

Numerical simulation of graded sediment transport

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River engineers commonly need to predict sediment transport rates in the absence of adequate field data, and so make frequent use of numerical sediment transport models. This paper compares the performance of two such computer models for the prediction of graded sediment transport. The intention is to inform model users of the level of accuracy that can be expected for typical applications. One model uses the Parker bedload transport equation and the other uses the Meyer-Peter and Müller sediment transport formula modified for use with graded sediments. The computer model predictions are compared with detailed experimental data collected for the purpose of computer model validation. The Meyer-Peter and Müller-based model produces better predictions of sediment transport rates, whereas the Parker-based model performs better in terms of the grain sizes of both the bedload and the bed material. These results illustrate the limitations of present models and indicate areas requiring further investigation.