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Upscaling of land surface parameters through inverse SVAT modeling

The accurate representation of subgrid scale effects in climate models has been an issue of great controversy. In an attempt to resolve this controversy, a model-independent technique was developed in this study to upscale land surface parameters through inverse-SVAT modeling. Upscaling laws are derived, that map the distributed land surface parameters of a heterogeneous land surface to their corresponding effective parameter. Simpler averaging methods of comparable performance are derived from the inverse modeling results, which drastically reduce the computational effort. The proposed method shows better performance than most well known methods. More importantly, the method is applicable in many fields.