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Calibration of HEC-RAS Model on Prediction of Flood for Lower Tapi River, India

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Author(s)

Prafulkumar V. Timbadiya, Prem Lal Patel, Prakash D. Porey

ABSTRACT

Channel roughness is a sensitive parameter in development of hydraulic model for flood forecasting and flood inundation mapping. The requirement of multiple channel roughness coefficient Mannig' s ' n ' values along the river has been spelled out through simulation of floods, using HEC-RAS, for years 1998 and 2003, supported with the photographs of river reaches collected during the field visit of the lower Tapi River. The calibrated model, in terms of channel roughness, has been used to simulate the flood for year 2006 in the river. The performance of the calibrated HEC-RAS based model has been accessed by capturing the flood peaks of observed and simulated floods; and computation of root mean squared error (RMSE) for the intermediated gauging stations on the lower Tapi River.

KEYWORDS

Hydrodynamic Model, Calibration, Simulation, Flood and Stage Hydrograph, Validation, HEC-RAS

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References

- [1] W.-M. Bao, X.-Q. Zhang and S.-M. Qu, " Dynamic Correction of Roughness in the Hydrodynamic Model," *Journal of Hydrodynamics*, Vol. 21, No. 2, 2009, pp. 255-263. doi:10.1016/S1001-6058(08)60143-2
- [2] R. Ramesh, B. Datta, M. Bhallamudi and A. Narayana, " Optimal Estimation of Roughness in Open-Channel Flows," *Journal of Hydraulic Engineering*, Vol. 126, No. 4, 1997, pp. 299-303. doi:10.1061/(ASCE)0733-9429(2000)126:4(299)
- [3] S. Patro, C. Chatterjee, S. Mohanty, R. Singh and N. S. Raghuvanshi, " Flood Inundation Modeling Using Mike Flood and Remote Sensing Data," *Journal of the Indian Society of Remote Sensing*, Vol. 37, No. 1, 2009, pp. 107- 118. doi:10.1007/s12524-009-0002-1
- [4] N. Usul and T. Burak, " Flood Forecasting and Analysis within the Ulus Basin, Turkey, Using Geographic Information Systems," *Natural Hazards*, Vol. 39, No. 2, 2006, pp. 213-229. doi:10.1007/s11069-006-0024-8
- [5] R. Vijay, A. Sargoankar and A. Gupta, " Hydrodynamic Simulation of River Yamuna for Riverbed Assessment: A Case Study of Delhi Region," *Environmental Monitoring Assessment*, Vol. 130, No. 1-3, 2007, pp. 381-387. doi:10.1007/s10661-006-9405-4
- [6] A. M. Wasantha Lal, " Calibration of Riverbed Roughness," *Journal of Hydraulic Engineering*, Vol. 121, No. 9, 1995, pp. 664-671. doi:10.1061/(ASCE)0733-9429(1995)121:9(664)
- [7] G. Thakar, " People' s Committee on Gujarat Floods 2006: A Report," *Unique Offset, Ahmedabad*, 2007.

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