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AEES is a Technical Society of IEAust The Institution of Engineers Australia and is affiliated with IAEE

2/2003

AEES Newsletter

Contents

President's Column

Since the last newsletter the executive has met to progress several initiatives of interest to members. The first of these is the development of an agreement of collaboration between our Society and the Earthquake Engineering Research Institute in the United States. The drafting process has progressed to the point that a nearly final version is with the EERI. If all goes well, we hope to be able to present this to members shortly. In essence, it commits AEES to identifying issues of mutual interest and the establishment of individuals or groups to prepare work plans to attempt to achieve progress in the identified areas. At this point, it is envisaged that the Society will simply act as a coordinator, trying to bring together members from both organizations so that a bilateral approach to solving mutual problems might bring faster resolution than working solo.

To that end, we plan to conduct a survey of members seeking information regarding their current areas of earthquake engineering and seismology (and other related fields) activity and key issues that need further/continued work. Following this, we anticipate approaching relevant organizations, including Emergency Management Australia, to make them aware of what we see as important areas of activity and seeking their support. For example, EMA has indicated their willingness to lobby for our Society, and wider earthquake engineering/seismology activities wherever appropriate.

I recently attended an Institution of Engineers meeting for the presidents of all the Institution's technical societies. One item of interest to us was that the IEAust, in recognition that its technical societies are largely responsible for providing most of the Continuing Profession Development activities that its members need to take part in to remain registered, are in the process of calling for applications from the societies for funding to support the running of CPD activities for the next financial year. The executive is planning to follow this up with an application – perhaps to fund a national speaking tour of a relevant expert on a topic of importance (identified in our survey) to our Society. If you have any ideas along this or other lines, please do not hesitate to let us know.

As you will be aware, applications have been called for the Society's research scholarship. Applications close on August 1st and the executive hopes to come to a decision before the end of August so that successful applicants have a chance to use the money before the end of 2003 and hopefully, attend our annual conference in November. Which brings me to the end. I hope to see a strong showing of members in attendance in November. If you require more information, please contact Barb Butler at: b.butler@civenv.unimelb.edu.au

Mike Griffith

Next AEES AGM and Conference to be held in Melbourne later this year!! Organisers Prof Graham Hutchinson, Prof John Wilson and Dr Nelson Lam

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AEES Executive

President	Mike Griffith
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Earthquakes in Australia

Apr – Jun 2003

The following list of earthquakes was compiled and provided by Geoscience Australia with information from ES&S and PIRSA. There were locatable events in every State and Territory, many of them felt though none caused damage. The largest was a magnitude 3.8 earthquake near Oodnadatta SA.

Date	Time	Lat S	Long E	M	Comments
March					
27	144001.32	33.832	133.299	3.5	Gt Australian Bight
27	173228.38	30.576	116.987	1.6	Burakin WA
29	40817.61	30.379	117.781	1.9	Beacon WA
30	152430.46	21.854	129.665	2.3	Lake Mackay NT
April					
1	63433.98	19.759	134.738	2.1	Tennant Creek NT
1	193137.01	30.578	116.986	1.8	Burakin WA
1	194344.77	30.571	117.006	1.8	Burakin WA
4	336.71	30.564	117.015	2.2	Burakin WA
5	191932.61	19.66	134.149	2.5	Tennant Creek NT.
6	233015.69	38.423	145.596	2.4	Almurta Vic.
7	171607.66	30.536	117.05	1.6	Burakin WA
8	31332.88	14.642	121.917	3.6	Scott Reef WA
10	4159.07	29.33	114.333	3.3	Near Geraldton WA
10	63338.68	30.5	117.086	2.1	Burakin WA
10	71126.62	39.223	145.929	3.9	Bass Strait.
11	442.11	30.775	117.149	1.5	Cadoux WA
13	212706.73	30.595	116.99	2.1	Burakin WA
14	52858.72	30.499	117.064	1.9	Burakin WA
14	213552.75	38.565	146.29	2.3	Boolarra Vic felt Budgeree
15	164525.06	19.707	133.945	2.7	Tennant Creek NT.
15	191619.53	31.196	118.709	2.7	Westonia WA. Felt
15	202638.59	31.17	118.75	1.5	Westonia WA.
18	185133.11	38.334	146.296	1.6	Boolarra Vic.
20	100001.82	31.576	116.876	1.6	Meckering WA.
20	173811.74	33.51	117.87	1.5	Dumbleyung WA.
20	183540.58	33.523	117.966	1.5	SE Dumbleyung WA
21	11025.74	30.835	116.353	1.5	Burakin WA
21	24347.37	30.524	117.057	2.2	Burakin WA
22	73902.01	38.518	146.282	3.1	Boolarra Vic.
23	164005.03	30.534	117.049	1.5	Burakin WA
24	221546.5	38.505	146.279	3.0	Boolarra Vic.
24	221821.76	38.508	146.26	2.3	Boolarra Vic.
25	33806.93	32.171	138.145	2.9	Hawker SA
25	210247.67	33.199	125.63	2.6	Great Australian Bight.
28	205323.94	33.3	117.508	1.9	Dumbleyung WA Felt Wagin
29	12533.44	19.709	133.916	3.0	Tennant Creek NT.
30	25552.35	25.086	111.072	3.3	Indian Ocean
May					
1	24943.5	24.596	115.725	2.6	NE Gascoigne Junction WA
1	225414.45	31.05	116.611	1.8	Calingiri WA
2	40258.8	31.834	116.139	1.3	Mundaring WA.
2	144117.47	33.875	137.982	2.9	Felt Bute area SA
3	223726.78	28.1	138.189	3.5	Tirari Desert SA.
8	102841.38	30.553	117.025	1.6	Burakin WA
9	63846.07	36.927	145.799	2.6	Bonnie Doon Vic
11	30530.95	27.919	135.13	3.8	Oodnadatta SA.
11	83437.59	29.175	114.144	2.5	SW Geraldton WA
11	183036.2	30.542	117.036	3.2	Burakin WA
11	190539.77	30.545	117.029	2.1	Burakin WA
11	213954.1	19.92	133.862	2.0	Tennant Creek NT.
16	51405.56	11.501	136.318	3.0	Wessel Is NT.
17	45229.4	33.028	139.032	2.7	Peterborough SA Felt
17	61452.83	30.429	117.734	1.5	Beacon WA
17	65135.4	36.208	148.416	3.0	Jindabyne NSW Felt
17	192817.05	30.546	117.04	2.3	Burakin WA Felt
19	163733.2	30.549	117.026	1.5	Burakin WA
20	123200.25	16.846	128.431	2.8	S Kununurra WA
25	222849	20.31	118.601	2.8	Port Hedland WA
27	102312.36	35.191	135.606	3.2	SW of Port Lincoln SA
28	125019.5	34.405	148.252	2.6	Young NSW.
28	211006.21	19.882	134.166	2.6	Tennant Creek NT.
31	31646.26	26.122	115.589	3.7	Mt Rebecca WA.
31	230800.78	23.415	135.158	2.3	E of Alice Springs NT
31	234948.23	32.957	117.125	1.7	Near Narrogin WA.
June					
1	25532.1	21.933	114.108	2.7	Exmouth WA.
1	235630.2	23.094	132.888	1.6	115km NW Alice Springs
3	121528.3	25.203	129.829	2.5	Petermann Ranges NT
4	200431.94	33.552	115.269	2.7	Busselton WA
6	114028.22	22.073	126.524	3.2	Great Sandy Desert WA.
11	15111.97	32.314	116.802	2.3	Brookton WA.
11	85429.01	32.315	116.803	2.2	Brookton WA.
12	62857.32	35.425	149.101	2.0	Tuggeranong ACT Felt Kambah, Gordon, Calwell,Isabella Plains, Conder
12	95640.1	22.446	135.681	1.6	NE Alice Springs NT
13	44553.26	13.628	128.837	3.0	Timor Sea

15	103448.47	31.853	138.393	2.7	Hawker SA
16	103240.46	33.476	138.576	2.3	Clare SA
19	72630.34	25.481	113.192	3.0	E Dirk Hartog Island WA
20	80652.15	30.573	117.029	2.2	Burakin WA
21	155110.86	21.144	132.588	3.2	Central Desert NT

The AEES subscription year is the fiscal year. It is expensive to send each member an individual reminder that fees are due so please help us by sending your subscription for 2001/2002 to AEES if you haven't already done so (attn: Barbara Butler, Civil and Environmental Engineering Dept, Melbourne University Parkville Vic 3052) or renew through IEAust's annual subscription system by marking AEES your preferred Society. If you change address or if you know a member who is not receiving the newsletter please advise the Secretary or Barbara.

News!

CENTRAL QUEENSLAND SEISMIC RESEARCH GROUP

As part of Central Queensland University's ongoing identification of research foci undertaken by its staff, the Faculty of Informatics and Communications has established the Central Queensland Seismic Research Group (CQ SRG, pronounced "seek you surge").

AEES members Mike Turnbull and Kevin McCue are in the group. Mike currently heads the group, and Kevin has been recently appointed as Adjunct Professor, Faculty of Informatics and Communications. The third member of the group is John Fichera, a Physics Honours student at CQU.

CQ SRG has a web site at:

http://www.infocom.cqu.edu.au/Research/Research_Groups/CQSMRG/.

The goals of CQ SRG are to:

- Establish seismic monitoring stations to detect, quantify and locate earthquakes that occur in the region.
- Perform seismic shaking vulnerability surveys of urbanised centres in the Central Queensland region.
- Develop and improve methods for non-invasive seismic shaking vulnerability surveys.
- Collaborate with other Australian earthquake researchers, State and Federal bodies, to exchange and disseminate data.

CQ SRG has been active in establishing collaborative links with local government councils in the Central Queensland region, including the Bundaberg, Gladstone, Hervey Bay and Rockhampton City Council; the Miriam Vale, Burnett, Kolan Shire Councils; and the North Burnett Regional Council Association. The group continues to inform and educate governments at all levels with respect to seismic hazard and risk in the Central Queensland region.

With the aid of research grants from the Bundaberg City Council, Miriam Vale Shire Council and an ARC Seed Grant, CQ SRG member Mike Turnbull has operated a full time seismic monitoring station in the Kolan Shire for the past four years. Triggered records are available for 2001 through to the present. This data is available on request at no cost. Just send Mike an email at M.Turnbull@cqu.edu.au and he will send you the data on CDs. It is planned to have trigger records of interest available as SUDS file via the CQ SRG web site in the near future.

Seismic shaking vulnerability surveys have been conducted for Bundaberg City, the Eastern Burnett Shire including Bargara, and Hervey Bay City confines. Reports on these surveys, and ArcGis map layers, are available on request.

Contact: Mike Turnbull

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Web: http://www.infocom.cqu.edu.au/Research/Research_Groups/CQSMRG/.

TURKEY DOING IT TOUGH AGAIN!

Eastern Turkey

Date	Time	Lat	Long	Depth
20030501	002704.8	39.008N	40.511E	10G

mb 5.8 Ms 6.4 MW 6.4 (GS) 6.4 (HRV).

At least 176 people were killed, more than 1000 injured and extensive damage done in the Bingol area. Felt strongly in much of eastern Turkey.

Bingol in East Turkey has once again been devastated by a large earthquake on the East Anatolian Fault Zone, This complex zone of plate interaction in a continental environment has a long history of previous earthquakes and at least here one would expect town planners, architects and engineers to insist that the earthquake code be used and be seen to be used.

Following the last destructive earthquake in 1971, buildings were rebuilt to the same design and using materials recovered from the ruins.

Details of the previous earthquake:

Date Time Lat Long Depth
19710522 164359.3 38.855N 40.524E 3

mb: 5.9 Ms 6.7.

Nearly 900 people died in the 1971 earthquake, most of them crushed under collapsed adobe dwellings.

WORRIED ABOUT ASTEROID-OCEAN IMPACTS? DON'T SWEAT THE SMALL STUFF

From Lori Stiles, UA News Services, 520-621-1877, March 17, 2003

The idea that even small asteroids can create hazardous tsunamis may at last be pretty well washed up.

Small asteroids do not make great ocean waves that will devastate coastal areas for miles inland, according to both a recently released 1968 U.S. Naval Research report on explosion-generated tsunamis and terrestrial evidence.

University of Arizona planetary scientist H. Jay Melosh is talking about it today at the 34th annual Lunar and Planetary Science Conference in League City, Texas. His talk, "Impact-Generated Tsunamis: an Over-Rated Hazard," is part of the session, "Poking Holes: Terrestrial Impacts."

Contact Information

H. Jay Melosh

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jmelosh@lpl.arizona.edu

Given all life's worries, new evidence that asteroids smaller than a kilometer in diameter won_t generate catastrophic tsunamis is welcome news, and not only for coast dwellers. It will save taxpayers the cost of financing searches for small Earth-approaching asteroids, a savings of billions of dollars, Melosh said.

(The current NASA-funded effort to search and map truly hazardous Earth-approaching asteroids _ those one kilometer or larger in diameter_ is now half done and on track to be finished by the end of the decade, Melosh noted. NASA funds NEAT, LINEAR and the UA Spacewatch programs in this effort.)

The idea that asteroids as small as 100 meters across pose a serious threat to humanity because they create great, destructive ocean waves, or tsunamis, every few hundred years was suggested in 1993 at a UA-hosted asteroids hazards meeting in Tucson.

At that meeting, a distinguished Leiden Observatory astrophysicist named J. Mayo Greenberg, who since has died, countered that people living below sea level in the Netherlands for the past millennium had not experienced such tsunamis every 250 years as the theory predicted, Melosh noted.

But scientists at the time either didn_t follow up or they didn't listen, Melosh added.

While on sabbatical in Amsterdam in 1996, Melosh checked with Dutch geologists who had drilled to basement rock in the Rhine River delta, a geologic record of the past 10,000 years. That record shows only one large tsunami at 7,000 years ago, the Dutch scientists said, but it coincides perfectly in time to a giant landslide off the coast of Norway and is not the result of an asteroid-ocean impact.

In addition, Melosh was highly skeptical of estimates that project small asteroids will generate waves that grow to a thousand meters or higher in

a 4,000-meter deep ocean.

Concerned that such doubtful information was _ and is - being used to justify proposed science projects, Melosh has argued that the hazard of small asteroid-ocean impacts is greatly exaggerated.

Melosh mentioned it at a seminar he gave at the Scripps Institution of Oceanography a few years ago, which is where he met tsunami expert William Van Dorn.

Van Dorn, who lives in San Diego, had been commissioned in 1968 by the U.S. Office of Naval Research t summarize several decades of research into the hazard posed by waves generated by nuclear explosions. The research included 1965-66 experiments that measured wave run-up from blasts of up to 10,000 pounds of TNT in Mono Lake, Calif.

The experiments indeed proved that wave run-up from explosion waves produced either by bombs or bolides (meteors) is much smaller relative to run-up of tsunami waves, Van Dorn said in the report. "As most of the energy is dissipated before the waves reach the shoreline, it is evident that no catastrophe of damage by flooding can result from explosion waves as initially feared," he concluded.

The discovery that explosion waves or large impact-generated waves will break on the outer continental shelf and produce little onshore damage is a phenomenon known in the defense community as the "Van Dorn effect."

But Van Dorn was not authorized to release his 173-page report when he and Melosh met in 1995.

Melosh, UA planetary sciences alumnus Bill Bottke of the Southwest Research Institute and others agreed at a science conference last September that they needed to find the report.

Bottke found the title - "Handbook of Explosion-Generated Water Waves" - in a Google search.

Given a title, UA science librarian Lori Critz then discovered that the report had been published and added to the University California San Diego library collection in March 2002. Bottke also tracked it down, and had the report by the time Melosh requested it by interlibrary loan. Both made several photocopies.

Melosh said, "I since found out it was actually read into the Congressional Record as part of the MX Missile controversy."

Melosh, a professor in the UA planetary sciences department and Lunar and Planetary Laboratory, is well known for his work in theoretical geophysics and planetary surfaces. His principal research interests are impact cratering, planetary tectonics, and the physics of earthquakes and landslides. His recent research has focused on studies of the giant impact origin of the moon, the K/T boundary impact that extinguished the dinosaurs, the ejection of rocks from their parent bodies, and the breakup and collision of comet Shoemaker-Levy 9 with Jupiter. Melosh also is active in astrobiological studies that relate chiefly to the exchange of microorganisms between the terrestrial planets. Melosh earned his doctorate from Caltech in 1973 and joined the UA faculty in 1982. He is on the 12-member science team for Deep Impact, a $279 million robotic mission that will become the first to penetrate the surface of a comet when it smashes its camera-carrying copper probe into Comet Tempel 1 on July 4, 2005.

Col Lynam provided the previous and next article too!

BIG QUAKES MEAN FAR LESS SHAKES ?

April 2003 Nicola Jones

Big earthquakes may be far less destructive than thought. While an earthquake's score on the Richter scale measures the overall movement of the ground, it is the jittery high-frequency shaking that is most likely to make buildings collapse. Now, data from the best-measured quake to date shows that the more the ground moves, the less shaking you get.

The Chi-Chi earthquake that hit Taiwan in 1999 7.6 on the Richter scale - was so big it created cliffs 12 metres high in just seconds, and the ground moved at the highest speeds ever recorded. Yet while the greatest ground displacement along the fault happened in the north, the shaking there was much less severe than in the south.

"People originally thought it might have been something funny with the local geology," says Emily Brodsky, a geophysicist at the University of California Los Angeles. But then the same thing happened during a 7.9 quake in Denali, Alaska in 2002 - massive ground displacement was seen with very little shaking.

Now Brodsky has come up with an explanation. High-frequency shaking occurs when rough spots on the adjoining fault surfaces rub against each other. So Brodsky wondered whether the exceptionally fast plate movement during Chi-Chi was enough to increase the fluid pressure of clay particles and groundwater within the fault. That would push the plates apart, reducing contact between rough spots and limiting the destructive vibrations.

Lubricating effect

Judging by the slip distances and speeds seen during Chi-Chi, she calculates that the plates could have been pushed between five and eight millimetres apart - enough to significantly reduce friction. The researchers say this lubricating effect should come into play for all quakes greater than 7.0 on the Richter scale.

"I don't know of any other viable explanations," says Paul Somerville, a seismologist with engineering firm URS in Pasadena.

He says scientists have not noticed the effect before because of a lack of monitoring networks and because buildings are often so poorly built that they topple even from a small amount of shaking.

Well-constructed buildings should have a surprisingly good chance of making it through a large quake. "That's very good news," says Somerville.

Journal reference: Geophysical Research Letters (vol 30, p 1244)

GEOSCIENCE AUSTRALIA NEWS RELEASE
ARE THE FLINDERS RANGES MOVING?
Friday 2 May 2003
A five-year Federal Government survey which will provide information to assess the risk of earthquakes in Adelaide and the Flinders Ranges was launched today by the Federal Member for the South Australian electorate of Mayo and Minister for Foreign Affairs, Alexander Downer.

As part of the survey, scientists from Geoscience Australia will be using satellite technology to measure barely detectable rock movement in the Flinders Ranges. This information will help to improve earthquake risk assessment for the Flinders Ranges and Adelaide, which has the highest earthquake risk of all Australian capital cities.

"There have been more moderate-sized earthquakes near Adelaide over the last 50 years than anywhere else in Australia," said Mr Downer. "And as we discovered with the 5.6 earthquake that occurred in Newcastle more than 13 years ago, even earthquakes of a moderate size have the potential to cause significant damage to people and property."

"This collaborative project will enable scientists to measure how much the rocks in the Mt Lofty and Flinders Ranges area are moving today. This movement is so small that we need to use satellite technology to detect it," said Mr Downer.

"Using the Global Positioning System, scientists will place some 48 GPS units at points across the Flinders Ranges, Mount Lofty Ranges and the eastern Eyre Peninsula. By returning to these points and re-locating them using GPS every few years, they will be able to detect any slight movement that has happened over that period, even if it is only a millimetre.

"Scientists will combine information from this project with information from previous earthquakes in the area to improve our assessment of the risk of earthquakes in the Mt Lofty and Flinders Ranges.

"This inaugural survey is of great value and importance to the Adelaide region," said Mr Downer. "It is an essential part of Geoscience Australia's role in hazard assessment and earthquake monitoring across the country."

The project is a collaborative effort between Primary Industries and Resources South Australia (PIRSA), the South Australian Department of Administrative and Information Services (DAIS), the Australian National University (ANU), and the New Zealand Institute of Geological and Nuclear Sciences (IGNS).

For more information please contact:
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HIGH-TECH CANARY TO SAVE MINERS' LIVES

(from Engineering Australia enews 30 May 2003)

CSIRO has developed new technology that can predict a collapse or the release of deadly gases in a mine.

"The technology, which operates remotely, will make mining safer and improve the way mines are designed in the future," said CSIRO research group leader Mark Berry.

The technique, called microseismic analysis, centres on the fine measurement of seismic waves generated in rock under stress from mining. Seismic waves are detected by arrays of geophones, devices with a wire coil inside a magnetic field. The waves cause the coil to move in the field, generating a voltage. Signals from the geophones pass via cable to CSIRO's data acquisition system, where they are amplified and recorded.

The technique has been trialled at 15 underground coal mines in Queensland, New South Wales and China. Industry collaborators on the project included the Australian Coal Association Research Program, Southern Colliery, Moranbah North Mine and South Blackwater, all in Queensland, and Dartbrook Mine in the Hunter Valley, NSW.

The Joint Australian/NZ Loading Code

AS/NZS 1170 Structural Design Actions - Part 4 Earthquake Actions

The comment period for the "road test" draft of the earthquake standard was extended to 15 May at the request of SESOC. There has also been a delay in arranging Andrew King's continued chairing of the committee following his change of employers from BRANZ to IGNS.

The issues raised in the comments received are significant and will require further work by the committee to resolve. The re-drafting group will be reconvened to provide a response to the comments received and carry out any necessary

drafting. The re-drafting group were Andrew King, Rob Jury, Arthur O'Leary, Des Bull, Bob Potter and Graeme McVerry.

Following this meeting any necessary further drafting will be completed. A ballot draft will then be prepared for the sign off by the committee prior to publication. There is an urgent need for this standard to be completed for New Zealand users and any further material that may arise from the Australia WG 20 work may need to be incorporated as amendment 1 if it cannot be completed and agreed soon.

WG20 will meet in Melbourne, tentatively 29 July 2003, following the road test of the draft Part 4 (version 8) there has been some further drafting in response to comment received. A final meeting is required to sign it off so that it can be balloted by BD6.

There is considerable continuing concern over the effect it will have when published

(Extracted from letters from Ian Brewer, Standards NZ and Richard Weller, Standards Australia).

EARTHQUAKE ENGINEERING CONFERENCE – SKOPJE MACEDONIA

It has been nearly 40 years since the last strong earthquake struck Skopje on July 26, 1963. The earthquake caused a tremendous loss of human life and property. The earthquake has been the subject of many scientific, technological, political conferences and a good lesson for all engineers, scientists, planners, and people working in crisis management and humanitarian organizations.

The earthquake struck Skopje on July 26, 1963 at 5:17 am local time, The main characteristics of this earthquake were: magnitude M = 6.1; intensity in the epicentral area IX MCS; hypocentral depth 5.0 km. The epicentral area was the central zone of Skopje. The tremendous amount of energy released, the shallow hypocentre of the earthquake, and the inadequate construction practiced during the pre-earthquake period were the three major reasons for the serious damage caused to almost all types of structures.

The Skopje earthquake of 1963 was the first strong urban earthquake in Europe. It aroused great interest among the political world, the humanitarian organizations and the scientific community. Immediately after the earthquake and until 1965, Skopje was visited by a large number of statesmen, cultural and state representatives, scientists and humanitarians, who tried to contribute to the faster reduction of the earthquake consequences. Skopje became a city of world solidarity, and also a city for drawing valuable experience. The Skopje earthquake was the reason for the passing of the first codes for aseismic design in many countries, including former Yugoslavia. It was also the reason for the establishment of the European Association of Earthquake Engineering.

The valuable experience from the earthquake including the rescue of the population, the organization of the city after the earthquake, the construction and reconstruction of the city was transferred to many countries in the world for the purpose of improving the preparedness of communities to respond efficiently to possible future natural disasters.

During the catastrophic Skopje earthquake, more than 1000 people were killed and several thousands injured. Many buildings collapsed or were seriously damaged. The catastrophe was estimated as the worst in the wider region for a long period of time. People were shocked by this calamity that took place so suddenly. However, thanks to domestic and international post-disaster actions, Skopje was soon revived and successfully rebuilt. The organized and synchronized post-earthquake activities in the Skopje case have been recognized internationally as a pioneering example. The citizens of Skopje will always remember and be grateful for the extended international solidarity.

AEES member Dr Sinadinovski from Geoscience Australia will be presenting a paper comparing the effects of the same-magnitude 1963 Skopje and 1979 Cadoux WA earthquakes.

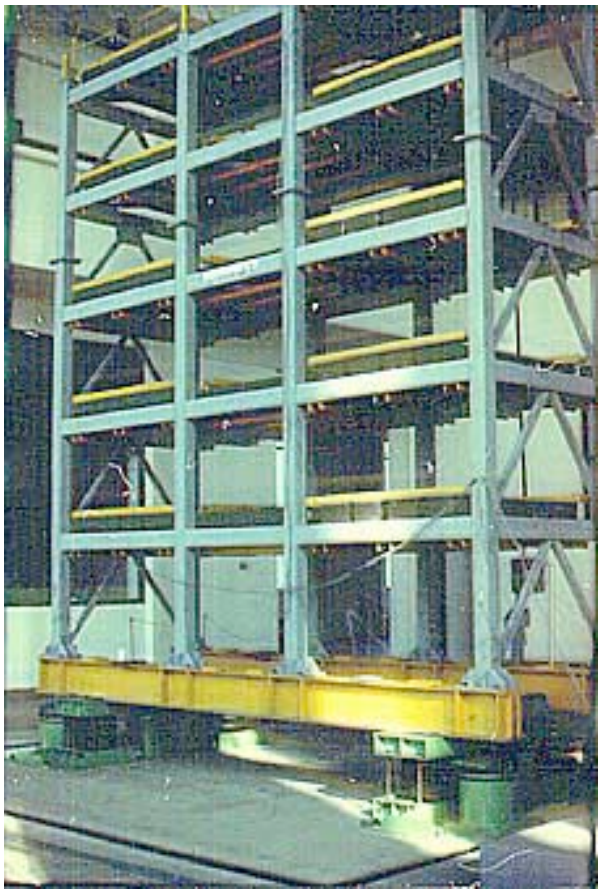

Figure 1 Shaking table test of a 5 storey steel frame model Isolated by GERB Vibration Isolation Elements at IZIIS Macedonia (joint program with GERB Germany.

Figure 2 Modelling of Mixed Reinforced Concrete Masonry Buildings at IZIIS Macedonia (joint program with Istituto di Tecnica Delle Costrucioni, Universita di Bologna, Italy

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The Australian Earthquake Engineering Society email list
Operated by ES&S Seismology Research Centre, Melbourne.

The Society website/email list

Dear AEES Members,

The AEES web site is at www.aees.org.au. Any contribution from you on the following topics is most welcome

- details of interesting recent publications
- significant research projects in earthquake engineering (in Australia?)
- links to other relevant Web sites

Please send me your contributions/suggestions via email.

The AEES email list is operated by the Seismology Research Centre, Melbourne. If you would like to register please notify me at vaughan@seis.com.au

Vaughan Wesson

FORTHCOMING CONFERENCES

17 - 19 Aug 2003 Catastrophic Risks and Insurability. Aon Re Hazards Conference. Surfers Paradise Marriott Resort, Gold Coast, Qld.

28 Aug 2003 ACSE Conference Sydney (see ad this Newsletter.

?? November 2003 AEES Annual Conference, Melbourne University.

8-12 December 2003 AGU FALL MEETING San Francisco.

8-13 February 2004 1 7th Australia Geological Convention Wrest Point Convention Centre, Hobart Tasmania.

16 - 20 August 2004 Western Pacific Meeting
The 2004 Western Pacific Geophysics Meeting will take place in Hawaii. The session proposal deadline is 6 November 2003. More information will be available on the AGU web site in the next few weeks.
www.17thagc.gsa.org.au

1 - 6 Aug 2004 13 WCEE Vanvouver Canada. Hosted by the Canadian Association for Earthquake Engineering (Chair Don Anderson).

www.13WCEE.com

18-20 October 2004 4th International Conference on Dam Engineering Nanjing, China.

NEW BOOKS (& OLD) / REPORTS

Series: Developments in Volcanology
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International Handbook of Earthquake and Engineering Seismology (Part A) 2002 Eds Lee, Kanamori, Jennings and Kisslinger. Academic Press.

Soft Plate and Impact Tectonics 2002 Antonio Ribeiro, Springer-Verlag Berlin.

REVIEW:
INTERNATIONAL HANDBOOK OF EARTHQUAKE AND ENGINEERING SEISMOLOGY PART A

Eds William H. K. Lee, Hiroo Kanamori, Paul C. Jenningsand Carl Kisslinger, 2002, 933 pp Academic Press, An imprint of Elsevier ISBN

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The four editors of this large, impressive handbook are all US based but with 81 contributors, 42 of them from the USA, the international in the title is not a complete contradiction. The more telling demographic statistic for us is that only one of the authors hails from the southern hemisphere.

The handbook includes paleoseismology, historical and observational seismology, Earth structure and theoretical seismology. Other topics in the handbook include plate tectonics, tsunamis, volcanoes, nuclear tests and the physics of earthquakes including attenuation. Various authors discuss many of the contentious issues such as whether the strength on faults is high or

low, whether stress drop intraplate is higher or the same as that interplate.

The handbook is full of interesting details; nowhere did I read on a recent stopover in Rome, that the missing half of the outer wall of the Colosseum was not an architectural oversight. It had been destroyed in an earthquake in 1349 – it's in the Handbook!

There is a separate section for colour plates at the front of the book (not mentioned in the contents) that has two of my favourite pictures. Plate 1 showing the distribution of world earthquakes was compiled from felt reports and first published in 1858 by Irishman Robert Mallet. I couldn't help but wonder whether Wegener ever saw this map. Plate 15 is a map of 20th century epicentres that the editors have cleverly printed at a similar scale and central meridian to that of Plate 1. Pity they are not on facing pages. On-land the mapped earthquake distributions are remarkably similar. Maps of historical (pre-1901) and post-instrumental Australian earthquakes (not in the handbook) are also very similar which says something about the stationarity of the process.

From an Australian perspective there is little local information, stemming presumably from the lack of local authors, just a brief mention of our crustal structure and not a single mention of an Australian earthquake. Papua New Guinea is only mentioned in relation to the 1998 Sissano earthquake and tsunami (not 1958 as given in the index). Indonesia is not mentioned at all, New Zealand en passant.

Whole topics such as intraplate seismicity have been all but excluded as are discussions of deep earthquakes and earthquake resistant design. Zoback and Zoback do comment that the state of stress intraplate is dominated by large-scale tectonic processes (as opposed to local processes – a topic much debated here). Many readers will be disappointed that there is no discussion on advances in earthquake location techniques. Hopefully chapters 57 to 90 in Part B will include earthquake hazard and risk assessment (there is no contents list for Part B in this volume which is a pity). It does contain an Australian contribution.

In such a massive undertaking it is easy to find errors. I have mentioned a few already, but I was disappointed to read that the seismograph at Riverview Observatory supposedly closed in 1985. This historic Australian station is of course still operational; the longest continuously running seismograph in Australia, established by the Jesuit, Father Pigot in 1909 and now maintained by Geoscience Australia. Perhaps it was the departure date of perhaps the last Jesuit seismologist Dr (Father) Laurie Drake from St Ignatius College Riverview that is commemorated in the Handbook.

On the positive side, there is a wealth of additional information on the three CDs included with Parts A and B of the handbook: earthquake catalogues, software, biographies of some earthquake seismologists (there are bound to be a few disappointments), and copies of important historical papers that are now impossible or difficult to find. The extensive lists of references and web addresses will be most useful for students and researchers alike.

I am sure I will find this book and CD a treasure for many years, particularly the historical essays in Section I, including Keiiti Aki's contribution in Chapter 5. The Master (earthquake) Model developed from observations in California has relevance internationally. Chapter 15 on inverse problems with its useful primer on probability will keep me awake long into the night. Section IV on Earthquake Geology and Mechanics makes me wish I had had the handbook before going to Mongolia on a paleo-seismology field trip.

One author commented that *as more sophisticated and precise experimental observations are made, the corresponding mathematical descriptions have invariably become more complicated.* The interplay of observation and theory and their order is a frequent theme running through this handbook. The authors have my warm congratulations on completing a mammoth and difficult six-year task. Unfortunately though, yet another book for all the missing topics is required.

Kevin McCue

(from a review in The Australian Geologist,127, June 30,

2003)