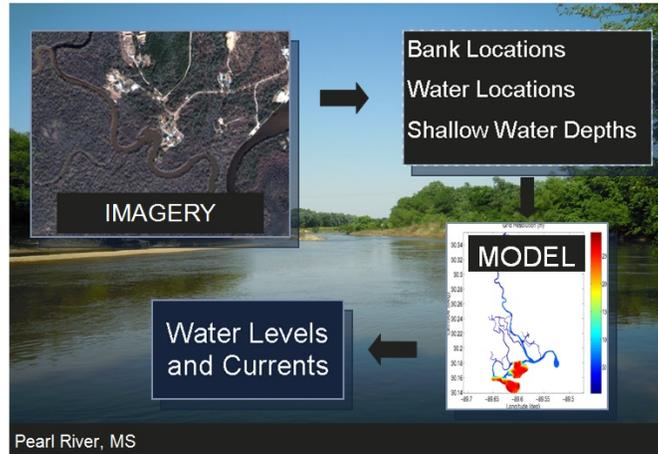




NAVAL RESEARCH LABORATORY

TECHNOLOGY LICENSING OPPORTUNITY

RIVER SIMULATION TOOL



Advantages/Features

No limitations on the type of imagery that can be used

Automates the extraction of geometry from imagery

Automates generation of model unstructured mesh

Applies contingencies for missing data (synthetic bathymetry or sediment type)

Allows ensemble configuration

Applications

Risk assessment

Mission planning systems

Port security

Environmental monitoring

Disaster response

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The Naval Research Laboratory (NRL) has developed a river simulation tool (RST) that performs automated extraction of riverine features from imagery. The extractions include water/land edge locations, water point locations, and obstacle and hazard locations. Processing within the RST also includes processing of shoreline and bathymetry data for mesh generation as well as automated configuration of an unstructured mesh of the river using image-derived data. The GUI interface for model set-up and user selection of boundary types and values will handle discharge, water levels, or tide elevations, bottom type for friction coefficient specification, and a lateral mixing coefficient. The NRL software tool has contingencies for missing data, which includes options for incorporation of localized bathymetry, user-specified cross-sections by location, or synthetic cross-sections. Also provided are default values for upstream discharge, downstream water level, the bottom friction coefficient, and a lateral mixing coefficient. The tool produces river currents and water level data at mesh points, and it provides configurations of ensembles based on variations of model parameters and forcing. Basic statistical measures can also be computed.

References

"A Tool for Rapid Configuration of a River Model," *OCEANS 2009, MTS/IEEE Biloxi - Marine Technology for Our Future: Global and Local Challenges*, pp. 1-10, 26-29 Oct. 2009.

"Merging Imagery and Models for River Current Prediction," *Proc. SPIE 8030, 80300G* (2011); doi: 10.1117/12.884100.

Available for License: US Patent Publication No. 2011-0013841 and other applications have been filed.

