



Poster presentation:

Comparison of HEC-RAS and Iber simulations for the assessment of waterway safety under the bridge in the Kaunas city

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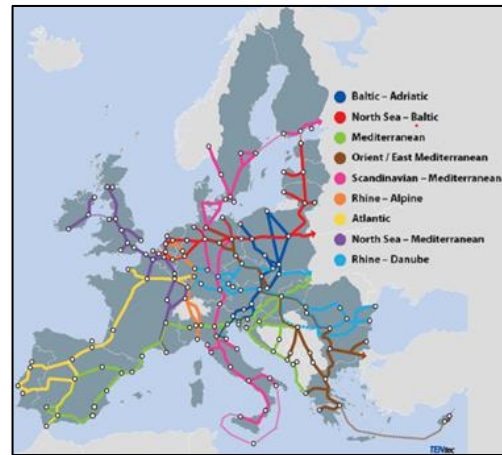


Introduction

The main problem investigated is the safety of the waterway.

The authors focused on a comparison of two models namely HEC-RAS and Iber.

The waterway E-41 was modernized with TEN-T funds.



Case Study

The chosen bridge is located in the city of Kaunas, in Lithuania.

Elements

- two parts: road & railway
- length: 470 m
- width: 30 m
- 2 x 3 piers
- 2 x 2 abutments



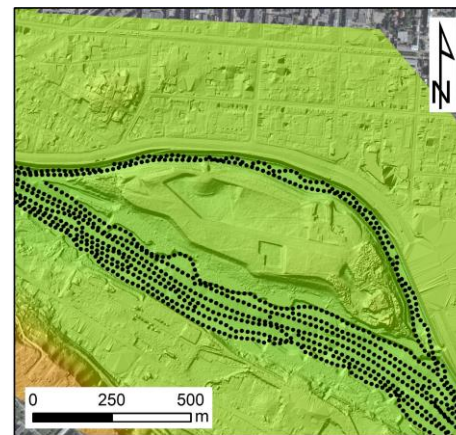
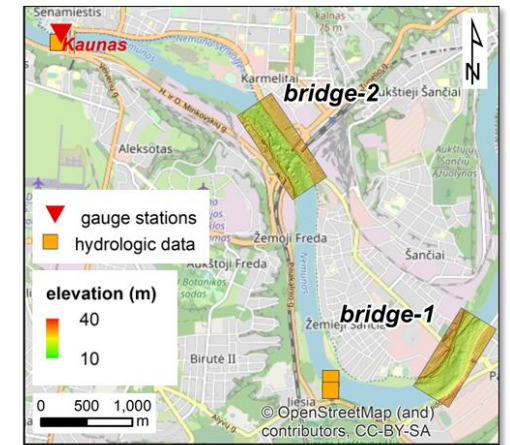
Materials and Methods

The main data applied are:

- 1) digital terrain model (DTM),
- 2) bathymetric measurements,
- 3) hydrologic information.

Additional data used are:


- 1) CAD design of the bridge
- 2) bottom cover information




Assumed risk/safety criteria

risk level	depth		Froude #	
	min	max	min	max
	(m)		(-)	
no risk	1.40	-	0.00	0.50
medium risk	1.15	1.40	0.50	0.75
high risk	0.00	1.15	0.75	-

Tested models:


HEC-RAS
 River Analysis System
 HEC-RAS 6.3.1 September 2022
 Developed by the
 U.S. Army Corps of Engineers
 Hydrologic Engineering Center




Iber

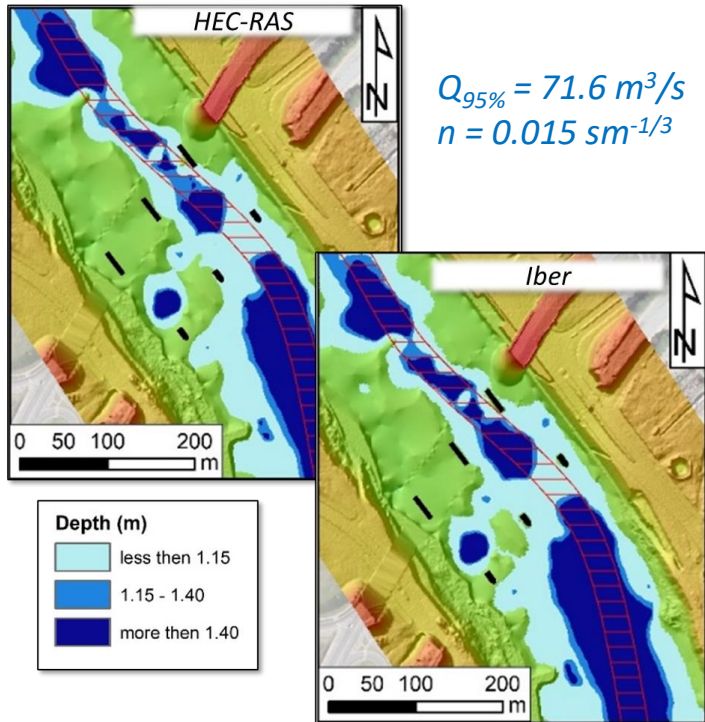




Results and Discussion

In general, the results of both models, depths and velocities, are compatible.

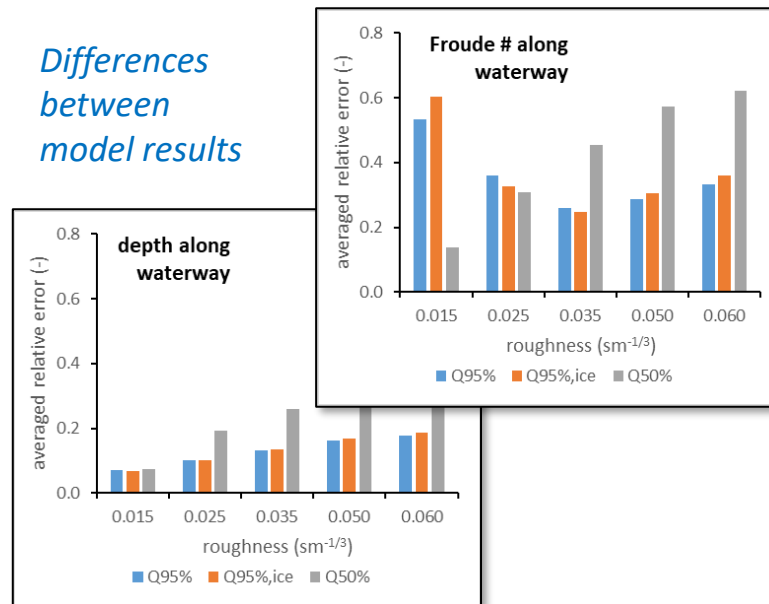
Maps of depth under the bridge



The roughness was treated as uncertain parameter.

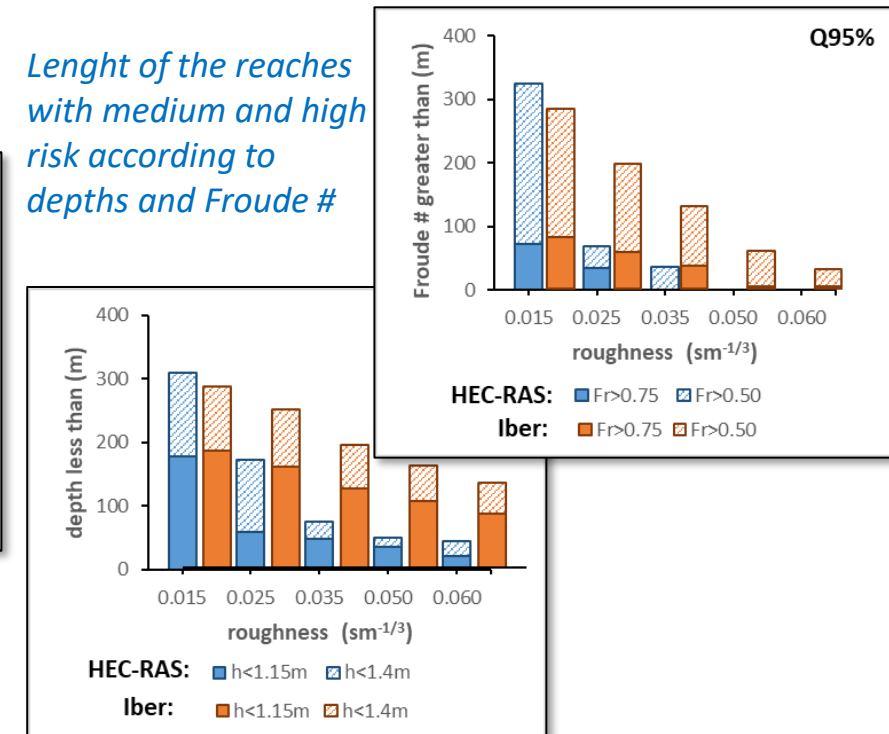
For the assessment of differences the average relative error is applied.

Differences between model results



Finally, the assumed safety criteria were checked and compared.

Length of the reaches with medium and high risk according to depths and Froude #



Conclusions

Both models may be recommended for advanced hydrodynamic simulations. However, there are also some differences observed as different sensibility to roughness in the final results.



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