国総研ニューズレター
NILIM News Letter
No.51
Winter 2015

■ Report on NILIM Lecture Meeting 2014

Planning and Research Administration Department, Planning Division

The NILIM Lecture Meeting 2014 was held in Nissho Hall in Toranomon, Minato-ku, Tokyo on December 3 (Wed.), 2014.

The NILIM Lecture Meetings are held annually to inform as many members as possible of the general public of initiatives taken by the NILIM through comprehensive lectures and reports on recent NILIM research achievements and research topics and trends.

The lecture meeting was attended by 674 people representing private companies, the national and regional governments, and concerned corporations, mainly those involved in public works and construction.

A special lecture, How to Tackle the Maintenance of the Public Capital Stock, was given by Professor Miki (Photo 2), Vice-President of Tokyo City University and Professor in the Advanced Research Laboratories (now President of Tokyo City University), the top expert on bridges, and a key member of various committees including the Council for Social Infrastructure, Road Maintenance Technology Subcommittee. Professor Miki presented his lecture in clear and easily understood terms including his own rich experience.


Photo 1: View of the Hall


Photo 2: Professor Miki Chitoshi

The other lectures began with a lecture about recent activities at the NILIM by the Executive Director for Research Affairs, then heads of all Research Departments and Research Centers each introduced research achievements, surveys, and research trends etc. conducted to meet recent needs in each field.

In particular, the “Immediately useful” series was presented at two special sessions. In order that people involved in work in the field can make better use of knowledge accumulated in the past at the NILIM, two lectures, “Immediately Useful Disaster Countermeasures (head of the Sabo Department)” and “Immediately Useful Road Structure Maintenance (Head of the Road Structures Department)” were given.

Documents concerning that day’s event are available at the following URL.

Details ☛ NILIM Lecture Meeting (NILIM web page)
http://www.nilim.go.jp/lab/bbg/kouenkai/kouenkai2014/kouenkai2014.htm

■ Full Scale Loading Test on the Five Story Reinforced Concrete Building

Building Department, Standards and Accreditation System Division

A full scale test on a five-story reinforced concrete building was conducted publicly on January 13 in order to establish a damage controlling design to ensure the sustained usability of critical post-disaster buildings (buildings used as bases for emergency and restoration activities) after large earthquakes.

The NILIM has developed a new structural method to achieve sustained use after a large earthquake as a part of the project research, Development of Technology to Sustain the Functions of Critical Post-Disaster Buildings (2013-2016), including a loading test of a full-scale building.

The specimen was a five-story reinforced concrete building with 1×2 spans and height of about 19m, and the wall frame has large openings in longitudinal direction. The slit (gaps), which was formed at a joint of walls and columns in conventional design are shifted to the inside of the walls to form a frame consisting of columns with wing wall and beams. This method improves the strength and stiffness of the moment resisting frame without raising the cost, and reduces the deformation during earthquakes. This can mitigate the damage on non-structural members or beam-column joints, which are difficult


Photo: Loading test of a Full-scale Five-story Building

to repair after an earthquake, and perform sustained use of the building. The test was open to the public, attracting about 70 visitors on January 13.

The Building Department continues developing further surveys, analysis and studies to establish a damage controlling design. The results of the study will be included in a design guideline for critical post-disaster buildings which will be prepared in 2016.

Details ☛ Project Research Website
http://www.nilim.go.jp/lab/bbg/project/ppdf/pro-h25_5.pdf
(*in Japanese*)


Photo: A Full-scale Five-story Building open to the Public

■ Field survey of damage to buildings, soils and foundations from the 2014 Northern Nagano earthquake

Housing Department and Building Department

The department conducted two surveys of damage to buildings, mainly wooden houses, by the November 22, 2014 earthquake in Northern Nagano Prefecture, and a survey of the surrounding ground and foundations.

In order to clarify the state of damage to wooden houses and other types of buildings from the earthquake that struck northern Nagano prefecture at 22:08 on November 22, 2014, in cooperation with the Building Research Institute, the department conducted surveys centered on the Kamishiro part of Hakuba Town. The primary survey confirmed many houses that collapsed or showed severe residual deformation in the Horinouchi district of that region. Judging from such conditions, it is thought that earthquake motion higher than upper 5 on the Japanese seismic intensity scale might have occurred in Hokujo in Hakuba Town, which is the location of the nearest earthquake observation station. And damage to mud-plastered wall houses, damage to houses in which the column and brace end joints were not connected adequately, displacement of houses in which the column ends or sills were not fixed to their foundations, and damage to houses with block foundations or non-reinforced foundations were found at many places. The secondary survey was a detailed survey of the state of damage including a visual inspection of the interiors of houses. The results of the surveys will be analyzed and summarized in technical documents to be used to study the causes of damage to buildings.


Photo: Collapsed House


Photo: Collapsed Stone Wall

The survey of ground and foundations has revealed that a number of stone and retaining walls were heavily damaged or overturned in the Horinouchi district, which is a south-facing slope terrace. Many power poles were also shifted and inclined southward in the district, and the degrees of their damage seem to be severe in the middle of the slope.

Some documents reported that this district was already placed near the shore of a large lake, suggesting that the surface strata consist of soft soils and their geophysical conditions could vary with locations on the slope in the district. And by surveying soil investigation data, we will study the relationship between the structural damage and ground characteristics in the district.

Details ☛ Survey report website
<Report on the primary survey of wooden construction etc.>
http://www.nilim.go.jp/lab/bcg/kisya/journal/kisya20141127.pdf
<Report of survey of foundation ground>
http://www.nilim.go.jp/lab/bbg/saigai/h26/141126nagano_kenchiku.pdf
<Report on secondary survey of wooden structures>
http://www.nilim.go.jp/lab/bbg/saigai/h26/141129nagano_juutaku2.pdf

■ Report on information exchange meeting for Action Plan of sewerage system in next 10 years

Water Quality Control Department, Wastewater System Division

The Sewerage and Wastewater Management Department of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and the NILIM held an information exchange meeting concerning the Action Plan to Enlarge the Sewered Area (below, "the Action Plan") on December 18 in order to achieve the 10 year plan for the provision of wastewater treatment facilities.

At the end of FY2013, the percentage of the population with wastewater treatment service (including public wastewater systems, Johkaso , rural wastewater systems, and community plants) was about 89%. Among these, about 76% were served by public wastewater systems by MLIT About 14 million people could still not use wastewater treatment systems (unserviced population).

Three concerned Ministries, Ministry of the Environment, Ministry of Agriculture, Forestry and Fisheries, and MLIT have jointly revised "The Manual for Prefectural Planning of Effective Sewage Treatment" in order to enhance wastewater systems all over Japan. The Manual has set the goal as "near completion of the provision of wastewater facilities in 10 years".

Photo: More than 150 participants from local governments gathered at the lecture meeting

This manual also requests regional governments to enact action plans incorporating specific initiatives to almost fully achieve this goal in 10 years. In this line the Sewerage and Wastewater Management Department has held information exchange meetings to report cases studies in several model cities to provide information and suggestions concerning enactment, research trends at the NILIM, and supporting measures taken by MLIT.

The conference room at the Japan Sewage Works Association (Kanda in Chiyoda Ward, Tokyo) where the meeting was held was filled to its capacity with more than 150 representatives of local governments throughout Japan. Many questions following the report indicated the high level of interest in enlarging the sewered area.

The NILIM introduced a study to connect a flush toilet to a wastewater system.

Details ☛ MLIT Water Quality Control Department website
http://www.mlit.go.jp/mizukokudo/sewerage/mizukokudo_sewerage_tk_000321.html

■ Awarded the Hydrographic Technology Encouragement Award by the Japan Hydrographic Association (JHA)

Administrative Coordination Department
Coastal, Marine and Disaster Prevention Department

The Coastal Marine and Disaster Prevention Department, Marine Environment Division, Division Head, Okada Tomonari, was awarded the 2014 Hydrographic Technology Encouragement Award by the JHA.

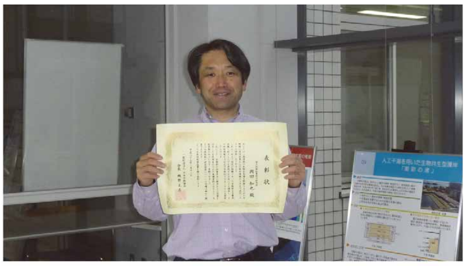
Okada Tomonari, Head of the Marine Environment Division was awarded the 2014 Hydrographic Technology Encouragement Award by the JHA in honor of "Development of a Three-dimensional Visualization System for Sounding and Topographical Information on Shorelines to Clarify Habitats of Living Organisms in Port Areas".

The Hydrographic Technology Encouragement Award is awarded to recognize extremely remarkable achievements in research and development of hydrographic technology in order to contribute to the advance of hydrographic technology in Japan by stimulating the willingness to conduct research by young technologists working on hydrography.

This achievement is the development of a system that can perform three-dimensional visualization of topographical information by surveying shorelines, which have been difficult to measure until now, by a method combining a sonic depth finder with a terrestrial laser.

The award ceremony was conducted accompanied by a poster display at the New Hydrographic Technology Conference held on February 13, 2015 by the Hydrographic and Oceanographic Department of the Japan Coast Guard.

The Coastal Marine and Disaster Prevention Department won this award the second consecutive year. Last year, it was awarded to Fuji Ryotaro, then Guest Research Engineer in the Coastal Zones System Division.



表彰状

国土技術政策総合研究所
岡田 知也 殿

あなたは「港湾域の生物生息場を把握するための水際線の深浅測量および地形情報の3次元可視化システムの開発」をされました
これはこれまで測定が困難であった水際部を音響測深機と地上レーザを併用する方法により調査し その地形情報を3次元で可視化できるシステムを開発したものです
これにより 水際部の測量手法の解決および浅場を活用した自然再生のための基礎資料となるなど 水路業務の向上に大きく貢献されました
その水路技術の研究開発についての功績は極めて顕著であります
よって水路技術奨励賞を贈り表彰します

平成二十七年二月十三日

一般財団法人 日本水路協会
会長 縄野克彦

■ Presentation of achievements at the 12th environmental research symposium

Environment Research Committee

Thirteen environmental research bodies gathered to hear research achievements announced at the 12th Environmental Research Symposium held in Hitotsubashi Hall on November 18, with its theme, "Future of the Globe Considering Climate Change and Science and Technology".

The Climate Research Committee participated actively in the 12th Environmental Research Symposium held by the liaison group of the environmental research organizations (comprised of 13 research institutes including the NILIM and other national research institutes, independent administrative agencies, national university corporations, etc.), where it announced its research achievements to clarify environmental research initiatives of the NILIM.

At this symposium, it introduced the way that the most advanced science and technology should approach the problem

of climate change based on scientific knowledge of climate change announced in the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

At the Symposium, presentations were given by 14 researchers active on the front lines in each research institute. From the NILIM, Research Coordinator for Integrated Water Disaster Management Fukami Kazuhiko of the Climate Change Adaptation Research Group spoke on Deepening Understanding of Flood Control Systems and Adaptation to Climate Change. About 100 posters about environmental research were displayed. The departments and centers of the NILIM provided 8 of these posters concerning themes including "National Land and Disasters", CO_2 and Greenery in the City", and "Regional Energy Consumption".

Broad-ranging research on the environment is in a synergistic relationship with initiatives to expand the economic infrastructure and to prevent and mitigate disasters, permitting its distinctive expansion directly linked to practical matters. The Environment Research Committee will, in cooperation with the liaison group of the environmental research organizations, do more to inform a wide range of researchers, administrative bodies, and the people of Japan of the most recent environmental research achievements of the NILIM by taking advantage of opportunities such as the Environmental Research Symposium.

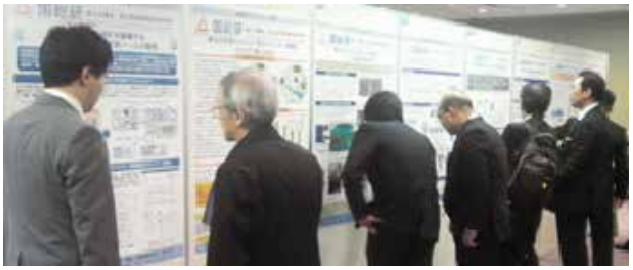


Photo: Posters about environmental research (NILIM Corner)

Details ☛ lecture slides (website: the liaison group of the environmental research organizations)
http://kankyorenrakukai.org/symposium_12/pdf/koen_8.pdf

● Publication (research achievements) < November, 2014-February, 2015 >

Download from here ☛ http://www.nilim.go.jp/lab/bcg/siryou/index.htm

TECHNICAL NOTE of NILIM

No.	Title of Paper	Names of Divisions
795	Technical note of road crossing structure for wildlife animals and post-survey technique	Landscape and Ecology Division
807	Technical guideline for countermeasures against deep-seated catastrophic (rapid) landslide	Sabo Planning Division
808	How to Enhance the Effect of Public Works on Town Planning and Community Development - A Guidebook for Improving the Quality of Public Works -	Landscape and Ecology Division
809	Classification of Fishes on an Inner Bay Based on Their Habitat Features and Lifecycles	Marine Environment Division
810	Characteristics of Damages of Coastal Protection Facilities in Ports due to the 2011 off the Pacific Coast of Tohoku Earthquake and Tsunami	Coastal Disaster Prevention Division
811	Analysis on World Container Ship Movement and Containerized Cargo Flow(2014)	Port Planning Division
812	Comprehensively report for setting up level-1 earthquake ground motion with a probabilistic time history waveform for seismic design of Port Facilities	Port Facilities Division
813	Annual Report of Road-related Research in FY 2013	Road Traffic Department, Road Structures Department, Research Center for Land and Construction Management

● We provide you with research information.

- 2014 Annual Report of NILIM

This web site introduces NILIM activities throughout the year, including research activities and achievements, future initiatives, etc.
Go to this web site: ☛ http://www.nilim.go.jp/english/annual/annual2014/ar2014e.html

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