# FROM REDUNDANCY TO SYNERGY:
TEXAS INTEGRATED FLOODING FRAMEWORK (TIFF) PLANNING PROJECT

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[1] Texas Water Development Board
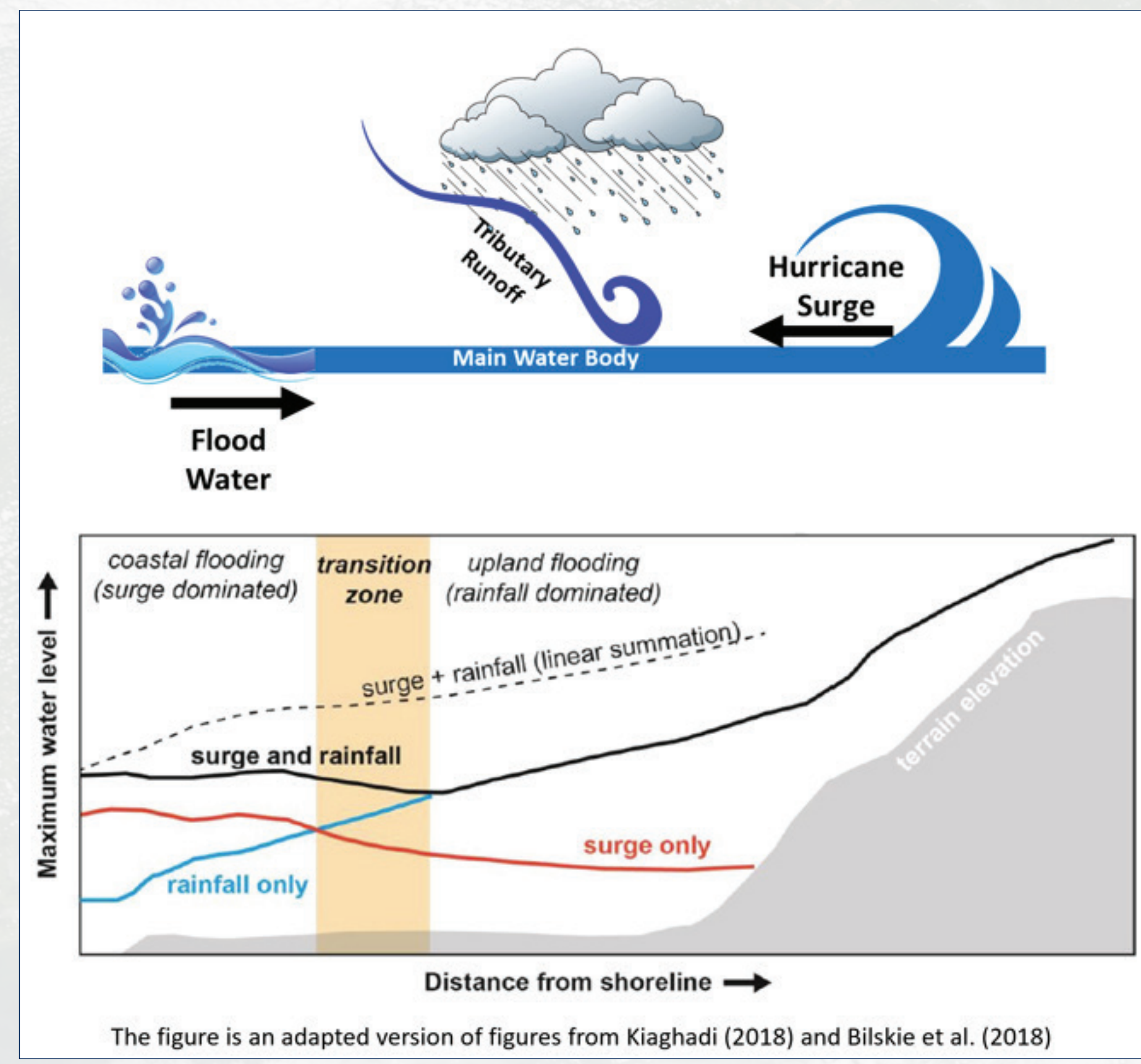[2] U.S. Army Corps of Engineers-Galveston District
[3] U.S. Geological Survey, Oklahoma-Texas Water Science Center

USGS science for a changing world

Texas Water Development Board
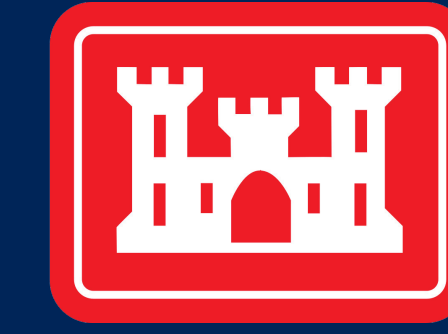
Background

Coastal flooding can wreak havoc on our Texas communities, causing billions in damage to coastal infrastructures and the environment. When multiple flood drivers occur at once or close together, it results in a particularly destructive phenomenon known as compound flooding. In Texas, this often means a combination of storm surge and riverine flooding that amplify each other and lead to greater impacts than when they occur separately.

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. In 2020, the Texas General Land Office funded the Texas Water Development Board to lead TIFF, a four-year comprehensive flood risk management planning project, in partnership with the U.S. Geological Survey and the U.S. Army Corps of Engineers – Galveston District.

The figure is an adapted version of figures from Kiaghadi (2018) and Bilskie et al. (2018)

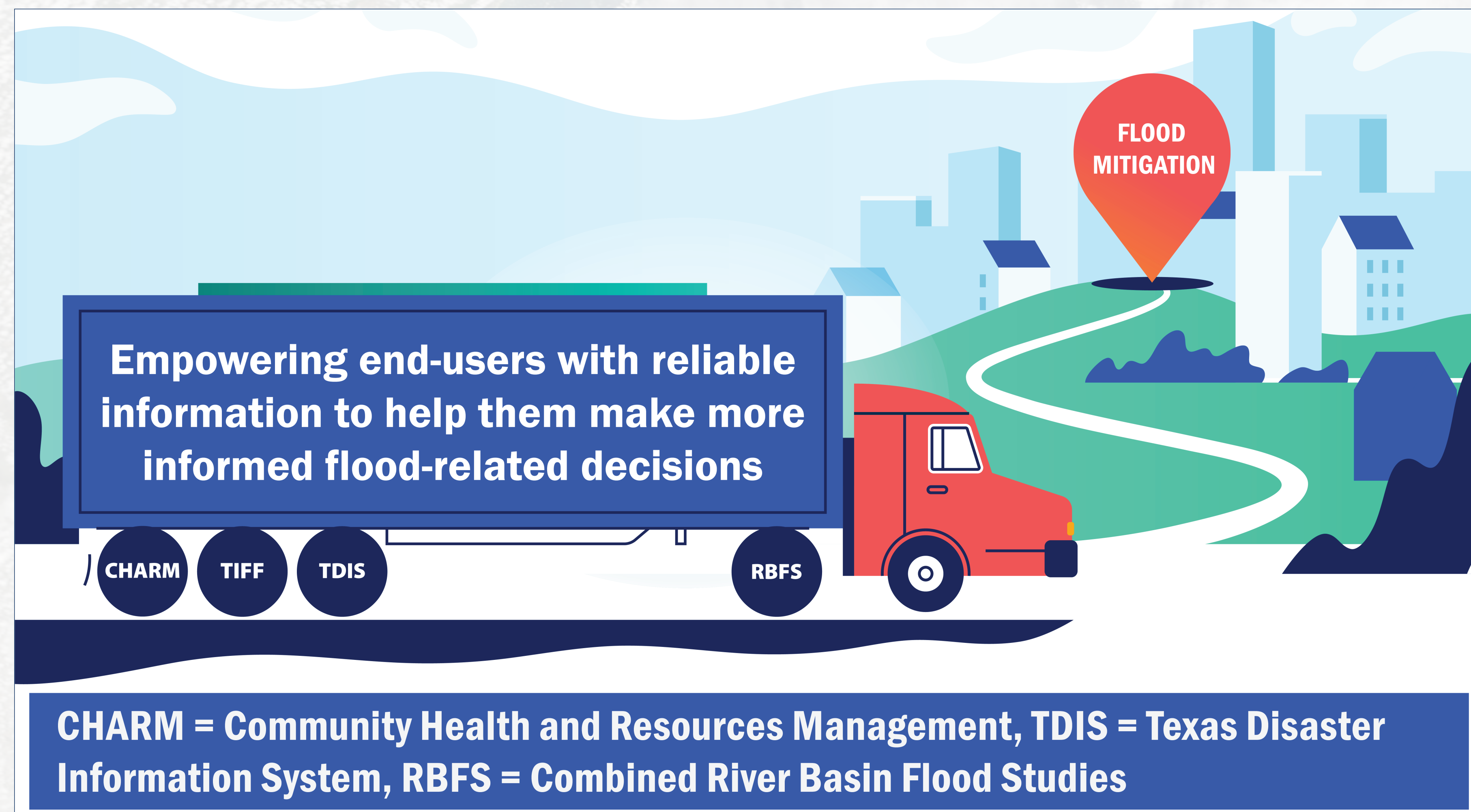**Texas Integrated Flooding Framework**

Mission

Leveraging expertise and resources to bring about the best information to enhance coastal flood risk planning and mitigation

Vision

Empowering Texans with reliable information to increase flood resiliency

Objectives

TIFF is a collaborative effort that leverages collective expertise and resources to identify and integrate the best information available into a framework to enhance flood risk planning and mitigation on the Texas coast.

Empowering end-users with reliable information to help them make more informed flood-related decisions

CHARM = Community Health and Resources Management, TDIS = Texas Disaster Information System, RBFS = Combined River Basin Flood Studies

To accomplish this goal, TIFF provides recommendations to stakeholders on ways to enhance current procedures across the project's four key components:

1) Data Collection
2) Data Management and Visualization
3) Modeling, and
4) Planning and Outreach

These recommendations are grounded in science and tailored to the unique needs of the communities (experts and public) to improve flood risk planning and mitigation strategies.

Structure & Collaborations

One of the most significant aspects of this project is that TIFF is actively forging stronger relationships between state, federal, and local authorities to enhance flood-related decision-making at all levels.

Guided by a six-member Steering Committee (SC), TIFF embodies a cooperative spirit by involving experts through four Technical Advisory Teams. Each team aligns with and contributes to building one of the four components of the framework to guide the project from vision to execution. The Meadows Center for Water and the Environment at Texas State University serve as project facilitators, supporting the SC with TAT coordination and engagement.

TIFF has also cultivated close relationships with several state and federal programs that assist and support those impacted by floods. As the framework evolves, the project will leverage these connections to identify ways to leverage existing state and federal programs to support the expansion and improvement of flood planning in Texas.
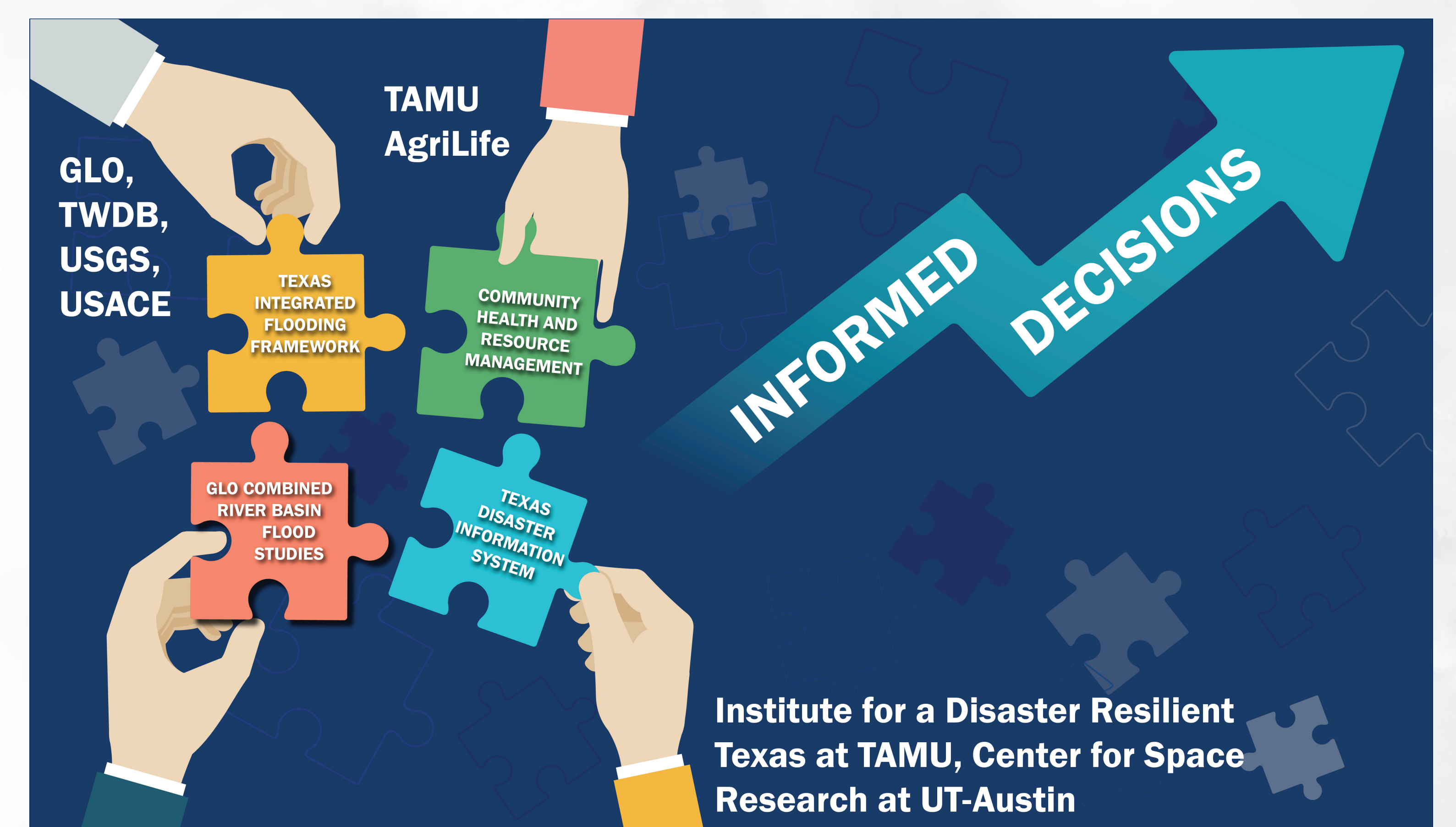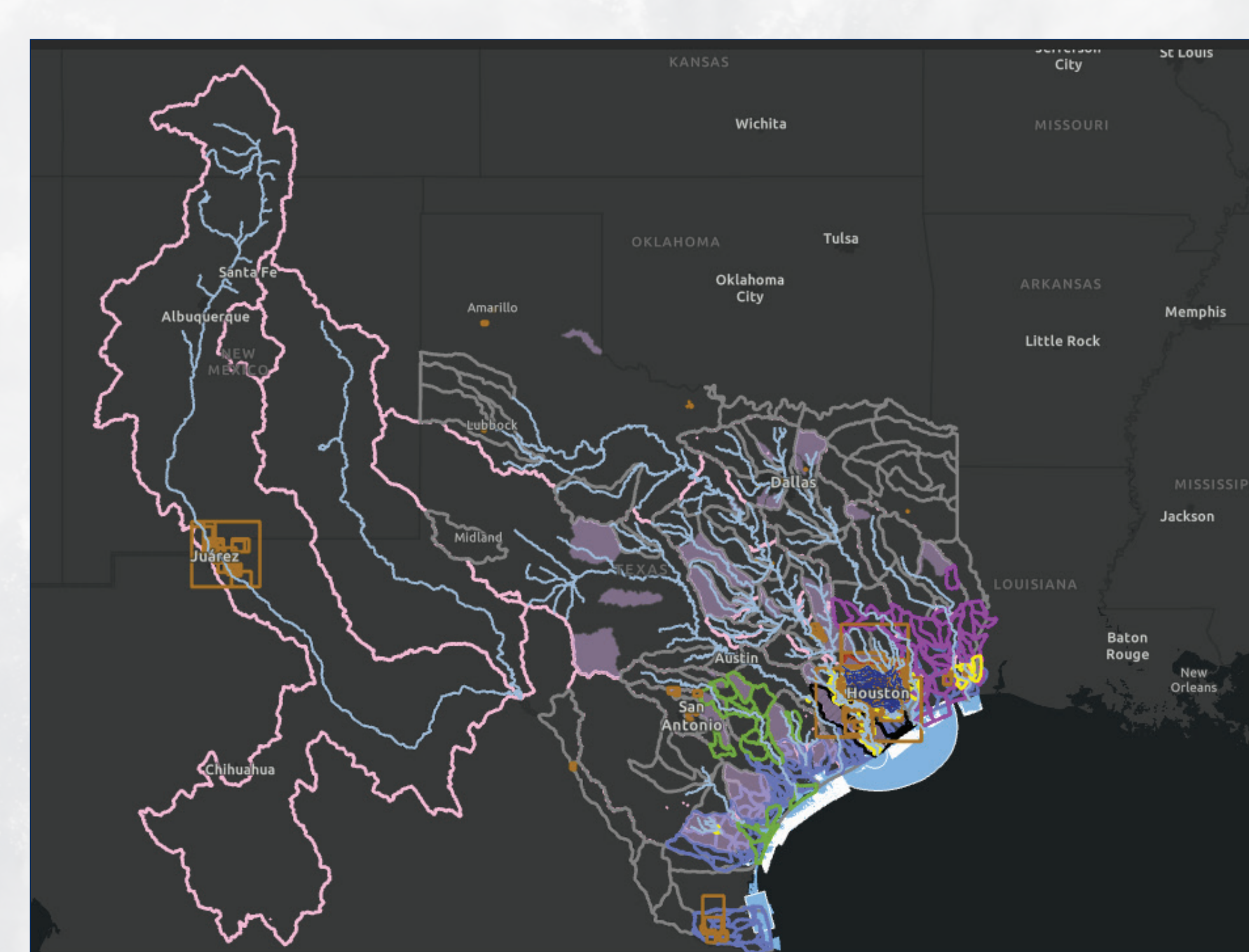

Accomplishments

In its first two years of implementation, the project tackled important and challenging topics such as bathymetry, subsidence, data taxonomy and anthology, coastal flood user interfaces, coastal and inland model inventories, end-user identifications, and outreach.

- Confirmed **101 members** across **4 Technical Advisory Teams**
- Cataloged an inventory of **34 coastal user interfaces**
- Created an inventory of **147 existing and ongoing statewide flood-related modeling and data-driven studies**
- Completed **data structure criteria** for the creation of a data availability tool to display and evaluate the availability of all datasets applicable to coastal flood planning and mitigation
- Created the **TIFF Model Inventory Viewer**, which assembled **819 models** to make Texas stakeholders aware of the available models
- Submitted t**wo official recommendations**:
  - Investing in the **quality control and quality assurance of the historical Texas Coastal Ocean Observation Network datasets**, which are not currently incorporated in NOAA's Center for Operational Oceanographic Products and Services (CO-OPS) official database.
  - Collecting bathymetry data acquisition for **20 identified high-priority areas** along the Texas coast, including shallow bays, rivers, and deep channels

Through these endeavors, TIFF has made significant achievements and strides toward creating an integrated framework to provide local, regional, state, and federal entities with the flood risk information and planning tools necessary for comprehensive regional flood planning and mitigation in the coastal zone.
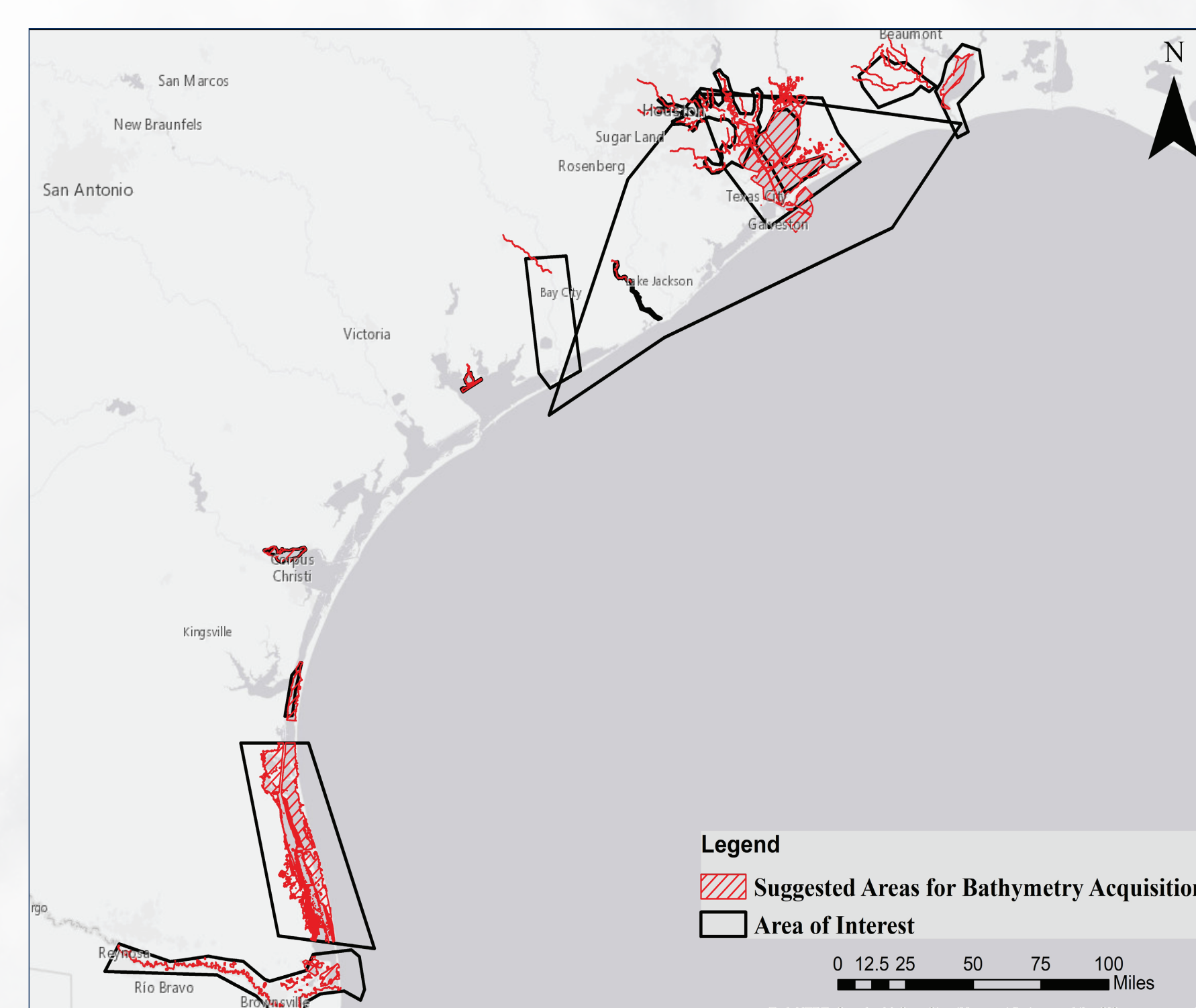
The 20 high priority areas identified by TIFF for bathymetry data acquisition for areas along Texas coast.

Learn More

For more information, scan the QR code with your phone, or visit www.texasflood.org/tools-library/tiff.

A preview of the TIFF Model inventory viewer.