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WEBSITE LISTING OF TOPICS AND TRACKS IN TECHNICAL PROGRAM

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Topic A. Advances in the Fundamentals of Water Science and Engineering

This topic concentrates on new ideas and general fundamental concepts facilitating the advance of engineering hydraulics.

A-1. The mechanics of water flow
A-2. Multi-phase flows
A-3. Sediment transport and fluvial processes
A-4. Numerical modeling
A-5. Laboratory experiments, instrumentation, and hydraulic modeling

S-1. Special Seminar: Sediment Transport at Hydraulic Jumps
S-2. Special Seminar: Smoothed Particle Hydrodynamics Method
S-3. Special Seminar: Experimental research around the world, organized by Euro-Hydralab
S-4. Special Seminar: Advanced Turbulence Modeling for Flow and Transport processes in River Engineering

Topic B. Water Engineering in Support of Built Environments

This topic focuses on applied science and engineering to support the energy, water supply, and water-management needs of human infrastructure.

B-1. Flow conveyance systems
B-2. Water control and hydraulic structures (including intakes, outlets, outfalls, and spillways)
B-3. Hydraulic machinery for water and power delivery
B-4. Urban drainage and flood protection (including rainwater and stormwater management)
B-5. Wastewater management (Separation of waste streams, hydraulic issues in centralized and distributed systems, and management of treatment residuals)

S-5. Special Seminar: Fast Transients
S-6. Special Seminar: Applied Hydrology

Topic C. Water Engineering for the Protection and Enhancement of Natural Watershed and Aquifer Environments

This topic revolves around the processes and engineering activities associated with the environmental aspects of water flow in watersheds and aquifers.

C-1. Eco-hydraulics (including natural and commercial fisheries)
C-2. Groundwater hydraulics (including integrated river basin management for water quantity, quality, and ecosystems)
C-3. Lake and reservoir hydraulics
C-4. Waterway restoration (including impacts of dam removal or rehabilitation, aquatic creature passage)

C-5. Climate influences on water flow in watersheds

S-7. Special Seminar: Climate Change

Topic D. Water Engineering for Sustainable Coastal and Offshore Environments (Built and Natural)

This topic examines natural processes and engineering activities associated with the well-being of marine and coastal environments, both built and natural.

D-1. Advances in understanding, modeling, and forecasting waves
D-2. Coastal processes and coastal morphologies
D-3. Estuary hydraulics
D-4. Wave loads and the performance of coastal and offshore structures
D-5. Protection of coastal cities

S-8. Special Seminar: Marine Current Power
S-9. Special Seminar: Beach Drainage

Topic E. Advances in Hydroinformatics for Integrated Watershed and Coast Management

This topic links hydraulic engineering work with contemporary developments in cyber-based, or hydroinformatic, methods for monitoring and managing watersheds and coastal regions.

E-1. Observational data models
E-2. Multi-process, data-driven modeling
E-3. Digital watersheds and coasts (fusion of data with models)
E-4. Decision-support systems (including economic and social aspects of management)
E-5. Policy and institutional issues (including trans-boundary waters)
E-6. Education and Training (**see F-2**)

S-10. Special Seminar: International Flood Initiative

Topic F. Education, History, Social/Economic Impacts

This topic focuses on the education and training aspects of water engineering. Additionally, it includes presentations on the historical impacts of hydraulic engineering, and on biographical facets of notable hydraulicians.

F-1. Fundamentals, Expts, Modeling, Instrumentation
F-2. Hydroinformatics (**also serves as E-6**)
F-3. History: Engineering Applications & People