MORPHOLOGICAL BED-UPDATING MODELS

Morphological bed updating models are based on hydrodynamic and sediment transport models that take into account feedback between the models. Generally the two components of the model are run in parallel with the results fed from one into the other at each time step. The hydrodynamic model predicts flows and water levels over the model domain. This information is then used to determine the sediment transport regime. The accretion or erosion estimates are then used to update the bed levels before the sequence recommences with calculations of water levels and current flows in the next time step of the model.

Morphological models have to deal with a high degree of uncertainty regarding the processes which occur and the manner in which the system reacts to them as morphology is at the end of a chain of the following inter-related processes, (STOWA-RIZA guide).

Water levels → sediment transport → flow rates → morphology

The complexity and inaccuracy increase significantly with distance down this chain.

Data Requirements

The data requirements for Morphological Bed-Updating models are similar to those outlined for the hydrodynamic and sediment transport modelling.

For further information see: (Mosselman, 1996a; Mosselman, 1996b; de Vriend & Ribberink, 1996; de Vriend, 1997; Capobianco *et al*. 1999; WL|delft hydraulics, 2001)

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