

Dam/Levee Break Inundation



Dams and levees are manmade structures that play an important role in flood mitigation. Structural failure of these infrastructure pose a major flood risk to downstream populations with potentially catastrophic consequences.

Advancement of computational technology and numerical modeling in recent decades has enabled us to accurately assess the possible impacts associated with dam / levee break flooding. Modeling analysis results subsequently form a critical dataset in risk management planning activities needed to protect life and minimize the social/ economic impact of a failure event.

The TUFLOW software suite has been developed and evolved over three decades to meet these needs. Our extensively benchmarked software offers industry-leading accuracy, numerical stability, computational speed, and functionalities to model various dam break scenarios, including piping failure and overtop erosion failure.

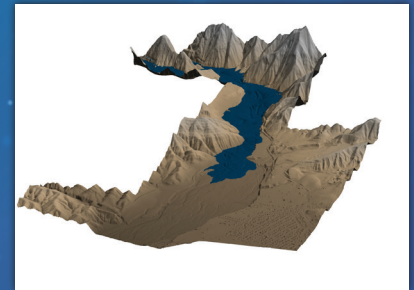
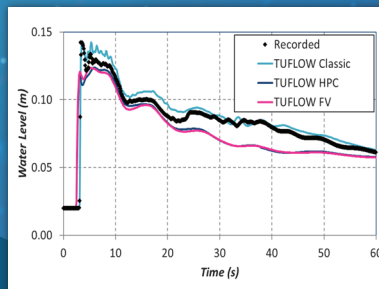
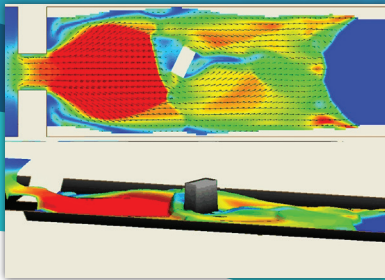
TUFLOW software is integrated with Geographic Information Software (GIS) software, making updates of model topography and hazard mapping efficient. Enable your team to tackle the most challenging dam and levee break modeling problems with TUFLOW.

As researchers, scientists and engineers we work in a range of industries that solve complex environmental problems. Our assessments span scales from the molecular, to the global, from the instantaneous to the inter-decadal. Our projects require flexible, accurate, fast and powerful tools backed up by research, benchmarking and support.

Industry leading stability, accuracy and computational speed

TUFLOW Feature Focus

- Exceptional numerical stability via computed adaptive time stepping based on numerous monitored control number calculations (courant, diffusion, celerity).
- 100% volume conservation.
- Numerous failure options (overtopping beach failure, embankment piping failure, water level or time trigger options, user defined rate of change controls, multiple structure cascade failure etc.).
- Newtonian and Non-Newtonian fluids.
- GPU acceleration provides significant benefits to project productivity, providing results 10 to 100 times quicker than CPUs or up to 400 times quicker with Quadtree meshing.
- TUFLOW's sub-grid topographic sampling is the most robust and efficient of any software – model confidently using larger cells at any orientation with no loss of accuracy.



The rapid and uncontrolled release of dam / levee break flood water is one of the most challenging hydraulic conditions to model due to the transient nature of the flood behavior. TUFLOW has proven itself to be one of the most accurate simulation software available and under these conditions. It has been successfully benchmarked to numerous flume scale and real-world dam failure events. TUFLOW's exceptional accuracy, stability and speed enables the user to conduct reliable and detailed hazard assessment down to the property scale, which is crucial for risk mitigation and evacuation planning.

TUFLOW's project workflow flexibility is unrivaled. It is uniquely integrated with numerous Geographical Information System (GIS) software such as ArcGIS, QGIS and MapInfo. It is also the computational engine within numerous GUI software such as 12D, Flood Modeler and SMS.

TUFLOW uses non-proprietary open access input and output formats. This supports efficient and meaningful dam / levee break hazard

mapping of hydraulic model results such as inundation level, depth, velocity, hazard, arrival time, inundation duration, hazard category, and evacuation route inundation details.

Further to TUFLOW's GIS and GUI integration, output compatibility with numerous complimentary analysis software:

- Flood risk management software, such as FloodIntel and WaterRide.
- Flood damage calculation software and calculation approaches, such as ANUFLOOD, FloodModeler and HEC FDA
- Evacuation simulation software, such as the Life Safety Model or LifeSIM.

For more information:

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