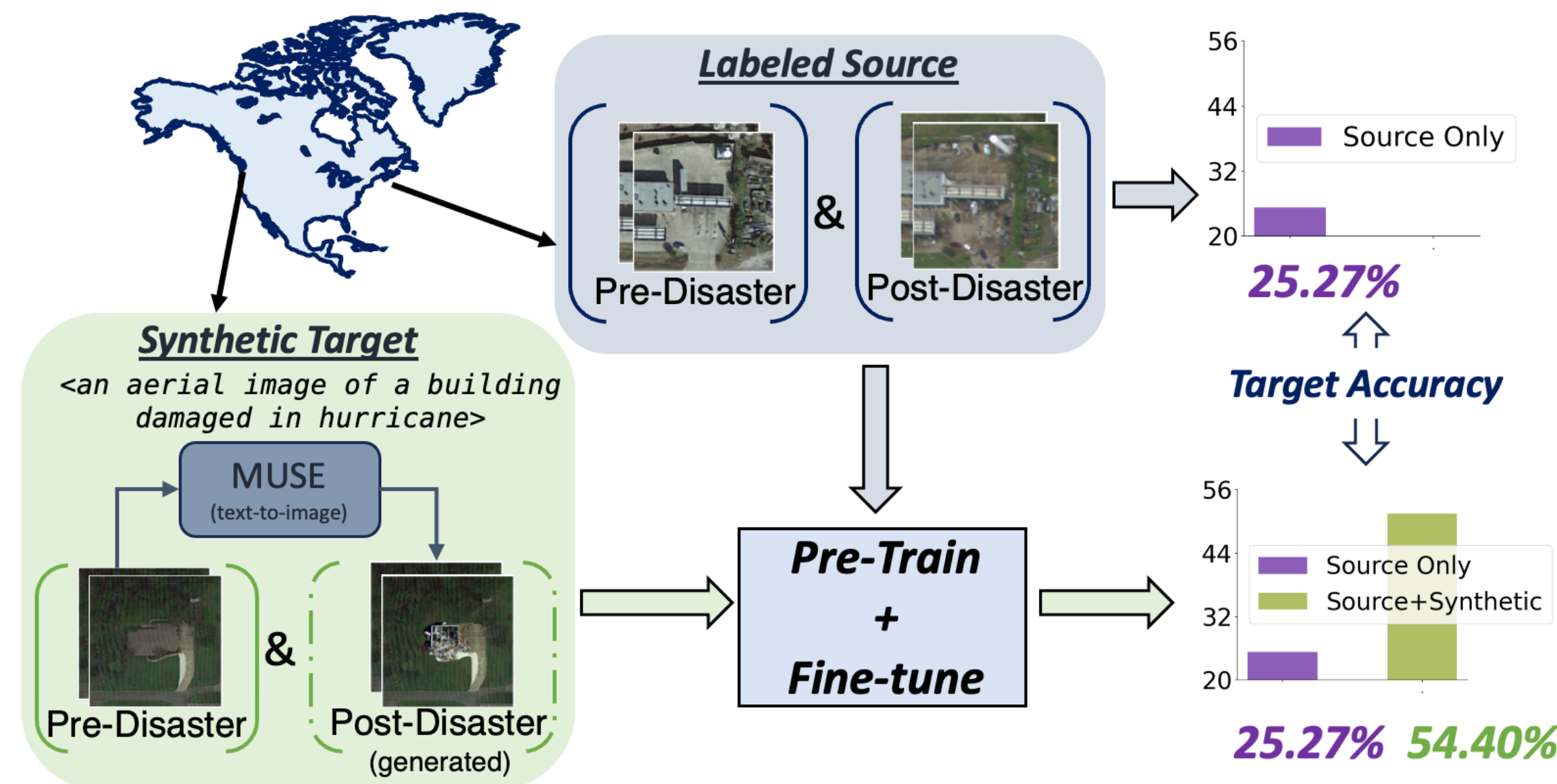
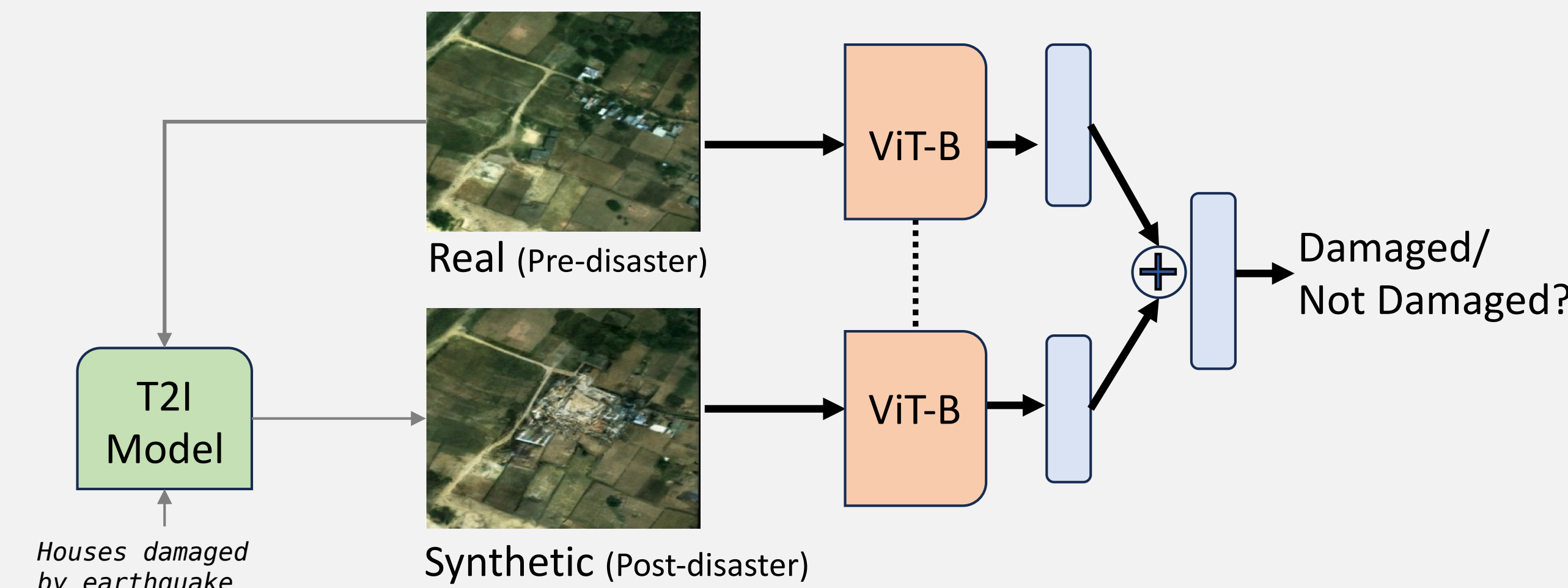


## 1. Overview

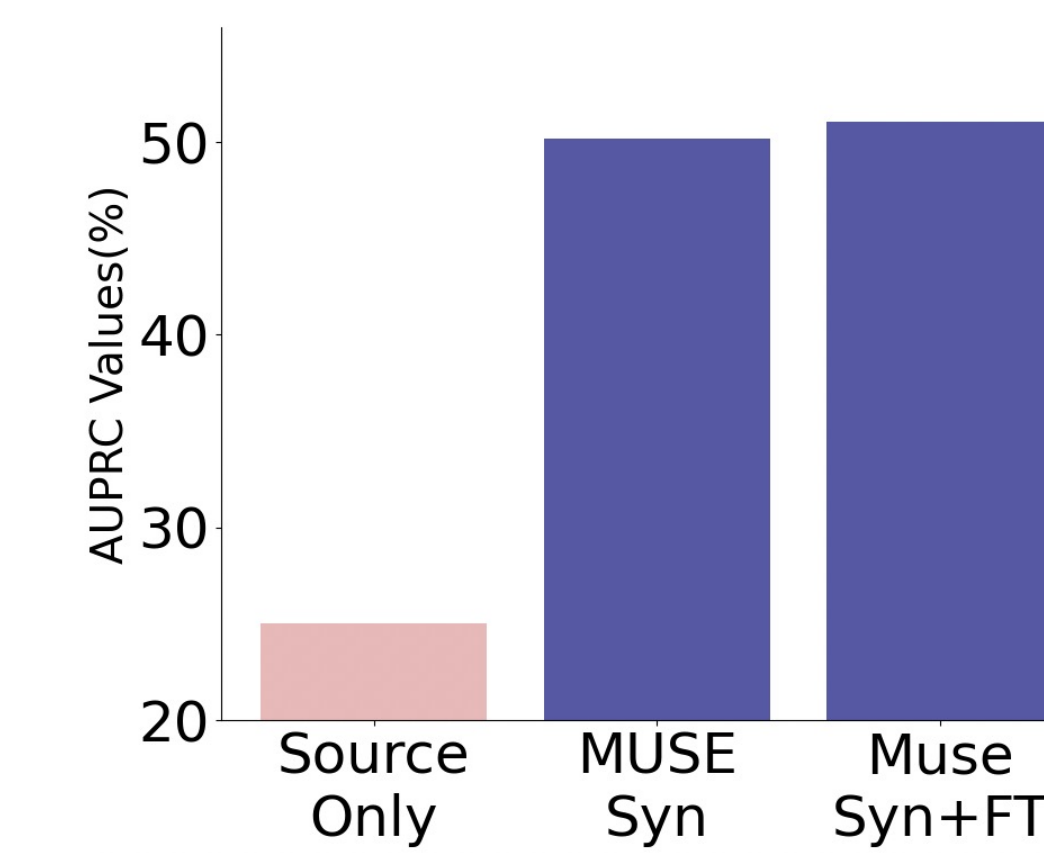


*TLDR: Synthetic data from text-to-image models leads to robust disaster assessment from aerial imagery across low-resource geographies.*

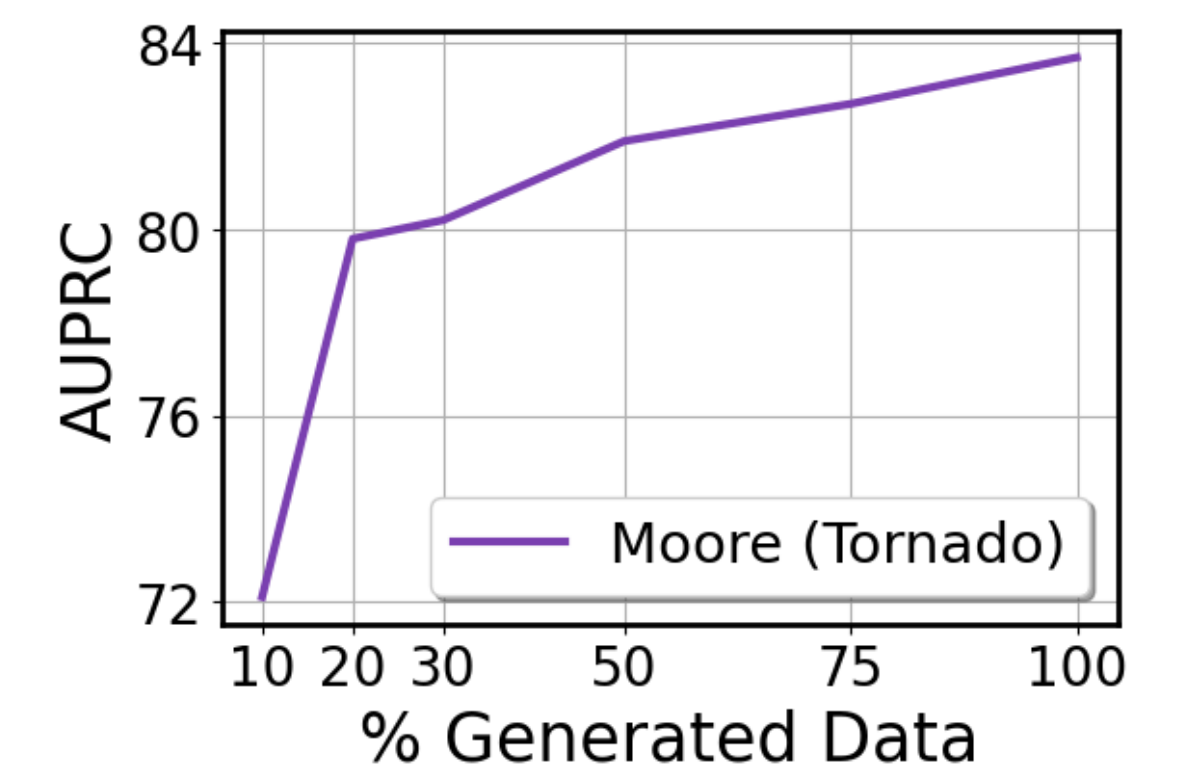


## 3. Improvements in Adaptation

- xBD Dataset, ViT-B Backbone



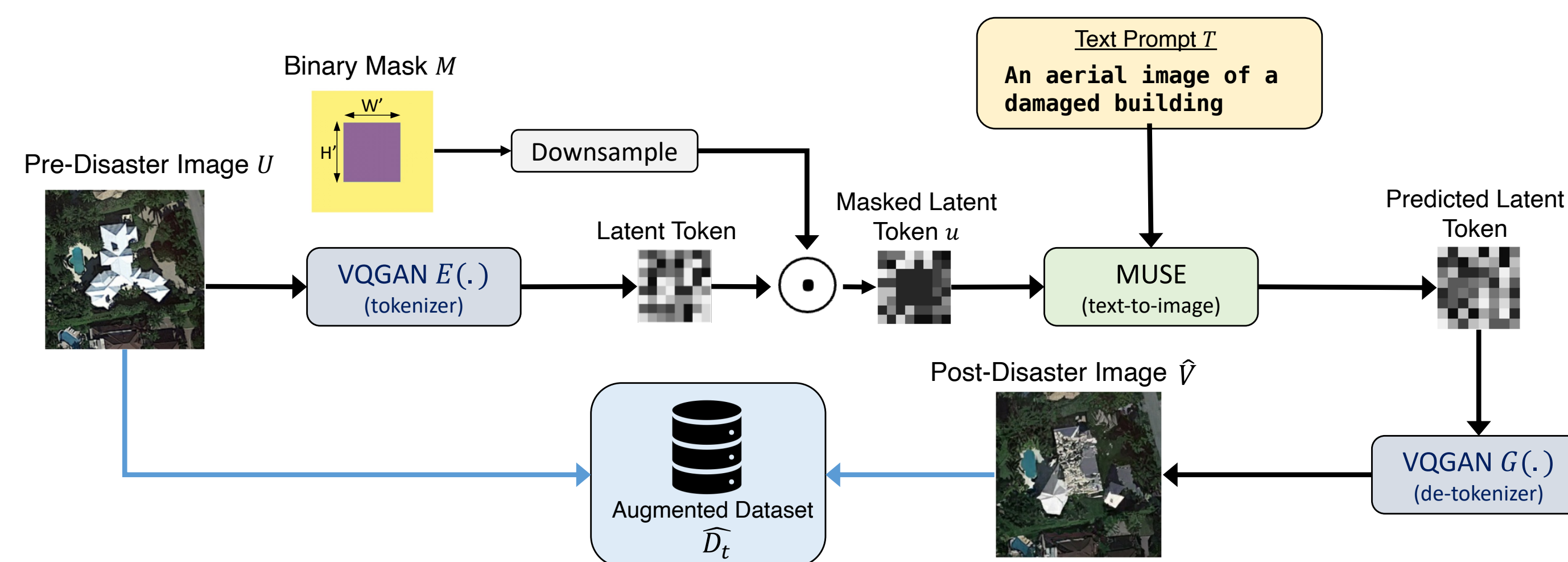
Single-Source



Data-Efficiency

## 2. Generating Synthetic Data

- Pass the pre-disaster image through VQVAE to compute the latent token.
- Mask the latent token using a randomly generated binary mask.



- Use the MUSE generative model along with a suitable text-prompt to predict the output tokens.
- De-tokenize to generate the post-disaster imagery.

## Prompt Set

### xBD DATASET

#### Moore Tornado

An aerial view of a house damaged due to a tornado.  
A bird's-eye view of a building destroyed by a tornado.  
A top-down view of a house damaged by a tornado.  
A satellite image of a building destroyed by a tornado.  
A bird's-eye view of a building damaged by a tornado.

#### Nepal Floods

An aerial view of houses surrounded by a flood.  
A top-down view of houses damaged by floods.  
A top-down view of a house damaged by floods inundated in water.  
A satellite image of a building destroyed by a flood surrounded by water.  
A satellite image of houses that was destroyed by a flood surrounded by water and trees.

#### Portugal Wildfire

An aerial view of forest land after it is torched by a wildfire.  
An aerial view of buildings after a wildfire.  
An aerial image of forest land scorched by a wildfire.  
A bird's-eye view of a forest region with completely scorched trees.

## 4. Generated Examples

Prompt: A top-down view of houses damaged by a tornado surrounded by debris.



Before-Image + Mask Post-Image (Generated)

Prompt: A bird's-eye view of a building completely damaged by a tornado.



Before-Image + Mask Post-Image (Generated)

Prompt: A bird's-eye view of a building destroyed by a tornado.



Before-Image + Mask Post-Image (Generated)

Prompt: An aerial view of a house damaged by a hurricane surrounded by debris.



Before-Image + Mask Post-Image (Generated)

Prompt: A satellite capture of a building destroyed by a hurricane.



Before-Image + Mask Post-Image (Generated)

Prompt: A top-down view of a house damaged in a hurricane.



Before-Image + Mask Post-Image (Generated)

Prompt: A bird's eye view of a forest region complete scorched in a wildfire.



Before-Image + Mask Post-Image (Generated)

Prompt: An aerial view of buildings after a wildfire.



Before-Image + Mask Post-Image (Generated)

Prompt: An aerial view of buildings after a wildfire.



Before-Image + Mask Post-Image (Generated)