

## **Parameterizing dynamic water quality models in ungauged basins: issues and solutions**

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**Abstract** The redundancy and ill-conditioned nature of model identification and parameter estimation make it difficult to identify a hydrological model that can correctly split the flow dynamics and associated contaminant transport and transformation between each of its conceptual pathways. The Pathways project, funded by the Irish EPA, combines insights from conceptual catchment modelling and detailed fieldwork investigations to inform an integrated water management tool. Within this project, a user-friendly GIS application is being developed for environmental managers interested in water quality modelling using the Pathways Computational Engine (PACE) model. This variable structure water quality model can be used to investigate hydrological and contaminant processes at sub-catchment scale and to incorporate expert knowledge relating to flow pathways and contaminant transport along these pathways. In this paper, parameter identification issues related to the hydrological model are discussed with an investigation of groundwater parameters for catchments underlain by locally important aquifers.

**Key words** hydrological processes; catchment modelling; flow path contributions; parameter identification