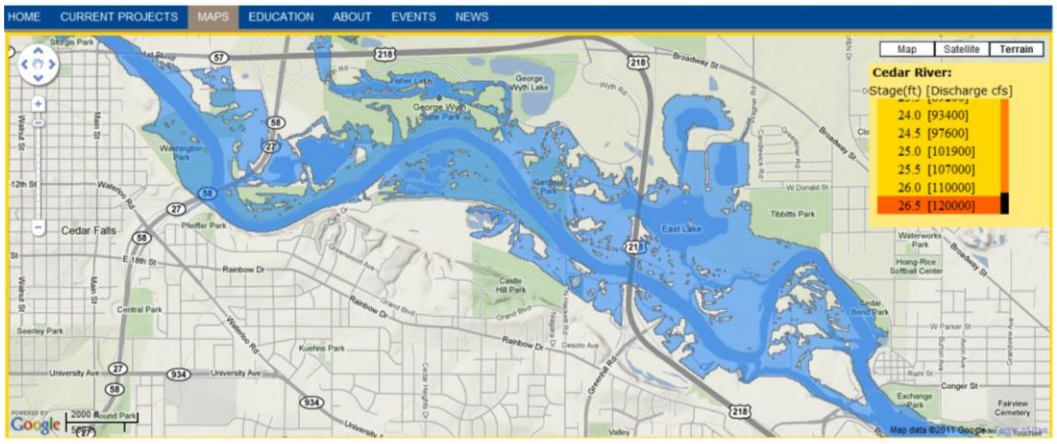
Success Story

Iowa Flood Center (IFC) uses Flood Modeling for Community Outreach to Better Communicate Flood Risk and Improve Public Preparedness[1]

In the summer of 2008, extreme flooding caused millions of dollars of damage to the Midwestern United States, exposing a lack of knowledge and preparation for major flood events. In response to this disaster, the State of Iowa established the Iowa Flood Center (IFC), a centre for advanced research and education specifically related to floods, the first of its kind in the nation. One objective of the IFC is to create community-based tools to better inform managers, policy makers, and individuals about flood risks. To this end, the IFC has used two-dimensional numerical simulations to supplement flood forecast information issued by the National Weather Service (NWS).

Many Iowa communities relied on National Weather Service (NWS) forecasts to anticipate flood levels and manage flood fighting efforts. However, NWS forecasts are limited to stage or discharge predictions at specific locations. This information is difficult for the public to associate with potential impacts to their communities. Although flood inundation maps are currently available in the form of Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), these maps are only available for a limited number of return period discharges and are not easily related to a specific river stage. Furthermore, the one-dimensional, steady-state models used to develop the FIRMs do not provide the level of accuracy and detail desired by the community to assess potential threats and damage.

The IFC is currently addressing this gap in publicly available data by performing high-resolution flood studies in Iowa communities. Using DHI's MIKE FLOOD, a one-dimensional (1D) and two-dimensional (2D) coupled hydrodynamic modelling software package, libraries of inundation maps are created for public access via the internet. These maps correspond to stage intervals of 0.15 meters at NWS forecast sites, ensuring that the public can relate forecasted river stages to flooding risk over a broad spatial domain.



Nathan C Young, Associate Director of IFC states "The Iowa Flood Center (IFC) has been using MIKE FLOOD to simulate flood discharges in several Iowa communities. The simulations have been used to numerically reconstruct the severe 2008 Iowa floods and to develop libraries of static inundation maps relating river stage and discharge to flood extents and depths in each community. The intent is to provide communities and individuals an impression of how river stages and discharges forecasted at discrete points may affect their properties. The maps are available on the IFC website as part of the Iowa Flood Information System (IFIS)."

[1] This document was prepared using excerpts from the paper by M. Moore, J. Piotrowski, and N. Young from the University of Iowa entitled "Community-Based Tools for Communicating Flood Risk and Improving Public Preparedness", Proceedings of the 34th IAHR World Congress – Balance and Uncertainty, July 2011, Brisbane, Australia

For more information on MIKE FLOOD please visit the MIKE by DHI website at www.mikebydhi.com or contact DHI by calling 1-888-344-9233 or sending an email to dhi-us@dhigroup.com.
For more information about the Iowa Flood Information System or the Iowa Flood Center please contact Nathan Young at nathan-young@uiowa.edu.