Pluvial Models for Coastal Virginia

The Department of Conservation and Recreation (DCR) provides pluvial (rainfall) hazard models covering 57 counties in coastal Virginia. These models and the data products derived from these models *are free and available to the public*. These resources support flood awareness and informed decision-making for planning, stormwater management, and emergency management.

MODELS AND PRODUCTS

The models and derivative products provide the extent and depth of flooding, calculated for a range of different durations and intensities of rainstorms, covering current and future conditions. The ready-to-use 2D models contain all the data necessary for running rainfall-induced flood simulations without the need to collect, generate, and process data from scratch. The available data products are:
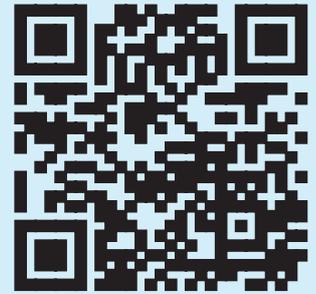
- HEC-RAS Pluvial Models and Data Packages
- Depth Grids
- Storm Duration of Maximum Depth
- Graduated Flood Extents

HOW THE MODELS WERE DEVELOPED

DCR produced the models in 2024 in response to community needs identified during the Virginia Coastal Resilience Master Plan development. The models were developed using publicly available USACE HEC-RAS software. Model domains were developed for approximately 440 HUC-12 watersheds, which were further subdivided into approximately 1,830 subbasin models.

Each model was loaded with 63 rainfall scenarios for 2-hr, 6-hr, and 24-hr duration events. The models use an incremental, pre-defined range of precipitation volumes that cover a wide range of rainfall conditions through 2100. The models were developed using the latest high-resolution topography, land use, and soil type. Basins in tidally influenced areas include varying boundary conditions to simulate sea level rise scenarios.

DCR'S OPEN DATA PORTAL

Above: Scan the QR Code to view and download pluvial model data and resources.

Below: Depth grid from pluvial modeling.