歴史都市防災論文集　Vol.13 掲載論文・報告一覧

【論文】

1. 文化遺産の免震レトロフィット化に関する研究ー仮受け鋼管杭を用いる工事の工程管理についてー

A Study on Seismic Isolation Retrofit Construction of the Cultural Heritage Buildings about the Delivery Management of Temporary Supporting Pile

伊原大貴・持田泰秀・包学文

This study is about the step of temporary supporting device for seismic isolation retrofit. In Japan where earthquakes occur frequently, seismic isolation retrofit construction has been adopted as seismic reinforcement construction. In this construction method, the building pillars and foundation are removed when the seismic isolation device installs. It required step of temporarily supporting the building to remove part of the building. There is not data concern temporary supporting method of seismic isolation retrofit construction. For three buildings with historical value analyze the construction process related data and determine step of evaluation method.

2. 堀立形式の木造鳥居の耐震性に関する実験的研究

Experimental Study on Earthquake Resistance of Wooden Torii

中嶋裕典・野村直樹・田口仙市郎・高橋佑花

In shrines, torii has a role as a barrier between the gods and the world. And from the entrance, one torii, two torii and three torii are built. The basic structure is only that Shimagi and Kasagi rides on two columns. In this study, we examined the wooden torii of the structure of the landfill pillar with the difference of the ground. We used types of ground, Tataki and Hanchiku, which are traditional civil engineering works in Japan. As a result, it turned out that Hanchiku is stronger than Tataki. And it turned out that the landfill pillar is strong.

3. 次元立体解析モデルを用いた旧加悦町役場庁舎の耐震性能評価に関する研究

Study on Seismic Performance of Old Town Office in Kayano Town by Usii1g 3D Analysis Model

浅野陽彦・吉富信太・中治弘行・須田達・向坊恭介・佐藤英佑・鈴木祥之

This study is evaluating seismic performance of an old town hall building by using 3D analysis model. The target building is the old Yosano town hall in Kyoto which is traditional wooden building and seismic reinforcement, i.e. addition or replacement of shear wall and patition wall or repair of base foundation, is examined to raise the seimic performance of this building. In this study, 3D analysis models are constructed corresponding to the building before reinforcement and after reinforcement based on site investigation or loading test. Seismic performance is examinend by using eigen value analysis and time history analysis for five sevier earthquakes and the validity or problem is discussed.

4. 石造鳥居の耐震性に関する考察

A Study on the Earthquake Resistance of Stone Tori

中嶋裕典・野村直樹・田口仙市郎・高橋佑花

There are two types of torii: wooden and stone. It is presumed that although the torii was originally wooden, it was gradually rebuilt into a durable stone. The form of a stone torii is basically the same as that of a wooden torii, but it is susceptible to earthquake damage because its weight is far greater than that of a wooden. In this study, in addition to the designated cultural property, the seismic risk is examined based on the current survey results of the stone torii in Kyoto city.

5. 振動計測に基づく伝統木造建物の部位別剛性及び質量の推定法

Method for Estimation of Partial Stiffness and Mass of Traditional Wooden Btuldil1gs Based on Vibration Measurement

佐々木俊彰・田淵敦士・瀧野敦夫・吉富信太

This paper proposes a method to estimate partial stiffness, mass and damping ratio of buildings based on measurement of horizontal vibration caused by exciter. The proposed method assumes multi-floor and multi-plane 3D shear building model with flexible floor and determines stiffness of each structural plane and floor and masses of each location which minimizes the error between actually recorded transfer functions and simulated transfer functions of 3D shear model. The validity of the proposed method is demonstrated through example using actually recorded vibration data of old town office in Yosano town, Kyoto prefecture.

6. 石川県穴水町指定文化財「明泉寺燈籠」モデルの転倒実験

A Fall Experiment of the Model "Myousen,ji-temple Lantern" Designated Cultural Assets of Anamizu Town, Ishikawa

中嶋裕典・野村直樹

This study describes the lanterns that are essential to Japanese culture. The structure of the lantern is only a stack of several members, and there is a risk of falling due to external factors such as earthquakes. In this experiment, we used a steel lantern in Anamizu-cho, Ishikawa Prefecture as a model, and performed tilting and vibration experiments. In the tilt test, it was found that a fall would occur at 0.12 G to 0.16 G, and it was confirmed that the fall occurred at the same acceleration as the calculation result, and thee experimental result was evaluated. The vibration experiment showed a maximum displacement of 3.43 mm in the Kasa of 2.9 Hz.

7. 縮小模型を用いた祇園祭の山鉾の構造特性に関する基礎的研究－真木の振動性状について－

Basic Study on Structural Characteristics of Yamaboko in Gion Festival Using a Small Scale Model about Vibrational Properties of Shingi

野村直樹・中嶋裕典

Yamaboko of the-Gion-Festival in Kyoto has the wheels, parade the city. It has a large aspect ratio and an unstable structure, but has been able to travel safely in recent years. Looking back on the past, an accident has occurred when a member called Shingi, which rises in the center, is broken. There is a need to prevent such accidents in Kyoto where many tourists visit, for the succession of Kyoto-culture. Therefore, it is an object to confirm the vibration characteristics of Yamaboko using a small scale model. From the experimental results, it was found that the bending moment is concentrated at the position where Kamurobashira attached, and the swaying of Shingi is suppressed by using several elements.

8. 古代の重層鐘楼の構造特性に関する実験的研究

Experimental Study on the Structural Properties of the Ancient Two-layer Bell Tower

中嶋裕典・野村直樹・田口仙市郎

It is widely known that five-storied pagoda have not been damaged by large earthquakes since ancient times, but the Bell-Tower is also one of the traditional temple buildings that are less damaged by earthquakes. The Bell-Tower is generally open and multi-tiered in order to resonate the sound of the bells far, and because heavy bells are suspended from the roof truss, the building's center of gravity tends to be high, combined with the large roof weight. In this study, the reduced model is to be studied experimentally in order to examine the structural characteristics of the Toin-Bell-Tower, targeting the National Treasure Horyuji-Temple Toin-Bell-Tower, which was built in 1163.

9. 壁土の強度試験法の開発と壁土の強度特性

Test Procedure of Mud Plaster and Strength Characteristics of Mud Plaster

山田耕司・中治弘行・後藤正美・鈴木祥之

It is necessary to develop a rapid drying method of mud plaster test pieces in order to

investigate strength characteristics of mud plasters. In this paper, a rapid dehydration method of mud plaster test pieces and a simplified compression test method of dried mud plaster test pieces are reported. Nineteen kinds of mud plasters are tested by the above method, and their strength characteristics are also reported. Results are as follows: 1) the proposed methods are practical. 2) The maximum tension stress is proportional to the maximum compression stress.

10.　与謝野町旧加悦町役場の基礎と外壁の実地調査と材料試験

Field Survey and Material Experiment on Foundations and Exterior Walls of the Former Kaya Town Hall in Yosano-chou

須田達・浦憲親・鈴木祥之

The former Kaya town hall in Yosano-cho was built in 1929. Seismic reinforcement and repairs are necessary to make use of this building in the future. Therefore, to clarify the structural and seismic performances, a structural detailed survey of the building was conducted. In this study, the structural characteristics and material strength obtained from experiments and surveys on the external wall and foundation are reported.

11.　補強繊維の壁土強度への影響

Influence of Reinforcing Fiber to Strength of Mud Plasters

山田耕司

In this paper, the influence of reinforcing fiber to the strength of mud plaster is discussed. The kinds of reinforcing fiber are straw, Japanese sliding-screen paper, lavatory paper, Japanese writing paper, newspaper, hemp string, and cotton yarn. Results are as follows: l) string is better material to reinforce mud plaster than paper. 2) There is the best combination of the string length and mix rate.

12.　伝統木造仕口の回転めり込み反力分布についての考察

Consideration on the Reaction Distribution of Rotational Embedment in Traditional Wooden Joint

棚橋秀光・鈴木祥之

Some formulations are proposed in order to formulate the rotational resistance of traditional wooden joints, which 1s significant for the evaluation of the restoring force characteristics of traditional timber buildings. The keypoint is the reaction distribution of the outside area of the loading block. Another keypoint is where to determine the loading point of reactions of the outside area. Some researchers set the loading point of reactions at the edge of loading block for the reaction of the outside area. The authors discuss the proposed models and the distributions of embedment reactions of rotational embedment and suggest some problems.

13.　束で分割された土塗り垂れ壁付大断面木造軸組の耐震性能評価実験

Experiment on Seismic Capacity of Large-Section Timber Frame with Hanging Mud-Wall divided by Vertical Timber Members

中治弘行・大串来華

Full-scale test of a large-section timber frame with hanging mud-wall divided by vertical members was carried out. The specimen was planned based on a house in Tottori prefecture. Section size of columns is 210 mm square which is larger than that of usual wooden houses. Maximum restoring force is 15.2 kN at the deformation angle 1/20 rad and the decline in restoring force in larger deformation is not significant. Estimated restoring force characteristics for structural design agrees well to the test result. Proposed design method for traditional timber structures is also practical for large-section timber framework.

14.　ネパール・パタンの歴史的組積造建物の漸増動的解析とノンエンジニアド補強効果の検証

Incremental Dynamic Analysis of A Historic Masonry Building in Patan, Nepal and Investigation of Effectiveness of Non-Engineered Retrofitting Techniques

古川愛子・花房陸斗・清野純史・R.R. Parajuli・士岐憲三

Prior to 2015 Gorkha earthquake, authors conducted detailed survey of a two-story historic

masonry building in Patan, Nepal. This building only experienced several cracks inside the building during Gorkha earthquake. This study conducted incremental dynamic analysis of the building by inputting scaled ground motions to understand the building safety at different input of ground motion leveles. This study also investigated the effectiveness of non-engineered retrofitting, such as ring-beams and supporting bars. It was found that ring-beams reduces maximum and residual displacement in both horizontal directions, but supporting bars only reduces displacement in their supporting direction.

15. 伝統的空間における震災備蓄計画に関する研究 ー世界遺産カトマンズ盆地・パタン地区を対象としてー

Research on Stockpiling Plan in Traditional Space at the Time of Earthquake-In the Case of Patan, Kathmandu Valley as World Heritage Site-

小川和馬・大窪健之・サキャラタ・金度源

On April 25, 2015, the Gorkha earthquake occurred in Nepal and hit Patan district designated as World Cultural Heritage. The former research clarified that more than 1,000 people used historic courtyard spaces as evacuation sites. The traditional community of residents played an important part in the historic space, but there were some problems. This research clarifies the specific stockpile items required during the evacuation life by interview research to the residents. For improving evacuation life, the needs of collaboration between traditional space of Nagbahal district and Golden Temple, and collaboration between surrounded local residents and local stores were revealed.

16. 京都市正親学区の事前復興計画を想定した建築物の類型化及び延焼シミュレーションと防火連担長屋の提案

Typology of Buildings Assuming Pre-reconstruction Plan of Seishin Kyoto City School District, its Evaluation and Proposal of Fire Prevention Collaboration Tenement House

小玉寧人・平尾和洋

This paper covers Kyoto-Kamigyo-ku where there are many traditional buildings with a large estimated damage scale due to the earthquake, quantitative grasping and typing of the appearance elements of the building towards the preliminary recovery plan, type examination of reconstruction level by another impression evaluation, and proposal of a reconstruction housing model with certain disaster prevention capability.

17. 松本城と周辺地域の防災拠点としての能力評価に関する研究 ー帰宅困難者への支援を想定して—

A Study of Current Capacity to Support the Earthquake Evacuees Including Matsumoto Castle Tourists -To Support the Earthquake Refugees from Matsumoto Castle Tourism-

大窪健之・植本幹大・金度源

Disaster evacuation plan needs to consider the safety of heritage tourist. Matsumoto Castle which is the representing heritage site of Matsumoto city, Nagano, has evacuation procedures for castle tower, but the tourists will need the evacuation support until safety return to their home after catastrophic disaster such as earthquake is occurred. This paper aims to evaluate the capacity of evacuation support which considers not only local residents but also tourists in the event of a disaster, with the amount of items such as food, drinking water, toilets, accommodation area of evacuees, tents, plastic sheets, communication equipment and pharmaceuticals. Through this study, food shortages were revealed at all of evacuation centers. In addition, it was found that there was not enough water for all evacuees when they evacuated in Honmaru of Matsumoto Castle.

18. ホース延長が可能な改良型市民消火栓の配置計画に関する基礎研究 ～模擬初期消火活動の実証実験と京都市清水周辺地域での改善配置計画を目指して～

A Study of Citizen Hydrants Planning with the User Experimental Result of Extra Connectable Type Citizen Hydrants on Kiyomizu District in Kyoto

金度源・大和田智彦・大窪健之・林倫子

The Important Preservation District of Historic Buildings in Japan, are difficult to stop the

spread of fire on continued wooden structures, so initial fire extinguishing by residents is indispensable on the emergency situation. Kiyomizu area in Kyoto which is the representative historical city in Japan has the Citizen-hydrant which is easy to be operated by local community. This research improved the current Citizen-hydrant for available to extend the reachable range with the extra hoses' connection. It defined the maximum extent range of Citizen-hydrant with the result of experimental testing by quantify research. This research clarifies effective time of Citizen-hydrant extinguishing and proposes a plan with the expanded range of Citizen-hydrant to Kiyomizu area.

19. 丸亀城の天守および石垣の見え方に関する定量的分析
ー景観的被害を加味した文化財防災の検討に向けてー

Quantitative Analysis on the Visibility of the Castle Tower and Stone Wall of Marugame Castle: Basic Study for Disaster Prevention of Cultural Property in Consideration of Landscape Damage

藤井健史・藤居芙美佳

Loss of cultural property also means loss of historical and cultural landscape. When considering cultural property disaster prevention, it is necessary to take into account the landscape effect. This research is a basic research to examine measures against disasters and maintenance management taking into consideration landscape damage caused by the loss of cultural property. We will develop a method to quantitatively analyze the visibility of the castle from the surrounding streets, targeting Marugame Castle where the stone wall was damaged by heavy rain and a typhoon. Then, this method is applied to the surrounding cities of Marugame Castle before the disaster to analyze the characteristics of the castle landscape in detail.

20. CVM を用いた金沢市内の文化遺産の防災対策に対する支払意思額に関する分析

An Analysis of the Willil1gness to Pay for Cultural Heritage Disaster Mitigation in Kanazawa City Using Contingent Valuation Method

小川圭一・谷本雄太郎

It is necessary to make clear the necessity of cultural heritage disaster mitigation in disaster mitigation planning in historical cities, to make social consensus to protect urban cultural heritage from natural disasters. For this purpose, it is necessary to show the necessity of cultural heritage disaster mitigation in historical cities objectively and quantitatively. In this paper, willingness to pay for cultural heritage disaster mitigation in Kanazawa City is surveyed by using contingent valuation method. Furthermore, the relationship between willingness to pay and contents of information for respondents in questionnaire survey is analyzed.

21. 北海道奥尻島における津波と居住の歴史

薬袋奈美子・岡井有佳

This paper shows land use history and Tsunami disaster area in Aonae, Okushiri island. It was an unexpected disaster, but it was not the first occasion during the long history of human residence in Okushiri. In Jomon period, people seemed to have lived on small hills, even they heavily depended on sea creatures for their diet. Ainu people stayed on the island temporally for fishing, and so as early Japanese occupants in the 19th century. The population rapidly grew in the early 20th century, and residential area, that has been developed during this expanding period was heavily damaged. ln our aging and diminishing society, we need to re-evaluate traditional living area for safety and for efficient land use.

22. 北海道南西沖地震における奥尻島青苗言代主神社例祭の復興過程をめぐる考察
ー GIS による祭礼ルートと時間の変化が意味するものー

Restoration of the Annual Festival at Kotoshironushi-jinja Shrine in Aonae District on Okushiri Island after the 1993 Earthquake and Tsunami

輝塚咲衣・佐々木理子・稲垣森太・手塚薫

The annual festival at Kotoshironushi-jinja Shrine in Aonae District on Okushiri Island has

been restored after the 1993 southwest-off Hokkaido earthquake and tsunami. Taking place after the reconstruction of the local community, this type of reconstruction can be classified as a type of “gradual restoration” of folk entertainment. This is opposed to “simultaneous restoration” in which folk entertainment is restored simultaneously with infrastructure, as has generally been the case with the Great East Japan Earthquake in 2011. It still remains unknown whether simultaneous restoration of folk entertainment is a long-range sustainable method. Based on the results of interviews and GIS processing, this study describes the relationship between changes in the shrine festival and socio-structural changes in the local community.

23. 近年の新聞報道からみた全国の社寺における盗難および放火・不審火被害の時期的・地域的傾向

Temporal and Geographical Characteristics of Theft and Arson Incidences Including Suspected Cases at Temples and Shrines in Entire Japan Based on Recent Newspaper Article

谷崎友紀・中谷友樹

ln this study, we examine the temporal and geographical characteristics of theft and arson occurrences targeting cultural properties at shrines and temples from 1986 to 2018 using the article databases of the two major newspapers in Japan, Asahi Shimbun and the Yomiuri Shimbun. As a result, the number of article reports increased in 2004, indicating that this year will be a milestone for man-made disasters at shrines and temples, possibly caused by several incidents of illegal international outflows of stolen properties that attracted public attention. Regarding the geographical aspects, the locational coefficient of theft was higher in non-urban areas adjacent to the metropolitan areas. In these areas, tenantless temples having Buddhist statues that were not designated as cultural properties were targeted. The locational coefficients of arson tended to increase in more urbanized areas that were associated with higher anonymity and easier access.

24. 伝統的まちなみ地区を対象とした安全な避難経路導出に関する研究

A Study on the Evacuation Routes Derivation for Safe and Sure Guidance in the Historical Landscape Area

吉村朋矩・藤田和秀・西川隼人・三寺潤・池田岳史

In this study, we analyzed for simulation of street-blockage affected by disasters. ln addition, we make a suggestion to the evacuation guidance method based on simulation results. We want to clarify safety on the evacuation route in local small city. From the above, we found that l) obtained the street which are high possibly blockage, 2) design of the sign for evacuation guidance, 3) sign plans and guidance of a person. Result of the study will make for consider and construct at the evacuate information sign system in areas with similar situations. ln the future, we will discuss and examine the desirable situation of evacuation guidance with local residents and administrator.

25. 『歴史地名辞書データ』を用いた集落地名の地域性の可視化

Visualizing Regional Characteristics of Community Names by Using “Historical Gazetteer”

花岡和聖

Japanese place names are important cultural and historical assets for communities however, they are at risk for disappearance because of the current population decline and livelihood change. Therefore, the purpose of this paper is to analyze geographical characteristics of community names printed on old 1:50,000 topographic maps across Japan by using historical gazetteer and geographical information system. The analysis focused on Chinese characters used in community names and the relationships with topographical characteristics. In addition, regional characteristics of community names were visualized based on results of correspondence analysis. Our results indicate that Japanese place names of communities might be named after topographic features where they were located but there are regional variations in Chinese characters used for community names by reflecting regional cultural differences when they were named.

26. 地域コミュニティにおける水害伝承の実態—滋賀県甲賀市信楽町勅旨区を対象として—

The Oral Tradition in the Local Community about the Past Flood Disaster: A Case Study of Shiragakicho Chokushi, Koga City, Shiga Prefecture

林倫子・昌子知正・大窪健之・金度源

Oral tradition that is obtained from past disaster experiences is useful for revitalizing community-based activities about disaster mitigation. In this study, interviews and questionnaire researches targeting residents of Shigarakicho Chokushi were conducted to clarify the actual condition of oral tradition about the flood disaster. As a result, this study clarified that the disaster oral tradition doesn't enhance the disaster consciousness of the disaster inexperienced people. And few of them, who have heard of the oral tradition, hand it down to the other residents.

27. 豪雪災害における民生委員の情報取得の実態—高島市を事例として—

The Real Situation of Information Gathering by Community Welfare Committees in Heavy Snowfall Condition -A Case Study of Takashima City-

小野聡・木村道徳・清水泰有

This paper contributes to discuss of the Community Welfare Committees' roles in climate disaster conditions. The Community Welfare Committees (CWCs) are the community supporters appointed by municipalities, and they have contributed keeping community residents well-beings. On the other hand, many Japanese local city is encountering aging society and it is said that the community governance system including CWC should be reconsidered. This paper attempts to analyze the structure between the CWC's attributes and the real situation of information gathering and its sufficiency in real disaster condition from the case study of the heavy snowfall in Takashima city, Shiga prefecture.

【報告】

1. 土塗り壁の耐力を用いた土塗り小壁の骨格曲線の再評価

Re-evaluation for Skeleton Curve of Strip-Shaped Horizontal Mud-Walls by Full-height Mud-Walls

山田耕司・中治弘行・長瀬正・鈴木祥之

We propose the estimating method of the skeleton curve for strip-shaped mud-plaster-walls in a wooden frame using the skeleton curve of full-height mud-plaster-wall tests. Two fracture mechanisms of mud-plaster-wall are in consideration: the compression failure and the shear failure. The effect of horizontal beams known as a nuki (penetrating tie beam) to the compression failure is also in consideration. This method is checked by the comparison with the full scale tests of 5 different strip-shaped mud-walls in a wooden frame, is confirmed as an appropriate method.

2. 京都市西陣地区の事前復興計画を想定した街並みエレメント選定及びそれを用いた街並み構成法の比較

Selection of Cityscape Element Assuming Preliminary Reconstruction Plan in Nishijin Area of Kyoto and Evaluation of Cityscape Constitution Using the Same

遠藤直久・西村祐香・平尾和洋

This paper covers Kyoto-Kamigyo-ku where there are many traditional buildings with a large estimated damage scale due to the earthquake, quantitative grasping and typing of the appearance elements of the building towards the preliminary recovery plan, type examination of reconstruction level by another impression evaluation, and comparison of a method for quantitative grasping and typing of the appearance elements.

3. Deep Learning を用いた AI の歴史都市分野への適用可能性

Applicability to the Historical City Sector with AI Using Deep Learning

大野耕太郎・山田悟史

At present, artificial intelligence (Al) based on Deep Learning is attracting attention in various fields, and world-renowned research institutes and the world's leading information companies are focusing on R & D from a large source Attempts to implement society have

also begun, and although there are aspects of excessive expectations, the social interest is extremely high not only for researchers, but also for the possibility of changing our lives and work areas. Taking one of the advantages of Deep Learning as an example of image classification., there is a point that the characteristic amount itself can be learned so as to approach a previously prepared classification without a person specifying the characteristic amount representing the image. The results that exceeded the existing results were reported and produced a big development. However, it can be said that the application to the historical city area is still underdeveloped. So, in this research, we try the application possibility to the historical city field of AI technology using such Deep Learning.

4. 『大和川付け替え反対訴状添付絵図』に見る旧大和川水系と付け替え反対理由

"The Map Attached To The Petition Against The Project To Re-route The Yamato River" Shows The Former Yamato River System and The Reason Against The Project

長尾武

This paper is concerned with the project to re-route the Yamato River. I referred to two maps which were produced by the villagers living along the proposed new river. In this research, I firstly showed the former Yamato River system. Next, I explained the reason why the villagers living along the proposed new river opposed the project. Not only, they were anxious of losing their lands to the riverbed, but also, the planned new river was against the topography. According to the ground level, the south was higher than the north. Rivers used to flow from the south to the north. However, the planned new river would be re-routed westward. If the project would be curried out, it might cause the flood in south areas from the new dike, and the drought in north areas. It might cause serious disasters affecting people's lives.

5. 歴史地区における津波避難場所への誘導とアクセス性に関する研究 ―高知県室戸市・吉良川伝統的建造物群保存地区を対象として―

A Study on Availability as a Tsunami Evacuation Site and Evacuation Route at the Time of Earthquake, Conserved Areas of Important Traditional Buildings in Kiragawa Town, Muroto City, Kochi Prefecture

櫻井琢人・大窪健之・金度源

There are a lot of important traditional buildings in Kiragawa. Muroto City is known as one of the country's most famous historical disasters. There are several problems. Because we prioritize the construction of harmonious buildings in historical townscapes, it is not easy to conduct disaster prevention through hard maintenance, making use of physical exterior deformation. To prepare for disasters in the future, we prepared a regional disaster prevention plan and further created a survey report on reviewing preservation measures for the Kiragawa. However, although there are descriptions about evacuation facilities in the items, proposals indicating concrete evacuation routes are not described. In the Kiragawa district, evacuation drills are conducted for each town, but should be planned based on the distance from the evacuation site.

6. 熊野参詣道伊勢路「横垣峠」を対象とした観光防災マップの作製

Mapping for Sightseeing and Disaster Prevention Intended for Yokogaki-toge Pass, Iseji Kumano Pilgrimage Route

石田優子・今村聡・古根川竜夫・深川良一・中谷友樹

Cultural properties have multiple roles as a common property of mankind, educational material for learning the culture, tourism resources, and so on. For sustainable use of cultural properties, it needs not only preservation but also disaster prevention and consolidation of infrastructure for tourists. Many books, pamphlets, and internet sites which provide information to tourists who visit the world heritage "Sacred Sites and Pilgrimage Routes in Kii Mountain Range" do not provide information on risk may occur during sightseeing. The authors construct a new information site including various categories for tourists using interactive "Story Map" based on arcgis online for safe and fruitful tourism.

7. Study on Space Renewal of Traditional Streets and Lanes in Southwest China —Taking Luodai Ancient Town in Chengdu, Sichuan Province as the Example

史斌・費月

Street space is an important activity place for human settlements. The accumulation of time and culture gives the street rich humanistic spirit and historical value. Meanwhile, it also puts forward new demands for sustainable vitality of traditional streets. Through the spot investigation, we found some problems in the streets and lanes of Luodai ancient town, such as deficiency of scale, inconvenient traffic and poor communication, which are concentrated in the space under eaves. More than that these problems are also increasingly obvious because of the rapid development of China's tourism industry.