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Assessment of Golestan Dam Break Using Finite Volume Method

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Abstract : One of the most vital hydraulic structures is the dam. Regarding the unrecoverable damages which may occur after a dam break phenomenon, analyzing dams' break is absolutely essential. GOLESTAN dam is located in the western South of Mashhad city in Iran. GOLESTAN dam break might lead to severe problems due to adjacent tourist and entertainment areas. In this paper, a numerical code based on the finite volume method was applied for assessing the risk of GOLESTAN dam break. As to this issue, first, a canal with a triangular barrier was modeled so as to verify the capability of the concerned code. Comparing analytical, experimental and numerical results showed that water level in the model results is in a good agreement with the similar water level in the analytical solutions and experimental data. The results of dam break modeling are revealed that two of the bridges, that are PARTOIE and NAMAYESHGAH, located downstream in the flow direction, are at risk following the potential GOLESTAN dam break. Therefore, the required times to conduct the precautionary measures at bridges were calculated at about 12 and 21 minutes, respectively. Thus, it is crucial to announce people about the possible risks of the dam break in order to decrease likely losses.

Keywords : numerical model, shallow water equations, GOLESTAN dam break, dry and wet beds modeling
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