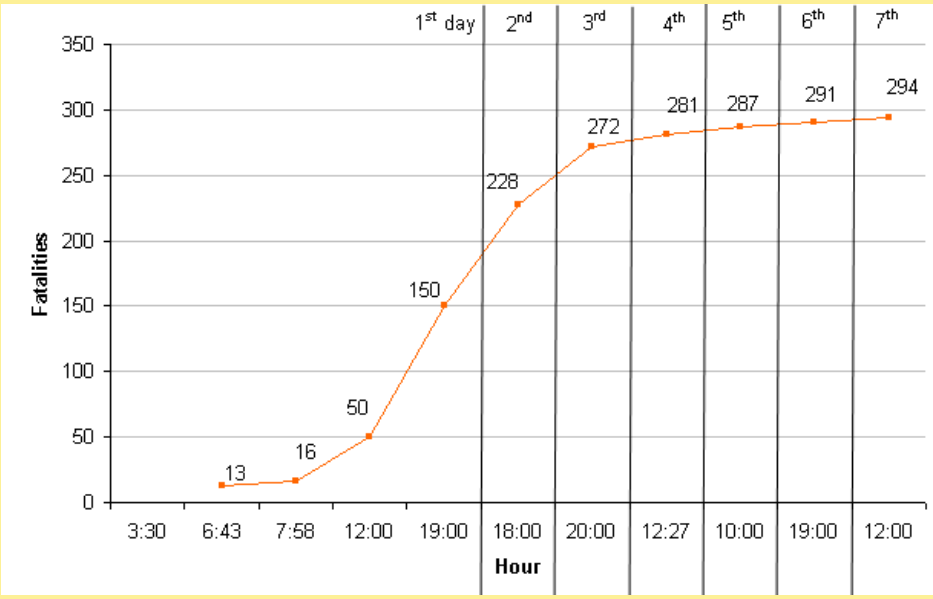


Figure 10: Number of victims during the first week

A list containing name, age and gender of 281 victims (169 female and 112 male) is accessible on web, allowing for the construction of the pyramid depicted in Figure 11 and to conclude that the lowest mortality group corresponds to those in the 35-50-year age range. The highest mortality group corresponds to those aged 20; L'Aquila is a university city with many students, the dormitory collapse and other houses collapse/damage increased the number of fatalities in this specific age group. The youngest victim is a boy with 4 months and the oldest a female with 96 years old.

Trapped people

Emergency workers in L'Aquila had pulled survivors from the rubble during these days. A 23-year-old student was pulled alive with the help of specialist cavers from the rubble of a four storey building more than 22 hours after the earthquake struck. Rescuers pulled a 20-year-old woman out of the rubble alive some 42 hours after the earthquake. A 98-year-old woman who was pulled alive told rescuers she spent the time knitting while she waited to be saved.

People trapped under a heavy layer of rubble had fewer chances to survive (Coburn and Spence, 2002), due to the collapse of old masonries which forms a cloud of dust, quickly suffocating and rapidly decreasing the surviving chances of buried people.

Figure 11: Age and gender of 281 victims (April 10, 2009). Source: http://www.corriere.it/cronache/09_aprile_10/lista_vittime_1a97ceb6-2591-11de-bdf0-00144f02aabc.shtml?fr=correlati?fr=correlati

Good practices

The mountain village of Santo Stefano di Sassanio, founded in Roman times, still stands. Apart from the tower, no other structure was damaged. Ten years ago Oriano di Zio and Kihlgren bought 15 houses of the abandoned hill village, restored them and create a hotel named *Sextantio - albergo diffuse* (Figure 12).

"In restoring the houses we have obeyed the most recent seismic resistant building codes; in fact, we have gone beyond them," says Oriano di Zio. Wooden arches are inconspicuously bracketed by stout steel girders. Upper floors hide steel reinforcement, giving the structures both the strength and flexibility to ride the seismic waves. One can conserve historic fabric while making it structurally adequate," says Kihlgren. "It would be a crime to do otherwise. Here there are houses with trees growing inside them, with 200-year-old tiles, but which also have underfloor heating and obey the seismic resistant codes".

The tower collapse is explained by the introduction of a concrete platform, before the present restoration, on the crown of the tower to afford views over the countryside.

Figure 12: The mountain village of Santo Stefano di Sassanio before the tower collapse.

Economics

The earthquake will have a huge impact in a region which mostly lives of tourism, farming and family businesses. Regarding entrepreneurs who have lost their jobs, the Prime Minister Silvio Berlusconi said the government will include in the unemployment benefits reform financial help for Abruzzo's businessmen whose economic activities have been destroyed.

Hotel owners are worried because tourists will not be able to come and the refugees have little money to spend.

The Italian government says it will set up new prefabricated villages to house the homeless. “There is not a single house which is intact”, said the Prime Minister. The "ghost town" reconstruction would cost billions of Euros and will soon be constructed near L'Aquila.

After seven years of San Giuliano di Puglia earthquake reconstruction still unfinished – a place with 1.163 inhabitants and few hundreds of buildings –. How long it will take to rebuild L’Aquila and surrounding areas?

Bring the idea of normality

Now after nearly a week from the tragic event, people finally realize what has happened.

After 4 days some supermarkets reopen for business, to bring the idea of normality to people who did not have anything, to provide bread and milk, to provide the basics.

"The people in the camps, they don't have toothbrushes, they don't have toothpaste," said Mayor Massimo Cialente. "You can't find a place to buy cigarettes or get a coffee."

In the main L'Aquila tent camp, people busied themselves with the routine of their improvised lives, waiting for breakfast and lining up for a shower. In the city, people lined up to request that rescue workers go into their homes to fetch key documents and prized possessions.

At the entrances to the main camp, a notice announces a lost pit bull, while another notice says psychological help for any of the 1.700 residents is available in a green tent.

Section III:

Before and after the disaster

Images taken before and after the event had shown severely damaged areas in the city. These pictures are available on online Daily Telegraph, Google Earth and Virtual Earth.

Note: During a disaster there is a common tendency to exaggerate. An example are the city of L'Aquila and the small village of Onna, 8 km to the SSE, both were described by press as being destroyed. Aerial views of the buildings of Onna show 100 per cent damage and 50-60 per cent outright collapse.

“Images of L'Aquila show sporadic damage, including the partial or total collapse of single large buildings and areas in which groups of buildings have battered each other down. In both cases this is far from total devastation. However, aggrandisement is a common feature of disaster reporting in any setting”. (http://www.emergency-planning.blogspot.com/)

Palazzo del Governo - before

After

Piazza della Repubblica - before

After

Cathedral (“Duomo”) - before

After

Cathedral (“Duomo”) - before

After

Corso Principe Umberto - before

After

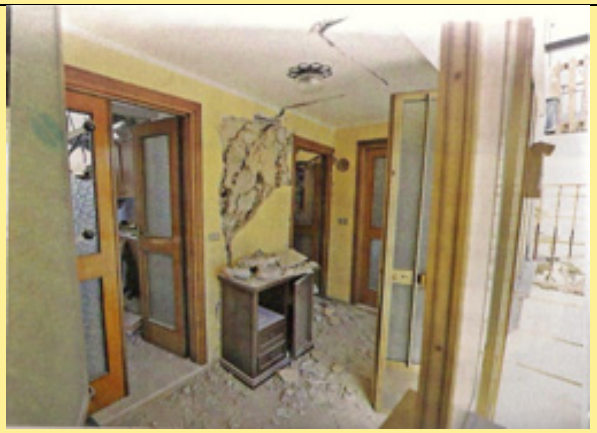
Aerial view - after

Aerial view - after

Before

After

After: Exterior - very heavy damage



After: Interior damage

Final remarks

This was just a curious and personal search to better understand the response and crisis evolution while waiting permission to visit the area.

During the first four days of the tragedy the news are almost in real time; all the newspapers and online televisions show and assemble information in "dossiers" or special articles. Nevertheless, on the 5th day the information flow is still strong but start decreasing – on the 7th day the Abruzzo earthquake is not the first item on the online edition of the international newspapers - which is related to the fact that most important decisions were implemented immediately; choose new hospital facilities or improvise medical care/assistance on covered roadways, choose hotels or safety stadiums and open areas to accommodate the homelessness - the first 3 days are crucial to make decisions. The other aspect to consider is related with hope of rescue someone with life becomes increasingly difficult with time, consequently the news decreases.

Unfortunately is impossible to read and collect the vast information contained on the World Wide Web. On April 11, per example if you "googled" for "abruzzo earthquake" it appears 223.000 results, about "L'Aquila earthquake" 1.670.000 results, while writing in Italian "Abruzzo terremoto" increases to 2.330.000 results. As we can see, themes related with the event are always be adding in different languages.

On the fifth and sixth days of data collection a connection problem had occurred during the morning, which means two half days lack of information, without knowing what is happening and increasing the anxiety for news. Communication systems are not only critical and precious during emergency, in a certain area devasted by a disaster, 2600 km away for instance, is also important to accompany the crisis evolution and the different phases that characterise post-earthquake. This reflects the power and necessity of internet and communications on our lives and works.

Acknowledgments

Professor Carlos Sousa Oliveira for his encouragement to assemble online data during these first days and the idea of write an article with this search results. Professor Jorge Miguel Proença for his comments and availability.
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http://www.ftatalk.com/showthread.php?t=275009 - ver mais
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BULLETIN OF EARTHQUAKE ENGINEERING
Official Publication of the European Association for Earthquake Engineering

SUMMARY REPORT FOR 2008

I was informed by the Senior Publishing Editor for Earth Sciences in Springer on June 18, 2008 that BEE received its first impact factor for 2007 as 1.125 which was the second highest among the five earthquake engineering journals (Earthquake Engineering and Structural Dynamics, Bulletin of Earthquake Engineering, Earthquake Spectra, Soil Dynamics and Earthquake Engineering, Journal of Earthquake Engineering) and is ranked as the 4th among 26 journals in "Engineering and Geological" section.

The publication of BEE started approximately five years ago in 2003, it was selected in November 2006 by ISI to be included in SCIE and CC/Engineering, Computing, and Technology Index starting from the first issue of 2007. It is inconceivable to have come so far so rapidly in five years. It would not have been possible without the contributions of the BEE Editorial Board, authors of published manuscripts and competent reviewers.

I would like to express my gratitude to all the authors who are really the main contributors to this process and to all the Members of the Editorial Board for all their support as reviewers, authors and Guest Editors. I would also like to thank all the reviewers for their very important input in this process.

In 2003 and in 2004, the number of manuscripts submitted was 26 for both years. In 2005 this number increased to 38, in 2006 to 51, in 2007 to 65 and in 2008 to 107. The number of submitted manuscripts with respect to 2007 increased approximately 65% indicating the increasing popularity of BEE.

With respect to printed manuscripts; the first BEE volume in 2003 had 16 articles, the second volume in 2004 had 15 articles, and the third volume in 2005 had 12 articles. Due to the increase in the number of issues to four, fourth volume in 2006 had 25 articles, fifth volume in 2007 had 27 articles and sixth volume in 2008 had 34 articles.

At the present we are discussing with Springer to increase the number of issues per year from 4 to 6. Most likely we will be publishing BEE as six issues per year starting 2010.

There were three new special issue proposals during the past year and with the two from previous year a total of 5 special issues are in line for publication:

- 12th Mallet Milne Lecture by Roger Bilham; Guest Editor: Ian Smith. Planned to be published as Vol.7 No.3.
- Earthquake Protection of Bridges; Guest Editor: Andreas Kappos (Out of the proposed 13 manuscripts 11 were accepted and published as Vol.7 No.2.)
- Structural Seismic Safety Assessment; Guest Editor: Carlos S. Oliveira (Out of the proposed 11 manuscripts 10 were submitted and are under review)
- Ambient Noise Measurements on Soil and Buildings; Guest Editor: Marco Mucciarelli (All of the proposed 10 manuscripts are under review)
- Italian strong motion data and networks; Guest Editors: Lucia Luzi, Paolo Augliera and Antonella Gorini (All of the proposed 9 manuscripts are under review)

During 2008, it was very unfortunate that Prof. Emilia Juhasova a member of BEE Editorial Board passed away. At the present, Editorial Board is composed of 31 distinguished researchers.

Atilla Ansal
Editor

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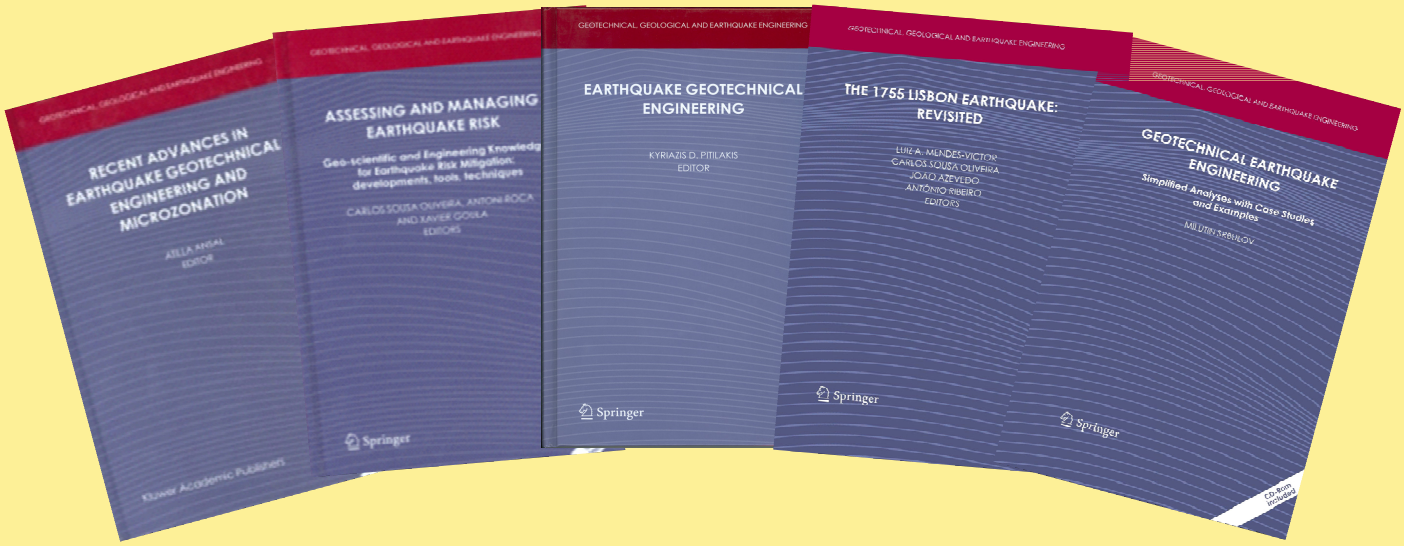

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Request for Proposals: Global Earthquake Model (GEM)

GEM seeks to build an authoritative standard for calculating and communicating earthquake hazard and risk. GEM will be the first global, open source model for seismic risk assessment at a national and regional scale, and aims at achieving broad scientific participation and independence. GEM aims to achieve its goals by developing state-of-the-art open source software and global databases necessary for reliably mapping earthquake risk. To this end, GEM has posted these requests for proposals, due **15 July 2009**, with these target budgets and durations:

- Global Active Fault and Seismic Source Database, 450,000€, 24 months. Seismic hazard assessments should incorporate an inventory of active faults. GEM seeks to build a uniform global active fault and seismic source database with a common set of strategies, standards and formats. It should include both observational (active faults and folds) and interpretative (inferred seismic sources) elements.
- Global Instrumental Seismic Catalog, 450,000€, 24 months. As basis for its global reference hazard model, GEM seeks the stable quantification of seismicity for as long a time period as possible and in all regions, as the primary tool to be used to characterize the spatial distribution of seismicity, the magnitude-frequency relation and the maximum magnitude.
- Global Historical Earthquake Catalog and Database, 400,000€, 24 months. The record of past earthquakes is among the most important means to evaluate earthquake hazard, and the distribution of damage associated with past earthquakes is a key to assessment of seismic risk. Extending the record of large damaging earthquakes by several hundred of years longer than the instrumental record is thus extremely valuable.
- Global Ground Motion Prediction Equations, 400,000€, 24 months. With the goal of compiling a global reference hazard assessment model, GEM seeks to develop a harmonized suite of ground motion prediction equations (GMPE), built on the most recent advances in the field.
- Global Geodetic Strain Rate Model, 250,000€, 18 months. The geodetically measured secular strain rate provides an independent benchmark for crustal deformation and thus the recurrence of large earthquakes that can be compared with the seismic catalog and active faults.

We anticipate that proposals will be prepared and submitted by international consortia. Proposals will be subject to peer review, and will be selected by the GEM Scientific Board, with awards expected in mid-September 2009. To learn more about GEM and to download the requests and guidelines for the preparation of the proposals, visit www.globalquakemodel.org.

Global Earthquake Model - GEM Secretariat
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Dr. Alexandros Rousopoulos
1943 – 2008

Alexandros Rousopoulos was born in Athens in 1943. He graduated from Athens College in 1962. Following his father, Athanasios Rousopoulos, the prominent Professor at the National Technical University of Athens (NTUA), Alexandros Rousopoulos studied at the School of Civil Engineers at the NTUA. He specialized in Earthquake Engineering and obtained his M. Phil. from the Imperial College in London and his Ph.D. from the NTUA.

He worked at the NTUA as a lecturer and served as President of the lecturers from 1975 to 1978. He coordinated the UNESCO program for the seismicity of the Balkan region and served as President of the European Association of Earthquake Engineering, (1978-1982), vice-President of the Organization of Earthquake Planning and Protection (1981-1985) and as a delegate and member of the Scientific Committee of Civil Engineers of the Technical Chamber of Greece (1976-1981).

From 1981 to 1989, he served as Secretary General and Deputy Minister of the Hellenic Ministry of Transportation and Telecommunications. During his stay at the Ministry he introduced and implemented important measures and actions such as the technical control of cars and codification of the legislation. From 1990 to 1995, he worked in the private sector as a business consultant and manager. From 1997 to 2002 he served as Head of the UNIDO Athens office, responsible for the industrial development of the Balkan region, some ex-Soviet counties and some countries of the Near and Middle-East. He also served as President of the Hellenic Road Safety Committee from its formation until 2005. Since 2004 he worked in the management of the Theocharakis Group of companies.

Apart from his professional achievements, he was admired for his generosity and genuine kindness. He died on 16-12-2008.

By Stavros A. Anagnostopoulos