AEES NEWSLETTER

July 2007

Editor's Welcome

We are all very pleased to see the return of the AEES newsletter following the well deserved retirement of Kevin McCue from the editorial role. Much of this is attributed to the continuous support from various members whose input have been co-ordinated by the state representatives, and importantly, the hard work of our recently appointed society secretary Sharon Anderson.

The editorial team look forward to receiving contributions which are related to the research, practice and knowledge transfer of earthquake engineering. Input from international sources are most welcome as we are very keen to share our knowledge and experiences with other countries which are confronted with the problem of seismic hazards. Furthermore, the subject matter of interest need not be restricted to "earthquakes" in the narrow sense and can be extended to engineering for other natural hazards and the protection of our infrastructure.

As you are all aware, the society has developed alternative modes of communication including the use of our website: http://www.aees.org.au/ and email address: aees-list@seis.com.au which enables two way communications to be established. Yet, traditional forms of communication like the newsletter and the annual conference will continue to be the key elements which bring us all together.

Finally, please be reminded that we are all ambassadors to AEES when attending other academic/ professional forums or during international visits. Please consider taking some copies of the AEES newsletter along with you to help AEES become even better known.

Nelson Lam

The Committee

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Treasurer:	Dee Ninis
Technical Editor-Publ.:	Nelson Lam
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Secretariat/Newsletter:	Sharon Anderson

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South Australia	David Love
Western Australia	Hong Hao

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President's Report

Welcome and greetings to all our members to the second edition of the newsletter for 2007.

The annual AEES conference will be held in Wollongong, 23-25 November, a date for the diary. Geoff Pryke, a consulting engineer with good association with the Illawarra Structural Branch of Engineers Australia is heavily involved with the organizing in Wollongong with assistance from the Melbourne Executive for the technical program development. The annual conference is our flagship event and provides a great opportunity for sharing and discussing the latest developments in seismology, earthquake engineering and related fields such as blast engineering, USAR, insurance and emergency response management. We hope to see you there.

The updated Earthquake Loading Standard AS1170.4 and AS3700 Appendix AA (earthquake clauses for masonry structures) have been approved by the various Standards Australia committees. Half day workshops on the new Standard were presented during June to around 150 engineers in Melbourne, Sydney, Brisbane, Perth and Adelaide. We are hopeful that the updated Standard will be published shortly by Standards Australia (proof check has been done, so we must be close) and 'called up' in the BCA as part of the Building Regulations for 2008, following the Regulation Impact Statement, commissioned by the ABCB.

Level 2 training of around 15 USAR Engineers is scheduled for Melbourne 26/27 July with our NZ colleagues Dave Brunsdon and Des Bull providing the facilitation. This training is well supported and sponsored by the Melbourne Fire Brigade and follows the Level 1 training of around 35 engineers in Melbourne in June 2005 and the Level 1&2 training of around 12 engineers in Adelaide in 2004. The aim is to have engineers trained to support the respective USAR task forces in each state.

Many thanks to Nelson and our secretariat Sharon Anderson and all the contributors to this newsletter. We look forward to seeing you in Wollongong later this year.

John Wilson
AEES President

Earthquake Risk Modeling Software

Geoscience Australia has posted an open-source alpha-release version of their earthquake risk modeling software (EQRM) on SourceForge. The EQRM is capable of earthquake scenario ground motion and scenario loss modeling as well as probabilistic seismic hazard (PSHA) and risk (PSRA) modeling. The program can be used for hazard or risk analyses in any region of the world by supplying appropriately formatted input files. Source code is also supplied so advanced users can modify individual components to suit their needs. The EQRM is a product of Geoscience Australia, an Australian Government Agency.

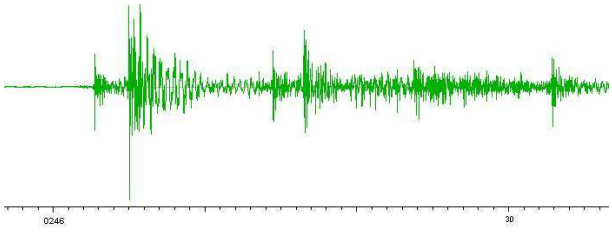
Download:

https://sourceforge.net/projects/eqrm
Contact: David Robinson
david.robinson@anu.edu.au ;
or david.robinson@ga.gov.au)

News from S.A. (David Love)

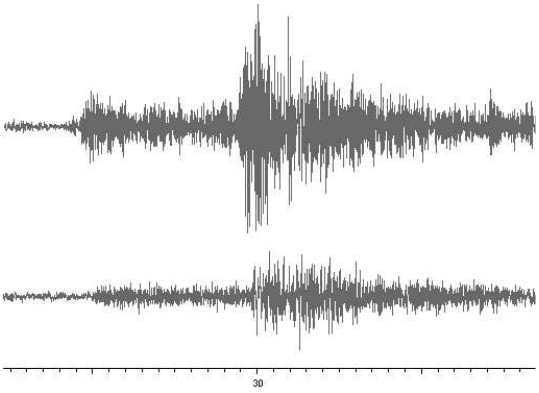
Scram Jet Detection

A scramjet was successfully tested at the Woomera Range recently. Three Echo seismographs were placed about 100km apart around the estimated landing zone to detect the 1.5 tonne remains hitting the ground. After being delayed 10 days, it was well off course, and broke up at about 25km altitude, at which point the radar signal was lost. One Echo recorded the landing. The seismogram shows a clear P, S and ground roll for the first piece, less clear arrivals for the second piece and evidence of a few other pieces. With an S-P time of only 2.3 sec, and low velocity sediments in the region, it probably landed only 3 to 4 km from the recorder.



SA Earthquake activity

During June and July the new seismograph network recorded increased local activity. Earthquakes of magnitude 2.5 east of the Barossa, 2.8 at Aldinga, 3.1 north of Jamestown, 2.8 at Cape Jervis, and 3.0 offshore from Beachport triggered the new system. Three of these earthquakes were even recorded by some of the metropolitan stations installed to estimate amplification. The newly installed station on the soft saturated sediments of Torrens Island (northeast of Adelaide) actually gave lower horizontal velocities than the firmer sediments to the east of Adelaide. The seismgram below shows north axes from Payneham (upper) and Torrens Island (lower) for the Barossa Ml 2.5 event about 80km away.



From Adelaide University

Jerry Vaculik is completing his PhD on the **Seismic behaviour of unreinforced masonry walls in bending** this year. He presented at the Mt Gambier conference, 2004 paper 18. He is now testing the last of his half-scale brick walls on the shaking table which are replicas of full-scale walls he tested previously with static airbag tests. He hopes to verify that the static airbag tests are representative of true dynamic loading, so that the numerical models he has developed for the full scale walls (with Nelson Lam at Melbourne) can be used to predict various earthquake loading scenarios.

Recent publication:

Vaculik, J, Griffith, MC, Lam, NTK, Wilson, J and Lumantarna, E (2007). "Cyclic tests of brick masonry walls in bending," *Earthquake Engineering and Structural Dynamics*, John Wiley and Sons, 36(6): 801 - 821.

News from W.A. (Hong Hao)

Associate Professor Nawawi Chouw from Okayama University, Japan came to UWA as a Gledden Senior fellow since May 2006. He has been working with Prof. Hong Hao to study spatial ground motion effects on relative responses of bridge structures (pounding between adjacent decks and unseating of decks) with soil-structure interaction effects. The research has resulted in two recently accepted journal publications in International Journal of Engineering Structures: "Significance of SSI and non-uniform near-fault ground motions in bridge response I: Effect on response with conventional expansion joint" and "II: Effect on response with modular expansion joint".

Nawawi has resigned from Okayama University. He will take up an Associate Professor position in the University of Auckland in New Zealand from 1 July 2007. He will continue to collaborate with Hong on research work in earthquake engineering and wave propagation. Their recent objective is to finish off a few more journal papers on study of the effects of the combined ground motion spatial variation and soil-structure interaction on bridge responses, and their implications on the new Japanese highway design code published in 2004, the only design code in the world that explicitly considers the ground motion spatial variation effects on bridges.

Nawawi has attended two previous AEES conferences, and is expected to come to more AEES conferences after joining the University of Auckland.

Canadian Visit

Hong Hao spent two months (December 2006 and January 2007) in the Canadian Bridge Research Institute in Carleton University, Canada to study the nonlinear seismic responses of the Confederation Bridge to spatially varying earthquake ground motions. During the two months, he simulated about 900 spatially varying ground motion time histories according to the recently proposed design spectrum for the new Canadian design code. The simulated ground motions are now used as input to analyze dynamic responses of the Confederation Bridge.

Recent Earthquake in Pu'er
Yunan Province, China

At approx. 5:00am on 3 June 2007, a Richter scale 6.4 earthquake hit Pu'er city, in southern Yunan province, China. The quake killed 3 and injured 562. In the following three days, 1778 aftershocks were recorded with 39 of them larger than ML3.0. The tremor was felt as far as 300 km away from the epicentral area. The estimated damage was 2.5 billion yuan (approximately AUD400 million). More than 1 million people in the area are affected by the quake.

Yunan province in southeast China is the seismically most active region in China. According to the Seismological Bureau of Yunnan Province, 9 earthquakes of magnitude larger than ML5.0 had occurred in the area within a radius of 50 km since 1970. The largest one was on 15 March 1979, with a magnitude ML6.8.

Australian Earthquakes 1 Jan – 10 Jun 2007, M≥2.5 (Kevin McCue)

Date	Time UTC	Lat °S	Long °E	Z km	M mb	Location
Jan						
01	1418	31.05	138.55	17	2.7	Blinman SA
03	2227	38.51	146.32	10	3.0	Boolarra South Vic
07	1357	40.50	143.76	10	3.7	S King Is
12	2029	20.83	144.94	6	3.0	Torrens Ck QLD
17	0820	32.74	138.21	0	2.7	NE of Melrose SA
28	2031	30.80	138.62	10	3.5	SE of Leigh Ck SA
Feb						
04	0107	19.78	133.91	5	2.7	SW Tennant Ck NT
05	1717	19.29	125.41	5	3.0	Gt Sandy Desert WA
05	1731	19.30	125.44	6	2.7	Gt Sandy Desert WA
09	1634	17.82	123.61	15	3.2	S Derby WA
15 *	1538	25.97	113.28	19	**5.3**	Shark Bay WA
17	1344	17.90	126.62	0	3.3	E Fitzroy Crossing WA
18	1004	38.62	146.32	11	3.4	NE Foster Vic
27	2106	38.58	145.89	10	2.5	Tarwin Vic
28	2022	18.72	123.23	16	3.5	Gt Sandy Desert.
Mar						
02	1019	23.52	136.70	0	3.6	E Alice Springs NT
06	0407	29.93	124.34	0	3.9	Gt Victoria Desert WA
06	0957	36.62	151.02	20	3.0	NE Pambula NSW
08*	0234	37.85	145.74	10	3.6	S Warburton Vic
08	1212	27.99	124.33	10	2.6	Yeo Lake WA
16	0612	39.52	145.59	10	3.1	Bass Strait
30	1752	33.39	116.27	0	2.5	SE Collie WA
30	1906	30.38	136.75	12	2.5	N Woomera SA
Apr						
07	1154	19.77	133.93	10	2.6	Tennant Ck NT
11*	0058	34.25	151.01	20	3.0	NE Wollongong NSW
25	1920	18.16	127.14	0	2.8	E Fitzroy Crossing WA
25	2027	18.12	127.15	0	3.0	E Fitzroy Crossing WA
28	0853	24.97	151.41	10	2.8	Monto Qld
29	0604	34.88	148.61	1	2.6	NW Burrinjuck NSW
May						
08	1805	39.06	144.70	18	2.6	Bass Strait Vic
22	1930	29.78	142.05	10	3.4	Tibooburra NSW
28	1423	37.66	151.52	10	2.5	SE Pambula NSW
28	1809	38.36	145.54	19	2.6	Coronet Bay Vic
Jun						
06	0104	38.59	146.31	19	2.5	Foster Vic
06	0809	31.39	111.65	35	3.5	W Perth WA
10	2002	36.70	146.80	0	2.7	Victoria

* reported felt

The number of earthquakes of magnitude 3 or more in the Australian region in the first 5 months of the year was well below average. Whilst numbers were down, energy release for the half year was about average thanks to the magnitude 5.3 earthquake that occurred near Shark Bay Western Australia. No damage was observed but several events, marked with an *, near urban areas were reported felt. The list was compiled using GA, ES&S, PIRSA, CQU and USGS data.

BN Gupta Award (2001-2004)

Following the award of the *Warren Medal* in 2006, Nelson Lam and John Wilson were given the *BN Gupta Award* earlier this year by the *Indian Society of Earthquake Technology*, Roorkee, India in recognition of their contributions through publication of the paper entitled :

Displacement Modelling of Intraplate Earthquakes
ISET Journal of Earthquake Technology Vol.41(1): 15-52.

This paper forms part of a special issue of invited papers surrounding the theme of seismic performance in structures. Prof. Nigel Priestley was guest editor of the issue. The *BN Gupta Award* is given out once every four years.

Congratulations to Nelson & John!

From our Members (Col Lynam)

Amendment 1 to AS ISO 19005.1-2006 – Document management

Contributions are sought towards this important topic - long term preservation formats for electronic documents. Engineers and seismologists make use of archival data and other "public documents". Seismograms, weather charts, well logs etc which are recorded and preserved may be covered by this ISO standard (in prep) and some input from this technical society should occur. Such standards will be used by the medium manufacturers and we will end up using such devices without any contribution to their specifications…

Comments are invited on the technical content, wording and general arrangement of the draft. The preferred method for submission of comment is to download the MS Word comment form found at http://www.standards.com.au/Catalogue/misc/Public Comment Form.doc. This form also includes instructions and examples of comment submission.

Lessons from the Solomans Tsunami Experience (cited 25/06/2007)

ScienceNews
Environmental and Life Sciences
Macquarie University
www.els.mq.edu.au
www.els.mq.edu.au/news/sciencenews

Dale Dominey-Howes from the Department of Physical Geography comments:

The Solomon Islands tsunami of April 2 is significant to Australia because for the first time the Australian Tsunami Warning System (ATWS) established following the catastrophic 2004 Indian Ocean disaster was activated, writes Dr Dale Dominey-Howes. The ATWS is costing approximately $70 million.

The ATWS consists of two components. First is the physical hardware – the actual detection and monitoring equipment. The hardware falls under the joint responsibility of Geoscience Australia which is required to detect, locate and evaluate potential tsunami generating earthquakes and the Bureau of Meteorology (BoM) which is responsible for monitoring deep water tsunami detection buoys and tide gauges in the Pacific and Indian Oceans.

Second is the information and warning component. Where necessary, the BoM issues alert and/or warning messages to Emergency Management Australia (EMA), the State Emergency Services (SES) and media agencies.

When a tsunami has been detected (as on April 2), the BoM runs simulations to determine the probable wave height along our coasts. This information is used by EMA and the SES to determine whether evacuation orders should be issued to local authorities. On April 2, Geoscience Australia successfully determined the location, size and characteristics of the earthquake and the BoM calculated the probability and magnitude of a tsunami. Within 15 minutes, the BoM issued its first advisory message. At this point, the

NSW State Tsunami Disaster Management Plan was activated.

The NSW SES established its emergency control centre and began following its protocol for contacting key organisations such as surf lifesaving clubs and port authorities along the coastline. Simultaneously, news of a potentially dangerous tsunami spread across all media networks and live streaming of the warning began.

Fortunately for Australia, only a small tsunami affected the eastern seaboard, and no losses occurred.

In the week that followed this event, the media and members of the public rightly asked probing questions about the effectiveness of the ATWS and whether it had performed adequately or, as many in the media reported, had failed.

Such questions should be asked and federal and state authorities are currently engaged in a process of reflection, analysis and learning. However, it is worth noting the following:

1) the physical infrastructure of the ATWS worked very well. Geoscience Aust was able to quickly locate the earthquake and determine its character;

2) the BoM was able to undertake sufficient simulations of the tsunami and issued an alert message within 15 minutes of the event; and

3) transmission of the alert message to EMA, the State SES and media occurred effectively.

However, whilst evacuation orders were issued at specific points along the NSW coastline, the public and the media were confused about the nature, meaning and intent of the alerts and warnings and for most, it was not clear what was happening.

This has taught us two important lessons. First, the physical warning system is not enough in itself to result in a reduction of vulnerability to tsunami. Just because we have a warning system does not mean the job is done. Second, communities need to be educated about tsunami hazard and risk, what alert and warning messages mean, how to react, where to evacuate and how quickly to respond. Furthermore, the emergency services and the EMA must work urgently to effect community tsunami disaster management planning, identification of safe evacuation zones, testing and evaluation of tsunami warning messages and trialling of these plans with the public.

Since December 2004, the Australian Federal Government, its agencies and the state emergency services have made tremendous efforts towards the development and deployment of an operational ATWS and these efforts are to be congratulated. However, much more work needs to be completed to ensure that the emergency management elements of warning and evacuation are properly developed, communicated to the public and tested. Without the latter, Australia's coastal people remain vulnerable to tsunami and the $70 million of investment may not be realised.

Dr Dale Dominey-Howes is a senior lecturer in the Department of Physical Geography. He can be contacted via e-mail at dale.dominey-howes@mq.edu.au.

This story was adapted from a story appearing in Macquarie University News May/June 2007.

English earthquake 'similar to 1776 tremor'

From correspondents in England
April 29, 2007 02:00am

Article from: Reuters

SOUTHEAST England was hit by a small earthquake on Saturday that brought down power lines and caused structural damage.

Kent Police worked with emergency services in the coastal town of Folkestone - the area worst hit by the tremor - to handle over 200 emergency calls.

More than 130 firefighters, some using specialist equipment, were deployed.

A 30-year-old woman suffered a minor head and neck injury. There were no reports of

serious injuries. "We can be genuinely thankful so few people were injured," said Chief Superintendent Alasdair Hope.

Experts gave differing estimates of the earthquake's strength with the US Geological Survey measuring the tremor's magnitude at 4.7 on the Richter scale while the British Geological Survey put it at 4.3. "It's similar to ones in 1950 and 1776," Dr Roger Musson of the British Geological Survey said. "We're quite fortunate that it's as small as it is."

The earthquake brought down power lines with several thousand homes affected, but EDF Energy Networks said services were quickly restored in the Folkestone and Dover areas.

After the earthquake, local residents called television stations to report feeling the ground shake, cracks appearing in homes and chimneys being brought down. "It woke me. It felt like an explosion and my bedroom started shaking backwards and forwards," Alison Reiney told Sky News. "It was a violent, violent rattle." Lorraine Muir said chimneys had come down, gas and electricity supplies were off and people were evacuated from their homes by the Salvation Army.

The earthquake had no effect on international travel services with Eurotunnel, which runs cross-channel rail links to France from its terminal near Folkestone on the English coast, running normally. A spokesman at nearby Dover, one of the busiest ferry ports in Europe, also said: "There has been no impact on ferries or on checking in."

The tremor, which struck at 0718 GMT, was the largest British earthquake since the one that hit Dudley in the West Midlands in 2002. "Damaging earthquakes are rare but not unknown in the UK, and the Kent region is one of those areas that has experienced them before," Professor Bill McGuire, the director of Benfield UCL Hazard Research Centre, said. "Two big quakes shook the Dover Straits in 1382 and 1580, reportedly causing widespread damage in adjacent areas of England and France." McGuire said the largest recent tremor in Britain was the 1931 Dogger Bank earthquake, which measured 6.1 on the Richter scale and was felt in France and Belgium."

Upcoming Conferences

AEES Conference

Plans are well under way for the 2007 AEES Conference which is to be held this year from 23-25 November in Wollongong, NSW. The deadline for abstract submission has now passed and authors will be notified of acceptance by 25 July.

A formal invitation will be issued in the coming weeks, however if you would like to register your interest in attending this year's conference, please contact Sharon Anderson at srj@bigpond.net.au or visit the AEES website for further details.

International Symposium on Rock Slope Stability in Open Pit Mining and Civil Engineering, 2007

This is an event organised by the Australian Centre for Geomechanics, W.A.

Date:	12-14 September, 2007
Venue:	Sheraton Perth Hotel, Perth, W.A.
Website:	www.slopestability07.com
Email:	christin@acg.uwa.edu.au

Society for Sustainability and Environmental Engineering (SSEE) Conference 2007

Date:	31 Oct – 2 Nov, 2007
Venue:	The Sheraton, Perth, W.A.
Website:	www.keynotewa.com/ssee-07/index.html

The Society for Sustainability and Environmental Engineering (SSEE) is staging a major conference in Perth on engineering sustainability. With an expected audience of over 400 delegates, the Conference has been designed for engineers and scientists practising across Government and private sectors including minerals and petroleum, industrial, energy, water, infrastructure, urban development and environment. The conference is geared to appeal to all engineering disciplines, not just environmental engineering. Moreover, as a

Technical Society within Engineers Australia, the SSEE draws membership from non-engineering

disciplines such as environmental scientists, social scientists and planners.

Engineers Australia is a major sponsor of this conference and Rolfe Hartley (National President of Engineers Australia) is an invited speaker.

The conference will feature the contribution of engineers in addressing climate change, sustainability, innovation, etc.

4th International Seminar on Deep & High Stress Mining, 2007

This is an event organised by the Australian Centre for Geomechanics, W.A.

Date: 7-9 November, 2007
Venue: Novotel Langley Hotel, Perth, W.A.
Website: www.deepmining07.com
Email: christin@acg.uwa.edu.au

International Conference on Modern Design, Construction & Maintenance of Structures (MDCMS 2007)

This event is jointly organised by the Department of Civil & Environmental Engineering, The University of Melbourne and Institute of Building Science and Technology (IBST), Vietnam. Papers on engineering for natural hazards including earthquake engineering, structural engineering, protective technology, structural dynamics, health monitoring of infrastructure, mechanics, materials and construction technology are all welcome.

Date: 10-11 December, 2007
Venue: Institute for Building Science & Technology (IBST) Hanoi, Vietnam
Email: t.ngo@civenv.unimelb.edu.au

Abstracts and enquiries should be directed to: t.ngo@civenv.unimelb.edu.au or info@mdcms2007.org. Although the submission of abstracts is overdue, late submissions will be considered.

Australasian Structural Engineering Conference 2008

Date: 26 – 27 June 2008
Venue: The Sebel Albert Park, Melb.
Website: www.asec2008.com
Email: asec2008@meetingplanners.com.au

Conference Themes:

- Turning theory into practice
- The practice of structural engineering
- Sustainable structural engineering
- Lessons from failures

The 14th World Conference of Earthquake Engineering, 2008

Date: 12-17 October, 2008
Venue: Beijing
Website: www.14wcee.org
Email: asec2008@meetingplanners.com.au

This is an event of the International Association of Earthquake Engineering (IAEE) and abstract submissions are invited from earthquake engineering participants from all over the world. Abstracts are due by 1 October 2007. For further details please visit their website.

Recent Publications

Loading on Structures
Special Issue of the *Electronic Journal of Structural Engineering* published in March 2007. (Ed. N. Lam, P. Mendis and T.Ngo)

This special issue contains review articles covering the important topics of *fire*, *earthquakes*, *wind*, *waves*, *blasts and impact*. In addition, there is an article devoted entirely to load-rating of bridges and a paper introducing the regulatory framework for Australia. The review articles are presented in such a manner that they will be of benefit to practising engineers with no prior specialized knowledge on the respective disciplines and to researchers looking for a compact state-of-the-art review.

This special edition contains the papers entitled :

Actions on Structures : Regulations and Standards
L.Pham

Designing Against Fire
I.D. Bennetts and I.R. Thomas

Calculation of Earthquake Actions on Building Structures in Australia
NTK Lam, BA Gaull and JL Wilson

Wind Loading on Tall Buildings
P. Mendis, T. Ngo, N. Haritos, B. Samali, J. Cheung and A. Hira

Introduction to the Analysis and Design of Offshore Structures
N. Haritos

Load Rating of Impaired Bridges Using a Dynamic Method
B. Samali, J. Li , K.I. Crews and M. Al-dawod

Blast Loading and Blast Effects on Structures – An Overview
T. Ngo, P. Mendis, A. Gupta and J. Ramsay

A Review of Blast and Impact of Metallic and Sandwich Structures
F. Zhu and G. Lu

All papers can be downloaded free from website: www.ejse.org/Main.htm

Possible reference book

Title: Sumatra: Andaman Earthquake and Tsunami 26 December 2004
Author: Sujit Dasgupta
Format: Paperback
Physical description: 240pp, tables, figures

Synopsis:

Introduction/Sujit Dasgupta. I. Earthquake: 1. A preliminary report on investigation of effects of the Sumatra - Andaman Earthquake of 26 December 2004 in Andaman and Nicobar Islands/K.N. Mathur, S.K. Ray, S. Sengupta, Prabhas Pande and Sujit Dasgupta. 2. Macroseismic survey in Andaman and Nicobar Island in the aftermath of the great earthquake of 26 December 2004/A.K. Ghosh Roy, S. Bardhan, P. Jana and S.R. Basir. 3. Analysis of satellite data for detection of changes in coastal geomorphology of Andaman - Nicobar Islands due to 26 December 2004 earthquake/D.P. Das, S.S. Ghosh, D. Chakraborty and K. Pramanik. 4. 26 December 2004 earthquake: coseismic vertical ground movement in the Andaman Islands/Sumit Kumar Ray and Anshuman Acharyya. 5. Bathymetry and magnetic observations along Andaman Arc-Trench gap in the post-earthquake scenario of 26 December 2004/R. Sengupta and 12 others. 6. Seismotectonics of the Andaman - Nicobar region: constraints from aftershocks within 24 hours of the great 26 December 2004 earthquake/Sujit Dasgupta, Basab Mukhopadhyay and A. Acharyya. 7. Aftershock investigation of the 26 December 2004 Sumatra-Andaman Islands earthquake/O.P. Mishra, G.K. Chakraborty and O.P. Singh. II. Tsunami: 8. Tsunami survey in the Andaman-Nicobar group of Islands/T. Ghosh, P. Jana, T.S. Giritharan, S. Bardhan, S.R. Basir and A.K. Ghosh Roy. 9. Tsunami survey in the Srikakulam-Pulicat segment, Andhra Pradesh/M. Raju, B.K. Bhandaru, V. Singaraju and B.M. Shah. 10. Tsunami survey in the Chennai - Nagapattinam segment, Tamil Nadu coast/R. Srinivasan and K. Nagarajan. 11. Tsunami survey in the Nagapattinam - Kanyakumari segment, Tamil Nadu coast/B. Kanishkan and B. Lakshminarayanan. 12. Tsunami survey in the Kanyakumari - Cochin segment in parts of Tamil Nadu and Kerala/K. Jayabalan and U. Durairaj. Appendix I: Locality index.

This book may be purchased from:

Akhil Books Pty Ltd
4675/21 Ganpati Bhawan, Ansari Road,
Daryaganj, New Delhi-110002, (INDIA)
Website: www.akhilbooks.com
E-mail: info@akhilbooks.com

Latest book on Tsunami in the Pacific and Indian Oceans

Some of you will be interested in this latest book on Tsunami in the Pacific and Indian oceans. Also published in Pageoph.

Collection of papers presented at the last ITS meeting is now published as a topical issue of Pure and Applied Geophysics
(PAGEOPH), vol. 164, No. 2/3, 2007.

It will be also available as a book.

http://www.springer.com/east/home/birkhauser/geo+science?SGWID=5-40352-0-0-0

ITIC Tsunami Newsletter

The ITIC Tsunami Newsletter (October - December 2006), No. 4 electronic
version is available at

http://ioc3.unesco.org/itic/categories.php?category_no=285

You are also invited to write tsunami articles for inclusion in the ITIC Newsletter. Articles should be a few paragraphs in length with accompanying photos or displays.

Send articles to Brian.Yanagi@noaa.gov or Linda.Sjogren@noaa.gov.