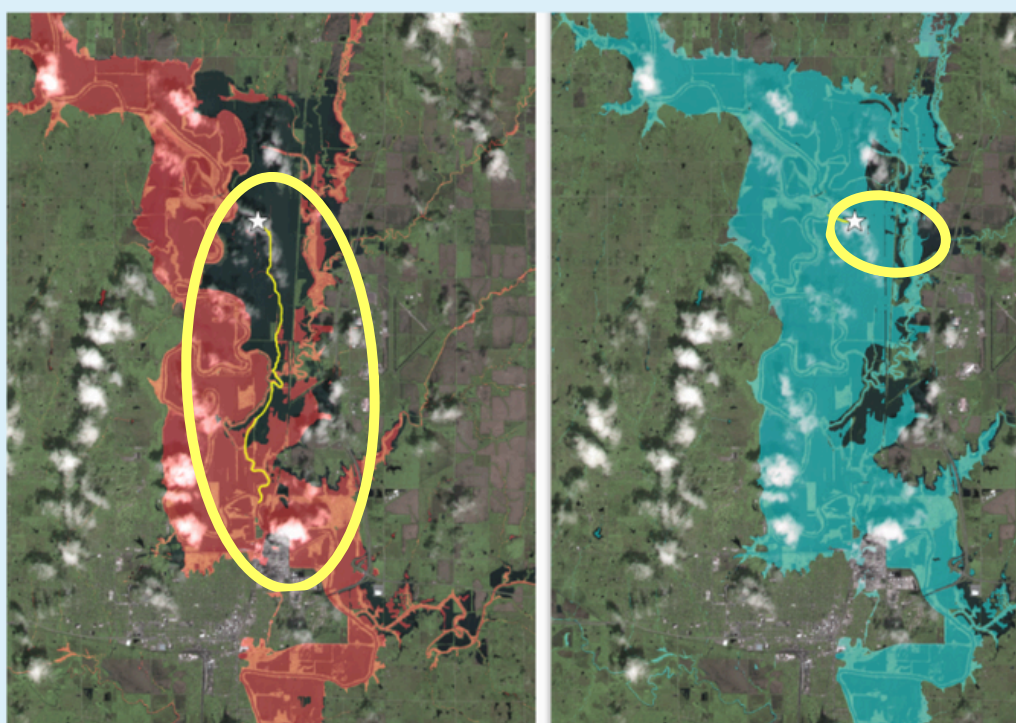


### National Updates

#### Catchment Boundary Mitigation

Algorithm updated to direct water flow to the nearest river, rather than exclusively to the bottom of the assigned catchment

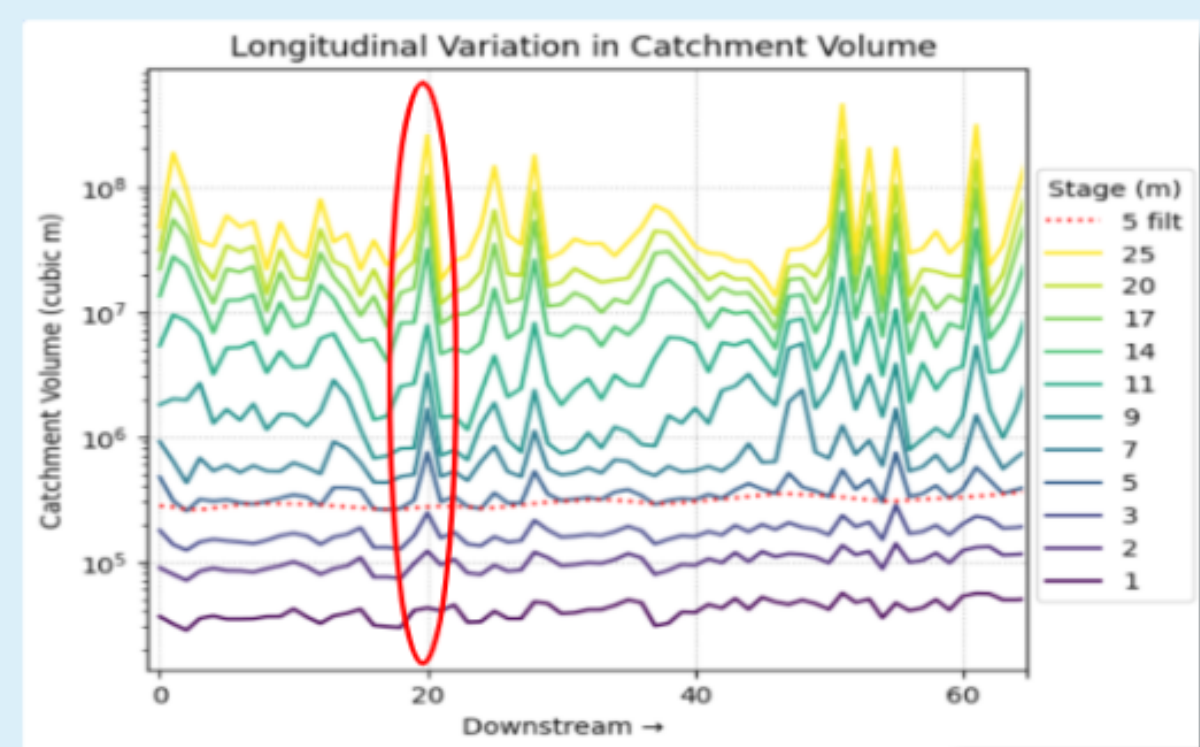
- ✓ *Benefit: Produces more realistic height-above-nearest-drainage values across catchments and improves overall flood representation*



#### Longitudinally Consistent Flows

Maintains river volume and preserves water surface elevation when volume fluctuates across reaches with tributaries

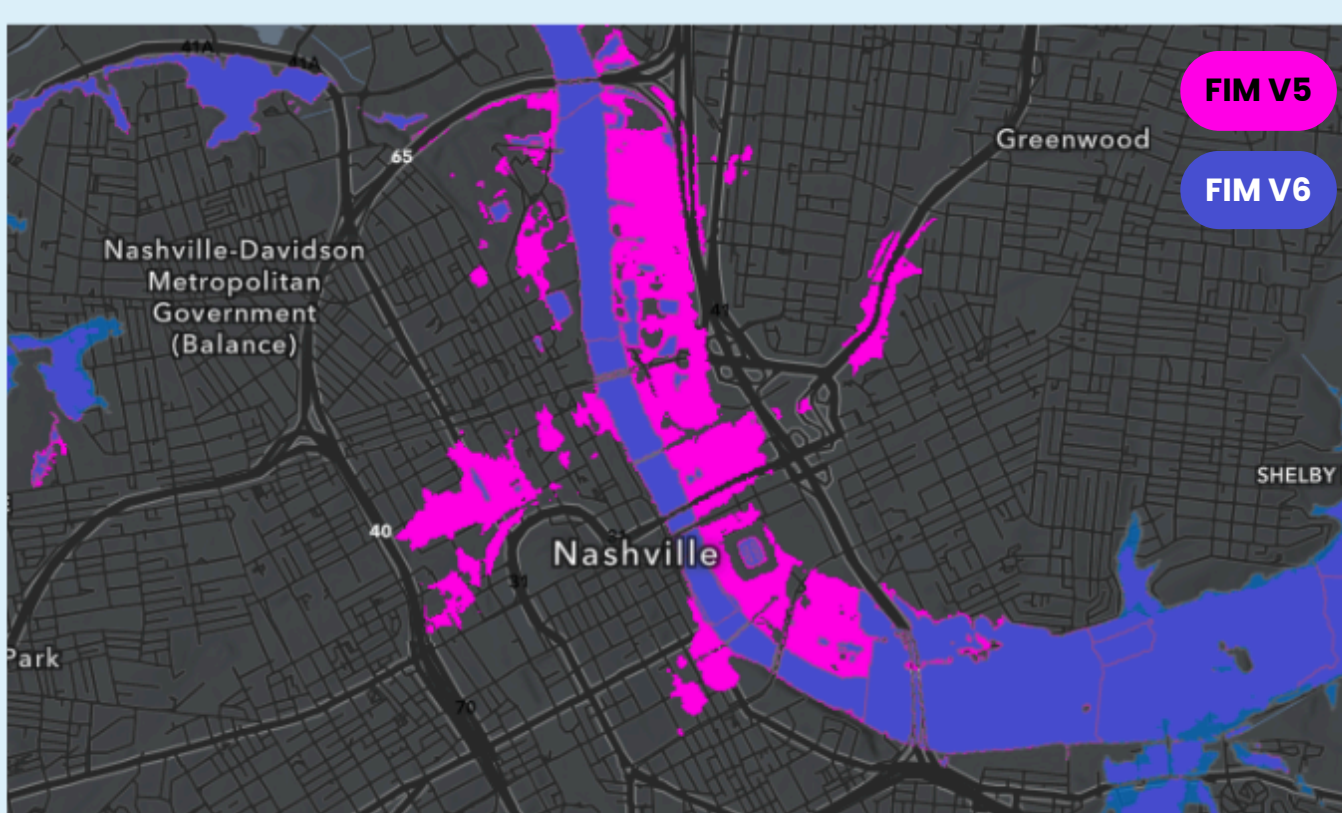
- ✓ *Benefit: Prevents dramatic stage drops near tributaries, resulting in a more consistent downstream flood map*



#### Machine Learning Bathymetry

Improves estimates of missing volume caused by LiDAR inability to penetrate water surfaces

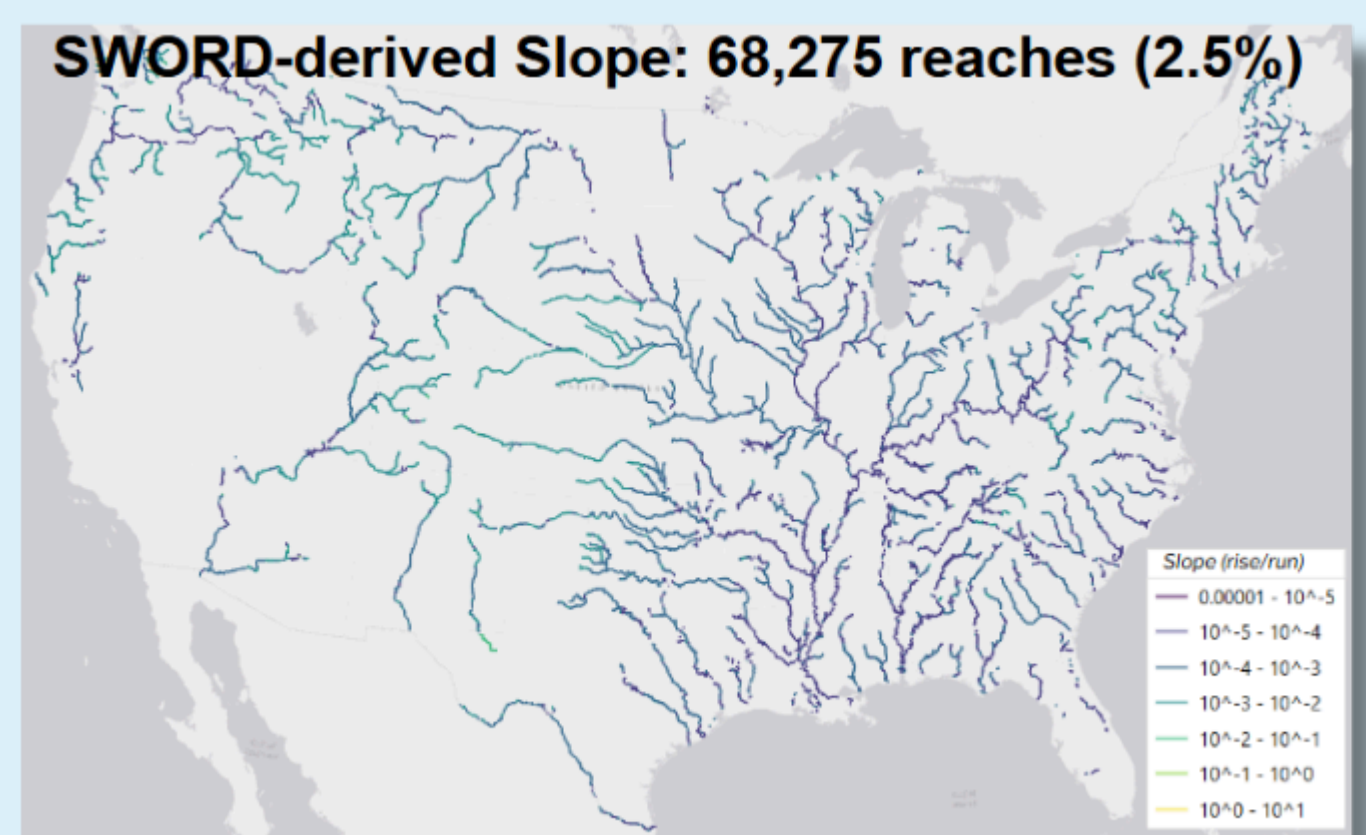
- ✓ *Benefit: Yields more accurate synthetic rating curves and flood map extents*



#### Slope Enhancement

Improved Manning's equation flow estimates by using a more precise slope dataset

- ✓ *Benefit: Increases the accuracy of flood extents through improved flow estimation*

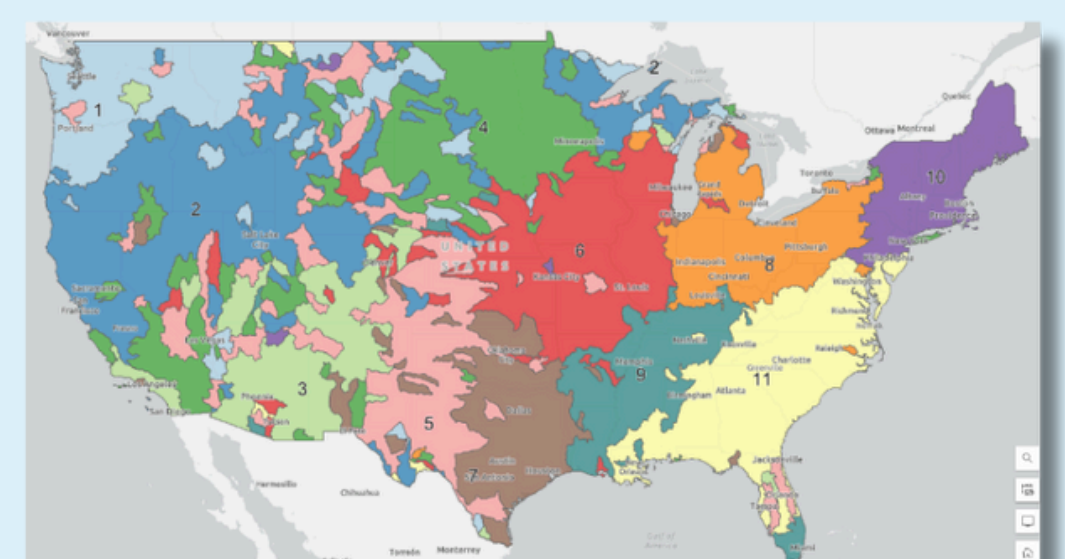


#### Optimized Manning's Numbers

Regionalizes Manning's numbers by calibrating to benchmark data

- ✓ *Benefit: Enhances regional flood mapping accuracy to better match benchmark data*

| Runoff cluster | channel n (order 4 or higher) | overbank n (order 4 or higher) | channel n (order 3 or lower) | overbank n (order 3 or lower) |
|----------------|-------------------------------|--------------------------------|------------------------------|-------------------------------|
| 1              | 0.027                         | 0.100                          | 0.016                        | 0.120                         |
| 2              | 0.008                         | 0.041                          | 0.005                        | 0.060                         |
| 3              | 0.025                         | 0.087                          | 0.038                        | 0.053                         |
| 4              | 0.008                         | 0.066                          | 0.005                        | 0.096                         |
| 5              | 0.023                         | 0.069                          | 0.030                        | 0.042                         |
| 6              | 0.025                         | 0.076                          | 0.027                        | 0.043                         |
| 7              | 0.035                         | 0.100                          | 0.044                        | 0.091                         |
| 8              | 0.023                         | 0.100                          | 0.014                        | 0.120                         |
| 9              | 0.022                         | 0.075                          | 0.028                        | 0.040                         |
| 10             | 0.022                         | 0.093                          | 0.013                        | 0.115                         |
| 11             | 0.024                         | 0.089                          | 0.024                        | 0.072                         |



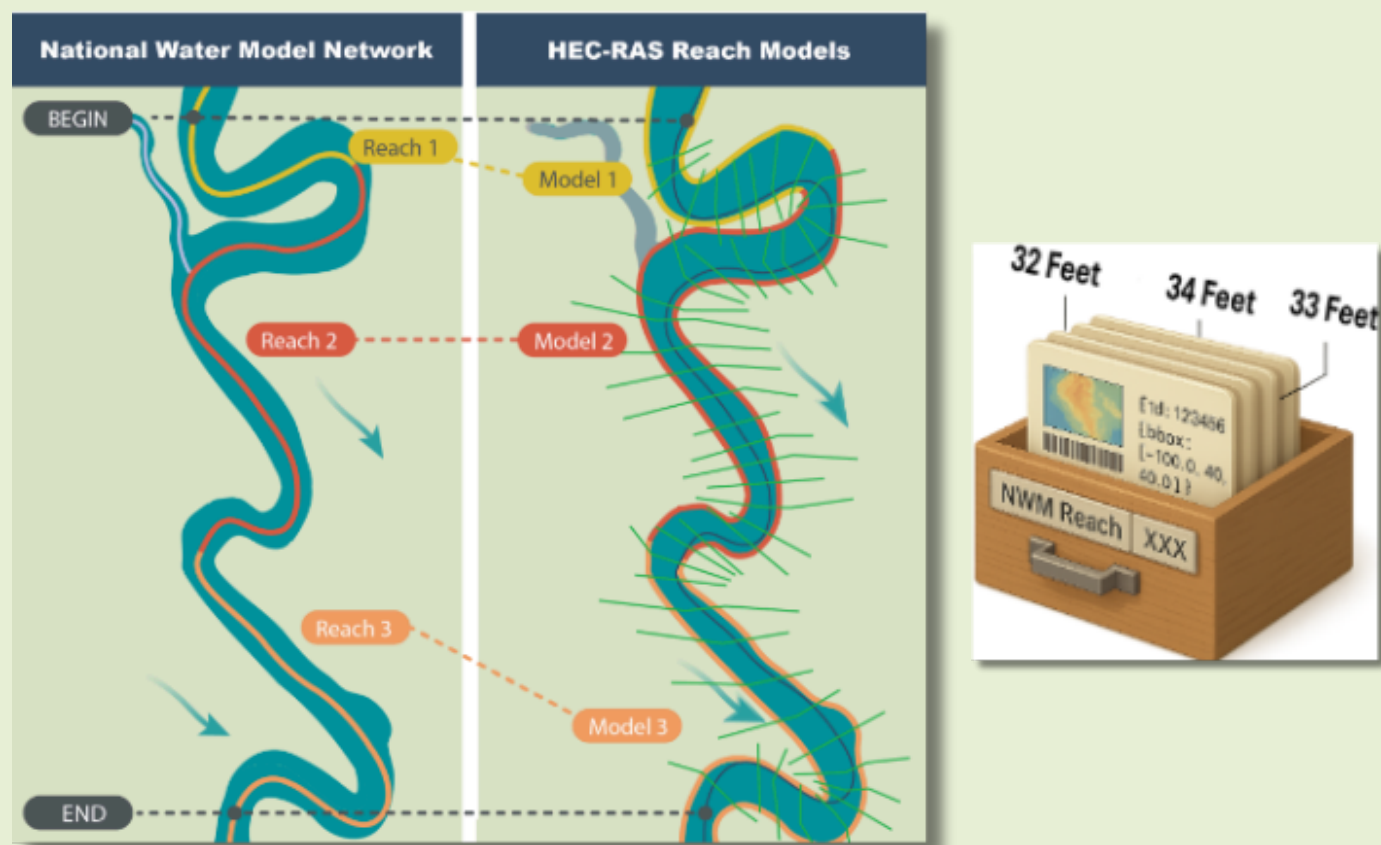


# Regional and Local Updates

## RASFIM Ripple Implementation

Implements flood-mapping libraries using HEC-RAS models from FEMA MIP and BLE programs for over 200K+ river miles

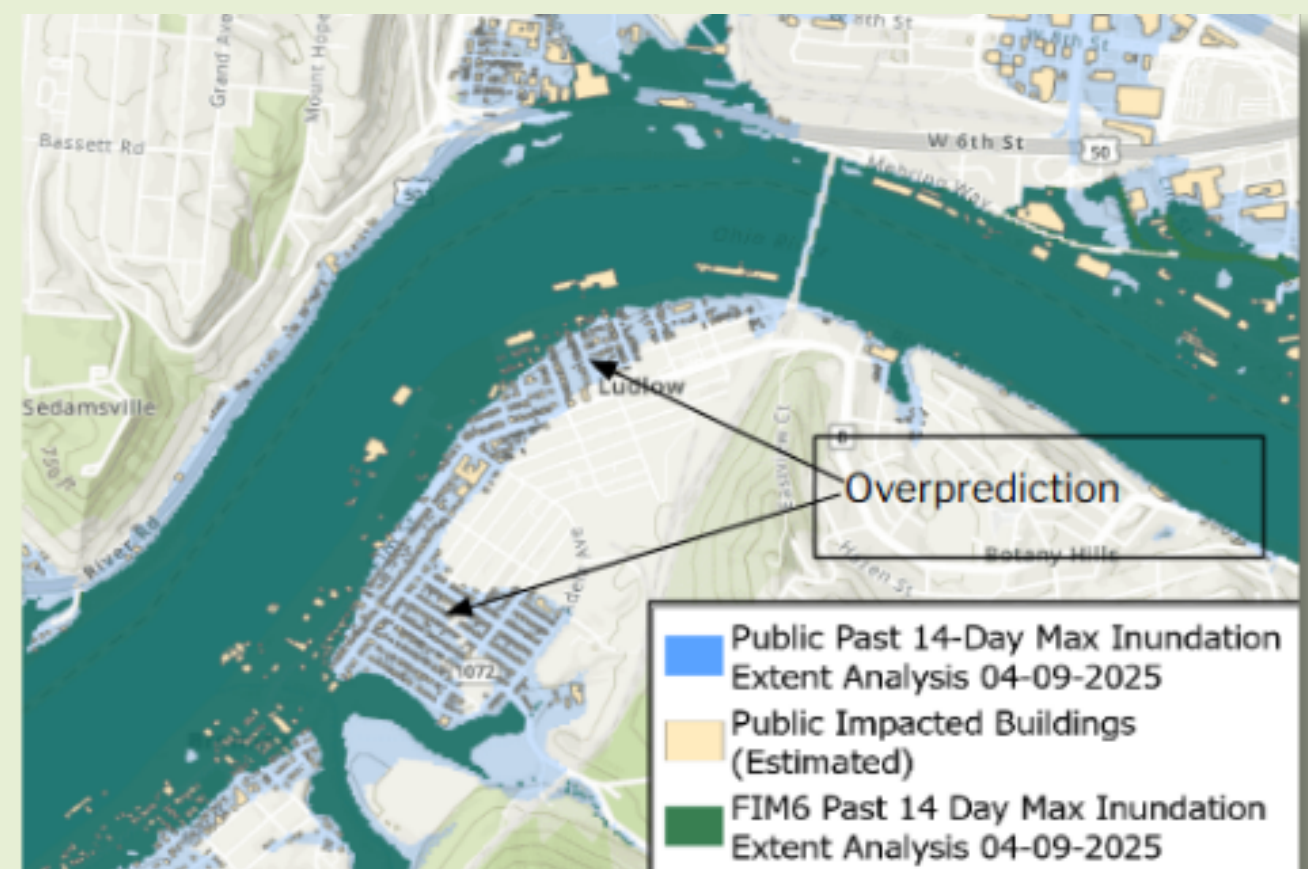
- ✓ *Benefit: Produces more accurate mapping for many river reaches nationwide*



## Ohio River Bathymetry Enhancement

Incorporates OHRFC-provided HEC-RAS model bathymetry into the synthetic rating curve for the Ohio River

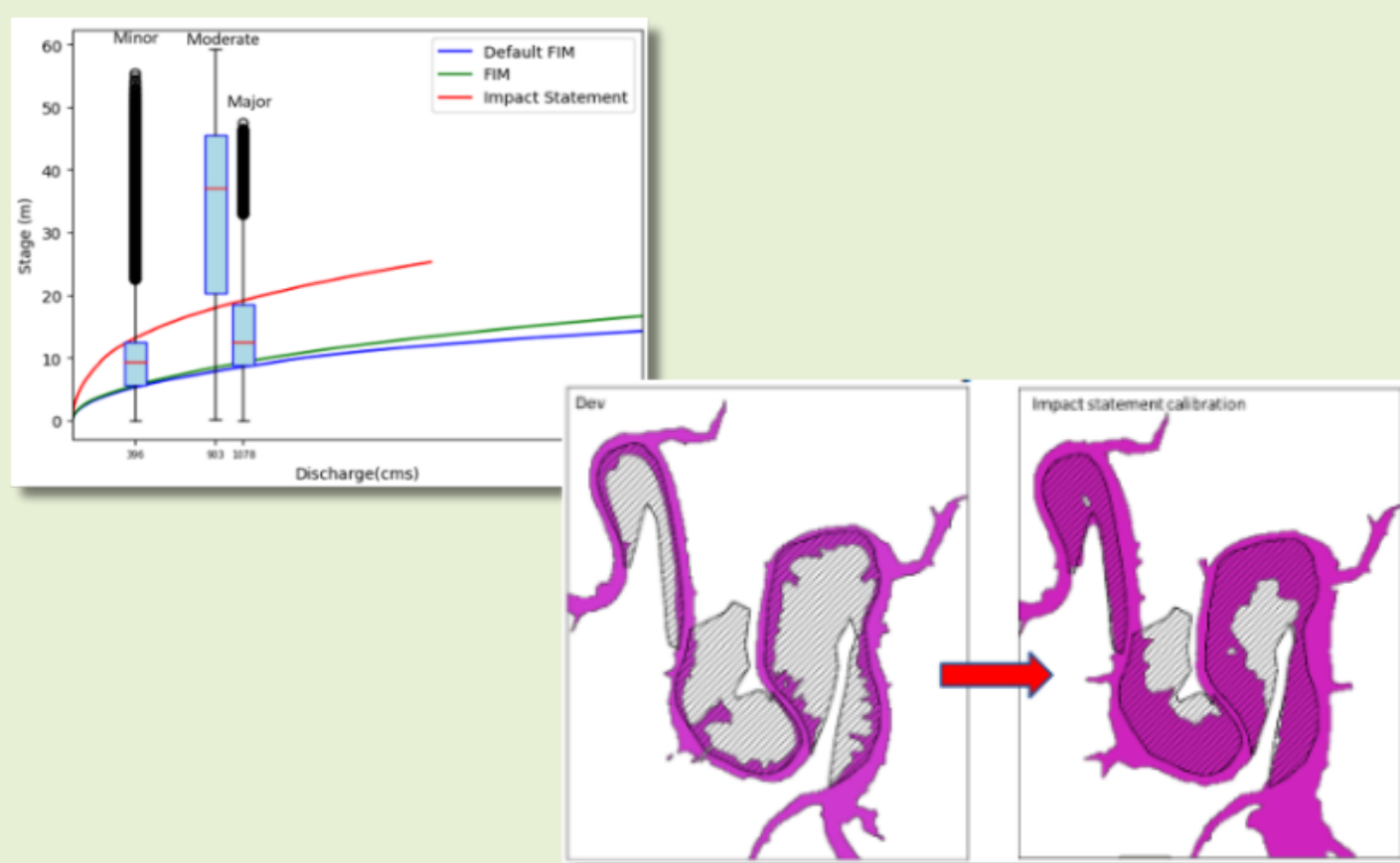
- ✓ *Benefit: Reduces overestimation and improves volume representation along Ohio River reaches*



## Geo-Located Impact Statements

Utilizes polygon-based geo-located impact statements to “nudge” rating curves toward observed impacts

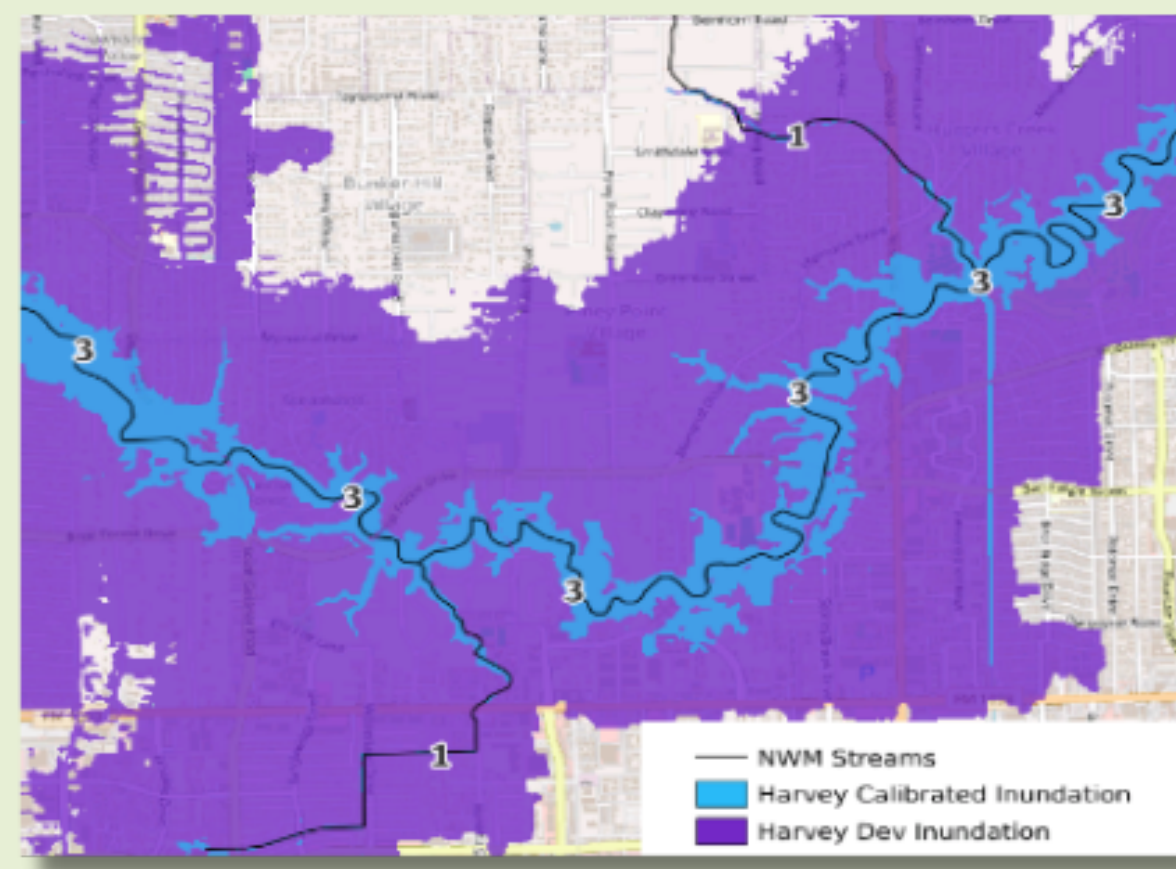
- ✓ *Benefit: Creates maps that more accurately reflect measured flooding impacts around gage sites*



## Manual Calibration in Houston

Manually calibrates reaches in the coastal urban area to better match HEC-RAS flood maps.

- ✓ *Benefit: Decreases the overestimation previously experienced in Houston*



## Questions, Comments, Discussion?

Speak Directly to the Developers!



**Slack Page:** national-water-center-gid

**Vlab Tickets for Issues:** <https://vlab.noaa.gov/redmine/projects/owp-inundation-mapping?jump=welcome>