**INTERNATIONAL CONFERENCE ON**

**"EARTHQUAKE HAZARD AND RiSK INTHE MEDITERRANEAN REGION"**

*Hüseyin GÖKÇEKUŞ* • Editor

ORGANIZED AND SPONSORED BY:



1988

**NEAR EAST UNIVERSITY**

LEFKOŞA, TURKISH REPUBLIC OF NORTHERPJ CYPRUS 18 - 22 October, 1999 .

**Published By:**

EDUCATIONAL FOUNDA TION OF NEAR EAST UNIVERSITY, Near East University, P.0. Box: 670 Lefkoşa. Turkish Republic of Northem Cyprus.

*Tel/Fax: 0090 392 223 5427*

*Tel: 0090 392 236 64641460*

*Fax: 0090 392 236 6461 e-mail:* *ghuseyin@kktc.net*

**Citation:**

**EHRMR'** 99.

Reproduction of this publication for educational or other non-

commercial purposes is authorized without prior permission from the copyright holder. Reproduction for resale or other commercial purposesis prohibited without prior written permission of the copyright hol der.

**Gökçekuş H.** (Editor), **2000.** Proceedings of the Intemational Conference on Earthquake Hazard and Risk in the Mediterranean Region, EHRMR' 99, vols. 1 and 2 Educational Foundation ofNear East University, Near East University. P.0. Box: 670 Lefkoşa, Turkish Republic of Northern Cyprus,

1085p.

**Copyright:**

**ISBN:**

975-8359-03-7 (Complete set of two volumes) 975-8359-04-5 (Volume I)

**Disclamier:**

While every effort has been made to ensure the accuracy of the information, contained in this publication, the EDUCA TIONAL FOUNDATION of NEAR EAST UNIVERSITY will not assume liability for any use made there of the proceedings and the presentation of the a participating organisations concerning the legal status of any country, territory, or area, or of its authorites, or concerning the delimitation of its frontiers or

boundaries.

**Printed by:**

Zincir Ajans (0312) 231 44 39 - 230 58 13 *I* Turkey

**FOREWORD**

Throughout history, earthquakes have influenced man in every corner of the world, irrespective of country, religion, language or race.

Until now humanity proved to be impotent against the dreadful effects of earthquakes everywhere. With the advent of advanced technology, precautions are being taken against earthquakes and as a result the number of deaths due to earthquakes has dropped but by no means eliminated. i.e the number of people killed in earthquakes in 1999 is almost twice the average of the last 100 years.

Our universe possesses a dynamic structure and since its inception has constantly been moving and evolving. in this respect, tectonic movements of differing velocity are taking place in all parts of the world. These in turn cause the risk of an earthquake in a country to be high or low, depending on the characteristics of the tectonic structure of the area. The Mediterranean region forms one of the few most active earthquake belts of the world.

We can say that Cyprus, which is situated between the African and Anatolian plates, shows a very complex and intricate tectonic structure. Being one of the countries in the Mediterranean region susceptible to earthquake hazards and risks, TRNC was a suitable and, 1 am happy to say, a welcome venue for the lnternational Conference on Earthquake Hazard and Risk in the Mediterranean Region. The Conference held in the Near East University, Lefkoşa, TRNC, 18-22 October 1999, brought together more than 500 scientists from 53 countries with different approaches in 234 excellent presentations and 12 interesting posters.

The Conference which was originally announced at the lnternational Conference on Water Problems in the Mediterranean Countries in November 1997, was the first of such conferences to be organised after the earthquakes in İzmit - Türkiye, Athens - Greece, Taiwan, Mexico and Los Angeles and it has proven its timely contribution to the better understanding of the earthquake phenomenon. it alsa provided a platform for discussing and exchanging ideas soon after these major earthquakes thereby

generating great interest.

We aimed that the Conference be honoured by specialists, administrators and other interested parties to provide a forum to discuss and exchange experiences and information on a variety of aspects related to earthquake hazards and risks in the Mediterranean regions. This, we are pleased to say, rnaterialised and the entire spectrum of earthquake related topics such as :

1. Special Session on August 17, 1999 İzmit Earthquake; 2. Eastern Mediterranean Tectonics; 3. Paleoseismology; 4. Earthquake Prediction; 5. Strong Motion; 6. Seismic Risk Analysis; 7. Earthquake Studies; 8. Structural Engineering; 9. Soil

Dynamics were discussed.



Earthquake is a multidisciplinary concern. For the studies in this field to yield results the research workers, the local administrators and the relevant state departments should cooperate and work together.



1 hope the conclusions of these discussions will provide all concerned - scientists, research workers, technocrats, law-makers, decision making organs and organisations and whoever else is concerned with preserving the socio-economic potential of a country against earthquake hazards and risks - with some scientific and technical assistance in their efforts to formulate national earthquake policies.

The success of the Conference was ensured by the painstaking studies of a large number of people and institutions. Special thanks to members of The Technical and Organising Committee, The Scientific Committee, The Speakers and all the participants far their invaluable contributions to the lnternational Conference on Earthquake Hazard and Risk in the Mediterranean Region.

**20 July 2000 - Near East University, Lefkoşa, TRNC**

**Assoc. Prof. Dr. Hüseyin GÖKÇEKUŞ Chairman**







**18·22 October** 1999, **NEAR EAST UNIVERSITY**

**TECHNICAL & ORGANIZING COMMITTEE**

**Honorary Chairman:**

**Dr. Suat İ. GÜNSEL**

Founding President, Near East University, Lefkoşa, **Turkish Republic of Northern Cyprus**

**Chairman:**

**Assoc. Prof. Dr. Hüseyin GÖKÇEKUŞ** Vice President, Near East University, Director, Near East University

North Cyprus Earthquake Research lnstitute, Lefkoşa, **Turkish Republic of Northern Cyprus**

**Members:**

**Prof. Dr. Mustafa Erdik**

Chairman, Department of Earthquake Engineering, Kandilli Observatory and

Earthquake Research lnstitute, Boğaziçi University,

İstanbul, **Turkey**

**Prof. Dr. Ahmet Mete lşıkara**

General Director, Kandilli Observatory and Earthquake Research lnstitute,

Boğaziçi University,

İstanbul, **Turkey**

**Prof. Dr. Atilla M. Ansal**

Secretary-General, European Association Far Earthquake Engineering arıd Civil

Engineering Faculty, lstanbul Technical University,

lstanbul, **Turkey**

**Prof. Dr. Aykut Barka**

Department of Geology,İstanbul Technical University,

İstanbul, **Turkey**

**Prof. Dr. Vedat Doyuran**

Geological Engineering Department, Middle East Technical University,

Ankara, **Turkey**

**Prof. Dr. Erçin Kasapoğlu**

Geological Engineering Department, Engineering Faculty, Hacettepe Univers

Beytepe,

Ankara, **Turkey**

**Prof. Dr. Tuğrul Tankut**

Vice Chairman, The Scientific and Technical Research Council of Turke (TUBITAK), Department of Civil Engineering, Middle East Technical University, Ankara, **Turkey**

**Rüçhan Yılmaz**

General Director, General Directorate of Disaster Affairs, Ministry of Public WorKs

and Settlement,

Ankara, **Turkey**

**Oktay Ergunay**

General Directorate of Disaster Affairs,Ministry of Public Works and Settlemen

Ankara, **Turkey**

**Mrs. Ş. Hülya İlgen**

Director, European Natural Disasters Training Center and Head, Vocational Training Department, General Directorate of Technical Research and lmplementation. Ministry of Public Works and Settlement,

Ankara, **Turkey**

**G. Babayev**

Director, European Associated, Training-lnformation Center.

Baku, **Azerbaijan**

**Abdelaziz Gaouar**

Director, Centre de Recherche Scientifique et Technique Sur Les Regions Arides

Eure Mediterranean Associe CRSTRA,

**Algeria**

**J. Jean Bartelemy**

Tresorier, E.C.G.S Observatorie, Royal de Belgique, Bruxelles, Luxernburq

**L. A. Mendes Victor,**

Programme FORM-OSE (niveau universitaire) Director, CERU,

Lisboan, **Portugal**

**Prof. Dr. J.C. Flageollet,**

Directeur, European Center on Geomorphological Hazards,

Strasbourg Cedex, **France**

T. Chelidze,

Director, European Centre on Geodynamical Risk Of High Dams, lnstitute of Geophysics,

Tbilisi, Georgie

Assoc. Prof. Dr. İlyas Yılmazer

Director General, Yılmazer Education and Engineering Ltd., Ankara, Turkey

Asst. Prof. Dr. Cavit Atalar Near East University,

Lefkoşa, Turkish Republic of Northern Cyprus

Prof. Dr. Fahrettin Mamedov Near East University,

Lefkoşa, Turkish Republic of Northern Cyprus

Önal Dorak

Near East University,

Lefkoşa, Turkish Republic of Northern Cyprus

Mahmut Sinan

Near East University,

Lefkoşa, Turkish Republic of Northern Cyprus

Erdal Camgöz

Near East University,

Lefkoşa, Turkish Republic of Northern Cyprus

Temel Rızza

Near East University,

Lefkoşa, Turkish Republic of Northern Cyprus

Orhan Bedel

Near East University,

Lefkoşa, Turkish Republic of Northern Cyprus



18·22October1999, NEAR EAST UNIVERSITY



ADVISORY SCIENTIFIC BOARD

Prof. Dr. A. Akif Ağamehtioğlu Council tor Seismicity Estimation and

Pragnosic of Earthquake in Republic of Azerbaijan,

Baku, Azerbaijan

Prof. Dr. Mohammad Al-haddad King Saud University,

Riyadh, Saudi Arabia

Prof. Dr. lsmailzade Tofik Alioğlu

Centre tor Regional Geophysical and Geology lnvestigations GEON,

Moscow, Russia

Prof. Dr. Atilla M. Ansal İstanbul Technical University, İstanbul, Turkey

Prof. Dr. Ronaldo Armijo

Laboratoire Tectonique lnstitut de Physique du Globe de Paris,

Paris, France



Prof. Dr. M. Ghafory-Ashtiany

lnternational lnstitute of Earthquake Engineering and Seismology (llEES)., Tehran,

l.R. ıran

Assoc. Prof. Dr. Kuvvet Atakan Sergen University,

Sergen, Norway

Prof. Dr. Zvi Ben Avraham Tel Aviv University,

Tel Aviv, lsrael

Prof. Dr. Nuray Aydınoğlu

Kandilli Observatory and Earthquake Research lnstitute, Boğaziçi University,

İstanbul,Turkey





**Prof. Dr. Pierre Yves Bard**

Risque Sismique au LCPC, (Division MSRGI), LGIT - Grenoble, **France**

**Prof. Dr. Aykut Barka** İstanbul Technical University, İstanbul, **Turkey**

**Prof. Dr. Hasan Boduroğlu**

İstanbul Technical University, Faculty of Civil Engineering,

lstanbul, **Turkey**

**Dr. Aomar lben Brahim** Geophysics Laboratory, CNCPRST, Rabat, **Morocco**

**Dr. M'Hamed Chadi**

lnstitut National De La Meteorologie Tunis, **Tunisia**

**Prof. Dr. Pietro Cosentino**

Applied Geophysics, Department of Chemistry and Physics of the Earth,

Geophysical Section, University of Palermo,

Palermo, **ltaly**

**Prof. Dr. Vedat Doyuran**

Geological Engineering Department, Middle East Technical University,

Ankara, **Turkey**

**Elfoul Djamal**

Seismic Hazard Evaluation and Microzoning Department, National Center of Applied

Research in Earthquake Engineering,

Algiers, **Algeria**

**Prof. Dr. Amr Salah-eldin Elnashai** lmperial College,

Landon, **UK**

**Prof. Dr. Mustafa Erdik**

Kandilli Observatory and Earthquake Research lnstitute, Boğaziçi University,

İstanbul, **Turkey**

**Oktay Ergunay**

General Directorate of Disaster Affairs, Ministry of Public Works and Settlement,

Ankara, **Turkey**

**Prof. Dr. Mustafa Ergün** Dokuz Eylül University, İzmir, **Turkey**





**Prof. Dr. Liam Finn** University of British Columbia, Vancouver, **Canada**

**Prof. Dr. M. Garcia-Fernandez**

lnstituto de Ciencias de la Tierra 'Jaume Almera' - CSIC, Barcelona, **Spain**

**Prof. Dr. Rainer Flesch**

Research Urıit Construction of Arsenal Research, Wien, **Austria**

**Prof. Dr. Domenico Giardini** lnstitute of Geophysics, ETH, Zurich, **Switzerland**

**Assoc. Prof. Dr. Hüseyin Gökçekuş** Vice President, Near East University,

Director, Near East University-North Cyprus Earthquake Research lnstitute, Lefkoşa, **Turkish Republic of Northern Cyprus**

**Prof. Dr. Naci Görür**

İstanbul Technical University, Faculty of Mining,

İstanbul, **Turkey** ·

**Prof. Dr. Gottfried Grunthal**

GeoForschungs Zentrum Potsdam Department Recent Kinematics and Dynamics of the Earth D-14473,

Potsdam, **Germany**

**Dr. Walter Hays**

Senior Program Manager, Technical and lnternational Activities, American Society of Civil Engineers, Reston, VA 20191-4400,

**USA**

**Prof. Dr. Michael lvanov**

UNESCO-MSU Centre tor Marine Geosciences Geology Faculty, Moscow State U.niversity,

Moscow, **Russia**

**Prof. Dr. Haluk lyidogan**

Department of Geophysics, Faculty of Mining lstanbul Technical University, lstanbul, **Turkey**

**Dr. Khaled Kahhaleh**

Building Research Center Royal Scientific Society Amman, **Jordan**

**Prof. Dr. Erçin Kasapoğlu**

Geological Engineering Department, Engineering Faculty, Hacettepe Urıiversity,

Beytepe,

Ankara, **Turkey**

**Prof. Dr. Liam Finn** University of British Columbia, Vancouver, **Canada**

**Prof. Dr. M. Garcia-Fernandez**

lnstituto de Ciencias de la Tierra 'Jaume Almera' - CSIC, Barcelona, **Spain**

**Prof. Dr. Rainer Flesch**

Research Urıit Construction of Arsenal Research, Wien, **Austria**

**Prof. Dr. Domenico Giardini** lnstitute of Geophysics, ETH, Zurich, **Switzerland**

**Assoc. Prof. Dr. Hüseyin Gökçekuş** Vice President, Near East University,

Director, Near East University-North Cyprus Earthquake Research lnstitute, Lefkoşa, **Turkish Republic of Northern Cyprus**

**Prof. Dr. Naci Görür**

İstanbul Technical University, Faculty of Mining,

İstanbul, **Turkey** ·

**Prof. Dr. Gottfried Grunthal**

GeoForschungs Zentrum Potsdam Department Recent Kinematics and Dynamics of the Earth D-14473,

Potsdam, **Germany**

**Dr. Walter Hays**

Senior Program Manager, Technical and lnternational Activities, American Society of Civil Engineers, Reston, VA 20191-4400,

**USA**

**Prof. Dr. Michael lvanov**

UNESCO-MSU Centre tor Marine Geosciences Geology Faculty, Moscow State U.niversity,

Moscow, **Russia**

**Prof. Dr. Haluk lyidogan**

Department of Geophysics, Faculty of Mining lstanbul Technical University, lstanbul, **Turkey**

**Dr. Khaled Kahhaleh**

Building Research Center Royal Scientific Society Amman, **Jordan**

**Prof. Dr. Erçin Kasapoğlu**

Geological Engineering Department, Engineering Faculty, Hacettepe Urıiversity,

Beytepe,

Ankara, **Turkey**



**Prof. Dr. Pedro S. Seco e Pinto**

ISSMFE TC4 on Earthquake Geotechnical Engineering,

Lizboa, **Portugal**

**Dr. Robert Reilinger**

Massachusatte lnstitute of Technology, Cambridge,

Massachusatte, **USA**

**Dr. Dieter Mayer-Rosa**

Schweiz. Erdbebendienst, ETH-Honggerberg,

Zurich, **Switzerland**

**Dr. Vladimir Schenk**

lnstitute of Rock Structure and Mechanics,

Praha Liben, **Czech Republic**

**Dr. Jamal Mohamed Sholan**

Director N. Seismological Observation Center Dhamar,

**Republic of Yemen** ·

**Dr. Freysteinn Sigmundsson**

Nordic Volcanological lnstitute,University of lceland,

Reykjavik, **lceland**

**Prof. Dr. Mohammed Sobaih** Cairo University,

Giza, **Egypt**

**Dr. lain Stewart** Brunel University, Uxbridge, **UK**

**Prof. Dr. Haluk Sucuoğlu**

Oirector of Earthquake Engineering Research Center,

Middle East Technical University,

Ankara, **Turkey**

**Dr. Erdal Şafak**

United States Geological Survey, Denver,

Colorado, **USA**

**Prof. Dr. Celal Şengör**

İstanbul Technical University, Faculty of Mining,

İstanbul, **Turkey**

**Prof. Dr. Tuğrul Tankut**

Vice Chairman, The Scientific and Technical Research Council of Turkey

(TUBITAK), Department of Civil Engineering, Middle East Technical University,

Ankara, **Turkey**



**Prof. Dr. Miha Tomazevic**

Sloveniarı National Building and Civil Engineering lnstitute,

Ljubljana, **Slovenia**

**Prof. Dr. John M. Woodside** Free University,

Amsterdam, **The Netherlands**

**Prof. Dr. Çetin Yılmaz**

Civil Engineering Department, Middle East Technical University,

Ankara,Turkey

**Assoc. Prof. Dr. İlyas Yılmazer**

Director General, Yılmazer Education and Engineering Ltd.,

Ankara, **Turkey**

**Prof. Dr. Özal Yüzügüllü**

Kandilli Observatory and Earthquake Research lnstitute, Boğaziçi University,

İstanbul, **Turkey**

**TABLE OF CONTENTS**

Volume 1

SPECIAL SESSION ON AUGUST 17, 1999 İZMİT EARTHQUAKE

Neotectonic Frame Of Turkey: A Special Emphasis On The 17 August 1999 Gölcük-Arifiye Earthquake (NE Marmara, Turkey) Ali Koçyiğit, Erdin Bozkurt, Mustafa Cihan, Arda Özacar and

Bülent Teksöz, Turkey 1

The August 17, 1999 İzmit Earthquake, M=7.4, and November 12, 1999 Düzce Earthquake, M=7.2, Eastern Marmara Sea Region ·

Aykut Barka, Serdar Akyüz and Erhan Altunel,Turkey 13

The Mechanism Of The 17 August 1999 Gölcük (Kocaeli) - Arifiye (Adapazarı) Earthquake, NW Turkey

Ergun Gökten, 1. Çemen, Volkan Özaksoy and Cenk Erkmen,

Turkey- USA 23

Preliminary Results Of The Trench Studies On The 1999 Rupture Of The İzmit Bay Earthquake, İzmit, NW Turkey Ramazan Demirtaş, Cenk Erkmen and Rüçhan Yılmaz,

Turkey 37

Surface Deformation Of The 17 August 1999 İzmit Earthquake And lts Neotectonic Significance

K. Ş. Kavak, S. Özden, S. Zeki Tutkun, O. Tatar and B. Doğan,

Turkey 47

On The Seismotectonics Of The Marmara Region: Source Characteristics Of 1999 Gölcük, Sapanca, Düzce Earthquakes

Tuncay Taymaz, Turkey 55

The August 17, 1999 İzmit Bay Earthquake, NW Turkey

Rüçhan Yılmaz and Ramazan Demirtaş, Turkey .: 77

The Cyclic Behaviour Of Soils And Effects Of Geotechnical Factors During 17 August 1999 Kocaeli Earthquake

Atilla Ansal, Turkey 89

Pages

Engineering Geological Characteristics Of August 17, 1999 Eastern Marmara Earthquake

K. Erçin Kasapoğlu, Reşat Ulusay and Candan Gökceoğlu,

Turkey 105

Earthquakes in Turkey Of 17.08.1999: Comparative Analysis With Other Destructive Earthquakes in The Central Part Of The Alpine Belt Of Eurasia.

Kondorskaya Nadezhda, Levin Leonid and Solodilov Leonid,

Russia 115

The Sea Of Marmara: A Deep lntracontinental Marine Basin Formed By The North Anatolian Fault Activity

Naci Görür and Namık Çağatay, Turkey 121

Lessons Learnt From İzmit Earthquake (Turkey) Of 17 August 1999 M5=7 .8; Case Study Of Aseverely Damaged lndustrial

Facility

A.I. Salama, Egypt 135

EASTERN MEDITERRANEAN TECTONICS

Tectonics Acting To The West Of Cyprus, Eastern Mediterranean

Ali Pınar, Semir Över, Doğan Kalafat, Ahmet Mete lşıkara and

 Aykut Barka, Turkey 145

Some Remarks About The General Tectonic Framework Of The Eastern Mediterranean

 Mustafa Ergün and Ersel Zafer Oral, Turkey 157

Caspian Region : Prediction Of Seismicity For Provision Of Safety Of Oil And Gas lndustry From Earthquakes.

 Levin Leonid and Solodilov Leonid, Russia 169

Geodynamics Of Western Turkey

 M. Şaik, Y. Altıner and M. Ergün, Turkey- Germany 179

Seismic Activity in The Cyprus Region Preceding Major Earthquakes in Turkey

Levent Gülen, USA.................................................................. 189

Global Positioning System Measurements Of Present-Day Plate Motions And lntra-Plate Deformation in The Eastern

Mediterranean Region

 Robert Reilinger and Aykut Barka, USA-Turkey 201



~arthquakes in And Around The lsland Of Cyprus in The Last 30 Year

O. lbrahim, O Erdel and B. Erdel, UK 203

PALEOSISMOLOGY

Paleoseismological lnvestigations Along The Kera Fault Zone, Western Crete: lmplications For Seismic Hazard Assessment Vasiliki Mouslopoulou,Cleanthi Andreou Kuvvet Atakan and

loannis Fountoulu, Norway 211

The Holocene Seismic History Of Some Regions Of The Al pine Belt Of The Eurasia From The Trenching Data

Eugene Rogozhin, Russia 221

EARTHQUAKE PREDICTION

Electron Density Perturbations Prior To Strong Earthquakes N.M. Rotanova, V.N. Oraevsky and A.H. Depueva,

Russia 227

The Relationship Of Geothermal Activity And Earthquakes in Turkey, Two Examples FronrBursa And Erzincan

Zeynel A. Demirel, Turkey 237

The Most Modern Methods in Time-Frequency Analysis Of Seismic Signals

Codruta Pricop, Mihail Pricop and Kunsel izet Ünsalan,

Romania 249

The Deep Geophysical lnvestigations For Prediction Of Source Of The Destructive Earthquakes

Konovalov Yuli, Popova Oksana and Solodilov Leonid,

Russia 257

Social lssues Of The Problem Of Earthquake Prediction

Akhundova Svetlana Beyuk-Aga Kysy, Azerbaijan 265

Engineering-Geonomical Model Of The World Forecasting Earthquakes

SH. Usupaev, Kyrghyz Republic 269

Seismodislocations And Their Manifestation in Radioactive Fields

T. A. Zolotovitskaya, Azerbaijan 277



Ta Hear The Vaice Of The Earth

 Askold Belyakov, Uipe Ras 287

APELL (Awareness And Preparedness Far Emergencies At Local Level)

 J. David Thwaites, France 293

STRONG MOTION

Evaluatian Of Strang Motian Netwark Data in Narth Cyprus E. Durukal, H. Gökçekuş, M. Gül, A. Mert,

Turkey-T.R.N.C 301

Develapments Of Turkish Natianal Strang Matian Netwark Zahide Çolakoğlu, Engin inan, Nejat Bayülke, Hüseyin Güler and

Tülay Uğraş, Turkey 327

Lacal Amplificatian Effects During The 1997 Umbria-Marche Earthquake

Tito Sana, ltaly 335

SEISMIC RiSK ANAL YSIS

A Navel Based Criteria Far Evaluating The Maximum Seismic Graund Acceleratian

Djawad Zendagui, Abdelmalek Bekouche And Abdelkader Djedid,

Algeria 347

Site Amplificatian At The Deep Sedimentary Depasits Aybige Akinci, Robert B. Hermann and Nihal Akyol,

Turkey - USA........................................................................ 355

Seismic Vulnerability Of Megacities

Mustafa Erdik, Turkey : 363

lran's Achievement During ldndr And Dimehr Far Future

Mohsen Ghafory-Ashtiany, ıran 375

The Results Of Researches At The Enviranmental-Pratectian Palygons Far The Aim Of The Earthquakes Predictian in Two Regians-The Narth Caucasus And Sauthern Kazakhstan Solodilov Leonid, Vasilyev Stanislav, Kadurin lgor and

Korobov Vladimir, Russia......................................................... 387



Model-Free Seismic Hazard Estimation

Stanislaw Lasocki, Andrzej Kijko and Gerhard Graham,

Poland - South Africa............................................................ 503

Earthquake Analysis Of A Sample Building According To Different Earthquake Codes

Hikmet H. Çatal, Cüneyt Tüzün and Halit Yazıcı, Turkey 509

Seismic Codes-Revisited

Mehedi A. Ansary, Munaz A. Noor and Salek M. Seraj,

Bangladesh - Japan 519

Seismic Hazard Description For Design Applications in Slovenia

Janez K. Lapejne and Blaz Zabukovec, Slovenia 531

Urban Design As A Framework For Disaster Management in Kathmandu metropolitan City

Bijaya K. Shrestha, Japan 541

Seismic Risk Study Of Aegean Region

Günruh Bağcı, Turkey 551

Urban Risk

S. Hülya llgen, Turkey 563

What Do We Learn From Recent Earthquake To Reduce The Damage?

Riadh Aljibouri, Turkey 569

Engineering-Seismological Approaches To The Problem Of Urban Earthquake Risk Mitigation: Experience Of The ldndr­Radius Project For The City Of Tashkent, Uzbekistan S.A.Tyagunov, K.N.Abdullabekov and V.A lsmailov,

Uzbekistan 573

Bulding Confıgurations For Seicmic Area And A Contemporary Building Example

Özlem Eşsiz, Turkey 583

Seismic Hazard Estimation in The Main Seismogenic Zones in North Algeria

Mohamed Hamdache, Algeria 593

Comparative lnvestigation Of The Earthquake Risk Analysis Methods

Hüseyin Kırbaş and Sonat Ermez, Turkey 605