MODELLING SOLUTE TRANSPORT
IN A SMALL STREAM USING DISCUS

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Abstract

This paper describes the main features of the DISCUS model for one-dimensional advection–dispersion computations in rivers, and describes its application to a short reach of The Murray Burn (a small stream in Edinburgh). DISCUS was calibrated using tracer data and an optimisation technique that uses a genetic algorithm. The optimised dispersion coefficients were found to increase from 0.25 to 2 m^2/s in the flow range 16-261 l/s. The model was validated using tracer data not used in the calibration stage. It appears that transient storage does not play a major role in the transport of solutes in the reach that was modeled.

Key words: solute transport, streams, numerical modelling, DISCUS, dispersion coefficients