

# Smart Rivers 2025 論文リスト (セッション別)

2025.9.8~9.12 米国・メンフィスにて開催



## Technical Session A1: Navigation Locks and Structure I

- Sustainable Solutions for Aging U.S. River Locks: An Exploratory Study (Cassia Galvao)
- Standardization of 4 New Locks in Wallonia (Belgium) (David Monfort)
- The Lüneburg Lock Project: A Water Saving Lock With 38m Lift Height (Lukas Brodersen)
- Box Forms at Lock and Dam 25 (Kody Sanders)
- Renovation and Re-Opening of Historic Locks Along the Kentucky River (Robert Hatton)

## Technical Session A2: Navigation Locks and Structures II

- Research and Application of Hydrodynamic-Driven Buoyancy-Balanced Vertical Ship Lift (Yi Jianhao)
- How Austria Transforms its River Locks in the Age of Digitalization (Martin Zeilinger)
- Innovative Digitalisation Approaches for Managing Hydraulic Structures of Inland Waterways – An Introduction of PIANC Working Group 264 (Daniela Schenk)
- Optimizing the Maintenance of Hydraulic Structures through Data-Driven Management in Germany's Infrastructure Administration (Gabriele Peschken & Thilo Wachholz)
- New Lock at the Soo (Darin White)

## Technical Session A4: Ports and Terminals

- The First Greenfield Marine Oil Terminal in California in 30 Years – Lessons Learned (Sanjay Nayak)
- Prediction of future berth occupation (Quirine de Kloet)
- Repurposing an Aging Wharf for Modern Dry-Bulk Operations: Challenges and Lessons Learned (Justin Pyun)
- Nautical Depth: Transforming Ports Management of Fluid Mud (Joe Wagner)
- Optimization of Generic Design of the Material Offloading Facility (MOF) Layout (Matt Liu)

## Technical Session A5: Waterway Structures

- Accelerating Planning Through Standardization and Digital Project Processing Using the Example of Labyrinth Weirs (Gabriele Peschken)
- Major Structural & Operational Improvement of a Quay Wall in a Container Terminal Remaining in Operation (Michel Zeicher)
- Portland Canal Guide Wall Damage Repair Design-Build Project, Louisville, Kentucky (Zach Usselton)
- Standardized Replacement Mitering-Type Lock Gates on the McClellan-Kerr Arkansas River System (Gary Grunwald Jr.)
- Kentucky Lock Downstream Approach Wall Challenges and Innovations (Mojtaba Dirbaz)

## Technical Session A6: Navigation Structures

- Lessons Learnt for Maintenance, Durability, Sustainability and Resilience of Hydraulic Structures (Philippe Rigo)
- Structural Re-Assessment of Existing (IW) Hydraulic Structures – Status Report of WG 255 (Viktória Malárics-Pfaff)
- Brazos River Crossing Sector Gate: Applying Fracture-Critical Principles and Welding Requirements to Pipe – Framed Gates (Chris Willcox)
- Mayport Dock Redevelopment Phase II – Revitalizing the Commercial Fishing Operations in Mayport (Jonathan Brumfield)
- Performing Bollard Pull Testing for Worry Free Mooring (Brad Koch)

#### **Technical Session B1: Economics of Inland Navigation**

- Pinglu Canal Construction and Marine Emissions Strategy (Xiaolei Liu)
- How to Assess the Impact of Choices in Water Management on the Shipping Sector? (Frederik Vinke)
- Strategic Scheme for Investment and Management on the Walloon Waterways: Updated Comprehensive and Long-Term Strategy for a 2050 Multipurpose and Resilient Network (Catherine Swartenbroekx)
- Dynamic Under-keel Clearance for smart navigation on the Savannah River (Laurence Benn)
- Use of Multiple Scenario Planning when Forecasting Corn and Soybean Traffic for the Upper Mississippi Region (Kevin Knight)

#### **Technical Session B2: Contracting and Financing of River Infrastructure**

- Alternative Project Delivery and Financing for America's Inland Waterways (Dennis Lambert)
- Best and Sustainable Practices for the Tendering of Waterway Management Services (Katrin Panzenböck)
- Climate Finance for the Development of Inland Waterways Infrastructure: A Case Study Along the Upper Mississippi River (Celine Wehbe)
- Public-Private Partnership Models in Inland Waterways and Locks in Brazil: Lessons from the USA, EU, and China (Elcio Ribeiro)
- The Continuing Contracts Clause: Balancing Efficiency and Fiscal Responsibility in U.S. Army Corps of Engineers Civil Works Contracting (Thomas Mack)

#### **Technical Session B3: Hydraulic Structures Operations and Maintenance**

- Welland Canal Steel Mitre Gates - Structural Rehabilitation/Replacement Program (Mario Palumbo)
- Sustainable Smart Sheet Pile Solutions for Inland Waterways (Pierre Werner)
- Taming Outdraft Conditions at Mississippi River's Lock & Dam 7 (Geoff Kramer)
- The Project for a Second Lock at Fontinettes (Olivier Vermorel)
- Designing the Proposed 1200' Lock at LaGrange Lock and Dam (Brain Twitchell)

#### **Technical Session B4: Physical Modeling of Waterway Infrastructure**

- Application and Implementation of Physical Models for the Nation's Inland Navigation Challenges (Aidan Gort)
- Brandon Road Flushing Lock Physical Model Study - Filling and Emptying System Performance (Allen Hammack)
- Physical Model of the Garrison Dam Spillway (Aidan Gort)
- Particle Tracking Velocimetry Techniques on a 1:55 Froude-scaled Physical Model to Analyze the Effects of Proposed River Training Structure(s) (Gary Bell)
- Brandon Road Flushing Lock Physical Model Study - Flushing Performance (Paxton Austin)

#### **Technical Session B5: Standardization and Waterway Assets**

- S-100 Implementation in the US (Heather Gilbert)
- Waterway Intelligence Monitoring System (Patricia DiJoseph)
- AssetWijzer: An Infrastructure Assessment Tool for Prioritizing and Estimating Asset Maintenance and Investments Costs (Niels Van Steenberg)
- Performing Rapid Underwater "Visual" Inspection Using Multibeam Acoustic Imaging (Brad Koch)
- Waterways are Not Made up of Different Sized Rectangles! Waterways Harmonization in the United States (Gerald Thornberry)

### **Technical Session B6: Vessel Interactions with Waterways**

- PIANC WG 241 – Crisis Management of Accidents in Navigation Hydraulic Structures (Timothy Paulus)
- Handling Accidents in Navigation Structures: Reflections and Additions WG241 (Bart Bommelyn)
- How to Prevent Bridge Accidents by Sending Height Measurement to hips? (Stefan Bober and Sebastian Feuerstack)
- Challenges and Inaccuracies in Scour Depth Prediction Due to Vessel Propellers (Orrin Lancaster)
- Advancing Collision Avoidance in Inland Shipping: System Overview and Practical Results (Florian Gschwandtner)

### **Technical Session C1: Digital Twins**

- From Full-Scale Trials to a Simplified 3DOF Manoeuvring Model: Enabling Rapid Assessment of SFAZ Vessel Performance (Marc Mansuy)
- Digital Twin Development for Enhanced River Management: A Case Study of the Paraguay River (Rutger Pasman)
- Integrating Digital Twins into River Information Services for Waterway, Infrastructure, and Asset Management in the Douro (Filipe Martins)
- OptiRiver: Pioneering Real-Time River Depth Charts for Safer, Smarter Waterways (Kris De Decker)

### **Technical Session C2: Smart Shipping and Artificial Intelligence**

- How to Embrace New Smart Technologies: A Roadmap Towards Smarter Waterways (Tony Durinck)
- Optimized Lock Scheduling at Artificial Waterways with Methods of Reinforcement Learning (Lorenz Mumm)
- Market Uptake and Innovation Adoption of Inland Waterway Transport Technologies: Integrating TAM, TRL, and MRL Frameworks (Marie Cryns)
- Modernising Waterway Infrastructure Inspection. Using AI for Asset Inspection and Asset Management in France (Matthieu Levivier)
- Application of a Machine Learning Model for the Prediction of Vessel Traffic Delays and Navigation Lock Maintenance (Yazmin Seda – Sanabria)

### **Technical Session C5: Waterway Innovation**

- An Approach to Ship Scheduling Optimization and Management in Port of Santos (Felipe Fray Buschinelli)
- Extending Wharf Service Life with Fiber Reinforced Polymer: The Nashville Wharf Project (Ahmad Alshwaiki)
- Composite Waterway Infrastructure – Today and Tomorrow (Eric Johnson)
- Cathodic Protection System Monitoring and Modeling to Protect Lock Dam Structures (Sean Morefield)

### **Technical Session C6: Efficient Waterways**

- Comparing Potential Automated Mooring Concepts in Inland Waterway Transportation (Marvin Budde)
- Comparing Two Strategies to Convert the Manual Loading Preparation of Inland Tank Vessels to Collaborative Robot Operation (Frédéric Etienne Kracht)
- Design of a Voyage Management System for the St. Lawrence Seaway (Rob Allen)
- The Corn Belt Ports: Modern, Sustainable, Rural, Regional, Multi – Modal, Inland Ports and How They Have Revolutionized the Corn Belt’s Globally and Nationally Significant River-Based Supply Chain (Robert Sinkler)

- Investigation of River Planform on the Missouri River: The Three Point Method for Radius of Curvature (Madalyn Mouton)

#### **Technical Session D1: Riverine Data Collection**

- Enhancing Inland Navigation Resilience: The Madeira River Waterway Monitoring Plan (PMH) and Its Role in Predictability and Adaptation (Ana Luísa Ribeiro)
- Advancing Inland Waterway Navigation with Integrated Hydrographic Surveys: Lessons from the Champlain Hudson Power Express Project (Austin Scheer)
- River Flow Prediction Using a Fleet of Aquatic Robots (Daniel Akanji)
- Enhancing Inland Navigation Through Data: An Overview of the Lock Performance Monitoring System (LPMS) (Yazmin Seda-Sanabria)
- Vanguard Technology: The Crucial Importance of the Bathymetry Echogram for the Success of the Excavation Work (José Bartolomeu)

#### **Technical Session D2: Waterway Planning and Design**

- The Revival of the São Francisco River Waterway by the Port Authority of Bahia: Challenges, Opportunities, and Strategic Approach (Leandro Gaudenzi)
- Design Guidelines for Transitions in Depth (or Width) for Canals and Other Waterways Without Currents (Jourian Ligtenberg)
- Planning for Navigation Extension on the Red River Utilizing Section 203 Process (Nina Reins)
- Use Case of the Detailed Design Approach Proposed by PIANC InCom WG I4I in the Study of the Accessibility of 135m Vessels on the Upper Scheldt in Wallonia (Belgium) (Rutger Pasman)
- Deepening the McClellan-Kerr Arkansas River Navigation System (Edmund Howe)

#### **Technical Session D3: Vessel Management Systems and AIS**

- Real-Time Monitoring and Prediction of Barge Activity Using Integrated Satellite Imagery, AIS Data, and Machine Learning (Geoffery Agorku)
- Development and Application of an AIS Processing Toolbox for Inland Navigation on the Walloon Waterway Network (Jeroen Verwilligen)
- iRIS, An Intelligent RIS Solution to Support Services Like FIS and CAS (Jan Gilissen)
- RIS.net - The Evolution of the European Digitized IWT Network (Christoph Plasil)
- Active Traffic Management, or How to Get Inland Navigation Ready for the Physical Internet (Jef Bauwens)

#### **Technical Session D4: Waterway Resiliency in a Changing Climate**

- Innovative Sea-Gate Solutions for Coastal Defense Against Rising Sea Levels and Climate Change (Tien Yang Clarence Cheong)
- Good Practice Climate Change Adaptation: Lessons Learned (Jan Brooke)
- The Corn Belt Ports Green Marine Highway Initiative on M-35 and M-55 (North): Getting Regional Decarbonization and Sustainability Results (Anshu Singh & Bob Sinkler)
- Towards a Method to Provide Insight of Future Fleet Composition and Fleet Performance Under Climate Change (Frederik Vinke)
- Connected River: Safe, Smart and Resilient Waterways and Waterfronts in the North Sea Region (Noémi Mené)

#### **Technical Session D5: Communities and Waterfront Development**

- D5.1: Design Criteria for Planning Riverine Recreational Boating (Jack Cox)
- D5.2: The Inland Navigation at the Heart of the Paris 2024 Olympic and Paralympic Games (Olivier Vermorel)
- D5.3: Marrying Historic Preservation with Climate Change Adaption (Margaret Boshek)
- D5.4: Metroparks Toledo – Development of a Glass City Riverwalk as a Economic Development Tool (Jennifer Van Horn)

#### **Technical Session D6: Waterway Infrastructure Planning**

- Containerization of Inland Waterways and Constraints of Containers On Barge (Bryan Seitz)
- The MeRS Logistics Observatory: Revitalizing Sustainable Multimodal Freight Transport on the Mediterranean – Rhône-Saône Corridor (Florian Linde)
- Security and Monitoring Project in the Brazilian Amazon – Design of an Inland Vessel with Drones (Andre B Mendes)
- Automated River Navigation in Wallonia Belgium (Abdelmalek Benzohra)
- Bridge Design for Submergence (Ryan Denney)

#### **Technical Session E1: Alternative Energy and Environment**

- Hydrogen and Alternative Green Energy as a New Opportunity for Inland Ports (Peter Rojko)
- Energy Master Planning and Electrification – Roadmapping the Zero-emission Transition for Inland Ports (David Nguyen)
- Low Head Hydro Electricity Generation Alongside Navigation Weirs (Ian White)
- Lake Washington Ship Canal Facility Electrical Distribution Upgrades Design (Albert Barnes)

#### **Technical Session E2: River Hydraulics and Hydrology**

- Navigation and Flood Risk Reduction, Challenges and Opportunities (Nancy Powell)
- Evaluating Low Flow Fluctuations in the Ohio River Basin (Vamsi Krishna Sridharan)
- Morphologic Variability in Artificial Estuarine Marshes: Implications for Vegetations Survival (Jinhyung Lee)
- Numerical Modeling of Houma Navigation Canal, Louisiana, for Navigation Improvements Support (Lihwa Lin)
- Savannah Harbor Shoaling Analysis and Sediment Transport Post-Deepening (Anna Godfrey)

#### **Technical Session E3: Mississippi River Morphology**

- Riverbank Stability in USACE Memphis District (Phillip Kesner)
- Lower Mississippi River Operationalized Low Water Model (Julia Zimmerman)
- Large-Scale Floodplain Sedimentation in the Lower Mississippi River Valley 1948 to Present (Autumn Murray)
- Numerical Modeling of Sediment Transport and Dredging within Southwest Pass (Braxton Chewing)

#### **Technical Session E5: Navigation Management**

- Water Level Analysis to Inform Design Components along the Mississippi River (Nick Stefani)
- Water Management of the Navigable Waterways in Flanders Using Conceptual Modelling (Laurens Breugelmans)
- Flemish Green Deal for Inland Shipping (Christophe Bruglemans)

- Assessment of Existing Dimensions of Dike Structures on the Lower Mississippi River (Abigail Grant)
- Considerations for Planning Safe & Efficient Waterfront Inspections (Marianna Fleming)

#### **Technical Session E6: Numerical Modeling**

- Optimizing Multimodal Transport to Enhance Supply Chain Movements on Rivers and Supply of Fuels to Ports (Kevin Zhang)
- Applications of Contaminant Modeling Using a Combined Hydrodynamic Sediment Transport and Contaminant Box Model (Nicholas Rose)
- Computational Fluid Dynamics of the Auke Bay Floating Breakwater (Ryan Denney)
- Utilization of Stochastic Modeling in Determining the Height/Invert of Cofferdams Flooding Gates (Jemie Dababneh)

#### **Technical Session F2: Resilience**

- Development of Data Basis and Recommendations for Climate Change Adaptation Measures of German Seaports and Maritime Shipping Routes (Jessica Kelln)
- Resilient Waterland, Preparing Ourselves for What is Already Happening (Niels Van Steenbergen)
- Navigation in the Amazon Region during the 2023 Drought (Guilherme Salles do Anjos)
- The Importance of Waterway Monitoring Plans (PMH) in the Management of Brazilian Waterways in Extreme Weather Conditions (Ana Luisa Ribeiro)
- Improving Navigability of Natural Rivers - WG 236 (Calvin Creech)

#### **Technical Session F3: Environmental Enhancement in Waterways**

- Habitat Restoration in Two Duwamish River Superfund Sites (Dan Berlin)
- Investigating the Impact of an Underwater Acoustic Deterrent on Invasive Carp Movement at Lock 19 (Megan Maloney)
- Working Towards a Balanced Sediment Budget (Robert Toegel)
- Engineering the Ohio River for Public Service, A History of Locks and Dams (Gary Grunwald)
- Prioritizing Resilience, Ecology, and Access on the Riverfront (Joseph Sutkowi)

#### **Technical Session P5: International Waterway Management**

- Technical and Legal Assessment of Possible Conflicts Between Domain of Waterbodies and Inland Navigation in Brazil (Mauro Medeiros de Carvalho Junior)
- The Blue Route in Uruguay River (Jose Zorrilla)
- Bridging the Gap: Exploring International Technology Transfer Opportunities in Inland Navigation (Emilia O'Neill)
- A Trans-Africa Inland Waterway Network: Challenges and Prospects (Lanre Badmus)
- Design Considerations in the Rehabilitation and Renewal of the Locks in the Meusewaal-Canal (NL) (Bart Noordman)

#### **Special Session AS3: Waterborne Composites on the Horizon**

- Design Parameters for Long-Term Fatigue and Creep Performance at Full Scale (Hota GangaRao and Ray Liang)
- Prioritizing Structure Types and Remaining Research Needs (Kyle Baekey)
- Advancing Critical Navigation Infrastructure with Fiber Reinforced Polymer (FRP) Solutions (Chella Subram)

- Optimized Connections for Fiber Reinforced Polymer Navigational Structures: Enhancing Durability, Repairability, and Joint Efficiency (Joshua Simpson-Gomez)
- Evaluating Wear of Fiber-Reinforced Polymer Composites for Navigational Systems Infrastructure (Kevin Dunne)

#### **Special Session CS3: U.S. Waterways and Navigation Infrastructure: Vision of USACE Civil Works Inland Navigation**

- USACE Inland Navigation Overview and Strategy (Craig Moulton)
- Building Consensus to Improve Inland Marine Transportation System Reliability (Kerry Lowman)
- Navigation Data Access and Analytics (Ned Mitchell)
- Strategic Navigation R&D Directions & Priorities (Ned Mitchell)

#### **Special Session CS4: U.S. Waterways and Navigation Infrastructure: Commerce and Navigation Water Resources**

- Policy and Science Implications to Managing Risk in Navigation (Dave Wegner)
- Basin-Scale Data and Technology for Smart Rivers (Peter Colohan)
- Industry Perspectives on Inland Waterways Reliability and Modernization (Tracy Zea)
- Realizing Waterways of the Future (Bob Leitch)

#### **Special Session ES4: AI/ML-Assisted Sediment Load Forecasting: Digital Twins for Waterway Management**

- Smart Waterways: A Retrieval-Augmented AI Framework for Vessel Tracking and Decision Support (Zaidur Rahman)
- Hydrodynamic Dredging in US Waterways: Past Achievements & Future Goals (Joe Wagner)
- Application of Machine Learning in Streamflow Forecasting (Charles McKnight)
- Crowd Sourced Bathymetry for USACE Channel Condition Monitoring (Andy Ashley)
- Image-based Forecasting of Waterway Depths for Channel Maintenance Operational Management (Hans Broders)

#### **Special Session PSI: River Engineering on the Lower Mississippi River**

- Gradational Sediment Supply from Bank Caving on the Lower Mississippi River (Autumn Murray)
- Innovative Modeling Techniques Deployed in the Red River Structure Physical Model Study (Gary Bell)
- Modeling, Design, Construction, and Monitoring of Togo Island Bendway Weirs on the Mississippi River (Keaton Jones)
- Mississippi River and Tributaries Project Operations (Joey Windham)

#### **Special Session PS3: Operation Challenges on the Lower Mississippi River & Tributaries System**

- The Hickman Hard Point: Underwater Waterfalls and Channel Navigation Risk (Michael Lampert)
- Operational Challenges of an Evolving Deltaic River (Brendan Yuill)
- USACE New Orleans District Saltwater Mitigation Response (Deborah Centola)
- Navigation Challenges on the Lowermost Mississippi River (TBD)
- Contribution of Bank Erosion to Atchafalaya Basin Sedimentation (Canda Lorson)

#### **Special Session PS4: General Design of the Locks on the Canal Seine-Nord Europe**

- Canal Seine-Nord Europe - General Design of the Locks (Joris Meersschaert)
- Physical Modelling of Catigny Lock with Longitudinal Culverts and side Ports (Kristof Verelst)
- Physical Modelling of Oisy-le-Verger Lock Filling & Emptying with Water-Saving Basins and Perforated Floor (Catherine Swartenbroekx)
- River Connection From the Seine to the Container Terminals on the English Channel/North Sea Coast in Le Havre (Benoit Seidlitz & H. Houis)

### **Special Session PS6: South American River Development**

- Annual Dredging Plan for Waterway Maintenance PADMA: Implementation Model and Preliminary Results (Henrique Monteiro Saldanha)
- Challenges and Opportunities in the Brazilian Waterway Sector from a Public Policy Perspective (Bruna Santoyo)
- A Classification Proposal for the Brazilian Section of the Paraguay – Paraná Waterway Based on PIANC WG 201 (Rodrigo Portugues)
- General Grant Plan for Waterways in Brazil: A Review and Discussion of Methodological Steps (Eduardo Queiroz)
- Influence of Reduction Level Criteria on Dredging Volume Estimation – A case Study in the Paraguay River (João Pedro Alves Sanchez)

### **Education/Outreach Session GSI: Workforce of the Future**

- “We Work the Waterways” (Pam Maxwell)
- Panel Discussion (Stephanie Ivey, University of Memphis and East High School Students)