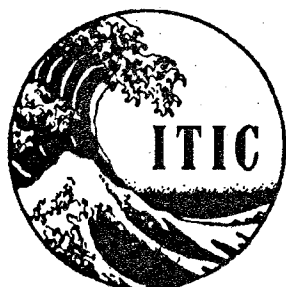


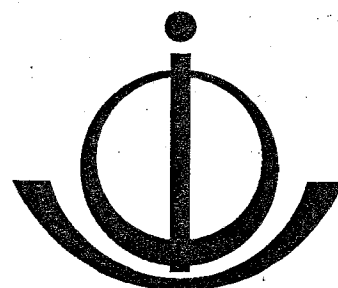


TSUNAMI NEWSLETTER

OCTOBER 1989
VOLUME XXII, No. 1



International
Tsunami
Information
Center



Box 50027
Honolulu, HI 96850-4993
Telephone: (808) 541-1658
FAX: (808) 541-1678

UNESCO
INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
COMMISSION OCEANOGRAPHIQUE INTERGOUVERNEMENTALE
COMISSÃO OCEANOGRÁFICA INTERGOVERNAMENTAL
МЕЖПРАВИТЕЛЬСТВЕННАЯ ОКЕАНОГРАФИЧЕСКАЯ КОМИССИЯ
اللجنة الحكومية لعلم المحيطات

INTERNATIONAL TSUNAMI
INFORMATION CENTER

Box 50027, Honolulu, Hawaii 96850-4993

Telephone: (808) 541-1658

Fax: (808) 541-1678

Director: Dr. George Pararas-Carayannis

TSUNAMI NEWSLETTER is published by the International Tsunami Information Center to bring news and information to scientists, engineers, educators, community protection agencies, and governments throughout the world.

We welcome contributions from our readers.

The International Tsunami Information Center (ITIC) is maintained by the U.S. National Oceanic and Atmospheric Administration (NOAA) for the Intergovernmental Oceanographic Commission (IOC). The Center's mission is to mitigate the effects of tsunamis throughout the Pacific.

MEMBER STATES

Present membership of the IOC International Coordination Group for the Tsunami Warning System in the Pacific (ITSU) comprises of the following States:

AUSTRALIA

JAPAN

CANADA

MEXICO

CHILE

NEW ZEALAND

CHINA

PERU

COLOMBIA

PHILIPPINES

COOK ISLANDS

REPUBLIC OF KOREA

DEMOCRATIC PEOPLE'S REPUBLIC OF

SINGAPORE

KOREA

THAILAND

ECUADOR

UNITED KINGDOM (HONG KONG)

FIJI

UNITED STATES OF AMERICA

FRANCE

UNION OF SOVIET SOCIALIST REPUBLICS

GUATEMALA

WESTERN SAMOA

INDONESIA

NEWS EVENTS

TSUNAMI - 89

The International Tsunami Meetings were held during 31 July - 10 August 1989 at Novosibirsk Science Center which is the main center of the Siberian Division of the USSR Academy of Sciences and known all over the world as the Science Town "Akademgorodok." Novosibirsk is the largest city in the entire eastern part of the Soviet Union between the Urals and the Pacific Ocean. Akademgorodok is a modern and attractive research community of up to 50 thousand population, and is located 20 km south from downtown Novosibirsk in a pine-tree forest growing along the banks of the Ob river.

The Tsunami 89 meetings were arranged by an International Organizing Committee, and a Novosibirsk Local Host Committee, and were sponsored by the following organizations:

Intergovernmental Oceanographic
Commission (IOC)
International Coordination Group for
the Tsunami Warning System in the
Pacific (ICG/ITSU)
Tsunami Commission of the
International Union of Geodesy
and Geophysics (IUGG)
International Tsunami Information
Center (ITIC)
USSR State Committee on
Hydrometeorology
Academy of Sciences of the USSR
Scientific-Technical Center RITM

Novosibirsk Computing Center
Krasnoyarsk Computing Center

The Program of the Meetings included the International Tsunami Symposium of the IUGG Tsunami Commission, the Workshop on the Technical Aspects of Tsunami Warning Systems, Tsunami Analysis, Preparedness, Observation and Instrumentation, and XII Session of the International Coordination Group for the Tsunami Warning System in the Pacific. The Meetings helped greatly in deepening the understanding of tsunamis by providing a forum for an exchange of views between scientists and specialists from all over the world.

INTERNATIONAL TSUNAMI SYMPOSIUM, 31 JULY-3 AUG 1989

The International Tsunami Symposium, organized by the International Union of Geodesy and Geophysics (IUGG) Tsunami Commission was held at Novosibirsk, USSR, from 31 July - 3 August 1989. The Symposium brought together scientists and engineers from all over the world specializing in the field of the tsunami research giving them the opportunity to exchange information and discuss progress.

The Novosibirsk Symposium covered all aspects of tsunami phenomena, whether scientific, technical, social, or historical. Presentations were grouped into the following research themes:

Tsunami Generation; Tsunami Propagation; Tsunami Coastal Effects; Seismic and Tectonics; Tsunami Observations; Tsunami Hazard Mitigation.

October 1989

More than 100 participants from 20 countries participated. The IUGG Tsunami Commission will publish the complete proceedings of the Symposium in the near future.

For more information write to:
Dr. Eddie Bernard
Chairman, IUGG Tsunami Commission
PMEL/NOAA
7600 Sand Point Way, N.E.
Seattle, WA 98115 U.S.A.

INTERNATIONAL TSUNAMI WORKSHOP 4-5 AUGUST 1989

The Second International Workshop on the Technical Aspects of Tsunami Warning Systems, Tsunami Analysis, Preparedness, Observation and Instrumentation, was held in Novosibirsk, USSR, on August 4-5, 1989. The main idea of the Workshop was to bring together tsunami specialists from different countries working on improving the understanding of the tsunami phenomena and on the practical solutions for the mitigation of the tsunami hazard.

The program of the Workshop was intensive with morning and afternoon lectures and technical talks and covered the following basic items:

International Cooperation; Existing Tsunami Warning Centers; New Methods of Tsunami Prognosis; Tsunami Data Bases; Instrumentation and Observations; Tsunami Preparedness.

The first International Tsunami Workshop on Technical Aspects of Tsunami Analysis, Prediction, and Communication had been held in 1985 in Sidney, Canada.

Just as the first workshop, this second workshop contributed greatly to the beneficial exchange of views and concepts between participants and facilitated the resolution of a number of problems of operational nature.

A summary report and the Workshop Proceedings will be prepared by the International Tsunami Information Center and will be published and distributed by the Intergovernmental Oceanographic Commission (IOC). For more information write to:

Dr. George Pararas-Carayannis
Workshop Chairman
International Tsunami Information Center
Box 50027
Honolulu HI 96850-4993
USA

XII SESSION OF ITSU GROUP 7-10 AUGUST 1989

The Twelfth Session of the International Coordination Group for the Tsunami Warning System in the Pacific was held in Novosibirsk, USSR during 7-10 August. The Agenda of the Session included national reports for the Member States, the survey of recent improvements of the Tsunami Warning System in the Pacific, consideration of implementation of resolutions and recommendations of the previous Session, and discussions of the current and future activities of the Group. Attendance was open to all the National Representatives of the Member States and to observers. Mr. Richard Hagemeyer was the Chairman of the Twelfth Session, Dr. Al Tolkachev of IOC was the Secretary. IOC will publish a summary report on the meeting. For more

Tsunami Newsletter

information write to:
Dr. Albert Tolkachev
IOC/UNESCO
7, Place de Fontenoy
75700 Paris, France

TSUNAMI COMMISSION MEETING 2 AUGUST 1989

The IUGG Tsunami Commission convened its biennial business meeting on 2 August 1989 in Novosibirsk, USSR. The meeting was well attended. Minutes of the meeting and recommendations can be obtained from:

Dr. E. Bernard
Chairman, IUGG Tsunami Commission
PMEL/NOAA
7600 Sand Point Way, N.E.
Seattle, WA 98115 USA

EARTHQUAKE IN HAWAII JUNE 1989

The largest earthquake in the last six years, with a magnitude of 6.1 shook the Island of Hawaii at 5:26 pm on 25 June 1989. Its epicenter was very close to the 1975 earthquake epicenter, near Kalapana on the southern coast of the island. The quake had a focal depth of only 5.5 miles. It was felt as far away as Maui and Oahu. At least five people reported minor injuries by falling debris in their homes. Only two homes in the Kalapana area were reported as destroyed by the quake. Unconfirmed reports were received that other homes may have been damaged by the quake. Several landslides were reported, the most serious occurring at Honomu, north of Hilo, which closed the one side of the Hawaii Belt Highway. Also, the quake caused sporadic

electric power and telephone service interruption for most of the Island of Hawaii. The quake was the strongest to hit Hawaii since 15 November 1983, when a 6.6 quake caused several million dollars damage on the island.

The 25 June quake caused a small tsunami which registered 22.8 inches high at Honuapo, 8.4 inches in Kapoho, and 5.6 at Hilo. The tsunami did not cause any damage and the Hawaii Regional Tsunami Warning System did not issue a tsunami warning.

EARTHQUAKE IN MEXICO APRIL 1989

On 25 April 1989, an earthquake measuring 6.8 on the Richter Scale struck Mexico City and Acapulco. No buildings collapsed, but one man died as a result of electrocution. No tsunami was reported.

EARTHQUAKE IN MOLUCCA SEA FEBRUARY 1989

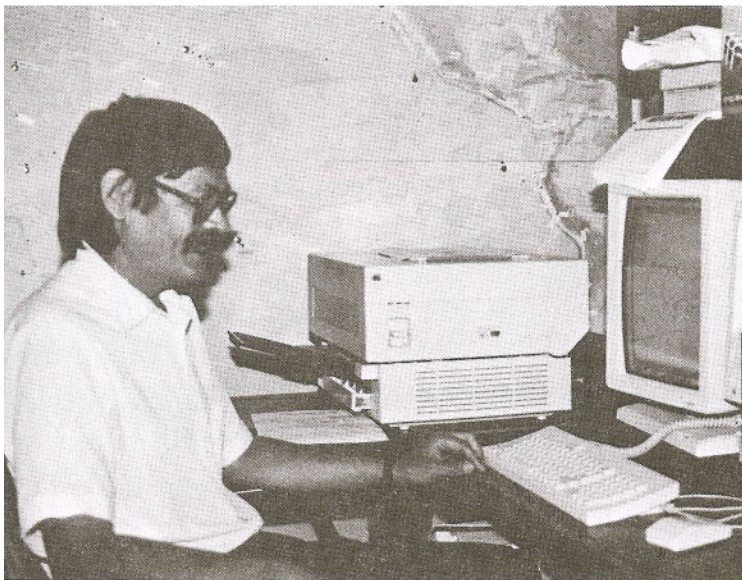
On 10 February 1989, an earthquake measuring 6.9 on the Richter Scale occurred 870 miles southeast of Manila in the Molucca Sea. No tsunami was reported.

EARTHQUAKE IN PHILIPPINES NOVEMBER 1988

In November 1988, a medium intensity earthquake rocked the central Philippines toppling two bridges and damaging school-houses. The earthquake registered 5.1 on the Richter Scale. Its epicenter was 25 miles off Samar in the sea. No tsunami was reported.



Group picture of the participants of the Tsunami 89 meetings in Novosibirsk, USSR.



above- Mr. Vladimir Berdin (USSR), ITIC visiting scientist, strikes up a friendship with ITIC's Macintosh SE computer.



right- Mr. Antonio Sanchez (Mexico), ITIC visiting scientist, finalized his report on the same computer.



Graduation day for visiting scientists Mr. Antonio Sanchez and Mr. Vladimir Berdin. With them is Mr. Richard Hagemeyer, Chairman ITSU, and Dr. George Pararas-Carayannis, ITIC Director.

INTERNATIONAL TSUNAMI INFORMATION CENTER

UNDP/UNESCO(IOC) MISSION SUB-REGIONAL TSUNAMI WARNING SYSTEM IN THE SOUTHWEST PACIFIC

In May/June 1989, Dr. George Pararas-Carayannis, Director of ITIC, Dr. Kazuhizo Kitazawa of IOC, and Mr. Ronald Richmond (Australia) were the members of a joint UNDP/UNESCO(IOC) Mission that visited the Southwest Pacific for Project Formulation of a Sub-Regional Tsunami Warning System. The itinerary was as follows: Philippines (15-20 May); Indonesia (20-26 May); Papua New Guinea (28-31 May); Solomon Islands (31 May-1 June); and Fiji (1-3 June).

At least six hazardous tsunamis have occurred in the region since 1976, resulting in great loss of life and property. The worst of these occurred in the Philippines in 1976 when 8,000 people died. The need to establish a regional warning system has been recommended by ICG/ITSU in the past, and proposals for support were submitted to UNDP. Dr. Kitazawa recently revived interest in this project. Once funded, the goal of the Project will be to develop a regional tsunami warning system with an adequate array of tidal and seismological stations and a rapid communication network for both observed data and tsunami information (warning). Sub-regional systems, as components of the Pacific-wide tsunami observatory network, can monitor effectively the tsunami phenomenon. The Southwest

Pacific is considered one of the sub-regions that needs to be strengthened.

The Mission reviewed the present situation of national networks of tide stations and seismic observatories, collected information, and met with scientists, administrators, and representatives of organizations involved in relevant activities in the mitigation of the tsunami hazard. As a result of this mission a five-year plan for the region has been drafted and a new project proposal will be submitted to UNDP.

VISITORS TO ITIC

Recent visitors to ITIC include S. Joy Svihra, Librarian, Earthquake Engineering Research Center, University of California, Richmond; Dr. Frantisek Wald, Department of Steel Structures, Czech Technical University, Prague, Czechoslovakia; CSIRO; Professor Geoff Lennon, Institute of Atmospheric and Marine Sciences, Flinders University, South Australia; Mr. Peter Shaw, Australian Bureau of Meteorology; Mr. Ken Ridgeway, CSIRO's Division of Oceanography, Australia; Mr. A.D. O'Connor, Director, Hydrography, Canadian Hydrographic Service, Pacific Region.

DIRECTOR, ITIC, ADDRESSES U.S. COAST GUARD OFFICERS ASSOCIATION, HONOLULU, HAWAII

Dr. George Pararas-Carayannis, Director, ITIC, recently gave a Tsunami Preparedness presentation to the U.S. Coast Guard Officers Association in Honolulu, Hawaii.



top left- Mr. Gordon Burton, Geophysicist-in-Charge PTWC, and wife Mary, with LCDR Sigrist (USA), and with Mr. Vladimir Berdin (USSR). *top right-* Dr. Huating Yang (People's Republic of China) poses for a photo during a social event. *above left-* Dr. Mohammed El Sabh (Canada), poses for a candid photo following a small accident on the dancing floor. *above-* ITSU Chairman Mr. Richard Hagemeyer and wife Helen, with George Pararas-Carayannis during a coffee break at the Tsunami 89 meetings. *bottom-* Emilio Lorca and Cdr. A.H. Gorriglia (Chile) with Dr. & Mrs. Gusiakov.

October 1989

the new national contact for ITSU in New Zealand, in May 1989.

IOC/ITSU

THIRD SESSION OF THE IOC TECHNICAL COMMITTEE ON OCEAN PROCESSES AND CLIMATE PARIS, 27-29 JUNE 1989

The Third Session of the IOC Technical Committee on Ocean Processes and Climate was held in Paris on 27-29 June 1989. Included among the 12 items on the agenda, were the following: the Implementation of the Tropical Ocean and Global Atmosphere Programme (TOGA); the Global Ocean Observing Systems Development; the Ocean Dynamics and Circulation on the Continental Shelf; and the Election of a Chairman of the Technical Committee.

NEW IOC SECRETARY

As of January of this year Dr. Gunnar Kullenberg (Denmark) is the Secretary of the Intergovernmental Oceanographic Commission (IOC). Dr. Mario Ruivo, who served as Secretary from 1980 to 1989, retired. Dr. Kullenberg, who held the rank of professor at the University of Copenhagen, joined the IOC Secretariat in 1985 and was in charge of the Commission's marine pollution research and monitoring programmes, prior to his present appointment.

NEW NATIONAL CONTACT FOR ITSU IN NEW ZEALAND

Mr. Edward Latter, the Director of Civil Defense at the Ministry of Defense, became

UNESCO WORKSHOP'S MARINE SCIENCE EDUCATION GUIDELINES FOR THE YEAR 2000

A UNESCO workshop in Paris on 6-10 June 1989 recommended guidelines for marine science education for institutional and international education and training programmes. Twenty-five participants from three countries and seventeen organizations reviewed the results of a recent UNESCO survey on the subject. The workshop covered six areas: research; problems of developing coastal states with special reference to small islands; economic and social potentials of marine science; sustainable development and management; data management and information acquisition; and continuing education and retraining.

POST-IDOE STUDIES OF EAST ASIAN TECTONICS AND RESOURCES (SEATAR)

A meeting is proposed for November/December to discuss Post-IDOE Studies of East Asian Tectonics and Resources (SEATAR). It will be a joint CCOP-IOC Working Group. IOC is the responsible organization.

IOC TECHNICAL COMMITTEE FOR TRAINING, EDUCATION AND MUTUAL ASSISTANCE (TEMA)

The IOC Technical Committee for Training, Education, and Mutual Assistance (TEMA) will hold its 5th session in Paris

Tsunami Newsletter

from 27 February - 3 March 1990.

IOC REGIONAL COMMITTEE FOR THE WESTERN PACIFIC (WESTPAC)

It is planned to hold the 5th session of the IOC Regional Committee for the Western Pacific (WESTPAC) in China February/March 1990.

THIRTEENTH SESSION OF THE IOC TECHNICAL COMMITTEE ON INTERNATIONAL OCEANOGRAPHIC DATA AND INFORMATION EXCHANGE (IODE) NEW YORK, USA, 17-24 JANUARY 1990

The Thirteenth Session of the IOC Technical Committee on International Oceanographic Data and Information Exchange (IODE) will be held in New York on 17-24 January 1990. Included among the items on the agenda were the Status of Global Oceanographic Data Exchange; Participation in Global Ocean Science Programmes; New Data Types and Processing; Data Products and Services; IODE Development of Technology and System; Marine Information Management; and Regional Programmes and Training and Mutual Assistance Activities in Marine Information and Data Management.

LIST OF NATIONAL CONTACTS OF ICG/ITSU

The following is a list of National Contacts of ITSU members on file at the ITIC office. Please inform ITIC if there are any changes.

AUSTRALIA

Mr. P. F. Noar
Assistant Director (Services)
Bureau of Meteorology
GPO Box 1289 K
Melbourne, Victoria 3001
Australia

CANADA

Mr. W. J. Rapatz
Regional Tidal Superintendent
Institute of Ocean Sciences
Dept. of Fisheries and Oceans
P.O. Box 6000
Sidney, B. C. V8L 4B2, Canada

CHILE

Captain Carlos Bari White
Director
Instituto Hidrografico de la Armada
Casilla 324
Valparaiso, Chile

CHINA

Mr. Luo Yuru
Director
National Bureau of Oceanography of the
People's Republic of China
Beijing, China

COLOMBIA

Commander Ricardo Alvarado
Secretario General
Comision Colombiana de Oceanografia
Apartado Aereo No. 28466
Bogota, D.E., Colombia

COOK ISLANDS

Commissioner H. R. Melrose
Police National Headquarters
P.O. Box 101
Rarotonga, Cook Islands

ECUADOR

Calm. Fernando Alfaro Echeverria
Director
Instituto Oceanografico de la Armada
Casilla 5940
Guayaquil, Ecuador

FIJI

Mr. A. Rahiman
Director, Mineral Development
Mineral Resources Department
Private Mail Bag
Suva, Fiji

FRANCE

Dr. M. Jacques Recy
Directeur de la Recherche
Office de la Recherche Scientifique et
Technique Outre-Mer
B.P. A5
Noumea Cedex (Nouvelle Calédonie) France

GUATEMALA

Ing. Eddy Hardie Sanchez Benett
Instituto Nacional de Sismologia
Vulcanologia,
Meteorologia e Hidrologia,
Ministerio de Comunicaciones
Transporte y Obras Publicas
7a Avenida 14-57 Zona 13
Guatemala, C.A.

INDONESIA

Head
Meteorology & Geophysical Agency
Dept. of Communication
Jl. Arief Rachman Hakim No. 3
P.O. Box 3540 jkt
Jakarta 10340, Indonesia

JAPAN

Dr. Toshio Akiyama
Head, Earthquake and Tsunami Observation
Division
Japan Meteorological Agency
1-3-4, Ote-machi,
Chiyoda-ku
Tokyo, Japan 100

KOREA (DPR OF KOREA)

Mr. Jong Young Gu
National Oceanographic Commission
Hydrometeorological Service
P.O. Box 100
Pyongyang
Democratic People's Republic of Korea

KOREA (REPUBLIC OF)

Mr. Sang-jo Kim
Korea Meteorological Service
1 Songwol-dong, Chongno-gu
Seoul 110-101, Korea

MEXICO

Lic. Ma de los Angeles Lopez-Ortega
Ministro Consejero
Encargada de Negocios a.i.
UNESCO
Delegacion Permanente de Mexico
1, Rue Miollis
75732 Paris, France

NEW ZEALAND

Mr. Edward Latter
Director of Civil Defence
Ministry of Civil Defence
P.O. Box 5010
Wellington, New Zealand

Tsunami Newsletter

PERU

Contralmirante Jorge A. del Aguila Sanchez
Direccion de Hidrografia y Navegacion de la
Marina
Casilla Postal No. 80
Gamarra No. 500
Chucuito, Callao, Peru

PHILIPPINES

Mr. Conrado M. Santos
OIC, Oceanographic Surveys Div.
National Mapping Resource
Information Authority
421 Barraca St., San Nicolas
Manila, Philippines

SINGAPORE

Mr. Paul Lo Su Siew
Director
Meteorological Service Singapore
P.O. Box 8
Singapore Changi Airport
Singapore 9181, Republic of Singapore

THAILAND

Lt. Sukit Yensung
Meteorology Department
Ministry of Communication
612 Sukumvit
Bangkok 10110, Thailand

UNITED KINGDOM

Mr. Patrick P. Sham
Royal Observatory,
134A Nathan Road
Kowloon, Hong Kong

USA

Mr. Richard H. Hagemeyer
Director
National Weather Service, Pacific Region
Box 50027
Honolulu, Hawaii 96850-4993, USA

USSR

Dr. B. P. Khimitch
Chief, Arctic and Antarctic Department
USSR State Committee for
Hydrometeorology
12, Pavlik Morozov Per.
Moscow 123376
USSR

WESTERN SAMOA

The Superintendent
Apia Observatory
Private Mail Bag
Apia, Western Samoa

DIRECTOR, ITIC

Dr. George Pararas-Carayannis
International Tsunami Information Center
Box 50027
Honolulu, Hawaii 96850-4993, USA

CHAIRMAN, ICG/ITSU

Mr. Richard H. Hagemeyer
Director
National Weather Service, Pacific Region
Box 50027
Honolulu, Hawaii 96850-4993, USA

NATIONAL AND AREA REPORTS

CICESE REPORTS ON CABO SAN LUCAS TIDAL STATION AND ISLA GUADALUPE

Dr. Salvador F. Farreras, Research
Oceanographer at CICESE, Ensenada,
reported in May 1989 that the Cabo San
Lucas tidal station is now in full operation
equipped with two recording gauges: one
digital and one analog. The Isla Guadalupe

is being considered again as a possible tidal station for the Regional and Pacific Tsunami Warning System. The Department of Hydrography of the Mexican Navy has agreed to install an analog tidal recorder and provide maintenance and personnel.

ALASKA TSUNAMI WARNING CENTER (ATWC) REPORTS ON TSUNAMI MODELING AND OTHER MATTERS

The ATWC has expanded its development efforts into tsunami modeling in cooperation with Dr. Zygmundt Kowalik, University of Alaska, Fairbanks. The research should lead towards predicting reasonable wave heights at various coastal communities. Also the ATWC successfully tested a new concept to alert standby personnel of the occurrence of local, regional, or worldwide events. The new equipment, which consists of a radio-alarm receiver unit (RU) and interfacing, was loaned to the ATWC by Mr. M. Searcy of Motorola. Small enough to fit into the palm of a hand, the equipment permits immediate earthquake information to be transmitted and received by the standby duty personnel informing them of the urgency of the situation.

NEW COLLECTED PAPERS ON TSUNAMI PUBLISHED IN USSR

A new collection of papers has been recently published in Russian. Entitled Tsunami Researches No. 3, it is edited by Professor S.L. Soloviev and Dr. E.A. Kulikov and published by the Soviet Geophysical Committee, Moscow 1988. The collection comprises of 16 papers.

ANNOUNCEMENTS

THIRD INTERNATIONAL COURSE ON DISASTER MEDICINE 30 OCTOBER - 18 NOVEMBER 1989

The European Center for Disaster Medicine will hold its Third International Course on Disaster Medicine on 30 October to 18 November 1989 in the Republic of San Marino. For further information, contact:

The Secretariat General
Ospedale di Stato
Repubblica di San Marino
Telephone: 39 (0) 549 994535/906244,
Telefax: 903706.

The meeting will be held under the auspices of the Council of Europe.

PACIFIC TELECOMMUNICATIONS: TWELFTH ANNUAL CONFERENCE 4-17 JANUARY 1990, HAWAII, USA

PTC will be holding its Twelfth Annual Conference on 14-17 January 1990 at the Hilton Hawaiian Village, Honolulu, Hawaii. The theme is "Pacific Telecommunications: Weaving the Technological and Social Fabric." For further information, contact: PTC'90, 1110 University Avenue, Suite 308, Honolulu, HI 96826, U.S.A.

**INSTITUTO TECNOLÓGICO DE
SEGURIDAD MAPFRE (ITSEMAP)
ORGANIZING MEETING
"CATASTROPHES AND SOCIETY,"
24-26 OCTOBER 1989, MADRID, SPAIN**

ITSEMAP is organizing an international meeting on the subject of "Catastrophes and Society" on 24-26 October 1989 in Madrid.

For further information, contact:
ITSEMAP, Secretaria
"Encuentro Catastrofes y Sociedad"
Paseo de Recoletos, 25
28004 Madrid, Spain
Telephone: 34-1/5811110
Telex: 42544 MAPFRE
Telefax: 34-1/4199195.

**IGCP FOURTH FIELD MEETING
AND WORKSHOP
30 SEPTEMBER - 8 OCTOBER 1989
ATHENS AND KALAMATA, GREECE**

The IGCP's Fourth Field Meeting and Workshop will take place on 30 September - 8 October 1989 at Athens and Kalamata, Greece. For further information about the field meeting, contact:
Professor Ilias Mariolakos
University of Athens
Department of Geology
157 71 Athens, Greece
Telephone: (01) 72 42 743

**SYMPOSIUM ON PREPAREDNESS,
MITIGATION AND MANAGEMENT OF
NATURAL DISASTER
2-4 AUGUST 1989, NEW DELHI, INDIA**

A symposium on Preparedness, Mitigation and Management of Natural Disaster was held on 2-4 August 1989 at New Delhi, India. For further information, contact:
Mr. O.D. Mande
Convenor, Organising Committee,
Symposium PMMND & Director
(Embk-NW & S)
Central Water Commission
West Block-II, Second Floor
R.K. Puram, New Delhi-110066, India.
Telephone: 601198, Telex: 031 66323
Telegram: "CWC" New Delhi.

**OCEANS'89
8-21 SEPTEMBER 1989
SEATTLE, WASHINGTON**

OCEANS'89 was held on 18-21 September 1989 in Seattle. For further information, contact:
OCEANS'89
Exhibits Committee
Applied Physics Laboratory,
University of Washington HN-10
1013 NE 40th St.
Seattle, WA 98105, U.S.A.

**INTERNATIONAL TROPICAL OCEAN
GLOBAL ATMOSPHERE (TOGA)
SCIENTIFIC CONFERENCE
16-20 JULY 1990, HONOLULU, HAWAII**

An International TOGA Scientific Conference will be held on 16-20 July 1990 in

Honolulu, Hawaii, to review the TOGA programme after its first five years. For further information, contact:
Director, International TOGA Project Office
World Meteorological Organization
Case Postale No. 5
CH-1211 Geneva 20, Switzerland.

**INSMAP 90 INTERNATIONAL
SYMPOSIUM ON MARINE POSITIONING
5-19 OCTOBER 1990, MIAMI, FLORIDA**

INSMAP 90 International Symposium on Marine Positioning will be held 15-19 October 1990 at Miami, Florida. Topics for sessions will include Seafloor Positioning, Absolute Sea Level, Impact of New Systems; and Workshops EEZ Mapping, and Marine Positioning. For further information, contact:

Dr. George Maul
NOAA/AOML
4301 Rickenbacker Cswy
Miami, FL 33149, U.S.A.

**AWARD PRESENTATIONS BY THE
TSUNAMI SOCIETY**

Three awards were presented by the Tsunami Society at the Ensenada meeting of the Hazards 88 Conference, but which were not announced in previous newsletters. The George Mansfield Goding Award was presented to Dr. Cinna Lomnitz; the Tadashi Nakashizuka Award was presented to Mr. James Lander; and the William Mansfield Adams Award was presented to Professor Sergei L. Soloviev. Organizations or individuals wishing to sponsor future awards should contact the President of the Tsunami Society.

Mr. Willie Rapatz
Institute of Ocean Sciences
P.O. Box 6000
Sydney, B.C. V8L 4B2, Canada

**TSUNAMI! PUBLISHED BY UNIVERSITY
OF HAWAII PRESS 1988**

TSUNAMI! tells the story of the tsunamis of 1946, 1952, 1957, 1960 and 1975 that struck Hawaii. The book is a combination of eyewitness accounts and scientific studies on tsunami. TSUNAMI! is published by the University of Hawaii Press at \$10.95 paper edition.

**HISTORIC TSUNAMI DATA COMPILED
BY THE NATIONAL GEOPHYSICAL
DATA CENTER (NGDC) AND THE
WORLD DATA CENTER-A
FOR SOLID-EARTH GEOPHYSICS**

The National Geophysical Data Center (NGDC) and the collocated World Data Center A for Solid-Earth Geophysics have compiled a unique set of data bases. They include digital historic tsunami data, tide gauge records, photographs, bathymetric data, and technical publications. Currently the data base consists of about 6,600 records and represents events from 49 B.C. to the present. Also available is a set of twenty 35-mm slides of tsunami, tide gauge records, and bathymetric data. For further information, contact: National Geophysical Data Center, NOAA, Code E/GC4, 325 Broadway, Boulder, CO 80303, U.S.A. Telephone: (303) 497-6337

**"LIVING WITH DISASTER" SHOWN ON
PUBLIC TELEVISION, 7 JUNE 1989**

The concluding episode in "The Infinite Voyage," "Living with Disaster" was aired on PBS on 7 June 1989. The episode divided into three varieties of Earth-born forces – atmospheric, earthquake, and volcanic.

**JOINT INSTITUTE FOR MARINE AND
ATMOSPHERIC RESEARCH'S (JIMAR)
ANNUAL SCIENTIFIC REVIEW, 5 APRIL
1989, HONOLULU, HAWAII**

JIMAR held its Annual Scientific Review on 5 April 1989 at Honolulu, Hawaii. Topics included Tsunami Research, Fisheries Oceanography, and Climate Research.

**CONFERENCE ON GEOMORPHOLOGY,
MAN AND NATURAL RESOURCES AND
INTERNATIONAL SYMPOSIUM ON
NATURAL CATASTROPHES
AND THEIR IMPACT
27-31 MARCH 1989, ANKARA, TURKEY**

As part of the 25th Anniversary of the Association of Geomorphologists of Turkey, a Conference on Geomorphology, "Man and Natural Resources" and an international symposium on "Natural Catastrophes and Their Impact" were held in Ankara, Turkey on 27-31 March 1989.

**SIXTH SYMPOSIUM ON COASTAL AND
OCEAN MANAGEMENT
11-14 JULY 1989
CHARLESTON, SOUTH CAROLINA**

The Sixth Symposium on Coastal and

Ocean Management was held in Charleston, South Carolina, on 11-14 July 1989.

**EUROPEAN GEOPHYSICAL SOCIETY
XIV GENERAL ASSEMBLY
13-17 MARCH 1989
BARCELONA, SPAIN**

The European Geophysical Society held its Fourteenth General Assembly at Barcelona on 13-17 March 1989. Among the topics discussed was Calderas and Volcanoes: Genesis, Structures, and Unrest.

**VIDEOS AND SLIDES AVAILABLE TO
HAZARDS EDUCATORS**

Several videos and a slide set are available to hazards educators. *Thunderstorms* is a 24-minute video produced by Everyday Weather Project, SUNY College at Brockport, Brockport, NY 14420, at \$79.95 plus \$5.00 for postage. *Shake, Rattle and Roll* is a 25-minute video about earthquakes, and is available from Lafferty and Associates, Inc., P.O. Box 1026, La Canada, CA 91011, at \$175. It is also available with slides and an audio cassette at \$150. The handbook *Earthquake Preparedness* costs \$5.00 for individual copies. *Be Ready*, dealing also with earthquakes, costs \$100, for video or slides and cassette, and can be ordered from Lafferty and Associates, Inc. The Earthquake Engineering Research Institute (EERI) has produced a set of 40 annotated slides illustrating the effects of seven hazards: earthquakes, volcanic eruptions, windstorms, floods, landslides, tsunamis, and wildfires. The slides are available from EERI, 6431 Fairmount Avenue, Suite 7, El Cerrito, CA 94530-3624 at \$50 for

members and \$60 for nonmembers. *Earthquake Hazards* is also an EERI product consisting of 40 slides dealing with earthquake resistant design. The set costs \$50 for EERI members and \$60 for nonmembers.

**EARTHQUAKE PREPAREDNESS
CONFERENCE
A CALL TO COMMITMENT
29-30 MARCH 1989
SAN DIEGO, CALIFORNIA**

An earthquake preparedness conference "A Call to Commitment" took place in San Diego, California on 29-30 March 1989. Dr. George Pararas-Carayannis, Director, ITIC, attended and participated in several of the workshops.

**"BEAT THE QUAKE"
CALIFORNIA, APRIL 1989**

April of this year was the designated California Earthquake Preparedness Month by Governor George Deukmejian. The campaign aimed at taking earthquake preparedness into the community to businesses, homes, schools, local governments,, and state agencies.

**BIG BIRD GET READY™ EARTHQUAKE
KIT**

FEMA released in May CTW's Big Bird GET READY™ Earthquake Kit for children. It contains a brochure on safety, a game board, and a cassette with stories. For a free copy, contact:

FEMA
P.O. Box 70274
Washington, DC 20024.

**PACIFIC TSUNAMI WARNING
CENTER**

**REPORT OF VISIT OF
MR. GORDON BURTON,
GEOPHYSICIST-IN-CHARGE, PTWC,
TO NEW ZEALAND CIVIL DEFENCE
26 JUNE - 4 JULY 1988**

Mr. Gordon Burton, Geophysicist-in-Charge, PTWC, was invited by the Ministry of Civil Defence to visit New Zealand from 26 June to 4 July 1988. His schedule included meetings with Civil Defence officers and site visits. Discussion centered on the various aspects of the tsunami hazard to New Zealand. Following the visit, a national tsunami exercise was conducted based on a simulated tsunami being generated off the coast of Peru. PTWC took part in "Exercise Breaker," the first time in which PTWC has assisted in a national exercise with an ICG/ITSU member nation.

**PTWC JOINS IN A COOPERATIVE
MEMORANDUM OF AGREEMENT WITH
THE NATIONAL EARTHQUAKE
INFORMATION CENTER OF THE
U.S. GEOLOGICAL SURVEY FOR GOES
ACQUISITION OF SEISMIC DATA**

In January 1989, PTWC joined in a cooperative Memorandum of Agreement in the National Earthquake Information Center of the U.S. Geological Survey for GOES acquisition of seismic data. The basic objective is to obtain P-data quickly for an early detection and location of any major earthquake in the Pacific Basin. The

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coordinated efforts of both Centers, using applicable resources, can result in a near real-time availability of seismic data from a network of GOES Data Collection Platforms spanning the Pacific. The operational goal is to detect significant earthquakes in the Pacific within five minutes of origin and to provide sufficient data for epicenter determination and preliminary evaluation within ten minutes of origin.

SEISMIC SUMMARY (AUGUST 1988 TO PRESS TIME)

EVENT NO.	EVENT	LOCATION	ACTION TAKEN
1988-18	Aug 14 1753Z 6.5	Chile 27.5S 070.3W	Tsunami information bulletin issued
1988-19	Aug 20 6.5	Nepal 27.3N 087.1E	No tsunami information bulletin issued
1988-20	Nov 06 1303Z 7.3	China-Burma border 23.0N 099.3E	No tsunami information bulletin issued
1988-21	Nov 07 0350Z 6.8	North Fiji Basin 20.8S 176.0E	Tsunami information bulletin issued
1988-22	Nov 14 0216Z 6.7	Papua New Guinea 01.7S 150.2E	Tsunami information bulletin issued
1988-23	Dec 07 0742Z 6.8	Tbilisi, Gruzinskaya SSR, USSR 41.6N 044.6E	No tsunami information bulletin issued
1989-1	Jan 10 0555Z 6.5	Eastern New Guinea Region 02.0S 130.6E	Tsunami information bulletin issued
1989-2	Jan 17 0035Z 6.5	Kandrian, New Britain, Papua New Guinea 06.1S 149.6E	Tsunami information bulletin issued
1989-3	Feb 10 1116Z 6.9	Molucca Sea 03.1N 126.6E	Tsunami information bulletin issued

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1989-4	Mar 10 2150Z 6.5	Malawi, Africa 14.0S 034.4E	No tsunami information bulletin issued
1989-5	Apr 11 0357Z 6.5	Northern Kurile Islands 49.2N 159.3E	Tsunami information bulletin issued
1989-6	Apr 25 1429Z 6.8	Mexico, near Acapulco 17.0N 099.2W	Tsunami information bulletin issued
1989-7	May 23 1055Z 8.2	Macquarie Islands 52.5S 160.7E	Tsunami information bulletin issued
1989-8	Jun 26 0327Z 6.5	Puna District, Hawaii 19.3N 155.2W	Announced over HAWAS
1989-9	Sep 04 1315Z 6.9	SW of Kodiak Island, Alaska 55.8N 156.9W	Tsunami information bulletin issued
1989-10	Sep 16 0205Z 7.0	Caspian Sea 40.3N 052.1E	No tsunami information bulletin issued
1989-11	Sep 17 0054Z 6.5	Caspian Sea 40.5N 052.2E	No tsunami information bulletin issued