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DECISION SUPPORT BASED ON UNCERTAINTY QUANTIFICATION OF MODEL PREDICTIONS OF CONTAMINANT TRANSPORT

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Summary. The process of decision making to protect groundwater resources requires a detailed estimation of uncertainties in model predictions. Various uncertainties associated with model development, such as measurement and computational errors, uncertainties in the conceptual model and model-parameter estimates, simplifications in model setup and numerical representation of governing processes, influence the uncertainties in the model predictions. As a result, the predictive uncertainties are generally difficult to quantify. Quite frequently however, the uncertainties in only some of the model parameters and predictions are important to consider in the decision making process. We investigate and compare existing and newly-proposed methods for the quantification of predictive uncertainties in relation to decision support. The goal is to quantify predictive uncertainties affecting decision making related to locating new monitoring wells.