



## **Modeled trends of soil organic carbon stocks in German croplands under climate change scenarios**

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Various studies analyzing long-term observation data as well as modelling studies showed that on average soil organic carbon (SOC) stocks of German croplands either remain constant or decrease under current management and climate conditions. Ongoing climate change with increasing temperatures and changing precipitation patterns will effect SOC decomposition and carbon (C) inputs. Thus, soils might even loose more C under climate change and there will be a need to increase C inputs in order to maintain present SOC stocks. The aim of our study is to simulate the SOC stock development under climate change in topsoils of more than 1000 German cropland sites, which have been investigated in the framework of the German agricultural soil inventory. We will use a multi-model ensemble covering different SOC models and C input estimation methods validated on a network of 139 German permanent soil monitoring sites to predict changes in SOC stocks for several climate scenarios. The latter will be derived for each individual site using a climate model ensemble. We will use the modelling framework to analyze the potential of different options to mitigate SOC losses under climate change, such as organic fertilizers, increased residue returns, improved crop rotations, cover cropping or plant breeding. First results of this modelling study will be presented and discussed.