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Local Organizing Committee

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Vice-secretary general

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Chair of the Public Relations Committee

Kaori Ito (Tokyo University of Science)

Chair of theVenue & Exhibitions

Atsushi Suzuki (Rissho University)

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Hiroshi Ota (Keio Futsubu School)

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Atsuyuki Okabe (Aoyama Gakuin University)
Takashi Oguchi (The University of Tokyo)
Shigeko Haruyama (Mie University)
Yuji Murayama (Tsukuba University)

Sponsor List (in alphabetival order)

GLOBAL

PASCO
Surveying the Earth to Create the Future

HEMISPHERE

ASIA AIR SURVEY CO.,LTD.

CONTINENTAL

AERO ASAHI CORPORATION
esri Japan
NAKANIHON AIR SERVICE ALL@SKY
Japan Asia Group KOKUSAI KOGYO

INTERNATIONAL TECHNICAL-COMMERCIAL EXHIBITION

- AERO ASAHI CORPORATION
- ASAHI ETIC CO., LTD.
- Center for Spatial Information Science, the University of Tokyo & Tokyo Digital Archives Project
- CHINA MAP CULTURAL AND CREATIVE INDUSTRY ALLIANCE
- EAST VIEW GEOSPATIAL
- Esri
- Esri Japan Corporation
- Hokkaido-Chizu Co., Ltd.
- KIMOTO CO., LTD.
- Laboratory for Cartographic Literacy
- Ministory of Internal Affairs and Communication
- ORBITAL NET INC.
- Pacific Spatial Solutions, Inc. / Avenza Systems Inc.
- PASCO CORPORATION
- Remote Sensing Technology Center of Japan
- SuperMap Japan CO., Ltd.
- TEIKOKU - SHOIN
- The Korean Cartographic Association
- TOKYO GEOGRAPHICAL SOCIETY

ADVERTISEMENT IN CONFERENCE PRODUCTS

- Georepublic Japan
- MIERUNE Inc.
- Nippon Sogo Systems, Inc.
- Taylor & Francis Asia Pacific

SUPPORTED BY

- The Association of Japanese Geographers
- GIS Association of Japan
- Geospatial Information Authority of Japan
- The Human Geographical Society of Japan
- Japan Aerospace Exploration Agency
- Japan Cartographers Association
- Japan Coast Guard
- Japan Organization of Geographical Sciences
- Tokyo Geographical Society
- Tokyo Metropolitan Government

Conference Themes

Venne
- Miraikan
- Plaza Heisei
- Integrated/Cancelled

- T01 Art and Cartography
- T02 Atlases
- T03 Cartographic Heritage into the Digital
- T04 Cartography and Children
- T05 Cartography in Early Warning and Crisis Management
- T06 Cognitive Issues in Geographic Information Visualization
- T07 Education and Training
- T08 Generalisation and Multiple Representation
- T09 Geospatial Analysis and Modeling
- T10 GI for Sustainability
- T11 History of Cartography
- T12 Location Based Services
- T13 Map Design
- T14 Map Production and Geoinformation Management
- T15 Map Projections
- T16 Maps and Graphics for Blind and Partially Sighted People
- T17 Maps and the Internet
- T18 Mountain Cartography
- T19 Open Source Geospatial Technologies
- T20 Planetary Cartography
- T21 SDI and Standards
- T22 Sensor-driven Mapping
- T23 Topographic Mapping
- T24 Toponymy
- T25 Ubiquitous Mapping, Spatial DB and IoT-Based Systems
- T26 Use, User and Usability Issues
- T27 Visual Analytics
- T28 Marine Cartography
- T29 Digital Humanities and GIS
- T30 GIS, Remote Sensing and Cartographic Theory, Methodology and Applications
- T31 Visualization and Analysis of Geographical Process
- T32 Mapping Cities
- T33 Design and visual variables: Rethinking Jacques Bertin
- T34 Geo for All: Open source GIS education
- T35 Crowdsourced Geospatial Information
- T36 Transition to Modern and Contemporary Mappings
- T37 Maps for SDGs
- T38 Mapping the Environment
- T39 Theoretical Cartography
- T40 AI, Robotics, Autonomous Cars and Mapping
- T41 Maps and Games
- T42 Big Data and Data Science
- T43 Others
- Asia Asia GIS

Keynote Presentations

Venkatesh Raghavan

Professor of Geoinformatics, Osaka City University, Japan
- **TUE 16 JUL**
- **13:30-14:30**
- **International Conference Hall, Plaza Heisei**

BIOGRAPHY

Prof. Venkatesh Raghavan is an alumnus of the Department of Geology, Pune University and obtained his Doctor of Science in Geological Remote Sensing from Osaka City University Japan in 1994. He is presently based in Japan as Professor of Geoinformatics at the Graduate School of Engineering, Osaka City University. His research interest includes geospatial Web Services, sensor network, Geo-Crowd Sourcing and remote sensing for change detection. Prof. Venkatesh Raghavan was one of the founders of the Free and Open Source Software for Geoinformatics (FOSS4G) global initiative in 2004. He has been involved in OSGeo Foundation (www.osgeo.org) since its inception in 2006. He was on the first OSGeo Board and was re-elected to again in 2015 and served as the President of the Foundation during 2016-2017. He is on the Advisory Board of the Geo4All initiative (www.geo4all.org). He plays active role in promoting FOSS4G in Asia.
Prof. Raghavan is currently Co-Editor-in-Chief of Spatial Information Research and is on the Editorial Board of International Journal of Geoinformatics and Applied Geomatics journals. He is the founder of ZOO WPS Platform Project which offers a comprehensive framework for deploying Geospatial-Software as a Service (Geo-SaaS). He is a team leader and member in several Geoinformatics projects and has vast experience in conducting national and international training programs and development of learning materials for RS/GIS using FOSS4G. He is actively involved in promoting Free and Open Source Software Solutions for Geoinformatics (FOSS4G) worldwide including organizing global, regional and national FOSS4G events.
He was awarded the Mining & Material Processing Institute of Japan Young Scientist Award in 1995. He has taken up visiting professor assignments at prestigious universities such as the Asian Institute of Technology, Bangkok and China University of Mining and Technology, Beijing. Prof. Venkatesh Raghavan was recipient of the 2012 Sol Katz Award for his contribution to the Open Geospatial Community and remains to be only Asian to receive this honour till date.

Beyond the Jargon: FOSS4G, OSGeo, Geo4All and ME4E

Geo-enabled Information and Communication Technology (Geo-ICT) is the mainstay of several international and national initiatives. Geo-ICT research contributes to the development of various location-aware services using Global Positioning Systems (GPS), the Internet of Things (IoT), Sensor Networks (weather, environment, water/air pollution etc), and Remote Sensing (satellites, UAV's). Applied Geoinformatics, using tools such as Geographic Information System (GIS) and Remote Sensing, supports an increasingly wide range of disciplines that include the arts, humanities, social/natural sciences and engineering.
Open Source Software, Open Hardware, Open Data and Open Standards constitute the four vital pillars supporting the implementation and deployment of interoperable and scalable Geo-ICT solutions for a variety of applications areas. A robust and customizable platform to facilitate Geospatial-Software as a Service (Geo-SaaS) forms the backbone of several citizen centric initiatives. Prudent and effective use of geospatial technologies requires the fostering of a highly skilled workforce for developing, maintaining Geo-ICT solutions for societal needsThe FOSS4G (Free and Open Source Solutions for Geoinformatics) initiative that began in 2004, has gained widespread acceptance the world over the 15 years. Since 2006, the Open Source Geospatial Foundation (OSGeo) has been spearheading the collaborative development of open source geospatial software and promote its widespread use. Active OSGeo Chapters have also been established worldwide to cater to specific local needs. As a part of the educational outreach and skill development, the OSGeo Foundation along with partner organizations such as the International Cartographic Association and the International Society for Photogrammetry and Remote Sensing has also established the Geo4All international network of universities and research institutions offering high-level training and sharing of knowledge and experiences to build a strong and vibrant geospatial workforce.
Further, in recent years, a wealth of geospatial Open Data has become available through international and national agencies but also through participatory data production initiatives such as the Open Street Map. Due to the proliferation of GPS-enabled devices, Crowd Sourcing and Volunteered Geographic Information has also facilitated easy gathering and value addition of open geospatial data. The past decade has also seen the maturity of international standards for geospatial data exchanges and interoperability though the initiatives of the Open Geospatial Consortium (OGC) and ISO.
This talk aims at demystifying the acronyms FOSS4G, OSGeo and Geo4all through temporal focus on the past, present and future. The speaker plans to narrate some anecdotes and personal experiences as experiential traveller the FOSS4G world. A gist of some new initiatives being undertaken and priorities for coming years will be outlined. Lastly, opportunities for joint industry-academia-government initiatives for collaborative innovation in mapping and cartography will be discussed. Some examples of leveraging the Free & Open geospatial ecosystem for deploying a participatory mapping framework to bring about positive social change will also be presented.

Steve Coast

Vice president, TomTom
- **WED 17 JUL**
- **13:30-14:30**
- **International Conference Hall, Plaza Heisei**

BIOGRAPHY

Coast interned at Wolfram Research before studying computing science at University College London (UCL).
In July 2004, he founded the OpenStreetMap project (OSM).
Coast set up Z.X.V. Ltd. with Nick Black, Tom Carden and Ben Gimpert as a technology consultancy in 2005. In 2008 this became CloudMade after investment by Nikolaj Nyholm and Sunstone Capital (company's website claims it was established in 2007). He resigned from CloudMade in October 2010, although he remained a shareholder.[citation needed]
On 23 November 2010, Coast announced that he had accepted a position as Principal Architect at Microsoft's Bing Mobile.
On 3 September 2013, Coast wrote on his blog that he had started to work for TeleNav, taking care of OSM development for the company's Scout navigator.
In March 2014, Coast became an advisor to Auth0, an identity-as-a-service provider.
In November 2015, Coast published ""The Book of OSM"". The book contains 15 interviews conducted by Coast with various users who had participated in the project since its beginning.
In January 2016, he stepped down from full-time work at TeleNav and started his work as a board advisor in Navmii. In March 2016 he started working as Chief Evangelist for what3words. In May 2016 he became an advisor in MapJam. In fall 2017, he joined DigitalGlobe. In spring 2019 he joined TomTom as a vice president in the Maps department.

The Past, Present, and Future of OpenStreetMap

Steve will be presenting on the past, present and future of OpenStreetMap – discussing how to edit, licensing, community and more. Steve will also discuss his book, "The Book of OSM", containing interviews with 15 early adopters of OSM to capture the early growth and feeling of the project.

Keynote Presentations

Ayako Kagawa

Geographic Information Officer, Chief Cartographic Unit, Geospatial Information Section, Office of Information and Communications Technology, United Nations

- **THU 18 JUL**
- **13:30-14:30**
- **International Conference Hall, Plaza Heisei**

BIOGRAPHY

The United Nations Geospatial Information Section is an office responsible in providing strategic and tactical geospatial information management services to the United Nations Secretariat. The Section provides wide range of services including maps and guidance for UN official publications and customised geospatial services for the Secretariat; serves as the Secretariat function of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM); provides technical support on international boundary issues including administrative boundaries; and provides programme management support to United Nations field missions who have geospatial support components. The Section provides technology driven solutions to enable Secretariat colleagues who are entrusted by the international community to resolve challenging global mandates and missions.
Ayako Kagawa is a Chartered Geographer, serving the United Nations since 2003 in various capacity including thematic mapping for the United Nations Office on Drugs and Crime (UNODC), topographic mapping for the peacekeepers in the United Nations Disengagement Observation Force (UNDOF) and currently with the United Nations Geospatial Information Section. She provides policy guidance and operational support in the areas of cartography, geospatial information management, international boundaries and geographical names. Prior to the United Nations, Ayako has worked with Japan Map Center as a Planning Officer in Japan and as a research assistant and a lecturer in ITC (Faculty of Geo-Information Science and Earth Observation, University of Twente) in The Netherlands.

The Role of Cartographers in a Sustainable Development World

The 2030 Agenda for Sustainable Development or also known as the Sustainable Development Goals (SDGs) is the new global paradigm and blueprint to achieve a better and more sustainable future for all. To collectively achieve the SDGs, the global community agreed on 17 Goals as a baseline framework to measure and monitor its growth. How to measure and monitor development progress by countries has been a long-standing debate since the era of Millennium Development Goals (MDGs) in the 2000s but with the establishment of Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs), the SDGs have a clearer framework on how to monitor progress and the global community are grappling on how to effectively collect, analyse, visualise and report their successes.
Within the United Nations, there is an attempt in providing principles and tools on how best to report the SDGs at country and local level as its success lies in the ownership and accountability at all levels. The Secretary-General of the United Nations has been anxious on how the use of technologies can accelerate the SDGs and to facilitate the alignments with the values enshrined in the United Nations Charter, the Universal Declaration of Human Rights, and the norms and standards of International Laws.
In this paradigm, what should be the role of cartographers and geospatial information management experts to ensure how maps and geospatial information can be effectively used by the global community at all levels to communicate their challenges and successes from planning to implementing, monitoring, analysing, visualising and reporting on sustainable development? This presentation argues the importance of listening the challenges, asking questions to the policy makers, sharing best practices and building a consensus on the issues surrounding the SDGs before demonstrating the diverse cartographic skills available to communicate the intended message better. Hence, the importance of context has never changed and provides the cartographic and geospatial information management community an opportunity to demonstrate the potential and a vision of maps for sustainable for all through better communication.
*The views expressed are those of the author(s) and do not necessarily reflect those of the United Nations.

Eric Gundersen

Mapbox CEO

- **FRI 19 JUL**
- **13:30-14:30**
- **International Conference Hall, Plaza Heisei**

BIOGRAPHY

As CEO of Mapbox, Eric Gundersen oversees product, business, and marketing.
Eric started Mapbox to create tools that make location data powerful and available to everyone. Previously, Eric co-founded Development Seed, a consultancy that developed open source tools for international development agencies and nonprofits to map the world.
He holds a master's degree in International Development, and a dual bachelor's degree in Economics and International Relations from American University.

Building a living map of the world updated from billions of sensors

Mapbox maps learn from every application they're embedded in. Over 640 million people use Mapbox every month. Every day these devices generate 14 billion anonymous sensor readings that are used to deliver precise traffic data and instantly ship over 100,000 daily changes to maps on any connected device. Using AI and machine learning, this information delivers precise, predictive drive times and finds the best routes for drivers.
Eric Gundersen, CEO and Founder of Mapbox, will speak about the future of mapping, from its roots with OpenStreetMap to sharing new plans on launching in Japan with SoftBank this summer. Gundersen will also do a live demo of this new AR Vision, turning cameras into co-pilots using AI-powered semantic segmentation, object detection, and classification to identify the variables that define a driver's journey. This live data with distributed sensors can detect construction, recognize street signs and speed limits, and identify potential hazards to enable augmented reality navigation and automated driving.

Venue

A...Tokyo International Exchange Center (Plaza Heisei)

B...National Museum of Emerging Science and Innovation (Miraikan)

C...Tokyo Metropolitan Industrial Technology Research Center

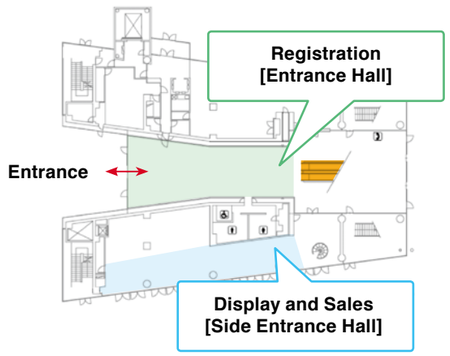
D...Telecom Center

Floor Plan

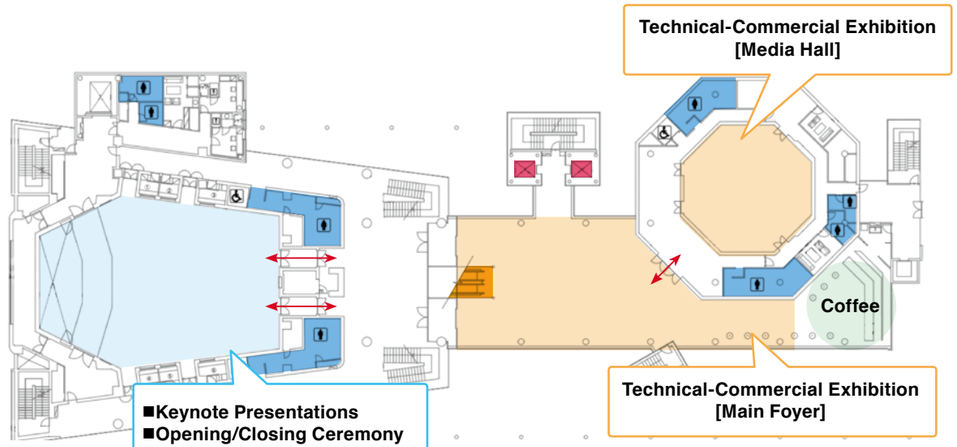
Escalator
Elevator
WC

Plaza Heisei

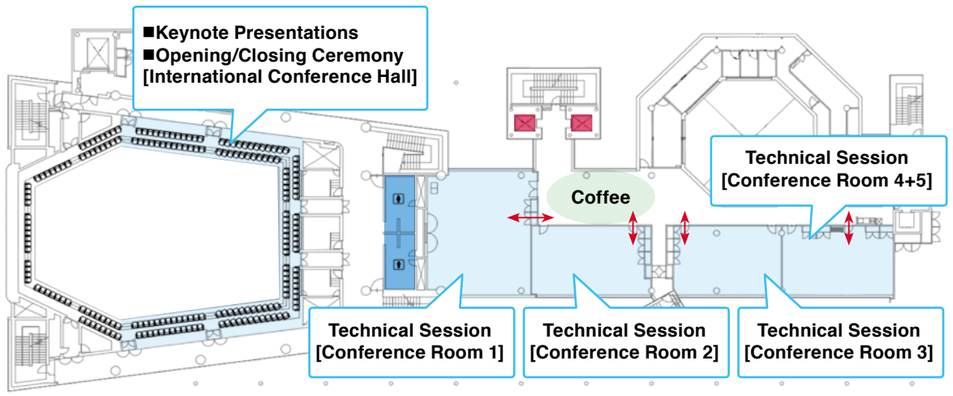
1F



3F



4F

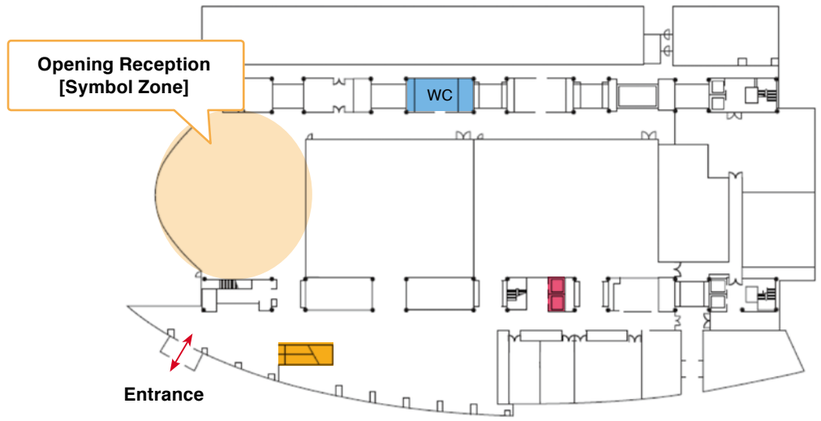


Floor Plan

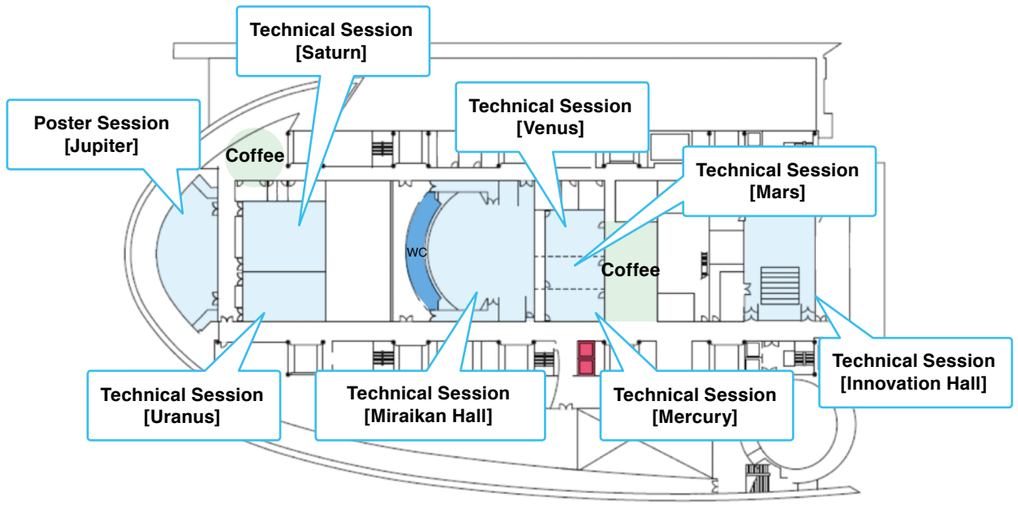
Escalator
Elevator
WC

Miraikan - National Museum of Emerging Science and Innovation

1F



7F

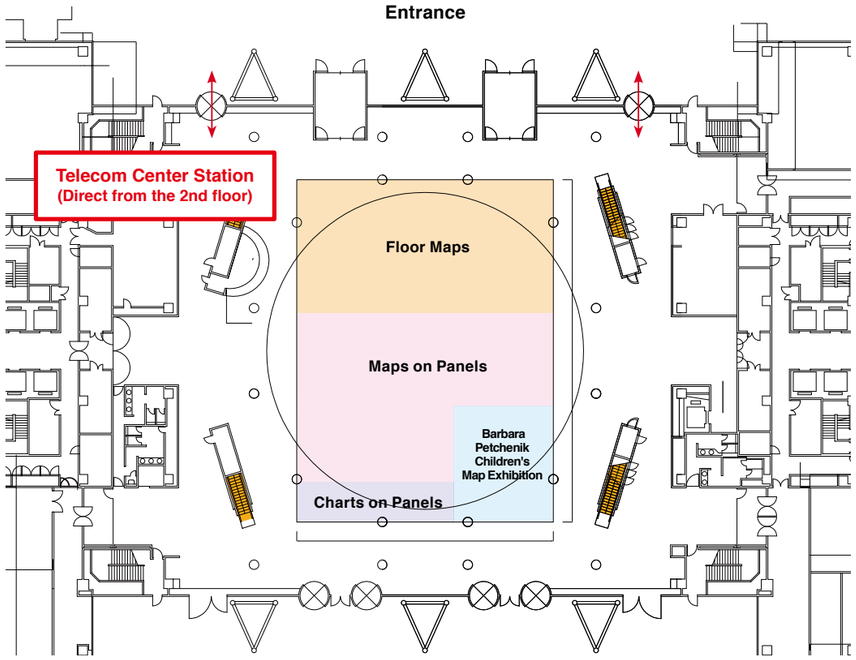


Floor Plan

Escalator
Elevator
WC

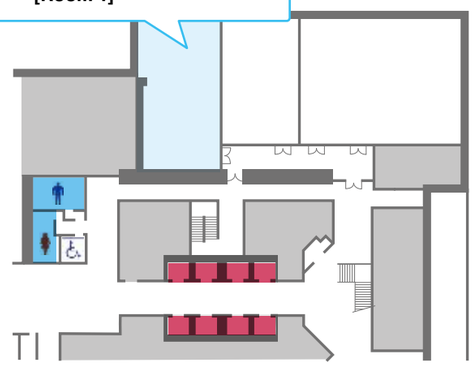
TELECOM CENTER BUILDING

1F



20F

International Cartographic Exhibition-Digital Products/Services Exhibition
Globes & Atlases Exhibition
[Room 1]



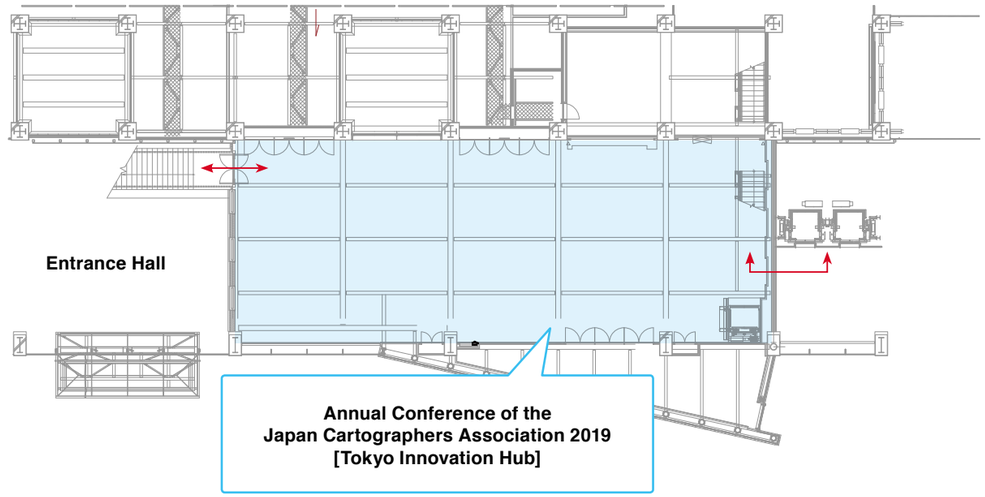
- **Atlases**
- **Digital Products**
- **Digital Services**
- **Educational Cartographic Products**
- **Other Cartographic Products**

Floor Plan

TOKYO METROPOLITAN INDUSTROAL TECHNOLOGY RESEARCH INSTITUTE

*Registration desk will be on the 1st floor

M2F



ICC2019 Joint Activities

Annual Conference of the Japan Cartographers Association 2019

16th Jul. 10:00 - 18:00
Presentations (oral, poster sessions), Workshop on “MIURA-ORI”, Japanese Cartographic Exhibition

17th Jul. 10:00 - 13:30
Special Session on “Technical Terms for Digital Mapping”, Presidential Address, Japanese Cartographic Exhibition
ICC2019 participants are allowed to join the meeting (All presentations are held in Japanese)

Special Exhibition “Japanese Maps: Past, present and future”

Supported by the Future Map Consortium

18th and 19th Jul. 10:00 - 17:00
A variety of Japanese maps and tools for mapping, including a navigation system with the quasi-zenith satellite, an application for browsing old maps with smartphone, and aerial views of Tokyo.
Everyone can freely visit and enjoy the exhibition.

International Cartographic Exhibition

The official opening of the International Cartographic Exhibition will take place in Telecom Center Building on Tuesday the 16th July at 9:00.

During the cartographic exhibition countries from all over the world will exhibit most recent cartographic products in digital or paper format. Maps and cartographic products are submitted in 7 different categories:

- Maps on panels
- Charts on panels
- Atlases
- Digital Products
- Digital Services
- Educational Cartographic Products
- Other Cartographic Products

Barbara Petchenik Children's World Map Drawing Competition

The competition was created by the International Cartographic Association in 1993 as a memorial for Barbara Petchenik, a past Vice president of the ICA and cartographer who had a lifelong interest in maps for children. The aim of the contest is to promote the creative representation of the world in graphic form by children.

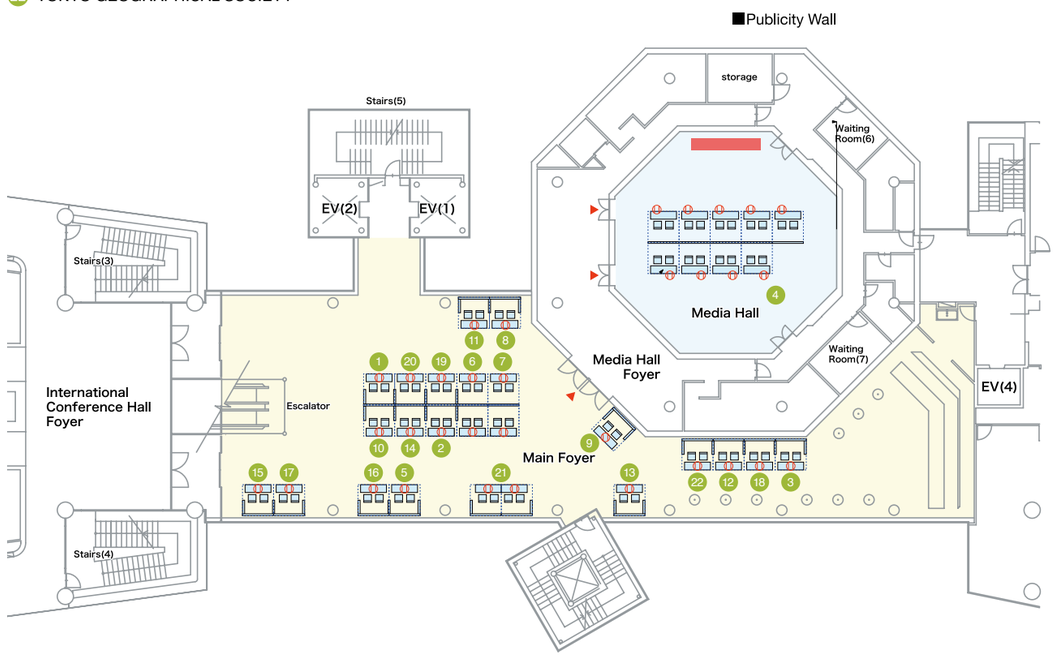
188 drawings by national winners from 33 countries are exhibited in Telecom Center Building from 16th to 19th July.

International Technical-Commercial Exhibition

Local Organizing Committee of ICC2019 holds the Technical Exhibition sponsored by the following exhibitors in Tokyo International Exchange Center (Plaza Heisei) from 16th to 19th July.

*In alphabetical order

1. AERO ASAHI CORPORATION
2. ASAHI ETIC CO., LTD.
3. Center for Spatial Information Science, the University of Tokyo & UTokyo Digital Archives Project
4. CHINA MAP CULTURAL AND CREATIVE INDUSTRY ALLIANCE
5. EAST VIEW GEOSPATIAL
6. Esri
7. Esri Japan Corporation
8. Hokkaido-Chizu Co., Ltd.
9. ICC2021 – Florence, ITALY
10. Japan Map Center
11. KIMOTO CO., LTD.
12. Laboratory for Cartographic Literacy
13. Mapping Technology Association
14. Ministry of Internal Affairs and Communication
15. ORBITAL NET INC.
16. Pacific Spatial Solutions, Inc. / Avenza Systems Inc.
17. PASCO CORPORATION
18. Remote Sensing Technology Center of Japan
19. SuperMap Japan CO., Ltd.
20. TEIKOKU - SHOIN
21. NGII with KCA
22. TOKYO GEOGRAPHICAL SOCIETY



Technical Tour

T-Course A

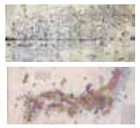
GSI (Geospatial Information Authority of Japan) and JAXA (The Japan Aerospace Exploration Agency)

19th of July, 9 am - 6 pm

T-Course B

19th Century Early Modern Maps by Japanese map maker Nagakubo Sekisui at Koga-city: The National Diet Library and Koga Historical Museum

17th of July, 8 am - 6 pm



T-Course C

Marine Cartography Site at Tokyo Bay, supported by JHOD (The Hydrographic and Oceanographic Department, Japan Coast Guard)

16th or 18th of July, 1 pm - 4 pm

T-Course D

The Hydrographic and Oceanographic Museum of JHOD (The Hydrographic and Oceanographic Museum, Japan Coast Guard)

16th or 18th of July, 2 pm - 3 pm

T-Course E

National Diet Library (NDL)

17th of July, 2 pm - 4 pm

T-Course F

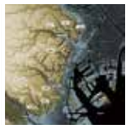
Roppongi Hills Mori Tower and Diorama Model of Downtown Tokyo

16th of July, 2 pm - 5 pm

T-Course G

Tokyo "Suribachi" Topography Tour and "Cartographic Night" at Shibuya town

17th of July



T-Course H

Tokyo Landscape "The Canal and Rivers create the Tokyo", discovery cruise by ship that special experience of Japanese Megalopolis History (Edo to Tokyo)

Departure at 3 pm and dissolution at 7 pm on 16th July

T-Course I

High-School in Tokyo and Cartographic Education Class

19th of July, 1 pm - 4 pm

Social Program

Opening Ceremony

Date:Monday, 15 July 6pm-8:40pm
Venue: Plaza Heisei International Conference Hall

Opening Reception

Date: Tuesday, 16 July 6:30pm
Venue: National Museum of Emerging Science and Innovation (Miraikan), "Symbol Zone"

Enjoy the Opening Reception right under the "The Geo-Cosmos", the symbol exhibit of Miraikan.
This symbol produces a rendition of our Earth shining brightly in space with a super high precision exceeding 10 million pixels. It is the world's first "Globe-like display" using organic LED panels.

Gala Dinner

Date: Friday, 19 July 7pm-9pm
Venue: Happo-en
URL: http://happo-en.com/banquet/

Enjoy the Gala Dinner which will take place in Happo-en restaurant.
Happo-en is grounded in all aspects of Japanese culture - traditional gardens, architecture, culinary techniques, art, music and many others - introducing the world of Japanese beauty and culture.

Young Cartographers Social Gathering

Date: Wednesday, 17 July 6:30pm
Venue: National Museum of Emerging Science and Innovation(Miraikan)
* The details will be announced on the ICC2019 Website.

Orienteering

Date: Friday, 19 July 7am-9am
Event center: Open space under the big bridge of KIBA Park

Japanese Culture and Sightseeing Tour

CS- Tour A

Japanese Culture and Sightseeing Tour (Supported by Tokyo Metropolitan Government)

afternoon 16th, 18th of July

CS- Tour B

Mt. Fuji and Mt. Hakone, Scienic and Geoscience Volcanos tour

15th of July 8 am - 7 pm

CS- Tour C

Heartful Japan "Town of Chichibu" and visit

20th of July, 9 am - 9 pm

Post Congress Tour

PC-Tour A

Hiroshima Peace GIS and “Setouchi Inland Sea” Tour, plus Kyoto “Gion Festival”

5 nights and 6 days
20th to 25th of July, 2019

PC-Tour B

18th Century, old Okinawa “Ryukyu” dynasty's map explore, plus Kyoto “Gion Festival”

4 nights and 5 days
21th to 25th of July, 2019

PC-Tour C

Old Capitals, “Nara” and “Kyoto” Map Explore tour, plus Kyoto “Gion Festival”

2 nights and 3days
22nd to 24th of July,

PC-Tour D

Heartful Country, Town of Takahagi and 19th Century Modern Japanese map maker “Nagakubo Sekisui's Home town”

1 nights and 2 days
21th to 22nd of July, 2019

Program at a Glance

	MON 15 JUL	TUE 16 JUL	WED 17 JUL	THU 18 JUL	FRI 19 JUL	SAT 20 JUL
AM	Commission & Workshops	Technical Sessions	Technical Sessions	Technical Sessions	Technical Sessions	General Assembly (2)
		Scientific Posters	Scientific Posters	Scientific Posters	Scientific Posters	
		Exhibition	Exhibition	Exhibition	Exhibition	
PM	General Assembly (1)	Keynote (1)	Keynote (2)	Keynote (3)	Keynote (4)	Closing Ceremony
	Commission & Workshops	Technical Sessions	Technical Sessions	Technical Sessions	Technical Sessions	
		Scientific Posters	Scientific Posters	Scientific Posters	Scientific Posters	
		Exhibition	Exhibition	Exhibition	Exhibition	
Evening	Opening Ceremony	Opening Reception	Young Cartographers Social Gathering		Gala Dinner	

Miraikan - National Museum of Emerging Science and Innovation
Plaza Heisei
Telecom Center Building
Tokyo Metropolitan Industroal Technology Research Institute

Scientific Program at a Glance

Miraikan
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	MON 15 JUL	TUE 16 JUL		WED 17 JUL	
8:30-10:20 (Miraikan) 9:20-10:20 (Plaza Heisei)		**Session** T01-1 Saturn T02-1 Innovation Hall T12-1 Uranus T25-1 Mars Asia-1 Conference room 4+5 T36-1 Conference room 1	**Poster Session P-1** Jupiter	**Session** T01-5 Saturn T02-5 Innovation Hall T07-1 Venus T09-3 Miraikan Hall T13-1 Uranus T18-1 Mars T19-1 Mercury Asia-5 Conference room 4+5 T26-1 Conference room 2 T42-1 Conference room 3	**Poster Session P-2** Jupiter
		10:20-10:50 **Coffee Break**			
10:50-12:10		**Session** T01-2 Saturn T02-2 Innovation Hall T04-1 Mars T05-1 Venus T12-2 Uranus T24-1 Mercury Asia-2 Conference room 4+5 T06-1 Conference room 2 T32b-1 Conference room 3 T36-2 Conference room 1		**Session** T02-6 Innovation Hall T07-2 Venus T09-4 Miraikan Hall T13-2 Uranus T18-2 Mars T30-1 Saturn T31-1 Mercury Asia-6 Conference room 4+5 T26-2 Conference room 2 T34/35-3 Conference room 1 T42-2 Conference room 3	
		12:10-13:30 **Lunch**			
13:30-14:30	13:00-17:00 **General Assembly** Miraikan Hall	Keynote 1		Keynote 2	
		14:30-14:50 **Break**			
14:50-16:10		**Session** T01-3 Saturn T02-3 Innovation Hall T04-2 Mars T05-2 Venus T09-1 Miraikan Hall T12-3 Uranus T24-2 Mercury Asia-3 Conference room 4+5 T06-2 Conference room 2 T32b-2 Conference room 3 T34/35-1 Conference room 1		**Session** T07-3 Venus T09-5 Miraikan Hall T13-3 Uranus T23-1 Mars T30-2 Saturn T31-2 Mercury T39-1 Innovation Hall Asia-7 Conference room 4+5 T06-4 Conference room 2 T34/35-4 Conference room 1 T42-3 Conference room 3	
		16:10-16:40 **Coffee Break**			
16:40-18:00		**Session** T01-4 Saturn T02-4 Innovation Hall T04-3 Mars T05-3 Venus T09-2 Miraikan Hall T12-4 Uranus T24-3 Mercury Asia-4 Conference room 4+5 T06-3 Conference room 2 T32b-3 Conference room 3 T34/35-2 Conference room 1		**Session** T07-4 Venus T09-6 Miraikan Hall T13-4 Uranus T23-2 Mars T30-3 Saturn T31-3 Mercury T39-2 Innovation Hall T06-5 Conference room 2 T34/35-5 Conference room 1 T42-4 Conference room 3	
18:00-	18:00-20:00 **Opening Ceremony** International Conference Hall	18:30-21:00 **Opening Reception** Symbol Zone			

	THU 18 JUL		FRI 19JUL		SAT 20 JUL
8:30-10:20 (Miraikan) 9:20-10:20 (Plaza Heisei)	**Session** T03-1 Mars T07-5 Venus T09-7 Miraikan Hall T13-5 Uranus T21-1 Saturn T31-4 Mercury T17-1 Conference room 1 T29-1 Conference room 4+5	**Poster Session P-3** Jupiter	**Session** T08-1 Uranus T09-11 Miraikan Hall T10-1 Mars T11-3 Saturn T38-1 Conference room 4+5 T40-1 Conference room 1 T43-1 Conference room 3	**Poster Session P-4** Jupiter	
	10:20-10:50 **Coffee Break**				
10:50-12:10	SS1		SS2		9:00-12:00 **General Assembly** International Conference Hall
	Session T03-2 Mars T07-6 Venus T09-8 Miraikan Hall T13-6 Uranus T21-2 Saturn T30-4 Innovation Hall T31-5 Mercury T17-2 Conference room 1 T26-3 Conference room 2 T33-1 Conference room 3		**Session** T08-2 Uranus T09-12 Miraikan Hall T11-4 Saturn T30-7 Innovation Hall T27-1 Conference room 2 T38-2 Conference room 4+5 T40-2 Conference room 1 T43-2 Conference room 3		
	12:10-13:30 **Lunch**				
13:30-14:30	Keynote 3		Keynote 4		13:00-15:30 **Closing Ceremony** International Conference Hall
	14:30-14:50 **Break**				
14:50-16:10	**Session** T03-3 Mars T09-9 Miraikan Hall T11-1 Saturn T16-1 Mercury T28-1 Venus T30-5 Innovation Hall T41-1 Uranus T17-3 Conference room 1 T26-4 Conference room 2 T29-2 Conference room 4+5 T33-2 Conference room 3		**Session** T08-3 Uranus T09-13 Miraikan Hall T11-5 Saturn T14-1 Mercury T15-1 Mars T30-8 Innovation Hall T32a-1 Venus T27-2 Conference room 2 T37-1 Conference room 1 T38-3 Conference room 4+5 T43-3 Conference room 3		
	16:10-16:40 **Coffee Break**				
16:40-18:00	**Session** T03-4 Mars T09-10 Miraikan Hall T11-2 Saturn T16-2 Mercury T30-6 Innovation Hall T41-2 Uranus T17-4 Conference room 1 T26-5 Conference room 2 T29-3 Conference room 4+5 T33-3 Conference room 3		**Session** T08-4 Uranus T11-6 Saturn T14-2 Mercury T15-2 Mars T30-9 Innovation Hall T32a-2 Venus T27-3 Conference room 2 T37-2 Conference room 1 T43-4 Conference room 3		
			19:00-22:00 **Gala Dinner** Happo-en		

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8:30-10:20 **T01-1 Art, History & Design** ····· Saturn (Miraikan)
Chair: Sharon Hayashi (York University)

T01-1-1 **Procedural Knowledge of Graphic Design for Analysing Graphic Elements in Historical … Urban Maps**
Chenyang Xie

T01-1-2 **Who were cartographers of manuscript topographic maps in the Enlightenment?**
Beata Medyńska-Gulij

T01-1-3 **3D art cartography in Belarus: The historical development and achievements in the modern period**
Anna German

T01-1-4 **City maps: Dreams, Art, Cartography, Planning**
Cosimo Palagiano

8:30-10:20 **T02-1 Atlases - Theory and Principles** ····· Innovation Hall (Miraikan)
Chair: Francis Harvey (Leibniz-Institute for Regional Geography)

T02-1-1 **National atlases - an atlas type reconsidered**
Eric H Losang

T02-1-2 **Atlases and Systems Theory within Systematic Cartography**
Vit Vozenilek

T02-1-3 **3D Carto-Graphics – Principles, Methods and Examples for Interactive Atlases**
René Sieber, Remo Eichenberger, Lorenz Hurni

8:30-10:20 **T12-1 Location Based Services I** ····· Uranus (Miraikan)
Chair: Haosheng Huang (University of Zurich)

T12-1-1 **Incorporating directional signs into indoor navigation systems**
Wangshu Wang, Haosheng Huang, Hao Lyu, Georg Gartner

T12-1-2 **The development of a cognitive indoor route planning algorithm: which aspects to include?**
Nina Vanhaeren, Kristien Ooms, Philippe De Maeyer

T12-1-3 **Linking perception to decision point complexity for adaptive indoor wayfinding support**
Laure De Cock, Kristien Ooms, Nico Van De Weghe, Philippe De Maeyer

T12-1-4 **Positioning Locality Based on Cognitive Directions and Context in Indoor Landmark Reference System**
Yankun Wang, Weixi Wang, Xiaoming Li, Shengjun Tang, You Li

8:30-10:20 **T25-1 Ubiquitous Mapping** ····· Mars (Miraikan)
Chair: Masatoshi Arikawa (Akita University)

T25-1-1 **Intergenerational differences in the use of maps: results from an online survey**
Yoshiki Wakabayashi

T25-1-2 **Visual-Inertial Odometer-Based Global High Precision Indoor Human Navigation in a University Library**
Akinori Takahashi, Shinpei Ito, Masatoshi Arikawa, Ruochen Si

T25-1-3 **Virtual Circular Geofences for Points and Regions of Interests with Spatial Context**
Masatoshi Arikawa, Hoshito Tokita, Ruochen Si, Ren Sato, Ryodai Tayama, Akinori Takahashi

9:20-10:20 **Asia-1 Opening Remarks and First Asia GIS Keynote** ··· Conference Room 4+5 (Plaza Heisei)
Chair: Yohta Kumaki (Senshu University)

Asia-1-1 **Brief opening remarks**
Anond Snidvongs (GISTDA)

Asia-1-2 **30 Years Development of Geographic Information Systems**
Deren Li (Wuhan University)

9:20-10:20 **T36-1 The transition to contemporary mappings** ····· Conference Room 1 (Plaza Heisei)
Chair: Kam Wing Fung (The University of Hong Kong)

T36-1-1 **The gradual reinforcement of Japanese mapping in pre-colonial Taiwan and Korea**
Shigeru Kobayashi

T36-1-2 **Development and Publication of Volcanic Base Map Data**
Gen Nagano, Hironobu Tsuchihashi, Katsuhiro Okamoto, Yoshinori Numata

T36-1-3 **Mapping time-distance**
Feng Qi, Seth Docherty

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10:50-12:10 **Asia-2 Mapping and GIS in Asia I** ····· Conference Room 4+5 (Plaza Heisei)
Chair: Jianya GONG (Wuhan University)

Asia-2-1 **Assessing airport ground access by public transit in Chinese city-regions**
Xingjian Liu

Asia-2-2 **Mapping Geo-spatial Dimensions of Water in Jammu and Kashmir to Pursue Wider Peace**
Seema Mehra, Premendra Kumar Parihar

Asia-2-3 **Classifying and Mapping Street-Blocks Based on Multi-Source Spatio-Temporal Data**
Jiansi Yang, Shuai Liu, Mingsheng Liao, Yandong Wang

Asia-2-4 **Delineation of Chinese county-scale urban function patterns with the real-time Tencent user density**
Yao Yao, Jianfeng Zhou, Qingfeng Guan, Yaqian Zhai

10:50-12:10 **T01-2 Journey as Method** ····· Saturn (Miraikan)
Chair: Cristina M. Iosifescu Enescu (ETH Zurich, Switzerland)

T01-2-1 **"A journey as a flow": A personal spatio-temporal projection of the world.**
Aleksandra Stanczak, Antoni Moore

T01-2-2 **Drawing North America by Hand**
Anton Thomas

T01-2-3 **Maps of Literary Trails in Thessaloniki**
Alexandra Koussoulakou, Yiannis Mitzias, Konstantinos Ntovas, Symeon Simeonidis, Michail Bakoyannis

T01-2-4 **Borderknots – cartographying experiences of crossing borders**
Katrin Gattinger

10:50-12:10 **T02-2 Atlases – Processes and Tools** ····· Innovation Hall (Miraikan)
Chair: Eric Losang (Leibniz-Institute for Regional Geography)

T02-2-1 **The automation of processes of atlas mapping**
Sergey Anatolyevich Krylov, Gleb Igorevich Zagrebin, Anton Viktorovich Dvornikov, Dmitriy Sergeyevich Loginov, Ivan Evgenyevich Fokin

T02-2-2 **Graphical modeling with the choremetic method. A case study on Saudi Arabia.**
Mohsen Dhieb

T02-2-3 **Extending Exploration and Navigation Capabilities of the Atlas of Switzerland**
Michael Schmuki, René Sieber, Lorenz Hurni

T02-2-4 **Maps under the global condition: a new tool to study the evolution of cartographic language**
Pierre Cherrier, Sebastian Lentz, Jana Moser, Laura Pflug

10:50-12:10 **T04-1 Cartography and Children 1** ····· Mars (Miraikan)
Chair: CARLA CRISTINA SENA (UNESP)

T04-1-1 **Teaching basic map concepts in three countries: Azerbaijan, Hungary and United Arab Emirates**
José Jesús Reyes Nunez, Naeema Al Hosani, Nargiz Safaraliyeva

T04-1-2 **Spatial Thinking in Children's Education: The relationship between Geography and Cartography**
Paula Strina Juliasz, Sonia Vanzella Castellar

T04-1-3 **Initiative aiming to introduce children to maps in Kenya**
Catherine Mugure Njore, Bartholomew Kuria Thiong'O, Charles Mwangi Kimari

T04-1-4 **School Atlas with Augmented Reality**
Nikola Petrov Yonov

10:50-12:10 **T05-1 Cartography in Early Warning and Crisis Management 1** ····· Venus (Miraikan)
Chair: Jiping Liu (Chinese Academy of Surveying and Mapping)

T05-1-1 **Using GIS and cartography as part of the whole-of-society approach to determine coercion into marine wildlife poaching and piracy.**
Peter Schmitz, Duarte Gonçalves

T05-1-2 **Role of geospatial information for disaster risk management as exemplified in recent large earthquakes in Japan**
Hiroshi Une, Takayuki Nakano

T05-1-3 **Evaluating earthquake-related ground failure mapping by combined traditional and modern methods**
Takayuki Nakano, Hiroshi Une, Kazuki Yoshida, Satoshi Fujiwara, Tomokazu Kobayashi

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T05-1-4 **The Integrated Disaster Reduction Intelligent Service System and its Application**
Jiping Liu, Yong Wang, Mengmeng Liu, Shenghua Xu, Tao Jiang, Yang Gu

10:50-12:10 **T06-1 Cartography in the Mind** ····· Conference Room 2 (Plaza Heisei)
Chair: Sara Irina Fabrikant (University of Zürich)

T06-1-1 **Representations of Place in the Human Brain**
Amy Lobben, Megan Mcnally Lawrence, P. William Limpisathian

T06-1-2 **Using fMRI to Explore the Influence of Road Network Patterns on Geospatial Cognition**
Bing Liu, Weihua Dong, Lin Zhu, Huiping Liu, Liqiu Meng

T06-1-3 **Using Spatial Image Schemata in the characterization of spatial relations**
Maria Engracinda Dos Santos Ferreira, Luciene Stamato Delazari

T06-1-4 **Our global-scale cognitive map: is it influenced by our place of residence or education?**
Lieselot Lapon, Kristien Ooms, Philippe De Maeyer

10:50-12:10 **T12-2 Location Based Services II** ····· Uranus (Miraikan)
Chair: Georg Gartner (TU Wien)

T12-2-1 **Location Based Services: Research Trends and Open Challenges**
Haosheng Huang, Georg Gartner, Jukka Krisp, Martin Raubal, Nico Van De Weghe

T12-2-2 **Trajectory-based POI recommendations for mobile maps**
Shane Loeffler

T12-2-3 **Collecting reliable training data to extract tourism strolling behaviour from smartphone GPS logs during walking**
Hisatoshi Ai, Hideki Kaji

T12-2-4 **Classifying complex road features in the context of car driver education**
Jukka M. Krisp, Andreas Keler

10:50-12:10 **T24-1 General approaches** ····· Mercury (Miraikan)
Chair: Peter Jordan (Austrian Academy of Sciences)

T24-1-1 **Cartographers and geographers as toponym users, creators, and promoters. A linguistic perspective on cartographic and textual dissemination of geographical names**
Wojciech Włoskowicz

T24-1-2 **On the SCJ report "Challenges for the national standardisation of geographical names in Japan"**
Kohei Watanabe, Kohei Okamoto, Akihiko Takagi, Takashi Morita, Shigeko Haruyama, Yoshiyasu Ida, Yumiko Takizawa, Hiroshi Tanabe, Takashi Todokoro, Yoshiki Wakabayashi

T24-1-3 **From Spatial to Platial Information Systems: For a Better Representation of the Sense of Place**
Yaïves Ferland, Mir Abolfazl Mostafavi

10:50-12:10 **T32b-1 Urbanization and urban shrinkage** ····· Conference Room 3 (Plaza Heisei)
Chair: Tomoko Kubo (University of Tsukuba)

T32b-1-1 **Urban cartography in the morphogenetic analysis of urban spaces: the case of the Boavista axis in the city of Porto**
Mário Gonçalves Fernandes, Rui Passos Mealha

T32b-1-2 **Housing challenges in shrinking and aging Japanese cities**
Tomoko Kubo

T32b-1-3 **Housing issue in shrinking Russian cities: mapping the reality**
TElena Batunova, Maria Gunko

10:50-12:10 **T36-2 The transition to modern mappings** ····· Conference Room 1 (Plaza Heisei)
Chair: Shigeru Kobayashi (Osaka University)

T36-2-1 **Aerial Surveys and Geographic Information in Modern China**
Hajime Yamamoto

T36-2-2 **Mapping Reality and Virtuality: Paintings, Maps and Hydrographical Surveying about British and American Settlements of the Shanghai Bund, 1845-1860**
Kam Wing Fung

T36-2-3 **Landscape-style Maps in Traditional Chinese Local Government**
Akihiro Osawa

T36-2-4 **The changing use-cases of medium and large-scale geological maps in Hungary**
Gáspár Albert

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13:30-14:30 **Keynote Presentation 1** ····· International Conference Hall (Plaza Heisei)
Venkatesh Raghavan

14:50-16:10 **Asia-3 Mapping and GIS in Asia II** ····· Conference Room 4+5 (Plaza Heisei)
Chair: Anthony Yeh (The University of Hong Kong)

Asia-3-1 **Design of 2D Pedestrian Navigation Interface for 3D Pedestrian Navigation**
A.G.O. Yeh, Run Shi, Teng Zhong

Asia-3-2 **STORY OF CREATING GENDER ATLAS OF INDIA: Some Insights of a Principal Investigator**
Seema Mehra

Asia-3-3 **Research on Public Space Vitality Evaluation Method Based on Time-Space Trajectory Behavior Pattern Recognition**
Xia Zhang, Senqi Wang

Asia-3-4 **The Influence Analysis and Layered Extraction of Cognitive Landmarks**
Hong Fan, Jiani Ouyang

14:50-16:10 **T01-3 Mapping the Ephemeral** ····· Saturn (Miraikan)
Chair: Nick Lally (University of Kentucky)

T01-3-1 **Cartographic Tools for Mapping Dreams**
Cristina M. Iosifescu Enescu, Lorenz Hurni

T01-3-2 **Sounding out Place and Cultural Memory in Tempelhofer: Human Scale**
Elina Lex

T01-3-3 **Points Further North: An Acoustemological Cartography of Non-Place**
Michael Klaus Trommer, Graham Wakefield

T01-3-4 **Mapping Perception of Place through Emotion, Memory, Senses, and the Imaginary**
Joanna Gardener, William Cartwright, Lesley Duxbury, Amy Griffin

14:50-16:10 **T02-3 National atlases** ····· Innovation Hall (Miraikan)
Chair: Qingwen Qi (National Atlases Editorial Office of China)

T02-3-1 **The new National Atlas of Hungary – volume Natural Environment**
Károly Kocsis, Zsombor Nemerkényi, László Zentai, Gábor Gercsák

T02-3-2 **A new work of the National Atlas of Spain called Spain on Maps. A Geographic Synopsis has been published**
Noelia Pérez, Andrés Arístegui, Pilar Sánchez-Ortiz, Alfredo Del Campo

T02-3-3 **Topic Selection and Structure in the National Atlas of Switzerland**
Raphael Vomsattel, René Sieber, Lorenz Hurni

T02-3-4 **Creation of the National Atlas of the Arctic**
Andrey Tatarenkov

14:50-16:10 **T04-2 Cartography and Children 2** ····· Mars (Miraikan)
Chair: Yaïves Ferland (Université Laval)

T04-2-1 **Cartographical Knowledge and the training of Geography teachers**
Carla Cristina Reinaldo Gimenes De Sena, Barbara Gomes Flaire Jordão, Sonia Maria Vanzella Castella

T04-2-2 **Liber chronicarum, Carta marina and other mappae mundi**
Beata Fijołek-Soska

T04-2-3 **Geography education by the combination use of GIS and AR**
Koji Ohnishi, Hiroaki Akimoto, Yoshihiro Ugawa, Satoru Itoh

14:50-16:10 **T05-2 Cartography in Early Warning and Crisis Management 2** ····· Venus (Miraikan)
Chair: Anne RUAS (IFSTTAR)

T05-2-1 **Hazard-based images comparison methods for damage assessment in emergency mapping**
Jean-François Girres

T05-2-2 **Mapping Violent Presence of Armed Actors in Colombia**
Javier Osorio, Mohamed Mohamed, Viveca Pavon, Susan Brewer-Osorio

T05-2-3 **The Swiss joint information platform for natural hazards**
Philipp Angehrn, Sabina Steiner, Christophe Lienert

T05-2-4 **Spatial Data modelling to study and improve waste management after hurricanes. The case of French West Indies**
Anne Ruas, Serge Lhomme

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14:50-16:10 **T06-2 Wayfinding with landmarks: from the world to the map** ····· Conference Room 2 (Plaza Heisei)

Chair: Petr Kubíček (Masaryk University)

T06-2-1 **The Influence of Spatial Familiarity on Landmark Salience Sensibility Based on Eye Tracking**
Litao Zhu, Milan Konečný, Jie Shen, Zdeněk Stachoň, Hana Švedová

T06-2-2 **Experiment on People's Selection of Route Landmarks from Different Types of Geospatial Pictures**
Pyry Kettunen

T06-2-3 **Influence of Viewing Field on Zoom Levels in Pedestrian Orientation Task Using Smartphones**
Bonan Wei, Jochen Schiewe

T06-2-4 **Task-Oriented Display of Landmark Pictograms in Maps**
Julian Keil, Dennis Edler, Lars Kuchinke, Frank Dickmann

14:50-16:10 **T09-1 GAM Research Agenda** ····· Miraikan Hall (Miraikan)

Chair: X.Angela Yao (University of Georgia)

T09-1-1 **New Paradigm in Mapping: A Critique on Cartography and GIS**
Bin Jiang

T09-1-2 **Is there a paradigm shift for GIS data representation and analysis?**
Xiaobai Angela Yao

T09-1-3 **Methods for the Geographic Representation of Interpersonal Relationships and Social Life**
Clio Andris, Dipto Sarkar

14:50-16:10 **T12-3 Location Based Services III** ····· Uranus (Miraikan)

Chair: Jukka Krisp (University of Augsburg)

T12-3-1 **The influence of user characteristics on spatial perception differences in 3D visual environments**
Lina Huang, Yanfang Liu, Shen Ying

T12-3-2 **Using Cartograms for Visualizing extended Floating Car Data (xFCD)**
Christian Röger, Jukka M. Krisp

T12-3-3 **Positioning Error in Mobile Phone Tracking Data with Consideration of Geographic Environment Factors**
Xiaoqing Song, Yi Long, Ling Zhang

T12-3-4 **Solution for indoor positioning using WIFI networks**
Carolina Aguilar Aravena, Luciene Stamato Delazari

14:50-16:10 **T24-2 Place names and identity** ····· Mercury (Miraikan)

Chair: Sungjae Choo (Kyung Hee University Seoul)

T24-2-1 **Toponyms' contribution to identity: The case study of Rabat (Morocco)**
Malak Alasli

T24-2-2 **Memory and local Identity: the Persistence of Colonial-Era Street Names in Hong kong after 1997**
Wenchuan Huang

T24-2-3 **Mapping the core and periphery applied to a choronym (the case of Székely Land)**
Zsombor Bartos-Elekes

T24-2-4 **Unveil the 'lost toponyms' in the northern part of the Menoreh Mountains, Java, Indonesia**
Albina Apriadsa, Habib Sidiq Anggoro, Ari Cahyono, Rossaydiana Apriadna

14:50-16:10 **T32b-2 Behavior and landscape of cities** ····· Conference Room 3 (Plaza Heisei)

Chair: Jun Yamashita (Kyushu University)

T32b-2-1 **Spatial Analysis of Tourist Spots in Central Tokyo Using Online Geotagged Photographs from Flickr**
Bochra Bettaieb, Yoshiki Wakabayashiong

T32b-2-2 **Mapping foreign residents in Japan's major cities**
Yoshitaka Ishikawa

T32b-2-3 **Spatial-Temporal Landscape Analysis of Kallang-Seletar Transect, Singapore**
Tao Wang

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14:50-16:10 **T34/35-1 The frontier of crowdsourced geospatial information** ····· Conference Room 1 (Plaza Heisei)

Chair: Yuichiro Nishimura and Toshikazu Seto (Nara Women's University and University of Tokyo)

T34/35-1-1 **Mobile Tools for Community Scientists**
Maria Antonia Brovelli, Candan Eylul Kilsedar, Francesco Frassinelli

T34/35-1-2 **Potential of crowdsourced data for integrating landmarks and routes for rescue in mountain areas**
Marie-Dominique Van Damme, Ana-Maria Olteanu-Raimond, Yann Méneroux

16:40-18:00 **Asia-4 Asia GIS Business Meeting** ····· Conference Room 4+5 (Plaza Heisei)

Chair: Anond Snidvongs (GISTDA, Thailand)

16:40-18:00 **T01-4 Alternative Urban Cartographies** ····· Saturn (Miraikan)

Chair: Joanna R Gardener (Swinburne University of Technology and RMIT University)

T01-4-1 **"Buoyant Cartographies": Strata-Mapping the Detroit River Border**
Taien Ng-Chan

T01-4-2 **Mapping Heterotopia: Port B's Excavation of Asia in Tokyo**
Sharon Hayashi

T01-4-3 **Mapping as a visual arts practice: social geographies of contemporary Beirut**
Lee Frederix

16:40-18:00 **T02-4 Historical Atlases** ····· Innovation Hall (Miraikan)

Chair: Thomas Schulz (Swiss Federal Statistical Office)

T02-4-1 **Historic Atlases of Polish Towns - status at the end of 2018**
Zenon Kozieł, Radosław Golba, Agnieszka Pilarska, Roman Czaja

T02-4-2 **Unknown Unknowns in Map Preparation for Historical Atlases**
Pavel Seemann, Tomas Janata

T02-4-3 **Creating a Digital Atlas of French Public Architecture (1795 – 1840)**
Lena Krause

16:40-18:00 **T04-3 Cartography and Children 3** ····· Mars (Miraikan)

Chair: José Jesús Reyes Nunez (Eotvos Lorand University)

T04-3-1 **The importance of History of Cartography in the Geography teaching**
Carla Cristina Sena

T04-3-2 **Geoliteracy, Cartology, and a Mobile Serious Game**
Yaïves Ferland, Margot Kaszap

16:40-18:00 **T05-3 Cartography in Early Warning and Crisis Management 3** Venus (Miraikan)

Chair: Apostolos Papakonstantinou (Aegean University)

T05-3-1 **Visualization of fire brigade interventions based on statistical data**
Łukasz Wielebski

T05-3-2 **Online Hazard Maps, Risk Communication, Acceptance and Usage Continuance Intention Model: A Selected Review of Literature**
Kartika Puspita Sari, Hidehiko Kanegae

T05-3-3 **Cartographies of Genocide**
Alberto Giordano

T05-3-4 **Mapping refugee litters in the eastern coast of Lesvos using UAS, an emerging marine litter problem.**
Apostolos Papakonstantinou, Konstantinos Topouzelis, Michaela Doukari, Olympos Andreadis

16:40-18:00 **T06-3 Maps, mountains and routing** ····· Conference Room 2 (Plaza Heisei)

Chair: Pyry Kettunen (Finnish Geospatial Research Institute (FGI), National Land Survey of Finland)

T06-3-1 **Deconstructing the relief inversion effect: Contributors of the problem and its solutions**
Arzu Coltekin, Gianna Hartung, Martina Meyer

T06-3-2 **Improving the search for victims in mountain with geovisualization and competing hypotheses management**
Matthieu Viry, Marlène Villanova-Oliver, Jacques Gautier, Matthew Sreeves, Paule-Annick Davoine

T06-3-3 **Evaluation of Map Signs for Evacuation Purposes**
Zdeněk Stachoň, Petr Kubicek, Hana Svedova, Jie Shen, Xinqian Wu, Milan Konecny

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T06-3-4 **A framework for automatically visualizing and recommending efficient routes**
Stefan Fuest, Monika Sester

16:40-18:00 **T09-2 Flood mapping and water system** ····· Miraikan Hall (Miraikan)
Chair: Clio Andris (Geogia Institute of Technology)

T09-2-1 **A Mid-Axis extraction of heterogeneous river network data with topological consistency**
Hai Hu, Lili Song, Zonglin Yin, Min Yang

T09-2-2 **A MULTI-CRITERIA DECISION SUPPORT SYSTEM IN THE ANALYSIS OF FLOOD RISK AND VULNERABILITY MAPPING IN SULEJA, NIGER STATE, NIGERIA**
Halima Sadiya Abdullahi, Nura Khaliel Umar, Ado Usman Kibon

T09-2-3 **Modelling and Mapping Elusive Locations of Historic Water-Powered Grist Mills**
Michael Edward Hodgson, Silvia Piovan

T09-2-4 **Spatio-Temporal Mapping of Water Consumption at Public Institutions: Case of the United Arab Emirates University**
M. M. Yagoub

16:40-18:00 **T12-4 Location Based Services IV** ····· Uranus (Miraikan)
Chair: Tinghua Ai (Wuhan University)

T12-4-1 **Floating Car Data and Fuzzy Logic for classifying congestion indexes in the city of Shanghai**
Maja Kalinic, Jukka M. Krisp

T12-4-2 **Combining Location2Vec with LSTM to predict next locations from trajectory data**
Shanshan Han, Fu Ren, Qingyun Du

T12-4-3 **A Method for extracting multi-scale stay feature of trajectory based on OPTICS**
Minshi Liu, Yi Long

16:40-18:00 **T24-3 Place names and map design** ····· Mercury (Miraikan)
Chair: Cosimo Palagiano (Sapienza University of Rome)

T24-3-1 **Fifty shades of Roboto: Text Design Choices and Categories in Multi-Scale Maps**
Sébastien Biniek, Guillaume Touya, Gilles Rouffineau

T24-3-2 **Multilingualization Experiment of Geographical Name Information Using Vector Tile Format**
Masaki Suga, Koji Otsuka, Yoshikazu Honda

T24-3-3 **Point Label Placement on Hexagonal Map Grids**
Tinghua Ai, Yingzhe Lei

T24-3-4 **Geographical names to support monitoring of the regional dynamic in Magelang, Central Java, Indonesia**
Ari Cahyono, Rossaydiana Apriadna, Yuniarsita Setyo Wulandari, Siti Martha Uly Br Sinaga

16:40-18:00 **T32b-3 Urban governance, development, and mapping platform** ··· Conference Room 3 (Plaza Heisei)
Chair: Jun Tsutsumi (University of Tsukuba)

T32b-3-1 **VGI contributors' awareness of geographic information quality and its effect on data quality: a case study from Japan**
Jun Yamashita, Toshikazu Seto, Yuichiro Nishimura, Nobusuke Iwasaki

T32b-3-2 **Challenges in creating a 3D participatory platform for urban development**
Thibaud Chassin, Jens Ingensand, Maryam Lotfian, Olivier Ertz, Florent Joerin

T32b-3-3 **UFPR CampusMap: a laboratory for a Smart City developments**
Luciene Stamato Delazari, Leonardo Ercolin Filho, Ana Luiza Stamato Delazari Skroch

T32b-3-4 **Mapping Building Roof over Large Areas with Images of Public Available Map Services: Semantic Segmentation and Footprint Regularization**
Yuchu Qin, Shuai Gao, Miao Liu

16:40-18:00 **T34/35-2 Geo for all: GIS education and volunteered geographic information** ··· Conference Room 1 (Plaza Heisei)
Chair: Nobusuke Iwasaki (The National Agriculture and Food Research Organization)

T34/35-2-1 **A Climate Event Portal for Citizen Science**
Andreas Divanis, Liqiu Meng

T34/35-2-2 **Web Cartography going public: Developing a Massive Open Online Course (MOOC) for cartographic prosumers**
Lorenz Hurni, Charalampos Gkonos, Hans Rudolf Baer

T34/35-2-3 **Auto-filtering validation in citizen science biodiversity monitoring: a case study**
Maryam Lotfian, Jens Ingensand, Olivier Ertz, Simon Oulevay, Thibaud Chassin

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Poster

8:30-18:00 **Poster Session P1** ····· Jupiter (Miraikan)

P1-01 **Living Among the Dead in the Manila North Cemetery: A Cartographic Re-Imagination**
Patricia Ocampo Algura

P1-02 **Mapping vanished mountain shapes —The struggle between limestone mining and establishing a natural park at Mount Bukō—**
Hiroko Toyota, Daiki Ito, Shuya Suzuki, Ryohei Hara, Junxiang Wang

P1-03 **The topography of the world by IN-YOU-ZU**
Yukihide Akiyama, Izumi Sakamoto

P1-04 **Social-Environmental Atlas of the Lençóis Maranhenses area in Northeastern Brazil. First results of a methodological approach.**
Reinaldo Paul Pérez Machado

P1-05 **Atlas of Yellowstone, 2nd Edition: Celebrating 150 Years of the World's First National Park, 1872-2022**
W. Andrew Marcus, James E. Meacham, Justin T. Menke, Aleathea Y. Steingisser, Ann E. Rodman

P1-06 **Atlas of Indonesian Batik: Javanese Batik**
Candra Sari Djati Kartika, Zulfa Nur'Aini 'Afifah, Adriati Annisa Utami

P1-07 **Development of an online learning environment for geography and geology using Minecraft**
Junko Iwahashi, Yoshiharu Nishioka, Daisaku Kawabata, Akinobu Ando, Hiroshi Une

P1-08 **1/30 scale of Japan topography model realized with Minecraft**
Yoshiharu Nishioka

P1-09 **National map contest for cartographic education**
Takuma Uda, Takaki Okatani

P1-10 **Variation of Geospatial Representation of Community Hazard Maps with Disaster Prevention Activities**
Toru Murayama

P1-11 **3D Interactive Visualization Method of Urban Waterlogging Based on Cesium**
Xu Zhang, Wei Zhou, Jie Shen, Lukáš Herman, Yixian Du

P1-12 **Anticipating the Flood. Community-based cartography for disaster flood events in Argentina.**
Ignacio Agustin Gatti, Federico Ariel Robledo, Sol Hurtado, Julieta Caneva, Diego Moreira, Mariano Re, Elodie Briche, Magdalena Falco, Leandro Kazimierski, Anna Paula Micou

P1-13 **Geomorphological maps as the basis of hazard mapping in Japan**
Yohta Kumaki, Sumiko Kubo

P1-14 **A tool for generating testable pop-out effects in geovisual displays**
Tumasch Reichenbacher

P1-15 **Combined GPS and motion-tracker data for activity levels and various route selections in everyday travel**
Kaito Yoshida, Madoka Nakajima, Takashi Morita

P1-16 **Context-Aware POI Sequence Recommendation with Attention-Based Neural Network**
Jianfeng Huang, Yuefeng Liu, Yue Chen, Chen Jia

P1-17 **No Sudden Audio Switch -- Preventing discontinuous POI audio playing in LBS**
Ruochen Si, Masatoshi Arikawa, Hideki Kaji, Tianqi Xia, Ryosuke Shibasaki

P1-18 **Understanding landmark types in human navigation from a database perspective**
Hao Lyu, Wangshu Wang

P1-19 **An interactive map of Tunisian toponymy.**
Mohsen Dhieb

P1-20 **Mobile Geographic Visualization Service for Marine Safety Information based on Geo-Location Based Augmented Reality**
Jaeseong Ahn, Hwahwan Kim, Jeongyun Lee

P1-21 **Managing coverage holes in IoT monitoring sensor networks**
Roya Habibi, Ali Asghar Alesheikh

P1-22 **Updating of mountain trails on the "Digital Japan Basic Map" using big data of walking paths**
Kiyoaki Nakaminami, Koji Otsuka, Yoshikazu Honda

P1-23 **How to read 'Emotional Cartographies': Rethinking (Carto)graphic Representation and Semantics**
Nevena Markovic

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P1–24 **Urban scene classification of high-resolution remote sensing images combined with spatial co-occurrence of POI**
Yu Su, Yanfei Zhong

P1–25 **Method of Indoor Map Unified Mathematics Basic Transformation Based on Transitional Projection Plane**
Weixin Sun, Zhiyong Xue, Heyuan Li

P1–26 **Research of Ubiquitous Information Aggregation Mechanism for Location Based Service**
Zhiyong Xue, Weixin Sun, Heyuan Li

P1–27 **The design and auto map-making technology for deformed traffic route map**
Xianhua Cai, Yuan Zhang, Xiao Fu

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8:30-10:20 **T01-5 Constructions & Abstractions** ····· Saturn (Miraikan)
Chair: William Cartwright (RMIT)

T01-5-1 **Geovisualizing space and time in a science-art exhibit**
Javier A. Arce-Nazario

T01-5-2 **Project "What connects us to the world?" : Constructions of artistic cartographic representations**
Vânia L.C.A. Souza, Maria R.M. Matos

T01-5-3 **Projecting emotions from artworks to maps using neural style transfer**
Edyta Paulina Bogucka, Liqiu Meng

T01-5-4 **Mapping dynamic, non-Euclidean spaces**
Nick Lally, Luke Bergmann

8:30-10:20 **T02-5 Statistical and Political Atlases** ····· Innovation Hall (Miraikan)
Chair: Oren Raz (Central Bureau of Statistics Israel)

T02-5-1 **Statistical Atlas of Poland and statistical atlases of voivodships**
Maciej Zych, Katarzyna Medolińska

T02-5-2 **Retro-atlases II: a new edition of the first Statistical Atlas of Switzerland (1897)**
Olaf König

8:30-10:20 **T07-1 Educational resources** ····· Venus (Miraikan)
Chair: Laszlo Zentai (Secretary-General & Treasurer ICA, Hungary)

T07-1-1 **An analysis of the representation of sustainable development goals in textbook maps and atlases in educational contexts**
Sandra Sprenger, Carina Peter

T07-1-2 **Solar System Cartography for High School Education: A Dual Scale Approach**
Stephan Wondrak

T07-1-3 **The Introduction Chapter of the Swiss World Atlas 2017 - An Innovative Cartographic Education Tool in Switzerland**
Christian Haeberling, Katharina Henggeler, Lorenz Hurni

8:30-10:20 **T09-3 Raster Data Analysis** ····· Miraikan Hall (Miraikan)
Chair: Tinghua Ai (Wuhan University)

T09-3-1 **Run length coding and efficient compression of hexagonal raster data based on Gosper curve**
Rui Xin, Tinghua Ai

T09-3-2 **Rural Road Extraction using Object Based Image Analysis (OBIA): A case study from Assam, India**
Ankita Medhi, Ashis Kumar Saha

T09-3-3 **A fast and simple algorithm for calculating flow accumulation matrices from raster digital elevation models**
Guiyun Zhou, Wenyan Dong, Hongqiang Wei

T09-3-4 **Validating the vertical quality of SRTM digital elevation model of the Mirim Lagoon hydrographic basin**
Andrea Lopes Iescheck, Patricia Andréia Paiola Scalco

8:30-10:20 **T13-1 Map Design I: Perception and Cognition** ····· Uranus (Miraikan)
Chair: Ian Muehlenhaus (University of Wisconsin-Madison)

T13-1-1 **Methods and tools for automated production of origin-destination flow maps**
Daniel M Stephen, Bernhard Jenny

T13-1-2 **A comparative analysis of visualization methods of travel time for schematic road map**
Xiaotong Hou, Peng Ti

T13-1-3 **Cargo flow maps: design principles and automated generation**
Timofey Samsonov, Platon Yasev

T13-1-4 **Another new design for an old map**
Kenneth Field, William Cartwright

8:30-10:20 **T18-1 Relief representation** ····· Mars (Miraikan)
Chair: Karel Kriz (University of Vienna)

T18-1-1 **Standard Elevation Models for Evaluating Terrain Representation**
Patrick Kennelly, Tom Patterson, Alexander Tait, Bernhard Jenny, Daniel Huffman, Sarah Bell, Brooke Marston

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T18-1-2 **Analysis of Relief Shading Tools and Methods for Terrain Representation**
Marianna Farmakis-Serebryakova, Lorenz Hurniight

T18-1-3 **Contour Lines Generation in Karstic Plateaus for Topographic Maps**
Guillaume Touya, Hugo Boulze, Anouk Schleich, Hervé Quinquenel

T18-1-4 **Visualizations of the Doblar Accumulation Basin Based on the UAV Survey**
Klemen Kozmus Trajkovski, Gašper Štebe, Dušan Petrovič

8:30-10:20 **T19-1 Open source geotechnologies in Cartogrphy** ····· Mercury (Miraikan)

Chair: Claudia Robbi Sluter (Federal University of Rio Grande do Sul - UFRGS (Brazil))

T19-1-1 **The advancement of utilizing geospatial information via GSI Maps**
Hirosato Mogi

T19-1-2 **GIS Maps as Powerful Curriculum Artefacts**
Mary Fargher

T19-1-3 **Historical map viewer technology that guarantees nonlinear bijective conversion without distortion**
Kohei Otsuka

T19-1-4 **Reproducible Workflow for Cartography - Migrants Deaths in the Mediterranean sea**
Timothée Giraud, Nicolas Lambert

9:20-10:20 **Asia-5 Second Asia GIS Keynote** ····· Conference Room 4+5 (Plaza Heisei)

Chair: Jianya GONG (Wuhan University)

Asia-5-1 **Scaling Geospatial Analysis for SDGs with Space Infrastructure**
Ryosuke Shibasaki (The University of Tokyo)

9:20-10:20 **T26-1 User Issues in Representation Design I** ····· Conference Room 2 (Plaza Heisei)

Chair: Robert Roth (University of Wisconsin)

T26-1-1 **How does the enumeration unit size influence spatial pattern recognition in choropleth maps? User study**
Izabela Karsznia

T26-1-2 **Choropleth map - which data type should I use?**
Tomasz Nowacki

9:20-10:20 **T42-1 Geospatial web data** ····· Conference Room 3 (Plaza Heisei)

Chair: Hideyuki Fujita (The University of Electro-Communications)

T42-1-1 **Research on Deep Web POI Acquisition based on Retrieving Word Optimization and Spatial Adaption**
Yong Wang, Jiping Liu, An Luo, Yuanhui Cao

T42-1-2 **Analysis of Tourists' Image of Seoul with Geotagged Photos using Convolutional Neural Networks**
Dongeun Kim, Youngok Kang, Yearim Park, Nayeon Kim, Juyoon Lee, Nahye Cho

T42-1-3 **Semantic trajectory inference from geo-tagged tweets**
Qunying Huang, Xinyi Liu

10:50-12:10 **Asia-6 Mapping and GIS in Asia III** ····· Conference Room 4+5 (Plaza Heisei)

Chair: Qiming ZHOU (Hong Kong Baptist University)

Asia-6-1 **Formal Analysis and Optimized Visual Design of Graticule**
Yifan Chen, Feiran Sun, Junfan Jiang

Asia-6-2 **Geographic Knowledge Graph Embedding with Geospatial Features**
Peiyuan Qiu, Feng Lu, Li Yu, Jialiang Gao, Shengjie Zheng

Asia-6-3 **Wind impact visualization and analysis for Typhoon during 2008-2017 in Shenzhen, south China**
Jun Liu, Qiming Zhou

Asia-6-4 **An Estimation of Housing Vacancy Rate in China Using NPP- VIIRS Nighttime Light Data and OpenStreetMap Data**
Luyao Wang, Hong Fan

10:50-12:10 **T02-6 Educational and Ecological Atlases** ····· Innovation Hall (Miraikan)

Chair: Vit Vozenilek (Palacký University Olomouc)

T02-6-1 **The Republic of Indonesia Territorial Atlas as Geoliteration Tools for the Adolescents**
Fakhruddin Mustofa, Ellen Suryanegara, Niendyawati Niendyawati, Mulyanto Darmawan

T02-6-2 **Swiss World Atlas in Class Room - How to teach with maps**
Wenke Zimmermann, Lorenz Hurni

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T02-6-3 **Rethinking the Place of students intermediated by the Geographic, Historical and Cultural School Atlas of the Federal District, Brasília, Brazil**
Vânia L.C.A. Souza, Cristina M.C. Leite, Míriam A. Bueno

T02-6-4 **Fauna on the maps of Russia and its Arctic Region**
Tamara Vereshchaka, Olga Kulagina, A.L. Stepanchenko

10:50-12:10 **T07-2 Educational consepts** ····· Venus (Miraikan)

Chair: Gertrud Schaab (Deputy Dean for Research, Karlsruhe University of Applied Research, Germany)

T07-2-1 **Strategies for teaching cartography from theory and practice**
Jeff T Howarth

T07-2-2 **Contemporary challenges in cartographic education**
David Fairbairn

T07-2-3 **Envisioning the future of academic cartographic education**
Georg Gartner, Menno-Jan Kraak, Dirk Burghardt, Liqiu Meng, Juliane Cron, Corne Van Elzakker, Britta Ricker

T07-2-4 **ANALYTICAL BACKGROUND FOR DEVELOPING A BODY OF KNOWLEDGE FOR CARTOGRAPHY**
Harold Moellering

10:50-12:10 **T09-4 Network Analysis (I)** ····· Miraikan Hall (Miraikan)

Chair: Clio Andris (Georgia Institute of Technology)

T09-4-1 **Understanding the integration of buses and metro systems using smart card data**
Diao Lin, Ruoxin Zhu

T09-4-2 **Uncovering Community Structure in Geospatial Networks: A Case Study of Urban Bus Networks in Hangzhou, China**
Yujing Wang, Fu Ren, Qingyun Du

T09-4-3 **Shadow analysis of buildings over urban express way by using three-dimensional GIS - To study the distribution of long remained snow cover that made express way close for five days**
Daichi Shiroki, Hiroshi Masaharu

T09-4-4 **FINDING AN ALTERNATE ACCESS ROUTE FROM IKIRE TO GBONGAN USING GEOSPATIAL TECHNIQUES**
Nureni Babatunde Amoo

10:50-12:10 **T13-2 Map Design II: Flows and Schematics** ····· Uranus (Miraikan)

Chair: Kenneth Field (Esri Inc.)

T13-2-1 **Design, Dissemination, and Disinformation in Viral Maps**
Anthony C Robinson

T13-2-2 **Emotion maps**
William Edward Cartwright

T13-2-3 **User Preferences for Bus Map Design: Evidence from a Map Usability Study**
Mohd Shahmy Mohd Said, David Forrest

10:50-12:10 **T18-2 Mapping mountain and outdoor activities** ····· Mars (Miraikan)

Chair: Dušan Petrovič (University of Ljubljana)

T18-2-1 **ALBINA The White Goddess – Mapping and Communicating Avalanche Risk in the European Alps**
Karel Kriz

T18-2-2 **Proposals for enhancements of topographic maps for high alpine tours**
Stephan Wondrak

T18-2-3 **Cross-border topographic mapping, cross-border orienteering: the Hungarian overview**
László Zentai, Gábor Gercsák

10:50-12:10 **T26-2 User Issues in Representation Design II** ····· Conference Room 2 (Plaza Heisei)

Chair: Zdenek Stachon (Masaryk University)

T26-2-1 **Evaluating rainbow colour scheme in social data mapping**
Izabela Golebiowska

T26-2-2 **How colour palettes in maps are re-coloured by daltonization methods**
Anne Kristin Kvitle

T26-2-3 **Numbers on maps as a new cartographic technique: helpful or harmful for users? An empirical study**
Jolanta Korycka-Skorupa

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T26-2-4 **The Specifics of Cartographic Semiology in Tactile Maps**
Alena Vondrakova, Radek Barvir, Jan Brus

10:50-12:10 **T30-1 GIS, Remote Sensing and Cartographic Theory, Methodology and Applications (1)** ····· Saturn (Miraikan)
Chair: Takashi Oguchi and Tzai-Hung Wen (Univ. Tokyo, Japan, National Taiwan Univ.)

T30-1-1 **Extraction of knowledge on spatial distribution and spatial relationship from scanned topographic map using Convolutional Neural Networks**
Hao Wu, Hongguo Jia

T30-1-2 **Semantically Enriched Simplification of Trajectories**
Rajesh Tamilmani, Emmanuel Stefanakis

T30-1-3 **Third dimension of a map**
Karel Jedlička

T30-1-4 **Image Spectrometry and Copernicus data for Heritage Mapping in the Jarama Valley, Spain**
Juan Gregorio Rejas, Francisco Javier Gonzalez, Pilar Sanchez-Ortiz

10:50-12:10 **T31-1 Visualization and Analysis of Geographical Process (1)** ····· Mercury (Miraikan)
Chair: Koichi Tanaka (Ibaraki University)

T31-1-1 **Time-space Visualization of Automobile and Airplane Travel Time from Chicago to Various Destination Cities**
Stella W. Todd, Alex Yetsko, Claire Hay

T31-1-2 **An Analysis of Movement by Visualizing Spatio-Temporal Characteristics of Logdata**
Nahye Cho, Youngok Kang

10:50-12:10 **T34/35-3 Analysis of OpenStreetMap contribution and data trustworthiness** ····· Conference Room 1 (Plaza Heisei)
Chair: Maria Antonia Brovelli (Politecnico di Milano)

T34/35-3-1 **Temporal-spatial Analysis of Contributors' Mapping Behavior for Building Data in OpenStreetMap**
Jin Xu, Qi Zhou

T34/35-3-2 **Spatial-temporal Evolution and Completeness Analysis of OpenStreetMap Building Data in China from 2012 to 2017**
Qi Zhou, Yuanjian Tian

T34/35-3-3 **Pedestrian Traffic Flow Prediction based on ANN Model and OSM data**
Achituv Cohen, Sagi Dalyot

T34/35-3-4 **Integrating spatial accessibility estimates derived from crowdsourced, commercial, and authoritative geo-datasets: Case study of mapping accessibility to urban green space in the Tokyo-Yokohama area**
Brian Alan Johnson, Rajarshi Dasgupta, Shizuka Hashimoto, Pankaj Kumar, Akio Onishi

10:50-12:10 **T42-2 Designing data driven maps** ····· Conference Room 3 (Plaza Heisei)
Chair: Tomas Renznik (Masaryk University)

T42-2-1 **Designing maps with fictional and real road intersections for the evaluation of countdown timer displays for bicyclists**
Andreas Keler, Georgios Grigoropoulos, Heather Kaths, Klaus Krämer, Jakob Kaths, Matthias Spangler, Fritz Busch

T42-2-2 **Enriching complex road intersections from OSM with traffic-related behavioral information**
Andreas Keler, Georgios Grigoropoulos, Dominik Mussack

T42-2-3 **Automatic Generation of Photorealistic Image Fillers for Privacy Enabled Urban Basemaps using Generative Adversarial Networks**
Amgad Agoub, Yevgeniya Filippovska, Valentina Schmidt, Martin Kada
Andreas Keler, Georgios Grigoropoulos, Dominik Mussack

T42-2-4 **Innovative Geospatial and Cartographic Approaches to Identification, Analysis, and Visualisation of Land Degradation**
Tomas Reznik, Milan Konecny, Karel Charvat

13:30-14:30 **Keynote Presentation 2** ····· International Conference Hall (Plaza Heisei)
Steve Coast

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14:50-16:10 **Asia-7 Mapping and GIS in Asia IV** ····· Conference Room 4+5 (Plaza Heisei)
Chair: Ryosuke Shibasaki (The University of Tokyo)

Asia-7-1 **Automatic recognition of syntactic patterns of natural language spatial relations based on random forest machine learning algorithm**
Hong Fan, Dan Guo, Jiani Ouyang

Asia-7-2 **Urban Informatics, a Attempt in the Big Data Era**
Yang Yue, Qingquan Li, Renzhong Guo

Asia-7-3 **A Cloud Model based Landslide Risk Level Assesment method**
Jing Geng, Wenxia Gan, Haning Yuan, Jiakai Yang

Asia-7-4 **What are the Focuses in GIS for the Last 10 Years ?: Extracting Key-phrases from Scientific Articles**
Li Yu, Feng Lu, Caihong Deng, Zhipeng Dong

14:50-16:10 **T06-4 Map design, emotions and decision-making** ··· Conference Room 2 (Plaza Heisei)
Chair: Amy Griffin (RMIT University)

T06-4-1 **The significance of shape in cartographic communication**
Silvia Klettner

T06-4-2 **Effects of valence on selecting and memorizing spatial information from road maps**
Andrea Binn

T06-4-3 **Emotional responses to climate change map framing using facial emotion recognition technology**
Carolyn S Fish, Amy L Griffin

T06-4-4 **How are map-based decisions influenced by uncertainty visualization in risky and time-critical situations?**
Michelle Korporaal, Sara Irina Fabrikant

14:50-16:10 **T07-3 Cartgraphic topics for wider audiences** ····· Venus (Miraikan)
Chair: William Cartwright (Professor of Cartography, RMIT University, Australia)

T07-3-1 **Geospatial Literacy in Africa-Nigeria**
Raimi Abidemi Asiyanbola

T07-3-2 **Digital sketch maps in teaching GIS for law enforcement students**
Andrea Pődör, László Zentai, Erika Gál

T07-3-3 **Orienteering in Geography Education in Japanese High School**
Taketo Kobayashi

T07-3-4 **Challenges for First Time GIS User among Student Teachers**
Mengieng Ung

14:50-16:10 **T09-5 Network Analysis (II)** ····· Miraikan Hall (Miraikan)
Chair: X.Angela Yao (University of Georgia)

T09-5-1 **MODELING AND ANALYSIS OF SEMANTICALLY ENRICHED SIMPLIFIED TRAJECTORIES USING GRAPH DATABASES**
Rajesh Tamilmani, Emmanuel Stefanakis

T09-5-2 **Data Cleansing Method for Sparse Trajectory Data: A Case Study of Shared Electric Bicycles in Tengzhou**
Zhaoxin Dai, Weixiang Peng, Chengcheng Zhang

T09-5-3 **Analysis on the Riding Characteristics of Mobike Sharing Bicycle in Beijing City, China**
Min Cao, Mengxue Huang

T09-5-4 **An Improved Algorithms of Stroke Generation Considering Multi-level Information Quantity**
Liu Yi, Li Wen Jing, Lin Zhi Yong

14:50-16:10 **T13-3 Map Design III: Thematics** ····· Uranus (Miraikan)
Chair: Ian Muehlenhaus (University of Wisconsin-Madison)

T13-3-1 **Image of Excellence – Developing Wine Maps for Austria**
Karel Kriz

T13-3-2 **Thematic Mapping: This Is My Truth Tell Me Yours**
Kenneth Field

T13-3-3 **Central Park Squirrel Census Maps**
Nathaniel Garnett Slaughter Iv

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14:50-16:10 **T23-1 New Approaches in Topographic Mapping** ····· Mars (Miraikan)
Chair: Alexander Kent (Canterbury Christ Church University)

T23-1-1 **Towards sustainable topographic mapping**
Haico Van Der Vegt, Paula Dijkstra, Ton Van Helvert

T23-1-2 **Cartographic support of design, construction and operation of underground gas storage in rock salt**
Tamara Vereshchaka, Marina Bakanova, A.L. Stepanchenko

T23-1-3 **Digital processing of old topographical maps for the reference base for quantitative and qualitative studies of landscape changes**
Dariusz Lorek, Beata Medyńska-Gulij, Paweł Cybulski, Tymoteusz Horbiń s

T23-1-4 **DEM based Terrain Sketch Mapping in a Loess Landform By Considering visual hierarchy and feature generalization**
Cheng Yi Han

14:50-16:10 **T30-2 GIS, Remote Sensing and Cartographic Theory, Methodology and Applications (2)** ····· Saturn (Miraikan)
Chair: Takashi Oguchi and Tzai-Hung Wen (Univ. Tokyo, Japan, National Taiwan Univ.)

T30-2-1 **3D Map Visualization Process and Efficiency Analysis of Geographic Information Based on WebGL**
Deguo Su, Beibei Tan, Debao Yuan, Yong Wang

T30-2-2 **Displacement and visualization of point symbols based on spatial distribution characteristics**
Haipeng Liu, Yi Long, Yi Zheng

T30-2-3 **Improvements to Information Entropy for Raster Spatial Data: A Thermodynamic-based Evaluation**
Hong Zhang, Peichao Gao, Zhilin Li

T30-2-4 **Boltzmann Entropy for the Spatial Information of Raster Data**
Peichao Gao, Hong Zhang, Zhilin Li

14:50-16:10 **T31-2 Visualization and Analysis of Geographical Process (2)** ····· Mercury (Miraikan)
Chair: Manjula Ranagalage (Rajarata University Sli Lanka)

T31-2-1 **The Spatial Relationship between Land Surface Temperature and Land Use/Cover Types in Sapporo City, Japan**
Ruci Wang, Yuji Murayama

T31-2-2 **Evaluating Bi-temporal Dynamics and Trend of Urbanization-induced Land Cover Temperature in Shanghai, China**
Fei Liu, Yuji Murayama

T31-2-3 **Geographical Change of the Japanese National Land in the 200 Years Using INŌ's Map with GIS**
Yuji Murayama, Yuki Iwai

14:50-16:10 **T34/35-4 Geomedia studies using volunteered geographic information** ····· Conference Room 1 (Plaza Heisei)
Chair: Holger Jens Kumke (Technical University Munich)

T34/35-4-1 **Linking picture with text: tagging flood relevant tweets for rapid flood inundation mapping**
Xiao Huang, Cuizhen Wang, Zhenlong Li

T34/35-4-2 **Social Media for Sensing: Do Tweets Represent Events at Geo-Tagged Locations?**
Morteza Karimzadeh

T34/35-4-3 **Finding cultural heritage traces from modern social media**
Francisco Porras Bernardez, Georg Gartner, Nico Van De Weghe, Steven Verstockt

14:50-16:10 **T39-1 Theoretical Cartography 1** ····· Innovation Hall (Miraikan)
Chair: Georg Gartner (Technical University Vienna)

T39-1-1 **Functional Cartography – About the quality of maps from the era of artefacts to the era of services and beyond**
Georg Gartner

T39-1-2 **Mapping in Cartography**
Miljenko Lapaine

T39-1-3 **From third-person to first-person cartographies with immersive virtual environments**
Florian Hruby

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14:50-16:10 **T42-3 Sensing and data analysis** ····· Conference Room 3 (Plaza Heisei)
Chair: Akira Sasagawa (Geospatial Information Authority of Japan)

T42-3-1 **Analysis of Travel Patterns of Seoul Tourists by Trajectory Data Mining**
Juyoon Lee, Youngok Kang, Nayeon Kim, Dongeun Kim, Yearim Park

T42-3-2 **Air pollution potential hot zone evaluation model based on environmental sensing IoT**
Chi-Chieh Peng, Tzai-Hung Wen

T42-3-3 **Exploring Urban Dynamics from Bluetooth Tracking Data: A Case Study of Austin, Texas**
Yihong Yuan, David Mills

T42-3-4 **Extraction of Newly-built Roads Using Probe Data**
Shuto Sugai, Sho Takahashi, Mayumi Noguchi, Akira Sasagawa

16:40-18:00 **T06-5 Optimizing map design for end users** ····· Conference Room 2 (Plaza Heisei)
Chair: Sidonie Christophe (Institut Nationale Geographique)

T06-5-1 **Coincident Visualization of Uncertainty and Value for Point Symbols**
Petr Kubíček, Milan Konečný, Jie Shen, Zdeněk Stachoň, Xinqian Wu

T06-5-2 **Grid overlays reduce bias in mental representations of topographic maps**
Lars Kuchinke, Julian Keil, Dennis Edler, Anne-Kathrin Bestgen, Frank Dickmann

T06-5-3 **Using Area Cartograms in Teaching Geography in Secondary Schools**
Anna Markowska

T06-5-4 **Creating and evaluating web-based visualizations of multi-dimensional spatiotemporal data**
Jan Wilkening, Keni Han, Mathias Jahnke

16:40-18:00 **T07-4 Cartographic education supporting specific activities** ··· Venus (Miraikan)
Chair: Tao Wang (Associate Dean for Education and International Affairs,Capital Normal University, Beijing, China)

T07-4-1 **Educational resources of Cartography and Geography in the IGN of Spain**
Ana Velasco-Tirado, Celia Sevilla-Sánchez

T07-4-2 **NOAA's Certification program in Marine Cartography**
Shachak Peeri, John Nyberg, Neil Weston

T07-4-3 **International Cartography Master graduates starting their career**
Juliane Cron, Liqiu Meng, Edyta Bogucka, Georg Gartner, Dirk Burghardt, Menno-Jan Kraak, Corné Van Elzakker, Britta Ricker

16:40-18:00 **T09-6 Analysis and modeling of air quality and landscape** ··· Miraikan Hall (Miraikan)
Chair: Lei Zou (Texas A&M University)

T09-6-1 **Data-driven regionalization for analyzing the spatiotemporal characteristic of air quality in China**
Sheng Li, Jiangtao Liu, Chao Wu

T09-6-2 **Extracting relationship between air pollution and precipitation using spatio-temporal analysis in Tehran metropolis**
Shokouh Dareshiri, Mohammadreza Sahelgozin, Maryam Lotfian, Jens Ingensand

T09-6-3 **Scale Effects on Land Loss Modeling in the Mississippi River Delta**
Nina S.-N. Lam, Heng Cai, Lei Zou, Kam-Biu Liu

16:40-18:00 **T13-4 Map Design IV: Content** ····· Uranus (Miraikan)
Chair: Kenneth Field (Esri Inc)

T13-4-1 **Banal Cartography: A Critique of Quantitative Content Analysis in Contemporary Cartographic Research**
Ian Muehlenhaus

T13-4-2 **Ten Telltale Signs of Novice Cartography**
Aileen R. Buckley

T13-4-3 **Quantifying Emotion: Survey Methods and Sentiment Analysis in Cartographic Design Research**
Cary Leonard Anderson

16:40-18:00 **T23-2 Topographic Mapping of Urban Environments** ····· Mars (Miraikan)
Chair: Anja Hopfstock (Federal Agency for Geodesy and Cartography)

T23-2-1 **Analysing the Symbology of Soviet Military City Plans**
Martin Davis, Alexander J Kent

T23-2-2 **The Soviet Military Plan of Tokyo (1966)**
Alexander James Kent

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T23-2-3 **A proposal of topographic map symbols for large-scale maps of urban areas in Brazil**
Claudia Robbi Sluter, Silvana Philippi Camboim, Andrea Lopes Iescheck, Luciane Borges Pereira

T23-2-4 **Measuring user preferences in virtual reality (VR): 2D versus 3D urban geovisualizations of topographic data**
Alexander James Kent, Lukasz Halik

16:40-18:00 **T30-3 GIS, Remote Sensing and Cartographic Theory, Methodology and Applications (3)** ····· Saturn (Miraikan)

Chair: Tzai-Hung Wen and Takashi Oguchi (National Taiwan Univ., Univ. Tokyo, Japan)

T30-3-1 **Automatic Change Detection Based on Edge Information Using Two Different Types of Ortho Image**
Akira Sasagawa, Shuto Sugai, Mayumi Noguchi

T30-3-2 **A novel spatial recurrent neural network for hyperspectral imagery classification**
Andong Ma, Anthony M. Filippi

T30-3-3 **Application of Method for Calculating Sky View Factor Using Google Street View: Relation Between Sky View Factor and Physical Elements in Urban Space**
Shoko Nishio, Fumiko Ito

T30-3-4 **Practice of a GIS education program for junior and senior high school students**
Hiroyuki Yamauchi, Takashi Oguchi, Yasutaka Haneda

16:40-18:00 **T31-3 Visualization and Analysis of Geographical Process (3)** ··· Mercury (Miraikan)

Chair: Yuji Murayama (University of Tsukuba), S.I.S. Subasinghe (University of Peradeniya)

T31-3-1 **Spatial Analysis of Urbanization in Major Asian and African Cities**
Manjula Ranagalage, Yuji Murayama

T31-3-2 **The Impact of landscape composition for urban heat island intensity in Addis Ababa City using Landsat data (1986-2016)**
Dmslb Dissanayake, Takehiro Morimoto, Yuji Murayama, Manjula Ranagalage

T31-3-3 **Ground Disasters Visual Representation Based on Multi-Field Geospatial Infographics Spectra in Mining Area**
Jin Zhang

T31-3-4 **Multiscale assessment of northern forest characteristics based on ultra-high resolution data**
Andrey A. Medvedev, Arseny V. Kudikov, Natalia O. Telnova, Olga V. Tutubalina, Elena I. Golubeva, Mihail V. Zimin

16:40-18:00 **T34/35-5 Development and practices of crowdsourced geospatial information** ··· Conference Room 1 (Plaza Heisei)

Chair: Toshikazu Seto (The University of Tokyo)

T34/35-5-1 **Action, Emotion, Opinion – A Taxonomy of Human Reactions Expressed in Location-Based Social Media**
Eva Hauthal, Dirk Burghardt

T34/35-5-2 **Feedbacks on VGI in-situ campaign for updating LULC data**
Laurence Jolivet, Ana-Maria Olteanu-Raimond, Marie-Dominique Van Damme, Marie Gombert, Simon Fauret, Thierry Saffroy

T34/35-5-3 **The Development of Open Source Based Citizen Collaboration Applications for Infrastructure Management: My City Report**
Toshikazu Seto, Yoshihide Sekimoto, Hiroshi Omata, Hiroya Maeda, Takehiro Kashiyama, Shusaku Higashi, Masato Fujii, Haruyuki Seki

16:40-18:00 **T39-2 Theoretical Cartography 2** ····· Innovation Hall (Miraikan)

Chair: Jim Thatcher (University of Washington Tacoma)

T39-2-1 **Distance Matters: a more than euclidean approach to visualizing gerrymandering**
Austin Jennings, Jim Thatcher

T39-2-2 **A Choropleth Map Classification Scheme with Control of Robustness for Uncertain Geographical Attributes**
Wangshu Mu, Daoqin Tong

T39-2-3 **Automatic Geological Map Generalization for special geobody—A Case Study on Dyke**
Wenjing Li, Siyi Li, Hongguo Jia

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16:40-18:00 **T42-4 Geospatial big data visualization and Data science** ··· Conference Room 3 (Plaza Heisei)

Chair: Ryo Inoue (Tohoku University)

T42-4-1 **Towards Spatial Data Science: Bridging the Gap between GIS, Cartography and Data Science**
Jan Wilkening

T42-4-2 **comprehensive workflow for automating thematic map geovisualization from univariate big geospatial point data**
Larissa Pillay, Gertrud Schaab, Serena Coetzee, Victoria Rautenbach

T42-4-3 **Advanced Cartographic Techniques for Making Sense of Big Dynamic Data**
Alexandre Sorokine, Steven Fernandez

T42-4-4 **Ethics of Location-Based Data in Crisis Situations**
Alan M Maceachren

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Poster

8:30-18:00 **Poster Session P2** ····· **Jupiter (Miraikan)**

P2-01 **Geospatial Information Authority of Japan's (GSI's) support for geography education**
Takaki Okatani, Hiroaki Tanaka, Yuki Kurisu, Hidetoshi Nakajima, Keisuke Katsuta

P2-02 **Work in Team – Improve your GIS Skills. Effectiveness of project work in teaching GIS for foreign students**
Krisztina Irás, José Jesús Reyes Nunez

P2-03 **Geostatistical mapping of land prices in Taiwan Case: an empirical comparison of ordinary kriging**
Cheng-Ya Chang

P2-04 **Estimation of building shape by block size**
Masahiro Taima, Yasushi Asami, Kimihiro Hino

P2-05 **Spatiotemporal Analysis of Carpooling Data**
Mátyás Gede, Lola Varga

P2-06 **Evaluating transport time in emergency medical service via GIS: an observational study of Tokyo**
Tianqi Xia, Shuzhe Huang, Xuan Song, Xiaoya Song, Ruochen Si, Ryosuke Shibasaki, Kyoung-Sook Kim

P2-07 **Digital Terrain Representation Methods and Red Relief Image Map, A New Visualization Approach**
Tatsuro Chiba, Shin-Ichi Kaneta, Makoto Ohashi

P2-08 **Improvement suggestions for problems of hazard map from the viewpoint of color scheme**
Endo Ryo, Nakano Takayuki

P2-09 **Implementation of Pedestrian Path Navigation Algorithm Based on "We-Map" Platform**
Jian Zhang, Haowen Yan

P2-10 **Potential of Digital Elevation Topographic Maps reveal the history of the region: comparing Those Maps with Marsh data in the early Meiji Period**
Masatoshi Ideto, Yuki Kurisu, Hideyuki Toishigawa

P2-11 **The Magnificent Pilgrimage of Borobudur**
Dirga Imam Gozali Sumantri, Muhammad Raihan, Pindi Setiawan, Agung Budi Harto

P2-12 **Methods and algorithms for creation of structural schemes of rivers**
Ivan Evgenyevich Fokin, Sergey Anatolyevich Krylov

P2-13 **A precise location navigation map visualization method for landmark guidance**
Wang Hai Ying, Yan haowen

P2-14 **Consideration of topographic expression for Geopark maps - Case study of the North Ibaraki Geopark**
Mamoru Koarai, Rika Imaizumi

P2-15 **A New Method for Extracting Elevation Information of River System from Contours**
Guifang He, Minshi Liu

P2-16 **Satellite Stereo Image Processing for 3D Topographic Mapping**
Jaehong Oh, Changno Lee

P2-17 **Landform mapping of Okinoshima island and sea bed of Munakata city**
Takahito Kuroki

P2-18 **Using a free colour vision simulator to improve the accessibility of orienteering maps**
Rebecca Schulga, David Forrest, Trevor Hoey

P2-19 **Measuring distance through topographic models**
Roberto De Figueiredo Ribeiro

P2-20 **Usability problems and literacy of online maps**
Shin Murakoshi, Kenta Mitsushita

P2-21 **Study on the Behaviors of Inbound Tourists based on Geotagged Photo Metadata**
Ru Ru Shen, Hao Wen Yan, Qin Ke Sun, Xiao Jun Li

P2-22 **Making post-glacial uplift visible: A model based high-resolution animation of shore displacement**
Viljami Perheentupa, Ville Mäkinen, Juha Oksanen

P2-23 **UAV Based Agricultural Crop Canopy Mapping for Crop Field Monitoring**
Prabath Priyankara, Takehiro Morimoto

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P2-24 **Urban Growth: From pixel to reality**
Shyamantha Subasinghe

P2-25 **Visualization and geospatial analysis on rural areas using sub-regional statistics**
Takehiro Morimoto

P2-26 **Research on event perception based on geo-tagged social media data**
Ruoxin Zhu, Chenyu Zuo, Diao Lin

P2-27 **Interactive mapping for geographically weighted correlation in big census data**
Narumasa Tsutsumida, Joseph Percival, Daisuke Murakami, Takahiro Yoshida, Tomoki Nakaya

P2-28 **Applicability of KOMPSAT Image Data in Open Data Cube**
Kwangseob Kim, Kiwon Lee

P2-29 **A city in liquid modernity: a sociological perspective**
Edyta Baranska

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8:30-10:20 **T03-1 Cartographic Heritage 1: Georeferencing, Analysis** ····· Mars (Miraikan)
Chair: Angeliki Tsorlini (Aristotle University of Thessaloniki)

T03-1-1 **Fast georeferencing/geocoding tool for old maps with large distortions**
Mátyás Gede

T03-1-2 **Research on Geographical Positioning of Ancient Map**
Lili Jiang

8:30-10:20 **T07-5 Cartographic topics for the classroom** ····· Venus (Miraikan)
Chair: David Fairbairn (Chair, ICA Commission on Education & Training, UK)

T07-5-1 **Developing Interactive Map Apps for an Exhibition on the Topic 'Fremdsein': a Joint Endeavour by Students and Lecturers**
Gertrud Schaab, Christian Stern, Jan Jedersberger, Agageldi Samedov

T07-5-2 **A New Approach to Teaching C++ Programming for Cartography Students by Means Training Programs with Emphasizing Cartography and Geodesy**
Vladimir Zablotskii

T07-5-3 **Cartography. A book and a MOOC**
Kenneth Field

T07-5-4 **Demystifying Least Square Adjustments Using Smartphones and Graphic Calculator**
Roberto Magayanes Recamunda

8:30-10:20 **T09-7 Health and emergency analysis** ····· Miraikan Hall (Miraikan)
Chair: Lois A Park (University of Southern California)

T09-7-1 **Identifying Heat Health Risks in the Urban Areas of Western Australia (WA) – An Enhanced Heat Vulnerability Assessment**
Qian Sun, Grace Yun, Ting Ling

T09-7-2 **Subnational estimates of health in low- and middle-income countries: a geospatial approach with interpolation and raster analysis**
Lois A Park

T09-7-3 **An approach for identifying and analysing reference features and spatial relations used in mountain emergency calls**
Mattia Bunel, Cécile Duchêne, Ana-Maria Olteanu-Raimond, Marlène Villanova-Olivier, Grégoire Bonhoure, Tiphaine Jouan

8:30-10:20 **T13-5 Map Design V: Paths** ····· Uranus (Miraikan)
Chair: Ian Muehlenhaus (University of Wisconsin-Madison)

T13-5-1 **Marathon Map and its Utilization in City Tourism**
Xiaoyan Liu, Cheng Ye, Shuran Zhang

T13-5-2 **Indoor path visualization method based on the spatial characteristics of indoor environment**
Jiafeng Shi, Jie Shen, Zdeněk Stachoň, Yawei Chen

8:30-10:20 **T21-1 Advances in SDI research** ····· Saturn (Miraikan)
Chair: Serena Coetzee (University of Pretoria)

T21-1-1 **Harmonizing National Topographic Data Using an Automated Quality Validation Process**
Nils Erik Mesterton, Mari Talvikki Isomäki, Antti Jakobsson, Joonas Jokela

T21-1-2 **MODEL OF MANAGEMENT OF THE QUALITY OF THE GEOSPATIAL INFORMATION IN THE AEROPHOTOGRAMETRIC SERVICE OF THE AIR FORCE OF CHILE, BASED ON STANDARDS ISO TC/211**
Joselyn Robledo Ceballos

T21-1-3 **Collaborative Custodianship through Collaborative Cloud Mapping: Challenges and Opportunities**
Serena Coetzee, Jacques Du Preez, Franz-Josef Behr, Antony K Cooper, Maritjn Odijk, Siegfried Vanlishout, Raf Buyle, Markus Jobst, Maroale Chauke, Nicolene Fourie, Peter Schmitz, Frikan Erwee

T21-1-4 **Expanding the ICA model of stakeholders in a spatial data infrastructure (SDI)**
Antony Kyle Cooper, Serena Coetzee, Petr Rapant, Adam Iwanik, Jan Hjelmager, Harold Moellering, Michel Huet, Kisco Sinvula

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8:30-10:20 **T31-4 Visualization and Analysis of Geographical Process (4)** ····· Mercury (Miraikan)
Chair: Manjula Ranagalageoque (Rajarata University of Sri Lanka)

T31-4-1 **Detecting Cooling Effect of Landscape Composition and Configuration: An Urban Heat Island Study on Hangzhou**
Hao Hou, Ronald Canero Estoque

T31-4-2 **Individual level heat stress evaluation using GPS towards smart navigation system**
Takahiro Yoshida, Yoshiki Yamagata, Daisuke Murakami

T31-4-3 **Visualization and Spatio-temporal Analysis of Tsunami Inundation: A Case of the Great East Japan Earthquake**
Yuki Iwai

T31-4-4 **Long-term analysis of irrational water use processes based on cartographic materials and remote sensing data**
Andrey A. Medvedev, Natalia A. Alekseenko, Natalia O. Telnova, Alexander V. Koshkarev

9:20-10:20 **T17-1 Maps and the Internet 1** ····· Conference Room 1 (Plaza Heisei)
Chair: Michael T Gastner (Yale-NUS College)

T17-1-1 **Pre-Pottery Neolithic age spatial planning: The typo-morphology of the first urbanisation with reference to three Akarçay Tepe plaques**
Şirin Gülcen Eren

T17-1-2 **The Application Programmer Interface (API) in Modern Cartography: Development and Prospects**
Michael P. Peterson

T17-1-3 **go-cart.io: a web application for generating contiguous cartograms**
Shi Tingsheng, Ian K Duncan, Michael T Gastner

9:20-10:20 **T29-1 Space-time mapping for Digital Humanities** ··· Conference Room 4+5 (Plaza Heisei)
Chair: Nakaya Tomoki (Tohoku University)

T29-1-1 **Changes in the distribution and structure of white-collar workers' residences in Japan during the period of modernization**
Takashi Kirimura

T29-1-2 **Space-Time Cube and Mixed Reality – New Approaches to Support Understanding Historical Landscape Changes**
Mathias Jahnke, Edyta Paulina Bogucka, Maria Turchenko

T29-1-3 **Space-time mapping of historical plague epidemics in modern Osaka, Japan**
Tomoki Nakaya, Kazumasa Hanaoka, Shohei Nagata

10:50-12:10 **SS1 Cartography in the age of big data** ····· International Conference Hall (Plaza Heisei)
Chair: Keiji Yano (Ritsumeikan University)

SS1-1 **Cartography in the age of big data (Invited talk)**
James Cheshire (UCL)

10:50-12:10 **T03-2 Cartographic Heritage 2: Map Libraries** ····· Mars (Miraikan)
Chair: Mátyás Gede (ELTE Eötvös Loránd University, Budapest, Hungary)

T03-2-1 **Unlocking the Geospatial Past with Deep Learning – Establishing a Hub for Historical Map Data in Switzerland**
Magnus Heitzler, Lorenz Hurni

T03-2-2 **Accessibility evaluation of topographic maps in the National Library of Poland**
Marta Kuzma, Albina Moscicka

T03-2-3 **Documenting, organizing and demonstrating the cartographic wealth of a library, through an information system, to the public**
Angeliki Tsorlini

10:50-12:10 **T07-6 Educational approaches for cartography** ····· Venus (Miraikan)
Chair: Ferjan Ormeling (University of Amsterdam Library, Netherlands)

T07-6-1 **Cartographic Presentation as the Central Theme for Geospatial Education**
Rakesh Malhotra, Terry Mcneill, Carrie Francis, Timothy Mulrooney

T07-6-2 **Teaching of geographical space relations for cartography - Academic Outdoor Station in Poznan (Poland)**
Beata Medyńska-Gulij, Maciej Smaczynski, Dariusz Lorek, Łukasz Halik, Łukasz Wielebski, Tymoteusz Horbinski, Paweł Cybulski

T07-6-3 **New patterns for geography field practice education based on location services**
Ling Zhang, Qian Jia, Shaojun Liu, Ling Ruan, Yi Long

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T07-6-4 **A preliminary study of geographical names research: Review of cartography education & research in Indonesia**
Ari Cahyono, Hartono, Bowo Susilo, Niken Wirasanti

10:50-12:10 **T09-8 Geosimulation, Spatial data assessment and handling** ····· Miraikan Hall (Miraikan)
Chair: Bin Jiang (University of Gävle)

T09-8-1 **Using building types and demographic data to improve our understanding and use of urban sprawl simulation**
Mojtaba Eslahi, Rani El Meouche, Anne Ruas

T09-8-2 **Geospatial and Simulation a Point of Convergence**
Christopher Victor Budas

T09-8-3 **Spatial data quality in multi-criterial analysis for decision making process**
Vaclav Talhofer, Šárka Hošková-Mayerová

T09-8-4 **Calculate Accurate 3D Cost Distance Efficiently**
Yaqian Chen, Jiangfeng She, Xingong Li

10:50-12:10 **T13-6 Map Design VI: Production** ····· Uranus (Miraikan)
Chair: Kenneth Field (Esri inc)

T13-6-1 **Miura-ori, Basics for Designing its Folding Machines**
Koryo Miura

T13-6-2 **Designing the Imagery on Image Maps – How far can we take it?**
Christian E. Murphy

T13-6-3 **Efficiency of Cartographic production for Decision-making**
Christine Zanin

T13-6-4 **Developing and Evaluating Multi-Scale Map Styles: Creating a Multi-Scale Legend**
Mathias Gröbe, Dirk Burghardt

10:50-12:10 **T17-2 Maps and the Internet 2** ····· Conference Room 1 (Plaza Heisei)
Chair: Otakar Čerba (University of West Bohemia)

T17-2-1 **GSI Maps - Showcase of National Geospatial Data**
Kaito Kamimura

T17-2-2 **A context-driven geospatial web service approach towards the design of situational awareness maps**
Sin Yi Ho, Jung Hong Hong

T17-2-3 **Roles of Ontologies in Cartography**
Otakar Čerba

10:50-12:10 **T21-2 Standards for geospatial information** ····· Saturn (Miraikan)
Chair: Franz-Josef Behr (Stuttgart University of Applied Sciences)

T21-2-1 **Some Considerations to Improve the General Feature Model and General Portrayal Model in Gittok**
Morishige Ota

T21-2-2 **A Spanish Standard for defining Open Geographic Data**
Ana Velasco, Antonio F Rodríguez-Pascual, Celia Sevilla-Sánchez, Juan Manuel Rodríguez-Borreguero

T21-2-3 **Selected cartographic products of the Polish Geological Survey in light of the international data standards and OneGeology experience**
Katarzyna Jóźwik, Marcin Słodkowski, Urszula Stępień

T21-2-4 **Study on multi-source data integrating standard and 3D cartographic visualization of urban flooding based on CityGML**
Jiemin Zhou, Jie Shen, Lukáš Herman, Yixian Du

10:50-12:10 **T26-3 User Issues in Interaction Design** ····· Conference Room 2 (Plaza Heisei)
Chair: Luciene Delazaro (Federal University of Parana)

T26-3-1 **Interacting with Maps in Virtual and Augmented Reality**
Bernhard Jenny, Kadek Ananta Satriadi, Yalong Yang, Christopher R. Austin, Simond Lee, Nian Chan, Maxime Cordeil, Barrett Ens

T26-3-2 **Does Interactivity increase map user's reasoning? A study with environmental map users**
Andre Luiz Alencar De Mendonça, Carina Coelho

T26-3-3 **Interactive & Multiscale Thematic Maps: A Preliminary Study**
Robert E Roth, Meghan Kelly, Nick Underwood, Nick Lally, Kristen Vincent, Carl Sack

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10:50-12:10 **T30-4 GIS, Remote Sensing and Cartographic Theory, Methodology and Applications (4)** ····· Innovation Hall (Miraikan)
Chair: Takashi Oguchi and Tzai-Hung Wen (Univ. Tokyo, Japan, National Taiwan Univ.)

T30-4-1 **Geomorphological mapping based on DEMs and GIS: A review**
Takashi Oguchi

T30-4-2 **Toward high resolution mapping of patterned ground with vegetation in Spitsbergen using a UAV**
Jaeyong Lee, Takashi Oguchi

T30-4-3 **Assess the impact of land use changes on erosion and sedimentation in Dak Uy reservoir**
Hoa Thi Viet Le, Lan Thi Huong Pham, Nguyet Minh Le

T30-4-4 **Assessing the instability of Dong Nai River in Bien Hoa District using Bank Erosion Hazard Index (BEHI) and Remote Sensing and GIS**
Lan Thi Huong Pham, Nguyet Minh Le, Hoa Thi Viet Le

10:50-12:10 **T31-5 Visualization and Analysis of Geographical Process (5)** ··· Mercury (Miraikan)
Chair: Hao Hou (Hangzhou Normal University)

T31-5-1 **Validity of using of GIS, SDI, Remote Sensing and Environmental factors for site selection of zones of coffee agriculture localization suitability modeling in Maraba sector, south province of Rwanda**
Jean Pierre Hitimana

T31-5-2 **Regioviz: a new visualisation tool dedicated to regional comparisons**
Ysebaert Ronan, Guérois Marianne

T31-5-3 **Mapping votes and representing power: Spatio-temporal and multiscalar analysis of electoral results in Tunisia between 2011 and 2018.**
Maher Ben Rebah

T31-5-4 **Features of creating multi-time thematic animations of the Arctic environment pollution on the example of Novaya Zemlya**
Andrey A. Medvedev, Natalia A. Alekseenko, Maria Arsentyeva

10:50-12:10 **T33-1 Rethinking Bertin Method 1 (framework)** ····· Conference Room 3 (Plaza Heisei)
Chair: Anne-Lyse Renon (University of Renne 2), EHESS (LIAS UMR8178))

T33-1-1 **Graphic design and research in social sciences: Jacques Bertin and the Laboratoire de Graphique.**
Anne-Lyse Renon

T33-1-2 **From Semiology of Graphics to Cultural Analytics: flaws in the mathematization of visible**
Anthony Masure

13:30-14:30 **Keynote Presentation 3** ····· International Conference Hall (Plaza Heisei)
Ayako Kagawa

14:50-16:10 **T03-3 Cartograpic heritage 3: Applications** ····· Mars (Miraikan)
Chair: Evangelos Livieratos (Aristotle University of Thessaloniki)

T03-3-1 **From historical cartography to historical mapping: digital edition of Gaul/Raczynski topographic map of Greater Poland (1807-1812)**
Tomasz Panecki

T03-3-2 **3D Model of Historical Vltava River Valley: Combination of Sources**
Jiri Cajthaml, Darina Kratochvilova, Tomas Janata

T03-3-3 **Transformation of the landscape of pre-industrial space in the multimedia depiction**
Dariusz Lorek

T03-3-4 **Automated summit spot height generation for modern topographic mapping**
Samantha T Arundel, Arthur Chan

14:50-16:10 **T09-9 Accessibility** ····· Miraikan Hall (Miraikan)
Chair: X.Angela Yao (University of Georgia)

T09-9-1 **A systematic evaluation of accessibility measures by the two-step floating catchment area (2SFCA) method**
Xiang Chen, Pengfei Jia

T09-9-2 **Network-based Visualisation of Accessibility for a Public Transport System**
Andreas Keler, Lukas A. Bug, Jukka M. Krisp

T09-9-3 **GIS-analysis of ground transport accessibility of fire stations at regional scale**
Ekaterina Sergeevna Podolskaia, Dmitriy Vladimirovich Ershov, Konstantin Aleksandrovich Kovganko

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14:50-16:10 **T11-1 Near East & Islam Cartography** ····· Saturn (Miraikan)
Chair: Şirin Gülcen Eren (Süleyman Demirel University)

T11-1-1 **Kitab-ı Bahriye (Book of Navigation), Commemoration of the Pîrî Reis and Understand His World Map of 1513.**
Aytac Yurukcu

T11-1-2 **Catalan Atlas of 1375 and Hormuz around 1300**
Vladimir Liscak

T11-1-3 **Ancient Anatolian Grids**
Şirin Gülcen Eren

14:50-16:10 **T16-1 Maps for the Disabled** ····· Mercury (Miraikan)
Chair: Andrey A. Medvedev (Institute of Geography, Russian Academy of Sciences)

T16-1-1 **Testing Maps for Visually Impaired People in Kurdistan**
Ashna Abdulrahman Kareem

T16-1-2 **Plain cartography - web maps for visually impaired and elderly people**
Juha Oksanen, Pyry Kettunen, Christian Koski

T16-1-3 **Toward Accessible Hazard Mapping: Tactile Risk Maps and Disaster Preparedness**
Harrison Carlton Cole

14:50-16:10 **T17-3 Maps and the Internet 3** ····· Conference Room 1 (Plaza Heisei)
Chair: Hideyuki Fujita (The University of Electro-Communications)

T17-3-1 **Web Maps for Risk Communication: Assessing Availability of Online Disaster Maps on Government Web Sites in Indonesia**
Kartika Puspita Sari, Hidehiko Kanegae

T17-3-2 **Multimedia Presentation of Spatial Journalistic Content**
Zeinab Torabi, Jan Wilkening, Juliane Cron

T17-3-3 **Visualisation and analysis of multi-resolution raster geodatasets in the cloud**
Lassi Allan Lehto, Jaakko Kähkönen, Juha Oksanen, Tapani Sarjakosk

T17-3-4 **Finding hotspots by location-direction-enabled photographs focusing on intersection of lines of sight**
Hideyuki Fujita, Shota Sagara, Tadashi Ohmori, Takahiko Shintani

14:50-16:10 **T26-4 Use Case Domain Analyses** ····· Conference Room 2 (Plaza Heisei)
Chair: Alena Vondrakova (Palacky University Olomouc)

T26-4-1 **Maps in Citizen Science: A Preliminary Analysis of their Use and User Issues**
Artemis Skarlatidou, Marcos Moreu

T26-4-2 **Graphic design and placement of map tools in mobile map application**
Tymoteusz Horbiński, Beata Medyńska-Gulij, Paweł Cybulski

T26-4-3 **Map Use in Transit Control Centers: Mapping geographic information flows**
Emily Domanico

T26-4-4 **Testing geovisualisations for effective environmental engineering decision-making**
Jess Hepburn, David Fairbairn

14:50-16:10 **T28-1 Nautical Charting: Production and Content** ····· Venus (Miraikan)
Chair: Ron Furness (ICA Marine Cartography Chair)

T28-1-1 **Validation of the shoal-biased pattern of bathymetric information on nautical charts.**
Christos Kastrisios, Brian Calder, Giuseppe Masetti, Peter Holmberg

T28-1-2 **History of Japan's chart production in 150 years**
Toru Kajimura

T28-1-3 **Adding value to ENCs: Land features**
Shachak Pe'eri, Noel Dyer

T28-1-4 **Raster charting products in an ENC-first era**
Christie Ence, Shachak Pe'eri, John Nyberg

14:50-16:10 **T29-2 Mapping the past** ····· Conference Room 4+5 (Plaza Heisei)
Chair: Akihiro Tsukamoto (Tokushima University)

T29-2-1 **Transformation of the Vltava Historical Riverine Landscape within the Modern Times**
Jiri Krejci, Jiri Cajthaml

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T29-2-2 **Digital archiving the space and memory of Kyoto across space and time using GIS**
Naomi Kawasumi, Hirotaka Sato, Shunpei Yamamoto, Keiji Yano

T29-2-3 **Premodern City Layouts Drawn on Published Maps: A Comparative Analysis of Edo, Osaka, and Kyoto**
Akihiro Tsukamoto

14:50-16:10 **T30-5 GIS, Remote Sensing and Cartographic Theory, Methodology and Applications (5)** ····· Innovation Hall (Miraikan)
Chair: Takashi Oguchi and Tzai-Hung Wen (Univ. Tokyo, Japan, National Taiwan Univ.)

T30-5-1 **Landslide hazard zonation assessment using GIS analysis at the coastal area of Safi (Morocco)**
El Bchari Fatima, Barbara Theilen Willige, H. Ait Malek

T30-5-2 **Three-dimensional desktop morphometric models for the Arctic Ocean floor**
Igor V. Florinsky, Sergei V. Filippov

T30-5-3 **Sea ice kinematic features in the Arctic outflow region and their associations with Arctic Northeast Passage accessibility**
Da Wei Gui, Xiao Ping Pang, Rui Bo Lei, Xi Zhao, Jia Wang

T30-5-4 **Comparison of Leads Mapping in the Arctic Ocean Between Landsat and MODIS Ice Surface Temperature Products**
Xiaoping Pang, Pei Fan, Xi Zhao, Qing Ji

14:50-16:10 **T33-2 Rethinking Bertin Method 2 (practice)** ····· Conference Room 3 (Plaza Heisei)
Chair: Francis Harvey (Leibniz Institute for Regional Geography)

T33-2-1 **A dialectical approach to the systematic analysis of geovisual communication using Bertin's visual variables**
Francis Harvey

T33-2-2 **Reaffirmation of J. Bertin's Ordinal Matrix for business strategy decision– taking apart of visualized data on map and reconstruction by the Ordinal Matrix**
Keiichi Ishida

T33-2-3 **The design of useful graphics in Bertin's thought. A case study from the Urban Atlas of Jeddah.**
Mohsen Dhieb, Abdulhamid Jamil, Ahmed Moharrem

T33-2-4 **A practice of information processing by rearranging matrix of Jacques Bertin - application of diagram in environmental color workshop -**
Qifan Huang, Akiyo Kobayashi

14:50-16:10 **T41-1 Maps and Games 1** ····· Uranus (Miraikan)
Chair: Tomoyasu Maruyama (Google LLC)

T41-1-1 **How to Play with Maps**
Ross Thorn

T41-1-2 **How an augmented reality game (Pokémon GO) affected volunteer contributions to OpenStreetMap**
Brian Alan Johnson

T41-1-3 **Location Based Elements into Gaming Industry**
Tomoyasu Maruyama

16:40-18:00 **T03-4 Cartographic Heritage 4: The Data Behind** ····· Mars (Miraikan)
Chair: Jiri Cajthaml (Czech Technical University in Prague)

T03-4-1 **Description of Cartographic Heritage in Europeana Data Model**
Albina Kinga Moscicka, Agnieszka Zwirowicz-Rutkowska

T03-4-2 **A semi-automated workflow for processing historic aerial photography**
Nathan Piekielek

T03-4-3 **Visualizing and Linking Cartographic Resources across Discovery Environments**
Kimberly Durante, Emily Prince

T03-4-4 **GeoDataHub: Building centralised repository of authoritative cartographic and geospatial resources**
Igor Drecki

16:40-18:00 **T09-10 Big Data and machine learning (I)** ····· Miraikan Hall (Miraikan)
Chair: Lei Zou (Texas A&M University)

T09-10-1 **Analysing tourism movements along the Danube river based on geotagged Flickr photography**
Mátyás Gede, Bálint Kádár

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T09-10-2 **Visualizing and Mining Social Media Data for Smart Emergency Management**
Lei Zou

T09-10-3 **Estimating the Crowd Size of a Rally by Crowdsourcing-Geocomputation**
T. Edwin Chow

T09-10-4 **Research on Monitoring Location Model Based on Geo-Video Semantics**
Dan Hu, Wenjing Li, Li Siyi

16:40-18:00 **T11-2 Eastern Europe & The Americas** ····· Saturn (Miraikan)
Chair: John J. Swab (University of Kentucky)

T11-2-1 **From Coast to Coast: The Mapping of the Adriatic Sea by the Joint Forces of the Austro-Hungarian and Italian Hydrographic Offices**
Mirela Altic

T11-2-2 **Depiction of Line Features on Folded Maps on Example of Old Maps of the Vltava River**
Tomas Janata, Jiri Krejci

T11-2-3 **Jewish settlement plans in Bohemia from the first half of the 18th century**
Jiří Drozda, Šarka Steinová, Filip Paulus

T11-2-4 **Mapping a Nation: Daniel Carter Beard's Time as a Surveyor for the Sanborn Map Company**
John J. Swab

16:40-18:00 **T16-2 Technology and Multisensory Maps** ····· Mercury (Miraikan)
Chair: Carla Cristina da Sena (Universidade Estadual Paulista (UNESP))

T16-2-1 **Tactile thematic maps for the territory of Russia:multivariate representation of geographic information**
Andrey A. Medvedev

T16-2-2 **TouchIt3D: Technology (not only) for Tactile Maps**
Radek Barvir, Alena Vondrakova, Jan Brus

T16-2-3 **Mobility routing optimization for physical accessibility and thermoregulation**
Jeffrey R Heuwinkel, Matthew T. Rice, Manzhu Yu, Kevin M. Curtin

16:40-18:00 **T17-4 Maps and the Internet 4** ····· Conference Room 1 (Plaza Heisei)
Chair: Aileen R. Buckley (Esri, Inc.)

T17-4-1 **Functionality similarities of global web mapping services in the context of responsive map design**
Tymoteusz Horbiński, Paweł Cybulski

T17-4-2 **Cartographic storytelling: 150 years of Swiss Federal Population Census**
Olaf König

T17-4-3 **Using Internet Streamed Data for Sport Visualization**
Rex G Cammack, Paul Hunt

T17-4-4 **Sharing Collections of Historical Map Online**
Aileen R. Buckley

16:40-18:00 **T26-5 User Study Experimental Design Issues** ····· Conference Room 2 (Plaza Heisei)
Chair: Artemis Skarlatidou (University College London)

T26-5-1 **A visual approach to creating multivariate geovisualization test data**
Thomas Lerch, Susanne Bleisch

T26-5-2 **A review of map types used in empirical research in cartography**
Katarzyna Słomska

T26-5-3 **A note on the Relationship between Spatial Recognition and Behavior while Walking in the City**
Kaori Ito, Yusuke Sakurai, Yuri Fujita, Andrew Burgess

T26-5-4 **Design of a cartographic eye tracking-EEG user experiment**
Merve Keskin, Kristien Ooms, Philippe De Maeyer, Ahmet Ozgur Dogru

16:40-18:00 **T29-3 Web and ICT for Digital Humanities** ····· Conference Room 4+5 (Plaza Heisei)
Chair: Keiji Yano (Ritsumeikan University)

T29-3-1 **Defensive Architecture Mapping: a case study in the city of Curitiba, Paraná, Brasil**
Debora Raquel Faria, Claudia Robbi Sluter, Alessandro Filla Rosaneli, Silvana Philippi Camboin

T29-3-2 **Modern Archeological Mapping: Towards Immersive VR Use in Archeology**
Alisa A Pettitt, Sven Fuhrmann

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T29-3-3 **Mining multiple sources of historical data: The example of a standardized dataset of medieval monasteries and convents in France**
Adam Mertel, David Zbíral

T29-3-4 **Japanese Map Warper for Spatial Humanities: The Japanese old maps portal site**
Keiji Yano, Satoshi Imamura, Ryo Kamata

16:40-18:00 **T30-6 GIS, Remote Sensing and Cartographic Theory, Methodology and Applications (6)** ····· Innovation Hall (Miraikan)
Chair: Takashi Oguchi and Tzai-Hung Wen (Univ. Tokyo, Japan, National Taiwan Univ.)

T30-6-1 **Flash Flood Hazard Mapping Using Satellite Images and GIS Tools: A case study of the central High Atlas (Morocco).**
El Bchari Fatima Fatima, Barbara Theilen Willige, Abdellatif Souhel

T30-6-2 **Dynamics of lake area on the Qinghai-Tibet plateau from 2000 to 2015**
Xianghong Che, Min Feng, Jiping Liu, Yong Wang, Qing Sun

T30-6-3 **GIS-based approach for development of the "natural basis" for thematic mapping**
Vera Ryzhkova, Michael Korets, Irina Danilova

16:40-18:00 **T33-3 Rethinking Bertin Method 3 (symbology)** ····· Conference Room 3 (Plaza Heisei)
Chair: Takashi Morita (Hosei University)

T33-3-1 **Design Issues on Context Based Cartographic Communication using Extended Visual Variables**
Takashi Morita

T33-3-2 **When marks become graphics. Rediscoreving a forgotten Bertin's fork ?**
Gilles Rouffineau

T33-3-3 **Effect of Frame Structure on Interpretation of Map Symbols**
Zhilin Li

16:40-18:00 **T41-2 Maps and Games 2** ····· Uranus (Miraikan)
Chair: Tomoyasu Maruyama (Google LLC)

T41-2-1 **Preparation of the Future with Minecraft® on Demand**
François Lecordix, Sivakavi Kumarasamy, Fernando Da Graca, Sofiane Kriat

T41-2-2 **Coupling a collaborative digital map and a dashboard: an optimal starting point for urban project learning in engineer training? The case of the serious game "Urb'Act"**
Nathalie Molines, Carine Henriot

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Poster

8:30-18:00 **Poster Session P3** ····· Jupiter (Miraikan)

P3-01 **The Characteristics of Taiwan Persuasive Maps Made by Japanese**
Ching-Jen Kao

P3-02 **Publication of maps and plans of Jewish settlement from the first half of the 18th century**
Jiří Drozda, Filip Paulus, Šárka Steinová, Ondřej Böhm

P3-03 **Automatic Georeferencing of Heterogenous Historic and Illustrated Maps**
Enrique Javier Arriaga-Varela, Toru Takahashi

P3-04 **Historical maps and landscape analysis**
Vladimir Kusan, Stjepan Husnjak, Tena Birov, Ivona Ziza

P3-05 **Engraved footprints from the past. Retrieving cartographic geohistorical data from the Cassini Carte de France, 1750 - 1789**
Bertrand Dumenieu, Julien Chadeyron, Pascal Cristofoli, Julien Perret, Laurence Jolivet, Stéphane Baciocchi

P3-06 **Digital archiving project of paper maps collected for the International Map Exhibition 1980 in Tokyo**
Hideki Kaji, Ken'Ichi Tsuruoka, Ruochen Si, Min Lu, Masatoshi Arikawa, Takashi Oguchi

P3-07 **Establishment of the inventory of the historic bridges analyzing the maps of Europe in the XIX. Century, in the area of Split-Dalmatia County, Croatia**
Katarina Rogulj, Ivana Racetin, Jelena Kilić, Ljerka Županović

P3-08 **100 years of Carte Rouge – a Hungarian ethnographical map by Pál Teleki**
Daniel Zoltan Segyevy

P3-09 **Use of 19th century cartographic source materials to study spatial changes of villages in Wielkopolska (Poland)**
Anna Oliskiewicz Krzywicka

P3-10 **A history of the city written in a map – cartography as the mirror of socio-political events in Gdańsk in the years of 1918-1939**
Agnieszka Bień

P3-11 **Exploring the social position of tactile maps in Japan**
Masahiro Tanaka

P3-12 **Mind maps produced by visual impaired students**
Luciana Arruda, Carla Cristina Sena

P3-13 **Caveat Emptor: A new form of participatory mapping and its ethical implications for Participatory GIS**
Koshiro Suzuki

P3-14 **Interactive web mapping of 90 Years of Fire History Across South Australia**
Joshua Andrew Gore, Stefan Peters

P3-15 **A Report on "Old Map Collection" by Geospatial Information Authority of Japan**
Kana Hidari, Niina Nakano

P3-16 **Fuzzy Expression of Hand-drawn Paths in We-Map Environment**
Ru Ru Shen, Hao Wen Yan, Xiao Min Lu, Qin Ke Sun

P3-17 **Mapping Mars's Eastern Valles Marineris**
Eian Scott Ray

P3-18 **Geo-visualization of antibiotic resistance based on web map service**
Taekeon Hwang, Kangmin Kim, Chul Sue Hwang, Chang-Jun Cha

P3-19 **The Re-Scheme Project for the Mexican Cartography Plan**
Cecilia Zuleima Cortina, Leonardo Tun, Shachak Pe'eri

P3-20 **Seafloor Stereo Map of Coastal Areas for Geomorphological Studies**
Hideaki Goto

P3-21 **The GEBCO and NOAA Chart Adequacy Workshop**
Cecilia Cortina, Rochelle Wigley, Shachak Pe'eri

P3-22 **Geographically weighted bidimensional regression on the 17th-century map of a castle town in Japan**
Naoto Yabe

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P3-23 **Streetcar Passenger Flow Maps in Old Tokyo City in 1930**
Kazuki Ishikawa, Daichi Nakayama

P3-24 **Creation and analysis of a GIS land-use map for the end of the Edo period in Tokyo**
Takeshi Noma

P3-25 **Learning Method that Facilitates User Understanding of Changes in the Kyoto Townscape: Utilizing a Smartphone Application with the Kyoto City Tram and Bus Photograph Database**
Akira Takahashi, Shumpei Yamamoto, Hirotaka Sato, Naomi Kawasumi, Manabu Inoue, Keiji Yano, Asanobu Kitamoto

P3-26 **Assessment of the effectiveness of vegetation cover management in the Mediterranean region: a remote sensing mapping comparison. Example of El Kala National Park, Algeria**
Imene Diaf

P3-27 **Key Technology Research on Quality Inspection and Evaluation of Orthoimage Map Used in China's National Survey**
Yaoling Shang, Zhao Yousong, Ma Wei, Wu Xuan, Wang Jindong, Luo Fujun, Yan Qingaing, Xu Yongru

P3-28 **Static Risk Mapping of Forest Fires - In the case of the Province of Chefchaouen (Morocco)**
Malak Alasli

P3-29 **Mapping of Geospatial Information on Disasters Predicted to Occur in Wetland Areas of the Shonan Region**
Kuniaki Isobe, Toshiro Sugimura

P3-30 **New Authentication Method for Vector Geographic Data Based on Perceptual Hash**
Zhang Liming, Zhang Xingang

P3-31 **Deformation Monitoring of Landslide Based on Adapted Distributed Scatter Interferometric Synthetic Aperture Radar**
Hongguo Jia, Hao Zhang, Wenjing Ren, Bin Yan

P3-32 **The GIS-based approach for the permafrost active layer depth mapping**
Mikhail A. Korets, Anatoly S. Prokushkin

P3-33 **Analysing and visualizing spatio-temporal landslide patterns**
Daniel Hölbling, Raphael Spiekermann, Andrea Binn, Harley Betts

P3-34 **Simulation and prediction of Shanghai urban spatial change based on random forest and CA-Markov model**
Xuewei Dang, Liang Zhou, Xiaoen Li, Haowei Mu, Lei Che, Fuwei Qiao

P3-35 **Spatial differences and pattern evolution of Multi-scale Urban Land between China and India**
Qinke Sun, Liang Zhou, Xuewei Dang, Bowei Hu, Haowei Mu

P3-36 **Relationships between landslides and land use changes in the Sanbagawa and Mikabo Belts, Shikoku, Japan**
Roxanne Lai, Takashi Oguchi

P3-37 **Ecological Change Analysis of Lanzhou City Based on Remote Sensing Ecological Index**
Huang Yu Han, Yan Hao Wen

P3-38 **Robustness assessment of China's high-speed railway transportation network**
Zhuo Wang, Haowen Yan, Yuhan Huang, Yazhen Li

P3-39 **Ponds of landuse in Yangmei District and Pingzhen District,Taoyuan City,Taiwan**
Tzu Hui Lin

P3-40 **Simulating impact of over-grazing on grassland degradation using GIS: a case study in the Heihe River Basin, China**
Bingyu Wang, Takashi Oguchi, Lin Zhang

P3-41 **Spatial Patterns of Urban Expansion in Chinese Cities**
Jing Yao, Ya Ping Wang, Xiaoxiang Zhang

P3-42 **Disaster risk assessment for urban areas: A GIS flood risk analysis for Luján City (Argentina).**
Ignacio Agustin Gatti, Takashi Oguchi

P3-43 **Geomorphological analysis of wetland distribution on various spatial scales**
Natsuki Sasaki, Toshihiko Sugai

P3-44 **Analysis of children's future map drawings in Sapporo City**
Akio Shiino

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8:30-10:20 **T08-1 Generalization Processes** ····· Uranus (Miraikan)
Chair: Anne Ruas (IFSTTAR, France)

T08-1-1 **Is Deep Learning the New Agent for Map Generalization?**
Guillaume Touya, Xiang Zhang, Imran Lokhat

T08-1-2 **Application of Deep Learning for 3D building generalization**
Yue Wu, Yevgeniya Filippovska, Valentina Schmidt, Martin Kada

T08-1-3 **Automatic Selection Method of Urban Road Network Considering Structural Characteristics**
Wei Wu, Zhaoting Ma

8:30-10:20 **T09-11 Big Data and machine learning (II)** ····· Miraikan Hall (Miraikan)
Chair: Bin Jiang (University of Gävle)

T09-11-1 **Automatic crater detection by mining existing crater map**
Cheng-Zhi Qin, Yan-Wen Wang, Wei-Ming Cheng, A-Xing Zhu

T09-11-2 **Lexical variation in Japanese dialects revisited: Geostatistic and dialectometric analysis**
Péter Jeszenszky, Yoshinobu Hikosaka, Keiji Yano

T09-11-3 **Spatial Component Models with Artificial Neural Networks for Spatially Constrained Regionalization**
Michael Govorov, Giedre Beconyte, Gennady Gienko

8:30-10:20 **T10-1 T10 GI for Sustainability** ····· Mars (Miraikan)
Chair: Alexander Panin (Lomonosov Moscow State University)

T10-1-1 **Spatial Modeling of Disaster Resilience in the Lower Mississippi River Basin**
Heng Cai

T10-1-2 **Geographic Information and Geo-visualization in support of Disaster Resilience**
Edward Kurwakumire, Paul Muchechetere, Shelter Kuzhazha, Guy Blanchard Ikokou

8:30-10:20 **T11-3 Western Europe** ····· Saturn (Miraikan)
Chair: Alastair William Pearson (University of Portsmouth)

T11-3-1 **Kaleidoscope of Swiss Cartography**
Stefan Raber, Lorenz Hurni

T11-3-2 **Mapping in Belgium in the 19th Century in a wider context**
Philippe De Maeyer

T11-3-3 **Thematic cartography of Portuguese winegrowing (1850-1952)**
Mário Gonçalves Fernandes, Helder Trigo Marques

T11-3-4 **'Heaping Offa upon Pelion, and Olympus upon Offa': An assessment of the role of model making in the development of relief portrayal from 1780 to 1900.**
Alastair William Pearson

9:20-10:20 **T38-1 Mapping the Environment 1** ····· Conference Room 4+5 (Plaza Heisei)
Chair: Márton Pál (ELTE Eotvos Lorand University)

T38-1-1 **Mapping of Physical Vulnerability in Tiger Habitat Areas: A Case Study of Tiger Corridor of Rajasthan, India**
Bhanwar Vishvendra Raj Singh, Anjan Sen

T38-1-2 **The visible impacts of human activities constructing hydropower dam on Vietnamese Mekong Delta and conceptual solutions for responses**
Nhan Nguyrn Huu, Shigeko Haruyama

T38-1-3 **Digital cartography for geoheritage: turning an analogue geotourist map into digital**
Márton Pál, Gáspár Albert

9:20-10:20 **T40-1 AI, Robotics, Autonomous Cars and Mapping 1** ··· Conference Room 1 (Plaza Heisei)
Chair: Song Gao (University of Wisconsin)

T40-1-1 **Transferring Multiscale Map Styles Using Generative Adversarial Networks**
Yuhao Kang, Song Gao, Robert E Roth

T40-1-2 **A object detection algorithm based on pyramid Convolutional Neural Networks(CNN) and feature map fusion model**
Nu Wen

T40-1-3 **Towards Storytelling with Animated Pictorial Map Objects – An Experiment with Convolutional Neural Networks**
Raimund Schnürer, Cengiz Öztireli, René Sieber, Lorenz Hurni

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9:20-10:20 **T43-1 Maps and society** ····· Conference Room 3 (Plaza Heisei)
Chair: Koshiro Suzuki (University of Toyama)

T43-1-1 **Treatment of cartography in official classification of fields of sciences and its misuse by the State Educational Inspectorate and the University of Tetova**
Bashkim Idrizi

T43-1-2 **Connecting users to trusted geospatial information for Europe**
Michael John Cory

10:50-12:10 **SS2 Waldo Tobler memorial session** ····· International Conference Hall (Plaza Heisei)
Chair: Aileen Buckley (Research Cartographer at Esri, Inc)

SS2-1 **Round table**
Aileen Buckley, Menno-Jan Kraak, Sara Fabrikant, Timothy Trainor, Harold Moellering

10:50-12:10 **T08-2 Shape and multi-scale measures** ····· Uranus (Miraikan)
Chair: Paulo Raposo (University of Tennessee, Knoxville, USA)

T08-2-1 **Between the Lines: Measuring Areal Displacement in Line Simplification**
Barry J Kronenfeld, Jiaxin Deng

T08-2-2 **Building-network: Concept, generation method and centrality analysis**
Xiao Wang, Dirk Burghardt

T08-2-3 **Exploring essential variables in the settlement selection for small-scale maps using machine learning**
Izabela Karsznia, Karolina Sielicka

10:50-12:10 **T09-12 Investigating spatial patterns** ····· Miraikan Hall (Miraikan)
Chair: X.Angela Yao (University of Georgia)

T09-12-1 **Research on the Spatial Distribution Pattern of Producer Service Firms in Urban Harbin**
Zhao Yang Yang, Liu Ji Ping, Zhang Fu Hao, Liu Meng Meng

T09-12-2 **Exploring spatio-temporal hotspots of land price change with housing transaction data in Seoul**
Seonga Cho, Gunhak Lee

T09-12-3 **Where do taxi trips start and end? Implications For Future Car-sharing For Commuting**
Pengyu Zhu, Yong-Hong Kuo, Marlon Ives Tanuihusada, Wei Qiang, Jie Wang

T09-12-4 **A spatial analytical approach towards understanding racial residential segregation in Gauteng province (South Africa)**
Samy Katumba, Inger Fabris-Rotelli, Alfred Stein, Serena Coetzee

10:50-12:10 **T11-4 Older Japan Cartography** ····· Saturn (Miraikan)
Chair: Hirotada Kawamura (Professor Emertus at Yamaguchi Univ.)

T11-4-1 **The national map of Japan complied by the Tokugawa Shogunate**
Hirotada Kawamura

T11-4-2 **The Revising Process of 'Kaisei Nihon Yochirotei Zenzu (Sekisui-zu) '**
Toshikazu Kaida

T11-4-3 **Global influence of the map of Japan produced by Japanese cartographer Sekisui Nagakubo**
Motohiro Tsujimoto

10:50-12:10 **T27-1 Social Applications of Geovisual Analytics** ··· Conference Room 2 (Plaza Heisei)
Chair: Anthony Robinson (The Pennsylvania State University)

T27-1-1 **Visual Analytics for Regional Economic Environment Factors Based on a Dashboard Design**
Chenyu Zuo, Linfang Ding, Liqiu Meng

T27-1-2 **Reasoning about Socio-Economic Data: A Visual Analytics Approach to Bayesian Network**
Ekaterina Chuprikova, Liqiu Meng

T27-1-3 **Geovisual analysis of VGI for understanding people's behaviour in relation to multifaceted context**
Natalia Andrienko, Gennady Andrienko, Siming Chen, Dirk Burghardt, Alexander Dunkel, Ross Purves

10:50-12:10 **T30-7 GIS, Remote Sensing and Cartographic Theory, Methodology and Applications (7)** ····· Innovation Hall (Miraikan)
Chair: Tzai-Hung Wen and Takashi Oguchi (National Taiwan Univ., Univ. Tokyo, Japan)

T30-7-1 **Mapping Anisotropic Landscape for Understanding Underlying Spatial Structure of Air Pollution**
Chen-Hsuan Tu, Tzai-Hung Wen

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T30-7-2 **Remote Sensing and Geospatial Analytics for Sustainable Development Assessment in Urban Areas**
Xiaojun Yang, Di Shi, Feilin Lai, Shijun Jiang, Ranhao Sun

T30-7-3 **Characterizing Spatial Variations of Urban Growth Patterns in Beijing, China through Spatial Analysis and Geovisualization**
Ting Liu, Xiaojun Yang

10:50-12:10 **T38-2 Mapping the Environment 2** ····· Conference Room 4+5 (Plaza Heisei)
Chair: Beata Medynska-Gulij (Adam Mickiewicz University in Poznan)

T38-2-1 **Potential Groundwater Extraction and Piezometric Surface Fluctuations in Puruliya, West Bengal – A GIS based study**
Devarupa Gupta

T38-2-2 **Wetland Loss in Northeastern Italy Documented by Historical Maps**
Silvia Elena Piovan, Marco Filippini, Michael Edward Hodgson

T38-2-3 **Statistical maps for comparative visualization of landscape changes for industrial centers from different countries**
Beata Medyńska-Gulij, Paweł Cybulski, Łukasz Wielebski, Dariusz Lorek, Tymoteusz Horbinsk

10:50-12:10 **T40-2 AI, Robotics, Autonomous Cars and Mapping 2** ··· Conference Room 1 (Plaza Heisei)
Chair: Dalia Elena Varanka (U.S. Geological Survey)

T40-2-1 **Demolished building detection from aerial imagery using deep learning**
Shu Su, Takahiko Nawata

T40-2-2 **Possibilities of high precision GPS data in autonomous driving**
Márton Pál, Fanni Vörös, István Elek, Béla Kovács

T40-2-3 **Automated Extraction of Drainage Channels and Roads through Deep Learning**
Lawrence V Stanislawski, Tyler Brockmeyer, Ethan Shavers

T40-2-4 **Scoping a vocabulary for spatial relation properties**
Dalia Elena Varanka

10:50-12:10 **T43-2 Miscellaneous maps (1)** ····· Conference Room 3 (Plaza Heisei)
Chair: Yoshiki Wakabayashi (Tokyo Metropolitan University)

T43-2-1 **Long term archiving orienteering maps project in Slovenia**
Dušan Petrovič

T43-2-2 **The role of disease maps in influenza epidemiological surveillance in Japan**
Tomohiko Arahori

T43-2-3 **Questionnaire Survey about the Reasons of Young People Migrating to the Tsunami-hit Area**
Kayo Okabe, Mayumi Dan, Chikako Nakayama

T43-2-4 **Seeing the Night Sky**
Colin G. Flynn, Matthew T. Rice

13:30-14:30 **Keynote Presentation 4** ····· International Conference Hall (Plaza Heisei)
Eric Gundersen

14:50-16:10 **T08-3 Generalization in Practice** ····· Uranus (Miraikan)
Chair: Pia Bereuter (FHNW University of Applied Sciences of Northwestern Switzerland)

T08-3-1 **CartAGen: an Open Source Research Platform for Map Generalization**
Guillaume Touya, Imran Lokhat, Cécile Duchêne

T08-3-2 **Real-time Cartographic Generalisation: Risk Management Maps Case Study**
Karel Stanek, Petr Silhak

T08-3-3 **A Parallel Method for Accelerating Visualization for Vector Tiles**
Wei Hu, Lin Li, Chao Wu, Hang Zhang, Haihong Zhu

14:50-16:10 **T09-13 Terrian analysis, modeling, and visualizaiton** ····· Miraikan Hall (Miraikan)
Chair: Lei Zou (Texas A&M University)

T09-13-1 **Density maps of geophysical study as a new type of integrated characteristic of geophysical fields in atlases**
Dmitriy Sergeevich Loginov, Sergey Anatolyevich Krylov

T09-13-2 **Geographical Scene Reconstruction and Application of Ancient Site with Fused Multi-source Data**
Lin Yang, Jiangwei Shen, Fangzihao Zheng

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14:50-16:10 **T11-5 Japan and Korea in 19th Century** ····· Saturn (Miraikan)
Chair: Shosuke Hosoi (Cartographic Information Office)

T11-5-1 **An Analysis on the Shape Changes of the Korean Peninsula on the British Charts of the 19th Century and Identification of Factors that Influence the Changes**
Jong Geun Kim

T11-5-2 **Japan's Most Famous Surveyor: Ino Tadataka and His Iconic 1821 Map of Japan**
John Francis Brock

T11-5-3 **Restorement of the early 19th century's geomagnetic declinations in Japan, from Tadataka Inoh's survey azimuth ledger.**
Motohiro Tsujumoto, Akitoshi Omotani

T11-5-4 **Modernization of Topographic Mapping by Japan Meiji Government - Introduction of French Army Mapping Technology and afterwards -**
Shosuke Hosoi

14:50-16:10 **T14-1 National and Local Mapping Innitiatives** ····· Mercury (Miraikan)
Chair: Melissa Ann West (Member of NZ Cartographic Society)

T14-1-1 **BDIG: Continuous updating for National Geospatial Information Databases in National Geographic Institute of Spain.**
Gonzalo Moreno, Francisco Mariño, Alfonso Marín, Pablo Barreira, Francisco Javier González-Matesanz, Pilar Sánchez Órtiz

T14-1-2 **How do the Swiss produce their New National Map Series?**
Mark Dominic Wigley

T14-1-3 **Mapping New Zealand 2025 – A National Perspective**
Karl Baker, Roger Carman

14:50-16:10 **T15-1 Map Projections Knowledge** ····· Mars (Miraikan)
Chair: Bojan Šavrič (Esri, Inc.)

T15-1-1 **A Semantic Representation of Map Projections Knowledge**
E. Lynn Usery

T15-1-2 **Map Projection Article on Wikipedia**
Miljenko Lapaine

T15-1-3 **Harmonization of different type of coordinate systems used for North Macedonian official spatial data**
Bashkim Idrizi

14:50-16:10 **T27-2 Design & Computation in Geovisualization** ··· Conference Room 2 (Plaza Heisei)
Chair: Arzu Coltekin (University of Applied Sciences and Arts, Northwestern Switzerland)

T27-2-1 **On the relevance of cartography — An interaction design perspective**
Sebastian Meier, Jordi Tost, Frank Heidmann

T27-2-2 **Given the problem of projection, are heat maps an oxymoron?**
Daniel Strebe

T27-2-3 **The Levenshtein distance as a measure of mirror symmetry and homogeneity for binary digital patterns**
Godfried Theodore Toussaint

14:50-16:10 **T30-8 GIS, Remote Sensing and Cartographic Theory, Methodology and Applications (8)** ····· Innovation Hall (Miraikan)
Chair: Tzai-Hung Wen and Takashi Oguchi (National Taiwan Univ., Univ. Tokyo, Japan)

T30-8-1 **Delineating urban functional regions by considering interaction cohesiveness and function diversity**
Fei-Ying Felix Kuo, Tzai-Hung Wen

T30-8-2 **An investigation of geographic object based image analysis (GEOBIA) for human settlement detection in South Africa**
Luncedo Ngcofe, Nale Mudau

T30-8-3 **Understanding the Process of Geospatial Reasoning: Evidences from an Eye-Tracking Experiment**
Tzai-Hung Wen, Hao-Yu Liao

T30-8-4 **On the Way to an Information System of Russian Transport Networks**
Irina Lurie, Ali Alyautdinov, Elena Prokhorova, Vladinir Semin

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14:50-16:10 **T32a-1 Mapping cities (1)** ····· Venus (Miraikan)
Chair: Naoto Yabe (Tokyo Metropolitan University)

T32a-1-1 **Visualising a comparison of simulated urban heat islands: a case study of two Slovakian cities**
Jan Feranec, Juraj Holec, Pavel Stastný, Daniel Szatmári, Monika Kopecká

T32a-1-2 **Interactive 3D Time-Integrated Solar Shadow Maps**
Georg Molzer, Florian Ledermann

T32a-1-3 **Is the neighbourhood a level suited to the thermal evaluation of energy loss from buildings?**
Nathalie Molines, Eduard Antaluca, Fabien Lamarque

14:50-16:10 **T37-1 SDGs and Cartography 1 (concept)** ····· Conference Room 1 (Plaza Heisei)
Chair: Ayako Kagawa (United Nations)

T37-1-1 **A Sustainable world with cartography**
Ayako Kagawa, Kyoung-Soo Eom

T37-1-2 **Seeing the UN Sustainable Development Goals through Maps**
Menno-Jan Kraak, Britta Ricker, Rob Roth

T37-1-3 **SDG Viz: A Web-based System for Visualizing Sustainable Development Indicators**
Xinyu Gong

T37-1-4 **Employing GIS towards shaping a smart and sustainable future: a brief policy survey of global and Taiwan's efforts**
Chih-Wei Chen, Ching-Yi Lin, Chine-Hung Tung, Hsiung-Ming Liao, Jr-Jie Jang, Kun-Chi Lai, Meng-Ying Li, Yin-Ling Huang

14:50-16:10 **T38-3 Mapping the Environment 3** ····· Conference Room 4+5 (Plaza Heisei)
Chair: Abdul Rauf Abdul Rasam (Universiti Teknologi)

T38-3-1 **The transition process of aerosol distribution state with spatio-temporal analysis based on MODIS product**
Su Wei Qing, Zhang Hong, Chen Li Lon

T38-3-2 **Examination of car navigation systems and UX designs – suggestion for a new interface**
Fanni Vörös, Zoltán Tompos, Béla Kovács

T38-3-3 **Disease Mapping and Spatial Landscape Characterization of Tuberculosis Ecology in Malaysia**
Abdul Rauf Abdul Rasam, Noresah Mohd Shariff

14:50-16:10 **T43-3 Miscellaneous maps (2)** ····· Conference Room 3 (Plaza Heisei)
Chair: Yoshiki Wakabayashi (Tokyo Metropolitan University)

T43-3-1 **Geospatial Distribution and Accessibility of Primary and Secondary Schools: A case of Abbottabad City, Pakistan**
Neema Simon Sumari, Hashir Tanveer, Zhenfeng Shao, Ernest Simon Kira

T43-3-2 **Bayesian Geographical Multi-Dimensional Scaling**
Hayato Nishi, Yasushi Asami

T43-3-3 **A missing link in cartographic visualization? A case study of "heat maps" effectiveness**
Tomasz Panecki, Wojciech Pokojski

T43-3-4 **Exploring Spatiotemporal Characteristics in the Twitter Data Using Topic Modelling Techniques**
Young-Hoon Kim, Hyun Jee Woo

16:40-18:00 **T08-4 Scale issues in Visualization** ····· Uranus (Miraikan)
Chair: Guillaume Touya (LASTIG, IGN France)

T08-4-1 **Focus+Context Map Labeling with Optimized Clutter Reduction**
Benjamin Niedermann, Jan-Henrik Haunert

T08-4-2 **Automatic tactile thematic map generation: research agenda and possible solutions**
Jakub Wabinski, Albina Mosciсka

T08-4-3 **A Self-Adaptive Method of Multi-scale POI Visualization in Indoor Map**
Yi Xiao, Tinghua Ai, Mengying Jiang, Chen Weng, Miqi Wang

T08-4-4 **Conceptual framework for enhancing visual change point analysis in generalized multi-temporal displays**
Jochen Schiewe

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16:40-18:00 **T11-6 Surveying and Mapping** ····· Saturn (Miraikan)
Chair: David Fairbairn (Newcastle University)

T11-6-1 **Advancing Reconnaissance and Valorisation: Map Series of German South West Africa (Namibia), 1892-1918**
Imre Demhardt

T11-6-2 **The bicycle at the end of the 19th century: An instrument for land surveying and mapping**
Tristan Thielmann

T11-6-3 **Database of Historical Atlases: An Interactive Web Application**
Petra Jílková, Jiří Cajthaml

T11-6-4 **Reconstructing the lost contours of Charles Hutton**
Karen Rann, David Fairbairn, Ella Southern

16:40-18:00 **T14-2 Map Production Technologies, Management and Certification** ··· Mercury (Miraikan)
Chair: Peter Kunz (Federal Agency for Cartography and Geodesy (BKG))

T14-2-1 **Multiscale cartographic visualization of harmonized datasets**
Peter Kunz, Joachim Bobrich

T14-2-2 **Technology research on Public welfare map adaptively and quickly producting**
Zhu Xiu Li, Zhao Yong, Liu Wan Zeng, Wu Chen Chen, Wang Zhongxiang

T14-2-3 **Certificates for High-Quality Cartographic Products**
Temenoujka Bandrova, Miljenko Lapaine, Silvia Marinova

T14-2-4 **An Algorithm of Automatic Administrative Region Index Map Generation for National-level Map Production**
Ruolei Wang, Jianjun Liu, Zhao Li, Jun Zhang

16:40-18:00 **T15-2 Map Projections Characteristics** ····· Mars (Miraikan)
Chair: E. Lynn Usery (U.S. Geological Survey)

T15-2-1 **The Equal Earth Projection: Distortion Characteristics, Adoption, and (Social) Media Impact**
Bojan Savrič, Bernhard Jenny, Tom Patterson

T15-2-2 **Polar and Equatorial Aspects of Map Projections?**
Miljenko Lapaine, Nedjeljko Frančula

16:40-18:00 **T27-3 Visualizing Flows & 3D Geovisualization** ··· Conference Room 2 (Plaza Heisei)
Chair: Paulo Raposo (The University of Tenessee)

T27-3-1 **Creating Maps of Artificial Spaces for Exploring Trajectories**
Gennady Andrienko, Natalia Andrienko

T27-3-2 **Workflow for 3D geovisualization of the data obtained with the use of Unmanned Aerial Vehicle in Augmented Reality**
Łukasz Halik, Maciej Smaczyński, Beata Medyńska-Gulij

T27-3-3 **Geovisualization of complex origin-destination flow maps using Discrete Global Grid Systems**
Paulo Raposo

T27-3-4 **Using Focus + Context Techniques to Visualize Building Information Model in virtual Geo-Environment**
Shen Ying, Chengpeng Li, Weiyang Li, Naibin Chen, Zhigang Zhao

16:40-18:00 **T30-9 GIS, Remote Sensing and Cartographic Theory, Methodology and Applications (9)** ····· Innovation Hall (Miraikan)
Chair: Tzai-Hung Wen and Takashi Oguchi (National Taiwan Univ., Univ. Tokyo, Japan)

T30-9-1 **Detecting land cover change using Sentinel-2**
Koji Osumi

T30-9-2 **The visualization of the use of land on the basis of the dynamics of the pedestrian movement from the interval UAV imaging**
Maciej Smaczyński, Beata Medynska-Gulij, Łukasz Halik

T30-9-3 **Method of Elaboration of Detailed Existing Land Use (ELU) Map of Poland**
Dariusz Ryszard Dukaczewski

T30-9-4 **The application of GIS in railway heritage management: the case of Yunnan-Vietnam Railway**
Kun Sang, Silvia Elena Piovan

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16:40-18:00 **T32a-2 Mapping cities (2)** ····· Venus (Miraikan)
Chair: Naoto Yabe (Tokyo Metropolitan University)

T32a-2-1 **Automated Generation of Schematic Network Maps with Preservation of Main Structures**
Tian Lan, Zhilin Li

T32a-2-2 **Multivariate thematic mapping using fractal glyphs**
Antoni Moore, Bin Jiang

T32a-2-3 **Measuring the Street Layout Orientation Entropy of Cities in the Philippines**
Homer Marquez Pagkalinawan

T32a-2-4 **The Use of Cartometric and Participatory Methods for Evaluating Regional Boundaries in Kaligesing Sub-district, Purworejo, Indonesia**
Sudaryatno, Bagus Wiratmoko, Raden Ramadhani Yuda

16:40-18:00 **T37-2 SDGs and Cartography 2 (discussion)** ····· Conference Room 1 (Plaza Heisei)
Chair: Menno-Jan Kraak (University of Twente)

T37-2-1 **Sustainable Development Goals and Visualizing Small Island Developing States**
Jessica Gosling-Goldsmith, Britta Ricker, Menno Jan Kraak

T37-2-2 **Alternate thematic maps to visualize United Nations Sustainable Development Goal indicator data**
Natasha Pirani, Britta Ricker, Menno Jan Kraak

16:40-18:00 **T43-4 Mapping geospatial data** ····· Conference Room 3 (Plaza Heisei)
Chair: Kaori Ito (Tokyo University of Science)

T43-4-1 **Giving life to the map can save more lives. Wildfire scenario with interoperable simulations.**
Walter David, Francesco Giannino, Duncan Heathfield, Antony Hubervic, Attila Aknai, Athanasios Sfetsos, Silvia Elena Piovan

T43-4-2 **GIS-based hillshade representation combined with relative relief as pseudo shade to enhance micro-topography**
Keiko Suzuki, Go Ishikawa

T43-4-3 **Towards a new face for Planetary Maps: Design and Web-based Implementation of Planetary Basemaps**
Andrea Nass, Nicolas Manaud, Stephan Van Gasselt, Trent Hare

T43-4-4 **Estimation of three dimensional structure of forest and development of roots of trees using LiDAR data**
Mamoru Koarai, Akane Rarikiyo, Wataru Watanabe

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Poster

8:30-18:00 **Poster Session P4** ····· Jupiter (Miraikan)

P4-01 **Curve Generalization Algorithm Based on Area of Bends using Head/tail Breaks**
Hangyu Wang, Haowen Yan

P4-02 **Quality assessment of topographic data automatic map generalization from scale 1:10 000 to 1:50 000**
Luo Fu Jun, Zhao You Song, Ma Xu, Wu Xua

P4-03 **Deriving Multiple Representation Database: A Model Generalisation Approach**
Jagadish Boodala, Onkar Dikshit, Nagarajan Balasubramanian

P4-04 **Incremental Updating Information Extraction and Topology Conflict Detection Method for Updating Road Network**
Jianchen Zhang, Heying Li

P4-05 **Proposition of a Schematization Plugin for QGIS**
Luciene Stamato Delazari, Isadora Barioni

P4-06 **Dot Symbol Auto filling Method for Land use Areas in Cartgraphic Representation**
Yong Yin, Chengcheng Zhana

P4-07 **Spatial Analysis to Identify Factors Affecting Residential Land Prices in Disaster Areas**
Keiko Inagaki, Satoru Sadohara

P4-08 **From walkability to bikeability: A GIS based analysis of integrating bike sharing service in Tokyo TOD system**
Tianqi Xia, Xiaoya Song, Xuan Song, Min Lu, Shuzhe Huang, Ryosuke Shibasaki, Kyoung-Sook Kim

P4-09 **Design of cooperative update mechanism of national geographic conditions monitoring and basic surveying and mapping**
Luo Fu Jun, Zhao You Song

P4-10 **LevelFilesSet: An efficient Data Structure for Scalable Web Tiled Map Management Systems**
Menelaos Kotsollaris, William Liu, Emmanuel Stefanakis, Yun Zhang

P4-11 **Rapid Mapping for German Federal Authorities**
Karsten Schmidt, Marian Graumann, Joachim Bobric

P4-12 **Research on Event-based Geospatial Data Updating**
Zhao Zhou

P4-13 **The evolution of spatial structure of China railway network in the past century**
Yalan Bai

P4-14 **Map Production Supporting Activities of Digitalization and AI**
Markus Jobst, Georg Gartner

P4-15 **The definition of scale series for atlas maps depending on the density of mapped objects**
Gleb Igorevich Zagrebin, Sergey Anatolyevich Krylov

P4-16 **Research and implementation of big data visualization based on WebGIS**
Lu Wen Juan, Aiguo Liu, Chengcheng Zhang

P4-17 **Visual analysis of ICC themes and topics from 2009 to 2019**
Li Jing, Liu Hai Yan, Kang Lei

P4-18 **Table cartogram generation as an optimization problem**
Mao Li, Ryo inoue

P4-19 **Mapping urban greenery to create the optimal cooling effect model against solar radiation under the conditions of a smart city**
Vladimír Sedlák, Katarína Onačillová, Michal Gallay, Jaroslav Hofierka, Ján Kaňuk, Ján Šašak, Jozef Šupinský

P4-20 **Social climate of cities as a factor of economic growth (on the example of the city of Kerch)**
Alexander Borisovich Zaitsev, Lazareva I.V., Melnikova I.V.

P4-21 **Mapping the hot and cold spots of spatial change in Tokyo following the bubble economy period**
Ryo Koizumi, Yoshiki Wakabayashi

P4-22 **Mapping Gentrification in Little Tokyo, Los Angeles: Using Geographic Information System (GIS) Analytical Tools**
Saki Nakashima

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P4-23 **Automated Extraction of Driving Lines from Mobile Laser Scanning Point Clouds**
Lingfei Ma, Tianyu Wu, Ying Li, Jonathan Li, Yiping Chen, Michael Chapman

P4-24 **A Study on the Distribution of Foreign-Female-Isolated Areas in Japan**
Kohei Okamoto, Masatoshi Morita

P4-25 **Los Angeles Homelessness and the Access to Water, Sanitation, and Hygiene (WaSH)**
Lourdes Johanna Avelar, Yao-Yi Chiang, Robert O. Vos, Jose Rico, Yanyi Qian, Xiaozhe Yin, Kate Vavra-Musser

P4-26 **Effect of Land tenure change on Land use in Machakos County, Kenya**
Mary Wamuyu Baaru, Charles Karanja Gachene

P4-27 **Stereo RGB-D indoor mapping with precise stream fusing strategy**
Shengjun Tang, Weixi Wang, Xiaoming Li, Zhilu Yuan

P4-28 **Mapping of reforestation progress in Chilean National Park Torres del Paine**
Italo Marquez, Guido Staub

P4-29 **Mapping of the maritime jurisdiction for Arctic Navigation**
Haiyan Liu, Xiaoping Pang

P4-30 **Surface and Volume Variation Determination of Laguna de Laja (Chile) since 2007**
Esteban Fernandez, Guido Staub

P4-31 **Utilizing the Road Mark Training Set from Ground-Based Mapping System to Airborne Imagery in Deep Learning Framework**
Tee-Ann Teo

P4-32 **There is no Kashubia without Kashubians - maps as sources in historical research of folk culture**
Agnieszka Małek

P4-33 **Map Usage on Smartphones and Acquisition of Spatial Knowledge**
Noriko Shingaki

P4-34 **The Spatial-temporal Variation of Precipitation and Temperature in Xinjiang in Recent 50 Years**
Wang Yu Zhu, Yan Hao Wen, Wang Xiao Ping, Wang Zhuo

Commission Business Meeting

Code	Commission	Date	Time	Venue	Room
B01	Art and Cartography	Tue 16th July	12:10-13:30	Miraikan	Saturn
B02	Atlases	Tue 16th July	12:10-13:30	Miraikan	Innovation Hall
B03	Cartgraphic Heritage into the Degital	Thu 18th July	12:10-13:30	Miraikan	Uranus
B04	Cartography and Children	Tue 16th July	12:10-13:30	Miraikan	Mars
B05	Cartography in Early Warning and Crisis Management	Tue 16th July	12:10-13:30	Miraikan	Venus
B06	Cognitive Issues in Geographic Information Visualization	Tue 16th July	12:10-13:30	Plaza Heisei	Conference Room 2
B07	Education and Training	Wed 17th July	12:10-13:30	Miraikan	Venus
B08	Generalisation and Multiple Representation	Fri 19th July	12:10-13:30	Miraikan	Uranus
B09	Geospatial Analysis and Modeling	Thu 18th July	12:10-13:30	Miraikan	Miraikan Hall
B10	GI for Sustainability	Fri 19th July	12:10-13:30	Miraikan	Mars
B11	History of Cartography	Fri 19th July	12:10-13:30	Miraikan	Saturn
B12	Location Based Services	Tue 16th July	12:10-13:30	Miraikan	Uranus
B14	Map Production and Geoinformation Management	Wed 17th July	12:10-13:30	Miraikan	Uranus
B15	Map Projections	Fri 19th July	12:10-13:30	Miraikan	Innovation Hall
B16	Maps and Graphics for Blind and Partially Sighted People	Thu 18th July	12:10-13:30	Miraikan	Mercury
B17	Maps and the Internet	Thu 18th July	12:10-13:30	Plaza Heisei	Conference Room 1
B18	Mountain Cartography	Wed 17th July	12:10-13:30	Miraikan	Mars
B19	Open Source Geospatial Technologies	Wed 17th July	12:10-13:30	Miraikan	Mercury
B20	Planetary Cartography	Fri 19th July	12:10-13:30	Miraikan	Mercury
B21	SDI and Standards	Thu 18th July	12:10-13:30	Miraikan	Saturn
B22	Sensor-driven Mapping	Fri 19th July	12:10-13:30	Miraikan	Venus
B23	Topographic Mapping	Wed 17th July	12:10-13:30	Miraikan	Saturn
B24	Toponymy	Tue 16th July	12:10-13:30	Miraikan	Mercury
B25	Ubiquitous Mapping, Spatial DB and IoT-Based Systems	Tue 16th July	12:10-13:30	Plaza Heisei	Conference Room 1
B26	Use, User and Usability Issues	Thu 18th July	12:10-13:30	Plaza Heisei	Conference Room 2
B27	Visual Analytics	Fri 19th July	12:10-13:30	Plaza Heisei	Conference Room 2
B28	Marine Cartography	Thu 18th July	12:10-13:30	Miraikan	Venus
B99	Geospatial Semantics	Thu 18th July	12:10-13:30	Miraikan	Mars

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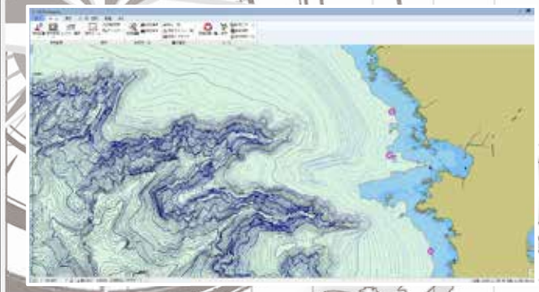

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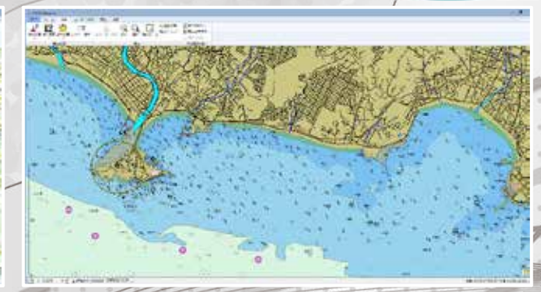
直感的な操作により**電子海図(ENC:Electronic Navigational Chart)**の表示や位置検索ができることはもちろん、**電子海底地形図**や**国土基本情報**、**電子地形図**など様々な種類の地図を重畳表示することができます。

また、地図上には線・塗りつぶし・円・円弧などの図形や文字を簡単かつ自在に作成・配置でき、ユーザー独自の情報を作成することができます。

ナビゲーション機能も備えており、大型船での補助システムとして利用することができるほか、オプションでAISデータや気象海象データを取り扱うこともできる、海上陸上どちらでも使えるシステムです。

電子海図の表示は電子海図形式および紙海図形式に対応しています。

電子海図+電子地形図+ユーザー作成図形



電子海図+国土基本情報

お問い合わせ先

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TEL：03-5805-3620 FAX：03-5805-3684

URL：https://www.nssys.co.jp

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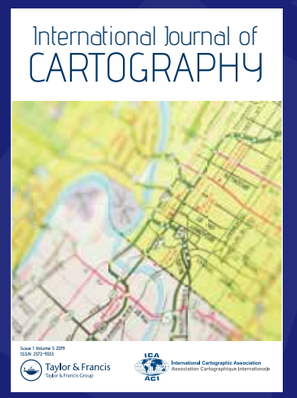
Cartography and Geographic Information Science

Cartography and Geographic Information Science (CaGIS) is the official publication of the Cartography and Geographic Information Society. The Society supports research, education, and practices that improve the understanding, creation, analysis, and use of maps and geographic information.

The CaGIS journal implements the objectives of the Society by publishing authoritative peer-reviewed articles that report on innovative research in cartography and geographic information science.

www.tandfonline.com/TCAG



International Journal of Cartography

International Journal of Cartography (IJC) is the official flagship journal of the International Cartographic Association (ICA) which is a much needed research outlet concentrating on the map as a form of communication about the world, and aims to promote research in the fields of cartography and GI Science.
The journal encompasses a wide range of topic including: spatial modelling, visualization, analysis and planning; theoretical GI Science including geospatial ontologies and semantics; maritime, environmental and urban GIS, remote sensing and photogrammetry; cognitive-based GIS and cartography: modelling of navigation knowledge and landscape perception in urban spaces and built environments; historical maps; art and cartography; topography.

www.tandfonline.com/TICA

The Cartographic Journal

The Cartographic Journal (first published in 1964) is an established peer reviewed journal of record and comment containing authoritative articles and international papers on all aspects of cartography, the science and technology of presenting, communicating and analysing spatial relationships by means of maps and other geographical representations of the Earth's surface. This includes coverage of related technologies where appropriate, for example, remote sensing, geographical information systems (GIS), the internet and global positioning systems. The Journal also publishes articles on social, political and historical aspects of cartography.

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