

Interactive comment on “Uncertainties in selected surface water quality data” by M. Rode and U. Suhr

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1. Abstract, line 23: I am not sure the term ‘meso scale’ is well understood. Could you explain it, e.g. by indicating an order of magnitude (or range) in km²

→ the order of magnitude has been added

2. Introduction: a good introduction to the relevance of the topic is given. However I lack a brief outline of state-of-the-art - maybe a 5-10 lines paragraph explaining whether similar reviews and frameworks for characterising uncertainty in surface water quality data have been presented previously. This should be accompanied by a similar brief statement on the novelty of this work in the chapter with conclusions.

→ the following chapter has been added:

Although previous research has produced valuable information on the uncertainty in-

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herent in measured surface water quality data, a systematic review to quantify important sources of uncertainties of river water quality data is missing. Most literature focus on specific aspects of water quality data uncertainties like suspended sediment concentrations in sediment rich rivers (Horowitz 1997), guidance for water quality data collection (e.g. Harmel et al. 2006b) or the analyses of techniques for quantification and comparison of different sources of uncertainties (e.g. Ramsey 1998). Only very few attempts have been made to characterise surface water quality data uncertainties according to specific uncertainty frameworks. Harmel et al. (2006a) used four procedural categories to assess streamflow water quality data uncertainties. The findings were restricted to nutrients and small streams. The objective of the present paper is to present a more general framework for characterising uncertainties in river water quality data.

3. p 2995, line17: Sect.2 !Section 2

—> done

4. Table 3 and text: I think you need to introduce/explain the terms D1, M1, I3, O3, L1, etc. You should refer to the paper (maybe the paper in the Data Guideline Report or to some of James Browns papers) where this is explained in further detail, but in addition a few lines introducing the meaning would be useful, so that the paper could be read as a stand alone.

—> the chapter has been corrected as follows

The methodology used to structure the uncertainty is based on a fourfold distinction between the empirical quality of data, the sources of uncertainty in data, the fitness for use of data and the goodness of an uncertainty model (van Loon et al., 2005). In this paper we focus on the empirical quality of data and its sources of uncertainty through a literature review and additional experimental data of the Elbe River. In order to develop probability models for attribute uncertainty, it is useful to distinguish between the space-time variability and the measurement scale. In Table 3 the category B1 indicates

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variation in time but not in space and a continuous numerical measurement scale. The category D1 specifies variability in time and space and also a continuous numerical measurement scale. For more details see Brown et al. (2005). Also the analytical errors can be stated for nearly all variables as with an empirical uncertainty of M1 which indicates that a probability distribution or upper & lower bounds can be specified. Instrument quality is always well suited for the field situation and calibrated if standard procedures are used (I3, see Table 3). The quality of the sampling strategy can be divided in four classes and water quality variables are determined in most cases based on large samples of direct measurements, good sample design and controlled experiments indicated by S3 in Table 3. The sampling strategy is also specified according to the spatial dimension (Sh = horizontal, Sv = vertical), and also in time (St). The overall method is always approved standard in well established disciplines (O3). Furthermore the description of uncertainty information is known to change over time what is specified by the term 'longevity'. The code L1 indicates that the uncertainty information is known to change over time and L2 indicates that it does not (see also van Loon et al. 2005). Information on autocorrelation of time series data is rare in the literature. If possible additional information is given in the following sections. Quantitative estimates on uncertainties for the variable groups like coefficients of variation (CV) of pdf (see Table 5) are restricted to measurement and analytical uncertainties due to the lack of information and site specific characteristics of other uncertainty information. The given values on mean standard deviations are general estimates for the analytical methods considered in Table 1. The estimation of uncertainty in sampling can only be done by taking at least a proportion of samples in duplicates. A detailed review of techniques for quantification and comparison of sampling and analytical sources of uncertainties is given e.g. by Ramsey (1998).

5. p 3004, line 4: weather ! whether

→ done

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 3, 2991, 2006.

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