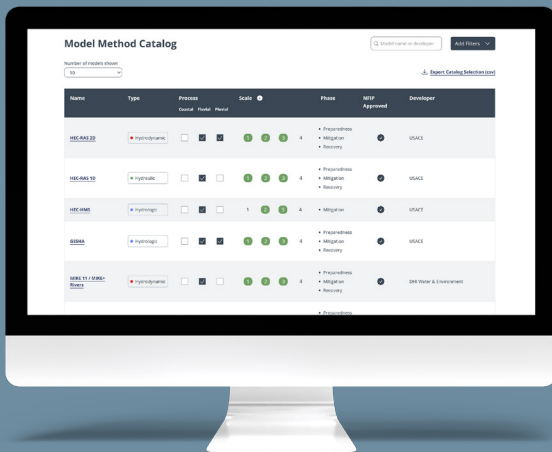


M3FR MEASURING, MAPPING, & MANAGING FLOOD RISK



Measuring, Mapping, and Managing Flood Risk in Texas (M3FR) is a project funded by The Texas General Land Office (GLO) and led by the Texas A&M University's Institute for a Disaster Resilient Texas (IDRT). The project aims to improve flood risk communication by integrating multiple types of flood risk and hazard models and leveraging risk communication best practices.



We compiled a list of the most widely used flood hazard models in the United States in a model catalog. Each model is tagged with several attributes (categorical and descriptive) that provides useful model-related information for the intended users.

The model catalog is not meant to be exhaustive, but is instead intended to serve as a reference tool to aid in decision making.

MODEL METHOD CATALOG FEATURES

- » Flood models are essential for decision-makers, offering insights into flood hazards crucial for planning, response, and recovery.
- » The model method catalog is a comprehensive collection of commonly used flood hazard models in the United States.
- » The catalog highlights key characteristics of each model that are relevant to the needs of decision makers, emphasizing practical utility over academic details to serve as effective guidelines for disaster management and flood-related issues.



WEBSITE

floodmodels.cloud.tdis.io



FILTER

Filter flood models by type, process, scale, phase, and NFIP-Approval status.



EXPLORE

Browse existing flood models.



EXPORT

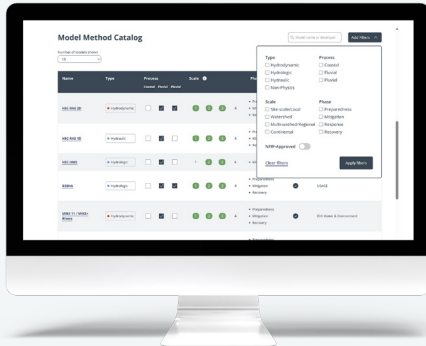
Download your catalog selections to CSV.



FLOODMODELS.CLOUD.TDIS.IO



SEARCH



Visit **floodmodels.cloud.tdis.io** to search for flood hazard models used across the nation.

FILTER

Type

- ☐ Hydrodynamic
- ☐ Hydrologic
- ☐ Hydraulic
- ☐ Non-Physics

Process

- ☐ Coastal
- ☐ Fluvial
- ☐ Pluvial

Scale

- ☐ Site-scale/Local
- ☐ Watershed
- ☐ Multi-washed/Regional
- ☐ Continental

Phase

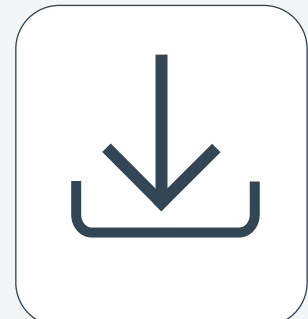
- ☐ Preparedness
- ☐ Mitigation
- ☐ Response
- ☐ Recovery

NFIP-Approved ☐

[Clear filters](#) [Apply filters](#)

Filter flood models by type, process, scale, phase, and NFIP-Approval status.

EXPORT



Export your catalog selections to csv.

EXPLORE

Select a model for more detailed information, and explore the tabs: **Basic Info, Strengths & Weaknesses, Resources, and Gallery.**

BASIC INFO | STRENGTHS & WEAKNESSES | RESOURCES | GALLERY

Model Type: Hydrodynamic

Process: Fluvial, Pluvial

Scale: Site-scale/Local, Watershed, Multi-washed/Regional

Developer: USACE

Scopes: Single or multiple event modeling, Flood extent for emergency management, Floodplain delineation Scenario simulation (land use change, conservation measures, climate change), Engineering design

Type of Output: Discharge, Depth, Duration, Velocity, Flood Extent

Information Produced: Discharge, Water level, Flood extent, Velocity

Availability: Open Access

NFIP Approved: Yes

Phase: Preparedness, Mitigation, Recovery

BASIC INFO | STRENGTHS & WEAKNESSES | RESOURCES | GALLERY

Strengths: Popularity, Variety of applications, Ability to model infrastructural elements

Weaknesses: Manually intense setup, No parallelization

Recommendations: Flexible and suitable to model watersheds at all scales, multiple landscapes, and with variable level of detail

BASIC INFO | STRENGTHS & WEAKNESSES | RESOURCES | GALLERY

Case Studies: Floodplain and travel time estimation for flood warning system (Grimm et al., 2020), Integrating flood modeling and reservoir operations (Garcia et al., 2020), Comparison of other models via HEC-RAS 2D (Corbelle et al., 2020)

Dashboards: Flood Decision Support Toolbox (FDST), MAFRast

Website: <https://www.hec.usace.army.mil/software/hecras/>, <https://www.hec.usace.army.mil/software/hecras2d/>

BASIC INFO | STRENGTHS & WEAKNESSES | RESOURCES | GALLERY

Water Surface Elevation Profile Line Plot

Use defined tracem of a profile line to assess simulation results at the desired scale (Source: HEC-RAS 2D).

Flow along the channel

Discharge time-series (hydrograph) for a channel cross-section (source: HEC-RAS 2D).

2D color-based plot of maximum flow velocities in a channel and floodplain. Blue indicates low velocity, brown corresponds to higher velocities. In HEC-RAS 2D interface, it is possible to query velocity value at any location (source: HEC-RAS 2D).

2D particle-tracing plot of maximum flow velocities (source: HEC-RAS 2D).

Alternative 3D perspective plot of flood depth results (source: HEC-RAS 2D).