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Estimation loads from Continuous data sets: An assessment of the uncertainties

S.D. Blazkova (1), A. Kulasova (1), P.J. Smith (2), and K.J. Beven (2)

(1) T.G. Masaryk Water Research Institute, Hydrology, Prague 6, Czech Republic (sarka_blazkova@vuv.cz), (2) Lancaster Environment Centre

A method for computing loads of total phosphorus and nitrate given continuous measurements from a pressure transducer along with those of a turbidity probe and an ion-specific N-NO_3 probe. Using Bayesian statistic methods these time series data are combined with a limited number of discharge measurements and analysed of grab samples to convert water levels to discharge and to derive continuous estimates of total phosphorus and nitrate. The integration used to estimate loads from the time series of predicted values of the true discharges and concentrations are then carried out by a Monte Carlo method.
The techniques are demonstrated on data from a small catchment in the Czech Republic. Variation in the estimated monthly loads range from 5 to 23% for total phosphorous and 12 to 36% for N- NO_3. At the annual time scales, coefficients of variation are of the order of 5% for both total phosphorous and N-NO_3. The variability in the estimated annual loads between the years was, however, significantly larger than the uncertainties estimated within each year