Booklet for the 11th International Conference on Sewer Processes and Networks

Location Høgskoleringen 5, Trondheim, Norway

Dates 19.05.2026 - 22.05.2026

Wi-Fi Description how to connect with NTNU guest Wi-Fi
Wi-Fi-name: `ntnuguest` and register with your email adress.

All sessions take place in the room R7.

Program

1st Day - Tu. 19.05.2026

08:00 - 09:00	Registration desk open
08:45 - 12:15	Workshop 1: **Bring your own Data: Making the data and codes of researchers FAIR** Conveners: *Vincent Pons; Alfredo Chavarria; Jörg Rieckermann* Room: *R8*
12:00 - 13:00	Lunch break
13:00 - 17:00	Workshop 2: **Stormwater Management for Highly Urbanized Areas: Toronto Exfiltration System (TES)** Conveners: *James Li; Simon Tait; Darko Joksimovic* Room: *R9* Workshop 3: **Self-healing pipes or more AI, let's discuss the future of sewer asset management** Conveners: *Lukas Guericke; Astrid Cifuentes; Frederic Cherqui; Nicolas Caradot; Jeroen Langeveld; Marius Møller Rokstad; Will Shepherd; Franz Tscheikner-Gratl* Room: *R8*
17:30 - 21:00	Icebreaker event at Erkebispegården (Kongsgårdsgata 1B, 7013 Trondheim)

2nd Day - We. 20.05.2026

08:00 - 08:30	Registration desk open
08:30 - 09:00	**Opening ceremony** Speaker: *Franz Tscheikner-Gratl*
09:00 - 10:00	Keynote: **How to measure Combined Sewer Overflows?** Speaker: *Alma Schellart* Chair: *Franz Tscheikner-Gratl*, Co-Chair: *Vincent Pons*
10:00 - 10:30	Coffee break
10:30 - 11:30	Session: **Monitoring and associated technologies** Chair: *Holger Hoppe* , Co-Chair: *Nicolas Neuenhofer* A detailed day classification for inflow conditions at the Graz wastewater treatment plant (p. 7) — Cajetan Beutle

	Uncertainty quantification for reliable sewer flow monitoring using stage-discharge rating curves (p. 9) — Jose Anta Continuous sewer infiltration and inflow detection using electrical conductivity and groundwater level (p. 11) — Behnam Motamedi
11:30 - 12:30	Session: **Design, re-design and operational issues** Chair: *Pascale Rouault* , Co-Chair: *Gints Dakša* Multi-Scale Modelling of Failures and Sediment Dynamics in Urban Drainage Systems (p. 13) — Seith Mugume Impact of urban drainage system malfunctions on pluvial flooding – Peri-urban study site in Austria (p. 15) — Fabian Funke Evaluating model performance of hydrologic signatures in nested urban catchments (p. 17) — Emmanuel Bangura
12:30 - 13:30	Lunch break
13:30 - 14:30	Session: **Inspection techniques to obtain information on the functioning of urban drainage systems** Chair: *Frederic Cherqui* , Co-Chair: *Kaeli Brazier* Multivariate analysis for acoustic-based defect detection in gravity pipe networks (p. 21) — Suneeta Kakati Sewer defect segmentation and severity quantification based on self-supervised learning (p. 23) — Tugba Yildizli Reliable Debris Detection Using Fixed-Camera Still Images for Stormwater Infrastructure Management (p. 26) — David McCarthy
14:30 - 15:30	Session: **Sewer repair, renovation and rehabilitation techniques** Chair: *Jeroen Langeveld* , Co-Chair: *Astrid Cifuentes* Enhanced Sewer Condition Prediction Using Prior Defect Observations (p. 28) — Lukas Guericke Teaching neural networks some old tricks: is domain knowledge in explainable sewer predictions a benefit or pandora's box? (p. 30) — Emmanuel Okwori Towards Climate-Conscious Sewer Rehabilitation: LCA-based Carbon Emission Factors for Strategic Planning (p. 32) — Celina Krüger
15:30 - 17:30	**Poster session** (p. 5)
17:30 - 18:00	Meeting of the Sewer Systems and Processes Working Group (*Dirk Muschalla, Asbjørn Haaning Nielsen*)
18:00 - 20:00	City tour

3rd Day - Th. 21.05.2026

08:00 - 09:00	Registration desk open
09:00 - 10:00	Keynote: **What can we achieve together through a collaborative Research Infrastructures network? Experiences and challenges ahead.**

<table>
<tr><td></td><td>Speaker: Jose Anta
Chair: Franz Tscheikner-Gratl, Co-Chair: Marius Møller Rokstad</td></tr>
<tr><td>10:00 - 10:30</td><td>Coffee break</td></tr>
<tr><td>10:30 - 11:30</td><td>Session: Emerging Issues and new technologies related to sewers
Chair: Dirk Muschalla , Co-Chair: Lukas Guericke
<table><tr><td>Calibration of Urban Drainage Models Using a Multi-Agent Framework: Which LLM to use? (p. 35)</td><td>Katharina Teuber</td></tr><tr><td>Removal of suspended solids and microplastics in new and existing stormwater sedimentation tanks using in situ-microflotation (p. 37)</td><td>Holger Hoppe</td></tr><tr><td>From nominal to effective dosing: understanding chemical performance gaps through integrated field evidence and sewer process modelling (p. 39)</td><td>Matthew Ward</td></tr></table></td></tr>
<tr><td>11:30 - 12:30</td><td>Session: Sewer system impacts
Chair: Ivar Annus , Co-Chair: Karen Rojas-Gomez
<table><tr><td>Quantifying CSO Emissions in Flanders: Insights from Large-Scale Pollutant Load Modelling (p. 41)</td><td>Geert Dirckx</td></tr><tr><td>Assessing Austria’s combined sewer overflow performance under the Urban Wastewater Treatment Directive (p. 43)</td><td>Martina Hauser</td></tr><tr><td>Which CSO Performance Indicators Align with the UWWTD 2 % Overflow Load Reference? (p. 46)</td><td>Dirk Muschalla</td></tr></table></td></tr>
<tr><td>12:30 - 13:30</td><td>Lunch break</td></tr>
<tr><td>13:30 - 14:30</td><td>Session: In-sewer processes
Chair: Jes Vollertsen , Co-Chair: Hyeongjun Ra
<table><tr><td>Putting a golden lining in sewers: Effect of pH and sulfide on heterotrophic and sulfide-based autotrophic in-sewer denitrification with nitrified urine (p. 48)</td><td>Iris De Corte</td></tr><tr><td>Solids tracer-based evaluation of particle transport dynamics in a combined sewer system (p. 50)</td><td>Yanlin Tan</td></tr><tr><td>Sediment dynamics under bridging of stratified flow during rapid filling of a horizontal pipe (p. 52)</td><td>Katrin Kaur</td></tr></table></td></tr>
<tr><td>14:30 - 15:30</td><td>Session: Monitoring and associated technologies
Chair: David McCarthy , Co-Chair: Cajetan Beutle
<table><tr><td>Mapping Methane: Systematic Screening of Greenhouse Gas Concentrations in a Danish Sewer Network (p. 54)</td><td>Asbjørn Haaning Nielsen</td></tr><tr><td>Mobile wastewater quality sensors for sewer inflows and infiltration detection: fast saline intrusion identification and location (p. 56)</td><td>Thibaud Maruejouls</td></tr></table></td></tr>
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	Understanding uncertainty in monitoring river quality parameters downstream of combined sewer overflows (p. 59)	Henriette Stokbro Jensen
15:30 - 16:00	Coffee break	
16:00 - 17:00	Session: **Design, re-design and operational issues** Chair: *Seith Mugume* , Co-Chair: *Spyros Pritsis*	
	Energy Tariff-Aware Control of Wastewater Networks: Adaptive Scheduling of Sewer Pumping Stations Operating in Series (p. 61)	Gints Dakša
	CENTAUR real-time control system for sewer overflow spill reduction: Case studies (p. 63)	Simon Tait
	Equal Mobility of Mixed-Size Sediment During Storm Sewer Flushing with Steady Clear-Water Inflow (p. 65)	Huang Biao
17:00 - 18:00	-	
18:00 - 00:00	Conference dinner at E.C. Dahls (Strandveien 71, 7067 Trondheim)	

4th Day - Fr. 22.05.2026

09:00 - 09:30	Coffee break	
09:30 - 10:30	Session: **Sewer system impacts** Chair: *Simon Tait* , Co-Chair: *Martina Hauser*	
	Gully pot sediments as an asset management challenge: contaminant profiles and environmental risks (p. 67)	Merethe Strømberg
	Downstream effects of urban wet weather discharges: A comprehensive approach to identify pollution sources and pathways (p. 69))	Karen Rojas-Gomez
	Methodology to calculate the relative contribution of pollution from the wastewater system to freshwater recipients in eight urban catchments in Nordre Follo municipality (p. 71)	Randi Aamodt
10:30 - 11:00	Coffee break	
11:00 - 12:00	Session: **Inspection techniques to obtain information on the functioning of urban drainage systems** Chair: *Nicolas Caradot* , Co-Chair: *Suneeta Kakati*	
	Sewer inspection planning for beginners: A scenario analysis on strategies when you have no existing condition data (p. 73)	Astrid Cifuentes
	Sewer Pipe Deterioration under Informative Censoring: A Two-Stage IPCW Framework for ML-Based Inspection Planning (p. 76)	Sina Masoumzadeh Sayyar
	Assessment of inline inspection for pressure mains: results of full-scale testing in Arnhem (p. 78)	Jeroen Langeveld
12:00 - 13:00	Lunch break	

<table>
<tr><td>13:00 - 14:00</td><td>Session: Monitoring and associated technologies
Chair: Biao Huang , Co-Chair: Iris De Corte
<table>
<tr><td>Multispectral imaging system for non-contact wastewater quality monitoring (p. 80)</td><td>Nicolas Neuenhofer</td></tr>
<tr><td>Multispectral Imaging and Machine Learning for Real-Time Wastewater Quality Assessment (p. 82)</td><td>Thibaud Maruejouls</td></tr>
<tr><td>Low-cost Non-contact Multispectral Sensing for Wastewater Intrusion Detection (p. 84)</td><td>David McCarthy</td></tr>
</table></td></tr>
<tr><td>14:00 - 14:30</td><td>Early career researchers Perspectives Speaker: Vincent Pons</td></tr>
<tr><td>14:30 - 15:00</td><td>Closing ceremony Speaker: Thomas Meyn</td></tr>
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Posters

Development of hydrological and physicochemical approaches for the evaluation of the physical integrity of sewage networks (p. 86)	Axumawit Tequam Tesfamariam
Unravelling impact of hydraulics in large sewer renovation project (p. 88)	Petra Van Daal
Development of a spatial Time-Domain Reflectometry (TDR) sensor for monitoring wastewater and FOG levels in sewers (p. 92)	Jose Anta
A machine learning approach to detecting hidden anomalies in real sewer networks (p. 94)	Lars Erik Risholm
Stochastic End-Use Modelling of Decentralised Water Systems: Impacts on Sewer Flows, Loads, and Dynamics (p. 96)	Hugo Jacque
Sensor data fusion combined with robotics and AI for automated inspection of wastewater networks (p. 98)	Cristiana Golfetto
Efforts to apply pyrolysis to recycle sewage sludge from large-scale sewage treatment plants in Seoul (p. 100)	Yujin Jung
Demonstration of Drone-based AI Twin Odor Monitoring System at Urban Sewage Treatment Plants in Seoul (p. 101)	Yujin Jung
Systematic Methods for Reducing Inflow and Infiltration in One of Europe's Rainiest Cities (p. 102)	Robert Styve
Assessing the hydrological performance of a modular blue roof over time (p. 104)	Aurora Gullotta
Environmental risk analysis of the entire wastewater pipe network in Nordre Follo municipality (p. 106)	Randi Margrete Aamodt
Development of a Prediction Model for Runoff Flow and BOD Concentration by Land Use Type: Based on EPA-SWMM and Field Monitoring (p. 108)	Yugyung Baek
Detection of deterioration of sewer pipes based on analysis of dissolved organic matter in sewage (p. 112)	Yuki Nakaya
Experimental Evaluation of Energy Dissipation in an Inclined Chute for Tangential Inlet Systems (p. 114)	Kyu-Hyun Park
Comparative Analysis of T-N Removal Prediction Models and Influential Factors for Operational Strategy Development in WWTPs (p. 118)	Soojin Kim
AI-driven Sewer Inspection: A Practical Comparative Assessment (p. 122)	Celia Ortega Flores

A QGIS Plugin to optimize sewer network data for hydraulic analysis and prioritize field verifications (p. 124)	Silvia Busquets Font
Storm sewer geysers: lessons from the literature and practical guidance for mitigation in large tunnel systems (p. 126)	Sara Carolina Criollo De La Cruz
Methane Emissions from Septic Tanks in Flanders: Inventory, Measurements and Scenario Analysis (p. 128)	Myrthe Van Hal
Users' preferences for vacuum toilets - a discrete choice experiment in Sweden (p. 130)	Letty Fiorella Mora Chirito
Field Monitoring and Numerical Modelling of Sediment Transport in a Sanitary Sewer Network with Pump-Station-Induced Downstream Pressurization (p. 132)	Biao Huang
Response Characteristics and Influencing Factors of Rainfall and Pipeline Drainage Flow Rate (p. 134)	Jiachun Liu
Explainable Spatio-Temporal Graph Neural Networks for Flood-Oriented Sensor Placement in Urban Drainage Systems (p. 138)	Taehyeon Kim
Remote Calibration and Anomaly Detection for Image-Based Sensors (p. 141)	David McCarthy
Sediment Scouring Mechanisms under the Influence of Artificial Waves in Urban Rivers (p. 143)	Yu Qian
Pressure Response at the Bottom Junction of a Vertical Shaft in an Underground Drainage Tunnel (p. 145)	Seongwook Choi
A Guideline of Blue-Green Infrastructure for CSO Management (p. 147)	Mahtab Helmi
Agentic AI Integration of SCADA, GIS, and Enterprise Systems for Real-Time Sewer Network Insights in eThekwini. (p. 152)	Nedon Ramsuran
Exploring Hybrid Sanitation Models for Enhanced Service Delivery in Urban Areas. A Case Study of eThekwini Municipality and Implications for SDG Achievement. (p. 154)	Nedon Ramsuran
Effect of pH dynamic-shocks on anaerobic COD degradation under sewer-like conditions (p. 156)	Hyeongjun Ra
Evaluating optical techniques to measure sediment deposition patterns around surcharging manholes (p. 158)	Kaeli Brazier
Water level smart sensors with irregular transmission patterns (p. 160)	Nils Kändler
Assessment of the impacts of public and private Blue-Green-Infrastructure developments on the sewer network (p. 162)	Albert Wilhelm König
From algorithms to experts' intuition: Initial insights from an interactive survey on how practitioners choose monitoring locations in urban drainage networks (p. 164)	Spyros Pritsis
Evaluation of Stormwater Network Conveyance Capacity Using Digital Visualization (p. 166)	Dong Sop Rhee
Urban Drainage and Heating Cooling Networks Planning (p. 168)	Alma Schellart