


Thesis Title **COMPARATIVE EVALUATION OF DYNAMIC RIVER ROUTING EQUATIONS
USING FINITE ELEMENT METHOD :**
A TEST CASE FOR UPPER CHI RIVER

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ABSTRACT

This study is to evaluate the flood routing in the river under various rainfall conditions by using three mathematical flow models, Kinematic Flow Model, Diffusion Flow Model and Complete Flow Model. The first two are approximated models while the third is a complete model. All three models use the Implicit Galerkin's Weighted Residual Finite Element Method with momentum equation and continuity equation.

The model test involves flow in the upper Chi river. Testing ranged from the E21 gauging station at Ban Kaeng Ko, Chiyaphum to E16A gauging station at Ban Tha Phra, Khon Kaen. These two points were 195 Kilometers apart. Results from the model test are not much different than observed data. Results from Complete Flow Model are close to the results from Diffusion Flow Model, however, the results from

Kinematic Flow Model are different from the Complete and Diffusion Flow Model in the range of peak flow. It is found that the Manning Roughness Coefficient is more effective on the computed discharge hydrograph, however, time step, distance step and time weighting factor did not effect the stability of the models.