



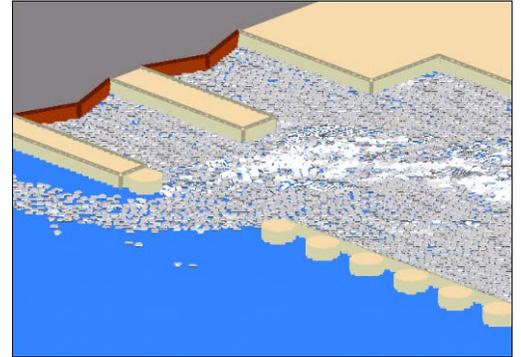
US Army Corps
of Engineers®

Engineer Research and
Development Center

Computer Simulation for Debris and River Ice Management

Description

This research will add to existing discrete element ice models the capability to simulate ice and/or debris transport, treating the ice mass as an accumulation of discrete particles. The resulting model will be used to simulate the impact of ice and/or debris on riverine structures such as booms, weirs, and pile-type ice control structures in order to estimate forces on the structures and the hydraulic influence of the ice and/or debris on the flow.



Issue

The 3D discrete element model of ice previously developed at CRREL will be coupled to an appropriate 2D unsteady flow model. The hydraulic effects of and the flow in and around ice control structures will be modeled. The ability to model open water flow, flow under the ice cover, and flow through a grounded ice jam will be included. The capability to simulate debris such as logs and trees to an existing coupled, 3D, discrete element river ice model will be added.



Users

Corps field offices responsible for evaluating alternatives for ice/debris avoidance.

Products

An SMS-compatible ADH (Adaptive Hydraulics) module for evaluating alternatives for ice/debris avoidance.

Benefits

This work will provide tools that will enable Corps' Districts to optimize the design of ice and debris mitigation measures without use of expensive and time-consuming physical models.

Corps Program

Navigation Systems Research Program, Mr. Charles E. "Eddie" Wiggins, Program Manager.

Point of Contact

Dr. Richard L. Stockstill, ATTN: CEERD-HN-NL, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, (601) 634-4251 (Richard.L.Stockstill@erdc.usace.army.mil)

Partners

U.S. Army Engineer Research & Development Center, Coastal & Hydraulics Laboratory and Cold Regions Research Engineering Laboratory.