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Modelling soil organic carbon in South east Chinas red soils under different land uses.

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Red soil is agriculturally important in China; it covers 20% of the spatial area and is used to produce 40% of China's food. Changes in demand have fuelled large scale land use change including intensification, different crop choices, and replacing forests with cropland and more grassland. We can identify the effects of these changes on soils using models. The outputs from models can subsequently be used to better inform management decisions. Testing simulations against independent data informs us of the reliability of projections. A soil organic matter model, ECOSSE, is used to simulate soil carbon and nitrogen dynamics on under different land uses and climate scenarios. ECOSSE is a simple pool based model with a low data requirement. We first test the model by simulating previous changes in soil carbon stocks. We then use the ECOSSE model to simulate the effect that land use changes will have on soil carbon stocks in Chinese red soils. We show areas where the soil carbon effects of these changes will be most beneficial and most detrimental. We also explore the impact of several different climate scenarios on soil carbon dynamics across these soils.