Modelling Measurement Errors for Dependent Data

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Abstract. The Berkson model for measurement errors arises when the values of predictor variables are controlled by the experimenter, but these target values may contain random fluctuations from the true values. In the basic formulation the measurement errors in this model are assumed to be independent. However, when analysing dependent, such as longitudinal or growth data, such assumption may be doubtful. In this talk I present an extension of the basic Berkson model, which also admits dependent measurement errors. The model presented is illustrated by an example of forest harvesting with some results of real harvesting data. Also some basic properties of OLS estimates and BLUPs with low degree polynomial models are discussed in this framework.

Key Words: Berkson model, BLUP, Covariance structure, OLS estimation