



Condition trees as a mechanism for communicating the meaning of uncertainties

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Uncertainty communication for environmental problems is fraught with difficulty for good epistemic reasons. The fact that most sources of uncertainty are subject to, and often dominated by, epistemic uncertainties means that the unthinking use of probability theory might actually be misleading and lead to false inference (even in some cases where the assumptions of a probabilistic error model might seem to be reasonably valid). This therefore creates problems in communicating the meaning of probabilistic uncertainties of model predictions to potential users (there are many examples in hydrology, hydraulics, climate change and other domains). It is suggested that one way of being more explicit about the meaning of uncertainties is to associate each type of application with a condition tree of assumptions that need to be made in producing an estimate of uncertainty. The condition tree then provides a basis for discussion and communication of assumptions about uncertainties with users. Agreement of assumptions (albeit generally at some institutional level) will provide some buy-in on the part of users, and a basis for commissioning of future studies. Even in some relatively well-defined problems, such as mapping flood risk, such a condition tree can be rather extensive, but by making each step in the tree explicit then an audit trail is established for future reference. This can act to provide focus in the exercise of agreeing more realistic assumptions.