Abstract:

conception of natural phenomena that occur in our vicinity, contains very important issues, Hence, researchers attempt, by finding of the current laws in these phenomena, controlled and exploit them in line with the development and progression of human life. One of these phenomena with specific complexity, is the phenomenon of the Precipitation and its transition to sea and river. Exact information about erosion, transition and precipitation in the country (Iran) isn't considerable and in many cases there are several antithesis between the measurements and predictions. In hydraulic of river and its geomorphology, investigation of the flow precipitation transition capacity and mechanism of precipitation transition has specific importance. In regard to the existent characters, in such affairs, application of the analytical procedures is not usable to study of these affairs. So, single solution, is application of numerical procedures. The purpose of this study is the imitation of the precipitation transition in stream by the hydrodynamic of the smooth ingredient .With the introducing of the current equations on flow and transition of the precipitation in stream and the forces upon the precipitation ingredient and full introducing of I-SPH and modified its form (M-I-SPH) and manner of impose of border condition, current separated algorithm of the equations , explained completely And finally MPM-I-SPH as a multi-phase M-I-SPH manner, for resolve of different problems that in which, fluid and precipitation have interaction, has been introduced. In order to investigation of accuracy of the M-I-SPH manner, the imitation of the barrier issue, that it is the common example of accuracy-testing for numerical models, have been evaluated. And the results were compared with the lab records. In continue, the transition precipitation of stream and channel were imitated and load-output of stream were computed based on the like-procedure that was applied in lab works, the result from this imitation were compared with practical and laboratory manners. Good comparison of different acquired results through MPM-I-SPH manner with different practical and laboratory results, shows the potency of MPM-I-SPH in analysis of the transition of precipitation issue and other like issues.

Key Words: Smoothed Particle Hydrodynamics, Sediment Transportation, Dam Failure, Simulation.

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Simulation of Sediment Transportation at bottom of Rivers by Smoothed Particle Hydrodynamics

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