



Digital Soil Assessment - a UK example

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Over the last 10 years Digital Soil Mapping (DSM) has emerged as an alternative to traditional soil mapping and is used actively in many parts of the World. However, DSM should not be seen as an end to itself, but rather as a technique for providing data and information for a new framework of Digital Soil Assessment (DSA). The framework concept of DSA encompasses individual components and the links and feedbacks between them. The framework comprises: 1) the soils attribute interface, 2) evaluation of soil functions and threats to soils and 3) the risk assessment and the development of soil protection strategies. A significant advantage *inter alia* of DSA over conventional methods is the provision of estimates of predictor uncertainties.

DSA is illustrated using examples from various projects that concentrate on spatial inference, soil attribute inference and soil function mapping. Two different approaches to spatial inference of soil properties are presented in a UK context, firstly a direct approach using soil-landscape models for individual properties and secondly an indirect approach using a soil class concept. The application of DSA is illustrated by assessing the potential for biomass production as an example of a soil function. The model input parameters are generated using methods of spatial inference which also allow estimates of errors to be made. Accuracy assessments of the model outputs are made using error propagation techniques. Future directions of DSA such as the development of harmonised soil functional assessment are proposed.