

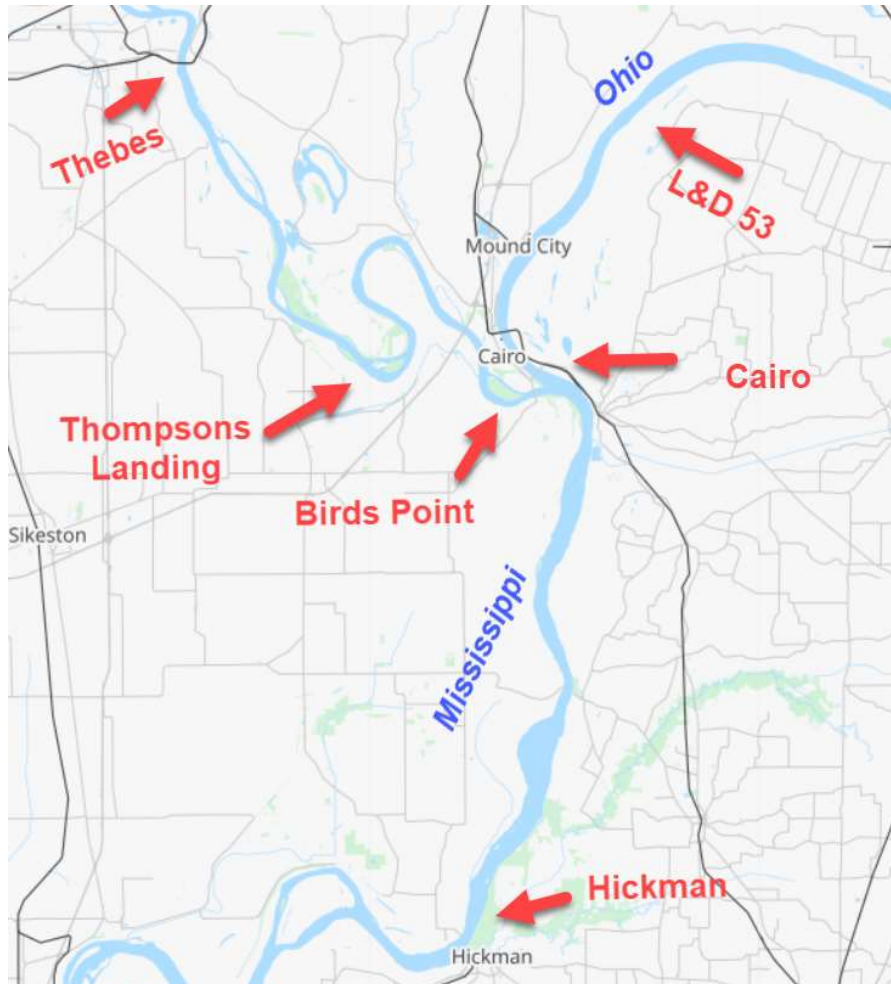
Calibration of the Mississippi – Ohio Model Workshop

1 Objective

In this workshop, you will gain experience calibrating an HEC-RAS model. You will learn how to adjust parameters to replicate water surface elevations, and travel times of observed data for an event.

2 Background

The figure on the following page shows gage locations along the Mississippi River from Thebes, IL to Hickman, KY (approximately 76 river miles) and the Ohio River from L&D 53 to its mouth at Cairo, IL (approximately 17 river miles).



In this workshop you will calibrate an existing Ohio Mississippi model at the gage locations in the table below.

Gage	River- Reach	River Station (RS)
Thebes	Mississippi - Upper	43.7
Thompson Landing	Mississippi - Upper	20.2
Birds Point	Mississippi - Upper	1.4
L&D 53 Tailwater	Ohio - Main Stem	17.39
Cairo	Ohio - Main Stem	0
Hickman (DS Boundary)	Mississippi - Lower	922

3 Calibrate the Model by Adjusting Manning's n Values

1. **Open** the **MissOhioRiv.prj** RAS Project in the "**Calibration**" directory.
2. **Open** and **Compute** the existing Plan "**1985 Flood Calibration**".
3. For the three reaches in model adjust the Manning's n values to of the cross-sections to adequately match the observed stages, particularly for the peaks.
 - a. Use the Stage and Flow Hydrograph Editor, Profile Plot and Cross Section Plots to compare the observed and computed stages.
 - b. From the **Geometry Editor**, in the **Tables Menu**, launch the **Manning's n or k values Table**. From here you can quickly change the n values for many cross-sections at once.

Note: it may be helpful to make new plans and geometries to keep track of progress

- c. Once you are satisfied with the results at each gage move on to the next task.

4 Tune the Calibration by Adjusting Flow Roughness Factors

4. For each gage, determine if stages are too high or too low for a given discharge band. For example, a gage may be calibrated well between 100,000 and 300,000 CFS and may calibrated poorly below 100,000 CFS.

5. From the **Unsteady Flow Analysis Window**, under the **Options Menu**, launch the **Flow Roughness Factors** editor.
6. **Create** and **adjust Flow Roughness Factors** for the calibration bands you identified.

5 Evaluate the Calibration

7. Fill out the table below to evaluate how well computed peak stages match observed.

Location	Time		
	06 Nov 1984	04 Jan 1985	01 Mar 1985
Thebes - RS 43.7 On Upper Mississippi			
Thompson Landing - RS 20.2 On Upper Mississippi			
L&D 53 - RS 17.39 On Ohio River			

Question: How well does the timing match for the observed and computed stages?

Question: How well are the stages at Thompson Landing reproduced? Are there any inconsistencies between the observed stage and computed flow at Thompson Landing which make it difficult to calibrate?