ECTQG 2025 is organized in cooperation with:

24th European Colloquium on Theoretical and Quantitative Geography
ECTQG 2025
Wednesday Sept 10 – Sunday Sept 14, 2025

Öpiku Conference Center – *sponsored by Mainor AS and Ülemiste City*
Valukoja 8, 11415, Tallinn, Estonia

	Wednesday 10th Sept	Thursday 11th Sept	Friday 12th Sept	Saturday 13th Sept	Sunday 14th Sept
8:00 – 9:00		**Registration** *Conference center hallway*			
9:00 – 9:30		**Opening session** *Kosmos*			
9:30 – 11:00		**Keynote:** A. Heppenstall *Kosmos*	**Keynote:** T. Toivonen *Kosmos*	**Keynote:** T. Tammaru *Kosmos*	**Excursion** to the Lahemaa national park and Sagadi Manor *Departs from Valukoja 3 parking lot*
11:00 – 11:30		**Coffee break** *Conference center hallway*	**Coffee break** *Conference center hallway*	**Coffee break** *Conference center hallway*	
11:30 – 13:00		**Parallel sessions 1** *Session rooms 1-3*	**Parallel sessions 4** *Session rooms 1-3*	**Parallel sessions 7** *Session rooms 1-3*	
13:00 – 14:30		**Lunch** *Restaurant Mona (Valukoja 10)*	**Lunch** *Restaurant Mona (Valukoja 10)*	**Lunch** *Restaurant Mona (Valukoja 10)*	
14:30 – 16:00		**Parallel sessions 2** *Session rooms 1-3*	**Parallel sessions 5** *Session rooms 1-3*	**Parallel sessions 8** *Session rooms 1-3*	
		Coffee break *Conference center hallway*	**Coffee break** *Conference center hallway*	**Closing session** *Kosmos*	
16:00 – 17:30		**Parallel sessions 3** *Session rooms 1-3*	**Parallel sessions 6** *Session rooms 1-3*		
18:00 – 19:00	**Registration** *Conference center hallway*				
19:00 – 21:00	**Welcome cocktails** *Restaurant Mona (Valukoja 10)*		**Conference Dinner** *Restoran Spot (Vene tn 4 in Tallinn Old Town)*		

For details on parallel sessions and keynote bios, please see refer to the pages below

General information

Conference website and Special Sessions

- Conference website – ectqg.org
- Special Sessions – ectqg.org – *List also available at the bottom of this document*

Conference venue and hotels

- A Google Maps collection of relevant locations – Google Maps
- Location of Öpiku Conference Center – Google Maps – *2nd floor of the building*
- Location of Hotel Mercure Tallinn – Google Maps
- Location of Hotel Hampton by Hilton Tallinn – Google Maps

Öpik Building

- The ECTQG 2025 conference will take place in the Öpik Building, located in Ülemiste City, Valukoja 8, 11415 Tallinn, Estonia.
- Named after Estonian astronomer Ernst Öpik, the building is a contemporary, energy-efficient complex designed for modern working and event needs. Its two towers are connected by a spacious atrium that provides natural light and shared common areas. The Öpik Conference Centre, situated within the building, offers a flexible and well-equipped setting for plenary sessions and smaller workshops.

Names of parallel session and keynote spaces

- **Keynote hall –** Kosmos
- **Session room 1 –** Andromeda (max. 50 people)
- **Session room 2 –** Universum (max. 40 people)
- **Session room 3 –** Galaktika (max. 40 people)

Eating and excursion

- Lunch at Restaurant Mona – Google Maps – *across the Öpiku Maja Conference Center*
- Conference Dinner at Restaurant Spot – Google Maps – *in Tallinn Old Town*
- Lahemaa excursion bus departure – Google Maps – *parking lot next to the conference venue*

Information on Tallinn and Ülemiste City

- The Visit Tallinn website – Visit Tallinn
- Information on Ülemiste City – ulemistecity.ee

Getting around

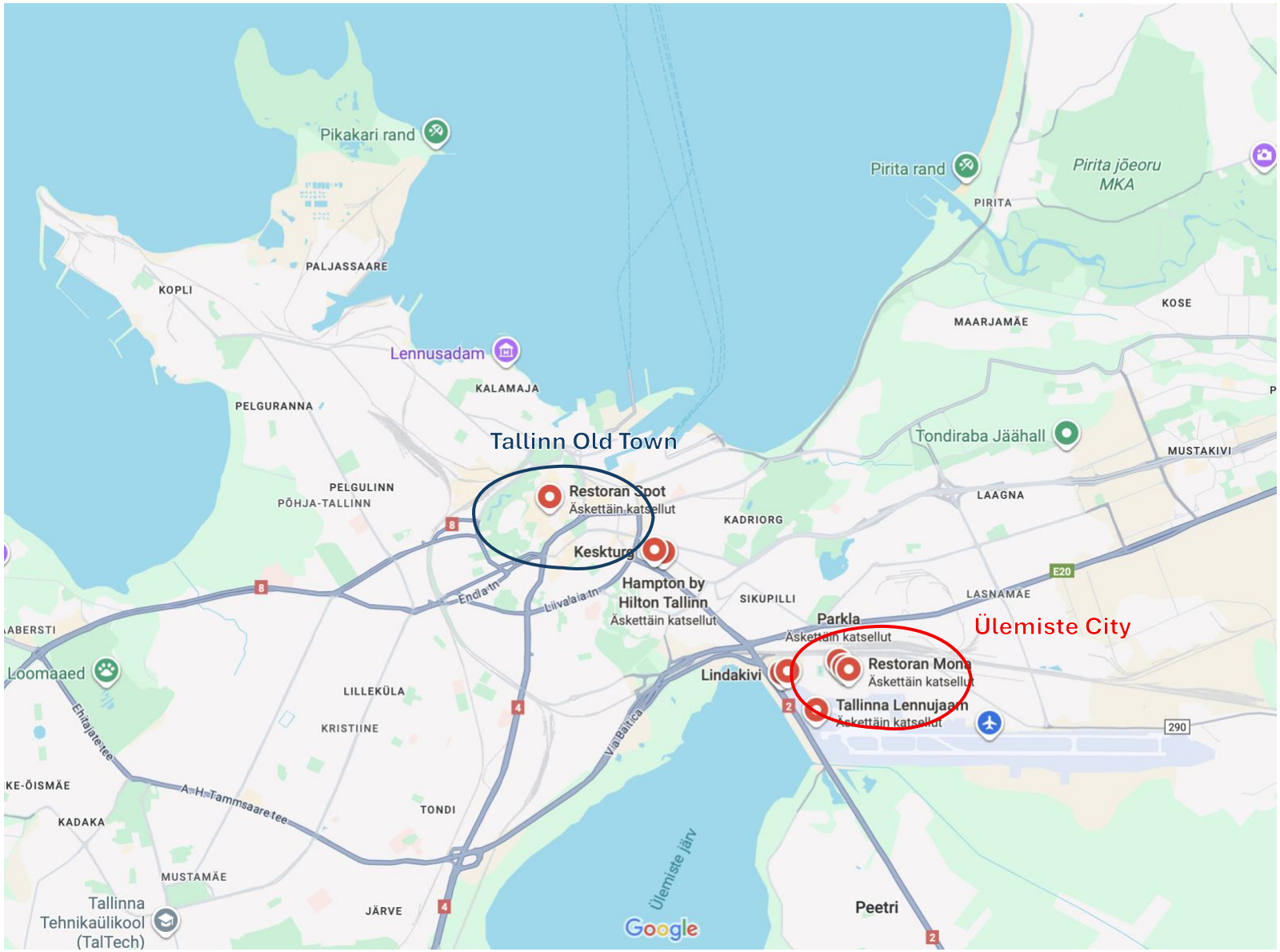
There is a frequent bus and a tram connection between the Tallinn city center (Kesklinn) and the conference venue.

- **Getting to Öpiku Conference Center**
  - From Mercure Tallinn – an 800m walk
  - From Hotel Hampton by Hilton Tallinn – a 15-minute bus ride from the Keskturg bus stop with bus 15 Sõjamäe or bus 2 Mõigu
  - Parking: EP90 Parking Zone, Lõõtsa 11 H-parkimismaja (parking garage) or the Valukoja 3 parking lot

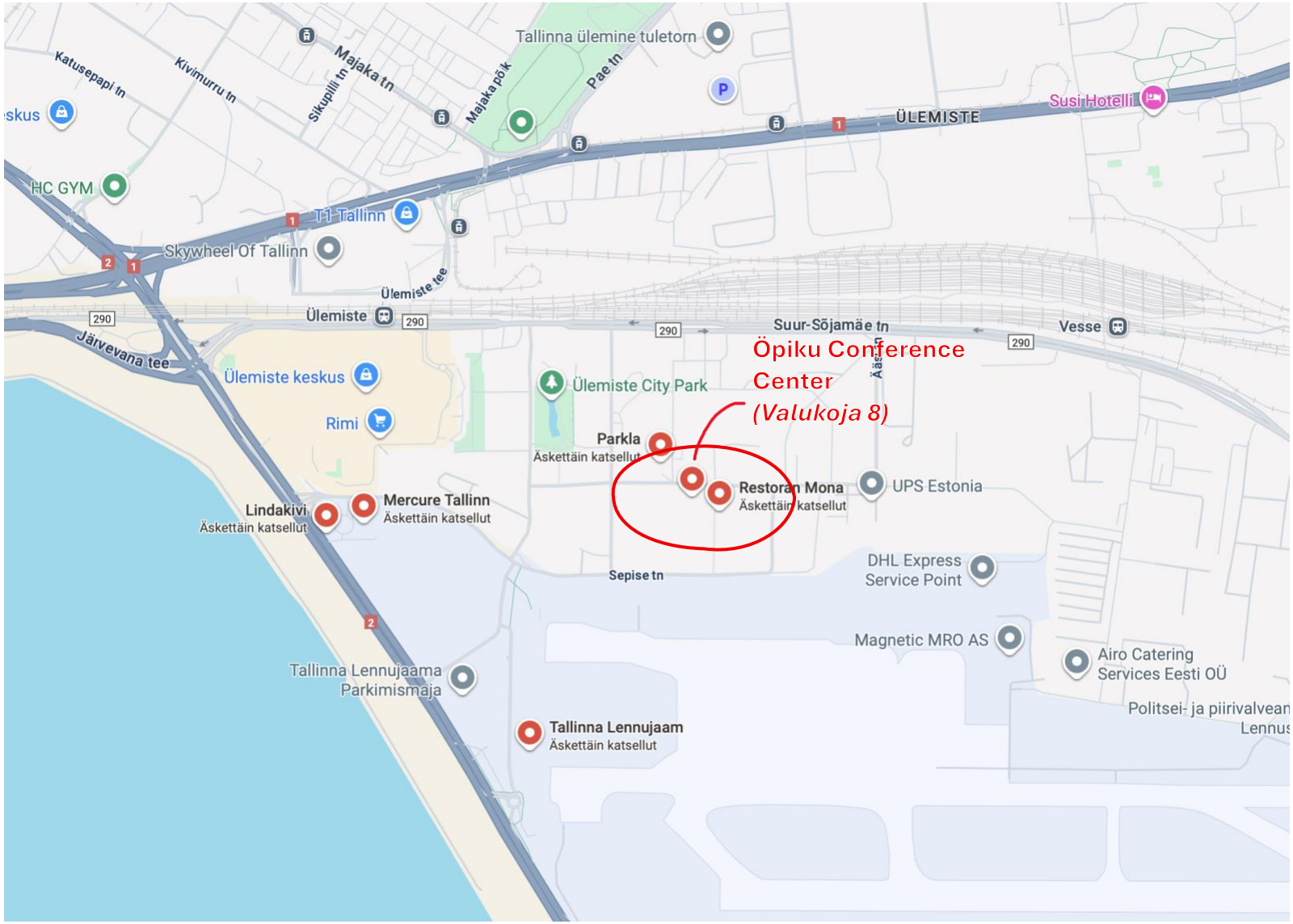
- **Getting to Restaurant Spot in Tallinn Old Town**
  - From the Conference Venue – bus 15 Estonia or bus 2 Balti Jaam
  - From Mercure Tallinn – bus 2 Balti Jaam departs from the Lindakivi bus stop next to the hotel
  - From Hotel Hampton by Hilton Tallinn – bus 15 Estonia or bus 2 Balti Jaam from the Keskturg bus stop

Contact in case of issues

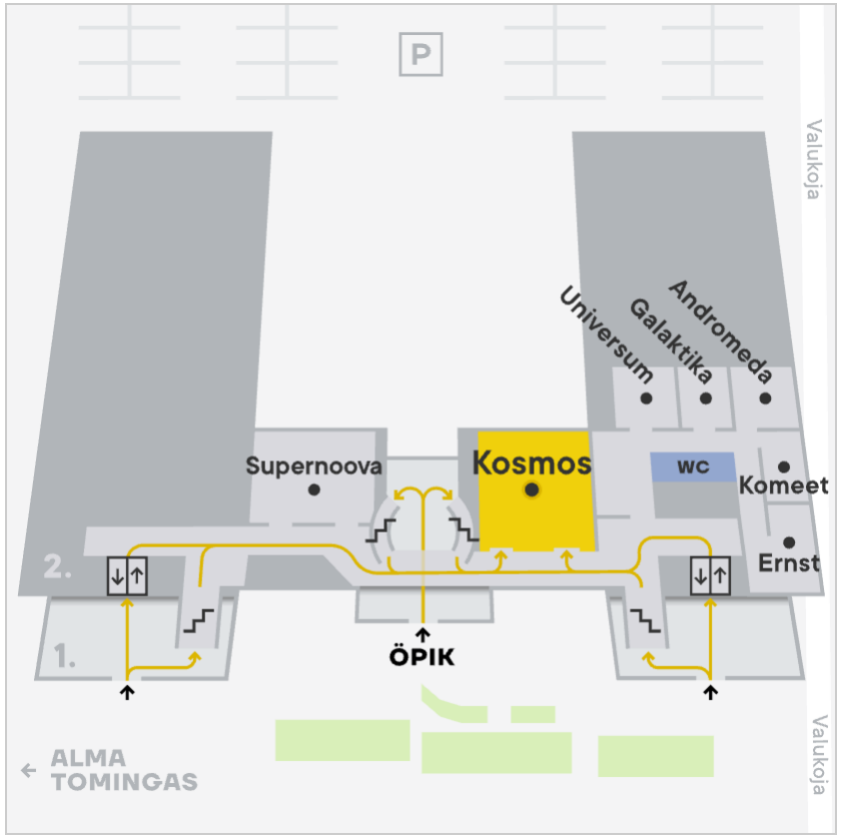
- **Conference chair** – Professor Jenni Partanen / +358 50 476 9144 or jenni.partanen@taltech.ee
- **Organizer**– PhD Student Olli Jakonen / +358 550 341 4233 or olli.jakonen@taltech.ee



Map of Tallinn and locations of Ülemiste City and the Tallinn Old Town



Map of Ülemiste City and the location of the Conference Venue at Öpiku Maja



Map of our conference venue at Öpiku Maja Conference Center

Colloquium keynote speakers

Professor Alison Heppenstall
University of Glasgow

On Thursday 9:30–11:00

Kosmos Lecture Hall

Alison Heppenstall is a Professor of Geocomputation within the School of Social and Political Sciences at the University of Glasgow. She holds a PhD in Computer Science from the University of Leeds and was a Lecturer and Associate Professor with the School of Geography at the University of Leeds. She is an Alan Turing Fellow. Alison's expertise is in the development of AI and ML approaches to simulating the dynamics and processes within urban areas. She is particularly fond of individual-based approaches such as microsimulation and agent-based modelling. Her other interests are in synthetic population generation, uncertainty quantification and exascale computation. Her work has been funded by numerous UK and international agencies. She is one of the Editors of Computers, Environment and Urban Systems and won the 2023 International Society of Computational Economics prize for "outstanding work in the area of computational economics and general computational statistics".

Keynote: Learning the City: AI-Driven Approaches to Urban Complexity

Cities are complex, dynamic systems shaped by human behaviour, infrastructure, and policy. As urban areas face mounting challenges—from climate change and congestion to housing and inequality—AI and machine learning offer alternative tools to analyse, simulate, and inform decision-making at scale. This talk explores how emerging methods, including synthetic data generation, geospatial machine learning, and agent-based modelling, are transforming urban analytics. By combining real and synthetic datasets, we can build more robust and accurate models that support smarter urban planning, mobility forecasting, and public service delivery. This talk will use examples from current work to highlight the potential of AI-driven urban intelligence to create more equitable and resilient cities.

Professor Tuuli Toivonen
University of Helsinki, Finland

On Friday 9:30–11:00
Kosmos Lecture Hall

Leading expert in geoinformatics, focusing on understanding dynamics of people and places, and their interactions, in both urban and natural areas using accessibility and mobility as lenses to these interactions. She is also developing approaches to leverage open/big data, spatial analytics and machine learning.

Keynote: To be announced

Professor Tiit Tammaru
University of Tartu, Estonia

On Saturday 9:30–11:00
Kosmos Lecture Hall

Renowned for his work on migration, residential mobility, housing, and socio-economic segregation across various life domains, relations between social inequalities and socioeconomic segregation, as well as comparative segregation studies.

Keynote: To be announced

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Keynote hall: Kosmos
Session room 1: Andromeda
Session room 2: Universum
Session room 3: Galaktika

PARALLEL SESSIONS TIMELINE 11th - 13th September 2025

Thursday Sept 11th	
Parallel sessions 1	
[ROOM1] ANDROMEDA 11:30 - 13:00	
Theoretical geography and history of geography 1	
Léandre Fabri and Geoffrey Caruso	How the perimeter and the area of urban patches relate across Europe
Cyrille Genre-Grandpierre	Reflexions on the transversal "knowledge objects" of contemporary geography
Juste Raimbault	Mapping the integration between Knowledge Domains in Theoretical and Quantitative Geography
Denise Pumain	Evolutionary theory of urban systems and prediction: the case of Chinese cities

[ROOM2] UNIVERSUM 11:30 - 13:00	
Environmental health studies 1	
Haokun Liu and Céline Rozenblat	Decoding the Urban Exposure: Integrating Network Analysis and GeoAI to Illuminate Environment Health at Lausanne
Malcolm Campbell, Vanessa Bastos, Lukas Marek and **Phoebe Eggleton**	mGeoHealth: using mobile phone location data to better understand population health

Samuel Benkimoun, Malika Madelln and Vincent Dupuis	Crowdsourced Weather Data and Environmental Health: High-Resolution Mapping and Modeling of Urban Heat Exposure in the Paris Metropolitan Region

Parallel sessions 2	
[ROOM1] ANDROMEDA 14:30 - 16:00	
Theoretical geography and history of geography 2	
Sandra Perez	Towards a theory of pathogenic geographical spaces
Olivier Orain and Nicolas Szende	Quantitative geography and its intellectual backdrop: socio-historical insights from Britain and France
Richard Harris	36 years later: Some personal reflections on Peter Haggett's 'Revolutions and Quantitative Geography'
Mikhail Rogov and Céline Rozenblat	Cities as boundary objects: can this concept improve the transfer of urban models?

[ROOM2] UNIVERSUM 14:30 - 16:00	
Environmental health studies 2	
Marina Toger, Nir Fulman, Yulia Grinblat, Emily Charlotte Wilke, Alexander Zipf, Armagan Teke Lloyd, Umut Türk, Johannes Huber, Sebastián Block and Kirsten Von Elverfeldt	The suitability of volunteered geographic information to support walkability studies in older adults
Phoebe Eggleton, Joseph Boden, Anne Harvet, Bingyu Deng, Geraldine McLeod, Malcolm Campbell and Matthew Hobbs	Investigating the long-term impact of experiencing a major disaster in mid-adulthood on body mass index and waist circumference: A prospective birth cohort study
Els Verachtert, Lien Poelmans and Karen Gabriels	High-resolution spatial greenness metrics supporting environmental health research

[ROOM3] GALAKTIKA 14:30 – 16:00	
Models 1	
Alex Hagen-Zanker	Node-to-node shortest path approximation for large scale agent based urban modelling: a new algorithm using dynamically narrowing destinations
Guangsheng Dong, Tao Cheng, Rui Li and Huayi Wu	Spatiotemporal-Semantic Fusion for User classification based on Virtual Trajectories on Public Map Service Platforms

Lucas Magalhães and **Geoffrey Caruso**	Simulating retail location in the digital era: a spatially-explicit theoretical agent-based monocentric city model
Kelly Oliveira and Eusébio Reis	Recent Climate Evolution in the Sado River Basin, Portugal: Empirical Challenges and Contributions to Spatial Model Validation

Parallel sessions 3	
[ROOM1] ANDROMEDA 16:30 – 18:00	
Urban Scaling: Global Patterns of Cities	
Victor Vignolles and **Rémi Lemoy**	Removing Population Size, World Cities Leave on Land a Footprint of Wealth
Geoffrey Caruso, Kerry Schiel and **Rémi Lemoy**	Comparing and visualizing the radial profiles of urbanised land across a worldwide sample of cities
Thibaud Rivet, **Rémi Lemoy**, Axel Pecheric and Gaëtan Laziou	Radial scaling of land use change in 1800+ world cities since 1975
Paul Kilgarriff, **Geoffrey Caruso** and **Rémi Lemoy**	Recursive City Definition

[ROOM2] UNIVERSUM 16:30 - 18:00	
Food and nature-based systems	
Frederik Priem, Nikola Obrenović, Maksim Lalić, **Tomas Crols and Els Verachtert**	Maximising sunflower crop yield, pollinator diversity and carbon sequestration in the Vojvodina region (Serbia) through spatial optimisation of Nature-based Solutions
Michal Iliev, James Cheshire and Stephen Law	Access to the night-time city: temporal variability in food accessibility for night workers in London
Irena Atkovska, Todor Stojanovski, Najmeh Mozaffaree Pour and Jenni Vilhelmiina Partanen	Morphological analysis and Geographical Information System (GIS) tools in exploration of green cities, food production and distribution within the urban environment
Nasim Eslamirad, Payam Sajadi and Salman Khan	Mapping the Human Dimension of Urban Flood Risk: A Qualitative Framework for Citizen Engagement in Nature-Based Solutions
Claudia Viana, Jorge Rocha and Eduardo Gomes	Tracing Agricultural System through Geospatial Theory and Historical Sources: Insights from Portugal

[ROOM3] GALAKTIKA 16:30 - 18:00

Computation, Analyses & Data 1: Emerging Data Practices	
Madeleine Guyot	From geodata abundance to meaningful insights: assessing the limits and potential of diverse geodatasets in urban research
Nikita Sinitsyn and **Andrey Konnov**	Radio call signs of consumer electronics as a data source in human geography
Iuria Betco and Jorge Rocha	Analyzing Street View and Social Media Data to Evaluate the Urban Environment in Lisbon
Bernhard Nöbauer, Alexandre Banquet, Claudia Baranzelli, Michelle Marshalian, **Ana Moreno Monroy** and Felix Winkelmayer	Comparing rural daily systems

Friday Sept 12th

Parallel sessions 4	
[ROOM1] ANDROMEDA 11:30 - 13:00	
Novel spatial data and indicators for assessing the reality of 15-minute cities 1	
Jules Grandvillemin, Florian Masse, Vincent Kaufmann and Samuel Carpentier-Postel	Mobility potential: towards an accessibility indicator accounting for the individual ability to move through motility
Xiuning Zhang, Alexei Poliakov and Elsa Arcaute	Recurrent visitations expose the paradox of human mobility in the 15-Minute City vision
Chris Jacobs-Crisioni and Ana Isabel Moreno-Monroy	Service provision in a regional perspective: a trilemma of densities, accessibility and cost-efficiency.

[ROOM 2] UNIVERSUM 11:30 – 13:00	
Mobility 1: Large-Scale Systems, Patterns and Datasets	
Samuel Benkimoun, Eric Denis and Olivier Telle	Comparative Inference of Urban Functional Systems Through Large Movements Datasets and Network Analysis in Delhi, Cairo, and Bangkok.
Ate Poorthuis, Olle Järv and Anirudh Govind	Open-source, continent-scale human mobility datasets derived from geotagged social media
Fangzhou Zhou, Tao Cheng and Mark Tewdwr-Jones	Tracking Migration Shifts During Covid-19: A Time-Series Clustering Study of English Local Authorities (2017–2022)

Louisette Garcin	Toward a systemic understanding of mobility patterns: modular modeling and cross-territorial validation

[ROOM3] GALAKTIKA 11:30 – 13:00	
Models 2: Validation of spatial simulation models	
Eduardo Gomes, Cláudia Viana and Jorge Rocha	Participatory validation of land-use simulation models for Cultural Ecosystem Services
Jorge Salgado and Céline Rozenblat	Modelling cities transitioning to a green economy: a multilevel complex approach
Meixia Lin and Tao Lin	Dynamic Construction and Optimization of Ecological Networks in Coastal Regions Under Multi-Objective Scenarios: A Case Study of Gulei Port Economic Development Zone, China
Juste Raimbault and Denise Pumain	Projecting possible future trajectories for systems of cities

Parallel sessions 5	
[ROOM1] ANDROMEDA 14:30 - 16:00	
Novel spatial data and indicators for assessing the reality of 15-minute cities 2	
Jiakun Liu, Eric Koomen and Erik Verhoef	Is the 15-minute city feasible? Assessing the role of the built environment through actual travel behaviour in Alkmaar, the Netherlands
Najmeh Mozaffaree Pour and Jenni Partanen	Spatial Justice and Urban Accessibility: Evaluating the 15-Minute City Metrics for Vulnerable Groups in Tallinn, Estonia
Cate Heine and Chen Zhong	Friendship in the 15-minute city: Social interaction as a key urban resource

[ROOM2] UNIVERSUM 14:30 - 16:00	
Mobility 2: Regional and Cross-Border System	
Olle Järv, Håvard Wallin Aagesen, Tuomas Väisänen and Michaela Söderholm	Sensing Cross-Border Integration of Border Regions in Europe from the Mobilities of People: A Mobile Big Data Approach

Tuomas Väisänen, Milad Malekzadeh, Oula Inkeröinen and Olle Järv	Structural changes in the catchment areas of student mobility in Europe: Case COVID-19
Yuyang Wu and Konstadinos Goulias	Multi-Scale Analysis of Local Labour Market Areas Using Complex Network Methods: Focusing on the Issue of Excess Commuting

[ROOM3] GALAKTIKA 14:30 - 16:00	
Computation, Analyses & Data 2: Machine Learning and AI Applications	
Adrian Nowacki, Jarosław Jasiewicz and Anna Dmowska	Using interpretative machine learning to analyze spatial distribution of socio-demographic profiles influencing voting patterns in U.S. presidential elections (2008-2024)
Iuria Betco, **Cláudia M. Viana, Eduardo Gomes and Jorge Rocha**	Unfolding the black box: Modelling Community-Acquired Pneumonia drivers in mainland Portugal with Explainable-AI
Lien Poelmans, Luc De Keersmaeker, Roggemans Pieter, Frederik Priem, Stijn Tallir, Toon Petermans and Jo Van Valckenborg	Assessing 250 years of land use changes in Flanders through GeoAI

Parallel sessions 6	
[ROOM1] ANDROMEDA 16:30 - 18:00	
Novel spatial data and indicators for assessing the reality of 15-minute cities 3	
Tomas Crols, Lien Poelmans and Els Verachtert	The impact of the 15-minute city on the spatial planning policy of a sprawled region
Joan Perez and Giovanni Fusco	Assessing urban scenes for the 15-minute city through SAGAI (Streetscape Analysis with Generative AI).
Ana Moreno Monroy and Bernhard Nöbauer	Enhancing compactness, connectivity, and accessibility in Korea

[ROOM2] UNIVERSUM 16:30 - 18:00	
Mobility 3: Local Transport and Flows	
Laura Pajaro, Elnert Coenegrachts and **Joris Beckers**	Locating neighbourhood scale mobility hubs using explorative spatial analysis
Emile Duflot	Residential Mobility and the Contribution of Population Flows to Micro-Local Socio-Economic Dynamics
Igor Shusterman, Aleksey Ogulenko and **Itzhak Benenson**	The discreet intelligence of transport accessibility maps

[ROOM3] GALAKTIKA 16:30 - 18:00	
Computation, Analyses & Data 3: Spatial Approaches	
Felipe Albuquerque, Cyrille Genre-Grandpierre and Rosa Figueiredo	Integrating equity into efficiency: the p-Median problem with territorial coverage constraint.
Christopher Brunsdon	Geographically Context Sensitive Weighted Indicators: Using The Benefit-of-Doubt Approach
Olli Jakonen, Najmeh Mozaffaree Pour and Jenni Partanen	Intraurban Spatial Evolution and Clustering Trends in the Software Industry
Roger Bivand	Categorical independent variables and spatial regression: interpretation and reporting

Saturday Sept 13th

Parallel sessions 7	
[ROOM1] ANDROMEDA 11:30 - 13:00	
Sensing functional systems through mobility from big data: from neighbourhoods to urban regions and global networks	
Egor Kotov, Tom Theile, Ole Hexel, Elizabeth Jacobs, Jisu Kim, Daniela Perrotta and Emilio Zagheni	Impact of Temporary Location Visitors on Mobile App Usage in French Cities: Implications for Socio-Economic Segregation Studies
Kofoworola Modupe Osunkoya, Tuomas Väisänen, Olle Järv and Jenni Partanen	Mapping Vital Urban Areas Through Social Media Activity: A: Case of Tallinn, Estonia
Anirudh Govind, **Ate Poorthuis** and Ben Derudder	Conceptualizing Functional Neighborhood Boundary Intensities

[ROOM2] UNIVERSUM 11:30 - 13:00	
Mobility 4: Equity and Accessibility.	
Anna Clara Dantas Cabral, Antônio Nélson Rodrigues da Silva and **Nuno Pinto**	Redefining a strategy for assessing urban mobility resilience from an equity perspective
Joana Barros, Agnes Silva de Araujo and Marcus Saraiva	Gender and mobility: Intersectional inequalities of accessibility in São Paulo, Brazil
Jorge Rocha, Luis Encalada, Iuria Betco and Cláudia M. Viana	Modelling Elderly Accessibility to Pharmacies by Integrating Vertical Mobility Constraints into Network-Based Spatial Analysis

Patrizia Sulis and Alessandro Giordano	Investigating a double vulnerability of accessibility poverty in European urban areas

Parallel sessions 8	
[ROOM1] ANDROMEDA 14:30 - 16:00	
Networks and Connectivity	
Céline Rozenblat	The spatial relay roles in ownership linkage network: from individual firms to cities' properties
Nuno Pinto, Mariam Jamilah and Runqi Xiao	Synthetic cities to support the development of advanced urban models
Oleksandr Karasov, Tiina Rinne, Olle Järv and Henrikki Tenkanen	Quality of personal time as a universal metric: a Telegram bot solution for the spatial assessment of cultural ecosystem services in Ukrainian city during the Russian invasion
Milad Malekzadeh, Tuomas Väisänen, Anastasia Panori and Olle Järv	Mapping Regional Connectivity: Identifying Mobility Hubs Through Multi-Dimensional Movement Networks in Europe (2012–2022)

[ROOM 2] UNIVERSUM 14:30 - 16:00	
Urban Boundaries: Natural and Social Divides	
Jaana Vanhatalo	The nature of urban area boundaries: concepts, dichotomic definitions and reality, case Finland
Tu Giang Vu and **Eric Koomen**	Cities divided by rivers; how water bodies steer urban expansion
Anna Dmowska	Examining spatio-racial patterns at various scales in U.S. metropolitan areas using segregation profiles

List of Special Sessions

1. Environmental health studies

Organisers

Sandra Pérez - *Associate Professor* - *UMR ESPACE 7300* - sandra.perez@univ-cotedazur.fr

Virginie Chasles - *Professor* - *UMR Environnement, Ville, Société 5600* - virginie.chasles@univ-st-etienne.fr

Régis Darques - *Research Associate* - *UMR ESPACE 7300* - regis.darques@univ-cotedazur.fr

With the support of the UMR ESPACE, the CNFG and the International Geographical Union Commission on Health and the Environment (IGU-CHE)

Description

The aim of this session is to provide a brief overview of the wide range of quantitative methods (modelling, AI) used in the field of environmental health to measure the importance of geographical space in pathologies affecting populations (chronic diseases, infectious diseases, etc.). The concepts of neighbourhood, proximity/distance and diffusion, as well as the more recent notion of cumulative exposure in space and time through the concept of the exposome, are often used in environmental health studies. The multiplicity of exposures, their complexity and the interactions between humans and their environment are now better taken into account. The heterogeneity and incompleteness of data and the need to work at very fine scales often force researchers to invent new methodologies. Similarly, the issues addressed by health geographers can generate new concepts that can be applied to other areas of geography. Because their findings are so compelling, questions of measurement and causality are at the heart of the environmental health studies. They are therefore closely linked to theoretical and quantitative geography.

Paper submission: The papers would be synthesized and submitted to the Applied Geography Journal.

2. Novel spatial data and indicators for assessing the reality of 15-minute cities

Organisers

Assistant Professor **Eric Koomen** - *Vrije Universiteit Amsterdam (VUA)*

Dr **Chen Zhong** - *University College London (UCL)*

Dr **Duncan Smith** - *University College London (UCL)*

Dr **Joana Barros** - *University College London (UCL) & Birkbeck University of London (BBK)*

Prof. **Fernando Bação** - *Universidade Nova de Lisboa (UNL)*

Description

The 15-minute city (15mC) concept is gaining momentum to improve the sustainability of cities. Ensuring that residents have their most essential services locally accessible through short walking, cycling, and public transport trips is an important step towards limiting greenhouse gas emissions, reducing air pollution, and creating healthier living environments. While many major cities have adapted the concept (e.g., C40, 2020), empirical evidence on the success of 15mC policies is so far limited. Research has begun developing indicators to assess local proximity to services (e.g., Logan et al., 2022). Still, these indicators do not yet include variables measuring the quality of the walking and cycling environment. They are typically limited in terms of the selection of trip types/amenities and the degree of demographic disaggregation. Moreover, they focus on the facilities residents can potentially reach, paying less attention to their actual behaviour.

The advent of novel, highly disaggregate data sources (e.g. GPS-tracks derived from mobile phone usage or dedicated travel apps) allows for capturing actual travel choices and developing more specific accessibility indicators. For this session we invite contributions focusing on applying novel spatial data to uncover the reality of 15-minute cities. Example topics may include, but are not limited to:

- Indicators of sustainable and inclusive cities
- Travel behaviour in relation to the 15-minute city
- Case studies of outer metropolitan areas and smaller towns
- Multimodal transport system
- Urban Mobility data analysis and modelling

Paper submission: Subject to the number of high-quality abstracts received, a special issue in the Journal of Transport Geography or Environmental Planning B, around the topic of the 15-minute city, will be considered.

3. Sensing Functional Systems through Mobility from Big Data: From Neighbourhoods to Urban Regions and Global Networks

Organisers

Olle Järv - *University of Helsinki*

Ate Poorthuis - *KU Leuven*

Description

The analysis of functional systems through spatial interactions has been a long-standing interest in quantitative geography. While traditional approaches often focused on single cities or countries, limited themselves to specific kinds of mobility (e.g. commuting or migration), or a single point-in-time, new (big) digital data sources and computational methods have opened up new avenues. By not only providing new information on temporal rhythms of functional systems – such as neighbourhood communities, urban structures and functional urban regions – these systems can also be investigated at larger cross-country and global scales with such data sources. Such information can provide new insights on our dynamic, complex and networked society, capture new forms of mobilities (e.g. cross-border commuting) and social phenomena (e.g. multilocal lifestyles, digital nomadism), which both reshape existing functional systems and creates new ones. It can also help to shine new light on social groups or types of mobility that are often underrepresented in more conventional data sources (e.g. leisure mobility, people not present in official registers). For example, new data sources can help to examine how border regions from different countries forming one functional system based on peoples' daily mobilities across country borders. Not the least, mobilities of people within functional systems also reveal inequalities such as intra-urban variations (e.g. segregation), urban-rural divide (e.g. regional left-behindness), country border differentials (e.g. cross-border commuting).

This special session focuses on this new frontier regarding empirical evidence and methodological advancements as well as conceptual and theoretical considerations. We invite contributions that apply new computational affordances to furthering our understanding of these underlying functional systems derived from spatial interactions of people. This includes, but is not limited to:

- The conceptualization of functional systems (e.g. community, city, region, transnational networks) from the perspective of mobilities and social interactions of people;
- The feasibility (opportunities, challenges) of novel data sources and methodology in capturing functional systems from the perspective of mobilities and social interactions of people;

- The transformation of mobile app, social media and other data sources into a reliable proxy for mobility flows
- The discussion on the future of (big) digital data source in mobility research in light of ethical (e.g. privacy), legal (e.g. use of data) and data access (e.g. data purchase) challenges.
- The analysis of cross-border (transnational) mobilities and the role of administrative borders in forming functional systems;
- The algorithmic inference of regions from mobility data and their change over time;
- The inference of different forms of mobility (i.e. those not conventionally captured in register data) from novel mobility data sources.

Paper submission: -

4. Theoretical Geography and the History of Geography

Organisers

Clémentine Cottineau - *T.U. Delft*

Cyrille Genre-Granpierre - *U. Avignon*

Rémi Lemoy - *U. Rouen*

Denise Pumain - *U. Paris 1*

Juste Raimbault - *IGN-ENSG / U. Gustave Eiffel*

Nicolas Szende - *U. Paris 1 / U. Lille*

Isabelle Thomas - *U.C. Louvain*

Description

Geography needs theories to consolidate its participation in research on subjects such as cities and the environment, which are increasingly being explored by a variety of disciplines, and of course to continue its involvement in the life of society in terms of scholarly education and regional planning. Theoretical construction is essential, and ECTQG colloquia are the ideal place to discuss it without fear (without wars? (Smith, 1992)).

Contributions to the theories of geography can be found at many levels, from the (rare) grand narratives, to revisions or complementation of existing theories, clarifications or hybridizations of certain concepts, improvements in methods of measurement and integration of new data, experimentation with models and their validation… All of these reflections can be enriched by forward-looking visions, but also through collecting and synthesizing knowledge about the evolution of epistemological proposals over time, in changing technological, political and social contexts.

Following on from discussions held at ECTQG23 in Braga, we invite ECTQG'25 participants in Tallin to contribute at any of these levels to the evolution of geographical theories, for example in relation to the following questions:

- 60 years after the publication of Locational analysis in human geography (Haggett, 1965), 40 years after Stan Openshaw explored the MAUP problem (Openshaw 1984), how do geographers theorize the question of scale? After the slogan “location, location, location” (Jones & Simmons 1990), is there a new “scaling mania”? How to combine physical and virtual spatial interactions (Miller 2005; Thrift 2005)? How are evolving individual and collective representations and conceptions of space-time processes in geography? (Raimbault 2017).
- Which of geography’s “knowledge objects” are transversal to our fields of study, and can contribute to develop more theoretical production, in physical as well as in human geography?
- Where is theoretical geography practiced? By whom? Is it a set of practices that goes beyond the disciplinary matrix of geography? Which cultural variability appears in conceptions of theory, depending on the school or region where geography is practiced (Gyuris et al., 2022)?
- To what extent do general laws depend on extensive empirical statistical comparisons? Which contributions from data-driven modeling, AI, deep-learning, can be expected to the theoretical construction of geography as a discipline? How are geographers integrating the so-called “4th scientific paradigm”, considering it simply as a tool or as developing collective intelligence? (Kitchin 2014; Longley et al 2015; Tansley et al 2009). Many examples can be found about global trends, concerns for Anthropocene and sustainability or contemporary urban research.
- How do geographical theories interact with other domains of knowledge (Livet et al., 2010), in particular the production of data and empirical knowledge on one side, and the construction of models on the other?
- Which companionship is practiced with disciplines that have a more formal conception of complex systems for handling geographical processes (e.g. spatial interactions, fractals, scaling laws, network dynamics, human mobility, etc.)? (Reggiani et al 2021).
- Which explicit or implicit theories are mobilized in the narratives related to normative applications from geography (Cottineau et al. 2024)?

This special session aims at bringing together geographers interested in discussing these questions and their contribution to theoretical geography more generally.

Paper submission: Authors are welcome for submitting their presentations after the colloquium to *Cybergeo, European Journal of Geography.*

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5. Validation of Spatial Simulation Models

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Spatial simulation models are an essential component for the production of knowledge in Theoretical and Quantitative Geography, as their many functions (Varenne, 2018) include for example the test of hypotheses from theory, causal analysis of spatio-temporal processes, scenario analysis for decision-making and planning, or advanced analysis of empirical data through calibration, to name a few. Methods and tools for their validation have been developed since their inception, but remain a priority research topic both from a theoretical and practical viewpoint. New methods have been introduced in recent years (Raimbault and Pumain, 2019) and implemented into open software tools such as OpenMOLE (Reuillon et al., 2013).

We propose to discuss in this special session recent developments in methods, theory and practice of the validation of geosimulation models, such as for example:

- what properties of spatio-temporal complexity increase the difficulty to validate such models?
- what are the different definitions of validation and communities of practice within various disciplines involved with Theoretical and Quantitative Geography?

- spatial sensitivity analysis (Raimbault et al., 2019) and similar methodologies to disentangle geographical contingencies from generic processes;
- methods stemming from recent progresses in machine learning, such as learning model surrogates, or the integration of Large Language Models into agent-based models;
- new model exploration methods with an application to spatial models;
- methods involving stakeholders such as companion modelling (Chapron et al., 2019).

Paper submission: We plan to invite contributors to the session to submit the full version of their paper to the *GeoOpenMod* collection of *Cybergeo, European Journal of Geography.*