Texas Integrated Flooding Framework

What is compound flooding?

Major coastal flood events have occurred during four of the last five years prior to 2019, resulting in billions of dollars in damage to coastal infrastructure. Coastal floods are more destructive when multiple flooding processes happen simultaneously, creating a compound event. A compound flooding event can be defined as a simultaneous or sequential combination of flooding from meteorological, oceanographic, and hydrologic drivers. The most common type of coastal compound flooding—a combination of storm surge and riverine flooding—can produce floodwaters that are longer in duration and more spatially extensive than anticipated.

What is the Texas Integrated Flooding Framework?

For Texas to implement state and regional flood planning, decision-makers need a more accurate understanding of coastal flood risks and the tools for effective mitigation planning. The Texas General Land Office, through its Community Development Block Grant Disaster Recovery Program, funded the Texas Water Development Board (TWDB) to serve as the lead agency to coordinate a comprehensive flood risk reduction planning project in partnership with the U.S. Geological Survey and the U.S. Army Corps of Engineers – Galveston District. The Texas General Land Office provided $3 million to the TWDB to deliver this project by June 30, 2024.

The Texas Integrated Flooding Framework (TIFF) project will create an integrated framework to provide local, regional, and state entities with the compound flood risk information and planning tools necessary for comprehensive regional flood planning and mitigation in the coastal zone. The general objectives of the TIFF are to: i) develop the guidelines and processes for implementing a comprehensive framework to model, visualize, and plan for the risk of flooding in counties affected by Hurricane Harvey; ii) build relationships among agencies to improve coordination and collaboration; and iii) complement the many ongoing efforts to enhance flood science, mapping, modeling, warning, response, and planning in Texas.

https://webapps.usgs.gov/tiff/

TIFF@twdb.texas.gov

What are the primary components of the TIFF project?

1) Data and Monitoring Gap Analysis. The goal of this component is to identify available data and data gaps and establish a plan for obtaining critical data for successful flood monitoring and modeling. This component will support expansion and improvement of observational data and data archives for inland, coastal, and ocean systems.

2) Data Management and Visualization. The goal of this component is to identify uniform data standards and methods for interoperability that can be integrated into the systems maintained by agency partners, including the Texas Disaster Information System, Interagency Flood Risk Management initiatives such as the Flood Decision Support Toolbox, and the TWDB's Data Hub. This component will advance the development of state-of-the-art data management and visualization tools for displaying observational data and model output.

3) Integrated Flood Modeling Framework. The goal of this component is to develop a conceptual model coupling strategy to support inland and coastal flood hazard identification.

4) Planning and Outreach. The goal of this component is to conduct outreach to ensure regional flood planning and mitigation needs are incorporated into the framework and to generate guidance documents and tools that support flood planning in Texas.

The TIFF project offers a collaborative approach by engaging other governmental agencies, academia, and regional stakeholders to build out the four components of the framework through expert technical advisory teams.

Contact Information

Dr. Amin Kiaghadi
Coastal Flood Modeler, Coastal Science
Amin.Kiaghadi@twdb.texas.gov, (512) 936-0844

Caimee Schoenbaechler
Manager, Coastal Science
Caimee.Schoenbaechler@twdb.texas.gov, (512) 463-3128

Dr. Carla G. Guthrie
Director, Surface Water Division
Carla.Guthrie@twdb.texas.gov, (512) 463-4179