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Hydrol. Earth Syst. Sci., 3, 85-93, 1999  
www.hydrol-earth-syst-sci.net/3/85/1999/

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## Functional similarity in landscape scale SVAT modelling

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**Abstract.** In this study, it is shown that the complexity of Soil Vegetation Atmosphere Transfer (SVAT) models leads to an equifinality of functional behaviour - many parameterizations from many areas of the parameter space lead to very similar responses. Individual parameters derived by calibration (i.e. model inversion) against limited measurements are, therefore, highly uncertain. Due to the non-linear internal behaviour of SVAT models, aggregation of uncertainly known parameter fields to parameterize landscape scale variability in surface fluxes will yield highly uncertain predictions. A disaggregation approach suggested by Beven (1995) requires that the land surface be represented by a linear sum of a number of representative parameterizations or functional types. This study explores the nature of the parameter space in terms of a simple definition of functional behaviour. Parameter interactions producing similar predicted behaviours are investigated through application of Principal Component Analyses. These reveal the lack of a dominant global interaction indicating the presence of highly complex parameter interactions throughout the feasible parameter space.

[Final Revised Paper](#) (PDF, 1340 KB)

Citation: Beven, K. J. and Franks, S. W.: Functional similarity in landscape scale SVAT modelling, Hydrol. Earth Syst. Sci., 3, 85-93, 1999. [Bibtex](#) [EndNote](#) [Reference Manager](#)



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