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N I L I M

News Letter

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■ NILIM conducted field surveys on the earthquake off the coast of Sumatra and the tsunami in the Indian Ocean.

Earthquake Disaster Prevention Division / Planning Division

We offer our sincere condolences to all affected by the earthquake off the coast of Sumatra and the tsunami in the Indian Ocean on December 26, 2004. Development of disaster prevention technologies is one of the principal objectives of the National Institute for Land and Infrastructure Management (NILIM). The Institute has conducted field surveys on the earthquake and tsunami disasters, published information through its web pages, and started intensive studies on measures against tsunami in April 2004.

Field surveys

Seven survey teams consisting of 15 persons in total have been sent (as of March 31, 2005) from NILIM to Thailand, Indonesia, the Maldives, and Sri Lanka, in order to investigate ways of assisting countries affected by the earthquake and tsunami, clarify the mechanisms of the disasters, and identify effective disaster prevention measures. Among seven teams, two were sent as a part of the Japan Disaster Relief Teams and a governmental delegation for investigating the earthquake and tsunami disasters respectively.

The governmental delegation was led by Director General Hamaguchi of NILIM. The surveys were conducted from March 13 to March 21, 2005 (Photo 1). The delegation aimed to understand the actual states of the affected counties in order to provide restoration assistance and investigate effective measures for preventing earthquake and tsunami damages. The delegation consisted of 33 members from the Ministry of Land, Infrastructure and Transport, Cabinet Office, and ministries related to disaster prevention, including four from NILIM besides the Director General, and visited Thailand and Sri Lanka.

The delegation collected information on tsunami damage and restoration policies from the federal and regional governments of Thailand and Sri Lanka and their branch offices, and surveyed the affected areas. Director General Hamaguchi directed the information collection from the affected countries and managed the discussions and information exchanges. The other members from NILIM surveyed damages to civil engineering structures, lifeline facilities, etc. and investigated methods of restoring them. Summaries of the results were reported to Minister Murata, Minister of State for Disaster Management, by Director General Hamaguchi on March 29. The report of the survey results will be published in Japanese and English.



Photo 1 Director General Hamaguchi of the NILIM listening to an explanation in Khao Lak Thailand.

Study on methods to assess tsunami damages and countermeasures against tsunami

NILIM has been studying damages caused during tsunami since fiscal 2004 and is investigating methods for preventing damages. The study aims to help administrators plan measures against tsunami, by enabling them to 1) image possible damages to civil engineering structures and resultant damages, 2) draw up a guideline for disaster prevention measures appropriate for possible damages during tsunami, and 3) evaluate the effectiveness of the measures to mitigate damages. Experiments are being conducted to evaluate the external forces acting on structures during tsunami (Photo 2). The results of the experiment and the field surveys will be used to establish easy methods for predicting damages during tsunami, and the methods will be proposed by the end of fiscal 2006.

Web site

NILIM set up a web site showing the various technological assistance that the Institute can provide to engineers in Japan and other countries who are involved in restoration. The web site includes the results of the field sur-

vey and studies conducted at the Institute on earthquakes and tsunami, and can also be accessed from links on the portal sites of the seven research institute of the Ministry of Land, Infrastructure and Transport (<http://www.mlit.go.jp/sumaportal/index.htm>), which have similar objectives. We hope the web site will be helpful to those involved in the restoration.

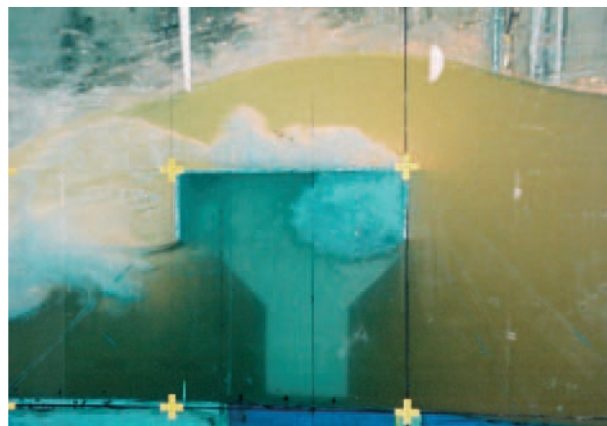


Photo 2 Experiment for evaluating the wave force of tsunami acting on a bridge girder

Natural disasters in Japan in 2004 and measures taken by the National Institute for Land and Infrastructure Management

Research Center for Disaster Risk Management

In 2004, many floods, landslides and storm surges occurred in Japan during storms caused by Baiu fronts and typhoons that hit the country, which were as many as

10, the largest number since meteorological observations began. Evacuation advice and orders were issued to over 1.6 million people in about 640 municipalities in total,

Table 1 Damages during natural disasters in 2004

Event	Month	Number of deaths and missing	Injured	Entirely destroyed houses	Partially destroyed houses	Damaged houses	Houses flooded above floor level	Houses inundated below floor level	Total
Typhoon No. 6	June	5	118	1	2	149	1	41	194
Storm in Niigata and Fukushima	July	16	4	70	5,354	94	2,149	6,208	13,875
Storm in Fukui	July	5	19	66	135	229	4,052	9,674	14,156
Typhoons No. 10 & 11	July to August	3	19	12	15	65	218	2,420	2,730
Typhoon No. 15	August	10	22	17	23	212	695	2,339	3,286
Typhoon No. 16	August	17	267	29	95	7,037	16,799	29,767	53,727
Typhoon No. 18	Sept.	45	1,301	109	848	42,183	1,598	6,762	51,500
Typhoon No. 21	Sept.	27	97	79	273	1,936	5,798	13,883	21,969
Typhoon No. 22	Oct.	8	167	167	244	4,495	1,247	3,592	9,745
Typhoon No. 23	Oct.	91	486	192	910	10,636	21,783	40,381	73,902
Chuetsu Earthquake	Oct.	40	4,574	2,867	11,122	92,609			106,598
Total		267	2,500	3,609	19,021	159,645	54,340	115,067	360,682

Note: Based on surveys by the Fire and Disaster Management Agency. Damages to buildings other than houses are excluded. The damages by the Chuetsu Earthquake are as of January 12, 2005, 9:00 AM.

and 227 people died or were missing (61% of 194 people whose age could be identified were at least 65 years old), the largest number since 1984. Especially many floods occurred along small to medium-scale rivers where banks were weak and low, and the flood water overflowed and destroyed the banks. The number of landslides was the largest since 1982. During Typhoon No. 16, a storm surge flooded about 44,000 houses along the coast of the Inland Sea of Japan. Japan was also hit by a large earthquake: an earthquake of magnitude 6.8 (tentative value) struck the Chuetsu Region of Niigata Prefecture at 17:56 on October 23, 2004 (the 2004 Niigata-ken Chuetsu Earthquake). In Kawaguchi-cho, which was near the epicenter, very strong motions of seismic intensity 7 on the Japanese scale were recorded, and roads, water lines, power lines, and gas pipes and other life lines were cut in several places. Landslides occurred in mountainous districts and isolated villages. At least 10 large natural

dams were formed, and people were temporarily evacuated from the lower reaches.

The National Institute for Land and Infrastructure Management sent researchers to identify the causes and provide technical assistance to draw up and take emergency measures and restoration projects, jointly with the Public Works Research Institute, the Building Research Institute, and the Port and Airport Research Institute. A total of 61 researchers were sent from the Institute in the two months after the Chuetsu Earthquake to study earthquake damages.

■ Demonstrating the Free Mobility Assistance System at Expo 2005 Aichi Japan

Advanced Road Design and Safety Division

The Ministry of Land, Infrastructure and Transport started the free mobility assistance project in March 2004 aiming to construct ubiquitous environments in which all people can use information on routes, means of transportation, and destinations and other information needed to enable people to work and participate in social activities anywhere at any time, as a part of its projects to create a universal society.

The system to be constructed in this project transmits information needed by users, such as safe and convenient routes, means of transportation, information about the destination and nearby areas, detours during emergencies, and means for dispatching SOS calls, by installing communication devices (IC tags, radios, infrared devices, etc.) that transmit positional information on information

maps, signs, textured paving blocks, etc. and communicating with portable terminals carried by users (portable phones, etc.). The system is being verified through indoor and outdoor tests and being improved based on the test results.

Expo 2005 Aichi Japan is being held from March 25, 2005, for six months, and is expected to attract many visitors from many countries. Information provision in various languages is being tested at Expo by asking the visitors to test the service. In the Nagakute area, radio markers, etc. have been installed along the Global Loop (about 2.6 km long) to provide information about facilities in various languages, and information on barrier-free and other facilities is provided to the handicapped in the Seto area.

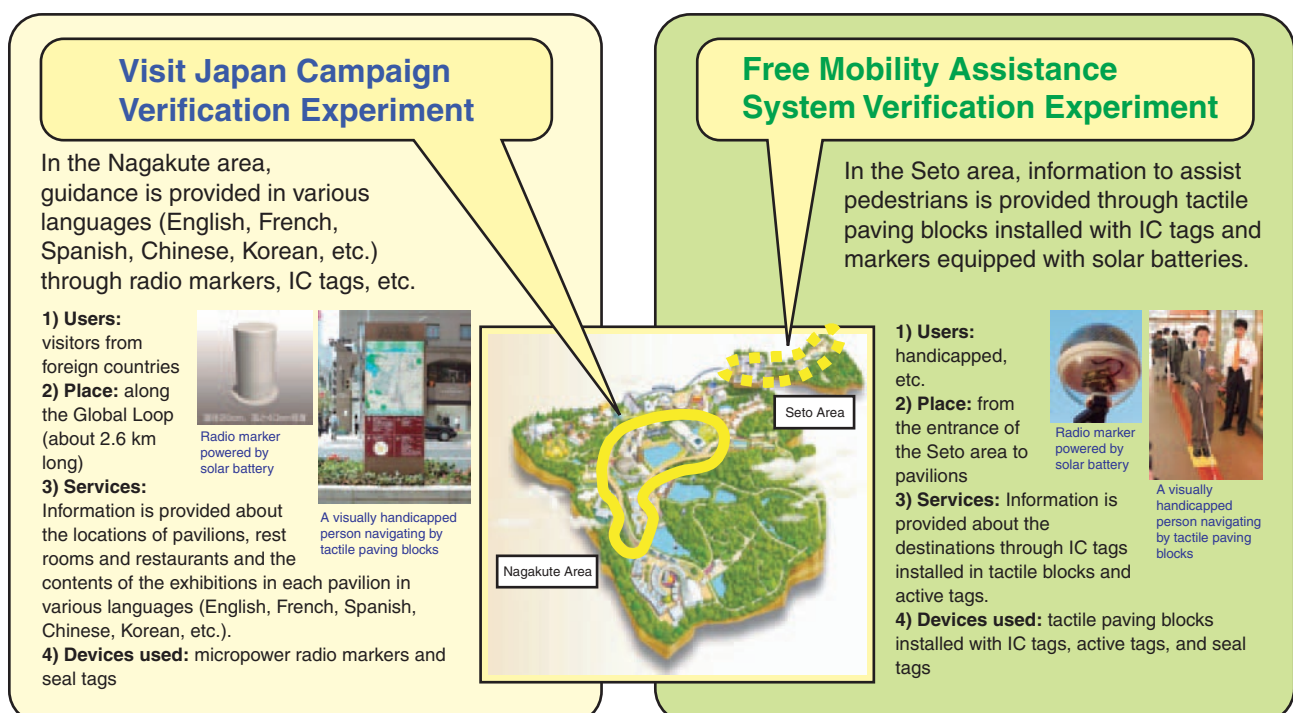


Figure 1 Overview of the verification experiments at Expo 2005 Aichi Japan

Symposium held at the United Nations World Conference on Disaster Reduction

Flood Disaster Prevention Division

The United Nations World Conference on Disaster Reduction was held from January 18 to 22, 2005, in Kobe, to decide new strategies of the United Nations to reduce disasters. The Hyogo Declaration was adopted at the conference, confirming the importance of mitigating the risk of disasters.

Public forums open to the general public were also held as part of the conference, including a symposium held by the Flood Disaster Prevention Division of the National Institute for Land and Infrastructure Management on "New partnership between citizens & governments for flood resistant community".

In the symposium, the mayor of Toyooka City, which was affected by floods during Typhoon No. 23 in 2004,

gave a speech entitled "Typhoon No. 23, the Flood Damage and Our Action". Mr. Bruce Stewart from the Bureau of Metrology, Australia gave a speech entitled "Flood control measures in Australia - roles of community and government". After the lectures, important points in mitigating flood damages were discussed by all participants in a brain-storming manner. It was concluded in general that 1) education on disaster prevention in local communities and schools is important, 2) fast and reliable methods for transmitting disaster information should be established, and 3) disaster experiences in the past should be accumulated and analyzed. The symposium ended in success, and the results were reported the next day at an inter-government session of WCDR.



Photo 3 Director-General Hamaguchi of the NILIM giving remarks at the opening ceremony

TECHNICAL NOTE of National Institute for Land and Infrastructure Management (May-June, 2004)

No	Title of Paper	Names of Divisions
134	Operation Manual for Communication System for Town Planning	Research Coordinator for Housing Information System
151	The HOPE (Housing with Proper Environment) Project, 1983-2003	Construction Economics Division
159	Draft Manual for the Application of Remote Sensing Technologies to Detect Facilities Damages	Earthquake Disaster Prevention Division
182	Report of the 2 nd Evaluation Committee of NILIM in FY2003	Research Administration and Evaluation Division
183	Annual Report of Research Activities, Earthquake Disaster Prevention Division, 2003	Earthquake Disaster Prevention Division

"2005 Annual Report of NILIM" is now on our website (in Japanese only, for the time being)

We publish "2005 Annual Report of NILIM" to show our research activities and accomplishments, and you can see its contents on our website, www.nilim.go.jp. English version will be available in the future.



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