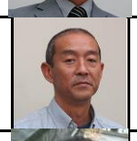
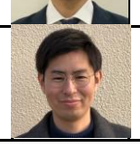
Department of Civil and Environmental Engineering
Faculty

Position	Name		E-mail	Research Subject
Infrastructure Field				
Professor	Jun MURAKOSHI		murakos@tmu.ac.jp	Bridgel Engineering, Steel/Composite/Hybrid Structure, Fatigue, Buckling Stability, Long-Term Durability and Maintenance
Professor	Hiroyuki ONEYAMA		oneyama@tmu.ac.jp	Traffic Engineering, Transportation Planning, Transportation Environmental Analysis, Traffic Simulation, Transportation Network Analysis
Associate Professor	Tomoki ISHIKURA		iskr@tmu.ac.jp	Infrastructure Policy, National and Regional Planning, Macroeconomic Dynamics, Spatial Economics, Computable General Equilibrium Analysis
Associate Professor	Hitoshi NAKAMURA		hnaka@tmu.ac.jp	Structural Engineering, Bridge Engineering, Structural Characteristics of Cable-Supported Bridges, Application of Advanced Composite Materials for Infrastructures, Repair and Strengthening of Existing Structures
Assistant Professor	Yusuke KISHI		kishi@tmu.ac.jp	Structural Engineering, Seismic Engineering, Disaster Mitigation Engineering, Human Behavioural Science
Assistant Professor	Masami YANAGIHARA		yanagihara@tmu.ac.jp	Traffic Flow Analysis, Driving Behavior Modeling, Traffic Simulation, Traffic Psychology, Information Processing
Environmental System Field				
Professor	Yoshiyuki IMAMURA		imamura@tmu.ac.jp	Water Policy, Hydrology, Disaster Risk Reduction, Flood Risk Management
Professor	Katsuhide YOKOYAMA		k-yoko@tmu.ac.jp	Environmental Hydraulics, Sediment Transport and Water Environment in a Reservoir, a River, and an Estuary
Associate Professor	Yasuhiro ARAI		y-arai@tmu.ac.jp	Water Supply Engineering, Environmental Engineering, Municipal Solid Waste Management Planning, Optimization Model
Associate Professor	Hiroshi SAKAI		h_sakai@tmu.ac.jp	Water and Wastewater Engineering, Water Environment Management, Water Quality Management
Associate Professor	Tetsuya SHINTANI		shintani@tmu.ac.jp	Coastal and Ocean Engineering, Stratified Flow, Computational Fluid Dynamics
Assistant Professor	Hideo AMAGUCHI		amaguchi@tmu.ac.jp	Hydrology, River Engineering
Assistant Professor	Gubash Azhikodan		gubash@tmu.ac.jp	Hydraulic Engineering, Estuarine hydro- and morphodynamics, Cohesive sediment transport, Phytoplankton dynamics
Safety and Disaster Prevention Field				
Professor	Nobuharu ISAGO		nisago@tmu.ac.jp	Tunnel Engineering, Underground Space Engineering, Design and Maintenance Methodology of Tunnel Structure and Facilities, Stability of Ground in Tunneling, Load-bearing Capacity Evaluation of Support Members
Professor	Yoshiya ODA		oda@tmu.ac.jp	Exploration Geophysics, Engineering Seismology, Earthquake and Volcano Disaster Prevention
Associate Professor	Kentaro OHNO		ohno@tmu.ac.jp	Concrete Engineering, Nondestructive Evaluation for Concrete Structures, Elastic wave techniques for Concrete
Associate Professor	Atsushi UENO		eagle@tmu.ac.jp	Concrete Engineering and Material Science, Environmental Consideration of Concrete and Concrete Making Materials, Evaluation of Properites of Concrete Making Materials
Associate Professor	Mitsutoshi YOSHIMINE		yoshimine-mitsutoshi@tmu.ac.jp	Soil Mechanics, Laboratory and Field Tests of Geomaterials, Soil liquefaction, Stability of Slopes and Embankments, Soil Dynamics, Transportation and Sedimentation of Debris
Assistant Professor	Kosuke KAWATA		k_kawata@tmu.ac.jp	Evaluation of deformation performance and mechanical behavior of a tunnel during external force Sophistication of tunnel design, construction and maintenance technology
Assistant Professor	Tomohisa KAMADA		tkamada@tmu.ac.jp	Concrete Engineering, Durability and Maintenance of RC Structures, Pore Structure and Mass Transfer in Hardened Cement

(As of April 2022)

IMPORTANT LINKS :

The department of Civil and Environmental Engineering	http://www.ues.tmu.ac.jp/civil/english/index.html
Graduate School and Faculty of Urban Environmental Sciences	http://www.ues.tmu.ac.jp/en/index.html
Tokyo Metropolitan University	http://www.tmu.ac.jp/english/index.html

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences
【Name】: Nobuharu ISAGO
【Position】: Professor
【Research Topic】: Tunnel Engineering, Urban Space Engineering, Rock Mechanics
【Outline of research achievement】
The research and investigation regarding road tunnel were performed in the following theme:
1) Mechanical behavior of support structure of mountain tunnel
2) Auxiliary method of mountain tunnel
3) Characteristics of structure of shield tunnel
4) Countermeasure against earthquake of road tunnel
5) Deformation mechanism of tunnel
Various results regarding planning, design, construction and rehabilitation of tunnel were acquired.
【Presentations】
1) Experimental study of influence on the reinforcement effect of tunnel structure by invert shape: T. Natsume, R. Nakazato, K. Kawata, N. Isago, T. Otsu, N. Mikami, A. Kusaka and Y. Koizumi, Proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023.9
2) Analytical study of influence on the reinforcement effect of tunnel structure by invert shape: R. Nakazato, T. Natsume, K. Kawata, N. Isago, T. Otsu, N. Mikami, A. Kusaka and Y. Koizumi, Proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023.9
3) Experiment evaluating mechanical performance of new invert shape for the reduction of excavated muck: Y. Koizumi, A. Kusaka, T. Natsume, R. Nakazato, K. Kawata, N. Isago, T. Otsu, N. Mikami and S. Tanabe, Proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023.9
4) Analytical consideration of behavior during earthquake at portal of in-service mountain tunnel: A. Matsuoka, M. Fukushima, K. Kawata, N. Isago, H. Kitamura, K. Nakajima and S. Kaise, Proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023.9
5) Experimental consideration of seismic effect of countermeasure for mountain tunnel: M. Fukushima, A. Matsuoka, K. Kawata, N. Isago and A. Kusaka, Proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023.9
6) Consideration on mechanical behavior of vertical reinforcement at slope by numerical analysis: T. Amemiya, Y. Tatebayashi, K. Kawata, N. Isago, K. Nishimura and H. Shiroma, Proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023.9
7) Experimental consideration of applicability for construction by mechanical behavior of vertical reinforcement: Y. Tatebayashi, T. Amemiya, K. Kawata, N. Isago, K. Nishimura and H. Shiroma, Proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023.9

8) Fundamental study of mechanical behavior of water-proof sheet for mountain tunnel: K. Sekine, K. Kawata and N. Isago, Proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023.9

9) Fundamental study of construction joint on mechanical characteristics of tunnel under loading condition: R. Okawa, R. Nakazato, T. Natsume, K. Kawata and N. Isago, Proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023.9

10) Reproduction methodology of displacement of mountain tunnel by Voigt model- Proposal of least square method (direct method): M. Uda, Y. Uemura, T. Funahashi, Y. Nashimoto and N. Isago, Proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023.9

11) Experimental consideration of the joint angle of permanent lining: S. Nagata, I. Otsuka, W. Zhang, S. Naomachi and N. Isago, Proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023.9

12) Experimental consideration of the effect of invert shape on tunnel structure reinforcement: M. Yamada, T. Natsume, K. Kawata, R. Nakazato, N. Isago and T. Otsu, Proceedings of the 35th Japan Road Congress, 2023.11

13) Analytical consideration of the effect of invert shape on tunnel structure reinforcement: R. Nakazato, T. Natsume, K. Kawata, N. Isago, Y. Koizumi and A. Kusaka, Proceedings of the 35th Japan Road Congress, 2023.11

14) Consideration of effect of seismic countermeasure for mountain tunnel by model experiment: M. Fukushima, K. Kawata, N. Isago and A. Kusaka, Proceedings of the 35th Japan Road Congress, 2023.11

15) Experimental consideration of effect on ground behavior by width of vertical reinforcement: Y. Tatebayashi, T. Amemiya, N. Isago and K. Kawata, Proceedings of the 35th Japan Road Congress, 2023.11

16) Analytical consideration of mechanical behavior of vertical reinforcement under slope: N. Tamura, T. Amemiya, K. Kawata and N. Isago, Proceedings of the 35th Japan Road Congress, 2023.11

17) Fundamental consideration of mechanical behavior of water-proof sheet for mountain tunnel: K. Sekine, N. Isago, K. Kawata, K. Ougihata and Y. Hosoda, Proceedings of the 35th Japan Road Congress, 2023.11

【Publications】

1) Practical countermeasures for road tunnels against collapse of lining caused by earthquake: A. Kusaka, N. Isago & K. Kawata, Proceedings of the ITA-AITES World Tunnel Congress 2023 (WTC 2023), pp.108-116, 2023.5

2) Influence of construction joints on the mechanical behavior of linings in mountain tunnels acted on by external forces; K. Kawata, R. Okawa, R. Nakazato, T. Natsume, N. Isago & A. Fujii, Proceedings of the ITA-AITES World Tunnel Congress 2023 (WTC 2023), pp.646-654, 2023.5

3) Mechanical behavior of invert structure with new geometries for simplified construction: R. Nakazato, T. Natsume, K. Kawata, N. Isago, A. Kusaka, Y. Koizumi & T. Otsu, Proceedings of the ITA-AITES World Tunnel Congress 2023 (WTC 2023), pp.761-768, 2023.5
4) Estimation of permanent lining stress of road tunnel by ultrasonic velocity: T. Ishimura, A. Kusaka & N. Isago, Proceedings of the ITA-AITES World Tunnel Congress 2023 (WTC 2023), pp.3127-3135, 2023.5
5) Characteristics of reinforcement for earthquake resistance in mountain tunnel: K. Kawata, M. Fukushima, A. Matsuoka, A. Kusaka and N. Isago, Proc. of the 15th International ISRM Congress 2023 & 72nd Geomechanics Colloquium, pp.1090-1095, 2023.10
6) Consideration of the Influence of Ground Conditions on the Seismic Behavior of Portal of Existing Mountain Tunnel: A. Matsuoka, M. Fukushima, K. Kawata, H. Kitamura, K. Maegawa and N. Isago, Proceedings of the 16th Japan Earthquake Engineering Symposium, proceedings, 2023.11
7) Model experiments on load bearing performance and failure process of proposed invert structures: Y. Koizumi, A. Kusaka, N. Isago, K. Kawata, T. Otsu and M. Mikami, Proceedings of the 33rd Tunnel Engineering, JSCE, I-9, 2023.11
8) Study on management method of concrete joint angle of tunnel lining: S. Nagata, I. Otsuka, W. Zhang, S. Naomachi, N. Isago, K. Kawata, Proceedings of the 33rd Tunnel Engineering, JSCE, I-11, 2023.11
9) A countermeasure against earthquake for road tunnels incorporating fail-safe function: A. Kusaka, H. Kikuchi, K. Kawata and N. Isago, Proceedings of the 50th Rock mechanics symposium, JSCE, No.38, 2024.1
10) Prediction of future displacement in mountain tunnels where tertiary creep has occurred: M. Uda, Y. Uemura, T. Funahashi, Y. Nashimoto and N.Isago, Proceedings of the 50th Rock mechanics symposium, JSCE, No.43, 2024.1
11) Study on correlation between deformation and geological characteristics in mountain tunnel: T. Natsume, R. Nakazato, K. Kawata, N. Isago, T. Otsu and A. Kusaka, Proceedings of the 50th Rock mechanics symposium, JSCE, No.44, 2024.1
12) Required performance and a study on the lining cutting type renewal method in tunnel renewal work: M. Uda, K. Nishiwaki, A. Kusaka, N. Isago and T. Sugita, Journal of practical research on infrastructure and maintenance, Vol.3, No.1, 2024.2
13) Consideration on Feasibility of New Invert Shapes for Work-saving Construction: T. Natsume, R. Nakazato, K. Kawata, N. Isago, A. Kusaka, Y. Koizumi and T. Otsu, Proceedings of Japan Society of Civil Engineers, Vol.79, No.19, ID:23-19003, 2024.3

【External Funding Sources】

・Two collaborative research with 3 organization, Research Grant (Japan Tunneling Association), Specified Donation from 8 organizations

・Grant-in-Aid for Scientific Research (C) Evaluation of collapse risk for tunnel structure by simple estimation of stress occurrence situation (Principal Investigator, 2023-2025)

【Social Contributions (Excluding confidential activities)】

Member of Tunnel Engineering Committee, Japan Road Association
Member of Road Tunnel Design and Construction Subcommittee, Japan Road Association
Chairman of Road Tunnel Facilities Subcommittee, Japan Road Association
Chairman of Internal Board of TC 4.4 Road tunnel operation, Japan Road Association
Member of TC 4.4 Road tunnel operation, PIARC (World Road Association)
Member of Rock Mechanics Committee, Japan Society of Civil Engineers
Member of Tunnel Engineering Committee, Japan Society of Civil Engineers
Member of International Technical Committee, Japan Tunneling Association
Chairman of ITA Subcommittee, Japan Tunneling Association
Member of Working Group 21 Life cycle asset management, International Tunneling Association

【Awards】

None

【Other Activities】

1) PIARC TC 4.4 'Tunnel' activity report: N.Isago, Magazine Road, No.991, pp.50-53, Japan Road Association, 2023.10
2) Britannica International Yearbook, Civil engineering tunnel, 2023.5
3) The 49th ITA General Assembly and World Tunnel Congress (Athens) Report, Tunnels and Underground (shared writing), Vol.54, No.10, pp.69-80, 2023.10

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences

【Name】: Yoshiyuki Imamura

【Position】: Professor

【Research Topic】: Flood risk management, River basin management, Water policy, Disaster risk reduction

【Outline of research achievement】

1) Joint research with the Tokyo Metropolitan Government and the Ministry of Land, Infrastructure, Transport and Tourism on flood risk management and river basin management.
2) Four research papers accepted/published in journals such as Journal Water, and 14 oral presentations at academic international or domestic conferences.
3) Received the Academic Conference Paper Award (co-authored).

【Presentations】

1) A Review of Integrated Urban Flood Risk and Future Urban Resilience in Phnom Penh Capital City of Cambodia, Monin Nong, Toru Konishi, Yoshiyuki Imamura, Hideo Amaguchi, The 51st JSCE Kanto Branch Technical Research Presentation Meeting, II-89, 2024.3.

2) Flood Inundation Analysis Using HEC-RAS in the Watershed Area around Metro Manila, Ryuhei Sato, Yoshiyuki Imamura, Hideo Amaguchi, Judy Marie Dulawan, The 51st JSCE Kanto Branch Technical Research Presentation Meeting, II-88, 2024.3.

3) Construction of SWMM Data Using GIS Geospatial Data for the Upper Kanda River Basin, Ryo Murakami, Hideo Amaguchi, and Yoshiyuki Imamura, 51st JSCE Kanto Branch Technical Research Presentation Meeting, II-87, 2024.3.

4) On the Estimation Method of Microplastics in Rivers: Problems with Regression Analysis and Modeling, Shunta Onuki, Toru Konishi, Yoshiyuki Imamura, Hideo Amaguchi, The 51st JSCE Kanto Branch Technical Research Presentation Meeting, II-72, 2024.3.

5) Analysis on Conversion in Increase in Urban Area of Phnom Penh Resulting from 20 Years's Rapid Urbanization and the Future Projections, Takuto Kumagae, Monin Nong, Toru Konishi, Yoshiyuki Imamura, Hideo Amaguchi, The 51st JSCE Kanto-branch Technical Research Presentation Meeting, II-64, 2024.3.

6) Flood Simulation and SNS: A Study on the Inundation Disaster House Estimation Method Using Images of the August 2019 Saga Downpour, Daichi Chuta, Keiichi Kajiwara, Yoshiyuki Imamura, Hideo Amaguchi, The 51st JSCE Kanto-branch Technical Research Presentation Meeting, II-65, 2024.3.

7) Bidirectional Long Short-Term Memory (Bilstm) Rainfall-Runoff Prediction with Sliding Window Analysis for an Urban Watershed, Cabila Subramaniyam, Yoshiyuki IMAMURA, Hideo AMAGUCHI, The 51st JSCE Kanto Branch Technical Research Presentation Meeting, II-63, 2024.3.

8) Addressing Data Gaps in Disaster Reports for Enhanced Flood Risk Management: Case Study in Metro Manila, Philippines, Judy Marie T. Dulawan, Miho Ohara, Yoshiyuki Imamura, Hideo Amaguchi, The 51st JSCE Kanto Branch Technical Research Presentation Meeting, II-56, 2024.3.
9) Study on Efficient Operation of Regulating Reservoir Gates Using Deep Reinforcement Learning for Multiple Small and Medium-Sized Rivers in Urban Areas, Yuki Okuda, Yoshihiro Imamura, Hideo Amaguchi, Shintaro Fujitsuka, The 51st JSCE Kanto Branch Technical Research Presentation Meeting, II-57, 2024.3.
10) Water Level Estimation by Segmentation of Images from a River Monitoring Camera at the Arakawa-Oashi Bridge, Riku Nogi, Hideo Amaguchi, Yoshiyuki Imamura, Tadakatsu Takasaki, 51st JSCE Kanto Branch Technical Research Presentation Meeting, II-55, 2024.3.
11) Construction of a database of hydraulic characteristics using HEC-RAS for providing real-time river information, Kounosuke Mizuno, Hideo Amaguchi, Yoshiyuki Imamura, Tadakatsu Takasaki, 51st JSCE Kanto Branch Technical Research Presentation Meeting, II-21, March 2024.
12) A Study on a Virtual Space Model Using a Game Engine for Supporting River Disaster Prevention, Kento Nakajima, Hideo Amaguchi, Yoshiyuki Imamura, Tadakatsu Takasaki, The 51st JSCE Kanto Branch Technical Research Presentation Meeting, II-20, 2024.3.
13) Creating an RRI model dataset in the Chikuma River Basin for the purpose of evaluating paddy field dam's runoff control, Yoshiyuki Imamura, Hideo Amaguchi, Yuito Aoki, 2023 Asain Conference on Remote Sensing, 2023.11.
14) The effect of rainwater storage tank installation on runoff control in individual buildings, Hideo Amaguchi, Yoshiyuki Imamura, 2023 Annual Conference of the Japan Society of Hydrology and Water Resources, 2023.09.

【Publications】

1) Social Drivers of Flood Vulnerability: Understanding Household Perspectives and Persistence of Living in Flood Zones of Metro Manila, Philippines, Judy Marie Tayaban Dulawan , Yoshiyuki Imamura, Hideo Amaguchi and Miho Ohara, Water 2024, 16, 799, 2024.03.
2) A Method for Composing Hydraulic Property Data in Images from River Monitoring Cameras Using VFX Technology, Kento Nakajima, Hideo Amaguchi, Yoshiyuki Imamura, Tadakatsu Takasaki, Proceedings of the 2023 Autumn Conference, pp.149-150, 2023.11
3) Study on the Method for Understanding the Actual Situation of Flood Damage Using Aerial Photographs and Flood Simulation, Daichi Nakata, Hisaya Sawano, Yoshiyuki Imamura, Shunta Nakamura, Proceedings of the 2023 Autumn Conference, pp.81-84, 2023.11
4) Estimating the Damaged Houses Caused by Typhoon Hagibis in October, 2019 Using Aerial Photographs in the Chikuma River Basin, Japan, Daichi Nakata, Yoshiyuki Imamura, Tadashi Tadokoro, 2023 Asian Conference on Remote Sensing, 2023.11.

【External Funding Sources】

・“Technical Research and Development of Augmented Reality Using River Monitoring Cameras” (Research on the advancement of road and river infrastructure services and improvement of

productivity through the promotion of DX by the Kanto Regional Development Bureau of the Ministry of Land, Infrastructure, Transport and Tourism, 15 million yen, 3 years, Principal Investigator)

・“Research on measures to prevent environmental pollution caused by floating trash and other waste in metropolitan river basins - preventive maintenance based on abnormal weather and urban lockdowns, etc.” (Advanced research conducted at Tokyo Metropolitan University by accepting international students from various cities overseas, 45 million yen, 3 years) (research collaborator)

【Social Contributions (Excluding confidential activities)】

- Head of the Japanese delegation at the ISO International Committee's Infrastructure Resilience Subcommittee in the UK.
- Guest speech at a ceremony, three lectures and guest lecture at a study abroad seminar at the University of the Philippines Los Baños, and received a letter of appreciation.
- Joint research with the Tokyo Metropolitan Government on river basin management and participated in a liaison meeting.
- Committee member of the international committee of the Japan Society of Natural Disaster Sciences.
- Council member of the Japan Society of Photogrammetry and Remote Sensing.
- Visiting professor at Yamaguchi University.

【Awards】

- Academic Conference Paper Award of the Japan Society of Photogrammetry and Remote Sensing: K. Nakajima, H. Amaguchi, Y. Imamura, T. Takasaki, “A Method for Composing Hydraulic Characteristics Data in Images from River Monitoring Cameras Using VFX Technology”.
- Special Award for Master's Student and Special Award for Undergraduate Student from the Faculty/Graduate School of Urban Environmental Sciences.
- President's Award from the Civil Engineering Alumni Association of the Tokyo Metropolitan University (1 Master's student and 4 undergraduate students)

【Other Activities】

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences

【Name】: Yoshiya ODA

【Position】: Professor

【Research Topic】: Exploration Geophysics

【Outline of research achievement】

We, Exploration Geophysics Laboratory, focus on development of new analysis methods for exploration geophysics and its applications to civil engineering, earthquake engineering and volcanic engineering fields. The main research topics of this year are as follows: 1) Crustal structure (velocity/attenuation) of Hachijojima and Kozushima Island, Tokyo. 2) Estimation of surface displacement using InSAR analysis of Kozushima Island, Tokyo. 3) Development of virtual seismic network using deep learning technology. 4) Estimation of crack depth using surface wave for concrete structures. 5) Damage investigation for the 2024 Noto Peninsula Earthquake. 6) Estimation of seismic attenuation characteristics of active faults. 4) Seismic Observation in Zushi City.

【Presentations】

1) Yoshiya Oda, Hiroyuki Azuma, Hikaru Kunimasa, Toshiki Watanabe and Kazuya Shiraishi, Virtual seismic network using deep learning and preliminary study, JpGU Meeting 2023, May 2023.
2) Utako Watanabe, Hiroyuki Azuma, Yoshiya Oda, Toshiki Watanabe and Hiro Nimiya, Estimation of three-dimensional S-wave velocity structure of Hachijojima Island using ambient noise by dense seismic observations, JpGU Meeting 2023, May 2023.
3) Teruya Sunada, Hiroyuki Azuma, Utako Watanabe, Yoshiya Oda, Rayleigh wave phase velocities estimated from dense seismic observation data on Kozushima Island, JpGU Meeting 2023, May 2023.
4) Haruna Inoue, Utako Watanabe, Hiroyuki Azuma and Yoshiya Oda, P-wave Attenuation Structure of Kozushima Island from twofold spectral ratio method using dense seismic observation data, Proceedings of the 148th SEGJ Conference, pp.105-108, May 2023.
5) Shota Nonaka, Hiroyuki Azuma and Yoshiya Oda, Automatic seismic detection of dense seismic observation data at Kozushima Island using EQTransformer, Proceedings of the 148th SEGJ Conference, pp.55-58, May 2023.
6) Masayuki Yamada, Koji Hada, Kazuro Yoshida, Tsuyoshi Nagao, Takao Kagawa, Yoshiya Oda, Haruna Inoue, Hiroyuki Azuma and Tadashi Hara, Seismic observation for estimation of seismic attenuation of active faults, Proceedings of the Annual Conference of the Institute of Social Safety Science, No. 52, May 2023.
7) Tsutomu Ochiai, Takahisa Enomoto, Yoshiya Oda, Kazuya Mitsuji and Shigeki Senna, Study of

3D Subsurface Structure Modeling Method Using Boring Data and Microtremors Observations, The 16th Japan Earthquake Engineering Symposium, Nov. 2023.

8) Yukinaga OGASAWARA, Katsumi KURITA, Shigeru AOKI, Yoshiya ODA and Hikaru OTA, 2023, Rocking vibration characteristics of structures on sliding type seismic isolation system and and its numerical analysis, Proceedings of the 13th International Workshop on Seismic Microzoning and Risk Reduction, A21, Nov. 2023.
9) Marcos A. Martinez-Segura , Cristina Garcia-Nieto , Manuel Navarro, Marcos D. Vasconez-Maza, Yoshiya Oda, Antonio Garcia-Jerez and Takahisa Enomoto, 2023, Seismic characterization of a historic building soil: Murcia Cathedral case study, Proceedings of the 13th International Workshop on Seismic Microzoning and Risk Reduction, A40 , Nov. 2023.

【Publications】

1) Manuel Navarro, Fernando Lopez, Antonio Garcia-Jerez, Pedro Martinez-Pagan, Marcos A. Martinez-Segura,Yoshiya Oda, T. Enomoto, 2023, A proxy model for estimating Vs30 in the southeast of Spain, Proceedings book of the 13th International Workshop on Seismic Microzoning and Risk Reduction, P10, 11pages, Nov. 2023.
2) Masayuki Yamada, Utako Watanabe, Koji Hada, Yoshiya Oda and Hiroyuki Azuma, 2023, Estimation of the Ratio of the Lapse Time from the Last Event for the Nosaka-Shufukuji Fault Zone in Japan using Twofold Spectral Ratio Method, Proceedings book of the 13th International Workshop on Seismic Microzoning and Risk Reduction, P11, 9pages, Nov. 2023.
3) Tsutomu Ochiai, Yoshiharu Shumuta, Takahisa Enomoto, Yoshiya Oda, 2023, Seismic Microzoning Using Microtremors H/V Spectral Ratios: A Case Study in the Shonai Plain, Northern, Proceedings book of the 13th International Workshop on Seismic Microzoning and Risk Reduction, P12, 7pages, Nov. 2023.

【External Funding Sources】

1) Grant-in-Aid for Scientific Research(C): Principal-Investigator, 2023-2025
2) Grant-in-Aid for Scientific Research(C): Co-Investigator, 2023-2025
3) Grant-in-Aid for Scientific Research(C): Co-Investigator, 2022-2024
4) Grant-in-Aid for Scientific Research(C): Co-Investigator, 2022-2024
5) Specified Donations

【Social Contributions (Excluding confidential activities)】

1) Board member of the society of exploration geophysicist of Japan
2) Committee member of JSPS
3) Committee member of water works bureau of City of Kawasaki

【Awards】

【Other Activities】

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences
【Name】: Hiroyuki Oneyama
【Position】: Professor
【Research Topic】: Traffic and Transportation Engineering
【Outline of research achievement】

1) Regarding the moving light guide system as a countermeasure against congestion on expressways, traffic simulation was performed using car-following behavior model parameters obtained from the results of a driving simulator experiment in a congested flow with the coexistence of autonomous vehicles, and the traffic flow characteristics during congestion were clarified. In addition, video data from the Metropolitan Expressway Central Circular Route was analyzed to empirically observe the difference in lane-changing behavior with and without the system.
2) A basic study was conducted on signal control methods that take into account not only vehicle but also pedestrian delays and LOS at signalized intersections. In a study on coordinated control targeting two consecutive intersections, delays were formulated through theoretical studies and numerical calculation experiments were conducted on cycle lengths and offsets that would result in optimal control based on multiple control indicators that take into account vehicles, pedestrians, and combinations of these, to clarify their characteristics. In addition, a simulation analysis was conducted on a single intersection to compare vehicle and pedestrian delays and accident risks for multiple signal systems, and a method for selecting the most desirable geometric design and signal system that takes into account the balance between vehicles and pedestrians was clarified.
3) As part of research into the performance evaluation of signalized intersections, we analyzed the factors that influence saturation flow rate and the number of discharging vehicles. We analyzed the distribution of residuals estimated from saturation flow rate using multiple regression analysis, and found that there were small differences between intersection approaches and lanes, that the observed number of discharging vehicles was significantly lower than the number of vehicles expected to be allowed to pass through based on the saturation flow rate, and that there was a significant decrease in saturation flow rate due to an increase in the time the light was green, especially in the outermost lanes.

【Presentations】

1) "Critical examination of multilane free-flow tolling system implementation in Indonesia", International Seminar of Science and Applied Technology: Natural Resources Management for Environmental Sustainability (ISSAT 2023),2023/11.
2) "Research on the effects of removing utility poles, taking into account the impact of collapsed

utility poles on evacuation routes during earthquake disasters", 68th Conference of Infrastructure Planning and Management (JSCE), 2023/11 [in Japanese].

3) "Completion time prediction model for vehicles stuck on expressways during heavy snowfall", 68th Conference of Infrastructure Planning and Management (JSCE), 2023/11 [in Japanese].
4) "Analysis of Traffic flow during Lane Closures on Inter-urban Expressways", 68th Conference of Infrastructure Planning and Management (JSCE), 2023/11 [in Japanese].
5) "Completion time prediction model for vehicles stuck on expressways during heavy snowfall",78th Annual Conference of JSCE, 2023/9 [in Japanese].
6) "Effects of visual environment on vehicle behavior in expressway tunnels", 78th Annual Conference of JSCE, 2023/9 [in Japanese].
7) " Understanding of Parking Positions and bicycle traffic positions on the route with bicycle lanes and parking spaces",78th Annual Conference of JSCE ,2023/9 [in Japanese].
8) "Effect of Motorcycle Proportion on Accident Risk in Mixed Traffic", The 15th International Conference of the Eastern Asia Society for Transportation Studies 2023 (EASTS 2023),2023/9.
9) "Comparison of Japanese and Indonesian Drivers' Attitude toward Traffic Information and Route-Choice Behavior", The 15th International Conference of the Eastern Asia Society for Transportation Studies 2023 (EASTS 2023),2023/9.
10) "Research on Factors Influencing Traffic Capacity During Lane Closures on Inter-Urban Expressways", The 15th International Conference of the Eastern Asia Society for Transportation Studies 2023 (EASTS 2023),2023/9.
11) "Analysis of Traffic Capacity During Lane Closures on Inter-urban Expressways", 43nd Annual Meeting of Japan Society of Traffic Engineers, 2023.8 [in Japanese].
12) "The Relationship between Signal Light Positions and Vehicle Behavior at Intersections under Various Signal Controls", 43nd Annual Meeting of Japan Society of Traffic Engineers, 2023.8 [in Japanese].
13) "Development of a Signal Control Method Based on AI Short-Term Prediction of Delay Using Probe Data", 67th Conference of Infrastructure Planning and Management (JSCE), 2023/6 [in Japanese].
14) " A Method for Evaluating the Transportation Hub Function of Roadside Stations, Focusing on Facility Convenience and Location ", 67th Conference of Infrastructure Planning and Management (JSCE),2023/6 [in Japanese].

【Publications】

1) Technical Handbook on Traffic Engineering 2024, Japan Society of Traffic Engineering, Co-Authors, 2024 [in Japanese].
2) Taufik Sugian Sumardi, Hiroyuki Oneyama, Masami Yanagihara: Critical examination of multilane free-flow tolling system implementation in Indonesia, E3S Web of Conference, International Seminar of Science and Applied Technology: Natural Resources Management for

Environmental Sustainability (ISSAT 2023), Vol. 479, Article Number: 07024, 7 pages, 2024.
3) Mitsuaki Sakurai, Junya Uehata, Takashi Aoki, Hiroyuki Oneyama: Analysis of Traffic Capacity During Lane Closures on Inter-urban Expressways, JSTE Journal of Traffic Engineering, Vol.10, No.1, pp.B_32-B_41, 2024 [in Japanese].
4) Koki Komatsu, Hiroyuki Oneyama, Masami Yanagihara: The Relationship between Signal Light Positions and Vehicle Behavior at Intersections under Various Signal Controls, JSTE Journal of Traffic Engineering, Vol.10, No.1, pp.A_324-A_332, 2024 [in Japanese].
5) Masami Yanagihara, Haruna Kondo, Hiroyuki Oneyama: Analysis of the Relationship among Driving Behavior, Drivers' Intention and Drivers' Stress during Lane Change, Journal of Japan Society of Civil Engineers, Ser. D3 (Infrastructure Planning and Management), Nol.78, No.5, pp.I_449-I_458, 2023 [in Japanese].
6) Masami Yanagihara, Wataro Yamashita, Hiroyuki Oneyama: Selection Model of Resting Places along Ordinary Roads for Evaluation of the Optimal Placement, Journal of Japan Society of Civil Engineers, Ser. D3 (Infrastructure Planning and Management), Nol.78, No.5, pp.I_613-I_625, 2023 [in Japanese].

【External Funding Sources】

- Express Highway Research Foundation of Japan Research Grant: "Research on expressway user rest behavior and SA/PA placement" (Research participant (Principal Investigator: Masami Yanagihara), 2023) Implemented.
- Ministry of Land, Infrastructure, Transport and Tourism Road Bureau: Technology research and development that contributes to improving the quality of road policies, "Technology research and development on alternative intersections to improve safety and smoothness at-grade intersections" (Research participant (Principal Investigator: Shinji Tanaka, Yokohama National University), 2024-2026) Accepted.

【Social Contributions (Excluding confidential activities)】

- Japan Society of Traffic Engineers: Chairperson, Research Committee / Member, General Affairs Committee / Member, Qualification Committee / Chairperson, Fundamental Research Committee on Intersection and Signal Control Planning and Design / Lecturer, Intersection Design Training Seminar.
- Road Bureau, Ministry of Land, Infrastructure, Transport and Tourism: Member, Regional Economic Strategy Study Group / Member, Committee on Advanced Road Technology.
- College of Land, Infrastructure, Transport and Tourism, Ministry of Land, Infrastructure, Transport and Tourism: Lecturer.
- Tokyo National Highway Office, Kanto Regional Development Bureau, Ministry of Land, Infrastructure, Transport and Tourism: Chairperson, Tokyo Metropolitan Mobility Improvement Committee / Chairperson, Subcommittee in the Tokyo Metropolitan Government Road Traffic Safety Promotion Liaison Committee / Member, Study Committee on the Bicycle Traffic Space

Improvement Plan.

- Ministry of the Environment: Member, Specific Procurement Item Review Committee
- Express Highway Research Foundations of Japan: Member, Editorial Committee / Chairperson, Paper Award Selection Committee.
- Kanagawa Prefecture: Member, Environmental Impact Assessment Committee
- Sagamihara City, Kanagawa: Member, Environmental Impact Assessment Committee
- Hino City, Tokyo: Chairperson, Universal Design Association and Member, Regional Public Transportation Conference
- Akiruno City, Tokyo: Chairperson, Public Transportation Examination Conference
- NEXCO Research Institute Limited: Chairperson, Study Committee on the interior board in tunnel
- East Nippon Expressway Co. Ltd.: Member, the Project Evaluation and Monitoring Committee / Member, Kanto Branch Office Traffic Control Measures Committee
- Central Nippon Expressway Co. Ltd.: Member, Committee on Traffic Measures for Road Closure due to Renewal Road Works along Tomei Expressway Fuji IC-Shimizu JCT / Member, Committee on Chuo Expressway Traffic Congestion Countermeasures.
- Metropolitan Expressway Co. Ltd.: Chairperson, Study Meeting on traffic safety measures in the Metropolitan Expressway / Member, Study Meeting on traffic flow estimation / Member, Committee on Disaster Prevention and Safety Measures in Tunnels on the Metropolitan Expressway / Member, Committee on Disaster Prevention and Safety Measures in the Nihonbashi section underground project / Member, Technical Committee on Large-scale Renewal, Repair and Functional Enhancement of the Metropolitan Expressway
- Urban Renaissance Agency: Chairperson, Research WG on Traffic management under Construction in Complex and Large Scale Urban Renewal.
- PIARC, World Road Association: Member, Technical Committee(TC)3.1

【Awards】

-None

【Other Activities】

-None

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Environmental Engineering
【Name】: Jun MURAKOSHI
【Position】: Professor
【Research Topic】: Bridge Engineering, Steel Bridge Design, Remaining Load-carrying Capacity Evaluation and Fatigue Evaluation of Steel Highway Bridge, Repair and Strengthening

【Outline of research achievement】

Experimental and analytical studies were conducted on clarification of fatigue behavior of orthotropic steel decks and durability evaluation of SFRC overlays, and a practical fatigue durability evaluation method for steel bridges. As results, size effects on the fatigue strength of out-of-plane gusset welded joints were clarified. In addition, significant findings were obtained regarding the relationship between local stresses at main girder-cross beam connections and the deformation behavior of the main girders and RC decks, which are the dominant factors for the displacement-induced fatigue in steel I-girder bridges.

【Presentations】

1) Kurabayashi, T., Murakoshi, J., Kinomoto, T., Sawada, M. and Ohnishi, T.: Considerations on applicability of fatigue crack propagation analysis method for fatigue crack of out-of-plane gusset joints, The 69th Structural Engineering Symposium, JSCE, 2023.4. (in Japanese)

【Publications】

1) Uaje, M.J.B. and Murakoshi, J.: Crack growth suppression effect of SFRC overlay for root-deck fatigue in orthotropic steel deck, Proceedings of the Eighth International Symposium on Life-Cycle Civil Engineering (IALCCE2023), 2-6 July, Milan, Italy, Life-Cycle of Structures and Infrastructure Systems pp.3983-3990, 2023.
2) Uaje, M. J. B., Murakoshi, J. and Higashida, R. : Stress reduction effect of SFRC overlay for weld root fatigue in orthotropic steel deck considering wheel load location, Proceedings of the 12th International Symposium on Steel Structures, November 8-11, 2023, Jeju, Korea, pp.560-563, 2023.11.
3) Tojo, H., Murakoshi, J., Nogami, K. and Kishi, Y.: The effect of damage to cable members on the structural safety of small pedestrian suspension bridge, Proceedings of Constructional Steel, JSSC, Vol.31, pp.37-46, 2023.11. (in Japanese)
4) Shibata, Y., Murakoshi, J. and Tokida, H.: Analytical study on load distribution characteristics for fatigue verification of existing steel I-girder bridges, Proceedings of Constructional Steel, JSSC,

Vol.31, pp.324-332, 2023.11. (in Japanese)

5) Kaneko, Y., Murakoshi, J., Kishi, Y. and Nogami, K.: Experimental study on lateral load carrying capacity of corroded riveted girder ends, Proceedings of Constructional Steel, JSSC, Vol.31, pp.470-479, 2023.11. (in Japanese)

6) Kinomoto, T., Murakoshi, J., Hirano, S., Sato, A., Kurabayashi, T. and Sawada, M.: Experimental study on fatigue strength of large-size out-of-plane gusset welded joints focusing on size effect, Japanese Journal of JSCE, Vol.79, No.12, 23-00088, 2023.12. (in Japanese)

7) Yoshikawa, S., Murakoshi, J., Kishi, Y., Urano, S. and Nagatani, T.: Numerical study on fatigue behavior and damage factors at main girder-cross beam connections in H-beam bridge, Journal of Structural Engineering, JSCE, Vol. 70A, pp.428-437, 2024.3. (in Japanese)

8) Japan Society of Steel Construction: Design and construction guidelines for one-sided high-strength bolt friction joints used in the repair and reinforcement of highway bridges, JSS IV 14-2023, 2023.3. (Co-authored, published 2023.5.) (in Japanese)

9) Murakoshi, J.: Outline of "Design and construction guidelines for one-sided high-strength bolt friction joints used in the repair and reinforcement of highway bridges, JSS IV 14-2023", JSSC, No. 55, pp. 35-38, 2023.10. (in Japanese)

【External Funding Sources】

・Practical diagnostic method for fatigue damages at main girder-cross beam connection in steel highway bridge, Principal Investigator, JSPS KAKENHI Grant No.21K04237, FY2021-FY2023
・Evaluation of fatigue strength for root-deck cracks in orthotropic steel deck bridges, Principal Investigator, Research funds of JISF, FY2023
・Study on practical method for fatigue durability evaluation of existing steel highway bridges using FEM data, Principal Investigator, Subsidies for Research and Education on Steel Structure, JISF, FY2022-FY2023

【Social Contributions (Excluding confidential activities)】

・Japan Road Association, Member of Committee on Bridges
・JSCE, Member of Committee on Steel Structure, Chairman of Sub-committee for Standard Specifications for Steel and Composite Structures
・College of Land, Infrastructure, Transport and Tourism, MLIT, Lecturer of Training Course on Design and Maintenance of Highway Structures
・Ehime University, Lecturer of Maintenance Experts Training Course
・Tokyo Metropolitan Public Corporation by Road Improvement and Management, Lecturer of Bridge Maintenance Professional Engineering Training Course, etc.

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences
【Name】: Dr. Katsuhide YOKOYAMA
【Position】: Professor
【Research Topic】: Environmental Hydraulics
【Outline of research achievement】
The following studies were undertaken to elucidate the mechanisms of water, sediment, and nutrient transport in the watershed area and to develop management techniques for the riverine environment;

1) Research on lake meteorology and the spatial distribution of water temperature and turbidity was initiated at the Ogouchi Dam Reservoir.

2) Research on the relationship between saltwater intrusion and fish behavior was conducted in the Nishimoune River in Kesennuma City, the Shimoyama River in Kanagawa Prefecture, the Chikugo River in Fukuoka Prefecture, the Okinohata River in Yanagawa City, and the Ashtamudi River in India.

3) The latest environmental DNA analysis was conducted in the Nishimoune River in particular, and the migration characteristics of Japanese eels in the river and wetlands were clarified.

【Presentations】
1) Yokoyama, K., Interaction Between Hydraulics, Morphodynamics and Biological Food Chain in a Macro Tidal Estuary, 4th Graduate School Research Conference, University of St. La Sale, June 16, 2023 (Invited)
2) Hlaing, N.O., Azhikodan, G., Yokoyama, K., 2023. Study on the relationship between Upstream Discharge and Downstream Tidal Forcing on the salinity intrusion at Tanintharyi River Estuary during Monsoon season, Proc. 4th University of St. La Salle Graduate Research Conference, Bacolod City, Philippines: 59.
3) Hlaing, N.O., Azhikodan, G., Yokoyama, K., 2023. Study on the effect of discharge on the salinity intrusion and mixing condition at Tanintharyi River estuary, Proc. 13th Symposium on River, Coastal, and Estuarine Morphodynamics (RCEM 2023), Urbana, Illinois.
4) Hlaing, N.O., Azhikodan, G., Yokoyama, K., 2023. Analyzing temporal discharge distribution in a Tidal River confluence, Proc. 4th IAHR Young Professionals Congress (Online), ISBN: 978-90-833476-5-3.
5) Kheiri, G., Azhikodan, G., Yokoyama, K. (2023). Long -term analysis of turnover occurrence during

winter in a deep reservoir. Proc. 4th University of St. La Salle Graduate Research Conference, Bacolod City, Philippines: 61

6) Kheiri, G., Duka, M.A., Azhikodan, G., Yokoyama, K., 2024. Relationship between turnover and bottom dissolved oxygen in a deep reservoir from 1993-1996. Proceedings of the 4th IAHR Young Professionals Congress, 199-201, ISBN: 978-90-833476-5-3.

7) Phyu, P.E., Azhikodan, G., and Yokoyama, K. (2023). Effects of recent disasters on changes in riverbed morphology of the Chikugo River estuary, Japan. Proc. 4th University of St. La Salle Graduate Research Conference, Bacolod City, Philippines: 61.

8) Phyu, P.E., Azhikodan, G., Yokoyama, K. (2023). Morphological responses of the Chikugo River to climate change events. Proc. 4th IAHR Young Professionals Congress (Online), ISBN: 978-90-833476-5-3.

9) Azhikodan, G., Phyu, P.E., Yokoyama, K., 2023. Long-term (1953-2020) changes in morphology of Chikugo River, Japan in response to natural and anthropogenic forces. Proceedings of the EGU General Assembly 2023, EGU23-15323, Vienna, Austria.

10) Rawat, V S., Azhikodan, G., Yokoyama, K. (2023). Effects of Tidal Cycles and Hydro-Environmental Parameters on Coilia nasus Catch Behavior in a Macrotidal Estuary. Proc. 4th University of St. La Salle Graduate Research Conference, Bacolod City, Philippines: 57.

11) Rawat, V S., Fujikawa. R., Azhikodan, G., Yokoyama, K. (2023). Tidal influence on the pattern of estuarine fish catch, Proc. 13th Symposium on River, Coastal, and Estuarine Morphodynamics (RCEM 2023), Urbana, Illinois.

12) Rawat, V S., Azhikodan, G., Yokoyama, K. (2023). Effects of fortnightly environmental parameters on Etsu (Coilia nasus) catch in the Chikugo river estuary, Japan, Proc. 4th IAHR Young Professionals Congress (Online).

13) Gunay, C.J., Iwama, T., Koyama, Y., Yokoyama, K., Sakai, H., Koizumi, A., Sakai, K., and Takahashi, H. (2023). Mapping priority areas for forest management in a mountainous watershed using raindrop impact estimation and physically-based modeling approaches. Proc. 20th Annual Meeting of Asia-Oceania Geosciences Society, Suntec Singapore Conference and Exhibition Ctr., Singapore: IG08-A015.

14) Gunay, C.J.C., Azhikodan, G., and Yokoyama, K. (2023). Forest management and its effects on soil water storage and erosion risk in a Japanese watershed. Proc. 4th University of St. La Salle Graduate Research Conference, Bacolod City, Philippines: 58.

15) Vidyalashmi, K., Chandana, L.M., Nandana, J.S., Azhikodan, G., Priya, K.L., Yokoyama, K., Paramasivam, S.K., 2024. Analysing the performance of the NARX model for forecasting the water level in the Chikugo River estuary, Japan. Environmental Research, 251 (1), 118531.

16) Vidyalashmi, K., Nandana, J.S., Megha, C., Priya, K.L., Azhikodan, G., Yokoyama, K., 2023. An assessment of salinity intrusion in the Ashtamudi estuary, India. Proceedings of the National Conference on Reviving Wetlands (Recent Developments in Wetland Research) 2023, Page 88, CWRDM Kozhikode, India.

17) Vidyalashmi, K., Nandana, J.S., Megha, C.L., Azhikodan, G., Priya, K.L., Yokoyama, K., 2024. An assessment of salinity intrusion in the Ashtamudi estuary, India. Proceedings of the 4th IAHR Young Professionals Congress, 59-60.

18) Megha, P.R., Krishnapriya, K., Hisana, N., Keerthy, R., Manaf, F.M., Priya, K.L., Azhikodan, G., Yokoyama, K., 2024. Evaluating the geospatial variability of sedimentary and hydrodynamic factors in the Ashtamudi estuary. Proceedings of the 4th IAHR Young Professionals Congress, 164-165.

19) Beema, M.M.N., Navya, P., Shana, S.G., Nourin, F.R., Padiyedath, S.G., Priya, K.L., Azhikodan, G., Yokoyama, K., 2024. Influence of the COVID-19 pandemic on plastic debris accumulation in the Ashtamudi estuary. Proceedings of the 4th IAHR Young Professionals Congress, 166-167.

20) Sacueza, L.C., Kishida, M., Hayashi, M., Azhikodan, G., and Yokoyama K. (2023). The effect of sandbar on the salinity intrusion in a microtidal estuary. Proc. 78th Annual Meeting of the Japan Society of Civil Engineers, Hiroshima, Japan: II-122.

21) Gunay, C.J., Iwama, T., Yokoyama, K., Sakai, H., Koizumi, A., Kawaue, M., and Takahashi, H. (2023). Improving the monthly discharge model in the Ogouchi Dam watershed by manual calibration of soil and slope parameters. Proc. Japan Water Works Association Research Conference, Tokyo, Japan, 2023 (0): 944–945.

22) Iwama, T., Gunay, C.J., Koyama, Y., Yokoyama, K., Sakai, H., Koizumi, A., Kawaue, M., and Takahashi, H. (2023). Creation of forest GIS and analysis of forest characteristics in Ogouchi Reservoir watershed (in Japanese). Proc. Japan Water Works Association Research Conference, Tokyo, Japan, 2023 (0): 218–219.

23) Iwama, T., Gunay, C.J., Koyama, Y., Yokoyama, K., Sakai, H., Koizumi, A., Kawaue, M., and Takahashi, H. (2023). Analysis of forest characteristics using GIS and refinement of the soil erosion susceptibility model in the Ogouchi Reservoir watershed (in Japanese, with English abstract). Proc. 31st Global Environment Symposium, Shiga, Japan, September 19–21, 2023.

24) Galang, J.M.J., Gunay, C.J., Sakai, H., and Yokoyama, K. (2023). Parameter uncertainty and sensitivity analysis for nutrient modelling in a forested catchment using the Sequential Uncertainty Fitting (SUFI-2) algorithm in SWAT-CUP. Proc. The Water and Environment Technology Conference 2023: 2A-4-c.

25) Galang, J.M.J., Gunay, C.J., Sakai, H., and Yokoyama, K. (2023). Development of a water quality model to evaluate the impacts of various watershed management and forest conservation practices on the quality of water in a reservoir using SWAT. Proc. 57th Annual Conference of the Japan Society on Water Environment, Ehime, Japan: 385.

【Publications】

1) Hlaing, N.O., Azhikodan, G., Yokoyama, K. (2023). Topography and Tidal variations: Impact on counter-current flow at the confluence area of Tanintharyi River estuary. Journal of Japan Society

of Civil Engineers, Ser. B1 (Hydraulic Engineering), 12 (2) 23-16140.
2) Phyu, P.E., Azhikodan, G.,Yokoyama, K. (2024). Effects of past human activities and recent disasters on riverbed morphology of the Chikugo River estuary. Journal of Japan Society of Civil Engineers, (Hydraulic Engineering), 12 (2): 23-1609.
3) Galang, J.M.J., Gunay, C.J., Sakai, H., and Yokoyama, K. Parameter uncertainty and sensitivity analysis for nutrient modelling in a forested catchment using the Sequential Uncertainty Fitting (SUFI-2) algorithm in SWAT-CUP. Journal of Water and Environment Technology, 22 (1): 27–40.
4) Gunay, C.J.C., Iwama, T., Yokoyama, K., Sakai, H., Kawaue, M., and Takahashi, H. (2024). Impacts of sustainable management on the spatial distributions of erosion susceptibility and probable sediment yield in a mixed-forested watershed. Journal of Environmental Management, 352: 119924. https://doi.org/10.1016/j.jenvman.2023.119924
5) Iwama, T., Gunay, C.J., Koyama, Y., Yokoyama, K., Sakai, H., Koizumi, A., Kawaue, M., and Takahashi, H. (2023). Analysis of forest characteristics using GIS and refinement of the soil erosion susceptibility model in the Ogouchi Reservoir watershed (in Japanese with English abstract). Journal of Japan Society of Civil Engineers (Global Environment), 79 (27): 23-27017.
6) Gunay, C.J.C., Iwama, T., Sakai, H., and Yokoyama, K. (2023). Influence of different management systems on surface protection and erodibility of a temperate mixed forest. Ecological Engineering, 193: 106993.
7) Nakajima, T., Kusunoki, T., Takao, Y., Yamada, K., Yokoyama, K., Sugimoto, R. (2023). Saline groundwater discharge accelerates phytoplankton primary production in a Sanriku ria coastal embayment, Japan. Marine Ecology Progress Series. 712.
8) Duka, M., Monterey, M.L., Casim, N.C., Andres, J.H., Yokoyama, K., (2024). Identifying Challenges to 3D Hydrodynamic Modeling for a Small, Stratified Tropical Lake in the Philippines. Water. 16. 561.
9) Casila, J.C., Andres, H., Haddout, S., Yokoyama, K., (2024). Sediment Transport Modeling in the Pasig River, Philippines Post Taal Volcano Eruption. Geosciences. 14. 45.

【External Funding Sources】

1) Nippon Life Foundation (PI) “Disaster-Resistant Forest, Village, and Sea Community Development Based on the Creation of Salt Marshes”

2) Global Environment Fund (co-PI) “Creating the Maine Forest, Satoumi and Sea Trail: Development of contents that enable people to experience the connection.

3) Joint research by Tokyo Metropolitan Government Bureau of Waterworks (PI) “Joint research on countermeasures against turbidity in the Ogouchi Reservoir in consideration of the effects of climate change

【Social Contributions (Excluding confidential activities)】

1) Member of “Food, Marine Ecosystem and Land Use Study Group”, Kajima Peace Research Institute
2) River Counselor, Arakawa Downstream River Office, Ministry of Land, Infrastructure, Transport and Tourism
3) Member of the River Management Advancement Study Committee, Arakawa Downstream River Office, Ministry of Land, Infrastructure, Transport and Tourism
4) Member of Project Evaluation Committee, Kanto Regional Development Bureau, Ministry of Land, Infrastructure, Transport and Tourism
5) Underground River Study Group, Ministry of Land, Infrastructure, Transport and Tourism
6) Evaluation Committee for the Ariake Sea and Yatsushiro Sea Comprehensive Survey, Ministry of the Environment
7) Subcommittee for the Study of the Ariake Sea and Yatsushiro Sea Area Environmental Restoration Measures, Ministry of the Environment
8) Chairman of the Hachioji City Basic Plan Revision Study Committee for the treatment of domestic wastewater

9) Member of the Environmental Hydraulic Subcommittee, Hydraulic Engineering Committee, Japan Society of Civil Engineers (JSCE)

10) Subcommittee for the Editorial Review of the Special Issue of JSCE Transactions on Hydraulic Engineering, JSCE Committee on Hydraulic Engineering
11) Member of Global Environment Paper Committee, JSCE
12) Chair, Subcommittee for Qualification of Senior Civil Engineer, JSCE

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences
【Name】: Yasuhiro Arai
【Position】: Associate Professor
【Research Topic】: Water Supply Engineering, Environmental Systems
【Outline of research achievement】
The main theme of the study was water systems. As water infrastructure ages, maintenance and renewal will become major issues. Research was conducted to contribute to solving problems in water pipeline renewal, visualizing leak sounds measured by leak monitoring sensors, and detecting leaks using AI technology. Additionally, an estimation model for the unit water volume of domestic water was attempted, and statistical analysis was used to identify factors contributing to increases and decreases in water usage.
【Presentations】
1) Leak Detection in Water Pipelines: Comparing AI Models and Test Results by Experienced Investigators, 78th Annual Meeting of the Japan Society of Civil Engineers (JSCE), 2023
Scenario Analysis for Predicting Future Unit Water Consumption of Single-Person Households, Proceedings of the 2023 Annual Conference (Waterworks Research Presentation), pp. 164-165, (October 2023)
2) A Study on Changes in Water Usage Patterns of Single-Person Households Before and After the COVID-19 Pandemic, Proceedings of the 2023 Annual Conference (Waterworks Research Presentation), pp. 166-167, (October 2023)
3) Comparison of AI Model and Skilled Investigator Evaluation Results for Water Pipeline Leak Detection, Proceedings of the 2023 Annual Conference (Waterworks Research Presentation), pp. 544-545, (October 2023)
4) Visualization of Simulated Leak Sounds Using Fourier Transform and Recurrence Plot, Proceedings of the 2023 Annual Conference (Waterworks Research Presentation), pp. 546-547, (October 2023)
5) Seasonal Variation of Chlorine Residual Prediction Using LSTM for a Small-Scale Water Distribution System, Proceedings of the 2023 Annual Conference (Waterworks Research Presentation), pp. 942-943, (October 2023)
6) The Effect of Data Variation on Generalization Performance by Multi-Point Model: Convolutional Neural Network (CNN), Proceedings of the 2023 Annual Conference (Waterworks Research Presentation), pp. 948-949, (October 2023)
【Publications】
1) Kaito ITO, Yasuhiro ARAI, Muhammad Anshari CARONGE, Takaharu KUNIZANE and Akira KOIZUMI, IMPROVING THE GENERALIZATION PERFORMANCE OF WATER LEAKAGE

DETECTION MODEL BY NOISE REDUCTION USING PSEUDO SOUNDS, Journal of JSCE, Ser.G, Vol.79, No.26, 2023

2) Takaharu KUNIZANE, Yasuhiro ARAI and Akira KOIZUMI, Analysis of Anticorrosion Effect of Polyethylene Sleeve for Water Supply by Survival Time Analysis, Journal of JSCE, Ser.G, Vol.79, No.25, 2023

【External Funding Sources】

1) Grant-in-Aid for Scientific Research [KAKENHI] (C), 22K04271, 2022-2024.

2) Japan Water Research Center, STAMPS Project (2023-2025).

【Social Contributions (Excluding confidential activities)】

1) Tokyo Metropolitan Government / Council for Environmental Impact Assessment

2) Sagamihara City / Council for Small Water Supply System

3) Akishima City / Committee for Public Facilities Comprehensive Management Plan Promotion

【Awards】

None

【Other Activities】

Collaborative research with Tokyo Metropolitan Government:

1) Tokyo Metropolitan Government Bureau of Waterworks: "Study on Actual Water Usage Focusing on Changes in Population Structure and Lifestyle" (2020-2023)

2) Tokyo Metropolitan Government Bureau of Waterworks: "Study on Repair and Renewal Methods Considering the Deterioration of Pipeline Facilities" (2023-2025)

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences
【Name】: Tomoki Ishikura
【Position】: Associate Professor
【Research Topic】: Infrastructure Planning and Management
【Outline of research achievement】
1) The new high speed rail Chuo Shinkansen using SuperConducting MAGnetic LEVitation, SCMAGLEV, railway system will drastically change the intercity mobility. The revolution of the mobility can influence to economic and geographic status of Japan. This paper develops a spatial economic model based on quantitative spatial economics (QSE) framework and estimates the impacts caused by Chuo Shinkansen by using the model. According to the short run analysis results, the almost all regions gain the welfare improvement. However, our estimation implies the demographic agglomeration into a small number of regions will arise in long run.

2) We introduce `interregional commodity flow model (ICFM)' developed by Kim, Ham and Boyce (PiRS2002). ICFM is an integrated system of transport network and input-output modeling, which describes the interaction of transport network flows and commodity trade demand and estimates regional and inter-regional commodity flows and transport network flows simultaneously. The model furthermore estimates the changes in shortest path and minimum generalized cost of each region-pair. We apply the model to Japanese inter-prefecture transport network for the estimation of impacts by volcanic ash fall. The application study estimates the impacts of two eruption scenarios, Mt.Fuji and Mt.Asama. Assuming that capacity of transport link including the road sections where the volcanic ash falls decreases, we estimate the influences on transport network flows and commodity flows. The results show remarkable changes in shortest route of specific O-D pairs and generation of new bottlenecks caused by traffic concentration. Thus, the study can contribute to the discussion of vulnerable network and regions when volcanic eruption takes place.

3) The building of applied multiregional economic models, such as a spatial computable general equilibrium (SCGE) models, require the estimation of benchmark equilibrium data due to the limitation of available data. Unfortunately, there is no universal method for estimating benchmark equilibrium data, especially final demand by region. This study compares and analyzes the characteristics of the benchmark data estimated by multiple estimation methods. Furthermore, we applied a SCGE model based on each benchmark data to transportation improvement scenarios. The results suggest that although there are differences in benchmark data for areas near large cities, the impact of the differences on the policy effect analysis is small.

【Presentations】

1) Ishikura, Tomoki. : Estimation of the impact of the new high-speed rail in Japan from a spatial economic perspective, The 16th World Conference on Transport Research, July 2023.
2) Komatsu Kanata, Yokoyama Fuga, and Ishikura Tomoki : Characteristics of estimation of benchmark data for spatial computable general equilibrium models. 67th meeting of Infrastructure Planning and Management, June 2023
3) Ishikura, Tomoki. : Estimation of economic and demographic impact of the new high-speed rail in Japan, Annual Meeting of the Applied Regional Science Conference, Dec 2023.

【Publications】

1) Ishikura, Tomoki., Iso, Shogo. Estimation of impacts of volcanic ash fall from Mt. Fuji eruption on freight transport and effects of partial restoration of highways. The Annals of Regional Science (2023). https://doi.org/10.1007/s00168-023-01251-0 (forthcoming)
2) Ishikura Tomoki, Komatsu Kanata and Yokoyama Fuga: Characteristics of estimation of benchmark data for spatial computable general equilibrium models. Journal of Japan Society of Civil Engineers, Ser. D3 (forthcoming).

【External Funding Sources】

JSPS KAKENHI, Grant-in-Aid for Scientific Research (B), 22H01617, Principal Investigator, 2022-2024.

【Social Contributions (Excluding confidential activities)】

NA

【Awards】

NA

【Other Activities】

NA

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences

【Name】: Atsushi Ueno

【Position】: Associate Professor

【Research Topic】: Materials for Civil engineering, Concrete engineering

【Outline of research achievement】

A study on durability and skid resistance of concrete pavement, detail investigation of surface texture factors of concrete pavement to maintain high skid resistance were conducted from the stand point of a traffic safety. Influence of steam curing condition on properties of hardened concrete for durable pre-cast concrete products, evaluation of properties of volcanic materials as concrete making materials, CO_2 as concrete making material were examined as the basic properties for various types of concrete.

【Presentations】

1) 7 technical papers on concrete and concrete making materials

【Publications】

1) 6 technical papers on concrete and concrete making materials

【External Funding Sources】

1) NEDO Green innovation funds.
2) Grants-in-Aid for Scientific Research (C)
3) Three funding support for basic study on acceleration curing of precast concrete.

【Social Contributions (Excluding confidential activities)】

1) 6 technical committees on JSCE
2) 4 technical committees on JCI (Japan Concrete Institute)
3) 1 technical committee on JCA (Japan Cement Association)
4) 1 technical committee on JSPS (Japan Society for the Promotion of Science)

【Awards】

1) Three paper awards as co-author.

【Other Activities】

1) Co-operation with Tokyo Metropolitan Gov.

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences

【Name】: Kentaro OHNO

【Position】: Associate Professor

【Research Topic】: Concrete Structure, Maintenance and Non-destructive Testing for Existing Concrete Structures

【Outline of research achievement】

1) Estimation of concrete stress in prestressed concrete by using ultrasonic
2) Estimation of strength in early age concrete for lining concrete by impact elastic wave method
3) Investigation of AE source location method with P-wave velocity change
4) Process monitoring of steam-cured concrete by ultrasonic and AE methods
5) Influence of moisture content in concrete on results of rebound number test
6) Estimation of bond conditions interface between rebar-concrete by using ultrasonic

【Presentations】

1) Kazuma SHIBANO, Tetsuya SUZUKI, Masaomi KIMURA and Kentaro OHNO : Surface Deterioration Detection of Concrete Block by Superpixel and Machine Learning with Visible and Infrared Image, Annual Conference on The Japanese Society of Irrigation, Drainage and Rural Engineering, 2023.8 [in Japanese]
2) Kengo KATO, Noriyuki UTAGAWA, Chitose KURODA and Kentaro OHNO : Evaluation of Tunnel Lining Formwork Removal Time using Impact Methods, Proceedings of the 78th Annual Conference of the Japan Society of Civil Engineers, V-87, 2023. 9 [in Japanese]
3) Kaya FURUKI, Atsushi UENO, Kentaro OHNO and Tomohisa KAMADA : Chemical and mineral composition of Izu-islands volcanic fine aggregate, strength and pore structure of mortar, Proceedings of the 78th Annual Conference of the Japan Society of Civil Engineers, V-195, 2023. 9 [in Japanese]
4) Airi SUZUKI, Tomohisa KAMADA, Atsushi UENO, Kentaro OHNO and Maki MIZUTA : Fundamental Study on Water Penetration Properties of Concrete Cover, Proceedings of the 78th Annual Conference of the Japan Society of Civil Engineers, V-269, 2023. 9 [in Japanese]
5) Eiki HORIZUMI, Atsushi UENO, Kentaro OHNO and Tomohisa KAMADA : Effect of temperature history curing on water penetration rate coefficient of concrete, Proceedings of the 78th Annual Conference of the Japan Society of Civil Engineers, V-270, 2023. 9 [in Japanese]
6) Ryoutarou KAGAMI, Yujin KOMORI, Kentaro OHNO, Atsushi UENO, Tomohisa KAMADA, Naoki NAGAMOTO and Naohumi ANDO : Influences of Artificial Error in Measurement and Inhomogeneous Material on Stress Estimation in Concrete by Ultrasonic Method, Proceedings of the 78th Annual Conference of the Japan Society of Civil Engineers, V-619, 2023. 9 [in Japanese]

7) Kazuhiro TSUNO, Tomoha OMAE, Kentaro OHNO and Mikinao GOTO：Application Study on Salt Attack Survey of Reinforced Concrete by Non-destructive test for Preventive Maintenance (Part 1)-Experimental Study on Effects of Early Re-bar Corrosion on Structures-, Proceedings of the 78th Annual Conference of the Japan Society of Civil Engineers, V-621, 2023. 9 [in Japanese]
8) Kentaro OHNO, Kazuhiro TSUNO, Mikinao GOTO, Shunpei FUJIMORI and Satoshi IWANO：Application Study on Salt Attack Survey of Reinforced Concrete by Non-destructive test for Preventive Maintenance (Part 2)　-Estimation of interface adhesion between rebar and concrete by Ultrasonic Method-, Proceedings of the 78th Annual Conference of the Japan Society of Civil Engineers, V-622, 2023. 9 [in Japanese]
9) Satoshi IWANO, Kazuhiro TSUNO, Mikinao GOTO, Shunpei FUJIMORI, Kentaro OHNO and Haruo SANEFUJI：Application Study on Salt Attack Survey of Reinforced Concrete by Non-destructive test for Preventive Maintenance (Part3) The Confirmatory Experiment by the Impact Elastic Wave Method to Specimens Focused on Salt Attack, Proceedings of the 78th Annual Conference of the Japan Society of Civil Engineers, V-623, 2023. 9 [in Japanese]
10) Ryota ONODA, Atsushi UENO, Kentaro OHNO and Tomohisa KAMADA：Effect of Replacement Ratio and Particle Size of Micronized Rubber Powder Derived from Used Tires on Mortar Properties, Proceedings of the 78th Annual Conference of the Japan Society of Civil Engineers, V-715, 2023. 9 [in Japanese]
11) Satoshi IWANO and Kentaro OHNO：Influence of Concrete Moisture Content on Non-destructive Test Results by Hitting on the Surface of Concrete, Proceedings of Annual Conference of the Japan Society of Non-Destructive Inspection, pp.75-78, 2023.10 [in Japanese]
12) Kentaro OHNO, Satoshi IWANO, Tetsuya SUZUKI, Masaomi KIMURA, Shinya UCHIDA and Shigeki ICHIKAWA：Defect Detection of Thrust Concrete Block by Infrared Thermography and Impact Elastic Wave Method, Proceedings of Annual Conference of the Japan Society of Dam Engineers, pp.1-6, 2023.11 [in Japanese]

【Publications】

1) Sochi SAKAI, Atsushi UENO, Tomohisa KAMADA and Kentaro OHNO：Study on water penetration behavior of concrete subjected to temperature history during hardening, Proceedings of the Japan Concrete Institute, Vol.45, No.1, pp.850-855, 2023.6 [in Japanese]
2) Ko HIWATASHI, Kentaro OHNO, Noriyuki UTAGAWA and Shinya KITAGAWA：Relationship between strength development of tunnel lining concrete and frequency response characteristics due to impact on steel plate, Proceedings of the Japan Concrete Institute, Vol.45, No.1, pp.1294-1299, 2023.6 [in Japanese]
3) Yujin KOMORI, Kentaro OHNO, Ryotaro KAGAMI and Naoki NAGAMOTO：Effect of coarse aggregate content on the relationship between compressive stress and ultrasonic velocity change rate of concrete, Proceedings of the Japan Concrete Institute, Vol.45, No.1, pp.1336-1341, 2023.6 [in Japanese]

4) Emi OSANO, Kentaro OHNO, Atsushi UENO and Tomohisa KAMADA：Study on water leakage behavior from cracks in concrete and evaluation of through cracks by ultrasonic method, Proceedings of the Japan Concrete Institute, Vol.45, No.1, pp.1486-1491, 2023.6 [in Japanese]
5) Yu NAKAMURA, Kentaro OHNO, Atsushi UENO and Tomohisa KAMADA：Proposal of an AE source location method considering velocity change of elastic waves and its verification by numerical experiments, Proceedings of the Japan Concrete Institute, Vol.45, No.1, pp.1492-1497, 2023.6 [in Japanese]
6) Ryotaro KAGAMI, Kentaro OHNO, Yujin KOMORI and Naoki NAGAMOTO：Stress Estimation of Prestressed Concrete by using Ultrasonic, Proceedings of the Japanese Society of Prestressed Concrete Institute, pp.289-292, 2023.10 [in Japanese]

【External Funding Sources】

・Grants-in-Aid for Scientific Research：1
・Collaborative research：3

【Social Contributions (Excluding confidential activities)】

・Japan Society of Civil Engineering：1 committee
・Japan Concrete Institute：2 committees
・Architectural Institute of Japan：1 committee
・The Japanese Society for Non-Destructive Inspection：4 committees

【Awards】

・Three Awards

【Other Activities】

・Collaborative research with bureau of Construction Tokyo Metropolitan Government

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences

【Name】: Hiroshi SAKAI

【Position】: Associate Professor

【Research Topic】: Water and Wastewater Engineering, Water Environment Management, Water Quality Management

【Outline of research achievement】

Several studies were conducted for development and improvement for water and waste water treatment from environmental, social, and technological perspectives. Specific research area includes behavior of microplastics from tire wear particles, degradation of pollutants by physical chemical treatment, asset management of

【Presentations】

1) Charles John GUNAY, Tomohiro IWAMA, Yuta KOYAMA, Katsuhide YOKOYAMA, Hiroshi SAKAI, Akira KOIZUMI, Kenji SAKAI, Hiroki TAKAHASHIJastine Mae Julita Galang, Charles John GUNAY, Hiroshi SAKAI, Katsuhide YOKOYAMA (2023.7.30-8.4), Mapping Priority Areas for Forest Management in a Mountainous Watershed Using Raindrop Impact Estimation and Physically-based Modeling Approaches, AOGS2023, Asia Oceania Geosciences Society, Singapore
2) Jastine Mae Julita Galang, Charles John GUNAY, Hiroshi SAKAI, Katsuhide YOKOYAMA (2023.7.8)、Parameter Uncertainty and Sensitivity Analysis for Nutrient Modelling in a Forested Catchment Using the Sequential Uncertainty Fitting (SUFI-2) Algorithm in SWAT-CUP、Japan Society on Water Environment, Water and Environment Technology Conference, Online

【Publications】

1) Yuichiro Murata, Hiroshi Sakai, Koji Kosaka (2024) Degrading surface-water-based natural organic matter and mitigating haloacetonitrile formation during chlorination: Comparison of UV/persulfate and UV/hydrogen peroxide pre-treatments, Chemosphere, 354, 141717.
2) Guntur Adisurya Ismail and Hiroshi Sakai (2024) Toxicity Changes of Dye Degradation via Photo-Fenton Treatment and the Possible Degradation Mechanism, Case Studies in Chemical and Environmental Engineering, 9, 100665.
3) Hiroshi SAKAI (2024) Review of Research on Performance Indicators for Water Utilities, AQUA - Water Infrastructure, Ecosystems and Society, 73(2), 167-182.
4) Charles John C. Gunay, Tomohiro Iwama, Katsuhide Yokoyama, Hiroshi SAKAI, Masaki

Kawaue, Hiroki Takahashi (2024) Impacts of sustainable management on the spatial distributions of erosion susceptibility and probable sediment yield in a mixed-forested watershed, Journal of Environmental Management,352, 119924

5) Jastine Mae Julita Galang, Charles John Gunay, Hiroshi Sakai, Katsuhide Yokoyama (2024) Parameter Uncertainty and Sensitivity Analysis for Nutrient Modelling in a Forested Catchment Using the Sequential Uncertainty Fitting (SUFI-2) Algorithm in SWAT-CUP, Journal of Water and Environment Technology, 22(1), pp.27-40
6) Guntur Adisurya Ismail and Hiroshi Sakai (2023) pH-dependent dye protonation and the effect of iron on dye degradation during Fenton-based processes, Ozone Science & Engineering (accepted).
7) Charles John C. Gunay, Tomohiro Iwama, Hiroshi SAKAI, Katsuhide Yokoyama (2023) Influence of different management systems on surface protection and erodibility of a temperate mixed forest, Ecological Engineering, 193, 106993
8) Gaku Oyama, Masami YANAGIHARA, Hiroshi SAKAI (2023) Occurrence of Tire-derived Microplastics at a Curvilinear Road Section, Journal of Environment and Safety, E23SC0101

【External Funding Sources】

• JSPS Kakenhi, Development of Selective Water Treatment Technology Using Sulfate Radicals to Control Disinfection Byproducts, PI, FY2022-2024

【Social Contributions (Excluding confidential activities)】

International Water Association, AQUA, Associate Editor

【Awards】

None

【Other Activities】

None

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences
【Name】: Tetsuya Shintani
【Position】: Associate Professor
【Research Topic】: Coastal engineering and Hydraulics
【Outline of research achievement】
1) Numerical models based on the LBM and SPH methods were developed to accurately and efficiently estimate wave forces acting on breakwaters due to high waves and tsunamis. In addition, models based on the Discontinuous Galerkin and Smoothed Particle methods employing the shallow-water flow equation were constructed for accurate analysis of tsunami propagation in the open ocean, and their accuracy was confirmed to be satisfactory.
2) Based on data assimilation technique, we have improved the accuracy of reservoir water temperature prediction using hydrodynamic models. We also investigated the influence of wind inhomogeneity which is important in analyzing reservoir hydrodynamics. In addition, problems related to the transport of microplastics were clarified through inverse analysis based on the FV method and solid-liquid coupled model analysis based on DEM.
【Presentations】
(1) Nakayama, K., & Shintani, T., Pycnocline thickness effect on internal wave breaking over a uniform slope, Coastal Engineering Proceedings, (37), currents.4, 2023.
(2) Matsumura, K., Nakayama, K., Matsumoto, T. and Shintani, T., Patch size effect on a flow field due to submerged aquatic vegetation, AOGS 20th annual meeting, 2023.
(3) Nakayama, K., Matsumura, K., Matsumoto, T. and Shintani, T., Patch size effect on dissolved inorganic carbon absorption by submerged aquatic vegetation, AOGS 20th annual meeting, 2023.
(4)Iwasaki, T and Shintani, T., A Hp adaptive discontinuous Galerkin hydrodynamic model for 2d shallow water equations, AOGS 20th annual meeting, 2023.
【Publications】
(1) Fukumaru, D., Akamatsu, Y. and Shintani, T., Investigation on accurate prediction of water level in a small-medium sized river basin using deep learning, Journal of JSCE, Volume 79 Issue 8 Article ID: 22-00234, 2023.
(2) Fukumaru, D., Akamatsu, Y. and Shintani, T., Development of real-time water level prediction system using deep learning and application for the whole Yamaguchi Prefecture, Advances in river engineering, vol.29, pp.103-106, 2023.
(3) Wataru Ito, Keisuke Nakayama, Tetsuya Shintani,Coriolis effects on wind-driven upwelling in enclosed basins, Continental Shelf Research, Volume 256,2023,104956,ISSN 0278-4343, 2023.
(4) Matsumura, K., Nakayama, K., Shintani, T. and Matsumoto, H., Assessment of patch size's impact on carbon absorption by submerged aquatic vegetation, Journal of JSCE, Volume 79, Issue 18,

Article ID: 23-18158, 2023.
(5) Kasahara, T. and Shintani, T., Development of a 3D multiphase fluid analysis model based on the cumulant model lattice Boltzmann method and its application to violent flow, Journal of JSCE, Volume 80, Issue 16, Article ID: 23-16043, 2024.
(6) Okazawa, T. and Shintani, T., Implementation and validation of a data assimilation method based on an ensemble Kalman filter using reservoir observed water temperatures, Journal of JSCE, Volume 80, Issue 16, Article ID: 23-16135, 2024.
(7) Nakayama, K., Shintani, T., Oshikawa, H. and Kobayashi, K., Wave-current model using variational principle, Journal of JSCE, Volume 80, Issue 16, Article ID: 23-16044, 2024.

【External Funding Sources】

Collaborate research with Tokyo Metropolitan Bureau of Waterworks
JSPS (B, Co-Investigator)

【Social Contributions (Excluding confidential activities)】

【Awards】

【Other Activities】

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences
【Name】: Hitoshi NAKAMURA
【Position】: Associate Professor
【Research Topic】: Structural Engineering, Bridge Engineering, Engineering of Hybrid Structures
【Outline of research achievement】

Aiming primarily at bridges and steel structures in infrastructures, the survey, research and development have been performed as follows:

(1) Study on material and structural properties of GFRP members
(2) Study on enhancement of fatigue durability for welded joints using externally-bonded CFRP
(3) Seismic retrofitting of circular steel bridge piers by externally bonded carbon fiber sheets
(4) Development of repair and strengthening method for steel structures using VaRTM technique
(5) Evaluation of fatigue durability and debonding in adhesively bonded joints
(6) Investigation research on history of material, structure and design for bridges, and evaluation as modern cultural heritages in civil engineering

As a result, the fundamental data and valuable information for rational design, construction and maintenance in infrastructures have been obtained.

【Presentations】

1) Naohiro Yokoyama, Hitoshi Nakamura, Kenta Nogami, Tetsuo Masakado: Detection and propagation behavior of fatigue cracks in out-of-plane welded gusset joints coated with ultra-thick solvent-free ceramic epoxy resin paint, Proc. of the 78th Annual Conference of JSCE, I-85, 2pages, Sept. 2023. [in Japanese]
2) Yuta Kanazawa, Visal Thay, Shuichi Fujikura, Yuna Osada, Hitoshi Nakamura, Hisakazu Hori: Study on fatigue strength of adhesively bonded joints considering stress ratio, Proc. of the 78th Annual Conference of JSCE, I-151, 2pages, Sept. 2023. [in Japanese]
3) Tomonori Tomiyama, Itaru Nishizaki, Takahiro Matsui, Hitoshi Nakamura: Durability of corroded steel plate repaired with CFRP by VaRTM Technology, Proc. of the 78th Annual Conference of JSCE, V-310, 2pages, Sept. 2023. [in Japanese]
4) Juliane Therese Rellas Bacod, Hitoshi Nakamura, Takahiro Matsui: Analytical Evaluation of Cyclic Loading Behavior of Circular Steel Columns Retrofitted by Externally Bonded Carbon Fiber Sheets in Graded Configuration, Proc. of the 78th Annual Conference of JSCE, CS2-39, 2pages, Sept. 2023.
5) Atsuki Kajihara, Hitoshi Nakamura, Kensuke Kobayashi, Koichi Hanamura, Toshiyuki Niikura: Experimental study on flexural characteristics of FRP girders for Strengthening RC slab, Proc. of the 78th Annual Conference of JSCE, CS6-10, 2pages, Sept. 2023. [in Japanese]
6) Toshihiro Yamazaki, Kensuke Kobayashi, Ryo Onodera, Hitoshi Nakamura, Kazuhiro Awazu, Toshiyuki Niikura: Relaxation test of high-strength bolted joint between steel plate and GFRP plate bonded with steel plate, Proc. of the 78th Annual Conference of JSCE, CS6-11, 2pages, Sept. 2023. [in Japanese]

7) Ryo Onodera, Hitoshi Nakamura, Kensuke Kobayashi, Koichi Hanamura, Toshiyuki Niikura: Experimental study on high-strength bolted joints between hybrid FRP composite girders and steel girders, Proc. of the 78th Annual Conference of JSCE, CS6-12, 2pages, Sept. 2023. [in Japanese]
8) Kota Arai, Hitoshi Nakamura, Kenta Ono, Mamoru Sawada: Analytical study on shear loading tests of steel girders by externally bonded CFRP, Proc. of the 78th Annual Conference of JSCE, CS6-13, 2pages, Sept. 2023. [in Japanese]
9) Kyousuke Takahashi, Hitoshi Nakamura, Visal Thay, Hisakazu Horii: Experimental study on fatigue strength of CFRP adhesive bonded joints under cyclic bending stress, Proc. of the 78th Annual Conference of JSCE, CS6-14, 2pages, Sept. 2023. [in Japanese]
10) Ryo Onodera, Atsuki Kajihara, Hitoshi Nakamura, Kensuke Kobayashi, Koichi Hanamura, Toshiyuki Niikura: Development of joint method and FRP members for strengthening of existing RC slab, JRPS, 68th FRP CON-EX 2023, Poster session, 3pages, Oct. 2023. [in Japanese]

【Publications】

1) Juliane Therese R. Bacod, Hitoshi Nakamura, Kim Oliver U. Magtagñob, Takahiro Matsui: Cyclic loading test and analytical evaluation of circular steel columns retrofitted by externally bonded carbon fiber sheets in graded configuration, The 11th International Conference on Fiber-Reinforced Polymer (FRP) Composites in Civil Engineering (CICE 2023), 12pages, July 2023.
2) Atsushi Matano, Hitoshi Nakamura, Visal Thay, Takahiro Matsui: Effect of adhesive debonding of CFRP around weld bead and crack on fatigue crack growth in steel plate, The 11th International Conference on Fiber-Reinforced Polymer (FRP) Composites in Civil Engineering (CICE 2023), 8pages, July 2023.
3) Kyosuke Takahashi, Hitoshi Nakamura, Visal Thay, Hisakazu Horii: Experimental study on fatigue strength and debonding progress of adhesive bonded joints between steel plates and patch plates, Japanese Journal of JSCE, Vol.79, Issue 14, 22-14002, May 2023. [in Japanese]
4) Ryo Onodera, Hitoshi Nakamura, Kensuke Kobayashi, Koichi Hanamura, Toshiyuki Niikura: Tensile test on high-strength bolted joints of GFRP plates reinforced by externally bonded steel plates, Japanese Journal of JSCE, Vol.79, Issue 14, 22-14006, May 2023. [in Japanese]
5) Kyosuke Takahashi, Hitoshi Nakamura, Thay Visal, Takahiro Matsui, Hisakazu Horii: Experimental study on fatigue strength of adhesive bonded joints of steel plate with bonded patch plate using VaRTM, JSCE, Proc. of the 15th Symposium on Research and Application of Hybrid and Composite Structures, pp.150-158, Nov. 2023. [in Japanese]
6) Juliane Therese R. Bacod, Hitoshi Nakamura: Analytical study on the effect of carbon fiber sheet orientation and configuration on seismic retrofitting of circular steel columns under cyclic loading, JSCE, Proc. of the 15th Symposium on Research and Application of Hybrid and Composite Structures, pp.159-166, Nov. 2023.
7) Atsuki Kajihara, Hitoshi Nakamura, Kensuke Kobayashi, Koichi Hanamura, Toshiyuki Niikura: Bending loading test and flexural evaluation on pultruded FRP girders, JSCE, Proc. of the 15th Symposium on Research and Application of Hybrid and Composite Structures, pp.314-322, Nov. 2023. [in Japanese]
8) Hitoshi Nakamura, Kunitaro Hashimoto, Takashi Koga, Keigo Kubo: Experimental study on tightening torque

of GFRP members, JSCE, Proc. of the 15th Symposium on Research and Application of Hybrid and Composite Structures, pp.350-358, Nov. 2023. [in Japanese]

9) Kazuhiro Awazu, Ryo Onodera, Hitoshi Nakamura, Kensuke Kobayashi, Toshiyuki Niikura: Experimental study on high-strength bolted friction joint of GFRP member, JSCE, Proc. of the 15th Symposium on Research and Application of Hybrid and Composite Structures, pp.359-367, Nov. 2023. [in Japanese]
10) Ryo Onodera, Hitoshi Nakamura, Kensuke Kobayashi, Koichi Hanamura, Toshiyuki Niikura: Static and fatigue test on high-strength bolted joints between hybrid FRP composite girders and steel girders, JSCE, Proc. of the 15th Symposium on Research and Application of Hybrid and Composite Structures, pp.368-374, Nov. 2023. [in Japanese]
11) Naohiro Yokoyama, Hitoshi Nakamura, Kenta Nogami, Tetsuo Masakado: Detect and propagation of fatigue cracks in welded joints painted by ultra thick layer solvent free ceramic epoxy resin paint, JSSC, Proceedings of Constructional Steel, Vol.31, pp.346-352, Nov. 2023 [in Japanese]

【External Funding Sources】

・JSPS KAKENHI, Grant Number: 21K04238, Investigator, Development of advanced strengthening technique for steel structures using externally bonded FRP members, 2021-2023.

【Social Contributions (Excluding confidential activities)】

・MEXT, Investigative council for examination of books for textbooks, Temporary Member
・MLIT, Kanto Regional Engineering Office, Review Subcommittee on Comprehensive Evaluation, Member
・JSCE Committee of Hybrid structure, Member and Secretary
・JSCE Committee of Hybrid structure, Subcommittee on Continuing education in hybrid structures, Chair
・JSCE Committee of Hybrid structure, Subcommittee on Guidelines for performance-based design of hybrid structures, Member
・JSCE Committee of Hybrid structure, Subcommittee on evaluation of green and gray infrastructures, Member
・JSCE Committee of Hybrid structure, Subcommittee on Design and maintenance of FRP composite structures, Member and Secretary
・JSCE Committee of Hybrid structure, Subcommittee on 300-year exposure project, Member
・JSCE Committee of Hybrid structure, Subcommittee on Establishment of infrastructure management system for Society 5.0, Member
・JSCE Committee of Structural engineering, Member
・JSCE Committee of Structural engineering, Subcommittee on Continuing Education, Member
・JSCE Committee of Steel structures, Member
・JSCE Committee of Steel structures, Research committee on Update and utilization of database of historical steel bridges, Chair
・JSCE Committee of Steel structures, Research committee on Repair and strengthening of steel bridges, Member
・JSCE Committee on the History of civil engineering, Subcommittee on Historical and cultural value of post-war Infrastructures, Member

・JSCE Committee on the Construction management, Research committee on Public design competition, Member
・JSSC Subcommittee on future strategy of steel structures, Vice-Chair
・Japan Steel Bridge Engineering Association, Research Group on Design method of steel bridges considering maintenance, Chair
・FRP Hydraulic Gates Engineering Association, Advisor
・The Japan Reinforced Plastics Society, Director
・Tokyo Metropolitan University Alumni Association, Representative

【Awards】

(1) JSCE, the 78th Annual Conference of JSCE, Excellent Paper Award
Ryo Onodera, Hitoshi Nakamura, Kensuke Kobayashi, Koichi Hanamura, Toshiyuki Niikura: Experimental study on high-strength bolted joints between hybrid FRP composite girders and steel girders, Proc. of the 78th Annual Conference of JSCE, CS6-12, 2pages, Sept. 2023. [in Japanese]

(2) JSCE, Proc. of the 15th Symposium on Research and Application of Hybrid and Composite Structures, Excellent Presentation Award
Atsuki Kajihara, Hitoshi Nakamura, Kensuke Kobayashi, Koichi Hanamura, Toshiyuki Niikura: Bending loading test and flexural evaluation on pultruded FRP girders, JSCE, Proc. of the 15th Symposium on Research and Application of Hybrid and Composite Structures, pp.314-322, Nov. 2023. [in Japanese]

(3) Conference Best Paper Awards, The 11th International Conference on Fibre-Reinforced Polymer (FRP) Composites in Civil Engineering (CICE 2023)
Juliane Therese R. Bacod, Hitoshi Nakamura, Kim Oliver U. Magtagñob, Takahiro Matsui: Cyclic loading test and analytical evaluation of circular steel columns retrofitted by externally bonded carbon fiber sheets in graded configuration, 12pages

【Other Activities】

(1) Hitoshi Nakamura, Hiroshi Isohata, Akio Kurebayashi, Shigeru Onoda, Shigenori Horii: Passing on technologies from historical steel bridges, Research Discussion Session, the 78th Annual Conference of JSCE, Committee of Steel Structure, Research committee on Update and utilization of database of historical steel bridges, Handout, Sept. 2023. [in Japanese]

(2) Toshiyuki Ishikawa, Hitoshi Nakamura, Kazuo Ogaki: Repair and strengthening of steel bridges using externally-bonded CFRP, Bulletin of The Japan Society of Naval Architects and Ocean Engineers, Vol.110, pp.18-23, Sept. 2023. [in Japanese]

(3) Itaru Nishizaki, Kunitaro Hashimoto, Hitoshi Nakamura, Takashi Matsumoto, Yasuo Kitane, et al.: Report on the Latest Research on Design and Maintenance of FRP Composite Structures, JSCE Committee of Hybrid structure, Research committee on design and maintenance of FRP Composite structures, Hybrid structure reports 20, Oct. 2023. [in Japanese]

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences
【Name】: Hideo
【Position】: : Assistant Professor
【Research Topic】: Hydrology, River Engineering
【Outline of research achievement】
In recent years, heavy rainfalls have become frequent because of climate change, necessitating the expansion of soft measures to mitigate water disasters. Particularly, to disseminate information on the urgency of potential flood threats in an easily understandable manner, it is essential to enhance the information dissemination for river disaster prevention, which includes assessing the flow of rivers and the condition of the surrounding areas. Meanwhile, the use of 3D models in recent infrastructure development projects has been increasing, and this approach is gaining significant attention in the field of disaster prevention as well. By utilizing 3D models to construct a virtual representation of the current river water levels and the conditions within embankments (such as the presence or absence of floodwater), there is a potential to use this as supportive information for river disaster prevention. In this study, we developed technology to disseminate AR (augmented reality)-based river disaster prevention information using a game engine, combining 3D riverbed measurement data obtained through LiDAR and river water surface extraction technology using AI-based image analysis from river monitoring cameras.

【Presentations】
1) Nakajima, K., Amaguchi, H. and Imamura, Y. (Mar. 2024)
Virtual space model using game engine for river disaster prevention support.
Proc. of the 51th Kanto Branch Annual Conference of JSCE, II-20.
2) Mizuno, K., Amaguchi, H. and Imamura, Y. (Mar. 2024)
Construction of hydraulic characteristics database using HEC-RAS for real-time river information provision.
Proc. of the 51th Kanto Branch Annual Conference of JSCE, II-21.
3) Katsuki, R., Amaguchi, H. and Imamura, Y. (Mar. 2024)
Water level estimation using segmentation of river monitoring camera images at Oashi bridge.
Proc. of the 51th Kanto Branch Annual Conference of JSCE, II-55.
4) Dulawan, J. M., Imamura, Y. and Amaguchi, H. (Mar. 2024)
Addressing data gaps in disaster reports for enhanced flood risk management: case study in Metro Manila, Philippines.
Proc. of the 51th Kanto Branch Annual Conference of JSCE, II-56.

5) Okuda, Y., Imamura, Y. Amaguchi, H. and Fujitsukaj, S. (Mar. 2024)
Study on efficient operation of storage reservoir gates using deep reinforcement learning for multiple urban small rivers.
Proc. of the 51th Kanto Branch Annual Conference of JSCE, II-57.

6) Subram, C., Imamura, Y. and Amaguchi, H. (Mar. 2024)
Bidirectional long short-term memory (BiLSTM) rainfall-runoff prediction with sliding window analysis for an urban watershed
Proc. of the 51th Kanto Branch Annual Conference of JSCE, II-63.

7) Kumagae, T., Nong M., Konishi, T., Imamura, Y. and Amaguchi, H. (Mar. 2024)
Analysis of increase in urban area of Phnom Penh resulting from 20 years of rapid urbanization and future projections.
Proc. of the 51th Kanto Branch Annual Conference of JSCE, II-63.

8) Kajiwara, K., Nakata, T., Imamura, Y. and Amaguchi, H. (Mar. 2024)
Estimation method for flood-damaged houses due to the heavy rain in Saga in August 2019 using flood simulation and SNS images.
Proc. of the 51th Kanto Branch Annual Conference of JSCE, II-65.

9) Onuki, S., Konishi, T., Imamura, Y. and Amaguchi: H. (Mar. 2024)
Study on regression analysis issues and modeling for estimating microplastic amounts in rivers.
Proc. of the 51th Kanto Branch Annual Conference of JSCE, II-72.

10) Murakami, R., Imamura, Y., and Amaguchi, H. (Mar. 2024)
Construction of SWMM data using GIS for the upper basin of the Kanda River.
Proc. of the 51th Kanto Branch Annual Conference of JSCE, II-87.

11) Sato, R., Imamura, Y. and Amaguchi, H. (Mar. 2024)
Flood inundation analysis using HEC-RAS in the basins around Metro Manila.
Proc. of the 51th Kanto Branch Annual Conference of JSCE, II-88.

12) Nong, M., Konishi, T., Imamura, Y. and Amaguchi, H. (Mar. 2024)
Review of integrated urban flood risk and future urban resilience in Phnom Penh capital city of Cambodia.
Proc. of the 51th Kanto Branch Annual Conference of JSCE, II-89.

13) Nakajima, K., Amaguchi, H., Imamura, Y. and Takasaki, T. (Nov. 2023)
Synthesizing method for hydraulic characteristic data in river monitoring camera images using VFX technology.
Japan Society of Photogrammetry and Remote Sensing, Autumn 2023 Academic Conference.

14) Amaguchi, H. and Imamura, Y. (Sep. 2023)
Study on the runoff suppression effect of rainwater storage tanks installed in individual buildings.
Japan Society of Hydrology and Water Resources 2023 Annual Meeting.

【Publications】

1) Dulawan, J.M.T., Imamura, Y., Amaguchi, H. and　Ohara, M.
Social Drivers of Flood Vulnerability Understanding Household Perspectives and Persistence of Living in Flood Zones of Metro Manila, Philippines.
Water. 2024; 16(6):799.
2) Kawamura, A., Amaguchi, H., Olsson, J. and Tanouchi, H.
Urban Flood Runoff Modeling in Japan: Recent Developments and Future Prospects.
Water. 2023; 15(15):2733

【External Funding Sources】

【Social Contributions (Excluding confidential activities)】

- Committee on Global Environment, Japan Society of Civil Engineers
- Editorial Board Member, Japan Society of Hydrology and Water Resources

【Awards】

【Other Activities】

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences
【Name】: Tomohisa KAMADA
【Position】: Assistant Professor
【Research Topic】: Durability and maintenance of RC structures
【Outline of research achievement】
1) Experimental study on water penetration property in the cover concrete of reinforced concrete was conducted and it revealed that the mass transfer rate changes with the cover thickness, and that the quality reduction of concrete near the rebar (coarsening of the pore structure) affects the mass transfer rate. It was also clarified that the quality reduction near the rebar may be caused by material separation in the concrete.
2) In addition, studies on efficient carbonation method of simulated sludge water and the durability of precast concrete were conducted.

【Presentations】
1) Tomohisa Kamada, Vu Viet Cuong, Toshiharu Kishi: Development of anomaly prediction formula considering the both effect of carbonation and water penetration,Proceedings of the annual meeting of cement and concrete engineering, pp.310-311, 2023
2) Kaya Furuki, Atsushi Ueno, Kentaro Ohno, Tomohisa Kamada: Chemical and mineral composition of Izu-islands volcanic fine aggregate, strength and pore structure of mortar, Proceedings of JSCE annual meeting 2023, V-195, 2023
3) Airi Suzuki, Tomohisa Kamada, Atsushi Ueno, Kentaro Ohno, Maki Mizuta: Fundamental Study on Water Penetration Properties of Concrete Cover, Proceedings of JSCE annual meeting 2023, V-269, 2023
4) Eiki Horizumi, Atsushi Ueno, Kentaro Ohno, Tomohisa Kamada: Effect of temperature history curing on water penetration rate coefficient of concrete, Proceedings of JSCE annual meeting 2023, V-270, 2023
5) Tomohisa Kamada: Relationship between 3D microscopic structure of pores of hardened cement using blast furnace slag fine powder and water penetration property, Proceedings of JSCE annual meeting 2023, V-592, 2023
6) Ryoutarou Kagami, Yujin Komori, Kentaro Ohno, Atusi Ueno, Tomohisa Kamada, Naoki Nagamoto, Naohumi Ando: Influences of Artificial Error in Measurement and Inhomogeneous Material on Stress Estimation in Concrete by Ultrasonic Method, Proceedings of JSCE annual meeting 2023, V-619, 2023
7) Masahiro Ishii, Toshiharu Kishi, Tomohisa Kamada: Research on Prediction Method of Steel

Corrosion Considering Variation of Carbonation Depth and Water Penetration, Proceedings of JSCE annual meeting 2023, V-666, 2023

8) Ryota Onoda, Atsushi Ueno, Kentaro Ohno, Tomohisa Kamada: Effect of Replacement Ratio and Particle Size of Micronized Rubber Powder Derived from Used Tires on Mortar Properties, Proceedings of JSCE annual meeting 2023, V-715, 2023

【Publications】

1) Sochi SAKAI, Atsushi UENO, Tomohisa KAMADA, Kentaro OHNO: Study on water penetration behavior of concrete subjected to temperature history during hardening, Proceedings of the Japan Concrete Institute, Vol.45, No.1, pp.850-855, 2023

2) Emi OSANO, Kentaro OHNO, Atsushi UENO, Tomohisa KAMADA: Water Leakage from Cracks in Concrete and Penetration Evaluation of Cracks by Ultrasonic Method, Proceedings of the Japan Concrete Institute, Vol.45, No.1, pp.1486-1491, 2023

3) Yu NAKAMURA, Kentaro OHNO, Atsushi UENO, Tomohisa KAMADA: Proposal of AE source location method with varying elastic wave velocity and verification by numerical experiment, Proceedings of the Japan Concrete Institute, Vol.45, No.1, pp.1492-1497, 2023

4) Naru SHIMIZU1, Atsushi UENO1, Tomohisa KAMADA1, Nwe LETT WAI: Fundamental study on carbonation in simulated slude with CO_2 micro bubble water, Proceedings of the Japan Concrete Institute, Vol.45, No.1, pp.1690-1695, 2023

【External Funding Sources】

・JSPS KAKENHI Grant Number 21KK0072
・JSPS KAKENHI Grant Number 20K14800

【Social Contributions (Excluding confidential activities)】

・JSCE Concrete Committee / Sub-Committee
・JCI Kanto branch / Young researcher's association 21
・Young researcher's association in cement

【Awards】

Nothing

【Other Activities】

Nothing

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences
【Name】: Kosuke Kawata
【Position】: Assistant Professor
【Research Topic】: Tunneling, Rock mechanics, Maintenance, Earthquake Engineering
【Outline of research achievement】
Research on the design, construction and maintenance of tunnels were done on the following topics.
1) The behavior of existing mountain tunnels during earthquakes and countermeasures against earthquakes.
2) The mechanical behavior of rock bolts made of different materials
3) The application conditions, methods and effects of reinforcement measures for existing tunnels
4) The effectiveness of auxiliary construction methods for mountain tunnels
5) The mechanical behavior of shield tunnel segments
【Presentations】
1) Experimental study on the reinforcing effects of different invert shapes in mountain tunnels, Proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023
2) Numerical analysis on the reinforcing effects of different invert shapes in mountain tunnels, Proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023
3) Experiments to evaluate the mechanical performance of new invert structures, proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023
4) Analytical study of seismic behavior at the portal area of an existing mountain tunnel, proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023
5) Experimental study on seismic effects of deformation countermeasures in mountain tunnels, proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023
6) Numerical study on the mechanical behavior of vertical pre-reinforcement in slope ground, proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023
7) Experiment on the mechanical behavior of vertical pre-reinforcement for field adoption, proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023
8) Fundamental study on the mechanical properties of the waterproof sheet using in mountain tunnels, proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023
9) Fundamental study on the influence of joints on the mechanical properties of tunnels under external forces, proceedings of Japan Society of Civil Engineers (JSCE) No.78 Annual Meeting, 2023
【Publications】
1) Mechanical Behavior of Invert Structure with New Geometries for Simplified Construction, Proceedings of the WTC2023 ITA-AITES World Tunnel Congre, 2023.5

2) Characteristics of reinforcement for earthquake resistance in mountain tunnel, 15th ISRM Congress 2023 & 72nd Geomechanics Colloquium, 2023.10

3) Consideration on feasibility of new invert shapes for work-saving construction, T. Natsume, R. Nakazato., K Kawata., N. Isago, A Kusaka., Y. Koizumi., T. Otsu Proceedings of the 33rd Annual Conference on Tunnel Engineering, JSCE, 2023

4) Model experiments on load-bearing performance and failure process of proposed invert structures, Y. Koizumi., K. Kusaka., N. Isago., K. Kawata., T. Otsu., N. Mikami Proceedings of the 33rd Annual Conference on Tunnel Engineering, JSCE, 2023

5) Study on management method of concrete joint angle of tunnel lining, S.Nagata., I. Otsuka., W. Zhang., S. Naomachi., K. Kawata., N. Isago., Proceedings of the 33rd Annual Conference on Tunnel Engineering, JSCE, 2023

6) Consideration of the Influence of Ground Conditions on the Seismic Behavior of Portal of Existing Mountain Tunnel, A. Matsuoka., M. Fukushima., K. Kawata., H. Kitamura., K. Maegawa., N. Isago., 2023.11, Proceedings of the 16th Japan Earthquake Engineering Symposium, JAEE, 2023

7) A countermeasure against earthquake for road tunnels incorporating fail-safe funcion, A. Kusaka., H Kikuchi., K. Kawata., N Isago., Proceedings of the 50th Symposium on Rock Engineering, JSCE, 2024

8) Study on correlation between deformation and geological characrterstics in mountain tunnel, T. Natsume., R. Nakazato., K. Kawata., N. Isago., T. Otsu., K. Kusaka., Proceedings of the 50th Symposium on Rock Engineering, JSCE, 2024

【External Funding Sources】

Subsidy (Japan Tunneling Association, Ueda Memorial Foundation), Donations

1) Study on vibration characteristics of mountain tunnels using constant microtremor Measurements, Subsidy, Japan Tunneling Association, Principal Investigator

2) Research on a method for understanding the deterioration of mountain tunnels using constant microtremor measurement, Subsidy, Ueda Memorial Foundation, Principal Investigator

Other two donations

【Social Contributions (Excluding confidential activities)】

Member of Tunnel Engineering Committee, Japan Road Association

Member of Tunnel Engineering Committee, Japan Society of Civil Engineers

Member of Rock Mechanics Committee, Japan Society of Civil Engineers

Member of ITA Committee, Japan Society of Civil Engineers

Chair of Young Member Group, Japan Tunneling Association

【Awards】

None

【Other Activities】

None

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences
【Name】: Yusuke KISHI
【Position】: Assistant Professor
【Research Topic】: Structural Engineering, Disaster Mitigation, Seismic Engineering
【Outline of research achievement】

1) Replication analyses of the compression loading tests conducted in FY2022 as the "Study on Evaluation of Coupled Buckling Strength of Compression Members of Steel Bridges". Target member is I-shaped (H-shaped) cross-section member represented by tensile member of steel truss bridges. As a results of residual stress measurements, which relates to the strength, there were differences in the distributions of residual stress between conventional steel and the new material. Based on these results, the parameters of initial imperfection and the properties that had already been measured in previous years were numerically modeled to match the test specimens.
2) Numerical analyses were conducted in order to establish an evaluation method for the effect of internal damage on the performance of rubber bearings. Numerical models were consisted of monolayer by finite element method. Based on the strain distribution obtained in the no damage state, simulated crack was defined. Finally, the performance of damaged model was compared with no damage state. As the result of numerical analysis, the relationship between the crack propagation state and the decreasing ratio of the horizontal reaction force was quantitatively determined.

【Presentations】

1) Yusuke Kishi, Yasuhiro Miyazaki, Tomoki Katayama: Experimental study on compressive strength of H shape cross section member in superstructure of steel bridges, Proc. of the 78th Annual Conference of JSCE, I-211, September, 2023. (in Japanese)
2) Hazuki Tojo, Jun Murakoshi, Kuniei Nogami, Yusuke Kishi: Effect of hangar cable breaking on the loading response characteristics of small pedestrian suspension bridge, Proc. of the 78th Annual Conference of JSCE, I-314, September, 2023. (in Japanese)
3) Shuhei Maeda, Jun Murakoshi, Yusuke Kishi, Kuniei Nogami: Analytical study on coupled buckling strength of welded H-shape section members, Proc. of the 51th Annual Conference on Kanto branch of JSCE, I-314, March, 2024. (in Japanese)

【Publications】

1) Hazuki Tojo, Jun Murakoshi, Kuniei Nogami, Yusuke Kishi: The effect of damage to cable members on the structural safety of small pedestrian suspension bridge, Proc. of Constructional Steel, Vol. 31, pp. 37-46, November, 2023. (in Japanese)
2) Yusaku Kaneko, Jun Murakoshi, Kuniei Nogami, Yusuke Kishi: Experimental study on lateral load carrying capacity of corroded riveted girder ends, Proc. of Constructional Steel, Vol. 31, pp. 470-

479, November, 2023. (in Japanese)

3) Sohei Yoshikawa, Jun Murakoshi, Yusuke Kishi, Satoru Urano, Toshihiko Nagatani: Numerical study on fatigue behavior and damage factors at main girder-cross beam connections in H-beam bridge, Journal of Structural Engineering A, Vol. 70A, pp. 428-437, March, 2024. (in Japanese)

【External Funding Sources】

1) Research and Educational Donations for Steel structures, The Japan Iron and Steel Federation, 2023.

2) Specific Research Donations for Steel structures, The Japan Iron and Steel Federation, 2023.

【Social Contributions (Excluding confidential activities)】

1) Subcommittee on investigation of application of 3D FE analysis for structural performance verification of steel bridges, Committee on Steel Structure, Japan Society of Civil Engineers.

2) Subcommittee on survey and research for seismic performance verification of steel bridges using high-precision numerical analysis method, Committee on Steel Structure, Japan Society of Civil Engineers.

3) Subcommittee of Young Structural Engineers, Committee on Structural Engineering, Japan Society of Civil Engineers.

4) Subcommittee on Rationalization Design, Committee on Strengthening and Life Elongation Research for Steel Bridges, Japan Society of Steel Construction.

【Awards】

None

【Other Activities】

None

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences
【Name】: AZHIKODAN Gubash
【Position】: Assistant Professor
【Research Topic】: Hydrodynamics, ecology, and morphological evolution in rivers and estuaries
【Outline of research achievement】

1) The hydrodynamic study in the Ashtamudi estuary, India, revealed that the estuary experienced different mixing regimes, from well-mixed to stratified conditions at downstream and only stratified conditions in all other parts of the estuary. Further, the Chlorophyll-a dynamics in the estuary were predicted using neural network models (R^2>0.95). Lastly, the influence of the COVID-19 pandemic on plastic debris accumulation in the estuary was investigated using a preliminary questionnaire survey.
2) The effects of past human activities and recent climate change disasters on the riverbed morphology of the Chikugo River estuary (CRE), Japan were investigated using long-term topographic surveys. The results showed that the riverbed morphology of the CRE was affected by tidally induced sediment transport, increase in river flow by recent disasters, and human disturbances that were implemented in the past.
3) The effect of fortnightly environmental parameters on the Etsu (Coilia nasus) fish catch in the CRE was investigated. The results revealed that parameters like temperature, salinity, and river discharge have significant impacts on the variability of estuarine fish catch specifically during the spring tide.
4) The study at the upstream confluence area of the multi-channel Tanintharyi River estuary (TRE), Myanmar revealed that the difference in downstream topography between the main channel and branch, combined with tidal forcing, plays a crucial role in counter-current flow formation at the confluence area of the TRE.
5) The turnover process in the deep monomictic Ogouchi reservoir was analyzed using the dissolved oxygen variation and thermal stratification indices.

【Presentations】

1) Long-term (1953-2020) changes in morphology of Chikugo River, Japan in response to natural and anthropogenic forces. **Azhikodan, G.**, Phyu, P. E., and Yokoyama, K., Proceedings of the EGU General Assembly, EGU23-15323, Vienna, Austria, 25 April 2023, 14:00–15:45 (CEST). https://doi.org/10.5194/egusphere-egu23-15323
2) Tidal influence on the pattern of estuarine fish catch. Rawat, V.S., Fujikawa, R., **Azhikodan, G.**, Yokoyama, K., Proceedings of the 13th Symposium on River, Coastal, and Estuarine Morphodynamics (RCEM2023), Page 65, Urbana-Champaign, USA, 26 September 2023, 16:30 - 17:30 (CDT). https://uofi.app.box.com/s/58f97gz06sf490n4l9r6mfsmm7lxzihm
3) Study on the effect of discharge on the salinity intrusion and mixing condition at Tanintharyi River estuary. Hlaing, N.O., **Azhikodan, G.**, Yokoyama, K., Proceedings of the 13th Symposium on River, Coastal, and Estuarine Morphodynamics (RCEM2023), Page 74, Urbana-Champaign, USA, 26 September 2023, 15:00 - 16:00 (CDT). https://uofi.app.box.com/s/58f97gz06sf490n4l9r6mfsmm7lxzihm

4) The effect of sandbar on the salinity intrusion in a microtidal estuary. Sacueza, L.C., Kishida, M., Hayashi, M., **Azhikodan, G.**, Yokoyama, K., 78th Annual Meeting of Japan Society of Civil Engineers, II-122, Hiroshima, Japan, 15 September 2023, 10:40-12:00. https://confit.atlas.jp/guide/event/jsce2023/subject/II-122/date?cryptoId=
5) A comparative study of microplastics on the Ashtamudi estuary in account of cage farming. Beema, J., Ashna, A., Firdhouz, M.R., Jithu, R., Priya, K.L., Renjith, K.R., **Azhikodan, G.**, National Conference on Reviving Wetlands (Recent Developments in Wetland Research), Page 7, CWRDM Kozhikode, India, 11-13 October 2023.
6) A comparative study of salinity-induced Chlorophyll-a changes using ANN and ANFIS in the Ashtamudi estuary. Megha, P.R., Krishnapriya, K., Hisana, N., Keerthy, R., Priya, K.L., Renjith, K.R., **Azhikodan, G.**, National Conference on Reviving Wetlands (Recent Developments in Wetland Research), Page 9, CWRDM Kozhikode, India, 11-13 October 2023.
7) An assessment of salinity intrusion in the Ashtamudi estuary, India. Vidyalashmi, K., Nandana, J.S., Megha, C., Priya, K.L., **Azhikodan, G.**, Yokoyama, K., National Conference on Reviving Wetlands (Recent Developments in Wetland Research), Page 88, CWRDM Kozhikode, India, 11-13 October 2023.
8) Effects of Tidal Cycles and Hydro-Environmental Parameters on Coilia nasus Catch Behavior in a Macrotidal Estuary. Rawat, V S., **Azhikodan, G.**, Yokoyama, K., 4th University of St. La Salle Graduate Research Conference, Bacolod City, Philippines, 17 June 2023 12:30 PM Asia/ Manila Time.
9) Study on the relationship between Upstream Discharge and Downstream Tidal Forcing on the salinity intrusion at Tanintharyi River Estuary during Monsoon season. Hlaing, N.O., **Azhikodan, G.**, Yokoyama, K., 4th University of St. La Salle Graduate Research Conference, Bacolod City, Philippines, 17 June 2023 12:30 PM Asia/ Manila Time.
10) Effects of recent disasters on changes in riverbed morphology of the Chikugo River estuary, Japan. Phyu, P.E., **Azhikodan, G.**, Yokoyama, K., 4th University of St. La Salle Graduate Research Conference, Bacolod City, Philippines, 17 June 2023 12:30 PM Asia/ Manila Time.
11) Long-term analysis of turnover occurrence during winter in a deep reservoir. Kheiri, G., **Azhikodan, G.**, Yokoyama, K., 4th University of St. La Salle Graduate Research Conference, Bacolod City, Philippines, 17 June 2023 12:30 PM Asia/ Manila Time.
12) Forest management and its effects on soil water storage and erosion risk in a Japanese watershed. Gunay, C.J.C., **Azhikodan, G.**, Yokoyama, K. 4th University of St. La Salle Graduate Research Conference, Bacolod City, Philippines, 17 June 2023 12:30 PM Asia/ Manila Time.

【Publications】

1) Effects of past human activities and recent disasters on riverbed morphology of the Chikugo River estuary. Phyu, P.E., **Azhikodan, G. (Corresponding author)**, Yokoyama, K., *Journal of Japan Society of Civil Engineers*, Volume 12(2), Article ID: 23-16019, 29 February 2024. https://doi.org/10.2208/journalofjsce.23-16019
2) Topography and tidal variations: impact on counter-current flow at the confluence area of Tanintharyi River

estuary. Hlaing, N.O., **Azhikodan, G. (Corresponding author)**, Yokoyama, K., *Journal of Japan Society of Civil Engineers*, Volume 12(2), Article ID: 23-16140, 29 February 2024. https://doi.org/10.2208/journalofjsce.23-16140

3) Evaluating the Performance of ANN and ANFIS Models for the Prediction of Chlorophyll in the Ashtamudi Estuary, India. Raj, M.R., Krishnapriya, K., Hisana, N., Priya, K.L., **Azhikodan, G.**, *Advances in Data-Driven Computing and Intelligent Systems (Lecture Notes in Networks and Systems)*, Volume 891, 521-534, Springer Singapore, 26 February 2024. https://doi.org/10.1007/978-981-99-9524-0_39
4) Morphological response of the Chikugo River to climate change events. Phyu, P.E., **Azhikodan, G.**, Yokoyama, K., Proceedings of the 4th IAHR Young Professionals Congress, 26-27, Publisher: IAHR, November 2023. ISBN: 978-90-833476-5-3. https://www.iahr.org/library/anything-else?aid=527.
5) A study on salinity intrusion of Ashtamudi estuary during pre-monsoon period. Vidyalashmi, K., Nandana, J.S., Megha, C.L., **Azhikodan, G.**, Priya, K.L., Yokoyama, K., Proceedings of the 4th IAHR Young Professionals Congress, 59-60, Publisher: IAHR, November 2023. ISBN: 978-90-833476-5-3. https://www.iahr.org/library/anything-else?aid=527.
6) Effects of fortnightly environmental parameters on Etsu (Coilia nasus) catch in the Chikugo river estuary, Japan. Rawat, V.S., Fujikawa, R., **Azhikodan, G.**, Yokoyama, K., Proceedings of the 4th IAHR Young Professionals Congress, 126-127, Publisher: IAHR, November 2023. ISBN: 978-90-833476-5-3. https://www.iahr.org/library/anything-else?aid=527.
7) Evaluating the geospatial variability of sedimentary and hydrodynamic factors in the Ashtamudi estuary. Megha, P.R., Krishnapriya, K., Hisana, N., Keerthy, R., Manaf, F.M., Priya, K.L., **Azhikodan, G.**, Yokoyama, K., Proceedings of the 4th IAHR Young Professionals Congress, 164-165, Publisher: IAHR, November 2023. ISBN: 978-90-833476-5-3. https://www.iahr.org/library/anything-else?aid=527.
8) Influence of the COVID-19 pandemic on plastic debris accumulation in the Ashtamudi estuary. Beema, M.M.N., Navya, P., Shana, S.G., Nourin, F.R., Padiyedath, S.G., Priya, K.L., **Azhikodan, G.**, Yokoyama, K., Proceedings of the 4th IAHR Young Professionals Congress, 166-167, Publisher: IAHR, November 2023. ISBN: 978-90-833476-5-3. https://www.iahr.org/library/anything-else?aid=527.
9) Analyzing temporal discharge distribution in a Tidal River confluence. Hlaing, N.O., **Azhikodan, G.**, Yokoyama, K., Proceedings of the 4th IAHR Young Professionals Congress, 190-191, Publisher: IAHR, November 2023. ISBN: 978-90-833476-5-3. https://www.iahr.org/library/anything-else?aid=527.
10) Relationship between turnover and bottom dissolved oxygen in a deep reservoir from 1993-1996. Kheiri, G., Duka, M.A., **Azhikodan, G.**, Yokoyama, K., Proceedings of the 4th IAHR Young Professionals Congress, 199-201, Publisher: IAHR, November 2023. ISBN: 978-90-833476-5-3. https://www.iahr.org/library/anything-else?aid=527.
11) Phytoplankton habitats response to the variability of estuarine hydrodynamic condition in the macrotidal Chikugo River estuary. Nwe, L.W., Yokoyama, K., **Azhikodan, G.**, Proceedings of the 19th Annual Meeting of Asia Oceania Geosciences Society, 121-123, World Scientific Publishing, April 2023. https://doi.org/10.1142/9789811275449_0041
12) Neap-spring tidal and seasonal variations in salinity intrusion and mixing condition at the tropical macrotidal

Tanintharyi River estuary. Hlaing, N.O., Yokoyama, K., **Azhikodan, G.**, Proceedings of the 19th Annual Meeting of Asia Oceania Geosciences Society, 124-126, World Scientific Publishing, April 2023. https://doi.org/10.1142/9789811275449_0042

13) Long-term (1953-2020) morphological changes of Chikugo River, Japan. Phyu, P.E., Yokoyama, K., **Azhikodan, G.**, Proceedings of the 19th Annual Meeting of Asia Oceania Geosciences Society, 127-129, World Scientific Publishing, April 2023. https://doi.org/10.1142/9789811275449_0043

14) Numerical modelling of saltwater and freshwater flow dynamics at the confluence of tidal rivers. Inoue, H., Yokoyama, K., **Azhikodan, G.**, Proceedings of the 19th Annual Meeting of Asia Oceania Geosciences Society, 130-132, World Scientific Publishing, April 2023. https://doi.org/10.1142/9789811275449_0044

15) A new index for the assessment of trophic status of estuarine system. Gayathri, H., Sreelekshmi, S., Gowtham, M., Gopika, S., Priya, K.L., **Azhikodan, G.**, Yokoyama, K., Proceedings of the 19th Annual Meeting of Asia Oceania Geosciences Society, 133-135, World Scientific Publishing, April 2023. https://doi.org/10.1142/9789811275449_0045

【External Funding Sources】

1) Principal Investigator, JSPS KAKENHI Grant-in-Aid for Early-Career Scientists, Analysis of morphodynamic evolution in a meandering estuarine channel in the context of climate change, April 2020 to March 2024.

2) Member (PI - Katsuhide Yokoyama), Advanced Research project, Prevention of water pollution caused by the floating waste disposal from mega cities in the context of global warming and COVID19 lockdowns, Tokyo Metropolitan Government, April 2022 to March 2025.

【Social Contributions (Excluding confidential activities)】

- Member, Japan Society of Civil Engineers (JSCE)
- Member, European Geosciences Union (EGU)
- Member, Asia Oceania Geosciences Society (AOGS)
- Member, International Association for Hydro-Environment Engineering and Research (**IAHR**)
- Member, Estuarine & Coastal Sciences Association (**ECSA**)
- Delivered an invited lecture on “Hydrodynamic Studies in Estuaries” on 1st March 2024 to the students of the Department of Civil Engineering, TKM College of Engineering, Kollam, Kerala, India.
- Technical advisory committee member of the National Conference on Advances in Science and Technology for Regenerative Agriculture (ASTRA 2023) in May 2023, organized by the Bannari Amman Institute of Technology, India. https://doi.org/10.1088/1755-1315/1258/1/011001
- Peer-reviewed manuscripts submitted in high-impact factor journals like Science of the Total Environment; Journal of Hydrology; Estuarine, Coastal, and Shelf Science; Journal of Sea Research; Aquacultural Engineering; Regional Studies in Marine Science; etc.

【Awards】

【Other Activities】

- Conducted online (October 2023-March 2024) and offline (May 2023) internship in the field of "Hydrodynamic Studies on Estuaries" for **fifteen** undergraduate students from TKM College of Engineering, Kollam, Kerala, India.
- During our visit to TKM College of Engineering (India) in March 2024, we interviewed two applicants (hydraulics and transportation) for the TMG Scholarship and recommended them to graduate school.

Annual Report (English Version)

【Department】: Department of Civil and Environmental Engineering, Faculty of Urban Environmental Sciences
【Name】: Masami Yanagihara
【Position】: Assistant professor
【Research Topic】: Traffic flow, Driving behavior, Traffic micro simulation, Public transportation
【Outline of research achievement】
1) Driving behavior and reactions, and the effects of fatigue and stress were analyzed based on the results of experiments using a driving simulator and the results of an online questionnaire considering drivers' needs for rest. In particular, an additional questionnaire survey was conducted on fatigue and stress in order to analyze the resting behavior on expressway, and knowledge about the behavior of general drivers was compiled.
2) The modeling results of fatigue and stress accumulation associated with driver resting behavior were verified using traffic simulation and questionnaire results, and the results were presented at conferences and submitted as a paper.

【Presentations】
1) The Relationship between Signal Light Positions and Vehicle Behavior at Intersections under Various Signal Controls, Koki KOMATSU, Hiroyuki ONEYAMA, Masami YANAGIHARA, Annual Conference of Japan Society of Traffic Engineers, vol.43, p.457-464, 2023.8.
2) The Influence of Visual Environment on Driving Behavior in Expressway Tunnels, Taisei TAKAGAKI, Hiroyuki ONEYAMA, Masami YANAGIHARA, The 78th Annual Meeting of JSCE, IV-163, 2023.9.
3) A model for predicting time required for clearing vehicles stuck by heavy snowfall on expressways, Hayate ITO, Masami YANAGIHARA, Hiroyuki ONEYAMA, The 78th Annual Meeting of JSCE, IV-172, 2023.9.
4) EVALUATION METHOD OF MICHI-NO-EKI AS TRANSPORTATION HUBS CONSIDERING ITS FACILITIES AND LOCATION, Kenta NAGAI, Masami YANAGIHARA, Hiroyuki ONEYAMA, Research Meeting on Civil Engineering Planning, vol.67, 2023.6.
5) Development of a signal control method based on AI short-term prediction of delay using probe information, Tsubasa TAKAHASHI, Hiroyuki ONEYAMA, Masami YANAGIHARA, Research Meeting on Civil Engineering Planning, vol.67, 2023.6.
6) Effect of removing utility poles considering the impact on evacuation routes during earthquake disasters, Hayato KITSUKAWA, Hiroyuki ONEYAMA, Masami YANAGIHARA, Research Meeting on Civil Engineering Planning, vol.68, 2023.11.
7) A model for predicting time required for clearing vehicles stuck by heavy snowfall, Hayate ITO, Masami YANAGIHARA, Hiroyuki ONEYAMA, Research Meeting on Civil Engineering Planning,

vol.68, 2023.11.

【Publications】

1) SELECTION MODEL OF RESTING PLACES ALONG ORDINARY ROADS FOR EVALUATION OF THE OPTIMAL PLACEMENT, Masami YANAGIHARA, Wataro YAMASHITA, Hiroyuki ONEYAMA, Journal of Japan Society of Civil Engineers Ser D3 (Infrastructure Planning and Management), Vol.78, No.5, pp.I_605-I_612, 2023.
2) ANALYSIS OF THE RELATIONSHIP AMONG DRIVING BEHAVIOR, DRIVERS' INTENTION AND DRIVERS' STRESS DURING LANE CHANGE, Masami YANAGIHARA, Haruna KONDO, Hiroyuki ONEYAMA, Journal of Japan Society of Civil Engineers Ser D3 (Infrastructure Planning and Management), Vol.78, No.5, pp.I_449-I_458, 2023.
3) The Relationship between Signal Light Positions and Vehicle Behavior at Intersections under Various Signal Controls, Koki KOMATSU, Hiroyuki ONEYAMA, Masami YANAGIHARA, JSTE Journal of Traffic Engineering, Vol.10, No.1, p.A_324-A_332, 2024.

【External Funding Sources】

・Research (B) (Contributor) Verification of traffic flow theory on single-lane expressways and strategic design of traffic control systems
・2024-2025 Grant-in-Aid for Scientific Research (B) (Contributor) Research on vehicle behavior and performance evaluation when introducing a traffic line separation method considering differences in signal lamp positions
・2023 Expressway Research Committee Research Grant (Representative) Research on SA/PA development considering rest behavior of long-distance expressway drivers
・2024-2026 Call for technical research and development that contributes to improving the quality of road policy (Contributor) Technical research and development on reverse intersections that improve the safety and smoothness of at-grade intersections

【Social Contributions (Excluding confidential activities)】

・JSTE Core Committee for Research on Planning, Design, and Control of Grade Intersections
・JSTE, Core Member of the Subcommittee for Updating a Manual of Intersections
・JSTE, Saturation Flow Rate Subcommittee
・JSTE Practical Application of Descriptive Theory of Traffic Jams on Single-Road Expressways

【Awards】

【Other Activities】