歴史都市防災論文集　Vol.8 掲載論文・報告一覧

【論文】

1. 飛騨高山の伝統木造仕口の性能検証実験

Experiment for Performance Verification of Traditional Wooden Joints in Hida-Takayama

棚橋　秀光・大岡　優・向坊　恭介・鈴木　祥之

There are lots of traditional wooden buildings which should be conserved as valuable cultural assets in Hida-Takayama. For their conservation, appropriate seismic evaluation and reinforcements are urgently required. In special, the mechanical properties and seismic characteristics of exisiting aged joints are very important for the proper seismic evaluation. This paper describes the experiment of tratidional wooden joints with aged and new wood in Hida-Takayama and performance verification of their restoring force characteristics in order to conserve and prevent them from disasters. These results will contribute the seismic evaluation of traditional wooden buildings.

2. 高山市伝統構法木造建築物の 3 次元立体モデルによる地震応答解析

3-D Earthquake Response Analysis for Traditional Wooden Houses in Takayama City

清水　一史・村田　晶・吉富　信太・向坊　恭介・池本　敏和

Many worthy traditional wooden houses are remained in Takayama City, and two areas are selected the Historic Preservation District by the Agency for Cultural Affairs. Threre is a problem in living these houses because it is difficult to evaluate seismic performance. But it is difficult to evaluate the criteria of seismic performance since the result of research is still insufficient. A lot of seismic evaluation for the structural element of traditional wooden houses are performed. But the seismic evaluation by 3-D earthquake response analysis is not fully studied. It is possible to perform well-balanced retrofit or reinforcement by which this study. This study estimates the seismic response characteristics of the tradisional wooden house in Takayama City by using 3-D earthquake response frame analysis, and we propose evaluating the seismic performance of traditional wooden house model.

3. 東本願寺御影堂門の立体解析モデルによる地震応答解析

Earthquake Response Analysis of Goei-do Mon in Higashi-honganji Based on 3D Analytical Model

吉富　信太・栗田　駿平・向坊　恭介・鈴木　祥之

Japan is predicted to have major earthquake in the near future and it is required to estimate the earthquake resistant performance of existing traditional wooden structures. There have been many researches to propose mechanical models of traditional wooden joints. However, the validity of whole structural model that consists of such mechanical models is not examined sufficiently. In this paper, 3D frame structural model of the traditional wooden gate structure, Higashihonganji Goei-do Mon, is constructed and the structural performance of the gate is evaluated through eigen value analysis, static response analysis and earthquake response analysis.

4. 東本願寺御影堂門における板壁構面の耐震性能と吸い付き桟を用いた補強法に関する実験的研究

EXPERIMENTAL STUDY ON SEISMIC BEHAVIOR OF BOARD WALL WITH STIFFENING BAR OF TRADITIONAL WOODEN STRUCTURES

瀧野　敦夫・鈴木　祥之

The very large board walls are used in the traditional wooden structures such as shrines and temples. These board walls are expected to have the seismic performance, however, elucidation of the seismic behavior of the board walls remains incomplete. In this study, we conducted the in-plane shear tests of frames including board walls and attempted to clarify the mechanism of the seismic performance of the large board walls. In addition, we suggested the seismic strengthening scheme with the stiffening bar and verified the stiffening effect by the in-plane shear tests.

5. 水平加力実験による飾り組子欄間の構造性能

Structural Performance of Muntin Decorated Traditional Wooden Frame on Static Loading Test

須田　達・棚橋　秀光・中村　友輔・鈴木　祥之

The traditional wooden frame decorated with elaborate muntins in Higashi Honganji Goei-do Mon is expected to be structural element. Therefore, static loading tests of a full scale specimen were carried out in order to make clear the structural performance. The test results showed that the wooden muntin frame has high performances of deformability and restoring force. The structural mechanisms of wooden muntins are suggested by considering the bending moments, compressive and tensile stresses acting on the wooden members. Based on the mechanisms, the restoring force characteristics were estimated by Elasto-plastic Pasternak Model analysis.

6. 高山市域における悉皆調査と地域住民の伝統木造建物に対する意識調査

An investigation of houses in Takayama city and Neighborhood Residents' Consciousness on woodenhouses

鈴木　智華・後藤　正美

There are traditional wooden houses in Takayama city Gifu prefecture. Some structures are assigned for preservation area (Preservation District for Group of Traditional buildings). A national disasters is frequently occurring in recent years. Their important houses will be required confirmation safety. In this study, an investigate the actual conditions of the houses and neighrhood residents' consciousness in Takayama city. In this investigation, film entire peripheral images and analysis for building distribution. With this method, serving to acquire various information and improve efficiency of investigation.

7. 大阪市における 1934 年室戸台風による被災社寺の分布とその特徴

The distribution and characteristics of shrines and temples damaged by the Muroto Typhoon in 1934 in Osaka, Japan

谷端　郷

This study analyzes the spatial characteristics of the shrines and temples in Osaka that suffered substantial damage caused by the storm surge and winds of the Muroto Typhoon in 1934. The data used in this study are taken from the edited reports of Osaka City on this disaster. The survey results reveal the following: (1) The shrines and temples damaged by the storm surge and winds in 1934 were distributed throughout the city of Osaka. (2) Because shrines had small buildings which were vulnerable to suffer from wind damage, the number of damaged shrines was higher than that of temples.

8. 宮城県南三陸町の被災した文化遺産の現状と復興の課題

Current Conditions of Cultural Heritages which Suffered from the Great East Japan Earthquake; Challenges of the Recovering Process of Damaged Cultural Environment in the Case of Minami-Sanriku-Cho, Miyagi Prefecture, Japan

板谷　直子（牛谷 直子）・ロヒト　ジグヤス・中谷　友樹

This study aims to summarise the current conditions of cultural heritages like shrines or temples damaged by the Great East Japan Earthquake in Minami-sanriku-cho, Miyagi prefecture, Japan, in order to diagnose problems in efforts to recover such damaged heritages. We firstly used a GIS (geographic information system) to identify shrines and temples within the Tsunami inundation areas, and then conducted a field survey to investigate the damages and current recovery processes of them. At the result, we found that severe damages of the precincts of the shrines or temples and that those caused serious destruction of the cultural environment that used to be attached with the precincts. Although we found less severe damages for the main buildings and graveyards, there remained no local communities in the vicinity of temples or shines damaged in many cases. The local government of Minami-sanriku-cho decided to relocate the residential areas from coastal low grounds to higher grounds to avoid the risk of Tsunami in the future. The major challenge to overcome this situation is to find the way to redevelop the cultural environments lost by the disaster.

9. 文政京都地震（1830）における北野天満宮の被害記録と流言の検証

Verification of the Rumor and Damage records of Kitano-tenmangu shrine in 1830 Bunsei Kyoto Earthquake

大邑 潤三

In Bunsei Kyoto Earthquake that occurred in 1830, record of Kitano-tenmangu shrine is many. This study is intended to organize revisit these records. At the same time, analysis of the social background in which the recording was written is also an object. As a result, the determination of the reliability of each record has become possible. The Actual damage was ambiguous, but it became clearer and is organized. In addition, in the confusion after the earthquake, caught how the rumor changes. However, from the stone lantern existing, to guess the impact of the earthquake is difficult. In studying the historical disaster, verification of records is an important analysis.

10. Researches Based on the Inundation-Prevention Oriented Migrations of the Major city sites of Chengdu Plain in Pre-Qin Dynasty Period

You-Hai Tang and Xi Yang

In pre-Qin period, floods frequently raged the Chengdu plain. Therefore, the major city sites in the regional civilization center of Chengdu plain underwent repeated migrations. And during this, the ancient Shu people constantly acquired the flood prevention techniques and gradually attained the pursuit of “the harmony of Man and Nature”. Hoping to inspire the contemporary urban flood prevention, this thesis set about expounding the migration of the main city sites of Chengdu plain and the achievements in flood prevention techniques of the ancient Shu people in pre-Qin period through summarizing historical and archaeological data and analyzing environmental climatology evidence.

11. 若狭地区の文化財の保存・継承の実態調査に関する研究

Study on Survey of Preservation and Inheritance of Cultural Heritages in Wakasa Area

崔　明姫・金　玟淑・谷口　仁士・冷泉　為人・大前　知也・鐘ヶ江　秀彦

In recent years, preservation and inheritance of cultural heritage become difficult because of aging and depopulation which caused non-successor of cultural heritage and difficulties financing management of repair cultural property.In this papar, the interviews to local government and temples of Wakasa area are conducted to understand the currunt status of preservation and publication of cultural heritage. And based on the result of interviews, we perform a comparative analysis of the temples in Wakasa with Kyoto and Nara which are the famouse historical cities in Japan, to consider the problems in preservation and inheritance of the cultural heritages in Wakasa area.

12. 文化財の盗難被害と防御システムの実態に関する研究

A Study on the Theft of Cultural Properties and Security System

金　玟淑・谷口　仁士

The purpose of this study is to clarify the actual state of theft of cultural properties and the security system by carring out the questionary survey and the hearing survey for the owner of the Japanese Buddhist temple and Shinto shrine and field survey. The results are as follows: (1) Buddha statues and pictures are higher theft than ancient documents; (2) The stealing or arson occurs before and after the temple or shrine’s opening hours than midnight.; (3) Criminals tends to use the route of the mountain or from the front ; (4) It is the most desirable for the defense system for cultural properties to set up appropriate amount on the appropriate place.

13. 市街地の変遷を踏まえた洪水氾濫リスク評価による防災計画

Disaster Prevention and Mitigation Plan Based on Estimated Flood Risk in Consideration to Waterproofing of Histrical City Structure in Oono City, Fukui Prefecture

田中　耕司・中島　秀明・中北　英一・竹之内　健介・矢守　克也・養老　伸介・羽生　雅則

Municipalities may not suitably alert evacuation warning and caution to residents in districts. This study describes about methods of evacuation judgment criteria based on the flood risk

at each district in order to alert proper evacuation warning and caution according to necessity and priority of evacuation at each district. Flood flowing analysis model which simulate the inundation process in flood plain of several small-medium rivers in Ono city of Fukui Pref was developed. We estimated flood risk in Oono city from design rainfall of river planning, probable maximum rain fall around Oono city and an event of the Okuetu heavy rainfall. As results of analysis of flood risk, it is shown that timing and priority order to alert evacuation warning and caution according to flood risk at each district was able to be established.

14. A Study of Community Decisions for Taking Action in Flood Risk Reduction Activities: Case Study in Ayutthaya Land Use Comprehensive Plan, Phra Nakhon Si Ayutthaya Province, Thailand

I-soon RAUNGRATANAAMPORN and Hidehiko KANEGAE

The intentions of local people towards disaster preparation are important in defining the readiness for responding in the disaster resilience approach. This research applied a questionnaire survey to local community members who live in the area of the Ayutthaya land use comprehensive plan. There are seven aspects in this study which relate to the decision to prepare and participate in flood risk reduction activities; these are (1) reliability of information, source of information and transparency, (2) experience, fear and anxiety toward flooding, (3) leadership and performance of service providers, (4) expectation toward compensation and help, (5) effect from other people, (6) expectation of damage and loss, and (7) familiarity and current flood management. In addition, there are seven types of activities, which are (1) sharing information, (2) checking survival kit, (3) evacuation planning, (4) applying sandbags or water pumps for flood protection, (5) donating to flood victims, (6) volunteering to help communities in flood mitigation or response, and (7) volunteering to help local government in flood mitigation or response. This study applies multinomial logit regression analysis to explain how influencing factors effect the possibility of community members participating in flood risk reduction activity. The output of this study shows that reliability, sources and transparency of information; effect from other people; familiarity with flood situations; the success of the current flood management; and experience, fear and anxiety of the respondent toward flood situation, all affect the respondents' decision to prepare flood risk reduction activities, while risk perception affects the intention to participate in local activities.

15. Influence of Preparedness Measures on Re-Opening Time for Small Businesses after 2011 Thai Flood: A Case Study of Sai Mai District in Bangkok Metropolitan Administration

Siriluk Mongkonkerd, Sachi Perera, Kohei Sakai, Mingji Cui, Yusuke Toyoda and Hidehiko Kanegae

Little evidence from previous studies is available for businesses and disasters in developing countries context, which have a higher probability of being located in hazard prone areas. The objective of this study is to investigate what the most important preparedness measure influenced on re-opening time for small businesses rapidly after the 2011 flood finished in Sai Mai district of Bangkok Metropolitan Administration (BMA). The output of Multiple Regression Model from 200 business owners shows that the most important preparedness measure is to get information about past floods in BMA. This preparedness measure influenced other preparedness measure which could reduce the time of business
recovery.

16. 2013 年台風 18 号の豪雨に伴う清水寺境内の被害と重要文化財後背斜面の地盤内水分変動に関する考察

A damage of the slope around the Kiyomizu temple by the heavy rain from the Typhoon in 2013, and a study of the changing moisture in the ground of the slope behind an important cultural asset

檀上　徹・藤本　将光・木村　亘・平岡　伸隆・深川　良一

In the Kiyomizu temple, the several slope failures occurred due to heavy rain from the Typhoon No.18 on September in 2013. The pore-water pressure and rainfall amount have been

measured from 2014. This paper reported the damage of the slopes around the Kiyomizu temple by the heavy rain from the Typhoon in 2013, and the ground moisture conditions of the slope behind an important cultural asset during the Typhoon event were validated using the measurement result of pore-water pressure. Then, we found that the total amount of rainfall in Kiyomizu temple from the Typhoon is the largest during four decades, and the positive pore-water pressure indicated at point M-100 at this event longer than that of past slope failures event. Consequently, it could be said that there was a high risk for slope failures occurs at the slopes behind an important cultural asset under these conditions.

17. 神聖とされている領域における地形把握手法の提案

原田　紹臣・山中　一幸・中谷　加奈・里深　好文

Historic sites must be protected against landslides and debris flows to save them for posterity. However, it is difficult to survey the topography in an area of sacred site, such as an off-limits area behind a shrine, to devise countermeasures against such hazards. We propose a method of measuring the topography of an area of sacred site using an unmanned aerial vehicle (UAV). In this study, the photogrammetry data obtained with the UAV were compared to control survey data obtained on the ground to validate the proposed method. In addition, a new relationship between the watershed area and channel width was proposed by taking into consideration the riverbed gradient, for prediction of the river width accurately using the photogrammetry data.

18. 超音波土中水分量測定における反射強度と体積含水率の相関性に関する研究

Study on Correlation between Reflective Intensity and Volumatric Water Content in Measuring Soil
Moisture Using Ultrasonic Waves

平岡　伸隆・中野　峻也・田中　克彦・藤本　将光・深川　良一・外狩　麻子・岩佐　直人

Monitoring of soil moisture and groundwater level is important for predicting slope failure caused by heavy rainfall. We have been developing a new device using ultrasonic waves for monitoring soil moisture and groundwater level. In this paper, multi cyclic experiment which has wetting process and drying process in laboratory is carried out to validate availability of measuremental soil moisture using the ultrasonic monitoring system. In addition, the soil moisture obtained by ultrasonic detector is validated to calibrate the reflective intensity into the volumetric water content. The results suggest possible beneficial effect of the calibration.

19. 文化遺産周辺の河岸侵食対策の提案に向けた生石灰と籾殻灰を用いた改良土の力学特性に関する研究

Study on mechanical characteristics of improved soil using quick lime and rice hulk ash for riverbank erosion around cultural heritage

大矢　綾香・奥本　龍馬・藤本　将光・深川　良一・李　徳河

Hue is located at middle of Vietnam, and famous for the ancient capital of Ngyuen Dynasty. A royal residence, temples, museums and buildings around the city are recognized as world cultural heritage sites by UNESCO. Some of them are located along Houng River, which is often suffered from flood during rainy seasons. It causes river bank erosion, and there is possibility that these historical buildings are harmed by riverbank erosion and settlement. This paper presents new ground improvement method using quick lime and rice hulk ash which are cheap and easy to obtain in developing countries like Vietnam. The mechanical characteristic of improved soil is validated by mechanical tests.

20. 清水寺後背斜面における地中音測定を用いた地下水流動の把握

Detection of groundwater movement using a measuring method of sound of groundwater flow on the hillslope behind Kiyomizu Temple

藤本　将光・檀上　徹・土山　拓也・木村　亘・深川　良一

We evaluated the groundwater movements based on the measurement of a sound due to groundwater flow in soil. The results indicated that there were specific movement of groundwater flow and groundwater area. Considereing the porewater pressures in soil layer, these

groundwater flow paths may exist in weathered bedrock zone below the soil layer. Our findings were mainly corresponded to the presious results obtained by the measurement of groundwater temperature at one meter depth in the soil, indicating that measurement method of sound by groundwater flow is good indicator to detect the groundwater flow path.

21. 清水寺における雨量指標を用いた斜面崩壊警戒基準に関する研究

Study on criteria for slope failure based on rainfall intensity at Kiyomizu-dera

石田　優子・藤本　将光・平岡　伸隆・大矢　綾香・酒匂　一成・深川　良一

Kiyomizu-dera is located on the slope of a mountain. An evacuation warning system for slope failure has been operating since 2004, based on rainfall monitoring. To improve the accuracy of rainfall warning, data from 25 rainfall events since 1881, with slope failure potential, were examined. Several calculated rainfall indices were considered to find the optimum criteria at the Kiyomizu-dera site. The results indicated that, suitable combination of rainfall indices is the amount of 12 h of rainfall and cumulative rainfall, the first tank value of soil water index has possibility of effectiveness, and short-time half-life of effective rainfall index should be set longer.

22. 京都市「ちびっこひろば」において実施した防災イベントの評価と防災的活用における課題に関する研究

A Study of Evaluation of the Proposed Disaster Mitigation Training in a "Chibikko Hiroba" in Kyoto City and Problem of the Disaster Mitigation

堀　健太郎・武田 史朗

In this study, a disaster mitigation training event in a small privately owned public space called chibikko-hiroba in Kyoto was conducted, and the evaluation on the event was carried out through questionnaire survey of the neigbourhood residents. From the analysis of the survey results, it was concluded that it is important to improve compatibility of easy participation by children and that of adults, and that there is need of enhancement of learning and valuable experience contents, to increase the participation willingness to the disaster mitigation training events.

23. Reconstruction and Renovation: Changes of Ways of Ethnic Cities in Tibetan Areas in Sichuan in Modern History Coping With Geologic Catastrophes1

Tian Kai and Chen Ying

Tibetan Areas in Sichuan are inhabited by various ethnic groups, and the development of cities in these areas has always been influenced by geologic catastrophes. The native people have formed their own harness mechanisms for coping with natural disasters. After the central government strengthened its control on these areas since the 18th century, the Tibetan Areas in Sichuan began to cope with the challenges brought by geologic catastrophes in a more active manner. This paper aims to present changes of ways of ethnic cities in coping with geologic catastrophes during modernization by analyzing ways of reconstruction and renovation of Kangting after hit by these catastrophes since 18th century.

24. 重要文化財・松山城の避難計画に関する研究 ～エージェント型避難シミュレーションを用いた有効性評価～

Research on evacuation plans in Matsuyama castle, by using an agent oriented simulation method which can evaluate the motion and action of people in emergency situations

大窪　健之・福田 和弘

Fundamental plans about repair work to improve the potency of equipment which mitigate disasters of the whole Matsuyama castle are examined. But the things about correspondence at the time of a disaster and refuge of tourists are not discussed enough, and Matsuyama castle has complicated structure for evacuation. Therefore, a possibility that trouble will occur in refuge in an emergency is high. So, this research estimates the measure for the tourist's refuge using evacuation simulation method in consideration of the factor which makes difficult refuge types at the time of the fire disaster of the Matsuyama castle.

25. 歴史都市における観光客のための避難経路の抽出方法に関する研究
～京都市東山区を対象として～

A Study on the Identification Methods of Evacuation Routes for Tourists in Historical Cities - Case Study: Higashiyama Ward in Kyoto City –

小川　圭一・前川　貴哉・松野　真樹・塚口　博司・安　隆浩

In this paper, the identification methods of evacuation routes for tourists from cultural heritage as sightseeing spots to evacuation sites are proposed in Higashiyama Ward in Kyoto City, which is a typical historical city in Japan. Evacuation routes from cultural heritage to evacuation sites are identified from the viewpoints of distances, reachability rates in disaster situation and numbers of turns at intersections. A comprehensive indicator which integrates these three viewpoints is proposed to identify the evacuation routes from cultural heritage to evacuation sites.

26. 姫路城における観光客の避難行動パターンに関する研究　ー多基準意思決定にもとづいた意識調査を事例としてー

A Study on Evacuation Behabior Pattern of Tourists after Earthquake in Himeji Castle -A Survey of Consciousness Based on Multicriteria Decision Making -

酒井　宏平・本多　彩夏・Siriluk Mongkonkerd・豊田　祐輔・谷口　仁士・鐘ヶ江　秀彦

This paper, based on a survey on tourists' consciousness in evacuation after an earthquake in Himeji castle, shows decision making of tourists' evacuation and pattern of evacuation behabior. First, this paper investigated whose information they consider for starting evacuation. According to the results of the questionnaire survey, four groups were categorized by using AHP and cluster analysis. As a result, many tourists think information from signboards and staff in the Himeji castle is important for starting evacuation. Next, in a similar manner, using AHP, this survey certified that many tourists consider information from signboards and staff for choosing evacuation routes, and the respondents were categorized into four groups using cluster analysis. Finally, an example of pattern of evacuation behabior was shown from starting evacuation to choosing evacuation routes.

27. 大規模地震発生直後の交通需要の推計と災害時交通マネジメントに関する一考察

Study of Estimation of Travel Demand and Traffic Management Immediately after Earthquake Disaster

安　隆浩・孫　若晨・塚口　博司・小川　圭一

There are many historical heritages and 50 million tourists and more a year have visited in Kyoto. There are many active faults, such as a Hanaore fault in this area. If a disaster occurs, an emergency vehicle may be unable to pass smoothly. Therefore, it is indispensable to implement measures, such as traffic management, after a seismic hazard. In this research, the traffic demand 3 hours after a disaster is predicted, and the road situation is predicted by a simulation. As a result, traffic congestion can be improved by restricting traffic inflow into Kyoto.

28. 歴史都市パタンにおける 1934 年大震災後の避難生活の実態

A study on life environment after the great earthquake 1934 in historic city Patan

サキャ　ラタ・大窪 健之

In this paper, life environment after the great earthquake 1934 in historic city Patan is clarified through the review of a precious book written about the great earthquake and interview survey with elderly who have experienced the great earthquake and live in Patan. From the book review, the government correspondence towards the disaster is clarified. And with interview survey, following results are figured out. 1) People spent almost one month in communal spaces as a Shelter, which are near to their own house. 2) It is considered that because people's lifestyle was not relying on modern life, they had been able to overcome with the disaster.

29. 先斗町花街における茶屋の減少に伴う火災危険性の変化

The change of fire risk caused by a decrease in the number of “chaya” in Pontocho area

松井 大輔・岡井 有佳

Recently, the conversion of “chaya” to restaurant has been proceeding in Japanese traditional entertainment districts. The aim of this paper is to clarify the relationship between the conversion and the change of fire risk. In Pontocho area, the number of “chaya” has been down about 70 percent, and restaurant has increased eightfold from 1954. Especially, many conversions occurred in periphery district of Pontocho area that correspond to evacuation routes. It is thought that fire risk of restaurant is higher than “chaya” because restaurant has many opportunities to use fire. Therefore, it is necessary to examine enriching fire extinguishing equipments in periphery district as well as in alleys.

30. ベイジアンネットワークを用いた海の見え方に対する印象評価に基づく街路空間の確率モデルに関する研究　ー宮古市鍬ヶ崎地区を対象としてー

A Study on Probablistic Model of Street Space Based on Sensibililty Evaluation of Visibility of Sea sing Bayesian Network.　-A case of planning for Kuwagasaki District in Miyako City-

酒谷　駿一・宗本　晋作・山田　悟史

The purpose of this paper is to provide the method for the construction of the probabilistic model of street space based on the evaluation of visibility of sea that is important for the stricken area of the Great East Japan Earthquake. We applied Bayesian Networks to construct a graphical model that represented the correlation between the impression of street space with visibility of sea and spatial elements of which street space is composed. The relationship of spatial elements was easily understood by visual analysis of graph structures. By executing probabilistic reasoning of Bayesian Networks on this model, furthermore we deduced the combination of spatial elements for the city planning that are
expected to be impressed in good image.

31. 自己組織化マップによる空間要素の可視化分析を用いた京都市伝統的建造物保存地区の通りの分類法に関する研究

Classification Method for Streets in Historic District of Kyoto Pref. Using Visual Analysis of Spatial Elements of Street by Self-Organizing Maps

松井　宏・宗本　晋作・山田　悟史

The purpose of this paper is to provide the method for the classification of streets in historic district of Kyoto Prefecture by using Self-Organizing Maps (SOM). The street data consisted of spatial elements given from the analysis. SOM includes a two-dimensional visible system which allowed us to analyze the multivariate data. By using SOM, we were able to create a map reflecting the characteristics of the streets. Streets in historic district were classified into five categories according to the spatial characteristics. We deduced the similarity of streets by the location on the map of the new additional data of a street consisted of spatial elements.

32. 重要伝統的建造物群保存地区における防災意識の地域特性に関する比較研究

A Comparative Study on Characteristics of Disaster Awareness in Areas with Groups of Traditional Buildings

崔 青林・豊田　祐輔・崔　明姫・谷口　仁士・金　玟淑・朴　ジョンヨン・鈴木　祥之

It is one of the crucial challenges to protect historic cities from natural disasters as the devastating disasters seem to occur more often than before. This study grasps charactiristics of disaster awarenss of three case areas with Groups of Traditional Buildings in Japan and South Korea, contributing to further studies to promote effective local disaster plans and community-based disaster risk reduction. These areas were selected as they have differnet disaster experiences and characteristic in disaster activities. A series of surveys in the areas revealed much diffenrences among three case areas. The results infer that these differneces stem from characteristics of the case areas.

【報告】

1. 石場建て建物の最大滑動量の実験的推計に関する検討

Experimental Upper Limit of Maximum Slide Response on Un-anchored Traditional Structure

山田　耕司

Traditional Japanese wooden structures are not fixed on the ground, and they slide on stones. Many shaking table tests and parametric analyses have been executed. These reports show the qualitative data on this sliding phenomena of unanchored traditional structures. The quantitative data on this sliding phenomena is needed for structural design. In this report, I propose the estimation method of the maximum slide response upper limit based on shaking table tests. As a result, another slide displacement occurs on both the same test specimen and the same earthquake motion. The estimated maximum slide displacement is 1.2 times of the average of the maximum slide displacements in one-way.

2. 煉瓦壁モデルの耐震補強効果に関する静的載荷実験

The static loading test on earthquake effect of reinforcing the brick wall model.

山口　和輝・Reza Amiraslanzadeh・池本　敏和・深田　宰史・宮島　昌克・村田　晶

As we know large numbers of URM structures around the world have not been designed for seismic loads and structural walls of these buildings were primarily designed to resist gravity loads. Therefore, moderate to strong earthquakes can devastate entire cities or villages resulting in massive death toll and cause extensive losses. Hence, retrofitting of these structures and improving their strength are significant and vital. There are different types of retrofitting methods for rehabilitation of brick walls. In this paper among these several types of retrofitting techniques, we tried to model center core method to see how efficient it could be on reinforcing brick walls against shear forces. For this reason lateral cyclic tests carried out on masonry panels in order to specify seismic parameters of brick panels. Comparisons were made along the results of seismic analyses of two types of masonry panels. The results evidence that existing of fiber concrete columns have positive effect on the shear resistance of the walls.

3. Inheritance and development of post disaster Qiang traditional architectural culture in Beichuan

李　天驕・劉　弘涛

By analyzing the causes of the reasons for the formation of Beichuan Qiang architectural features, inducing building types and symbols of Qiang traditional buildings, the article try to provide reference for the inheritance of the traditional architectural culture, and looks for feasible method of inheriting and carrying forward Qiang nationality traditional architectural culture in the investigation of architectural design in the new town of Beichuan.

4. 雅安地震における伝統的集落の被害調査

The Damage Investigation of Historic Settlement Post Yaan Earthquake A Case Study in Wangyu historic village in Sichuan Provinve in China

劉　弘涛・沈　中偉・谷口　仁士・崔　明姫

Wangyu is a tranditional historic village of Sichuan province in China. On April 20th, 2013, a devastating earthquake measuring 7 on Richter scale struck Yaan, Sichuan province. Now there are 44 historic wooden buildings in Wangyu. The purpose of this report is to study the damaged situation of these historic buildings in the earthquake, and then attempt to find the weak points in these buildings. Also this report will be beneficial to the mitigation and prevention of historic buildings in Yanan.

5. 大阪市における南海地震石碑と教訓の継承

Nankai Earthquake Memorial and Handing Down Lessons in Osaka City

長尾　武

There are four memorials to the Ansei Nankai earthquake in Osaka City. Two of them, the Ohjishin(Daijishin)- Ryokawaguchi-Tsunamiki and the memorial in Shitennoji, are inscribed with the disaster's lessons. However, we do not know of any memorials to the Hoei earth-

quake in Osaka, although an Ansei-period “news” story briefly mentions a “Jizou” (“Ksitigarbha”) statue being built. I believe the “Jizou” was built at the mouth of the Kizu River where the Ohjishin-Ryokawaguchi-Tsunamiki was later built. Since that memorial’s construction, it has been regularly maintained, and ceremonies are held as if it were a “Jizou” that has been keeping residents safe for about 160 years.

6. The Syrian cultural heritage tragedy: cause, effect, and approaches to future protection

Youssef Kanjou

In this paper I present the actual situation of Syrian culture heritage under the current situation from the beginning until now, in particular I concentrate on Aleppo heritage which is consider one the most important in Syria. Also I speak about the protection of cultural heritage by the government, archaeology authority, anti-government and the local community. After that I try to explain the cause of the disaster of Syrian cultural heritage and finally try to find the answer how we can protect the heritage before, during and after the war.

7. MANAGING KOTAGEDE HERITAGE DISTRICTS AFTER 2006 EARTHQUAKE

Punto Wijayanto

On May 27, 2006, Kotagede heritage district in Yogyakarta was hit by a powerful earthquake. During 2006-2012, emergency response and recovery efforts carried out in Kotagede. This paper is to expose models of heritage area management by examining various actors and their implemented projects in Kotagede. Before earthquake some actors, such as university (UGM) and heritage organizations (JHS) already showed their concern in management of Kotagede heritage district. The 2006 earthquake gave them opportunity to expand their roles and furthermore, to define the heritage management process.

8. 京都府亀岡市篠町における 2013 年台風 18 号水害の地理的特徴

Geography of the Flood Disaster Caused by Typhoon Man-yi (2013) in Shino Town, Kameoka City, Kyoto Prefecture, Japan

村中　亮夫・谷端　郷・中谷　友樹

This paper reports the geographical chiaracteristics of the flood disaster caused by Typhoon Man-yi (2013) in Shino Town, Kyoto Prefecture, Japan. Some parts of the town is low lying and prone to flooding. The results of field surveys shows that the damage to houses, farmlands and river banks occured especially in flood or valley plains of the Katsura River and its tributaries. Most houses flooded above/under floor level in Shino Town were concentrated on the Kawanishi District where (1) the overflow water running into the area inside the open levees from the Katsura River partly flew through the underpass of the railway embankment of the JR San’in main line because the ground elevation in the district is reratively low, (2) the surface water which inflew from the higher place could not be discharged because of the slow running drainlines of the Katsura River. The results indicate the importance to design residential developments after having a better understanding of historical disaster-mitigation system, such as open levee.

9. 地区防災計画の実施状況評価と防災活動推進のためのワークショップ実施について　～与謝野町加悦重伝建地区を対象に～

Estimation of achievement in disaster mitigation plan and promotion of disaster mitigation activities with citigens`workshop case study in the Kaya Historic District of Kyoto Pref.

宮田　雄大，大窪　健之，金　度源

The residents in the Kaya historic district of Kyoto Prefecture made plans of the disaster-mitigation activity in cooperation with citizens`organizations.The policies were decided for practicing the continuous disaster-mitigation activity in historical district in March 2012 in Kaya. They include the opinions of residents. Although the fact was shown that part of the plan is not promoted enough, by the research for estimation.Therefore, both of mapping workshop and on-site workshop were held for promoting 6 elements of disaster mitigation activities which were not implemented enough. With these outcomes, adeguate activitity policies were found from guestionair research for residents and site investigation after the

workshops.

10. 都市内の河川と河川空間の防災活用に関する基礎的研究　ー再整備された京都市・堀川における防災機能の調査ー

A Research of Disaster Mitigating Faculty on The Horikawa River in Kyoto - A Survey The Emergency Water Supply System and The Practical Safety Using of A River Side -

金　度源・大窪　健之

From the Great Hanshin-Awaji Earthquake, it has clarified that the fire water service is not perfectly available with the urban infrastructure. Because of that the natural water resource has been planned as an available disaster prevention measures for firefighting water and evacuees' water. The Horikawa River has been restored for the emergency water supply based on the acquaphily water resource. The results of research, The Horikawa River was not only the using of emergency water resource, but also the using of water-path for evacuation route and the river side to using a temporary shelter. The aim of study is to arrange the planning method of disaster mitigating faculty on the river development.

11. 防災コンテストにおける地域防災活動の実践事例と文化遺産防災への課題と展望　ー文化遺産と周辺地域コミュニティの連携を目指してー

Practices of Disaster Prevention Contest on Community Activities and Possibilities and Challenges to Cultural Heritage Disaster Prevention -Aiming to Collaboration in the Local Community and Cultural Heritage-

崔　青林・李　泰榮・田口　仁・臼田　裕一郎

While attaining to return research results to society, NIED (National Research Institute for Earth Science and Disaster Prevention) is aimed at the realization of disaster-resistant collaborative community. As the part of the activities, we have been holding disaster prevention contest from 2010. The contest is conducted to support community disaster prevention with providing local disaster prevention technique and support tools to community groups who participated registration. In this report, we introduce the practice cases of the contest and examine possibilities and challenges to cultural heritage disaster prevention focused on the collaboration of local community and cultural heritage.

12. The Brief of Ancient Chinese Cities' Site Selections Based on the Disasters Preventions

You-Hai Tang and Xi Yang

The ancient Chinese cities have experienced a lot of natural or man-made disasters, and have accumulated huge amount of disaster prevention experience, especially the site selection ideology formed with the choice of the cities' locations, which continuously absorbed the thoughts of divination, Pragmatism location ideology and geomantic omen, and finally become mature. This ideology is based on the disaster prevention, and has built two levels which arethe macroscopic "Shi" and the microscopic "Di". Thus the constructors can have macroscopic considerations and strategic judgments to the regional conditions and can have accurate responses to the cities' adaptability to the specific geographic patterns.